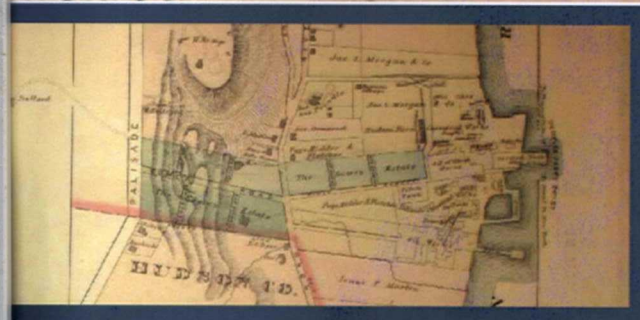
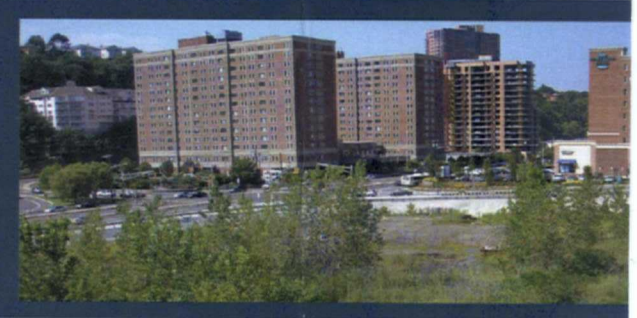
Draft Remedial Investigation Report

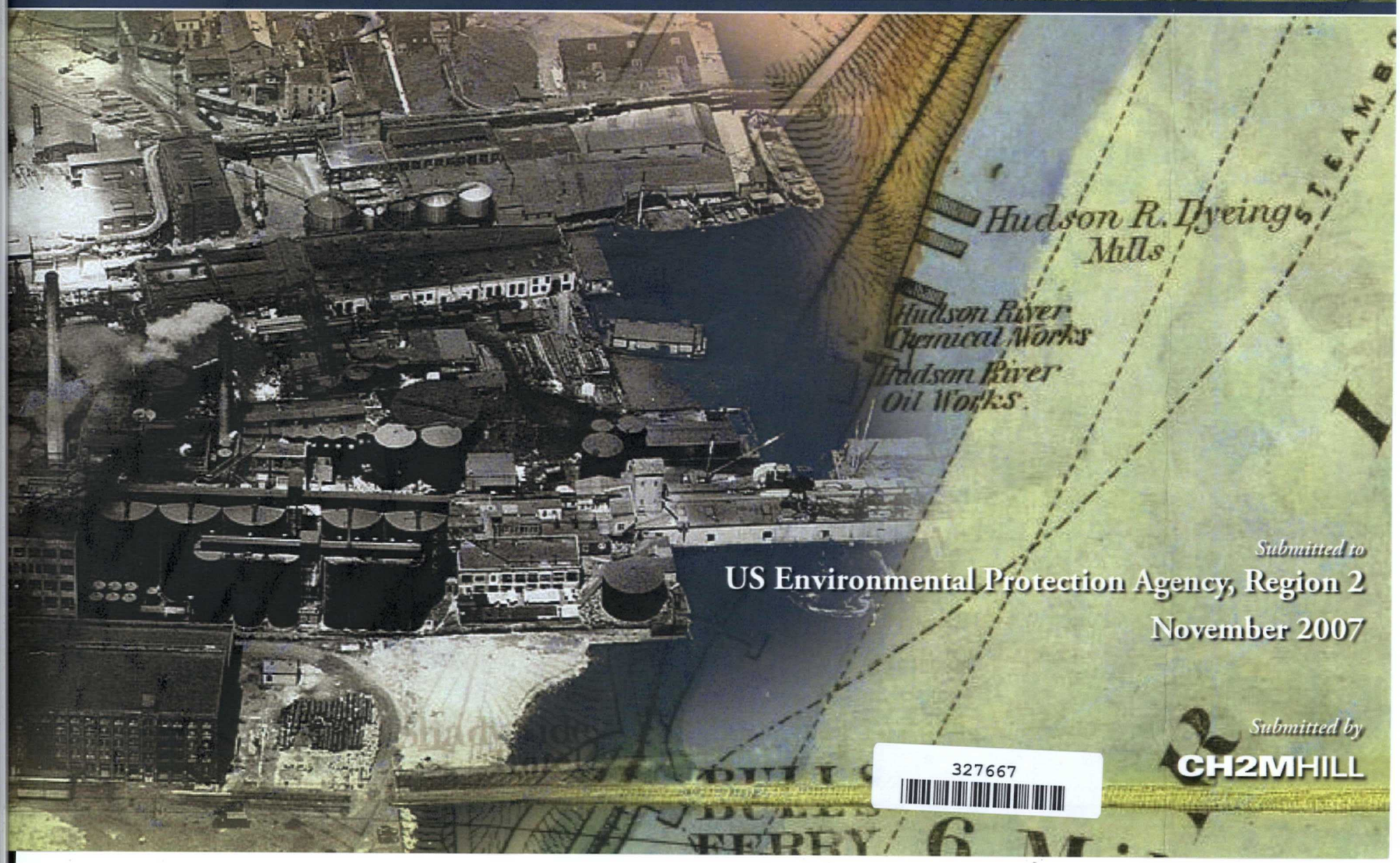
Quanta Resources Superfund Site

Operable Unit 1

Volume 7 of 7







Submitted to

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CH2MHILL

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Human Health Risk Assessment

Quanta Resources Superfund Site

Operable Unit 1

Submitted to

U.S. Environmental Protection Agency

November 2007

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Acronyms and Abbreviations

ALM	adult lead methodology
AOC	Administrative Order on Consent
ATSDR	Agency for Toxic Substances and Disease Registry
BLL	blood lead level
BTEX	benzene, toluene, ethylbenzene, and xylene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, commonly referred to as Superfund
COC	constituent of concern
COPC	constituent of potential concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CTE	central tendency exposure
ELCR	excess lifetime cancer risk
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
HHRA	Human Health Risk Assessment
HI	hazard index
HQ	hazard quotient
IEUBK	Integrated Exposure Uptake Biokinetic (model)
IRIS	Integrated Risk Information System
MCL	maximum contaminant level (EPA Drinking Water Standards)
µg/dL	micrograms per deciliter
mg/day	milligrams per day
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MMOA	mutagenic mode of action
NCEA	National Center for Environmental Assessment
NJDEP	New Jersey Department of Environmental Protection
NJDHHS	New Jersey Department of Health and Senior Services
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PAH	polycyclic aromatic hydrocarbon
PAR	Pathway Analysis Report
PCB	polychlorinated biphenyl
PHA	public health assessment
PPRTV	Provisional Peer-Reviewed Toxicity Values
PRG	Preliminary Remediation Goal

RAGS	Risk Assessment Guidance for Superfund
RI/FS	Remedial Investigation/Feasibility Study
RME	reasonable maximum exposure
Site	Quanta Resources Superfund Site
SQL	sample quantitation limit
SVOC	semi-volatile organic compound
TCE	trichloroethene or trichloroethylene
UCL	upper confidence limit
VOC	volatile organic compound

SECTION 1

Introduction

This baseline Human Health Risk Assessment (HHRA) for Operable Unit (OU) 1 of the Quanta Resources Superfund Site[1] (the "Site"), located in Edgewater, New Jersey, has been prepared in accordance with the requirements of the U.S. Environmental Protection Agency (EPA) Administrative Order on Consent (AOC) II-Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)-2003-2012 for the Uplands Area, OU1.

The overall approach and assumptions used in this HHRA are consistent with the AOC, the EPA-approved Remedial Investigation/Feasibility Study (RI/FS) Work Plan (Parsons, 2005) and the EPA-approved *Pathway Analysis Report for the Human Health Risk Assessment – Quanta Resources Site, Operable Unit 1* (CH2MHILL, 2006) and subsequent comments received from EPA. The objectives of the HHRA were to characterize and quantify the current and potential future risks to human health that may occur if no further remedial action is performed on soil and groundwater at OU1. The methods and approaches used in this HHRA were developed from EPA Risk Assessment Guidance for Superfund (RAGS) (EPA, 1989).

The spatial extent of the HHRA encompasses the majority of OU1, which includes Block 95, Lot 1 (referred to as the "Quanta property") and portions of adjacent properties that may have been affected by former operations, consisting of the former Celotex, 115 River Road, former Lever Brothers, and Block 93 North properties (Draft RI Report, Section 1.3.1). Potential impacts to Block 93 Central and/or South will be addressed in a future submittal following supplemental investigation in this area. Potential impacts to media in the Hudson River will be assessed in a separate HHRA for OU2.

The supporting tables for this HHRA are presented in RAGS Part D format (EPA, 2001a) in Attachment 1. An overview of the various potential receptors and exposure pathways addressed qualitatively or quantitatively in this HHRA is presented in Table 1 of Attachment 1.

As required by the OU1 AOC, a Pathway Analysis Report (PAR) was prepared and submitted to EPA in April 2006. The initial step in performing the HHRA was to develop a memorandum on exposure scenarios and assumptions, which was submitted to EPA on November 7, 2005 (CH2M HILL, 2005). The PAR presented the assumptions to be used in the HHRA and was consistent with the memorandum referenced above (CH2M HILL, 2005), the approach discussed at a meeting held with EPA on February 21, 2006, and EPA comments on the memorandum (received on March 13, 2006). The memorandum included Risk Assessment Guidance for Superfund (RAGS) Part D draft Tables 1 and 4 (EPA, 2001). The PAR included RAGS Part D Tables 1 and 4 updated on the basis of the meeting held

[1] As defined in the AOC II-CERCLA-2003-2012, the Quanta Resources Superfund Site includes the former Quanta Resources property, located on River Road in Edgewater, New Jersey, and any areas where contamination from the property has come to be located (as defined in the Draft RI Report for OU1). The current extent of the Quanta property refers to Block 95, Lot 1 as defined on the Borough of Edgewater, New Jersey tax map.

with EPA on February 21, 2006, and EPA comments on the memorandum), in addition to RAGS Part D draft Tables 2, 3, 5, and 6.

In this HHRA, the RAGS Part D tables provided in the PAR were updated with additional soil and groundwater data. Specifically, the following information was added to the HHRA:

- Soil analytical data from the former Celotex property
- Soil analytical data from the northwestern corner of the Quanta property
- Groundwater analytical data from RI groundwater sampling events

The following topics are discussed in the PAR: site history, potential receptors and exposure pathways considered for the HHRA, data to be used in the HHRA, chemicals of potential concern to be used in the HHRA, exposure point concentrations to be used in the HHRA, exposure factors to be used in the HHRA, and toxicity values to be used in the HHRA.

Subsequent to submitting the PAR, EPA provided comments on the PAR (EPA, 2006a), and several meetings were held between the CH2M HILL senior risk assessor and EPA Region 2's senior risk assessor to address EPA's comments on the PAR, and to reach agreements on aspects of the HHRA. Some of these agreements included the following.

- Data groupings used in the HHRA
- Elimination of Class A carcinogens as constituents of potential concern (COPCs) if detected very infrequently and at low concentrations
- Child and youth age-specific exposure factors used to evaluate chemicals with a mutagenic mode of action
- Model and exposure times used to estimate bathroom air concentrations from showering
- Methodology for evaluating potential future indoor air vapor intrusion issues where buildings are not currently located and there are no specific building plans or specifications
- Inclusion of hot spot evaluations for arsenic in soil and/or groundwater at selected properties based on the distribution of arsenic concentrations
- Methodology for calculating remedial goal options

SECTION 2

Hazard Identification

2.1 Data Used in the HHRA

The soil dataset used in the HHRA consists of soil samples collected during the RI and historic soil samples collected at properties adjacent to the Quanta property by consultants under contract with adjacent property owners. The groundwater dataset consists of groundwater samples collected during the RI. Summaries of investigations conducted at the Site are presented in Section 1.3.3 of the Draft RI report.

2.1.1 Soil

Soil analytical data that were collected from the 0- to 10-foot interval were used for the HHRA. The available data consist of surface soil samples (0- to 2-foot interval) and subsurface soil samples (2- to 10-foot interval) collected between 1990 and 2006. The data were grouped for the HHRA by property and depth, as presented in Attachment 1 (Tables 2.1, 2.2, 2.4, 2.5, 2.7, 2.8, 2.10, 2.11, 2.13, and 2.14) and summarized below:

- **Quanta property**—55 surface soil samples and 37 subsurface soil samples collected from 1990 to 2006
- **Former Celotex property**—29 surface soil samples collected in 2003 and 2004 and 30 subsurface soil samples collected from 2003 and 2006
- **115 River Road property**—5 surface soil samples collected in 2005 and 2006 and 9 subsurface soil samples collected in 1998, 1999, 2005 and 2006
- **Former Lever Brothers property**—15 surface soil samples collected in 2005 and 2006 and 74 subsurface soil samples collected in 1998, 1999, 2005 and 2006
- **Block 93 North**— 20 surface soil samples collected in 1990, 1996, and 2004 to 2006 and 44 subsurface soil samples collected in 1998, 2005, and 2006

In the HHRA, subsurface soil is evaluated at the 0- to 10-foot depth, which is the depth assumed to be potentially contacted by a construction worker. Soil and groundwater data for Block 93 Central and Block 93 South were not available at the time this HHRA was prepared. Risks due to potential impacts at Block 93 Central and/or South will be addressed in a future submittal following supplemental investigation in the Block 93 area. In addition, if necessary, the Block 93 North evaluation presented herein will be updated.

2.1.2 Groundwater

Groundwater analytical data collected during RI activities (2005 and 2006) were used for the HHRA. At the Site, the groundwater data from wells with water present within 10 feet of ground surface were used to quantify potential exposures by a construction worker in a deep excavation. In addition, the potential for future indoor air vapor intrusion exposures

by residents was evaluated qualitatively (see Attachment 2). Also, groundwater data from the Site were grouped by hydrostratigraphic unit (i.e., above the silty clay layer and below the silty clay layer) to quantify hypothetical tap water exposures by future residents, under the assumption that area groundwater is used as a potable source in the future. However, exposure to groundwater is not actually a complete pathway for the reasonably foreseeable future. Groundwater at the site will not be used for potable purposes within a reasonable planning horizon (i.e., 30 years). Moreover, a reliable municipal water supply is readily available; there are no potable wells in the vicinity of the property; water supply planning for the area of the site does not identify any groundwater supply needs from the vicinity of the site; and water yield and natural quality of site groundwater are unlikely to meet potable water use requirements.

At the request of EPA, the shallow groundwater zone was evaluated in the risk assessment. Site conditions documented in the Remedial Investigation report indicate that the depth of this zone from surface to the top of the lower confining is no greater than 29 feet below ground surface. In accordance with the New Jersey Administrative Code (N.J.A.C.) 7:10 et seq. (Safe Drinking Water Act Regulations) and N.J.A.C. 7:9D (Well Construction and Maintenance), potable wells shall meet various requirements based on characteristics for the water bearing formation. At the minimum, the N.J.A.C. requires all casings to be no less than 50 feet in depth, and a minimum length of 50 feet of grout seal extending from the top of the gravel pack or top of the well screen to grade. Therefore, based on conditions observed in the shallow water bearing formation at the Site, a potable well cannot be permitted in accordance with N.J.A.C. As additional safe guards, it is expected that any deed notifications or Classification Exception Areas (CEA) identified in the alternatives analysis for the Feasibility Study will address this restriction of use.

Groundwater data groupings are presented in Attachment 1 (Tables 2.3, 2.6, 2.9, 2.12, 2.15, 2.16, and 2.17).

2.2 Potential Receptors

The potential receptors at the Site were initially presented in the PAR (CH2M HILL, 2006). During preparation of the HHRA, the current potential receptors were re-evaluated and revised as appropriate based on current conditions. The following potential receptors were identified at the Site for current land uses and were evaluated for significant potential exposure pathways in Section 3.1 of the HHRA.

- **Quanta property**—adult and adolescent trespassers; the property is inactive and trespassing is expected to be extremely infrequent because the property is relatively inaccessible to trespassers because of the fence on three sides of the property (except along the Hudson River) and the elevation above the river
- **Former Celotex property**—none; the area on the former Celotex property that is potentially affected by historical Site operations is beneath a paved parking lot
- **115 River Road property**—commercial workers and daycare children

- **Former Lever Brothers property**—adult and adolescent trespassers; the area that is potentially affected by historical Site-related operations is inactive, but trespassing might occur because the property is not fenced and is located near developed properties
- **Block 93 North**—adult and adolescent trespassers and commercial workers

For potential future land uses and activities, each property was evaluated for construction/utility workers, commercial workers, and residents. In addition, at the 115 River Road property, daycare children were evaluated. Trespassers were evaluated at the Quanta property, the former Lever Brothers property, and Block 93 North.

The HHRA conceptual site model presents potential chemical sources, release mechanisms, receptors (current and future), and exposure routes, and is provided in Attachment 1 (Table 1).

2.3 Chemicals of Potential Concern Selection Process

COPCs for each environmental medium were identified by a two-step screening process that evaluated frequency of detection and risk-based screening levels. Most chemicals that are considered to be essential nutrients (calcium, magnesium, potassium, and sodium) were not considered COPCs. In accordance with direction from EPA Region 2's senior toxicologist, because toxicity values are available for iron, iron was evaluated in the same manner as other chemicals that are not essential nutrients. It should be noted that background concentrations were not considered when identifying COPCs; therefore, some COPCs may be identified as a result of background concentrations being above risk-based screening levels rather than identified due to Site impact. Additional discussion of background is provided in Section 1.3.4 of the Draft RI Report.

2.3.1 Step 1: Frequency of Detection Evaluation

The frequency at which each constituent was detected in surface soil and subsurface soil was evaluated for the Site. Those constituents detected at a frequency of 5 percent or less in soil (requiring at least 20 total samples to observe 5 percent) were not considered COPCs in accordance with EPA guidance (EPA, 1989). Those constituents detected at a frequency greater than 5 percent were carried to Step 2 of the COPC screening process. For media at properties not having 20 or more samples (i.e., 115 River Road property surface and subsurface soil; former Lever Brothers property surface soil), Step 1 of the screening process was not performed and all constituents were carried to Step 2 as described below.

2.3.2 Step 2: Comparison to Screening Levels

For each analyte carried to Step 2 (except lead), the maximum detected concentration was compared to its human health risk-based screening levels, identified below. In accordance with EPA guidance (EPA, 2006b), the mean concentration of lead within an exposure area was compared to its screening level. The following screening levels were used:

- **Soil**—EPA Region 9 Preliminary Remediation Goals (PRGs)[2] for soil, issued in October 2004 (and revised in December 2004), based on a residential scenario, target excess lifetime cancer risk (ELCR) of 1×10^{-6} and target noncancer hazard quotient (HQ) of 0.1 (EPA, 2004a), were used for selecting COPCs for soil.
- **Groundwater**— EPA Region 9 PRGs for tap water, issued in October 2004 (and revised in December 2004), based on a target ELCR of 1×10^{-6} and target noncancer HQ of 0.1 (EPA, 2004a), were used for selecting COPCs for groundwater.

2.4 Identification of COPCs

Those analytes evaluated in Step 2 that exceeded risk-based screening levels were identified as COPCs for specific exposure areas. Results of the COPC selection process are provided in Tables 2-1 through 2-17 of Attachment 1. In summary, the following COPCs were identified for surface soil, subsurface soil, shallow groundwater that may seep into 10-foot-deep excavations, shallow groundwater above the confining layer, and the deep sand groundwater zone (below the silty clay confining layer):

- **Quanta property surface soil**—14 inorganics, 2 polychlorinated biphenyls (PCBs), 1 pesticide, 7 carcinogenic polycyclic aromatic hydrocarbons (cPAHs), 12 semi-volatile organic compounds (SVOCs), and 5 volatile organic compounds (VOCs)
- **Quanta property subsurface soil**—14 inorganics, 2 PCBs, 2 pesticides, 7 cPAHs, 15 SVOCs, and 9 VOCs
- **Quanta property shallow groundwater**—3 inorganics, 3 pesticides, 7 cPAHs, 19 SVOCs, and 8 VOCs
- **Former Celotex property surface soil**—eight inorganics, five cPAHs, and one SVOC
- **Former Celotex property subsurface soil**—16 inorganics, 1 PCB, 7 cPAHs, 8 SVOCs, and 5 VOCs
- **Former Celotex property shallow groundwater**—3 inorganics, 1 cPAH, 6 SVOCs, and 10 VOCs
- **115 River Road property surface soil**—two inorganics, six cPAHs, and one SVOC
- **115 River Road property subsurface soil**—6 inorganics, 7 cPAHs, 11 SVOCs, and 3 VOCs
- **115 River Road property shallow groundwater**—two inorganics, three cPAHs, six SVOCs, and three VOCs
- **Former Lever Brothers property surface soil**—two inorganics and six cPAHs
- **Former Lever Brothers property subsurface soil**—12 inorganics, 7 cPAHs, 6SVOCs, and 3 VOCs

[2] Region 9 PRGs were used for screening purposes, as requested by EPA. The use of these PRGs for screening purposes should not be construed as an indication that the Respondents are in agreement that the EPA Region 9 PRGs should be used to determine Site cleanup criteria. Site-specific PRGs were developed in this HHRA.

- **Former Lever Brothers property shallow groundwater**—2 inorganics, 1 cPAH, 10 SVOCs, and 8 VOCs
- **Block 93 North surface soil**—12 inorganics, 2 PCBs, 7 cPAHs, 9 SVOCs, and 4 VOCs
- **Block 93 North subsurface soil**—11 inorganics, 2 PCBs, 10 cPAHs, 10 SVOCs, and 4 VOCs
- **Block 93 North shallow groundwater**—three inorganics, one pesticide, three cPAHs, four SVOCs, and one VOC
- **Groundwater zone above confining unit**—3 inorganics, 3 pesticides, 7 cPAHs, 17 SVOCs, and 12 VOCs
- **Groundwater zone below confining unit**—one inorganic, one cPAH, four SVOCs, and eight VOCs

These COPCs were used for the HHRA to quantify potential exposures by the receptors identified in Section 1.2. The exposure point concentrations (EPCs) for the exposure areas identified above were calculated as described in Section 5.

Although many COPCs were identified, not all were significant contributors to the risk estimates for the various receptors. The relative percent contribution to the RME risk estimates for each environmental medium exceeding remediation triggers is provided in Table 1. As shown, arsenic, carcinogenic PAHs, and naphthalene are the primary risk drivers.

2.5 Groundwater Screening for Potential Vapor Intrusion

At the verbal request of EPA Region 2's senior toxicologist during a meeting with CH2M HILL on February 21, 2006, a conservative screening of groundwater concentrations was performed to evaluate potential future indoor air vapor intrusion under a residential scenario. For each chemical detected in groundwater, the lower of the New Jersey Department of Environmental Protection (NJDEP) groundwater screening level for protection of vapor intrusion (NJDEP, 2005) and EPA's target groundwater concentrations presented in the Office of Solid Waste and Emergency Response (OSWER) Subsurface Vapor Intrusion Guidance (EPA, 2002a), based on a target ELCR of $1x10^{-6}$ and an attenuation factor of 0.001, was used. If the EPA target groundwater concentration is based on a maximum contaminant level (MCL), a value based on carcinogenic effects ($1x10^{-6}$ ELCR) or non-carcinogenic effects (HQ=0.1) was calculated and used in the comparison to the NJDEP screening value.

At each property, the potential future vapor intrusion pathway was conservatively evaluated by comparing the maximum detected concentrations in the groundwater zone above the clay layer to the groundwater screening levels identified above. Results are presented in Attachment 2, and the constituents exceeding the conservative screening levels are summarized below:

- **Quanta property**— 16 VOCs
- **115 River Road property**— 6 VOCs

- **Former Celotex property** – 11 VOCs
- **Former Lever Brothers property** – 8 VOCs
- **Block 93 North** – 3 VOCs

Table 1
Percent Contribution of Risk Relative to a Medium's Cumulative Risk/Hazard for Constituents of Concern (COCs)[1]
Reasonable Maximum Exposure Scenario
Quanta Resources Superfund Site, OU1, Edgewater, New Jersey

Site: Quanta Resources

Surface Soil			Subsurface Soil			Groundwater (above Confining Unit)		
Receptor	% Cancer Risk	% Non-Cancer Hazard	Receptor	% Cancer Risk	% Non-Cancer Hazard	Receptor	% Cancer Risk	% Non-Cancer Hazard
Adult Trespasser			***Construction Worker***			***Construction Worker***		
Arsenic	33.8%		Antimony		1.2%	2-Methylnaphthalene		3.6%
Benzo(a)anthracene	4.9%		Arsenic	55.55%	49.1%	Benzo(a)anthracene	5.7%	
Benzo(a)pyrene	44.2%		Iron		0.7%	Benzo(a)pyrene	70.7%	
Benzo(b)fluoranthene	5.2%		Thallium		0.5%	Benzo(b)fluoranthene	8.2%	
Dibenz(a,h)anthracene	8.9%		2-Methylnaphthalene		0.8%	Benzo(k)fluoranthene	0.4%	
Indeno(1,2,3-c,d)pyrene	2.5%		Benzo(a)anthracene	3.2%		Dibenz(a,h)anthracene	11.1%	
Adolescent Trespasser			Benzo(a)pyrene	30.6%		Indeno(1,2,3-c,d)pyrene	3.7%	
Arsenic	11.1%		Benzo(b)fluoranthene	3.5%		Naphthalene		93.1%
Benzo(a)anthracene	6.5%		Dibenz(a,h)anthracene	5.0%		Benzene		1.7%
Benzo(a)pyrene	59.5%		Indeno(1,2,3-c,d)pyrene	1.6%				
Benzo(b)fluoranthene	7.0%		Naphthalene		46.0%			
Dibenz(a,h)anthracene	11.9%		Benzene	0.1%	0.2%			
Indeno(1,2,3-c,d)pyrene	3.3%							
Commercial Worker								
Arsenic	26.0%	30.7%						
Aroclor-1242	0.1%							
Aroclor-1260	0.1%							
Benzo(a)anthracene	5.3%							
Benzo(a)pyrene	48.7%							
Benzo(b)fluoranthene	5.7%							
Benzo(k)fluoranthene	0.3%							
Dibenz(a,h)anthracene	9.8%							
Indeno(1,2,3-c,d)pyrene	2.7%							
Naphthalene		53.3%						
Benzene	0.8%							
Trichloroethene	0.3%							
Adult Resident								
Antimony		3.1%						
Arsenic		38.8%						
Iron		5.9%						
Thallium		0.9%						
2-Methylnaphthalene		0.5%						
Naphthalene		41.9%						
Benzene		1.4%						
Child Resident								
Antimony		4.7%						
Arsenic		57.5%						
Copper		1.6%						
Iron		9.1%						
Thallium		1.3%						
Vanadium		1.0%						
Zinc		0.1%						
Mercury		1.1%						
Aroclor-1242		2.4%						
Aroclor-1260		1.2%						
2-Methylnaphthalene		0.8%						
4-Methylphenol		0.3%						
Fluorene		0.1%						
Naphthalene		16.7%						
Benzene		0.6%						
Adult/Child Aggregate Resident								
Arsenic	8.6%							
Heptachlor	0.01%							
Aroclor-1242	0.03%							
Aroclor-1260	0.02%							
Benzo(a)anthracene	6.7%							
Benzo(a)pyrene	61.2%							
Benzo(b)fluoranthene	7.2%							
Benzo(k)fluoranthene	0.3%							
Carbazole	0.01%							
Chrysene	0.1%							
Dibenz(a,h)anthracene	12.3%							
Indeno(1,2,3-c,d)pyrene	3.4%							
Benzene	0.1%							
Trichloroethene	0.03%							

Table 1
Percent Contribution of Risk Relative to a Medium's Cumulative Risk/Hazard for Constituents of Concern (COCs)[1]
Reasonable Maximum Exposure Scenario
Quanta Resources Superfund Site, OU1, Edgewater, New Jersey

Site: Edgewater

Surface Soil			Subsurface Soil			Groundwater (above CU)		
Receptor	% Cancer Risk	% Non-Cancer Hazard	Receptor	% Cancer Risk	% Non-Cancer Hazard	Receptor	% Cancer Risk	% Non-Cancer Hazard
Adult/Child Aggregate Resident			***Construction Worker***			***Construction Worker***		
Arsenic	10.4%		Arsenic		47.6%	Arsenic		79.45%
Benzo(a)anthracene	6.4%		2-Methylnaphthalene		1.6%	Naphthalene		19.81%
Benzo(a)pyrene	60.1%		Naphthalene		30.9%			
Benzo(b)fluoranthene	5.8%							
Dibenz(a,h)anthracene	13.9%							
Indeno(1,2,3-c,d)pyrene	3.4%							

Site: 115 River Road

Surface Soil			Subsurface Soil			Groundwater (above CU)		
Receptor	% Cancer Risk	% Non-Cancer Hazard	Receptor	% Cancer Risk	% Non-Cancer Hazard	Receptor	% Cancer Risk	% Non-Cancer Hazard
Daycare Child			***Construction Worker***			***Construction Worker***		
Arsenic	0.7%		Arsenic	2.0%		Naphthalene		96.4%
Benzo(a)anthracene	7.5%		2-Methylnaphthalene		8.8%			
Benzo(a)pyrene	66.7%		Benzo(a)anthracene	10.1%				
Benzo(b)fluoranthene	8.3%		Benzo(a)pyrene	65.1%				
Benzo(k)fluoranthene	0.4%		Benzo(b)fluoranthene	6.9%				
Dibenz(a,h)anthracene	12.3%		Dibenz(a,h)anthracene	11.0%				
Indeno(1,2,3-c,d)pyrene	4.0%		Indeno(1,2,3-c,d)pyrene	2.9%				
Chromium	0.2%		Naphthalene		81.5%			
Naphthalene		83.2%						

Site: Former Lever Brothers

Surface Soil			Subsurface Soil			Groundwater (above CU)		
Receptor	% Cancer Risk	% Non-Cancer Hazard	Receptor	% Cancer Risk	% Non-Cancer Hazard	Receptor	% Cancer Risk	% Non-Cancer Hazard
Adolescent Trespasser			***Construction Worker***			***Construction Worker***		
Arsenic	5.4%		Arsenic		55.9%	Arsenic		7.7%
Benzo(a)anthracene	6.5%		Naphthalene		12.1%	2-Methylnaphthalene		6.4%
Benzo(a)pyrene	64.7%					Naphthalene		80.9%
Benzo(b)fluoranthene	8.4%							
Dibenz(a,h)anthracene	10.7%							
Indeno(1,2,3-c,d)pyrene	3.9%							

Site: Block 93 North

Surface Soil			Subsurface Soil			Groundwater (above CU)		
Receptor	% Cancer Risk	% Non-Cancer Hazard	Receptor	% Cancer Risk	% Non-Cancer Hazard	Receptor	% Cancer Risk	% Non-Cancer Hazard
Adult Trespasser			***Construction Worker***			***Construction Worker***		
Arsenic	15.9%		Arsenic		3.3%	Arsenic		91.7%
Benzo(a)anthracene	8.9%		2-Methylnaphthalene		2.6%	Naphthalene		0.5%
Benzo(a)pyrene	55.2%		Naphthalene		86.6%			
Benzo(b)fluoranthene	5.8%							
Benzo(k)fluoranthene	0.5%							
Dibenz(a,h)anthracene	10.2%							
Indeno(1,2,3-c,d)pyrene	3.0%							
Adolescent Trespasser								
Arsenic	4.5%							
Benzo(a)anthracene	10.1%							
Benzo(a)pyrene	63.0%							
Benzo(b)fluoranthene	6.6%							
Benzo(k)fluoranthene	0.5%							
Dibenz(a,h)anthracene	11.6%							
Indeno(1,2,3-c,d)pyrene	3.5%							
Commercial Worker								
Arsenic	11.6%							
Aroclor-1260	0.2%							
Benzo(a)anthracene	9.2%							
Benzo(a)pyrene	57.4%							
Benzo(b)fluoranthene	6.0%							
Benzo(k)fluoranthene	0.5%							
Dibenz(a,h)anthracene	10.6%							
Indeno(1,2,3-c,d)pyrene	3.2%							
Naphthalene		84.2%						
Benzene	1.1%							

Table 1
Percent Contribution of Risk Relative to a Medium's Cumulative Risk/Hazard for Constituents of Concern (COCs)[1]
Reasonable Maximum Exposure Scenario
Quanta Resources Superfund Site, OU1, Edgewater, New Jersey

Site-Wide Groundwater (Above the Confining Unit)

Receptor	% Cancer Risk	% Non-Cancer Hazard
Adult Resident		
Arsenic		94.0%
Iron		0.2%
Benzene		0.2%
Ethylbenzene		0.003%
Toluene		0.005%
Trichloroethene		0.004%
m,p-Xylene		0.01%
o-Xylene		0.01%
Xylene (Total)		0.02%
2,4-Dimethylphenol		0.02%
2-Methylnaphthalene		0.1%
2-Methylphenol		0.002%
3&4-Methylphenol		0.002%
4-Methylphenol		0.1%
Acenaphthene		0.004%
Benzo(g,h,i)perylene		0.01%
1,1'-Biphenyl		0.001%
Fluoranthene		0.01%
Naphthalene		5.2%
Pyrene		0.01%

Receptor	% Cancer Risk	% Non-Cancer Hazard
Child Resident		
Arsenic		99.3%
Iron		0.2%
Benzene		0.1%
Ethylbenzene		0.002%
Toluene		0.004%
Trichloroethene		0.004%
m,p-Xylene		0.001%
o-Xylene		0.001%
Xylene (Total)		0.002%
2,4-Dimethylphenol		0.02%
2-Methylnaphthalene		0.1%
2-Methylphenol		0.002%
3&4-Methylphenol		0.002%
4-Methylphenol		0.1%
Acenaphthene		0.004%
Acenaphthylene		0.001%
Benzo(g,h,i)perylene		0.01%
1,1'-Biphenyl		0.001%
Fluoranthene		0.01%
Fluorene		0.002%
Naphthalene		0.2%
Pyrene		0.01%

Receptor	% Cancer Risk	% Non-Cancer Hazard
Adult/Child Aggregate Resident		
Arsenic	50.8%	
alpha-BHC	0.0002%	
delta-BHC	0.0002%	
Heptachlor	0.0001%	
Benzene	0.2%	
Trichloroethene	0.004%	
Benzo(a)anthracene	2.0%	
Benzo(a)pyrene	42.7%	
Benzo(b)fluoranthene	2.8%	
Benzo(k)fluoranthene	0.1%	
Carbazole	0.003%	
Chrysene	0.02%	
Indeno(1,2,3-c,d)pyrene	1.3%	

Site-Wide Groundwater (Below the Confining Unit)

Receptor	% Cancer Risk	% Non-Cancer Hazard
Adult Resident		
Trichloroethene		75.3%
2-Methylnaphthalene		0.2%
Naphthalene		23.0%

Receptor	% Cancer Risk	% Non-Cancer Hazard
Child Resident		
Arsenic		1.2%
Trichloroethene		97.2%

Receptor	% Cancer Risk	% Non-Cancer Hazard
Adult/Child Aggregate Resident		
Arsenic	1.9%	
Benzene	0.2%	
Tetrachloroethene	2.0%	
Trichloroethene	93.7%	
Vinyl chloride	0.04%	
Benzo(a)anthracene	2.1%	
Carbazole	0.02%	

[1] The percent risk/hazard for each constituent represents the percent individual risk relative to the total risk by all COPCs evaluated in a medium.

COCs = Constituents of Concern. If a cumulative ELCR of $1x10^{-4}$ is exceeded for a given medium, the COPCs that pose an individual ELCR greater than $1x10^{-6}$ for a potential receptor/property combination were identified as COCs. If a target organ-specific HI exceeds 1.0, the COPCs that pose an individual HQ greater than 0.10 were identified as COCs.

Shaded values contribute to 95% or more of the risk or hazard from the medium for this receptor.

The total percentages for each medium and receptor do not equal 100% because only chemicals identified as COCs are included in the table.

SECTION 3

Exposure Assessment

3.1 Potential Exposure Pathways Quantified in the HHRA

Numerous potential exposure pathways were quantified in the HHRA. Each property was evaluated separately. The following data groupings were used to estimate potential risks for the indicated potential receptors:

3.1.1 Quanta Property

- **Current/Future Trespasser (Adult)** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the Quanta property.
- **Current/Future Trespasser (Adolescent)** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the Quanta property.
- **Future Commercial Worker** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the Quanta property.
- **Future Construction Worker** – Ingestion, dermal contact, and inhalation of COPCs in subsurface soil (0-10 feet) and dermal contact and inhalation of COPCs in shallow groundwater (<10 feet) at the Quanta property.
- **Future Adult Resident** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the Quanta property.
- **Future Child Resident** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the Quanta property.

3.1.2 Former Celotex Property

- **Future Commercial Worker** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the former Celotex property.
- **Future Construction Worker** – Ingestion, dermal contact, and inhalation of COPCs in subsurface soil (0-10 feet) and dermal contact and inhalation of COPCs in shallow groundwater (<10 feet) at the former Celotex property.
- **Future Adult Resident** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the former Celotex property
- **Future Child Resident** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the former Celotex property.

3.1.3 115 River Road Property

- **Future Commercial Worker** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the 115 River Road property.
- **Future Daycare Child** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the 115 River Road property.
- **Future Construction Worker** – Ingestion, dermal contact, and inhalation of COPCs in subsurface soil (0-10 feet) and dermal contact and inhalation of COPCs in shallow groundwater (<10 feet) at the 115 River Road property.
- **Future Adult Resident** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the 115 River Road property.
- **Future Child Resident** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the 115 River Road property.

3.1.4 Former Lever Brothers Property

- **Current/Future Trespasser (Adult)** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the former Lever Brothers property.
- **Current/Future Trespasser (Adolescent)** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the former Lever Brothers property.
- **Future Commercial Worker** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the former Lever Brothers property.
- **Future Construction Worker** – Ingestion, dermal contact, and inhalation of COPCs in subsurface soil (0-10 feet) and dermal contact and inhalation of COPCs in shallow groundwater (<10 feet) at the former Lever Brothers property.
- **Future Adult Resident** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the former Lever Brothers property.
- **Future Child Resident** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the former Lever Brothers property.

3.1.5 Block 93 North

- **Current/Future Trespasser (Adult)** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the Block 93 North property.
- **Current/Future Trespasser (Adolescent)** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the Block 93 North property.
- **Future Construction Worker** – Ingestion, dermal contact, and inhalation of COPCs in subsurface soil (0-10 feet) and dermal contact and inhalation of COPCs in shallow groundwater (<10 feet) at the Block 93 North property.
- **Future Commercial Worker** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the Block 93 North property.

- **Future Adult Resident** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the Block 93 North property.
- **Future Child Resident** – Ingestion, dermal contact, and inhalation of COPCs in surface soil (0-2 feet) at the Block 93 North property.

3.1.6 Shallow Groundwater (Monitoring Wells Screened Above Confining Unit)

- **Future Adult Resident** – Ingestion, dermal contact, and inhalation of COPCs in groundwater (above the confining unit) across all properties.
- **Future Child Resident** – Ingestion and dermal contact with COPCs in groundwater (above the confining unit) across all properties.

Shallow groundwater was quantitatively evaluated at the request of EPA. However, exposure to groundwater is not considered a realistically complete pathway for the future. Site conditions documented in the Remedial Investigation report indicate that the depth of this zone from surface to the top of the lower confining is no greater than 29 feet below ground surface. In accordance with the New Jersey Administrative Code (N.J.A.C.) 7:10 et seq. (Safe Drinking Water Act Regulations) and N.J.A.C. 7:9D (Well Construction and Maintenance), potable wells shall meet various requirements based on characteristics for the water bearing formation. At the minimum, the N.J.A.C. requires all casings to be no less than 50 feet in depth, and a minimum length of 50 feet of grout seal extending from the top of the gravel pack or top of the well screen to grade. Therefore, based on conditions observed in the shallow water bearing formation at the Site, a potable well cannot be permitted in accordance with N.J.A.C. As additional safe guards, it is expected that any deed notifications or Classification Exception Areas (CEA) identified in the alternatives analysis for the Feasibility Study will address this restriction of use.

3.1.7 Deep Sand Groundwater (Monitoring Wells Screened Within and Below Confining Unit)

- **Future Adult Resident** – Ingestion, dermal contact, and inhalation of COPCs in groundwater (within/below below confining unit) across all properties.
- **Future Child Resident** – Ingestion and dermal contact of COPCs in groundwater (within/below below confining unit) across all properties.

Like shallow groundwater, deep sand groundwater was quantitatively evaluated at the request of EPA. However, exposure to groundwater is not considered to be a realistically complete pathway for the future. Groundwater at the site will not be used for potable purposes within a reasonable planning horizon (i.e., 30 years). A reliable municipal water supply is readily available; there are no potable wells in the vicinity of the property; water supply planning for the area of the site does not identify any groundwater supply needs from the vicinity of the site; and water yield and natural quality of site groundwater are unlikely to meet potable water use requirements.

3.2 Potential Exposure Pathways Not Quantified in the HHRA

A few potential exposure pathways were evaluated qualitatively in the HHRA. At the 115 River Road property, current indoor air exposures at Building 12 by commercial workers and at the Main Building by commercial workers and daycare children were evaluated qualitatively by collecting soil gas and indoor air samples. Results of the sampling event and data evaluation are presented in Appendix K.

Hypothetical groundwater exposures by a daycare child and commercial worker were not quantified. Groundwater will not be used for potable purposes within a reasonable planning horizon (30 years). A reliable municipal potable supply is readily available, and the groundwater quality of shallow water adjacent to the Hudson River is naturally degraded and degraded due to historic fill in relation to desirable potable water characteristics. Under the hypothetical scenario of groundwater use, a daycare child may be exposed to groundwater (via tap water) only through drinking water[3], beverages made with tap water, and occasional hand washing. Similarly, under the hypothetical scenario of groundwater use in a commercial setting, workers may be exposed to groundwater (as tap water) only through drinking water and occasional hand washing. Because a daycare child or a commercial worker would be exposed to less water on a daily basis and at a lower frequency and exposure duration than would a child or an adult in a residential setting, the risks estimated for hypothetical future adult and child residents can be used to conservatively represent the potential risk to a daycare child and a commercial worker from hypothetical groundwater exposures.

Potential exposures by a utility worker were not specifically quantified in this HHRA. However, a construction worker would be exposed to a similar soil depth interval (as the utility worker) and would likely be exposed at a higher frequency/duration than a utility worker. Therefore, the utility worker scenario can be conservatively represented by the risk estimates for a construction worker scenario.

Potential exposures by recreational users of the Hudson River were not evaluated in this HHRA. Potential impacts to the Hudson River (e.g., via groundwater discharge to surface water) will be assessed in a separate HHRA for OU2.

3.3 Exposure Point Concentrations Used in the HHRA

The EPCs for each exposure area are provided in Tables 3.1 through 3.17 of Attachment 1. For the COPCs in the data groups identified below, there are less than 10 analytical results available, and therefore the maximum detected concentration was used as the EPC for that data grouping:

- Quanta Property
  - **Surface soil**—10 inorganics, 1 pesticide, and 2 VOCs
  - **Subsurface soil**—four VOCs
  - **Shallow groundwater** —two inorganics, one SVOCs, and two VOCs

[3] Site groundwater is not being used and not expected to be used for potable purposes. All potable water at the Site and adjacent properties is provided by a public water supply source.

- Former Celotex Property
  - **Surface soil**— none (i.e., 10 or more samples were available)
  - **Subsurface soil**— none (i.e., 10 or more samples were available)
  - **Shallow groundwater**—all COPCs with the exception of arsenic
- 115 River Road Property
  - **Surface soil**—all COPCs
  - **Subsurface soil**—five inorganics and one SVOC
  - **Shallow groundwater**—one VOC
- Former Lever Brothers Property
  - **Surface soil**—all COPCs
  - **Subsurface soil**—three inorganics
  - **Shallow groundwater**—two inorganics, one SVOC, and two VOCS
- Block 93 North
  - **Surface soil**—two VOCs
  - **Subsurface soil**—none (i.e., 10 or more samples were available)
  - **Shallow groundwater**—two VOCs
- Area groundwater
  - **Above clay**— none (i.e., 10 or more samples were available)
  - **Below clay**— none (i.e., 10 or more samples were available)

For the remaining COPCs in these data groupings, 10 or more samples are available in the data set, and the appropriate upper confidence limit (UCL) for the mean concentration of each COPC was used as the EPC unless it exceeded the maximum detected concentration for that data grouping. The appropriate UCLs were calculated using EPA's ProUCL (version 3.00.02; EPA, 2004b). The ProUCL output for each data grouping is provided in Attachment 3, and the EPCs for each data grouping are provided in Tables 3-1 through 3-17 of Attachment 1.

For most EPCs, measured concentrations were used in the HHRA. However, modeled concentrations were used as EPCs when evaluating inhalation exposures to volatile constituents and particulates in air, as described below:

- The EPCs in air within excavations (via groundwater intrusion) were modeled using a two-film volatilization model; the equations and input assumptions used in this model are presented in the following tables in Attachment 1:
  - 7.4.RME Supplement B (Quanta)
  - 7.9.RME Supplement B (Former Celotex)
  - 7.15.RME Supplement B (115 River Road)
  - 7.22.RME Supplement B (Former Lever Brothers)
  - 7.29.RME Supplement B (Block 93 North)
- A particulate emission factor was used to model EPCs for particulates in ambient air (via fugitive dust generation from soil); the equations and input assumptions used in this model are presented in Table 4-2.RME Supplement A and Table 4-4.RME Supplement A of Attachment 1.

- The Andelman Model as modified by Schaum et al. (Andelman, 1990; Schaum et al., 1994) was used to model EPCs in bathroom air (via showering); the equations and input assumptions used in this model are presented in Table 4-9.RME Supplement A of Attachment 1.

3.4 Exposure Factors Used in the HHRA

A reasonable maximum exposure (RME) scenario was quantified for each potential receptor identified above. If the calculated ELCR or hazard index (HI) associated with an RME scenario for a potential receptor group exceeded an ELCR of 1×10^{-4} or a target organ-specific HI of 1, a central tendency exposure (CTE) scenario was also quantified for that potential receptor group. The exposure factors used in the RME and CTE risk calculations are presented in Tables 4-1.RME through 4.9.RME and Tables 4-1.CTE through 4.9.CTE of Attachment 1, respectively. The references for exposure factors are as follows:

- **Trespasser**—standard default exposure factors presented in EPA guidance (EPA, 1989, 1991, 1996, 1997a, 2002b, 2004c), and best professional judgment regarding exposure frequency and exposure time.
- **Commercial worker**—standard default exposure factors presented in EPA guidance (EPA, 1989, 1991, 1996, 1997a, 2002b, 2004c).
- **Daycare child**—exposure factors presented in EPA guidance (EPA, 1989, 1991, 1996, 1997a, 2002b, 2004c) and best professional judgment regarding exposure frequency and exposure time.
- **Construction worker**—exposure factors presented in EPA Soil Screening Level guidance and other EPA guidance (EPA, 1989, 1991, 1996, 2002b, 2004c).
- **Resident**—standard default exposure factors presented in EPA guidance (EPA, 1989, 1991, 1996, 1997a, 2002b, 2004c).

For chemicals that act via a mutagenic mode of action (MMOA), carcinogenicity was evaluated using age-dependent adjustment factors. All cPAHs are considered by EPA to follow the MMOA. Age groups and associated exposure parameters used in the HHRA for the MMOA calculations are presented in Table 4-1.RME Supplement A, Table 4-2.RME Supplement B, and Table 4-8.RME Supplement A.

SECTION 4

Toxicity Assessment

The following hierarchy of sources (EPA, 2003a) was used to obtain toxicity data for the COPCs that were identified in the data groupings:

- EPA's Integrated Risk Information System (IRIS) (EPA, 2007)
- EPA's Provisional Peer-Reviewed Toxicity Values (PPRTVs) (EPA, 2004a)
- Other toxicity values - for example, California EPA as presented by EPA (2004a), National Center for Environmental Assessment (NCEA), as presented by EPA (2000, 2004a), and Health Effects Assessment Summary Tables (EPA, 1997b)

For those COPCs without published toxicity values, toxicity values for surrogate chemicals were identified when available. Noncancer toxicity values used in the HHRA are presented in Tables 5.1 and 5.2 of Attachment 1, whereas cancer toxicity values are provided in Tables 6.1 and 6.2 of Attachment 1.

Quantitative oral toxicity criteria were not available for lead. Risk assessments for lead therefore differ from those for other non-carcinogens in that they rely on observed or predicted blood lead levels (BLLs), which have been directly related to adverse outcomes in adults and children. BLLs can be estimated from environmental data through modeling techniques. EPA's Integrated Exposure Uptake Biokinetic (IEUBK) model was used to evaluate potential risks associated with resident child exposures to lead in soil. The adult lead methodology (ALM) was used to evaluate potential risks associated with nonresidential adult (i.e., commercial worker and construction worker) exposures to lead in soil. This methodology is a variation of the IEUBK model. Because the lead models are probabilistic models, several of the EPA default parameters are based on central tendency (i.e., average) values (EPA, 2003b). Therefore, the arithmetic means for surface and subsurface soil served as input values for the soil concentrations. For the ALM, the EPA default input parameters were used. EPA has provided additional guidance regarding exposure parameters for the excavation workers (EPA, 2006b). The soil ingestion rate of 100 milligrams per day (mg/day) was used as a reasonable value for construction workers with contact-intense exposures to soil.

SECTION 5

Risk Characterization

Potential ELCRs and HIs were calculated using RME assumptions for the potential receptors and exposure pathways identified in Section 2. The results of the risk characterization are presented below by property and potential receptor. CTE risks were calculated when the cumulative RME hazards exceeded 1 or the cumulative RME ELCR exceeded 10^{-4}. The risk calculations are presented in Tables 7.1.RME through 7.38.RME and 7.1.CTE through 7.38.CTE of Attachment 1. The results are summarized in Tables 9.1.RME through 9.38.RME and 9.1.CTE through 9.38.CTE of Attachment 1.

Because background concentrations were not considered when identifying COPCs, some COPCs may be associated with background concentrations rather than Site impact. Therefore, a portion of the risk estimates presented below are those attributable to background concentrations rather than those associated with Site-related impacts.

EPA's target range for ELCR associated with CERCLA sites and specified in the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations 300.430) is 1-in-10,000 (1×10^{-4}) to 1-in-1,000,000 (1×10^{-6}). That is; the estimated ELCR associated with site-related exposures for a potential receptor population (group) should not exceed this target range. Similarly, the EPA's target non-cancer HI, by target organ or critical effect, is unity (1.0) for a potential receptor group.

For the Site, if the RME ELCR for a potential receptor group exceeds "remediation triggers" (the level at which action [remediation, institutional controls, or engineering controls] is considered in the Feasibility Study; a total ELCR greater than $1x10^{-4}$ or a target organ-specific HI greater than 1.0), constituents of concern (COCs) were identified for that potential receptor group. The potential receptor scenarios and potential exposure pathways that exceed remediation triggers are presented in Tables 10.1.RME through 10.34.RME and 10.1.CTE through 10.26.CTE of Attachment 1. If an ELCR of $1x10^{-4}$ is exceeded, the COPCs that pose an individual ELCR greater than $1x10^{-6}$ for a potential receptor/property combination were identified as COCs. If a target organ-specific HI exceeds 1.0, the COPCs that pose an individual HQ greater than 0.10 were identified as COCs. For lead, EPA policies seek to protect the health of the most vulnerable populations, namely children and women of childbearing age. EPA policy (EPA, 1994) strives to reduce soil lead levels so that no child will have more than a 5 percent chance of exceeding a BLL of 10 micrograms per deciliter (µg/dL). If the predicted BLL exceeded 5 percent, lead was identified as a COC for that potential receptor/property combination.

Although many COPCs were identified, not all were significant contributors to the risk estimates for the various receptors. The relative percent contribution to the RME risk estimates for each environmental medium exceeding remediation triggers is provided in Table 1. As shown, arsenic, carcinogenic PAHs, and naphthalene are the primary risk drivers.

For the identified COCs, a range of risk-based remedial goal options were calculated based on target ELCRs of $1x10^{-4}$, $1x10^{-5}$, and $1x10^{-6}$ and a target HQ of 1, as presented in this Section.

Potential risks to recreational users of the Hudson River were not estimated in this HHRA. Potential risks associated with exposures in the Hudson River (e.g., fishing) will be assessed in a separate HHRA for OU2.

5.1 Quanta Property

The RME and CTE risk results for the Quanta property are summarized in Tables 9.1.RME through 9.7.RME and 9.1.CTE through 9.7.CTE of Attachment 1, respectively. BLLs were calculated using RME assumptions for commercial workers, construction workers, and child residents because lead was identified as a COPC in surface and subsurface soil; results for BLLs are summarized in Tables 11.1a/b through 11.3a/b of Attachment 1.

Although not addressed quantitatively in the risk estimates provided in Tables 9.1.RME through 9.7.RME and 9.1.CTE through 9.7.CTE, coal tar is present in soil in some areas of the Quanta property. Coal tar may be present at the Site surface during certain times of the year. If contacted, exposure to coal tar is expected to exceed acceptable risk levels.

5.1.1 Current/Future Trespasser (Adult)

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Quanta property were quantified. An ELCR of $2x10^{-4}$ and total HI of 0.4 were calculated (Table 9.1.RME of Attachment 1). The ELCR exceeds the acceptable risk level, and six COCs were identified for this potential receptor and exposure area (Table 10.1.RME of Attachment 1): arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Because COCs were identified, estimated risks were also evaluated using CTE assumptions. An ELCR of $3x10^{-5}$ and total HI of 0.1 were calculated (Table 9.1.CTE of Attachment 1), which are within acceptable risk levels.

Consistent with RAGS Part A (EPA, 1989), because arsenic concentrations are unevenly distributed across surface soil on the property and concentrations are relatively high (greater than 100 times the screening level), a hot spot evaluation was performed. Potential exposures to the area of high arsenic impact relative to other areas of the property were evaluated separately to estimate the risk to a trespasser that may be exposed to the hot spot area only (and not exposed to a property-wide average concentration). A hot spot analysis was conducted based on the arsenic concentrations detected in 14 surface soil samples within an elevated arsenic area on the Quanta property (Attachment 4). Based on these 14 samples, the EPC is 3,900 milligrams per kilogram (mg/kg). The maximum detected concentration was used because the calculated 95% UCL was higher than the maximum detected concentration. The property-wide arsenic EPC in surface soil is 1,506 mg/kg. Because the ratio of EPC to ELCR (and HI) is linear, an EPC of 3,900 mg/kg in the hot spot area yields an estimated ELCR of 1×10^{-4} and an HI of 0.7 (Table 13.1 of Attachment 1).

Summary – The estimated ELCR for this receptor exceeds the acceptable risk range.

5.1.2 Current/Future Trespasser (Adolescent)

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Quanta property were quantified. An ELCR of $3x10^{-4}$ and total HI of 0.7 were calculated. The ELCR exceeds the acceptable risk level, and six COCs were identified for this potential receptor and exposure area (Table 10.2.RME of Attachment 1): arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Because COCs were identified, estimated risks were also evaluated using CTE assumptions. An ELCR of $4x10^{-5}$ and total HI of 0.2 were calculated (Table 9.2.CTE of Attachment 1), which are within acceptable risk levels.

A hot spot analysis was conducted for arsenic in surface soil based on the arsenic concentrations detected in 14 surface soil samples within an elevated arsenic area on the Quanta property (Attachment 4). Based on these 14 samples, the EPC is 3,900 mg/kg. The maximum detected concentration was used because the calculated 95% UCL was higher than the maximum detected concentration. The property-wide arsenic EPC in surface soil is 1,506 mg/kg. Because the ratio of EPC to ELCR (and HI) is linear, an EPC of 3,900 mg/kg in the hot spot area yields an estimated ELCR of 8×10^{-5} and an HI of 1.2 (Table 13.1 of Attachment 1).

Summary – The estimated ELCR for this receptor exceeds the acceptable risk range.

5.1.3 Future Commercial Worker

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Quanta property were quantified. An ELCR of $2x10^{-3}$ and target organ-specific HIs above 1 (respiratory system = 6 and skin = 3) were calculated. The ELCR and HIs exceed acceptable levels, and 12 COCs were identified for this potential receptor and exposure area (Table 10.3.RME of Attachment 1): arsenic, Aroclor-1242, Aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, benzene, trichloroethene (TCE), and naphthalene.

Because COCs were identified, estimated risks were also evaluated using CTE exposure assumptions. An ELCR of $3x10^{-4}$ and target organ-specific HIs above 1 (respiratory system = 5, skin = 2) were calculated (Table 9.3.CTE of Attachment 1). Therefore, the ELCR and HIs exceed acceptable levels, and eight COCs were identified for this potential receptor and exposure area for a CTE scenario (Table 10.3.CTE of Attachment 1): arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, benzene, and naphthalene.

A hot spot analysis was conducted for arsenic in surface soil based on the arsenic concentrations detected in 14 surface soil samples within an elevated arsenic area on the Quanta property (Attachment 4). Based on these 14 samples, the EPC is 3,900 mg/kg. The maximum detected concentration was used because the calculated 95% UCL was higher than the maximum detected concentration. The property-wide arsenic EPC in surface soil is 1,506 mg/kg. Because the ratio of EPC to ELCR (and HI) is linear, an EPC of 3,900 mg/kg in the hot spot area yields an estimated ELCR of 1×10^{-3} and an HI of 9 (Table 13.1 of Attachment 1).

Based on the average surface soil lead concentration (682 mg/kg) for the Quanta property, the ALM predicts that 2.2 to 4.4 percent of the population will have BLLs exceeding 10 µg/dL (Tables 11.1a/b). The percentage based on the mean concentration is below the target level. Therefore, lead was not identified as a COC for this potential receptor.

Summary – The estimated ELCR and HIs for this receptor exceed acceptable risk levels.

5.1.4 Future Construction Worker

Ingestion, dermal contact, and inhalation exposures to subsurface soil COPCs and dermal and inhalation exposures to shallow groundwater at the Quanta property were quantified. For subsurface soil and groundwater combined, an ELCR of $1x10^{-3}$ and target organ-specific HIs above 1 (blood = 3, respiratory system = 80, skin = 70, and whole body = 3) were calculated. The ELCR and HIs exceed acceptable levels, and 12 COCs were identified for this potential receptor in soil (Table 10.4.RME of Attachment 1): antimony, arsenic, iron, thallium, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, benzene, 2-methylnapthylene, and naphthalene. Nine COCs were identified for this potential receptor in groundwater: 2-methylnaphthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, and benzene.

Because COCs were identified for subsurface soil and groundwater, risks were also estimated using CTE exposure assumptions. For soil and groundwater combined, an ELCR of $6x10^{-4}$ and target organ-specific HIs above one (respiratory system = 30, skin =20, whole body = 1.3) were calculated (Table 9.4.CTE of Attachment 1. The ELCR and HIs exceed acceptable levels, and eight COCs were identified for this potential receptor in soil for a CTE scenario (Table 10.4.CTE of Attachment 1): arsenic, 2-methylnapthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene. Eight COCs were identified for this potential receptor in groundwater for a CTE scenario (Table 10.4.CTE of Attachment 1): 2-methylnaphthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene.

A hot spot analysis was conducted for arsenic in subsurface soil based on the arsenic concentrations detected in 14 subsurface soil samples within an elevated arsenic area on the Quanta property (Attachment 4). Based on these 14 samples, the EPC is 10,158 mg/kg. The property-wide arsenic EPC in subsurface soil is 6,088 mg/kg. Because the ratio of EPC to ELCR (and HI) is linear, an EPC of 10,158 mg/kg in the hot spot area yields an estimated ELCR of 8×10^{-4} and an HI of 119 (Table 13.1 of Attachment 1).

For shallow groundwater, a hot spot analysis was conducted for arsenic based on the arsenic concentrations detected in four groundwater samples within an elevated arsenic area on the Quanta property (Attachment 4). An EPC of 28.8 milligrams per liter (mg/L) was identified based on the maximum detected arsenic concentration in these four samples. The property-wide arsenic EPC in shallow groundwater is 0.012 mg/L. Because the ratio of EPC to ELCR (and HI) is linear, an EPC of 28.8 mg/L in the hot spot area yields an estimated ELCR of 7×10^{-6} and an HI of 1 (13.1.RME of Attachment 1).

Based on the average subsurface soil lead concentration (1,319 mg/kg) for the Quanta property, the ALM predicts that 15.9 to 19.9 percent of the population will have BLLs

exceeding 10 µg/dL (Tables 11.2a/b). The percentage based on the mean concentration exceeds the target level. Therefore, lead was identified as a COC for this potential receptor.

Summary – The estimated ELCR, HIs, and BLL for this receptor exceed acceptable risk levels.

5.1.5 Future Resident

Adult – Non-Cancer Effects

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Quanta property were quantified. Target organ-specific HIs above 1 (blood = 1.1, respiratory = 8, skin = 8) were calculated, and therefore HIs are above acceptable levels. Seven COCs were identified for this potential receptor and exposure area (Table 10.5.RME of Attachment 1): antimony, arsenic, iron, thallium, 2-methylnapthalene, naphthalene, and benzene.

Because COCs were identified, estimated HIs were also calculated using CTE exposure assumptions. Target organ-specific HIs above 1 (respiratory = 8, skin = 4) were calculated (Table 9.5.CTE of Attachment 1). Therefore, HIs exceed acceptable levels, and two COCs (arsenic and naphthalene) were identified for this potential receptor and exposure area for a CTE scenario (Table 10.5.CTE of Attachment 1).

A hot spot analysis was conducted for arsenic in surface soil based on the arsenic concentrations detected in 14 surface soil samples within an elevated arsenic area on the Quanta property (Attachment 4). Based on these 14 samples, the EPC is 3,900 mg/kg. The maximum detected concentration was used because the calculated 95% UCL is higher than the maximum detected concentration. The property-wide arsenic EPC in surface soil is 1,506 mg/kg. Because the ratio of EPC to HI is linear, an EPC of 3,900 mg/kg in the hot spot area yields an estimated HI of 20 (Table 13.1 of Attachment 1).

Child – Non-Cancer Effects

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Quanta property were quantified. Target organ-specific HIs above 1 (blood = 8, gastrointestinal system = 2, immune system = 6, respiratory = 20, skin = 70, whole body = 1.2) were calculated. Therefore, HIs exceed acceptable levels, and 15 COCs were identified for this potential receptor and exposure area (Table 10.6.RME of Attachment 1): antimony, arsenic, copper, iron, thallium, vanadium, zinc, mercury, Aroclor-1242, Aroclor-1260, 2-methylnaphthalene, 4-methylphenol, fluorene, naphthalene, and benzene.

Because COCs were identified, HIs were also estimated using CTE exposure assumptions. Target organ-specific HIs above 1 (blood = 4, immune system = 2, respiratory = 20, skin = 30) were calculated (Table 9.6.CTE of Attachment 1). Therefore, HIs exceed acceptable levels, and 12 COCs were identified for this potential receptor and exposure area for a CTE scenario (Table 10.6.CTE of Attachment 1): antimony, arsenic, copper, iron, thallium, mercury, Aroclor-1242, Aroclor-1260, 2-methylnaphthalene, 4-methylphenol, naphthalene, and benzene.

A hot spot analysis was conducted for arsenic in surface soil based on the arsenic concentrations detected in 14 surface soil samples within an elevated arsenic area on the Quanta property (Attachment 4). Based on these 14 samples, the EPC is 3,900 mg/kg. The maximum detected concentration was used because the calculated 95% UCL is higher than

the maximum detected concentration. The property-wide arsenic EPC in surface soil is 1,506 mg/kg. Because the ratio of EPC to HI is linear, an EPC of 3,900 mg/kg in the hot spot area yields an estimated HI of 180 (Table 13.1 of Attachment 1).

Based on the average surface soil lead concentration (682 mg/kg) for the Quanta property, the EPA IEUBK model predicts that 20.8 percent of the population will have a BLL exceeding 10 µg/dL (Tables 11.3a/b). The percentage based on the mean concentration exceeds the target level. Therefore, lead was identified as a COC for this potential receptor.

Child/Adult Aggregate – Cancer Risk

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Quanta property were quantified. An ELCR of $5x10^{-2}$ was calculated. The ELCR exceeds acceptable levels, and 14 COCs were identified for this potential receptor and exposure area (Table 10.7.RME of Attachment 1): arsenic, heptachlor, Aroclor-1242, Aroclor-1260, benzene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, carbazole, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and TCE.

Because COCs were identified, estimated risks were also evaluated using CTE exposure assumptions. An ELCR of $1x10^{-2}$ was calculated (Table 9.7.CTE of Attachment 1). Therefore, risks exceed acceptable levels, and 12 COCs were identified for this potential receptor and exposure area for a CTE scenario (Table 10.7.CTE of Attachment 1): arsenic, Aroclor-1242, Aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, carbazole, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and benzene.

Although it is unreasonable to expect that groundwater would be used as a potable source in the future, exposures to a hypothetical resident using site-wide groundwater as a potable source and contacting surface soil at the Quanta property were estimated. Potential risks were calculated separately for use of groundwater in the hydrostratigraphic zone above the clay layer and below the clay layer. For soil and hypothetical groundwater exposures combined, risk estimates are provided in Tables 9.7.RME Supplement and 9.7.CTE Supplement. Risk estimates exceed acceptable levels.

A hot spot analysis was conducted for arsenic in surface soil based on the arsenic concentrations detected in 14 surface soil samples within an elevated arsenic area on the Quanta property (Attachment 4). Based on these 14 samples, the EPC is 3,900 mg/kg. The maximum detected concentration was used because the calculated 95% UCL is higher than the maximum detected concentration. The property-wide arsenic EPC in surface soil is 1,506 mg/kg. Because the ratio of EPC to ELCR is linear, an EPC of 3,900 mg/kg in the hot spot area yields an estimated ELCR of 1×10^{-2} (Table 13.1 of Attachment 1).

Summary – The estimated risks for this receptor exceed acceptable levels.

5.2 Former Celotex Property

The RME and CTE risk results for the former Celotex property are summarized in Tables 9.8.RME through 9.12.RME and 9.8.CTE through 9.12.CTE of Attachment 1, respectively. BLLs were calculated using RME assumptions for construction workers because lead was identified as a COPC in subsurface soil; results for BLLs are summarized in Tables 11.4a/b.

5.2.1 Future Commercial Worker

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the former Celotex property were quantified. An ELCR of $2x10^{-5}$ and total HI of 0.2 were calculated (Table 10.8.RME of Attachment 1), which are within acceptable levels.

Summary – The estimated risks for this receptor are within acceptable levels.

5.2.2 Future Construction Worker

Ingestion, dermal contact, and inhalation exposures to subsurface soil COPCs and dermal and inhalation exposures to shallow groundwater at the former Celotex property were quantified. For soil and groundwater combined, an ELCR of $8x10^{-5}$ and target organ-specific HIs above 1 (respiratory = 4, skin = 9) were calculated. The HIs exceed acceptable levels, and three COCs (arsenic, 2-methylnapthylene, and naphthalene) were identified for this potential receptor in soil and two COCs (arsenic and naphthalene) were identified for groundwater (Table 10.9.RME of Attachment 1).

Because COCs were identified for subsurface soil and shallow groundwater, estimated risks were also evaluated using CTE exposure assumptions. For soil and groundwater combined, an ELCR of $3x10^{-5}$ and target organ-specific HIs above 1 (respiratory = 2, skin = 4) were calculated (Table 9.9.CTE of Attachment 1). HIs exceed acceptable levels, and two COCs (arsenic and naphthalene) were identified for this potential receptor in soil and shallow groundwater for a CTE scenario (Table 10.9.CTE of Attachment 1).

For shallow groundwater, a hot spot analysis was conducted for arsenic based on the arsenic concentrations detected in three groundwater samples within an elevated arsenic area on the former Celotex property (Attachment 4). An EPC of 126 mg/L is based on the maximum detected arsenic concentration from these four samples. In addition, the property-wide arsenic EPC in shallow groundwater is the same value (126 mg/L). Therefore, the estimated ELCR and HI in the hot spot area are the same as those calculated for the property-wide arsenic EPC (3×10^{-5} and an HI of 5; Table 13.1.RME of Attachment 1).

Based on the average subsurface soil lead concentration (904 mg/kg) for the former Celotex property, the ALM predicts that 9.0 to 12.8 percent of the population will have BLLs exceeding 10 µg/dL (Tables 11.4a/b). The percentage based on the mean concentration exceeds the target level. Therefore, lead was identified as a COC for this potential receptor.

Summary – The estimated HIs and BLL for this receptor exceed acceptable risk levels.

5.2.3 Future Resident

Adult – Non-Cancer Effects

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the former Celotex property were quantified. A total HI of 0.4 was calculated (Table 9.10.RME of Attachment 1). Therefore, non-cancer risks are within acceptable levels and no COCs were identified for this potential receptor and exposure area.

Child – Non-Cancer Effects

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the former Celotex property were quantified. All target organ-specific HIs were below 1 (Table 9.11.RME of Attachment 1). Therefore, non-cancer risks are within acceptable levels and no COCs were identified for this potential receptor and exposure area.

Child/Adult Aggregate – Cancer Risk

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the former Celotex property were quantified. An ELCR of $5x10^{-4}$ was calculated (Table 9.12.RME of Attachment 1). Risks exceed acceptable levels, and six COCs were identified for this potential receptor and exposure area (Table 10.12.RME of Attachment 1): arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Because COCs were identified, estimated risks were also evaluated using CTE exposure assumptions. An ELCR of $2x10^{-5}$ was calculated (Table 9.12.CTE of Attachment 1), which is within the acceptable risk range.

Although it is unreasonable to expect that groundwater would be used as a potable source in the future, exposures to a hypothetical resident using site-wide groundwater as a potable source and contacting surface soil at the former Celotex property were estimated. Potential risks were calculated separately for use of groundwater in the hydrostratigraphic zone above the clay layer and below the clay layer. For soil and hypothetical groundwater exposures combined, risk estimates are provided in Tables 9.12.RME Supplement and 9.12.CTE Supplement. Risk estimates exceed acceptable levels.

Summary – The estimated ELCR for this receptor exceeds acceptable risk levels.

5.3 115 River Road Property

The RME and CTE risk results for the 115 River Road property are summarized in Tables 9.13.RME through 9.18.RME and 9.13.CTE through 9.18.CTE of Attachment 1, respectively.

Although not addressed quantitatively in the risk estimates provided in Tables 9.13.RME through 9.18.RME and 9.13.CTE through 9.18.CTE, coal tar is present in soil in some areas of the 115 River Road property. Coal tar may be present at the Site surface during certain times of the year. If contacted, exposure to coal tar is expected to exceed acceptable risk levels.

5.3.1 Future Commercial Worker

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the 115 River Road property were quantified. An ELCR of $1x10^{-4}$ and total HI of 0.1 were calculated (Table 9.13.RME of Attachment 1), which are within acceptable risk levels.

Summary – The estimated risks for this receptor are within acceptable risk levels.

5.3.2 Future Daycare Child

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the 115 River Road property were quantified for a future scenario based on the unrealistic assumption

that all current surface cover (e.g., asphalt parking lot, rubber materials) is removed and the underlying soil is available for contact. This scenario is highly unlikely due to the nature of industrial and commercial building settings and daycare facilities. An ELCR of $1x10^{-3}$ and one target organ-specific HI above 1 (respiratory = 2) were calculated (Table 9.14.RME of Attachment 1). Risks exceed acceptable levels, and nine COCs were identified for this potential receptor and exposure area (Table 10.14.RME of Attachment 1): arsenic, chromium, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene.

Because COCs were identified, estimated risks were also evaluated using CTE exposure assumptions. An ELCR of $4x10^{-4}$ and total HI of 0.5 were calculated (Table 9.14.CTE of Attachment 1). Therefore, the ELCR exceeds acceptable levels, and seven COCs were identified for this potential receptor and exposure area for a CTE scenario (Table 10.14.CTE of Attachment 1): arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

It should be noted that exposures associated with the future risk estimates can be avoided by maintaining the surface cover at the site. Eliminating the potential soil contact points will eliminate the exposure pathways and associated potential risks.

Summary – The estimated ELCR and HI for this receptor exceed acceptable risk levels.

5.3.3 Future Construction Worker

Ingestion, dermal contact, and inhalation exposures to subsurface soil COPCs and dermal and inhalation exposures to shallow groundwater at the 115 River Road property were quantified. For subsurface soil and groundwater combined, an ELCR of $1x10^{-4}$ and one target organ-specific HI above 1 (respiratory = 20) were calculated (Table 9.15.RME of Attachment 1). Therefore, the HI exceeds acceptable levels, and two COCs were identified for this potential receptor in soil: 2-methylnapthylene and naphthalene; one COC (naphthalene) was identified in groundwater (Table 10.15.RME of Attachment 1).

Because COCs were identified for subsurface soil and groundwater, estimated risks were also evaluated using CTE exposure assumptions. An ELCR of $5x10^{-5}$ and one target organ-specific HI above 1 (respiratory = 8) were calculated (Table 9.15.CTE of Attachment 1). The HI exceeds acceptable levels, and two COCs were identified for this potential receptor and exposure area for the CTE scenario (Table 10.12.CTE of Attachment 1): 2-methylnapthylene and naphthalene.

Summary – The estimated HI for this receptor exceeds acceptable risk levels.

5.3.4 Future Resident

Adult – Non-Cancer Effects

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the 115 River Road property were quantified. A total HI of 0.2 was calculated (Table 9.16.RME of Attachment 1). Therefore, non-cancer risks are within acceptable levels and no COCs were identified for this potential receptor and exposure area.

Child – Non-Cancer Effects

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the 115 River Road property were quantified. All target organ-specific HIs were less than 1 (Table 9.17.RME of Attachment 1). Therefore, non-cancer risks are within acceptable levels and no COCs were identified for this potential receptor and exposure area.

Child/Adult Aggregate – Cancer Risk

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the 115 River Road property were quantified. An ELCR of $3x10^{-3}$ was calculated (Table 9.18.RME of Attachment 1). Risks exceed acceptable levels, and seven COCs were identified for this potential receptor and exposure area (Table 10.18.RME of Attachment 1): arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Because COCs were identified, estimated risks were also evaluated using CTE exposure assumptions. An ELCR of $9x10^{-4}$ was calculated (Table 9.18.CTE of Attachment 1). Risks exceed acceptable levels, and seven COCs were identified for this potential receptor and exposure area for the CTE scenario (Table 10.18.CTE of Attachment 1): arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Although it is unreasonable to expect that groundwater would be used as a potable source in the future, exposures to a hypothetical resident using site-wide groundwater as a potable source and contacting surface soil at the 115 River Road property were estimated. Potential risks were calculated separately for use of groundwater in the hydrostratigraphic zone above the clay layer and below the clay layer. For soil and hypothetical groundwater exposures combined, risk estimates are provided in Tables 9.18.RME Supplement and 9.18.CTE Supplement. Risk estimates exceed acceptable levels.

Summary – The estimated ELCR for this receptor exceeds acceptable risk levels.

5.4 Former Lever Brothers Property

The RME and CTE risk results for the Former Lever Brothers property are summarized in Tables 9.19.RME through 9.25.RME and 9.19.CTE through 9.25.CTE of Attachment 1, respectively. BLLs were calculated using RME assumptions for construction workers because lead was identified as a COPC for subsurface soil; results for BLLs are summarized in Tables 11.5a/b.

5.4.1 Current/Future Trespasser (Adult)

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Former Lever Brothers property were quantified. An ELCR of $8x10^{-5}$ and total HI of 0.08 were calculated (Table 9.19.RME of Attachment 1), which are within acceptable risk levels.

Summary – The estimated risks for this receptor are within acceptable risk levels.

5.4.2 Current/Future Trespasser (Adolescent)

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Former Lever Brothers property were quantified. An ELCR of $2x10^{-4}$ and total HI of 0.1 were calculated (Table 9.20.RME of Attachment 1). The ELCR exceeds acceptable levels, and six COCs were identified for this potential receptor and exposure area (Table 10.20.RME of Attachment 1): arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Because COCs were identified, estimated risks were also evaluated using CTE assumptions. An ELCR of $2x10^{-5}$ and total HI of 0.03 were calculated (Table 9.20.CTE of Attachment 1), which are within acceptable risk levels.

Summary – The estimated ELCR for this receptor exceeds acceptable risk levels.

5.4.3 Future Commercial Worker

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Former Lever Brothers property were quantified. An ELCR of $1x10^{-4}$ and total HI of 0.1 were calculated (Table 9.21.RME of Attachment 1), which are within acceptable risk levels.

Summary – The estimated risks for this receptor are within acceptable risk levels.

5.4.4 Future Construction Worker

Ingestion, dermal contact, and inhalation exposures to subsurface soil COPCs and dermal and inhalation exposures to shallow groundwater at the Former Lever Brothers property were quantified. For subsurface soil and groundwater combined, an ELCR of $6x10^{-5}$ and target organ-specific HIs above 1 (respiratory = 4, skin = 2) were calculated (Table 9.22.RME of Attachment 1). The HIs exceed acceptable levels, and two COCs (arsenic and naphthalene) were identified for this potential receptor in soil and three COCs (arsenic, 2-methylnaphthalene, and naphthalene) were identified for this potential receptor in groundwater (Table 10.22.RME of Attachment 1)

Because COCs were identified for subsurface soil and groundwater, estimated risks were also evaluated using CTE exposure assumptions. An ELCR of $2x10^{-5}$ and target organ-specific HIs below 1.0 were calculated (Table 9.22.CTE of Attachment 1), which are within acceptable levels.

Based on the average subsurface soil lead concentration (441 mg/kg) for the Former Lever Brothers property, the ALM predicts that 3.1 to 5.7 percent of the population will have BLLs exceeding 10 µg/dL (Tables 11.5a/b). The percentage based on the mean concentration is below the target level. Therefore, lead was not identified as a COC for this potential receptor.

Summary – The estimated HIs for this receptor exceed acceptable risk levels.

5.4.5 Future Resident

Adult – Non-Cancer Effects

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Former Lever Brothers property were quantified. A total HI of 0.2 was calculated (Table 9.23.RME of Attachment 1). Therefore, non-cancer risks are within acceptable levels and no COCs were identified for this potential receptor and exposure area.

Child – Non-Cancer Effects

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Former Lever Brothers property were quantified. A target organ-specific HI above 1 (skin = 2) was calculated (Table 9.24.RME of Attachment 1) and one COC (arsenic) was identified for this potential receptor and exposure area (Table 10.24.RME of Attachment 1).

Because a COC was identified, estimated risks were also evaluated using CTE exposure assumptions. A total HI of 1.0 was calculated (Table 9.24.CTE of Attachment 1). Therefore, the HI is within acceptable levels and no COCs were identified for this potential receptor and exposure area for the CTE scenario.

Child/Adult Aggregate -Cancer Risk

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Former Lever Brothers property were quantified. An ELCR of $3x10^{-3}$ was calculated (Table 9.25.RME of Attachment 1). Risks exceed acceptable levels, and seven COCs were identified for this potential receptor and exposure area (Table 10.25.RME of Attachment 1): arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Because COCs were identified, estimated risks were also evaluated using CTE exposure assumptions. An ELCR of $7x10^{-4}$ was calculated (Table 9.25.CTE of Attachment 1). Therefore, risks exceed acceptable levels, and seven COCs were identified for this potential receptor and exposure area for the CTE scenario (Table 10.25.CTE of Attachment 1): arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Although it is unreasonable to expect that groundwater would be used as a potable source in the future, exposures to a hypothetical resident using site-wide groundwater as a potable source and contacting surface soil at the Former Lever Brothers property were estimated. Potential risks were calculated separately for use of groundwater in the hydrostratigraphic zone above the clay layer and below the clay layer. For soil and hypothetical groundwater exposures combined, risk estimates are provided in Tables 9.25.RME Supplement and 9.25.CTE Supplement. Risk estimates exceed acceptable levels.

Summary – The estimated risks for this receptor exceed acceptable levels.

5.5 Block 93 North Property

The RME and CTE risk results for the Block 93 North property are summarized in Tables 9.26.RME through 9.32.RME and 9.26.CTE through 9.32.CTE of Attachment 1, respectively.

BLLs were calculated using RME assumptions for commercial workers, construction workers, and child residents because lead was identified as a COPC in surface and subsurface soil; results for BLLs are summarized in Tables 11.6a/b through 11.8a/b.

5.5.1 Current/Future Trespasser (Adult)

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Block 93 North property were quantified. An ELCR of $5x10^{-4}$ and no target organ-specific HIs above 1 were calculated (Table 9.26.RME of Attachment 1). The ELCR exceeds acceptable levels and seven COCs were identified for this potential receptor and exposure area (Table 10.26.RME of Attachment 1): arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Because COCs were identified, estimated risks were also evaluated using CTE assumptions. An ELCR of $3x10^{-6}$ and total HI of 0.04 were calculated (Table 9.26.CTE of Attachment 1), which are within acceptable levels.

A hot spot analysis was conducted for arsenic in surface soil based on the arsenic concentrations detected in four surface soil samples within an elevated arsenic area on the Block 93 North property (Attachment 4). An EPC of 913 mg/kg is based on the maximum detected arsenic concentration from these four samples. The property-wide arsenic EPC in surface soil is 242 mg/kg. Because the ratio of EPC to ELCR (and HI) is linear, an EPC of 913 mg/kg in the hot spot area yields an estimated ELCR of 3×10^{-4} and an HI of 2 (Table 13.1.RME of Attachment 1).

Summary – The estimated ELCR for this receptor exceeds acceptable risk levels.

5.5.2 Current/Future Trespasser (Adolescent)

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Block 93 North property were quantified. An ELCR of $1x10^{-3}$ and no target organ-specific HIs above 1 were calculated (Table 9.27.RME of Attachment 1). The ELCR exceeds acceptable levels, and seven COCs were identified for this potential receptor and exposure area (Table 10.27.RME of Attachment 1): arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

Because COCs were identified, estimated risks were also evaluated using CTE assumptions. An ELCR of $1x10^{-4}$ and total HI of 0.07 were calculated (Table 9.27.CTE of Attachment 1), which are within acceptable levels.

A hot spot analysis was conducted for arsenic in surface soil based on the arsenic concentrations detected in four surface soil samples within an elevated arsenic area on the Block 93 North property (Attachment 4). An EPC of 913 mg/kg is based on the maximum detected arsenic concentration from these four samples. The property-wide arsenic EPC in surface soil is 242 mg/kg. Because the ratio of EPC to ELCR (and HI) is linear, an EPC of 913 mg/kg in the hot spot area yields an estimated ELCR of 2×10^{-4} and an HI of 3 (Table 13.1.RME of Attachment 1).

Summary – The estimated ELCR for this receptor exceeds acceptable risk levels.

5.5.3 Future Commercial Worker

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Block 93 North property were quantified. An ELCR of $8x10^{-4}$ and one target organ-specific HI above 1 (respiratory = 10) were calculated (Table 9.28.RME of Attachment 1). Therefore, risks are above acceptable levels, and 10 COCs were identified for this potential receptor and exposure area (Table 10.28.RME of Attachment 1): arsenic, Aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, benzene, and naphthalene.

Because COCs were identified, estimated risks were also evaluated using CTE exposure assumptions. An ELCR of $8x10^{-5}$ and one target organ-specific HI above one (respiratory = 9) were calculated (Table 9.28.CTE of Attachment 1). Because the HI is above the acceptable level, one COC (naphthalene) was identified for this potential receptor and exposure area for the CTE scenario (Table 10.21.CTE of Attachment 1).

A hot spot analysis was conducted for arsenic in surface soil based on the arsenic concentrations detected in four surface soil samples within an elevated arsenic area on the Block 93 North property (Attachment 4). An EPC of 913 mg/kg is based on the maximum detected arsenic concentration from these four samples. The property-wide arsenic EPC in surface soil is 242 mg/kg. Because the ratio of EPC to ELCR (and HI) is linear, an EPC of 913 mg/kg in the hot spot area yields an estimated ELCR of 3×10^{-4} and an HI of 2 (Table 13.1.RME of Attachment 1).

Based on the average surface soil lead concentration (441 mg/kg) for the Block 93 North property, the ALM predicts that 1.3 to 3.1 percent of the population will have BLLs exceeding 10 µg/dL (Tables 11.6a/b). The percentage based on the mean concentration is below the target level. Therefore, lead was not identified as a COC for this potential receptor.

Summary – The estimated risks for this receptor exceed acceptable risk levels.

5.5.4 Future Construction Worker

Ingestion, dermal contact, and inhalation exposures to subsurface soil COPCs and dermal and inhalation exposures to shallow groundwater at the Former Block 93 North property were quantified. For subsurface soil and groundwater combined, an ELCR of $1x10^{-4}$ and target organ-specific HIs above 1 (respiratory = 20, skin = 2) were calculated (Table 9.29.RME of Attachment 1). HIs exceed acceptable levels and three COCs (arsenic, 2-methylnaphthalene, and naphthalene) were identified for this potential receptor in soil and two COCs (arsenic and naphthalene) were identified for this potential receptor in groundwater (Table 10.29.RME of Attachment 1).

Because COCs were identified for subsurface soil and groundwater, estimated risks were also evaluated using CTE exposure assumptions. An ELCR of $6x10^{-5}$ and one target organ-specific HI above 1 (respiratory = 10) were calculated (Table 9.29.CTE of Attachment 1). The HI exceeds the acceptable level and two COCs (2-methylnaphthalene and naphthalene) were identified for this potential receptor in soil for the CTE scenario (Table 10.29.CTE of Attachment 1); no COCs were identified for shallow groundwater.

A hot spot analysis was conducted for arsenic in subsurface soil based on the arsenic concentrations detected in four subsurface soil samples within an elevated arsenic area on the Block 93 North property (Attachment 4). An EPC of 913 mg/kg is based on the maximum detected arsenic concentration from these four samples. The property-wide arsenic EPC in subsurface soil is 73 mg/kg. Because the ratio of EPC to ELCR (and HI) is linear, an EPC of 913 mg/kg in the hot spot area yields an estimated ELCR of 7×10^{-5} and an HI of 11 (Table 13.1.RME of Attachment 1).

Based on the average subsurface soil lead concentration (441 mg/kg) for the Block 93 North property, the ALM predicts that 3.1 to 5.7 percent of the population will have BLLs exceeding 10 µg/dL (Tables 11.7a/b). The percentage based on the mean concentration is below the target level. Therefore, lead was not identified as a COC for this potential receptor.

Summary – The estimated HIs for this receptor exceeds acceptable risk levels.

5.5.5 Future Resident

Adult – Non-Cancer Effects

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Block 93 North property were quantified. Target organ-specific HIs above 1 (nervous system = 1.1, respiratory = 10, skin = 1.2) were calculated (Table 9.30.RME of Attachment 1). Therefore, HIs are unacceptable, and six COCs were identified for this potential receptor and exposure area (Table 10.30.RME of Attachment 1): arsenic, 2-methylnapthalene, naphthalene, m,p-xylene, o-xylene, and xylenes (total).

Because COCs were identified, estimated risks were also evaluated using CTE exposure assumptions. Target organ-specific HIs above 1 (nervous system = 1.1, respiratory = 10) were calculated (Table 9.30.CTE of Attachment 1). Therefore, HIs exceed acceptable levels, and four COCs were identified for this potential receptor and exposure area for the CTE scenario (Table 10.30.CTE of Attachment 1): naphthalene, m,p-xylene, o-xylene, and xylenes (total).

A hot spot analysis was conducted for arsenic in surface soil based on the arsenic concentrations detected in four surface soil samples within an elevated arsenic area on the Block 93 North property (Attachment 4). An EPC of 913 mg/kg is based on the maximum detected arsenic concentration from these four samples. The property-wide arsenic EPC in surface soil is 242 mg/kg. Because the ratio of EPC to HI is linear, an EPC of 913 mg/kg in the hot spot area yields an estimated HI of 5 (Table 13.1.RME of Attachment 1).

Child – Non-Cancer Effects

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Block 93 North property were quantified. Target organ-specific HIs above 1 (blood = 2, immune system = 2, nervous system = 3, respiratory = 40, skin = 10, whole body = 1.4) were calculated (Table 9.31.RME of Attachment 1). HIs exceed acceptable levels, and 14 COCs were identified for this potential receptor and exposure area (Table 10.31.RME of Attachment 1): antimony, arsenic, iron, thallium, mercury, Aroclor-1254, Aroclor-1260,

2-methylnaphthalene, fluorene, naphthalene, benzene, m,p-xylene, o-xylene, and xylenes (total).

Because COCs were identified, estimated risks were also evaluated using CTE exposure assumptions. Target organ-specific HIs above 1 (blood = 1.1, nervous system = 3, respiratory = 30, skin = 5) were calculated (Table 9.31.CTE of Attachment 1). HIs exceed acceptable levels, and nine COCs were identified for this potential receptor and exposure area for the CTE scenario (Table 10.31.CTE of Attachment 1): antimony, arsenic, thallium, 2-methylnaphthalene, benzene, m,p-xylene, o-xylene, and xylenes (total), and naphthalene.

A hot spot analysis was conducted for arsenic in surface soil based on the arsenic concentrations detected in four surface soil samples within an elevated arsenic area on the Block 93 North property (Attachment 4). An EPC of 913 mg/kg is based on the maximum detected arsenic concentration from these four samples. The property-wide arsenic EPC in surface soil is 242 mg/kg. Because the ratio of EPC to HI is linear, an EPC of 913 mg/kg in the hot spot area yields an estimated HI of 42 (Table 13.1.RME of Attachment 1).

Based on the average surface soil lead concentration (440 mg/kg) for the Block 93 North property, the IEUBK model predicts that 6.7 percent of the population will have a BLL exceeding 10 µg/dL (Tables 11.8a/b). The percentage based on the mean concentration exceeds the target level. Therefore, lead was identified as a COC for this potential receptor.

Child/Adult Aggregate – Cancer Risk

Ingestion, dermal contact, and inhalation exposures to surface soil COPCs at the Block 93 North property were quantified. An ELCR of $2x10^{-2}$ was calculated (Table 9.32.RME of Attachment 1). Risks exceed acceptable levels, and 12 COCs were identified for this potential receptor and exposure area (Table 10.32.RME of Attachment 1): arsenic, Aroclor-1254, Aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, carbazole, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and benzene.

Because COCs were identified, estimated risks were also evaluated using CTE exposure assumptions. An ELCR of $5x10^{-3}$ was calculated (Table 9.32.CTE of Attachment 1). Risks exceed acceptable levels, and 12 COCs were identified for this potential receptor and exposure area (Table 10.32.CTE of Attachment 1): arsenic, Aroclor-1254, Aroclor-1260, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, carbazole, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and benzene.

Although it is unreasonable to expect that groundwater would be used as a potable source in the future, exposures to a hypothetical resident using site-wide groundwater as a potable source and contacting surface soil at the Block 93 North property were estimated. Potential risks were calculated separately for use of groundwater in the hydrostratigraphic zone above the clay layer and below the clay layer. For soil and hypothetical groundwater exposures combined, risk estimates are provided in Tables 9.32.RME Supplement and 9.32.CTE Supplement. Risk estimates exceed acceptable levels.

A hot spot analysis was conducted for arsenic in surface soil based on the arsenic concentrations detected in four surface soil samples within an elevated arsenic area on the Block 93 North property (Attachment 4). An EPC of 913 mg/kg is based on the maximum

detected arsenic concentration from these four samples. The property-wide arsenic EPC in surface soil is 242 mg/kg. Because the ratio of EPC to ELCR is linear, an EPC of 913 mg/kg in the hot spot area yields an estimated ELCR of 2×10^{-3} (Table 13.1.RME of Attachment 1).

Summary – The estimated risks for this receptor exceed acceptable risk levels.

5.6 Unconfined Groundwater Zone

The risk calculations for groundwater (across the entire Site) in the unconfined groundwater zone (above the silty clay confining unit) are presented in Tables 7.33.RME through 7.35.RME of Attachment 1. The risk estimates are summarized in Tables 9.33.RME through 9.35.RME of Attachment 1.

As discussed previously, shallow groundwater (i.e., groundwater above the confining layer) was quantitatively evaluated at the request of EPA. However, exposure to groundwater is not considered a realistically complete pathway for the future. Groundwater at the site will not be used for potable purposes within a reasonable planning horizon (i.e., 30 years). NJDEP well construction regulations require the fully grouted casing of potable supply wells to extend 50 feet below the surface (i.e., below the overburden groundwater at the site). Moreover, a reliable municipal water supply is readily available; there are no potable wells in the vicinity of the property; water supply planning for the area of the site does not identify any groundwater supply needs from the vicinity of the site; and water yield and natural quality of site groundwater are unlikely to meet potable water use requirements.

5.6.1 Future Adult Resident

Inhalation (at the showerhead by an adult), ingestion, and dermal contact of COPCs in tap water from hypothetical groundwater use were quantified. HIs above 1 were calculated for various target organs (blood, central nervous system, kidney, liver, nervous system, respiratory system, skin, and whole body) (Table 9.33.RME of Attachment 1). Twenty COPCs exceeded an individual HI of 0.1 and were identified as COCs: arsenic; iron; benzene, toluene, ethylbenzene, and xylenes (BTEX); TCE; 2-methylnaphthalene; naphthalene; four phenols; four PAHs and 1,1'-biphenyl (Table 10.33.RME of Attachment 1).

Summary – The estimated HIs for this receptor exceed acceptable risk levels.

5.6.2 Future Child Resident

Ingestion and dermal contact of COPCs in tap water from hypothetical groundwater use were quantified. HIs above 1 were calculated for various target organs (blood, central nervous system, kidney, liver, respiratory system, skin, whole body, and fetus) (Table 9.34.RME of Attachment 1). Twenty-two COPCs exceeded an individual HI of 0.1 and were identified as COCs: arsenic, iron, BTEX, TCE, four phenols, 2-methylnaphthalene, naphthalene, six PAHs, and 1,1'-biphenyl (Table 10.34.RME of Attachment 1).

Summary – The estimated HIs for this receptor exceed acceptable risk levels.

5.6.3 Future Adult/Child Aggregate Resident

Inhalation (at the showerhead by an adult), ingestion, and dermal contact of COPCs in tap water from hypothetical groundwater use were quantified. An ELCR of $1X10^{+0}$ was calculated Table 9.35.RME of Attachment 1). Risks exceed acceptable levels, and 13 COCs were identified for this potential receptor and exposure area (Table 10.35.RME of Attachment 1): arsenic, alpha-BHC, delta-BHC, heptachlor, benzene, TCE, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, carbazole, chrysene, and indeno(1,2,3-cd)pyrene.

Summary – The estimated ELCR for this receptor exceeds acceptable risk levels.

5.7 Deep Sand (Confined) Groundwater Zone

The risk calculations for groundwater (across the entire Site) in the confined groundwater zone (monitoring wells screened within or below the silty clay confining unit) are presented in Tables 7.36.RME through 7.38.RME of Attachment 1. The risk estimates are summarized in Tables 9.36.RME through 9.38.RME of Attachment 1.

As discussed previously, groundwater below the confining layer was quantitatively evaluated at the request of EPA. However, exposure to groundwater is not considered a realistically complete pathway for the future. Groundwater at the site will not be used for potable purposes within a reasonable planning horizon (i.e., 30 years). A reliable municipal water supply is readily available; there are no potable wells in the vicinity of the property; water supply planning for the area of the site does not identify any groundwater supply needs from the vicinity of the site; and water yield and natural quality of site groundwater are unlikely to meet potable water use requirements.

5.7.1 Future Adult Resident

Inhalation (at the showerhead by an adult), ingestion, and dermal contact of COPCs in tap water from hypothetical groundwater use were quantified. HIs above 1 were calculated for various target organs (kidney, liver, nervous system, respiratory system, eyes, and fetus) (Table 9.36.RME of Attachment 1). Therefore, HIs exceed acceptable levels. Three COPCs (TCE, 2-methylnaphthalene, and naphthalene) exceed an individual HI of 0.1 and were identified as COCs (Table 10.36.RME of Attachment 1).

Summary – The estimated HIs for this receptor exceed acceptable risk levels.

5.7.2 Future Child Resident

Ingestion and dermal contact of COPCs in tap water from hypothetical groundwater use were quantified. HIs above 1 were calculated for various target organs (kidney, liver, skin, and fetus) (Table 9.37.RME of Attachment 1). Therefore, HIs exceed acceptable levels. Two COPCs (arsenic and TCE) exceed an individual HI of 0.1 and were identified as COCs (Table 10.37.RME of Attachment 1).

Summary – The estimated HIs for this receptor exceed acceptable risk levels.

5.7.3 Future Adult/Child Aggregate Resident

Inhalation (at the showerhead by an adult), ingestion, and dermal contact of COPCs in tap water from hypothetical groundwater use were quantified. An ELCR of $6x10^{-3}$ was calculated. Risks exceed acceptable levels, and seven COCs were identified for this potential receptor and exposure area (Table 10.38.RME of Attachment 1): arsenic, benzene, PCE, TCE, vinyl chloride, benzo(a)anthracene, and carbazole.

Summary – The estimated ELCR for this receptor exceeds acceptable risk levels.

Because the ELCRs and HIs for hypothetical groundwater exposures by future adult and child residents are well above target risk levels, it is likely that ELCRs and HIs for the commercial worker and daycare child will also exceed target risk levels.

5.8 Groundwater Vapor Migration to Indoor Air

Potential indoor air exposures via vapor intrusion from groundwater were evaluated qualitatively. The detailed evaluation of groundwater concentrations is provided in Attachment 2. As discussed in Section 1.5, various constituents in groundwater exceed the conservative groundwater vapor intrusion screening levels. Therefore, the potential impacts of groundwater on indoor air should be further evaluated when specific building plans (location, building configuration) are available.

5.9 Other Health Studies

The Agency for Toxic Substances and Disease Registry (ATSDR), created by CERCLA, is required to conduct public health assessments (PHAs) for all sites listed on the National Priority List. A PHA includes a preliminary assessment of the potential threats that individual sites pose to human health. The PHA is required to be completed "to the maximum extent practicable" before completion of the RI/FS. ATSDR uses the same general risk assessment framework as the EPA HHRA. ATSDR's PHAs are intended to help public health and regulatory officials (e.g., EPA) determine if actions should be taken to reduce exposure to hazardous substances and to recommend whether additional information on human exposure and associated risk is needed. EPA considers the information in the PHA and the results of the HHRA when evaluating the potential health threats posed by a site.

In 2002, the New Jersey Department of Health and Senior Services (NJDHHS), in cooperation with ATSDR, conducted a PHA of the Quanta property and adjacent properties to review environmental data obtained from the site, define potential human exposure to contaminants, and to determine whether the exposures are of public health concern (NJDHHS, 2002). The report concluded the following regarding OU-1:

> *The Public Health Hazard Category recommended for the QRC site is '**Indeterminate Public Health Hazard**.'*
>
> 1. *Current conditions indicate that there are no apparent completed human exposure pathways at the QRC site. Dermal exposures to workers, trespassers, nearby residents, and passersby from contaminated surface*

soil, sediment, and fugitive dust is a potential human exposure pathway if groundbreaking activities commence at the QRC site.

2. *General concerns regarding odors at the site may suggest a localized potential pathway, especially during heavy construction and/or remediation activities which disturb on-site soils and river sediments. Digging or working in the soil may cause inhalation exposures due to volatilization. Area odors may indicate a possible exposure pathway although there were no measurements to support this observation at the time of report preparation...*

3. *Redevelopment of contiguous properties to the QRC site is continuing at this time. Neighboring properties had contaminant levels comparable to and sometimes higher than those detected on the QRC site.*

As site conditions change with any future remediation and/or construction activities at the Quanta Resources Corporation site, public health implications and the potential for completed human exposure pathways will be reevaluated. Furthermore, additional investigation of neighboring properties is advisable. If additional data become available to indicate that there are completed human exposure pathways attributable to the Quanta Resources Corporation site, the current designated hazard category for the site will be reconsidered.

Based on the conclusions presented above, the conceptual site model presented in RAGS Part D Table 1 in Attachment 1 is very conservative because it includes three potential receptor types for current exposures (trespasser; daycare child and worker at the 115 River Road property) whereas the PHA identifies no potentially complete current exposure pathways. Consistent with the PHA, the conceptual site model indicates that various exposure pathways could be complete under future construction and redevelopment scenarios. Results of the HHRA estimates in Section 5 indicate that future site exposures may result in unacceptable risk levels if chemicals in soil and/or groundwater are contacted.

5.10 Uncertainty Analysis

All HHRAs involve assumptions, professional judgments, and imperfect data to varying degrees; these in turn result in uncertainty in the final estimates of risk. Risk assessment in general is a highly conservative process and often is based on extremely conservative assumptions and scenarios. Thus, it is important to specify the uncertainties inherent in this HHRA to place the risk estimates in proper perspective.

5.10.1 Uncertainty Associated with Data Evaluation

The data sets for soil at the Site were a compilation of studies from various investigations[4]. These subsets consisted of samples that were collected at various times under different

[4] Data sets obtained from other investigators was not validated by CH2M HILL, however historical data was evaluated for usability as described in Appendix L of the Draft RI Report. Two criteria were used to judge usability. First, laboratory reports (if available) were evaluated. Data supported by laboratory quality control data were considered usable and of known quality

investigations and analyzed by different laboratories. Combining these datasets contributes some uncertainty to the HHRA. The degree of potential overestimation or underestimation is not known. However, several measures were taken to minimize this uncertainty, which included cross-checking hard-copy data with data in the electronic database.

A comparison of maximum detected constituent concentrations to adjusted (HQ=0.1) EPA Region 9 PRGs was conducted for each medium. Constituents whose maximum concentrations were below their respective PRGs were not carried through the HHRA. It is unlikely that this risk-based screening would have excluded constituents that would be of concern, based on the conservative exposure assumptions and conservatively derived toxicity criteria on which the PRGs are based. Although following this methodology does not provide a quantitative risk estimate for every constituent, it focuses the assessment on the constituents accounting for the greatest risks (i.e., constituents whose maximum concentrations exceed their respective PRGs), and the overall cumulative risk estimates would not be expected to be significantly (if at all) greater.

Vinyl chloride was detected in 1 of 33 subsurface soil samples at the Former Lever Brothers property but was not selected as a COPC. Although it is generally EPA Region 2's policy to carry all Class A carcinogens through the risk assessment calculations, vinyl chloride was not selected as a COPC because of its low frequency of detection and low detected concentration (0.096 mg/kg; the concentration was reported with a "J" qualifier, indicating an estimated concentration). Vinyl chloride was not detected in the data evaluated for the other four properties (Quanta, former Celotex, 115 River Road, or Block 93 North properties). It was concluded that vinyl chloride provides no significant contribution to site risk estimates. Therefore, not quantifying potential exposures to vinyl chloride is not expected to result in a significant underestimation of potential risk.

Historically, various industrial facilities operated in the vicinity of the Quanta property. For purposes of the HHRA, all detected concentrations in the samples were used as-is. However, samples collected from properties adjacent to the Quanta property may also reflect impact from industrial operations unrelated to the Site. Therefore, use of these samples may result in an overestimation of Site-related impact.

There is uncertainty regarding the COPC screening step for chromium and mercury concentrations detected in Site samples. Total chromium concentrations were screened against the PRG for hexavalent chromium (the more-toxic form of chromium). Therefore, the COPC screening process was conservative, and the total chromium data could have been screened using an assumed ratio of 1:6 for hexavalent/trivalent forms. Similarly, mercury concentrations were screened using the conservative PRG for methylmercury (the more-toxic form). Although mercury was not analyzed for its speciated forms, it is unlikely that significant concentrations of methylmercury are present in soil. Therefore, the screening process is expected to be conservative and likely did not eliminate site-related chemical risk drivers.

unless the review of the data revealed a reason to reject the data due to quality control issues. Second, data was considered usable if no laboratory quality control data was available, but the data had been reported previously to and reviewed by EPA.

5.10.2 Uncertainty Associated with the Exposure Assessment

The primary areas of uncertainty regarding chemical intakes are assumptions regarding potentially complete exposure pathways, estimating EPCs, and selection of exposure factors used to calculate chemical intakes. The uncertainties associated with these sources are discussed below.

The potential exposure pathways that were quantified were assumed to be complete, and the majority of the exposure factors used to calculate exposures are conservative and reflect worst-case or upper-bound exposure assumptions. In the case of the daycare child at 115 River Road, exposure to surface soil was assumed to be a complete pathway in the future. However, the outdoor ground surface at 115 River Road is currently covered by an asphalt parking lot, buildings, and rubber materials (in the daycare playground). No future contact points in soil are anticipated unless the existing surface cover is removed. Therefore, this exposure pathway is currently incomplete and unless surface covers are removed (which is unlikely), exposure to surface soil will remain an incomplete pathway in the future. Use of the maximum detected concentrations of the COPCs at 115 River Road also contributes to an overestimation of risks to the daycare child. Because of the small sample size (i.e., 5 samples), the maximum detected concentration of each COPC was used as the EPC in accordance with EPA protocol. As seen in Figure 1 below, concentrations of most COPCs varied greatly in the five samples.

Groundwater exposures were quantified at the request of EPA. Although potable use of groundwater was quantified, the Site is currently served by the public water supply and will continue to be served in the future.[5] It is unrealistic to assume that shallow groundwater (i.e., groundwater above the clay layer) would be used as drinking water. Overburden groundwater at the Site is not expected to be developed for potable purposes based on New Jersey water supply regulations, more readily available municipal sources of potable water, and naturally poor quality of site floodplain groundwater.[6] However, because groundwater at the Site has been classified as a Class IIA aquifer according to NJDEP, hypothetical use of groundwater in a residential setting was evaluated.[7]

An underlying assumption in the HHRA is that individuals at the Site will regularly engage in activities that will result in chemical exposures. This assumption is conservative in that it is more likely that the activities assumed to occur in this analysis will occur only occasionally.

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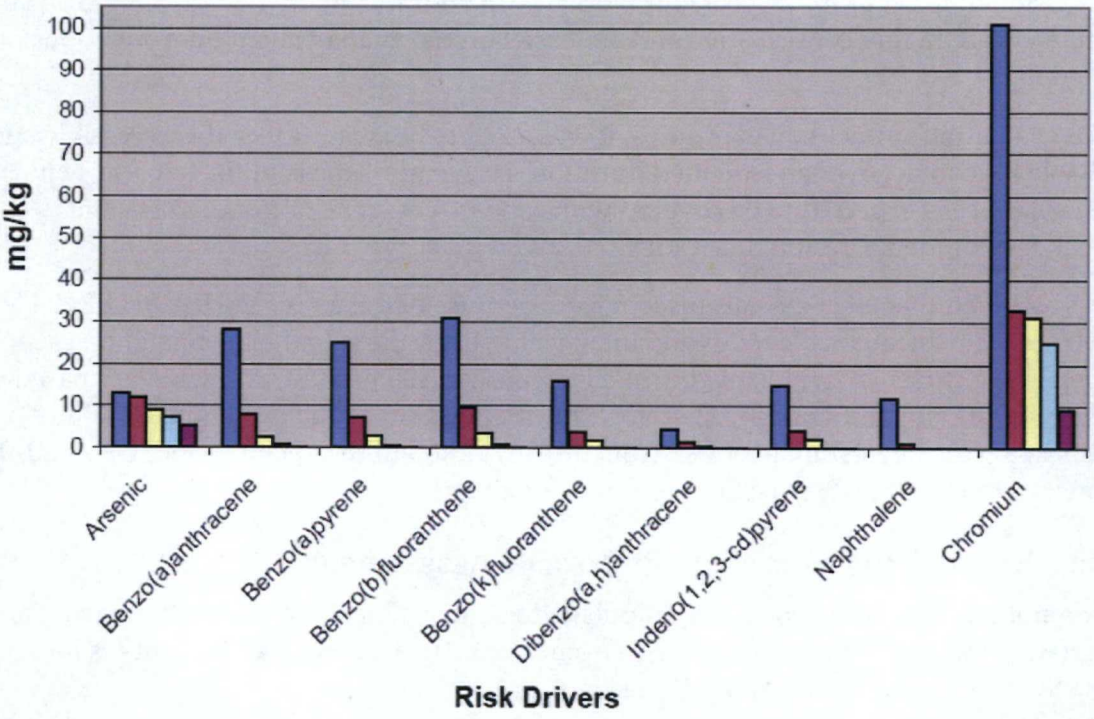
[5] Groundwater at the Site is not used for potable sources.

[6] New Jersey potable well construction regulations (NJAC 7:9D-2.3(a)3(i)) require the fully grouted casing of potable supply wells to extend 50 feet below the surface (i.e., below the overburden groundwater at the site). Moreover, a reliable municipal water supply is readily available; there are no potable wells in the vicinity of the property; water supply planning for the area of the site does not identify any groundwater supply needs from the vicinity of the site; and water yield and natural quality of site groundwater are unlikely to meet potable water use requirements.

[7] This speculative evaluation was conducted at the request of EPA; the actual drinking water source is a public water supply unrelated to groundwater in the area.

Figure 1. Surface Soil Concentrations - 115 River Road



With respect to calculating EPCs, it is assumed that the COPC concentrations will remain constant over time. Depending on the properties of the chemical and the media in which it was detected, this assumption could over- or underestimate risks, depending on the degree of chemical degradation or transport to other media. At this Site, it is likely an overestimation because further chemical degradation in soil and groundwater is likely.

When calculating EPCs from sampling data, one-half of the reported sample quantitation limit (SQL) was used for non-detect samples in the calculation of the 95 percent UCL on the mean. This approach contributes uncertainty to the risk estimates because chemicals that were not detected at the specified SQL may be absent from the medium or may be present at a concentration below the SQL. The uncertainty surrounding the EPC will increase as the number of non-detects in a data set increases, and the uncertainty likely results in overestimation of EPCs.

The 95 percent UCL was used as the EPC for each medium if at least 10 samples were available for a data grouping. If the 95 percent UCL exceeded the maximum detected value or if fewer than 10 samples were available for a data grouping, the maximum detected concentration was conservatively used as the default EPC. Using an EPC to characterize a long-term exposure that is based on one sampling location (i.e., the maximum) is associated with uncertainty, and adds a great deal of conservatism to the assessment.

The exposure factor values used to describe the extent, frequency, and duration of exposure are associated with some uncertainty. Actual risks for certain individuals within an exposed population may vary from those predicted depending upon their actual intake rates (e.g.,

soil ingestion rates), nutritional status, or body weights. The exposure assumptions were selected to produce an upper-bound estimate of exposure in accordance with EPA guidelines regarding evaluation of potential exposures at Superfund sites (e.g., exposures were assumed to occur for 25 years for workers). In addition, many EPA default exposure parameters are highly conservative and are based on risk management interpretations of limited data.

When evaluating surface soil exposures, it was assumed that surface soil is accessible and available for contact over an extended duration (i.e., years). This is unlikely because most of the site surface is expected to be covered with asphalt, concrete, or grass, consistent with typical developments in similar settings.

It was assumed that all chemicals (except lead, because of the use of the IEUBK Model and ALM) are 100% bioavailable following intake. However, the actual bioavailability, especially of metals (e.g., arsenic), will likely be much lower than 100 percent, and will vary based on the site-specific soil mineralogy. Therefore, the assumption of 100 percent bioavailability results in a large overestimate of risk from metals, although the extent cannot be quantified because of the lack of site-specific soil mineralogy data.

5.10.3 Uncertainty Associated with Toxicity Assessment

Uncertainty factors are applied to extrapolate doses from animal studies to humans. The uncertainty factor for constituents varies from 1 to 3,000. Therefore, uncertainty is inherent in the toxicity values used to quantify risks.

Carcinogenic slope factors developed by EPA represent upper-bound estimates. Any ELCR generated in this HHRA should be regarded as an upper-bound estimate on the potential ELCR rather than an accurate representation of ELCR. The true ELCR is likely to be less than the predicted value.

For dermal exposures, the absence of dermal toxicity criteria necessitated the use of oral toxicity data. To calculate risk estimates for the dermal pathway, absorbed dermal absorption doses were combined with oral toxicity values. Oral toxicity values, which are typically expressed in terms of potential (or administered) doses, are adjusted when assessing dermal absorption doses, which are expressed as internal (or absorbed) doses. In this assessment, absolute oral absorption factors that reflect the toxicity study conditions were used to modify the oral toxicity criteria. The risk estimates for the dermal absorption pathways may be over- or underestimated depending on how closely the values used in the HHRA reflect the difference between the oral and dermal routes.

Surrogate chemicals were used for constituents without toxicity values. The use of surrogate toxicity values for chemicals lacking toxicity values may underestimate or overestimate the potential risks or hazards.

At the current time, the toxicity values to be used for evaluating potential exposure to TCE are under review. In the absence of relevant toxicity values in IRIS (EPA, 2007) or a PPRTV—the first two tiers of human health toxicity values in the EPA Superfund hierarchy—EPA supports use of toxicity values from other EPA and non-EPA peer-reviewed sources until a toxicity value is available in IRIS. Acceptable sources include California EPA, which develops its toxicity values in a manner that is quite similar to the

EPA IRIS program, in that many of the same databases and considerations are used. As stated in the EPA memorandum, "Human Health Toxicity Values in Superfund Risk Assessments" (EPA, 2003a):

> *In general, draft toxicity assessments are not appropriate for use until they have been through peer review, the peer review comments have been addressed in a revised draft, and the revised draft is publicly available.*

However, at the direction of EPA, the toxicity values presented in the draft toxicity reassessment of TCE (EPA, 2001b) were used in the risk calculations in this HHRA. However, other Tier 3 values are available for TCE (e.g., from California EPA), and their use would result in lower risk calculations for TCE exposures.

5.10.4 Uncertainty in Risk Characterization

The uncertainties identified in each component of the HHRA ultimately contribute to uncertainty in risk characterization. The addition of risks and HIs across potential pathways and constituents contributes to uncertainty based on the interaction of constituents such as additivity, synergism, potentiation, and susceptibility of exposed receptors.

The linear form of the carcinogenic risk equation is usually applicable for estimating site risks. However, as indicated in RAGS (EPA, 1989), "this linear equation is valid only at low risk levels (i.e., below estimated risks of 0.01)." For sites where chemical intakes might be high (i.e., risk above 0.01), the one-hit equation should be used instead. For the HHRA, the one-hit equation was used when risks were above $1x10^{-2}$.

Free-phase and residual coal tar is present in soil in some areas of the Site. Free-phase coal tar may be present at the ground surface during certain times of the year on one or more properties, as described in the Draft RI Report. Although exposures were not quantified in the risk estimates, it is acknowledged that exposure to coal tar would likely exceed acceptable risk levels.

SECTION 7

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Attachment 1
Risk Assessment Guidance for Superfund (RAGS) Part D Tables

TABLE 1

SELECTION OF POTENTIALLY COMPLETE EXPOSURE PATHWAYS

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Surface Soil (0-2 ft)	Surface Soil (0-2 ft)	Quanta Resources, Block 93 North, and Former Lever Brothers Property(1)	Trespasser	Adult, Adolescent (6-<16 yrs old)	Dermal Absorption	Quant	Trespassers may contact soil.
						Ingestion	Quant	Trespassers may contact soil.
		Ambient Air	Quanta Resources, Block 93 North, and Former Lever Brothers Property(1)	Trespasser	Adult, Adolescent (6-<16 yrs old)	Inhalation	Quant	Trespassers may inhale vapors and dust.
	Groundwater	Indoor Air	115 River Road property (Building 12)	Commercial Worker	Adult	Inhalation	Qual (7)	Soil gas and indoor air concentrations were evaluated.
			115 River Road property (Main Building)	Commercial Worker, Daycare Child	Adult, Child	Inhalation	Qual (7)	Soil gas and indoor air concentrations were evaluated.
Future	Surface Soil (0-2 ft)	Surface Soil (0-2 ft)	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93 North, and Former Lever Brothers Property (1)	Commercial Worker	Adult	Dermal Absorption	Quant	Workers may contact soil.
						Ingestion	Quant	Workers may contact soil.
				Daycare Child (3)	Child	Dermal Absorption	Quant	Daycare children may contact soil if surface cover is removed in the future; this is highly unlikely.
						Ingestion	Quant	Daycare children may contact soil if surface cover is removed in the future; this is highly unlikely.
				Resident	Adult, Child	Dermal Absorption	Quant	Residents may contact soil.
						Ingestion	Quant	Residents may contact soil.
			Quanta Resources, Block 93 North, and Former Lever Brothers Property(1)	Trespasser	Adult, Adolescent (6-<16 yrs old)	Dermal Absorption	Quant	Trespassers may contact soil.
						Ingestion	Quant	Trespassers may contact soil.
		Ambient Air	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93 North, and Former Lever Brothers Property (1)	Commercial Worker	Adult	Inhalation	Quant	Workers may inhale vapors and dust.
				Daycare Child (3)	Child	Inhalation	Quant	Daycare children may inhale vapors and dust in soil if surface cover is removed in the future; this is highly unlikely.
				Resident	Adult, Child	Inhalation	Quant	Residents may inhale vapors and dust.
			Quanta Resources, Block 93 North, and Former Lever Brothers Property(1)	Trespasser	Adult, Adolescent (6-<16 yrs old)	Inhalation	Quant	Trespassers may inhale vapors and dust.

TABLE 1

SELECTION OF POTENTIALLY COMPLETE EXPOSURE PATHWAYS

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont.)	Subsurface Soil (0-10 ft)	Subsurface Soil (0-10 ft)	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93 North, and Former Lever Brothers Property (1)	Construction Worker/ Utility Worker (4)	Adult	Dermal Absorption	Quant	Construction and utility workers may contact soil.
						Ingestion	Quant	Construction and utility workers may contact soil.
		Ambient Air	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93 North, and Former Lever Brothers Property (1)	Construction Worker/ Utility Worker (4)	Adult	Inhalation	Quant	Construction and utility workers may inhale vapors and dust.
	Groundwater	Groundwater (Tap Water)	Groundwater (2,8)	Commercial Worker	Adult	Dermal Absorption	Qual (5)	Although it is very unlikely, hypothetical future use of groundwater as a drinking water source is evaluated.
						Ingestion	Qual (5)	
				Daycare Child	Child	Dermal Absorption	Qual (5)	
						Ingestion	Qual (5)	
				Resident	Adult, Child	Dermal Absorption	Quant	
						Ingestion	Quant	
		Groundwater (Excavation)	Quanta Resources, 115 River Road, Block 93 North, Edgewater Enterprises, and Former Lever Brothers Property (1)	Construction Worker/ Utility Worker (4)	Adult	Dermal Absorption	Quant	Construction and utility workers may contact shallow groundwater in excavations.
		Ambient Air (Excavation)	Quanta Resources, 115 River Road, Block 93 North, Edgewater Enterprises, and Former Lever Brothers Property (1)	Construction Worker/ Utility Worker (4)	Adult	Inhalation	Quant	Construction and utility workers may inhale vapors from groundwater in excavations.
		Indoor Air	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93 North, and Former Lever Brothers Property (1)	Commercial Worker, Daycare Child (3)	Adult, Child	Inhalation	Quant (5,7), Qual (6)	Commercial workers and daycare children may inhale vapors via indoor air vapor intrusion and during potable water use.
				Resident	Adult, Child	Inhalation	Quant (6)	Residents may inhale vapors via indoor air vapor intrusion. Adult residents may inhale vapors at the shower head. Child residents (ages 1-6) may inhale vapors from the tap during bathing.
			Former Lever Brothers Property (Building 9)	Commercial Worker	Adult	Inhalation	Quant (7)	Indoor air concentrations were evalauted by GZA at Building 9 (GZA, 2007).

Note:

(1) Evaluation is conducted for each property separately.

(2) Evaluation is conducted for all five properties merged together for the groundwater zone above the clay layer and below the clay layer, separately.

(3) 115 River Road property only

(4) Construction worker scenario is used as a conservative representation of the utility worker scenario.

(5) Residential scenario is used as a conservative representation of the commercial worker (adult) and daycare child (child) scenarios because worker and daycare exposures are likely limited to drinking and occasional hand washing.

(6) Potential indoor air exposures via vapor intrusion (from groundwater) are evaluated qualitatively by screening in Attachment 2.

(7) Indoor air investigations were conducted as described in Appendix K.

(8) Evaluation of shallow groundwater for potable purposes was conducted at EPA's request. Groundwater at the site will not be used for potable purposes within a reasonable planning horizon (i.e., 30 years). Based on conditions observed in the shallow water bearing formation at the Site (i..e, no greater than 29 feet below ground surface) , a potable well cannot be permitted in accordance with N.J.A.C. At a minimum, N.J.A.C. requires all casings to be no less than 50 feet in depth, and a minimum length of 50 feet of grout seal extending from the top of the gravel pack or top of the well screen to grade.

Table 2.1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Qualifier	Maximum Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Quanta Resources	7429-90-5	Aluminum	570		7630		PPM	TL17-08	9 / 9	0.018 - 5.6	7630	--	7.6E+03	nc	NA	NA	Yes	ASL
	7440-36-0	Antimony	1.2	J	174		PPM	TL16-09	9 / 9	0.61 - 2.8	174	--	3.1E+00	nc	NA	NA	Yes	ASL
	7440-38-2	Arsenic	0.0072		3900		PPM	B-18	39 / 40	0.00077 - 2.8	3900	--	3.9E-01	ca*	NA	NA	Yes	ASL
	7440-39-3	Barium	60.2		305		PPM	B-13	9 / 9	0.32 - 0.37	305	--	5.4E+02	nc	NA	NA	No	BSL
	7440-41-7	Beryllium	0.14		0.53		PPM	QR-02	5 / 9	-	0.53	--	1.5E+01	nc	NA	NA	No	BSL
	7440-43-9	Cadmium	0.67		10.1		PPM	TL16-09	9 / 9	0.11 - 0.37	10.1	--	3.7E+00	nc	NA	NA	Yes	ASL
	7440-70-2	Calcium	8930		29200		PPM	B-15	9 / 9	9.6 - 11	29200	--	NA	--	NA	NA	No	NUT
	7440-47-3	Chromium	0.006		37.9		PPM	SB-113C	27 / 29	0.47 - 0.68	37.9	--	2.2E+01	nc	NA	NA	Yes	ASL
	16065-83-1	Chromium, Trivalent	22.9		24.6		PPM	TL16-07	2 / 2	2.2 - 2.3	24.6	--	1.2E+04	nc	NA	NA	No	BSL
	18540-29-9	Hexavalent Chromium	0.81	J	0.81	J	PPM	SB-113C	1 / 17	0.64 - 0.64	0.81	--	2.2E+01	nc	NA	NA	No	BSL
	7440-48-4	Cobalt	6.3		42.8		PPM	B-15	9 / 9	0.19 - 0.22	42.8	--	1.4E+02	nc	NA	NA	No	BSL
	7440-50-8	Copper	124		6170		PPM	TL16-09	9 / 9	0.25 - 0.84	6170	--	3.1E+02	nc	NA	NA	Yes	ASL
	7439-89-6	Iron	21200		257000		PPM	TL16-09	9 / 9	8.1 - 28	257000	--	2.3E+03	nc	NA	NA	Yes	ASL
	7439-92-1	Lead	0.069		7730		PPM	TL16-09	34 / 34	0.0009 - 1.2	682	--	4.0E+02	nc	NA	NA	Yes	ASL
	7439-95-4	Magnesium	45.7	J	5370		PPM	TL17-08	9 / 9	1.9 - 2.1	5370	--	NA	--	NA	NA	No	NUT
	7439-96-5	Manganese	54.3		306		PPM	TL16-06	9 / 9	0.064 - 0.073	306	--	1.8E+02	nc	NA	NA	Yes	ASL
	7440-02-0	Nickel	5.6		37.8		PPM	TL16-06	9 / 9	0.34 - 0.39	37.8	--	1.6E+02	nc	NA	NA	No	BSL
	7440-09-7	Potassium	531	J	1040	J	PPM	TL17-08	9 / 9	0.011 - 11	1040	--	NA	--	NA	NA	No	NUT
	7782-49-2	Selenium	1.6	J	27.9		PPM	B-15	9 / 9	0.85 - 2.9	27.9	--	3.9E+01	nc	NA	NA	No	BSL
	7440-22-4	Silver	0.47		24.3		PPM	TL16-09	8 / 9	0.24 - 0.81	24.3	--	3.9E+01	nc	NA	NA	No	BSL
	7440-23-5	Sodium	317		441		PPM	B-15	5 / 9	-	441	--	NA	--	NA	NA	No	NUT
	7440-28-0	Thallium	1.7		8.2		PPM	B-13	3 / 9	-	8.2	--	5.2E-01	nc	NA	NA	Yes	ASL
	7440-62-2	Vanadium	7.7		82.2		PPM	TL16-06	9 / 9	0.25 - 0.28	82.2	--	7.8E+00	nc	NA	NA	Yes	ASL
	7440-66-6	Zinc	139		3820		PPM	TL16-09	8 / 8	0.31 - 0.36	3820	--	2.3E+03	nc	NA	NA	Yes	ASL
	7439-97-6	Mercury	2		29.5		PPM	B-12	8 / 9	0.11 - 0.62	29.5	--	6.1E-01	nc	NA	NA	Yes	ASL
	72-54-8	4,4'-DDD	0.029	J	0.56	J	PPM	MW-112A	6 / 10	0.021 - 0.37	0.56	--	2.4E+00	ca	NA	NA	No	BSL
	72-55-9	4,4'-DDE	0.3		1.1	J	PPM	MW-112A	4 / 10	0.37 - 0.37	1.1	--	1.7E+00	ca	NA	NA	No	BSL
	50-29-3	4,4'-DDT	0.078		0.35	J	PPM	SB-113C	5 / 9	0.063 - 0.063	0.35	--	1.7E+00	ca*	NA	NA	No	BSL
	53494-70-5	Endrin ketone	0.074		0.27		PPM	B-13	4 / 10	-	0.27	--	1.8E+00	nc	NA	NA	No	BSL
	76-44-8	Heptachlor	0.35	J	0.35	J	PPM	MW-112A	1 / 10	0.19 - 0.19	0.35	--	1.1E-01	ca	NA	NA	Yes	ASL
	72-43-5	Methoxychlor	0.32		1.3		PPM	B-13	4 / 10	-	1.3	--	3.1E+01	nc	NA	NA	No	BSL
	53469-21-9	Aroclor-1242	0.11		3.2		PPM	SS-04	9 / 33	0.0071 - 0.036	3.2	--	1.0E+00	nc	NA	NA	Yes	ASL
	11097-69-1	Aroclor-1254	0.047		0.702		PPM	TL14-09	7 / 33	0.0039 - 0.051	0.702	--	1.0E+00	nc	NA	NA	No	BSL
	11096-82-5	Aroclor-1260	0.0073	J	1.6		PPM	SB-09I	15 / 33	0.0035 - 0.036	1.6	--	1.0E+00	nc	NA	NA	Yes	ASL
	78-93-3	2-Butanone	0.009	J	0.015		PPM	MW-116B	2 / 26	0.005 - 0.005	0.015	--	2.2E+03	nc	NA	NA	No	BSL
	67-64-1	Acetone	0.015	J	1.6		PPM	B-12	7 / 26	0.007 - 0.009	1.6	--	1.4E+03	nc	NA	NA	No	BSL
	98-86-2	Acetophenone	0.254	J	2.8	J	PPM	SB-03C	4 / 21	0.12 - 1.6	2.8	--	1.0E+04	N (R3)	NA	NA	No	BSL
	71-43-2	Benzene	0.0007	J	19		PPM	B-6-90	22 / 32	0.0005 - 0.44	19	--	6.4E-01	ca*	NA	NA	Yes	ASL
	75-15-0	Carbon Disulfide	0.001	J	0.28	J	PPM	B-12	7 / 26	0.001 - 0.001	0.28	--	3.6E+01	nc	NA	NA	No	BSL
	67-66-3	Chloroform	0.003	J	0.003	J	PPM	SB-103DS	1 / 26	0.002 - 0.002	0.003	--	2.2E-01	ca	NA	NA	No	FOD
	110-82-7	Cyclohexane	0.003	J	0.003	J	PPM	SB-118B	1 / 21	0.002 - 0.002	0.003	--	1.4E+02	sat	NA	NA	No	FOD
	100-41-4	Ethylbenzene	0.003	J	50		PPM	B-6-90	17 / 32	0.001 - 0.88	50	--	1.9E+02	nc	NA	NA	No	BSL
	98-82-8	Isopropylbenzene	0.23	J	3.3		PPM	MW-112A	9 / 21	0.032 - 1.7	3.3	--	5.7E+01	nc	NA	NA	No	BSL
	79-20-9	Methyl Acetate	0.157	J	1.1		PPM	SB-103DS	4 / 21	0.098 - 0.24	1.1	--	2.2E+03	nc	NA	NA	No	BSL
	108-87-2	Methylcyclohexane	0.006	J	0.006	J	PPM	SB-118B	1 / 21	0.002 - 0.002	0.006	--	2.6E+02	nc	NA	NA	No	FOD
	127-18-4	Tetrachloroethene	0.006		0.52	J	PPM	SB-102B	4 / 26	0.001 - 0.17	0.52	--	4.8E-01	ca*	NA	NA	Yes	ASL
	108-88-3	Toluene	0.002	J	42		PPM	B-6-90	22 / 32	0.001 - 0.88	42	--	6.6E+01	nc	NA	NA	No	BSL
	79-01-6	Trichloroethene	0.005	J	0.54		PPM	B-6-90	3 / 32	0.001 - 0.001	0.54	--	5.3E-02	ca	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	12		12		PPM	SB-102B	1 / 21	0.35 - 0.35	12	--	3.9E+01	nc	NA	NA	No	FOD
	XYLENES1314	m,p-Xylene	0.347		3.5		PPM	QR-02	3 / 5	0.051 - 0.061	3.5	--	2.7E+01	nc	NA	NA	No	BSL
	108-38-3	m-Xylene	0.14		45		PPM	B-6-90	5 / 6	-	45	--	2.7E+01	nc	NA	NA	Yes	ASL
	95-47-6	o-Xylene	0.319		1.6		PPM	QR-02	2 / 5	0.034 - 0.034	1.6	--	2.7E+01	nc	NA	NA	No	BSL
	XYLENES1214	p,o-Xylene	0.35		49		PPM	B-6-90	5 / 6	-	49	--	2.7E+01	nc	NA	NA	Yes	ASL
	1330-20-7	Xylene (Total)	0.001	J	21		PPM	SB-03C	19 / 25	0.001 - 1.7	21	--	2.7E+01	nc	NA	NA	No	BSL
	95-50-1	1,2-Dichlorobenzene	2.9		2.9		PPM	SB-102B	1 / 26	0.17 - 0.17	2.9	--	1.1E+02	nc	NA	NA	No	FOD
	105-67-9	2,4-Dimethylphenol	1.13	J	120		PPM	MW-112A	6 / 26	0.5 - 4.5	120	--	1.2E+02	nc	NA	NA	No	BSL
	121-14-2	2,4-Dinitrotoluene	17		17		PPM	SB-06F	1 / 26	3.9 - 3.9	17	--	1.2E+01	nc	NA	NA	No	FOD
	91-57-6	2-Methylnaphthalene	0.081	J	1200		PPM	MW-112A	26 / 26	0.037 - 30	1200	--	5.6E+00	nc	NA	NA	Yes	ASL
	95-48-7	2-Methylphenol	0.195	J	110		PPM	MW-112A	7 / 26	0.18 - 3	110	--	3.1E+02	nc	NA	NA	No	BSL
	34METPH	3&4-Methylphenol	0.755	J	8.84		PPM	TL16-07	3 / 4	0.28 - 0.3	8.84	--	3.1E+01	nc	NA	NA	No	BSL
	106-44-5	4-Methylphenol	2.7	J	250		PPM	MW-112A	4 / 22	0.72 - 60	250	--	3.1E+01	nc	NA	NA	Yes	ASL
	100-01-6	4-Nitroaniline	3.6		29		PPM	MW-112A	2 / 26	1.4 - 3	29	--	1.8E+01	nc	NA	NA	Yes	ASL
	83-32-9	Acenaphthene	0.065	J	1300		PPM	MW-103	34 / 35	0.037 - 30	1300	--	3.7E+02	nc	NA	NA	Yes	ASL
	208-96-8	Acenaphthylene	0.19	J	280		PPM	MW-112A	31 / 35	0.037 - 30	280	--	3.7E+02	nc	NA	NA	No	BSL
	120-12-7	Anthracene	0.29		940		PPM	MW-112A	34 / 35	0.037 - 30	940	--	2.2E+03	nc	NA	NA	No	BSL
	56-55-3	Benzo(a)anthracene	1.2		990		PPM	MW-112A	35 / 35	0.041 - 30	990	--	6.2E-01	ca	NA	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	1.2		941		PPM	TL16-07	34 / 35	0.041 - 30	941	--	6.2E-02	ca	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	1.7		1100		PPM	MW-112A	35 / 35	0.041 - 30	1100	--	6.2E-01	ca	NA	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.87		553		PPM	TL16-07	34 / 35	0.037 - 30	553	--	2.3E+02	nc	NA	NA	Yes	ASL
	207-08-9	Benzo(k)fluoranthene	0.57		632		PPM	TL16-07	35 / 35	0.037 - 30	632	--	6.2E+00	ca	NA	NA	Yes	ASL
	92-52-4	1,1'-Biphenyl	0.042	J	220		PPM	MW-112A	18 / 21	0.037 - 30	220	--	3.0E+02	nc	NA	NA	No	BSL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.34	J	26	J	PPM	MW-116B	14 / 32	0.074 - 7.4	26	--	3.5E+01	ca*	NA	NA	No	BSL
	85-68-7	Butylbenzylphthalate	1.13	J	3.8	J	PPM	SB-09I	2 / 26	0.14 - 3.6	3.8	--	1.2E+03	nc	NA	NA	No	BSL
	105-60-2	Caprolactam	1.2	J	1.2	J	PPM	SB-102B	1 / 21	0.36 - 0.36	1.2	--	3.1E+03	nc	NA	NA	No	FOD
	86-74-8	Carbazole	0.089	J	520		PPM	MW-112A	26 / 26	0.037 - 30	520	--	2.4E+01	ca	NA	NA	Yes	ASL
	218-01-9	Chrysene	1.2		965		PPM	TL16-07	35 / 35	0.041 - 30	965	--	6.2E+01	ca	NA	NA	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	0.24		220		PPM	QR-02	33 / 35	0.037 - 9.8	220	--	6.2E-02	ca	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	0.052	J	820		PPM	MW-112A	26 / 26	0.037 - 30	820	--	1.5E+01	nc	NA	NA	Yes	ASL
	206-44-0	Fluoranthene	2.1		2400		PPM	MW-112A	35 / 35	0.041 - 30	2400	--	2.3E+02	nc	NA	NA	Yes	ASL
	86-73-7	Fluorene	0.066	J	1300		PPM	MW-103	34 / 35	0.037 - 30	1300	--	2.7E+02	nc	NA	NA	Yes	ASL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.74		540		PPM	TL16-07	34 / 35	0.037 - 30	540	--	6.2E-01	ca	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.24		6200		PPM	MW-112A	34 / 35	0.037 - 150	6200	--	5.6E+00	nc	NA	NA	Yes	ASL
	85-01-8	Phenanthrene	0.91		4100		PPM	MW-103	35 / 35	0.041 - 98	4100	--	2.2E+03	nc	NA	NA	Yes	ASL
	108-95-2	Phenol	0.085	J	190		PPM	MW-112A	11 / 26	0.041 - 30	190	--	1.8E+03	nc	NA	NA	No	BSL
	129-00-0	Pyrene	2.1		1700		PPM	MW-112A	35 / 35	0.041 - 30	1700	--	2.3E+02	nc	NA	NA	Yes	ASL

(1) Maximum concentration is used for screening except for lead. Average concentration is used for screening for lead.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Residential Soil; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)
Frequency of Detection (FOD)

Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Chromium (VI) was used as a surrogate for Chromium
Endrin was used as a surrogate for Endrin ketone
Mercury (methyl) was used as a surrogate for Mercury
4-Methylphenol was used a surrogate for 3&4-Methylphenol
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Pyrene was used as a surrogate for Benzo(g,h,i)perylene
Xylenes (total) was used as a surrogate for m,p-Xylene, m-Xylene, o-Xylene, and p,o-Xylene
The residential/commercial soil screening criterion for PCB (1 ppm) was used for aroclor 1242, 1254, and 1260 (see text)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
ca = Carcinogenic
nc = Noncarcinogenic
sat = Soil saturation
N(R3) = EPA Region 3 Preliminary Remediation Goals (PRGs) adjusted using HQ=0.1
NA = Not available

Table

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Qualifier	Maximum Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Quanta Resources	7429-90-5	Aluminum	300		8330		PPM	T-8_1	17 / 17	0.007 - 7	8330	--	7.6E+03	nc	NA	NA	Yes	ASL
	7440-36-0	Antimony	1.2	J	205		PPM	TL17-08	16 / 17	0.81 - 2.8	205	--	3.1E+00	nc	NA	NA	Yes	ASL
	7440-38-2	Arsenic	0.0072		35100		PPM	B-11	71 / 72	0.00077 - 2.8	35100	--	3.9E-01	ca*	NA	NA	Yes	ASL
	7440-39-3	Barium	42.7		499		PPM	B-10	17 / 17	0.32 - 0.44	499	--	5.4E+02	nc	NA	NA	No	BSL
	7440-41-7	Beryllium	0.14		0.53		PPM	QR-02	8 / 17	0.029 - 0.029	0.53	--	1.5E+01	nc	NA	NA	No	BSL
	7440-43-9	Cadmium	0.3		12.3		PPM	TL16-09	15 / 17	0.11 - 0.37	12.3	--	3.7E+00	nc	NA	NA	Yes	ASL
	7440-70-2	Calcium	264	J	49200		PPM	T-8_1	17 / 17	9.6 - 13	49200	--	NA	--	NA	NA	No	NUT
	7440-47-3	Chromium	0.006		105		PPM	TL17-06	42 / 45	0.47 - 0.68	105	--	2.2E+01	nc	NA	NA	Yes	ASL
	16065-83-1	Chromium, Trivalent	8.3		105		PPM	TL17-06	5 / 6	2.2 - 3	105	--	1.2E+04	nc	NA	NA	No	BSL
	18540-29-9	Hexavalent Chromium	0.81	J	1.4	J	PPM	TL16-07	2 / 32	0.32 - 0.64	1.4	--	2.2E+01	nc	NA	NA	No	BSL
	7440-48-4	Cobalt	4.4	J	69.6		PPM	TL17-08	17 / 17	0.19 - 0.27	69.6	--	1.4E+02	nc	NA	NA	No	BSL
	7440-50-8	Copper	32.1		9690		PPM	B-10	17 / 17	0.25 - 0.84	9690	--	3.1E+02	nc	NA	NA	Yes	ASL
	7439-89-6	Iron	11600		257000		PPM	TL16-09	17 / 17	0.011 - 28	257000	--	2.3E+03	nc	NA	NA	Yes	ASL
	7439-92-1	Lead	0.069		38800		PPM	TL17-08	60 / 60	0.0009 - 4.2	1319	--	4.0E+02	nc	NA	NA	Yes	ASL
	7439-95-4	Magnesium	35.7	J	8960	J	PPM	TL16-07	17 / 17	1.9 - 2.6	8960	--	NA	--	NA	NA	No	NUT
	7439-96-5	Manganese	27.7		306		PPM	TL16-06	17 / 17	0.064 - 0.089	306	--	1.8E+02	nc	NA	NA	Yes	ASL
	7440-02-0	Nickel	5.6		118		PPM	TL17-06	16 / 17	0.34 - 0.47	118	--	1.6E+02	nc	NA	NA	No	BSL
	7440-09-7	Potassium	130		2580		PPM	TL16-07	17 / 17	0.011 - 13	2580	--	NA	--	NA	NA	No	NUT
	7782-49-2	Selenium	1.2		302		PPM	TL17-08	16 / 17	0.85 - 2.9	302	--	3.9E+01	nc	NA	NA	Yes	ASL
	7440-22-4	Silver	0.36	J	29.1		PPM	B-10	13 / 17	0.24 - 0.81	29.1	--	3.9E+01	nc	NA	NA	No	BSL
	7440-23-5	Sodium	116		1490		PPM	T-8_1	9 / 17	47 - 47	1490	--	NA	--	NA	NA	No	NUT
	7440-28-0	Thallium	1.7		36.2		PPM	B-10	5 / 17	30 - 30	36.2	--	5.2E-01	nc	NA	NA	Yes	ASL
	7440-62-2	Vanadium	2	J	82.2		PPM	TL16-06	17 / 17	0.25 - 0.34	82.2	--	7.8E+00	nc	NA	NA	Yes	ASL
	7440-66-6	Zinc	65		4830		PPM	TL16-09	16 / 16	0.31 - 4.1	4830	--	2.3E+03	nc	NA	NA	Yes	ASL
	7439-97-6	Mercury	0.15		69.2		PPM	TL17-08	16 / 17	0.015 - 1.3	69.2	--	6.1E-01	nc	NA	NA	Yes	ASL
	72-54-8	4,4'-DDD	0.029	J	0.56	J	PPM	MW-112A	6 / 14	0.021 - 0.37	0.56	--	2.4E+00	ca	NA	NA	No	BSL
	72-55-9	4,4'-DDE	0.018		1.1	J	PPM	MW-112A	5 / 14	0.37 - 0.37	1.1	--	1.7E+00	ca	NA	NA	No	BSL
	50-29-3	4,4'-DDT	0.029		0.35	J	PPM	SB-113C	6 / 13	0.063 - 0.063	0.35	--	1.7E+00	ca*	NA	NA	No	BSL
	319-85-7	beta-BHC	0.17		0.17		PPM	T-8_2	1 / 14	-	0.17	--	3.2E-01	ca	NA	NA	No	BSL
	60-57-1	Dieldrin	0.22		0.22		PPM	T-8_2	1 / 14	-	0.22	--	3.0E-02	ca	NA	NA	Yes	ASL
	53494-70-5	Endrin ketone	0.074		0.27		PPM	B-13	4 / 14	-	0.27	--	1.8E+00	nc	NA	NA	No	BSL
	76-44-8	Heptachlor	0.35	J	0.35	J	PPM	MW-112A	1 / 14	0.19 - 0.19	0.35	--	1.1E-01	ca	NA	NA	Yes	ASL
	72-43-5	Methoxychlor	0.017		1.3		PPM	B-13	5 / 14	-	1.3	--	3.1E+01	nc	NA	NA	No	BSL
	53469-21-9	Aroclor-1242	0.11		3.2		PPM	SS-04	10 / 51	0.0071 - 0.036	3.2	--	1.0E+00	nc	NA	NA	Yes	ASL
	11097-69-1	Aroclor-1254	0.014	J	0.702		PPM	TL14-09	10 / 51	0.0039 - 0.051	0.702	--	1.0E+00	nc	NA	NA	No	BSL
	11096-82-5	Aroclor-1260	0.0073	J	1.6		PPM	SB-09I	19 / 51	0.0035 - 0.036	1.6	--	1.0E+00	nc	NA	NA	Yes	ASL
	78-93-3	2-Butanone	0.009	J	0.015		PPM	MW-116B	2 / 45	0.005 - 0.005	0.015	--	2.2E+03	nc	NA	NA	No	FOD
	67-64-1	Acetone	0.015	J	1.6		PPM	B-12	9 / 45	0.007 - 0.012	1.6	--	1.4E+03	nc	NA	NA	No	BSL
	98-86-2	Acetophenone	0.245	J	2.8	J	PPM	SB-03C	6 / 36	0.12 - 1.6	2.8	--	1.0E+04	N (R3)	NA	NA	No	BSL
	71-43-2	Benzene	0.0007	J	33	J	PPM	SB-09I	37 / 53	0.0005 - 0.81	33	--	6.4E-01	ca*	NA	NA	Yes	ASL
	75-15-0	Carbon Disulfide	0.001	J	0.28	J	PPM	B-12	8 / 45	0.001 - 0.002	0.28	--	3.6E+01	nc	NA	NA	No	BSL
	67-66-3	Chloroform	0.003	J	0.003	J	PPM	SB-103DS	1 / 45	0.002 - 0.002	0.003	--	2.2E-01	ca	NA	NA	No	FOD
	110-82-7	Cyclohexane	0.003	J	0.003	J	PPM	SB-118B	1 / 36	0.002 - 0.002	0.003	--	1.4E+02	sat	NA	NA	No	FOD
	100-41-4	Ethylbenzene	0.003	J	100		PPM	SB-02B	33 / 53	0.001 - 6	100	--	1.9E+02	nc	NA	NA	No	BSL
	98-82-8	Isopropylbenzene	0.23	J	21.7		PPM	TL14-09	18 / 36	0.032 - 6	21.7	--	5.7E+01	nc	NA	NA	No	BSL
	79-20-9	Methyl Acetate	0.157	J	1.1		PPM	SB-103DS	7 / 36	0.098 - 0.24	1.1	--	2.2E+03	nc	NA	NA	No	BSL
	108-87-2	Methylcyclohexane	0.006	J	0.006	J	PPM	SB-118B	1 / 36	0.002 - 0.002	0.006	--	2.6E+02	nc	NA	NA	No	FOD
	100-42-5	Styrene	0.18	J	41.9		PPM	TL16-09	2 / 45	0.091 - 0.15	41.9	--	4.4E+02	nc	NA	NA	No	FOD
	127-18-4	Tetrachloroethene	0.006		0.52	J	PPM	SB-102B	4 / 45	0.001 - 0.17	0.52	--	4.8E-01	ca*	NA	NA	Yes	ASL
	108-88-3	Toluene	0.002	J	95		PPM	SB-02B	38 / 53	0.001 - 0.91	95	--	6.6E+01	nc	NA	NA	Yes	ASL
	79-01-6	Trichloroethene	0.005	J	0.54		PPM	B-8-90	3 / 53	0.001 - 0.001	0.54	--	5.3E-02	ca	NA	NA	Yes	ASL
	75-69-4	Trichlorofluoromethane	1.4		12		PPM	SB-102B	2 / 36	0.17 - 0.35	12	--	3.9E+01	nc	NA	NA	No	BSL
	XYLENES1314	m,p-Xylene	0.226	J	122		PPM	TL14-09	6 / 9	0.051 - 1.5	122	--	2.7E+01	nc	NA	NA	Yes	ASL
	108-38-3	m-Xylene	0.14		45		PPM	B-6-90	6 / 8	-	45	--	2.7E+01	nc	NA	NA	Yes	ASL
	95-47-6	o-Xylene	0.319		55		PPM	TL14-09	5 / 9	0.034 - 0.83	55	--	2.7E+01	nc	NA	NA	Yes	ASL
	XYLENES1214	p,o-Xylene	0.35		49		PPM	B-6-90	6 / 8	-	49	--	2.7E+01	nc	NA	NA	Yes	ASL
	1330-20-7	Xylene (Total)	0.001	J	230		PPM	SB-02B	36 / 44	0.001 - 6	230	--	2.7E+01	nc	NA	NA	Yes	ASL
	95-50-1	1,2-Dichlorobenzene	0.16	J	2.9		PPM	SB-102B	2 / 44	0.086 - 0.17	2.9	--	1.1E+02	nc	NA	NA	No	FOD
	105-67-9	2,4-Dimethylphenol	1.13	J	340		PPM	SB-03C	15 / 44	0.5 - 33	340	--	1.2E+02	nc	NA	NA	Yes	ASL
	121-14-2	2,4-Dinitrotoluene	13	J	24		PPM	SB-117B	4 / 44	3.9 - 13	24	--	1.2E+01	nc	NA	NA	Yes	ASL
	91-57-6	2-Methylnaphthalene	0.081	J	2500		PPM	MW-116B	44 / 44	0.028 - 220	2500	--	5.6E+00	nc	NA	NA	Yes	ASL
	95-48-7	2-Methylphenol	0.195	J	260		PPM	SB-03C	15 / 44	0.18 - 22	260	--	3.1E+02	nc	NA	NA	No	BSL
	34METPH	3&4-Methylphenol	0.755	J	8.84		PPM	TL16-07	4 / 8	0.28 - 0.32	8.84	--	3.1E+01	nc	NA	NA	No	BSL
	106-44-5	4-Methylphenol	2	J	630		PPM	SB-03C	12 / 36	0.18 - 60	630	--	3.1E+01	nc	NA	NA	Yes	ASL
	100-01-6	4-Nitroaniline	3.6		58		PPM	MW-116B	5 / 44	1.4 - 22	58	--	1.8E+01	nc	NA	NA	Yes	ASL
	83-32-9	Acenaphthene	0.049	J	2400		PPM	MW-116B	61 / 62	0.022 - 220	2400	--	3.7E+02	nc	NA	NA	Yes	ASL
	208-96-8	Acenaphthylene	0.0282	J	280		PPM	MW-112A	56 / 62	0.017 - 30	280	--	3.7E+02	nc	NA	NA	No	BSL
	120-12-7	Anthracene	0.29		1500	J	PPM	SB-03C	61 / 62	0.016 - 220	1500	--	2.2E+03	nc	NA	NA	No	BSL
	56-55-3	Benzo(a)anthracene	0.37		3700	J	PPM	SB-03C	62 / 62	0.021 - 220	3700	--	6.2E-01	ca	NA	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.29		3500	J	PPM	SB-03C	61 / 62	0.015 - 220	3500	--	6.2E-02	ca	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.46		4100	J	PPM	SB-03C	62 / 62	0.019 - 220	4100	--	6.2E-01	ca	NA	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.22	J	1900	J	PPM	SB-03C	61 / 62	0.023 - 220	1900	--	2.3E+02	nc	NA	NA	Yes	ASL
	207-08-9	Benzo(k)fluoranthene	0.19		2000	J	PPM	SB-03C	62 / 62	0.032 - 220	2000	--	6.2E+00	ca	NA	NA	Yes	ASL
	92-52-4	1,1'-Biphenyl	0.0359	J	590		PPM	MW-116B	32 / 36	0.021 - 30	590	--	3.0E+02	nc	NA	NA	Yes	ASL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.178		26	J	PPM	MW-116B	20 / 52	0.055 - 7.4	26	--	3.5E+01	ca*	NA	NA	No	BSL
	85-68-7	Butylbenzylphthalate	1.13	J	3.8	J	PPM	SB-09I	2 / 44	0.14 - 3.6	3.8	--	1.2E+03	nc	NA	NA	No	FOD
	105-60-2	Caprolactam	1.2	J	1.2	J	PPM	SB-102B	1 / 36	0.36 - 0.36	1.2	--	3.1E+03	nc	NA	NA	No	FOD
	86-74-8	Carbazole	0.081	J	1200		PPM	SB-03C	44 / 44	0.017 - 30	1200	--	2.4E+01	ca	NA	NA	Yes	ASL
	218-01-9	Chrysene	0.45		4200	J	PPM	SB-03C	62 / 62	0.016 - 220	4200	--	6.2E+01	ca	NA	NA	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	0.063		510		PPM	SB-03C	60 / 62	0.022 - 11	510	--	6.2E-02	ca	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	0.052	J	1900		PPM	MW-116B	44 / 44	0.02 - 130	1900	--	1.5E+01	nc	NA	NA	Yes	ASL
	206-44-0	Fluoranthene	0.82		10000	J	PPM	SB-03C	62 / 62	0.015 - 220	10000	--	2.3E+02	nc	NA	NA	Yes	ASL
	86-73-7	Fluorene	0.066	J	2000		PPM	MW-116B	60 / 62	0.017 - 220	2000	--	2.7E+02	nc	NA	NA	Yes	ASL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.22		1700	J	PPM	SB-03C	60 / 62	0.027 - 220	1700	--	6.2E-01	ca	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.16	J	10000	J	PPM	SB-03C	61 / 62	0.024 - 220	10000	--	5.6E+00	nc	NA	NA	Yes	ASL
	85-01-8	Phenanthrene	0.72		11000	J	PPM	SB-03C	62 / 62	0.019 - 220	11000	--	2.2E+03	nc	NA	NA	Yes	ASL
	108-95-2	Phenol	0.085	J	460		PPM	SB-03C	20 / 44	0.041 - 30	460	--	1.8E+03	nc	NA	NA	No	BSL
	129-00-0	Pyrene	0.78		8700	J	PPM	SB-03C	62 / 62	0.015 - 220	8700	--	2.3E+02	nc	NA	NA	Yes	ASL

(1) Maximum concentration is used for screening except for lead. Average concentration is used for screening for lead.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Residential Soil; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)
Frequency of Detection (FOD)

Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Chromium (Vi) was used as a surrogate for Chromium
Endrin was used as a surrogate for Endrin ketone
Mercury (methyl) was used as a surrogate for Mercury
4-Methylphenol was used as a surrogate for 3&4-Methylphenol
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Pyrene was used as a surrogate for Benzo(g,h,i)perylene
Xylenes (total) was used as a surrogate for m,p-Xylene, m-Xylene, o-Xylene, and p,o-Xylene
The residential/commercial soil screening criterion for PCB (1 ppm) was used for aroclor 1242, 1254, and 1260 (see text)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered
J = Estimated Value
ca = Carcinogenic
nc = Noncarcinogenic
N(R3) = EPA Region 3 Preliminary Remediation Goals (PRGs) adjusted using HQ=0.1
sat = Soil saturation
NA = Not available

Table 2.3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Qualifier	Maximum Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Quanta Resources	7440-38-2	Arsenic	0.98	J	28800		PPB	MW-112B	35 / 43	0.33 - 132	28800	--	4.5E-02	ca	3	NJ GWSL	Yes	ASL
	22569-72-8	Arsenic (III)	15500		15500		PPB	MW-113B	1 / 1	4800 - 4800	15500	--	4.5E-02	ca	NA		Yes	ASL
	17428-41-0	Arsenic (V)	9500		9500		PPB	MW-113B	1 / 1	1260 - 1260	9500	--	4.5E-02	ca	NA		Yes	ASL
	7439-89-6	Iron	193000		193000		PPB	MW-113B	1 / 1	25 - 25	193000	--	1.1E+03	nc	300	NJ GWSL	Yes	ASL
	7439-92-1	Lead	0.18	J	50.2		PPB	MW-112A	35 / 42	0.047 - 0.18	50.2	--	1.5E+01	MCL	5	NJ GWSL	Yes	ASL
	72-54-8	4,4'-DDD	0.012	J	0.17		PPB	MW-103	5 / 24	0.0057 - 0.029	0.17	--	2.8E-01	ca	0.1	NJ GWSL	No	BSL
	72-55-9	4,4'-DDE	0.0052	J	0.13	J	PPB	MW-103	12 / 24	0.0038 - 0.02	0.13	--	2.0E-01	ca	0.1	NJ GWSL	No	BSL
	50-29-3	4,4'-DDT	0.0065	J	0.034	J	PPB	MW-117B	4 / 24	0.0057 - 0.0057	0.034	--	2.0E-01	ca*	0.1	NJ GWSL	No	BSL
	309-00-2	Aldrin	0.032	J	0.032	J	PPB	MW-117B	1 / 24	0.0047 - 0.0047	0.032	--	4.0E-03	ca	0.04	NJ GWSL	No	FOD
	319-84-6	alpha-BHC	0.045	J	0.048	J	PPB	MW-117B	3 / 24	0.0019 - 0.0095	0.048	--	1.1E-02	ca	0.02	NJ GWSL	Yes	ASL
	5103-71-9	alpha-Chlordane	0.0024	J	0.014	J	PPB	MW-112B	4 / 24	0.0019 - 0.0095	0.014	--	1.9E-01	ca*	NA		No	BSL
	319-86-8	delta-BHC	0.0065	J	0.1		PPB	MW-117A	8 / 24	0.0036 - 0.019	0.1	--	3.7E-02	ca	NA		Yes	ASL
	959-98-8	Endosulfan I	0.0035	J	0.14	J	PPB	MW-112A	9 / 24	0.0019 - 0.096	0.14	--	2.2E+01	nc	40	NJ GWSL	No	BSL
	33213-65-9	Endosulfan II	0.0071	J	0.0071	J	PPB	MW-103A	1 / 24	0.0038 - 0.0038	0.0071	--	2.2E+01	nc	40	NJ GWSL	No	FOD
	1031-07-8	Endosulfan sulfate	0.0084	J	0.02	J	PPB	MW-112B	2 / 24	0.0057 - 0.0057	0.02	--	2.2E+01	nc	40	NJ GWSL	No	BSL
	72-20-8	Endrin	0.0066	J	0.51	J	PPB	MW-112A	7 / 24	0.0038 - 0.19	0.51	--	1.1E+00	nc	2	NJ GWSL	No	BSL
	58-89-9	gamma-BHC (Lindane)	0.0025	J	0.011	J	PPB	MW-117B	2 / 24	0.002 - 0.0095	0.011	--	5.2E-02	ca	0.03	NJ GWSL	No	BSL
	76-44-8	Heptachlor	0.0021	J	0.016	J	PPB	MW-117B	6 / 24	0.0019 - 0.0095	0.016	--	1.5E-02	ca	0.05	NJ GWSL	Yes	ASL
	1024-57-3	Heptachlor epoxide	0.0024	J	0.0037	J	PPB	MW-117B	2 / 24	0.0019 - 0.0019	0.0037	--	7.4E-03	ca*	0.2	NJ GWSL	No	BSL
	72-43-5	Methoxychlor	0.16	J	0.16	J	PPB	MW-103	1 / 24	0.029 - 0.029	0.16	--	1.8E+01	nc	40	NJ GWSL	No	FOD
	75-34-3	1,1-Dichloroethane	0.1	J	5.1	J	PPB	MW-103	2 / 42	0.1 - 5	5.1	--	8.1E+01	nc	50	NJ GWSL	No	FOD
	78-93-3	2-Butanone (MEK)	1.4	J	61	J	PPB	MW-112A	3 / 42	1 - 50	61	--	7.0E+02	nc	300	NJ GWSL	No	BSL
	67-64-1	Acetone	2.9	J	470	J	PPB	MW-112A	5 / 42	2.4 - 150	470	--	5.5E+02	nc	6000	NJ GWSL	No	BSL
	71-43-2	Benzene	0.4	J	11000		PPB	MW-102	39 / 42	0.1 - 100	11000	--	3.5E-01	ca	1	NJ GWSL	Yes	ASL
	75-15-0	Carbon disulfide	0.1	J	33	J	PPB	MW-102A	13 / 42	0.1 - 20	33	--	1.0E+02	nc	700	NJ GWSL	No	BSL
	75-00-3	Chloroethane	1.6	J	1.6	J	PPB	MW-113A	1 / 42	1 - 1	1.6	--	4.6E+00	ca	NA		No	FOD
	74-87-3	Chloromethane	0.2	J	21	J	PPB	MW-102	8 / 42	0.1 - 20	21	--	1.6E+01	nc	NA		Yes	ASL
	110-82-7	Cyclohexane	0.3	J	0.4	J	PPB	MW-113B	2 / 42	0.0001 - 0.1	0.4	--	1.0E+03	nc	NA		No	FOD
	100-41-4	Ethylbenzene	0.5	J	1300		PPB	MW-103	38 / 42	0.1 - 20	1300	--	1.3E+02	nc	700	NJ GWSL	Yes	ASL
	98-82-8	Isopropylbenzene (Cumene)	0.1	J	141		PPB	MW-103A	35 / 42	0.1 - 20	141	--	6.6E+01	nc	700	NJ GWSL	Yes	ASL
	100-42-5	Styrene	460	J	480	J	PPB	MW-103	2 / 42	10 - 20	480	--	1.6E+02	nc	100	NJ GWSL	No	FOD
	108-88-3	Toluene	0.3	J	4400		PPB	MW-102	38 / 42	0.1 - 100	4400	--	7.2E+01	nc	1000	NJ GWSL	Yes	ASL
	79-01-6	Trichloroethene	0.1	J	0.1	J	PPB	MW-113B	1 / 42	0.1 - 0.1	0.1	--	2.8E-02	ca	1	NJ GWSL	No	FOD
	XYLENES1314	m,p-Xylene	1		1210		PPB	MW-103A	4 / 5	0.42 - 4.2	1210	--	2.1E+01	nc	NA		Yes	ASL
	95-47-6	o-Xylene	1.2		704		PPB	MW-103A	4 / 5	0.31 - 3.1	704	--	2.1E+01	nc	NA		Yes	ASL
	1330-20-7	Xylene (Total)	1.6		3900		PPB	MW-103	38 / 42	0.1 - 20	3900	--	2.1E+01	nc	1000	NJ GWSL	Yes	ASL
	120-82-1	1,2,4-Trichlorobenzene	13	J	13	J	PPB	MW-103A	1 / 42	10 - 10	13	--	7.2E-01	nc	9	NJ GWSL	No	FOD
	95-50-1	1,2-Dichlorobenzene	0.2	J	1.1	J	PPB	MW-105A	3 / 42	0.1 - 1	1.1	--	3.7E+01	nc	600	NJ GWSL	No	BSL
	106-46-7	1,4-Dichlorobenzene	0.9		1.4		PPB	MW-113B	3 / 42	0.1 - 0.5	1.4	--	5.0E-01	ca	75	NJ GWSL	Yes	ASL
	105-67-9	2,4-Dimethylphenol	3	J	7400		PPB	MW-102A	30 / 42	3 - 710	7400	--	7.3E+01	nc	100	NJ GWSL	Yes	ASL
	91-57-6	2-Methylnaphthalene	1.5	J	8400		PPB	MW-116B	38 / 42	0.41 - 240	8400	--	6.2E-01	nc	NA		Yes	ASL
	95-48-7	2-Methylphenol	1	J	4200		PPB	MW-102A	31 / 42	0.9 - 190	4200	--	1.8E+02	nc	NA		Yes	ASL
	34METPH	3&4-Methylphenol	45.6		64.1		PPB	MW-117B	2 / 5	1.3 - 1.4	64.1	--	1.8E+01	nc	NA		Yes	ASL
	106-44-5	4-Methylphenol	3	J	5800		PPB	MW-102A	23 / 37	2 - 380	5800	--	1.8E+01	nc	NA		Yes	ASL
	83-32-9	Acenaphthene	2.48		3300		PPB	MW-116B	42 / 42	0.017 - 100	3300	--	3.7E+01	nc	400	NJ GWSL	Yes	ASL
	208-96-8	Acenaphthylene	1	J	550		PPB	MW-116B	31 / 42	0.0095 - 10	550	--	3.7E+01	nc	NA		Yes	ASL
	120-12-7	Anthracene	0.902		1600		PPB	MW-116B	41 / 42	0.021 - 100	1600	--	1.8E+02	nc	2000	NJ GWSL	Yes	ASL
	56-55-3	Benzo(a)anthracene	0.306		1100		PPB	MW-116B	23 / 42	0.0068 - 10	1100	--	9.2E-02	ca	0.1	NJ GWSL	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.292		800		PPB	MW-116B	11 / 42	0.017 - 10	800	--	9.2E-03	ca	0.1	NJ GWSL	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.229		920		PPB	MW-116B	15 / 42	0.036 - 10	920	--	9.2E-02	ca	0.2	NJ GWSL	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.752		420		PPB	MW-116B	7 / 42	0.018 - 10	420	--	1.8E+01	nc	NA		Yes	ASL
	207-08-9	Benzo(k)fluoranthene	0.314		450		PPB	MW-116B	7 / 42	0.016 - 10	450	--	9.2E-01	ca	0.5	NJ GWSL	Yes	ASL
	92-52-4	1,1'-Biphenyl	1	J	1100		PPB	MW-116B	34 / 42	0.33 - 10	1100	--	3.0E+01	nc	400	NJ GWSL	Yes	ASL
	105-60-2	Caprolactam	35		35		PPB	MW-113B	1 / 42	5 - 5	35	--	1.8E+03	nc	NA		No	FOD
	86-74-8	Carbazole	2.8		790		PPB	MW-116B	39 / 42	0.36 - 190	790	--	3.4E+00	ca	NA		Yes	ASL
	218-01-9	Chrysene	0.243	J	1000		PPB	MW-116B	20 / 42	0.017 - 10	1000	--	9.2E+00	ca	5	NJ GWSL	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	0.6		41	J	PPB	MW-112A	4 / 42	0.016 - 10	41	--	9.2E-03	ca	0.3	NJ GWSL	Yes	ASL
	132-64-9	Dibenzofuran	1.6	J	2200		PPB	MW-116B	39 / 42	0.34 - 100	2200	--	1.2E+00	nc	NA		Yes	ASL
	206-44-0	Fluoranthene	2	J	3400		PPB	MW-116B	40 / 42	0.009 - 100	3400	--	1.5E+02	nc	300	NJ GWSL	Yes	ASL
	86-73-7	Fluorene	0.617		2800		PPB	MW-116B	40 / 42	0.02 - 100	2800	--	2.4E+01	nc	300	NJ GWSL	Yes	ASL
	193-39-5	Indeno(1,2,3-c,d)pyrene	0.736		390		PPB	MW-116B	7 / 42	0.011 - 10	390	--	9.2E-02	ca	0.2	NJ GWSL	Yes	ASL
	91-20-3	Naphthalene	0.943		36000		PPB	MW-116B	40 / 42	0.026 - 500	36000	--	6.2E-01	nc	300	NJ GWSL	Yes	ASL
	85-01-8	Phenanthrene	4	J	8300		PPB	MW-116B	39 / 42	0.021 - 100	8300	--	1.8E+02	nc	NA		Yes	ASL
	108-95-2	Phenol	2	J	3100		PPB	MW-102A	18 / 42	0.5 - 190	3100	--	1.1E+03	nc	2000	NJ GWSL	Yes	ASL
	129-00-0	Pyrene	1	J	2800		PPB	MW-116B	40 / 42	0.014 - 100	2800	--	1.8E+01	nc	200	NJ GWSL	Yes	ASL

(1) Maximum concentration is used for screening.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Tap Water; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Frequency of Detection (FOD)

Arsenic III and Arsenic IV data are included for informational purposes only and are not carried through the risk calculations
4-Methylphenol was used as a surrogate for 3&4-methylphenol.
Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Arsenic was used as a surrogate for Arsenic (III) and Arsenic (V)
Chlordane (technical) was used as a surrogate for alpha-Chlordane
Endosulfan was used as a surrogate for Endosulfan I, Endosulfan II, Endosulfan Sulfate
HCH-technical was used as a surrogate for delta-BHC
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Pyrene was used as a surrogate for Benzo(ghi)perylene
Xylenes, total was used for o-Xylene, and m,p-Xylene

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
MCL = Maximum Contaminant Level
nc = Noncarcinogenic
ca = Carcinogenic
NA = Not available

Table 2.4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration Qualifier	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Edgewater	7429-90-5	Aluminum	9340	19100	PPM	SB-X18	29 / 29	11 - 116	19100	--	7.6E+03	nc	NA	NA	Yes	ASL
	7440-36-0	Antimony	1.05	1.51	PPM	SB-X18	29 / 29	1.05 - 1.51	1.51	--	3.1E+00	nc	NA	NA	No	BSL
	7440-38-2	Arsenic	1.82	54.2	PPM	SB-W15	29 / 29	1.05 - 1.51	54.2	--	3.9E-01	ca*	NA	NA	Yes	ASL
	7440-39-3	Barium	24.2	167	PPM	SB-T21	29 / 29	10.5 - 15.1	167	--	5.4E+02	nc	NA	NA	No	BSL
	7440-41-7	Beryllium	0.525	1.01	PPM	SB-X18	29 / 29	0.525 - 0.756	1.01	--	1.5E+01	nc	NA	NA	No	BSL
	7440-43-9	Cadmium	0.263	1.49	PPM	SB-X18	29 / 29	0.263 - 0.378	1.49	--	3.7E+00	nc	NA	NA	No	BSL
	7440-70-2	Calcium	1540	29500	PPM	SB-T15	29 / 29	52.5 - 602	29500	--	NA	--	NA	NA	No	NUT
	7440-47-3	Chromium	11.9	153	PPM	SB-X18	29 / 29	2.1 - 3.02	153	--	2.2E+01	nc	NA	NA	Yes	ASL
	7440-48-4	Cobalt	7.09	20.9	PPM	SB-V21	29 / 29	2.1 - 3.02	20.9	--	1.4E+02	nc	NA	NA	No	BSL
	7440-50-8	Copper	19.2	163	PPM	SB-X18	29 / 29	2.1 - 3.02	163	--	3.1E+02	nc	NA	NA	No	BSL
	7439-89-6	Iron	15300	38100	PPM	SB-X18	29 / 29	26.3 - 37.8	38100	--	2.3E+03	nc	NA	NA	Yes	ASL
	7439-92-1	Lead	15.6	951	PPM	SB-W11	29 / 29	0.525 - 0.756	162	--	4.0E+02	nc	NA	NA	No	BSL
	7439-95-4	Magnesium	3330	12800	PPM	SB-V21	29 / 29	52.5 - 75.6	12800	--	NA	--	NA	NA	No	NUT
	7439-96-5	Manganese	200	582	PPM	SB-X18	29 / 29	5.25 - 7.56	582	--	1.8E+02	nc	NA	NA	Yes	ASL
	7440-02-0	Nickel	13.6	38.4	PPM	S28	29 / 29	1.05 - 1.51	38.4	--	1.6E+02	nc	NA	NA	No	BSL
	7440-09-7	Potassium	932	7560	PPM	SB-T21	29 / 29	52.5 - 75.6	7560	--	NA	--	NA	NA	No	NUT
	7782-49-2	Selenium	2.1	3.02	PPM	SB-X18	29 / 29	2.1 - 3.02	3.02	--	3.9E+01	nc	NA	NA	No	BSL
	7440-22-4	Silver	0.55	6.08	PPM	SB-X18	29 / 29	0.525 - 0.756	6.08	--	3.9E+01	nc	NA	NA	No	BSL
	7440-23-5	Sodium	110	1080	PPM	S26	29 / 29	105 - 151	1080	--	NA	--	NA	NA	No	NUT
	7440-28-0	Thallium	0.121	1.37	PPM	SB-X12	29 / 29	0.105 - 0.151	1.37	--	5.2E-01	nc	NA	NA	Yes	ASL
	7440-62-2	Vanadium	24.1	57.3	PPM	SB-X11	29 / 29	2.1 - 3.02	57.3	--	7.8E+00	nc	NA	NA	Yes	ASL
	7440-66-6	Zinc	38.4	349	PPM	SB-V21	29 / 29	2.1 - 3.02	349	--	2.3E+03	nc	NA	NA	No	BSL
	7439-97-6	Mercury	0.02	2.64	PPM	SB-X18	29 / 29	0.013 - 0.189	2.64	--	6.1E-01	nc	NA	NA	Yes	ASL
	72-54-8	4,4'-DDD	0.00451	0.011	PPM	SB-T24	2 / 29	0.00446 - 0.00449	0.011	--	2.4E+00	ca	NA	NA	No	BSL
	72-55-9	4,4'-DDE	0.00845	0.00845	PPM	SB-X12	1 / 29	0.00401 - 0.00401	0.00845	--	1.7E+00	ca	NA	NA	No	FOD
	57-74-9	Chlordane (technical)	0.00433	0.018	PPM	SB-T26	3 / 29	0.00401 - 0.00415	0.018	--	1.6E+00	ca*	NA	NA	No	BSL
	33213-65-9	Endosulfan II	0.00996	0.00996	PPM	SB-T24	1 / 29	0.00449 - 0.00449	0.00996	--	3.7E+01	nc	NA	NA	No	FOD
	5103-74-2	gamma-Chlordane	0.011	0.017	PPM	SB-T26	2 / 29	0.00403 - 0.00415	0.017	--	1.6E+00	ca*	NA	NA	No	BSL
	53469-21-9	Aroclor-1242	0.637	0.637	PPM	SB-X18	1 / 29	0.023 - 0.023	0.637	--	1.0E+00	nc	NA	NA	No	FOD
	11097-69-1	Aroclor-1254	0.045	0.348	PPM	SB-W26	4 / 29	0.014 - 0.018	0.348	--	1.0E+00	nc	NA	NA	No	BSL
	11096-82-5	Aroclor-1260	0.029	0.621	PPM	SB-X11	15 / 29	0.015 - 0.018	0.621	--	1.0E+00	nc	NA	NA	No	BSL
	100-41-4	Ethylbenzene	0.756	0.756	PPM	SB-W21	1 / 18	0.579 - 0.579	0.756	--	1.9E+02	nc	NA	NA	No	BSL
	79-20-9	Methyl Acetate	1.64	1.74	PPM	SB-W26	2 / 29	0.437 - 0.62	1.74	--	2.2E+03	nc	NA	NA	No	BSL
	127-18-4	Tetrachloroethene	0.459	0.459	PPM	SB-X11	1 / 29	0.777 - 0.777	0.459	--	4.8E-01	ca*	NA	NA	No	FOD
	1330-20-7	Xylene (Total)	0.13	1.79	PPM	SB-W21	3 / 29	0.437 - 0.777	1.79	--	2.7E+01	nc	NA	NA	No	BSL
	91-57-6	2-Methylnaphthalene	0.08	2.48	PPM	SB-W21	14 / 29	0.105 - 0.249	2.48	--	5.6E+00	nc	NA	NA	No	BSL
	83-32-9	Acenaphthene	0.085	3.36	PPM	SB-T18	21 / 29	0.102 - 0.249	3.36	--	3.7E+02	nc	NA	NA	No	BSL
	208-96-8	Acenaphthylene	0.076	0.705	PPM	SB-W15	12 / 29	0.105 - 0.121	0.705	--	3.7E+02	nc	NA	NA	No	BSL
	120-12-7	Anthracene	0.124	4.59	PPM	SB-T18	24 / 29	0.102 - 0.249	4.59	--	2.2E+03	nc	NA	NA	No	BSL
	56-55-3	Benzo(a)anthracene	0.063	10.4	PPM	SB-T18	28 / 29	0.102 - 0.249	10.4	--	6.2E-01	ca	NA	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.083	8.89	PPM	SB-T18	26 / 29	0.102 - 0.249	8.89	--	6.2E-02	ca	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.206	9.62	PPM	SB-X12	25 / 29	0.102 - 0.249	9.62	--	6.2E-01	ca	NA	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.136	5.71	PPM	SB-X12	25 / 29	0.102 - 0.249	5.71	--	2.3E+02	nc	NA	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	0.071	5.88	PPM	SB-T18	26 / 29	0.102 - 0.249	5.88	--	6.2E+00	ca	NA	NA	No	BSL
	92-52-4	1,1'-Biphenyl	0.145	0.621	PPM	SB-W21	5 / 29	0.109 - 0.249	0.621	--	3.0E+02	nc	NA	NA	No	BSL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.083	1.13	PPM	SB-T26	26 / 29	0.102 - 0.249	1.13	--	3.5E+01	ca*	NA	NA	No	BSL
	85-68-7	Butylbenzylphthalate	0.066	1.23	PPM	SB-X11	7 / 29	0.105 - 0.121	1.23	--	1.2E+03	nc	NA	NA	No	BSL
	86-74-8	Carbazole	0.084	2.32	PPM	SB-T18	19 / 29	0.104 - 0.249	2.32	--	2.4E+01	ca	NA	NA	No	BSL
	218-01-9	Chrysene	0.102	10.4	PPM	SB-T18	27 / 29	0.102 - 0.249	10.4	--	6.2E+01	ca	NA	NA	No	BSL
	53-70-3	Dibenzo(a,h)anthracene	0.069	2.17	PPM	SB-T18	23 / 29	0.104 - 0.249	2.17	--	6.2E-02	ca	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	0.131	1.85	PPM	SB-W21	15 / 29	0.105 - 0.249	1.85	--	1.5E+01	nc	NA	NA	No	BSL
	84-74-2	Di-n-butylphthalate	0.064	0.319	PPM	SB-W24	3 / 29	0.104 - 0.118	0.319	--	6.1E+02	nc	NA	NA	No	BSL
	206-44-0	Fluoranthene	0.104	20.8	PPM	SB-T18	28 / 29	0.102 - 0.249	20.8	--	2.3E+02	nc	NA	NA	No	BSL
	86-73-7	Fluorene	0.076	2.49	PPM	SB-T18	20 / 29	0.102 - 0.249	2.49	--	2.7E+02	nc	NA	NA	No	BSL
	193-39-5	Indeno(1,2,3-c,d)pyrene	0.123	5.07	PPM	SB-X12	25 / 29	0.102 - 0.249	5.07	--	6.2E-01	ca	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.08	14.5	PPM	SB-W21	19 / 29	0.104 - 0.249	14.5	--	5.6E+00	nc	NA	NA	Yes	ASL
	85-01-8	Phenanthrene	0.064	19.3	PPM	SB-T18	28 / 29	0.102 - 0.249	19.3	--	2.2E+03	nc	NA	NA	No	BSL
	129-00-0	Pyrene	0.098	18	PPM	SB-T18	28 / 29	0.102 - 0.249	18	--	2.3E+02	nc	NA	NA	No	BSL

(1) Maximum concentration is used for screening except for lead. Average concentration is used for screening for lead.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Residential Soil; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)
Frequency of Detection (FOD)

Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Chlordane (technical) was used as a surrogate for gamma-Chlordane
Chromium (VI) was used as a surrogate for Chromium
Endosulfan was used as a surrogate for Endosulfan II.
Mercury (methyl) was used as a surrogate for Mercury
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Pyrene was used as a surrogate for Benzo(ghi)perylene
The residential/commercial soil screening criterion for PCBs (1 ppm) was used for aroclor 1242, 1254, and 1260 (see text)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available

Table 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration Qualifier	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Edgewater	7429-90-5	Aluminum	468	19100	PPM	SB-X18	55 / 55	10.7 - 116	19100	--	7.6E+03	nc	NA	NA	Yes	ASL
	7440-36-0	Antimony	1.05	135	PPM	SB-W10	55 / 55	1.05 - 1.51	135	--	3.1E+00	nc	NA	NA	Yes	ASL
	7440-38-2	Arsenic	1.82	5700	PPM	P-6	55 / 55	1.05 - 1.51	5700	--	3.9E-01	ca*	NA	NA	Yes	ASL
	7440-39-3	Barium	11.8	721	PPM	P-1	55 / 55	10.5 - 15.1	721	--	5.4E+02	nc	NA	NA	Yes	ASL
	7440-41-7	Beryllium	0.525	1.01	PPM	SB-X18	55 / 55	0.525 - 0.756	1.01	--	1.5E+01	nc	NA	NA	No	BSL
	7440-43-9	Cadmium	0.263	12	PPM	SB-W10	55 / 55	0.263 - 0.378	12	--	3.7E+00	nc	NA	NA	Yes	ASL
	7440-70-2	Calcium	197	40900	PPM	SB-Y13	55 / 55	52.5 - 602	40900	--	NA	--	NA	NA	No	NUT
	7440-47-3	Chromium	3.39	153	PPM	SB-X18	55 / 55	2.1 - 3.02	153	--	2.2E+01	nc	NA	NA	Yes	ASL
	7440-48-4	Cobalt	2.35	67.2	PPM	SB-W10	55 / 55	2.1 - 3.02	67.2	--	1.4E+02	nc	NA	NA	No	BSL
	7440-50-8	Copper	13.6	4540	PPM	SB-W10	55 / 55	2.1 - 3.02	4540	--	3.1E+02	nc	NA	NA	Yes	ASL
	7439-89-6	Iron	1100	274000	PPM	SB-W11	55 / 55	26.3 - 325	274000	--	2.3E+03	nc	NA	NA	Yes	ASL
	7439-92-1	Lead	5.02	12000	PPM	P-7	55 / 55	0.525 - 12.2	908	--	4.0E+02	nc	NA	NA	Yes	ASL
	7439-95-4	Magnesium	78	12800	PPM	SB-V21	55 / 55	52.5 - 75.6	12800	--	NA	--	NA	NA	No	NUT
	7439-96-5	Manganese	14.3	702	PPM	SB-X13	55 / 55	5.25 - 7.56	702	--	1.8E+02	nc	NA	NA	Yes	ASL
	7440-02-0	Nickel	1.18	38.4	PPM	S28	55 / 55	1.05 - 1.51	38.4	--	1.6E+02	nc	NA	NA	No	BSL
	7440-09-7	Potassium	336	7560	PPM	SB-T21	55 / 55	52.5 - 75.6	7560	--	NA	--	NA	NA	No	NUT
	7782-49-2	Selenium	2.1	168	PPM	P-7	55 / 55	2.1 - 3.02	168	--	3.9E+01	nc	NA	NA	Yes	ASL
	7440-22-4	Silver	0.533	41.7	PPM	SB-W10	55 / 55	0.525 - 0.756	41.7	--	3.9E+01	nc	NA	NA	Yes	ASL
	7440-23-5	Sodium	110	1550	PPM	SB-W12	55 / 55	105 - 151	1550	--	NA	--	NA	NA	No	NUT
	7440-28-0	Thallium	0.118	38.7	PPM	SB-W11	55 / 55	0.105 - 1.3	38.7	--	5.2E-01	nc	NA	NA	Yes	ASL
	7440-62-2	Vanadium	5.34	69.3	PPM	SB-V24	55 / 55	2.1 - 3.02	69.3	--	7.8E+00	nc	NA	NA	Yes	ASL
	7440-66-6	Zinc	11.7	4300	PPM	SB-W10	55 / 55	2.1 - 3.02	4300	--	2.3E+03	nc	NA	NA	Yes	ASL
	7439-97-6	Mercury	0.02	316	PPM	P-7	55 / 55	0.013 - 18.3	316	--	6.1E-01	nc	NA	NA	Yes	ASL
	72-54-8	4,4'-DDD	0.00451	0.011	PPM	SB-T24	3 / 54	0.00436 - 0.00449	0.011	--	2.4E+00	ca	NA	NA	No	BSL
	72-55-9	4,4'-DDE	0.00845	0.00845	PPM	SB-X12	1 / 54	0.00401 - 0.00401	0.00845	--	1.7E+00	ca	NA	NA	No	FOD
	319-84-6	alpha-BHC	0.0061	0.0061	PPM	SB-W10	1 / 54	0.0042 - 0.0042	0.0061	--	9.0E-02	ca	NA	NA	No	FOD
	57-74-9	Chlordane (technical)	0.00433	0.032	PPM	SB-X12	6 / 54	0.00401 - 0.00471	0.032	--	1.6E+00	ca*	NA	NA	No	BSL
	60-57-1	Dieldrin	0.023	0.023	PPM	P-9	1 / 54	0.00459 - 0.00459	0.023	--	3.0E-02	ca	NA	NA	No	FOD
	33213-65-9	Endosulfan II	0.00996	0.00996	PPM	SB-T24	1 / 54	0.00449 - 0.00449	0.00996	--	3.7E+01	nc	NA	NA	No	FOD
	5103-74-2	gamma-Chlordane	0.011	0.033	PPM	P-9	3 / 54	0.00403 - 0.00459	0.033	--	1.6E+00	ca*	NA	NA	No	BSL
	53469-21-9	Aroclor-1242	0.637	0.637	PPM	SB-X18	1 / 54	0.023 - 0.023	0.637	--	1.0E+00	nc	NA	NA	No	FOD
	11097-69-1	Aroclor-1254	0.045	1.54	PPM	SB-X12	5 / 54	0.014 - 0.018	1.54	--	1.0E+00	nc	NA	NA	Yes	ASL
	11096-82-5	Aroclor-1260	0.029	0.621	PPM	SB-X11	18 / 54	0.015 - 0.018	0.621	--	1.0E+00	nc	NA	NA	No	BSL
	95-63-6	1,2,4-Trimethylbenzene	1.83	37.5	PPM	SB-X13	2 / 14	0.657 - 0.721	37.5	--	5.2E+00	nc	NA	NA	Yes	ASL
	95-49-8	2-Chlorotoluene	2.1	34.4	PPM	SB-X13	2 / 14	0.657 - 0.721	34.4	--	1.6E+01	nc	NA	NA	Yes	ASL
	71-43-2	Benzene	0.15	8.53	PPM	SB-V21	9 / 56	0.328 - 1.34	8.53	--	6.4E-01	ca*	NA	NA	Yes	ASL
	108-90-7	Chlorobenzene	0.18	0.4	PPM	SS-13D	2 / 56	-	0.4	--	1.5E+01	nc	NA	NA	No	FOD
	156-59-2	cis-1,2-Dichloroethene	0.29	0.29	PPM	SS-13D	2 / 56	-	0.29	--	4.3E+00	nc	NA	NA	No	FOD
	100-41-4	Ethylbenzene	0.248	82.4	PPM	SB-V24	13 / 42	0.579 - 2.68	82.4	--	1.9E+02	nc	NA	NA	No	BSL
	98-82-8	Isopropylbenzene (Cumene)	0.25	10.3	PPM	SB-V24	10 / 54	0.621 - 2.68	10.3	--	5.7E+01	nc	NA	NA	No	BSL
	79-20-9	Methyl Acetate	0.792	1.74	PPM	SB-W26	4 / 54	0.437 - 0.758	1.74	--	2.2E+03	nc	NA	NA	No	BSL
	108-87-2	Methylcyclohexane	0.952	46.7	PPM	SB-V24	4 / 54	0.621 - 0.899	46.7	--	2.6E+02	nc	NA	NA	No	BSL
	75-09-2	Methylene chloride	0.22 J	0.53 J	PPM	SS-13D	2 / 56	-	0.53	--	9.1E+00	ca	NA	NA	No	FOD
	100-42-5	Styrene	0.402	1.57	PPM	SB-X10	2 / 56	0.655 - 0.751	1.57	--	4.4E+02	nc	NA	NA	No	FOD
	127-18-4	Tetrachloroethene	0.459	1.1	PPM	SS-13D	3 / 56	0.777 - 0.777	1.1	--	4.8E-01	ca*	NA	NA	Yes	ASL
	108-88-3	Toluene	0.23	23.3	PPM	SB-X12	11 / 42	0.621 - 2.68	23.3	--	6.6E+01	nc	NA	NA	No	BSL
	79-01-6	Trichloroethene	0.15	0.18	PPM	SS-13D	2 / 56	-	0.18	--	5.3E-02	ca	NA	NA	No	FOD
	XYLENES1314	m,p-Xylene	0.38	5.1	PPM	SS-13D	2 / 2	-	5.1	--	2.7E+01	nc	NA	NA	No	BSL
	95-47-6	o-Xylene	0.31	3	PPM	SS-13D	2 / 2	-	3	--	2.7E+01	nc	NA	NA	No	BSL
	1330-20-7	Xylene (Total)	0.13	213	PPM	SB-V24	18 / 56	0.437 - 2.68	213	--	2.7E+01	nc	NA	NA	Yes	ASL
	91-57-6	2-Methylnaphthalene	0.08	578	PPM	SB-X12	31 / 56	0.105 - 9.95	578	--	5.6E+00	nc	NA	NA	Yes	ASL
	83-32-9	Acenaphthene	0.075	557	PPM	SB-X12	42 / 58	0.102 - 9.95	557	--	3.7E+02	nc	NA	NA	Yes	ASL
	208-96-8	Acenaphthylene	0.045	77.7	PPM	SB-X13	23 / 58	0.105 - 8.61	77.7	--	3.7E+02	nc	NA	NA	No	BSL
	120-12-7	Anthracene	0.08	172	PPM	SB-X12	48 / 58	0.102 - 9.95	172	--	2.2E+03	nc	NA	NA	No	BSL
	56-55-3	Benzo(a)anthracene	0.063	241	PPM	SB-W21	56 / 58	0.102 - 9.95	241	--	6.2E-01	ca	NA	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.083	145	PPM	SB-W21	54 / 58	0.102 - 9.95	145	--	6.2E-02	ca	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.091	150	PPM	SB-W21	53 / 58	0.102 - 9.95	150	--	6.2E-01	ca	NA	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.077	85.9	PPM	SB-W21	52 / 58	0.102 - 9.95	85.9	--	2.3E+02	nc	NA	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	0.071	117	PPM	SB-W21	53 / 58	0.102 - 9.95	117	--	6.2E+00	ca	NA	NA	Yes	ASL
	92-52-4	1,1'-Biphenyl	0.128	99.8	PPM	SB-X18	18 / 54	0.107 - 9.95	99.8	--	3.0E+02	nc	NA	NA	No	BSL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.071	1.13	PPM	SB-T26	36 / 56	0.102 - 1.14	1.13	--	3.5E+01	ca*	NA	NA	No	BSL
	85-68-7	Butylbenzylphthalate	0.066	1.23	PPM	SB-X11	9 / 56	0.105 - 0.121	1.23	--	1.2E+03	nc	NA	NA	No	BSL
	86-74-8	Carbazole	0.075	44	PPM	SB-X12	37 / 56	0.104 - 9.95	44	--	2.4E+01	ca	NA	NA	Yes	ASL
	218-01-9	Chrysene	0.102	272	PPM	SB-W21	55 / 58	0.102 - 9.95	272	--	6.2E+01	ca	NA	NA	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	0.069	35.5	PPM	SB-W21	46 / 58	0.104 - 9.95	35.5	--	6.2E-02	ca	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	0.06	345	PPM	SB-X12	34 / 56	0.105 - 9.95	345	--	1.5E+01	nc	NA	NA	Yes	ASL
	84-66-2	Diethylphthalate	0.119	0.119	PPM	P-9	1 / 56	0.116 - 0.116	0.119	--	4.9E+03	nc	NA	NA	No	FOD
	84-74-2	Di-n-butylphthalate	0.064	0.319	PPM	SB-W24	3 / 56	0.104 - 0.118	0.319	--	6.1E+02	nc	NA	NA	No	BSL
	206-44-0	Fluoranthene	0.104	756	PPM	SB-W21	56 / 58	0.102 - 9.95	756	--	2.3E+02	nc	NA	NA	Yes	ASL
	86-73-7	Fluorene	0.076	466	PPM	SB-X12	42 / 58	0.102 - 9.95	466	--	2.7E+02	nc	NA	NA	Yes	ASL
	193-39-5	Indeno(1,2,3-c,d)pyrene	0.07	81.9	PPM	SB-W21	52 / 58	0.102 - 9.95	81.9	--	6.2E-01	ca	NA	NA	Yes	ASL
	78-59-1	Isophorone	0.255	0.255	PPM	SB-W12	1 / 56	0.114 - 0.114	0.255	--	5.1E+02	ca*	NA	NA	No	FOD
	91-20-3	Naphthalene	0.08	1450	PPM	SB-X12	41 / 58	0.104 - 9.95	1450	--	5.6E+00	nc	NA	NA	Yes	ASL
	87-86-5	Pentachlorophenol	3	3	PPM	SS-13D	1 / 56	-	3	--	3.0E+00	ca	NA	NA	No	FOD
	85-01-8	Phenanthrene	0.064	677	PPM	SB-X12	56 / 58	0.102 - 9.95	677	--	2.2E+03	nc	NA	NA	No	BSL
	108-95-2	Phenol	2.24	2.24	PPM	SB-Y13	1 / 56	1.1 - 1.1	2.24	--	1.8E+03	nc	NA	NA	No	FOD
	129-00-0	Pyrene	0.098	645	PPM	SB-W21	56 / 58	0.102 - 9.95	645	--	2.3E+02	nc	NA	NA	Yes	ASL

(1) Maximum concentration is used for screening except for lead. Average concentration is used for screening for lead.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Residential Soil; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)
Frequency of Detection (FOD)

Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Chlordane (technical) was used as a surrogate for gamma-Chlordane
Chromium (VI) was used as a surrogate for Chromium
Endosulfan was used as a surrogate for Endosulfan II.
Mercury (methyl) was used as a surrogate for Mercury
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Pyrene was used as a surrogate for Benzo(ghi)perylene
Xylenes (total) was used as a surrogate for m,p-Xylene and o-Xylene
The residential/commercial soil screening criterion for PCBs (1 ppm) was used for aroclor 1242, 1254, and 1260 (see text)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available

Table 2.6

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Qualifier	Maximum Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Edgewater	7440-38-2	Arsenic	49.1		126000		PPB	MW-A-2	15 / 16	0.33 - 660	126000	--	4.5E-02	ca	3	NJ GWSL	Yes	ASL
	22569-72-8	Arsenic (III)	23.9		136000		PPB	MW-A-2	5 / 5	4.8 - 19200	136000	--	4.5E-02	ca	NA		Yes	ASL
	17428-41-0	Arsenic (V)	212		212		PPB	MW-B	1 / 5	63.2 - 63.2	212	--	4.5E-02	ca	NA		Yes	ASL
	7439-89-6	Iron	6540		369000		PPB	MW-A-2	5 / 5	25 - 25	369000	--	1.1E+03	nc	300	NJ GWSL	Yes	ASL
	7439-92-1	Lead	1.8		4100		PPB	MW-A-2	8 / 9	0.047 - 18	4100	--	1.5E+01	MCL	5	NJ GWSL	Yes	ASL
	71-55-6	1,1,1-Trichloroethane	0.64	J	3		PPB	MW-B	3 / 9	0.1 - 0.28	3	--	3.2E+02	nc	30	NJ GWSL	No	BSL
	76-13-1	Freon 113	0.0002	J	0.0003	J	PPM	MW-B	2 / 9	0.2 - 0.2	0.0003	--	5.9E+03	nc	NA		No	BSL
	75-34-3	1,1-Dichloroethane	51.8		120		PPB	MW-B	3 / 9	0.23 - 1	120	--	8.1E+01	nc	50	NJ GWSL	Yes	ASL
	75-35-4	1,1-Dichloroethene	0.3	J	0.3	J	PPB	MW-B	2 / 9	0.1 - 0.1	0.3	--	3.4E+01	nc	1	NJ GWSL	No	BSL
	107-06-2	1,2-Dichloroethane	1		2.9		PPB	MW-B	2 / 9	0.1 - 0.29	2.9	--	1.2E-01	ca*	2	NJ GWSL	Yes	ASL
	78-87-5	1,2-Dichloropropane	0.2	J	0.3	J	PPB	MW-B	2 / 9	0.1 - 0.1	0.3	--	1.6E-01	ca*	1	NJ GWSL	Yes	ASL
	71-43-2	Benzene	5		31		PPB	MW-B	6 / 9	0.1 - 2	31	--	3.5E-01	ca	1	NJ GWSL	Yes	ASL
	75-27-4	Bromodichloromethane	0.1	J	0.1	J	PPB	MW-B	2 / 9	0.1 - 0.1	0.1	--	1.8E-01	ca	1	NJ GWSL	No	BSL
	75-15-0	Carbon disulfide	0.1	J	8.8	J	PPB	MW-A-2	4 / 9	0.1 - 1	8.8	--	1.0E+02	nc	700	NJ GWSL	No	BSL
	108-90-7	Chlorobenzene	0.6		0.7		PPB	MW-B	2 / 9	0.1 - 0.1	0.7	--	1.1E+01	nc	50	NJ GWSL	No	BSL
	75-00-3	Chloroethane	5.8		8		PPB	MW-B	3 / 9	0.1 - 0.56	8	--	4.6E+00	ca	NA		Yes	ASL
	67-66-3	Chloroform	0.99		1.7		PPB	MW-B	3 / 9	0.1 - 0.22	1.7	--	1.7E-01	ca	70	NJ GWSL	Yes	ASL
	74-87-3	Chloromethane	2.2	J	2.2	J	PPB	MW-A-2	1 / 9	2 - 2	2.2	--	1.6E+01	nc	NA		No	BSL
	156-59-2	cis-1,2-Dichloroethene	2		6.2		PPB	MW-B	3 / 9	0.1 - 0.18	6.2	--	6.1E+00	nc	70	NJ GWSL	Yes	ASL
	110-82-7	Cyclohexane	0.0003	J	0.0003	J	PPM	MW-B	1 / 9	0.1 - 0.1	0.0003	--	1.0E+03	nc	NA		No	BSL
	100-41-4	Ethylbenzene	0.8		5	J	PPB	MW-A-2	5 / 9	0.1 - 2	5	--	1.3E+02	nc	700	NJ GWSL	No	BSL
	98-82-8	Isopropylbenzene (Cumene)	0.0002	J	0.0003	J	PPM	MW-B	2 / 9	0.1 - 0.1	0.0003	--	6.6E+01	nc	700	NJ GWSL	No	BSL
	108-87-2	Methylcyclohexane	0.0001	J	0.0002	J	PPM	MW-B	2 / 9	0.1 - 0.1	0.0002	--	5.2E+02	nc	NA		No	BSL
	75-09-2	Methylene chloride	0.54	J	0.54	J	PPB	MW-B	1 / 9	0.27 - 0.27	0.54	--	4.3E+00	ca	3	NJ GWSL	No	BSL
	127-18-4	Tetrachloroethene	0.5	J	0.81	J	PPB	MW-B	3 / 9	0.1 - 0.28	0.81	--	1.0E-01	ca	1	NJ GWSL	Yes	ASL
	108-88-3	Toluene	0.2	J	2.2	J	PPB	MW-A-2	5 / 9	0.1 - 2	2.2	--	7.2E+01	nc	1000	NJ GWSL	No	BSL
	79-01-6	Trichloroethene	0.6		0.64	J	PPB	MW-B	3 / 9	0.1 - 0.29	0.64	--	2.8E-02	ca	1	NJ GWSL	Yes	ASL
	75-01-4	Vinyl chloride	2.8		4.4		PPB	MW-B	3 / 9	0.1 - 0.29	4.4	--	2.0E-02	ca	1	NJ GWSL	Yes	ASL
	XYLENES1314	m,p-Xylene	0.3	J	0.3	J	PPB	MW-B	1 / 5	0.1 - 0.1	0.3	--	2.1E+01	nc	NA		No	BSL
	95-47-6	o-Xylene	4.6	J	4.6	J	PPB	MW-A-2	1 / 3	1.5 - 1.5	4.6	--	2.1E+01	nc	NA		No	BSL
	1330-20-7	Xylene (Total)	0.5		10		PPB	MW-A-2	4 / 7	0.1 - 2	10	--	2.1E+01	nc	1000	NJ GWSL	No	BSL
	120-82-1	1,2,4-Trichlorobenzene	0.1	J	0.1	J	PPB	MW-F	1 / 9	0.1 - 0.1	0.1	--	7.2E-01	nc	9	NJ GWSL	No	BSL
	105-67-9	2,4-Dimethylphenol	4	J	4	J	PPB	MW-A-2	2 / 9	3 - 3	4	--	7.3E+01	nc	100	NJ GWSL	No	BSL
	91-57-6	2-Methylnaphthalene	1	J	92		PPB	MW-A-2	5 / 9	0.44 - 1	92	--	6.2E-01	nc	NA		Yes	ASL
	95-48-7	2-Methylphenol	1.6	J	2	J	PPB	MW-A-2	3 / 9	1 - 1.5	2	--	1.8E+02	nc	NA		No	BSL
	34METPH	3&4-Methylphenol	2	J	2	J	PPB	MW-A-2	1 / 3	1.4 - 1.4	2	--	1.8E+01	nc	NA		No	BSL
	106-44-5	4-Methylphenol	3	J	4	J	PPB	MW-A-2	2 / 6	2 - 2	4	--	1.8E+01	nc	NA		No	BSL
	83-32-9	Acenaphthene	0.582		77		PPB	MW-A-2	7 / 9	0.018 - 1	77	--	3.7E+01	nc	400	NJ GWSL	Yes	ASL
	208-96-8	Acenaphthylene	1	J	2	J	PPB	MW-A-2	3 / 9	0.011 - 1	2	--	3.7E+01	nc	NA		No	BSL
	120-12-7	Anthracene	0.757		4	J	PPB	MW-A-2	4 / 9	0.022 - 1	4	--	1.8E+02	nc	2000	NJ GWSL	No	BSL
	56-55-3	Benzo(a)anthracene	0.202	J	0.202	J	PPB	MW-A-2	1 / 9	0.0076 - 0.0076	0.202	--	9.2E-02	ca	0.1	NJ GWSL	Yes	ASL
	92-52-4	1,1'-Biphenyl	0.00045	J	0.02		PPM	MW-A-2	4 / 9	0.35 - 1	0.02	--	3.0E+01	nc	400	NJ GWSL	No	BSL
	105-60-2	Caprolactam	0.009	J	0.076	J	PPM	MW-A-2	2 / 9	5 - 5	0.076	--	1.8E+03	nc	NA		No	BSL
	86-74-8	Carbazole	3	J	16.2		PPB	MW-A-2	6 / 9	0.39 - 1	16.2	--	3.4E+00	ca	NA		Yes	ASL
	218-01-9	Chrysene	0.271		0.271		PPB	MW-A-2	1 / 9	0.019 - 0.019	0.271	--	9.2E+00	ca	5	NJ GWSL	No	BSL
	132-64-9	Dibenzofuran	3	J	35		PPB	MW-A-2	6 / 9	0.37 - 1	35	--	1.2E+00	nc	NA		Yes	ASL
	84-66-2	Diethylphthalate	18.5		18.5		PPB	MW-A-2	1 / 9	0.43 - 0.43	18.5	--	2.9E+03	nc	6000	NJ GWSL	No	BSL
	206-44-0	Fluoranthene	0.325		6		PPB	MW-A-2	5 / 9	0.0097 - 1	6	--	1.5E+02	nc	300	NJ GWSL	No	BSL
	86-73-7	Fluorene	1	J	36		PPB	MW-A-2	6 / 9	0.022 - 1	36	--	2.4E+01	nc	300	NJ GWSL	Yes	ASL
	78-59-1	Isophorone	3	J	5		PPB	MW-B	2 / 9	0.9 - 1	5	--	7.1E+01	ca	40	NJ GWSL	No	BSL
	1634-04-4	Methyl Tert-butyl Ether	0.0002	J	0.0005	J	PPM	MW-B	5 / 9	0.1 - 0.31	0.0005	--	6.2E+00	ca	70	NJ GWSL	No	BSL
	91-20-3	Naphthalene	0.713	J	1200		PPB	MW-A-2	7 / 9	0.028 - 49	1200	--	6.2E-01	nc	300	NJ GWSL	Yes	ASL
	85-01-8	Phenanthrene	1	J	30.4		PPB	MW-A-2	6 / 9	0.023 - 1	30.4	--	1.8E+02	nc	NA		No	BSL
	129-00-0	Pyrene	0.937		5		PPB	MW-A-2	4 / 9	0.015 - 1	5	--	1.8E+01	nc	200	NJ GWSL	No	BSL

(1) Maximum concentration is used for screening.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Tap Water; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)

Arsenic III and Arsenic IV data are included for informational purposes only and are not carried through the risk calculations
4-Methylphenol was used as a surrogate for 3&4-methylphenol.
Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Arsenic was used as a surrogate for Arsenic (III) and Arsenic (V)
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Xylenes, total was used for o-Xylene, and m,p-Xylene

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
MCL = Maximum Contaminant Level
nc = Noncarcinogenic
ca = Carcinogenic
NA = Not available

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration Qualifier	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
115 River Road	7440-38-2	Arsenic	5.3	13	PPM	MW-114B	5 / 5	0.72 - 1.2	13	--	3.9E-01	ca*	NA	NA	Yes	ASL
	7440-47-3	Chromium	9.2	101	PPM	MW-114B	5 / 5	0.57 - 0.89	101	--	2.2E+01	nc	NA	NA	Yes	ASL
	7439-92-1	Lead	39.1	557	PPM	MW-114B	5 / 5	0.83 - 1.4	239	--	4.0E+02	nc	NA	NA	No	BSL
	12672-29-6	Aroclor-1248	0.47	0.47	PPM	MW-114B	1 / 5	0.019 - 0.019	0.47	--	1.0E+00	nc	NA	NA	No	BSL
	11097-69-1	Aroclor-1254	0.047	0.79	PPM	MW-114B	3 / 5	0.0075 - 0.019	0.79	--	1.0E+00	nc	NA	NA	No	BSL
	11096-82-5	Aroclor-1260	0.11	0.12 J	PPM	MW-114B	2 / 5	0.018 - 0.019	0.12	--	1.0E+00	nc	NA	NA	No	BSL
	67-64-1	Acetone	0.016 J	0.058 J	PPM	SB-08H	4 / 5	0.007 - 0.013	0.058	--	1.4E+03	nc	NA	NA	No	BSL
	71-43-2	Benzene	0.0008 J	0.004 J	PPM	SB-01A	2 / 5	0.0005 - 0.0009	0.004	--	6.4E-01	ca*	NA	NA	No	BSL
	75-15-0	Carbon Disulfide	0.002 J	0.003 J	PPM	SB-08H	3 / 5	0.002 - 0.002	0.003	--	3.6E+01	nc	NA	NA	No	BSL
	110-82-7	Cyclohexane	0.002 J	0.002 J	PPM	SB-01A	1 / 5	0.002 - 0.002	0.002	--	1.4E+02	sat	NA	NA	No	BSL
	100-41-4	Ethylbenzene	0.097	0.097	PPM	SB-01A	1 / 5	0.002 - 0.002	0.097	--	1.9E+02	nc	NA	NA	No	BSL
	98-82-8	Isopropylbenzene	0.035	0.035	PPM	SB-01A	1 / 5	0.002 - 0.002	0.035	--	5.7E+01	nc	NA	NA	No	BSL
	108-87-2	Methylcyclohexane	0.014	0.014	PPM	SB-01A	1 / 5	0.002 - 0.002	0.014	--	2.6E+02	nc	NA	NA	No	BSL
	127-18-4	Tetrachloroethene	0.003 J	0.003 J	PPM	SB-17Q	1 / 5	0.001 - 0.001	0.003	--	4.8E-01	ca*	NA	NA	No	BSL
	108-88-3	Toluene	0.002 J	0.002 J	PPM	SB-17Q	2 / 5	0.001 - 0.002	0.002	--	6.6E+01	nc	NA	NA	No	BSL
	1330-20-7	Xylene (Total)	0.002 J	0.22	PPM	SB-01A	2 / 5	0.001 - 0.002	0.22	--	2.7E+01	nc	NA	NA	No	BSL
	91-57-6	2-Methylnaphthalene	0.075 J	4.4	PPM	SB-01A	5 / 5	0.038 - 0.19	4.4	--	5.6E+00	nc	NA	NA	No	BSL
	83-32-9	Acenaphthene	0.051 J	4.6	PPM	SB-08H	5 / 5	0.038 - 0.19	4.6	--	3.7E+02	nc	NA	NA	No	BSL
	208-96-8	Acenaphthylene	0.3	1.4	PPM	SB-08H	4 / 5	0.038 - 0.19	1.4	--	3.7E+02	nc	NA	NA	No	BSL
	120-12-7	Anthracene	0.13 J	12	PPM	SB-08H	5 / 5	0.038 - 0.19	12	--	2.2E+03	nc	NA	NA	No	BSL
	56-55-3	Benzo(a)anthracene	0.26	28	PPM	SB-08H	5 / 5	0.038 - 0.95	28	--	6.2E-01	ca	NA	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.25	25	PPM	SB-08H	5 / 5	0.038 - 0.95	25	--	6.2E-02	ca	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.36	31	PPM	SB-08H	5 / 5	0.038 - 0.95	31	--	6.2E-01	ca	NA	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.22	15	PPM	SB-08H	5 / 5	0.038 - 0.19	15	--	2.3E+02	nc	NA	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	0.16 J	16	PPM	SB-08H	5 / 5	0.038 - 0.19	16	--	6.2E+00	ca	NA	NA	Yes	ASL
	92-52-4	1,1'-Biphenyl	0.054 J	0.68	PPM	SB-01A	3 / 5	0.039 - 0.19	0.68	--	3.0E+02	nc	NA	NA	No	BSL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.26 J	2.9 J	PPM	MW-114B	3 / 5	0.075 - 0.38	2.9	--	3.5E+01	ca*	NA	NA	No	BSL
	85-68-7	Butylbenzylphthalate	27	27	PPM	MW-114B	1 / 5	0.75 - 0.75	27	--	1.2E+03	nc	NA	NA	No	BSL
	86-74-8	Carbazole	0.36	3.7	PPM	SB-08H	4 / 5	0.038 - 0.19	3.7	--	2.4E+01	ca	NA	NA	No	BSL
	218-01-9	Chrysene	0.39	25	PPM	SB-08H	5 / 5	0.038 - 0.95	25	--	6.2E+01	ca	NA	NA	No	BSL
	53-70-3	Dibenzo(a,h)anthracene	0.06 J	4.6	PPM	SB-08H	5 / 5	0.038 - 0.19	4.6	--	6.2E-02	ca	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	0.13 J	2.1	PPM	SB-08H	5 / 5	0.038 - 0.19	2.1	--	1.5E+01	nc	NA	NA	No	BSL
	206-44-0	Fluoranthene	0.53	56	PPM	SB-08H	5 / 5	0.038 - 0.95	56	--	2.3E+02	nc	NA	NA	No	BSL
	86-73-7	Fluorene	0.069 J	4	PPM	SB-08H	5 / 5	0.038 - 0.19	4	--	2.7E+02	nc	NA	NA	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.18 J	15	PPM	SB-08H	5 / 5	0.038 - 0.19	15	--	6.2E-01	ca	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.097 J	12	PPM	SB-01A	5 / 5	0.038 - 0.28	12	--	5.6E+00	nc	NA	NA	Yes	ASL
	86-30-6	N-Nitrosodiphenylamine	0.12 J	0.12 J	PPM	SB-01A	1 / 5	0.056 - 0.056	0.12	--	9.9E+01	ca*	NA	NA	No	BSL
	85-01-8	Phenanthrene	0.61	36	PPM	SB-08H	5 / 5	0.038 - 0.95	36	--	2.2E+03	nc	NA	NA	No	BSL
	129-00-0	Pyrene	0.48	47	PPM	SB-08H	5 / 5	0.039 - 0.95	47	--	2.3E+02	nc	NA	NA	No	BSL

(1) Maximum concentration is used for screening except for lead. Average concentration is used for screening for lead.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Residential Soil; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)

Acenaphthene was used as a surrogate for Acenaphthylene

Anthracene was used as a surrogate for Phenanthrene

Chromium (VI) was used as a surrogate for Chromium

Naphthalene was used as a surrogate for 2-Methylnaphthalene

Pyrene was used as a surrogate for Benzo(g,h,i)perylene

The residential/commercial soil screening criterion for PCB (1 ppm) was used for aroclor 1248, 1254, and 1260 (see text)

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value

ca = Carcinogenic

nc = Noncarcinogenic

sat = Soil saturation

NA = Not available

Table 2.8
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration Qualifier	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
115 River Road	7429-90-5	Aluminum	4050	4050	PPM	CPT-21	1 / 1	-	4050	--	7.6E+03	nc	NA	NA	No	BSL
	7440-38-2	Arsenic	2.1	57.7	PPM	CPT-21	14 / 14	0.0013 - 1.2	57.7	--	3.9E-01	ca*	NA	NA	Yes	ASL
	7440-39-3	Barium	196	196	PPM	CPT-21	1 / 1	-	196	--	5.4E+02	nc	NA	NA	No	BSL
	7440-41-7	Beryllium	0.45	0.45	PPM	CPT-21	1 / 1	-	0.45	--	1.5E+01	nc	NA	NA	No	BSL
	7440-43-9	Cadmium	0.38	0.38	PPM	CPT-21	1 / 1	-	0.38	--	3.7E+00	nc	NA	NA	No	BSL
	7440-70-2	Calcium	7860	7860	PPM	CPT-21	1 / 1	-	7860	--	NA	--	NA	NA	No	NUT
	7440-47-3	Chromium	9.2	101	PPM	MW-114B	8 / 8	0.57 - 0.89	101	--	2.2E+01	nc	NA	NA	Yes	ASL
	7440-48-4	Cobalt	15.3	15.3	PPM	CPT-21	1 / 1	-	15.3	--	1.4E+02	nc	NA	NA	No	BSL
	7440-50-8	Copper	171	171	PPM	CPT-21	1 / 1	-	171	--	3.1E+02	nc	NA	NA	No	BSL
	7439-89-6	Iron	46800	46800	PPM	CPT-21	1 / 1	-	46800	--	2.3E+03	nc	NA	NA	Yes	ASL
	7439-92-1	Lead	39.1	1040	PPM	SB-119B	14 / 14	0.0015 - 1.4	360	--	4.0E+02	nc	NA	NA	No	BSL
	7439-95-4	Magnesium	2980	2980	PPM	CPT-21	1 / 1	-	2980	--	NA	--	NA	NA	No	NUT
	7439-96-5	Manganese	243	243	PPM	CPT-21	1 / 1	-	243	--	1.8E+02	nc	NA	NA	Yes	ASL
	7440-02-0	Nickel	23.7	23.7	PPM	CPT-21	1 / 1	-	23.7	--	1.6E+02	nc	NA	NA	No	BSL
	7440-09-7	Potassium	347	347	PPM	CPT-21	1 / 1	-	347	--	NA	--	NA	NA	No	NUT
	7782-49-2	Selenium	1.2	1.2	PPM	CPT-21	1 / 1	-	1.2	--	3.9E+01	nc	NA	NA	No	BSL
	7440-23-5	Sodium	621	621	PPM	CPT-21	1 / 1	-	621	--	NA	--	NA	NA	No	NUT
	7440-62-2	Vanadium	26.9	26.9	PPM	CPT-21	1 / 1	-	26.9	--	7.8E+00	nc	NA	NA	Yes	ASL
	7440-66-6	Zinc	264	264	PPM	CPT-21	1 / 1	-	264	--	2.3E+03	nc	NA	NA	No	BSL
	7439-97-6	Mercury	0.93	0.93	PPM	CPT-21	1 / 1	-	0.93	--	6.1E-01	nc	NA	NA	Yes	ASL
	60-57-1	Dieldrin	0.027	0.027	PPM	CPT-21	1 / 1	-	0.027	--	3.0E-02	ca	NA	NA	No	BSL
	72-43-5	Methoxychlor	0.067	0.067	PPM	CPT-21	1 / 1	-	0.067	--	3.1E+01	nc	NA	NA	No	BSL
	12672-29-6	Aroclor-1248	0.47	0.47	PPM	MW-114B	1 / 13	0.019 - 0.019	0.47	--	1.0E+00	nc	NA	NA	No	BSL
	11097-69-1	Aroclor-1254	0.047	0.79	PPM	MW-114B	3 / 13	0.0075 - 0.019	0.79	--	1.0E+00	nc	NA	NA	No	BSL
	11096-82-5	Aroclor-1260	0.022	0.37	PPM	SB-01A	5 / 13	0.0042 - 0.022	0.37	--	1.0E+00	nc	NA	NA	No	BSL
	78-93-3	2-Butanone	0.008 J	0.01 J	PPM	SB-119B	2 / 14	0.006 - 0.007	0.01	--	2.2E+03	nc	NA	NA	No	BSL
	67-64-1	Acetone	0.016 J	0.066 J	PPM	SB-119B	8 / 14	0.007 - 0.013	0.066	--	1.4E+03	nc	NA	NA	No	BSL
	71-43-2	Benzene	0.0008 J	29	PPM	SB-08H	8 / 14	0.0005 - 0.69	29	--	6.4E-01	ca*	NA	NA	Yes	ASL
	75-15-0	Carbon disulfide	0.002 J	0.006 J	PPM	SB-17Q	5 / 14	0.001 - 0.002	0.006	--	3.6E+01	nc	NA	NA	No	BSL
	110-82-7	Cyclohexane	0.002 J	0.13 J	PPM	SB-17Q	5 / 12	0.001 - 0.11	0.13	--	1.4E+02	sat	NA	NA	No	BSL
	100-41-4	Ethylbenzene	0.01 J	130	PPM	MW-114B	6 / 14	0.002 - 3.3	130	--	1.9E+02	nc	NA	NA	No	BSL
	98-82-8	Isopropylbenzene	0.003 J	26	PPM	MW-114B	6 / 12	0.002 - 1.4	26	--	5.7E+01	nc	NA	NA	No	BSL
	108-87-2	Methylcyclohexane	0.003 J	0.71 J	PPM	MW-114B	6 / 12	0.001 - 0.33	0.71	--	2.6E+02	nc	NA	NA	No	BSL
	127-18-4	Tetrachloroethene	0.003 J	0.003 J	PPM	SB-17Q	1 / 14	0.001 - 0.001	0.003	--	4.8E-01	ca*	NA	NA	No	BSL
	108-88-3	Toluene	0.002 J	89	PPM	SB-08H	7 / 14	0.001 - 1.4	89	--	6.6E+01	nc	NA	NA	Yes	ASL
	1330-20-7	Xylene (Total)	0.002 J	240	PPM	MW-114B	10 / 14	0.001 - 1.4	240	--	2.7E+01	nc	NA	NA	Yes	ASL
	121-14-2	2,4-Dinitrotoluene	29 J	29 J	PPM	SB-08H	1 / 13	15 - 15	29	--	1.2E+01	nc	NA	NA	Yes	ASL
	91-57-6	2-Methylnaphthalene	0.075 J	2100	PPM	SB-08H	12 / 13	0.038 - 73	2100	--	5.6E+00	nc	NA	NA	Yes	ASL
	106-44-5	4-Methylphenol	19 J	19 J	PPM	SB-08H	1 / 13	15 - 15	19	--	3.1E+01	nc	NA	NA	No	BSL
	83-32-9	Acenaphthene	0.051 J	1300	PPM	SB-08H	14 / 14	0.038 - 73	1300	--	3.7E+02	nc	NA	NA	Yes	ASL
	208-96-8	Acenaphthylene	0.24 J	110	PPM	SB-08H	12 / 14	0.038 - 7.3	110	--	3.7E+02	nc	NA	NA	No	BSL
	120-12-7	Anthracene	0.13 J	920	PPM	SB-08H	14 / 14	0.038 - 73	920	--	2.2E+03	nc	NA	NA	No	BSL
	56-55-3	Benzo(a)anthracene	0.26	660	PPM	SB-08H	14 / 14	0.038 - 12	660	--	6.2E-01	ca	NA	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.25	460	PPM	SB-08H	14 / 14	0.038 - 7.3	460	--	6.2E-02	ca	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.36	530	PPM	SB-08H	14 / 14	0.038 - 7.3	530	--	6.2E-01	ca	NA	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.22	230	PPM	SB-08H	14 / 14	0.038 - 7.3	230	--	2.3E+02	nc	NA	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	0.16 J	200	PPM	SB-08H	13 / 14	0.038 - 7.3	200	--	6.2E+00	ca	NA	NA	Yes	ASL

Table 2.8

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration Qualifier	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
	92-52-4	1,1'-Biphenyl	0.054 J	380	PPM	SB-08H	8 / 12	0.039 - 7.3	380	--	3.0E+02	nc	NA	NA	Yes	ASL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.26 J	2.9 J	PPM	MW-114B	5 / 13	0.075 - 0.38	2.9	--	3.5E+01	ca*	NA	NA	No	BSL
	85-68-7	Butylbenzylphthalate	27	27	PPM	MW-114B	1 / 13	0.75 - 0.75	27	--	1.2E+03	nc	NA	NA	No	BSL
	86-74-8	Carbazole	0.36	340	PPM	SB-08H	11 / 13	0.038 - 7.3	340	--	2.4E+01	ca	NA	NA	Yes	ASL
	218-01-9	Chrysene	0.39	610	PPM	SB-08H	14 / 14	0.038 - 12	610	--	6.2E+01	ca	NA	NA	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	0.06 J	58	PPM	SB-08H	12 / 14	0.038 - 7.3	58	--	6.2E-02	ca	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	0.13 J	960	PPM	SB-08H	12 / 13	0.038 - 73	960	--	1.5E+01	nc	NA	NA	Yes	ASL
	206-44-0	Fluoranthene	0.53	2000	PPM	SB-08H	14 / 14	0.039 - 73	2000	--	2.3E+02	nc	NA	NA	Yes	ASL
	86-73-7	Fluorene	0.069 J	1200	PPM	SB-08H	13 / 14	0.038 - 73	1200	--	2.7E+02	nc	NA	NA	Yes	ASL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.18 J	210	PPM	SB-08H	13 / 14	0.038 - 7.3	210	--	6.2E-01	ca	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.097 J	5800	PPM	SB-08H	13 / 14	0.038 - 73	5800	--	5.6E+00	nc	NA	NA	Yes	ASL
	86-30-6	N-Nitrosodiphenylamine	0.12 J	1.1	PPM	SB-17Q	2 / 13	0.056 - 0.13	1.1	--	9.9E+01	ca*	NA	NA	No	BSL
	85-01-8	Phenanthrene	0.61	3900	PPM	SB-08H	13 / 14	0.038 - 73	3900	--	2.2E+03	nc	NA	NA	Yes	ASL
	129-00-0	Pyrene	0.48	1600	PPM	SB-08H	14 / 14	0.039 - 73	1600	--	2.3E+02	nc	NA	NA	Yes	ASL

(1) Maximum concentration is used for screening except for lead. Average concentration is used for screening for lead.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Residential Soil; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Chromium (VI) was used as a surrogate for Chromium
Mercury (methyl) was used as a surrogate for Mercury
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Pyrene was used as a surrogate for Benzo(g,h,i)perylene
The residential/commercial soil screening criterion for PCB (1 ppm) was used for aroclor 1248, 1254, and 1260 (see text)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
ca = Carcinogenic
nc = Noncarcinogenic
sat = Soil saturation
NA = Not available

Table 2.9

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	CAS Number	Chemical	Minimum Concentration Qualifier		Maximum Concentration Qualifier		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
115 River Road	7440-38-2	Arsenic	2.8		15.7		PPB	MW-114A	13 / 16	0.33 - 3.3	15.7	--	4.5E-02	ca	3	NJ GWSL	Yes	ASL
	7439-92-1	Lead	0.25	J	16.2		PPB	MW-108	13 / 16	0.047 - 3	16.2	--	1.5E+01	MCL	5	NJ GWSL	Yes	ASL
	78-93-3	2-Butanone (MEK)	1.1	J	1.1	J	PPB	MW-108	1 / 16	1 - 1	1.1	--	7.0E+02	nc	300	NJ GWSL	No	BSL
	67-64-1	Acetone	3.9	J	3.9	J	PPB	MW-108	1 / 16	3 - 3	3.9	--	5.5E+02	nc	6000	NJ GWSL	No	BSL
	71-43-2	Benzene	4.7		470		PPB	MW-121A	13 / 16	0.1 - 10	470	--	3.5E-01	ca	1	NJ GWSL	Yes	ASL
	75-15-0	Carbon disulfide	0.2	J	2.5		PPB	MW-108	4 / 16	0.1 - 0.1	2.5	--	1.0E+02	nc	700	NJ GWSL	No	BSL
	108-90-7	Chlorobenzene	1.3		1.8		PPB	MW-108	3 / 16	0.1 - 0.22	1.8	--	1.1E+01	nc	50	NJ GWSL	No	BSL
	75-00-3	Chloroethane	0.1	J	1.1		PPB	MW-119A	6 / 16	0.1 - 0.1	1.1	--	4.6E+00	ca	NA		No	BSL
	74-87-3	Chloromethane	0.2	J	3	J	PPB	MW-114A	4 / 16	0.1 - 2	3	--	1.6E+01	nc	NA		No	BSL
	110-82-7	Cyclohexane	0.1	J	2.7	J	PPB	MW-121A	5 / 16	0.1 - 2	2.7	--	1.0E+03	nc	NA		No	BSL
	100-41-4	Ethylbenzene	0.2	J	120		PPB	MW-121A	13 / 16	0.1 - 2	120	--	1.3E+02	nc	700	NJ GWSL	No	BSL
	98-82-8	Isopropylbenzene (Cumene)	0.1	J	41		PPB	MW-121A	15 / 16	0.1 - 2	41	--	6.6E+01	nc	700	NJ GWSL	No	BSL
	108-87-2	Methylcyclohexane	0.2	J	4	J	PPB	MW-121A	6 / 16	0.1 - 2	4	--	5.2E+02	nc	NA		No	BSL
	108-88-3	Toluene	0.4	J	6.4		PPB	MW-114A	9 / 16	0.1 - 2	6.4	--	7.2E+01	nc	1000	NJ GWSL	No	BSL
	XYLENES1314	m,p-Xylene	0.76	J	11.3		PPB	MW-114A	2 / 4	0.42 - 0.42	11.3	--	2.1E+01	nc	NA		No	BSL
	95-47-6	o-Xylene	1.7		22.9		PPB	MW-114A	2 / 4	0.31 - 0.31	22.9	--	2.1E+01	nc	NA		Yes	ASL
	1330-20-7	Xylene (Total)	0.2	J	83		PPB	MW-121A	14 / 16	0.1 - 2	83	--	2.1E+01	nc	1000	NJ GWSL	Yes	ASL
	105-67-9	2,4-Dimethylphenol	3.6	J	55		PPB	MW-121A	4 / 16	1.7 - 3	55	--	7.3E+01	nc	100	NJ GWSL	No	BSL
	91-57-6	2-Methylnaphthalene	0.59	J	99		PPB	MW-114A	7 / 16	0.43 - 10	99	--	6.2E-01	nc	NA		Yes	ASL
	95-48-7	2-Methylphenol	4	J	5		PPB	MW-114A	2 / 16	1 - 1	5	--	1.8E+02	nc	NA		No	BSL
	106-44-5	4-Methylphenol	2	J	2	J	PPB	MW-114A	2 / 12	2 - 2	2	--	1.8E+01	nc	NA		No	BSL
	83-32-9	Acenaphthene	4	J	420		PPB	MW-121A	16 / 16	0.017 - 10	420	--	3.7E+01	nc	400	NJ GWSL	Yes	ASL
	208-96-8	Acenaphthylene	0.294		2	J	PPB	MW-121A	5 / 16	0.0095 - 1	2	--	3.7E+01	nc	NA		No	BSL
	120-12-7	Anthracene	0.27		7		PPB	MW-121A	12 / 16	0.021 - 1	7	--	1.8E+02	nc	2000	NJ GWSL	No	BSL
	56-55-3	Benzo(a)anthracene	0.255		0.761		PPB	MW-114A	2 / 16	0.0072 - 0.0072	0.761	--	9.2E-02	ca	0.1	NJ GWSL	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.484		0.484		PPB	MW-114A	1 / 16	0.018 - 0.018	0.484	--	9.2E-03	ca	0.1	NJ GWSL	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.429		0.429		PPB	MW-114A	1 / 16	0.038 - 0.038	0.429	--	9.2E-02	ca	0.2	NJ GWSL	Yes	ASL
	92-52-4	1,1'-Biphenyl	0.93	J	6		PPB	MW-114A	7 / 16	0.34 - 1	6	--	3.0E+01	nc	400	NJ GWSL	No	BSL
	105-60-2	Caprolactam	9	J	9	J	PPB	MW-108	1 / 16	5 - 5	9	--	1.8E+03	nc	NA		No	BSL
	86-74-8	Carbazole	1.1	J	160		PPB	MW-121A	12 / 16	0.36 - 10	160	--	3.4E+00	ca	NA		Yes	ASL
	218-01-9	Chrysene	0.729		0.729		PPB	MW-114A	1 / 16	0.018 - 0.018	0.729	--	9.2E+00	ca	5	NJ GWSL	No	BSL
	132-64-9	Dibenzofuran	0.44	J	90		PPB	MW-121A	12 / 16	0.34 - 1	90	--	1.2E+00	nc	NA		Yes	ASL
	206-44-0	Fluoranthene	0.208		9		PPB	MW-119B	14 / 16	0.009 - 1	9	--	1.5E+02	nc	300	NJ GWSL	No	BSL
	86-73-7	Fluorene	1	J	88		PPB	MW-121A	14 / 16	0.02 - 10	88	--	2.4E+01	nc	300	NJ GWSL	Yes	ASL
	1634-04-4	Methyl Tert-butyl Ether	0.3	J	0.4	J	PPB	MW-108	2 / 16	0.1 - 0.1	0.4	--	6.2E+00	ca	70	NJ GWSL	No	BSL

Table 2.9

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Qualifier	Maximum Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
	91-20-3	Naphthalene	0.919	J	1600		PPB	MW-114A	13 / 16	0.026 - 49	1600	--	6.2E-01	nc	300	NJ GWSL	Yes	ASL
	85-01-8	Phenanthrene	0.472		62		PPB	MW-121A	12 / 16	0.021 - 1	62	--	1.8E+02	nc	NA		No	BSL
	108-95-2	Phenol	1	J	1	J	PPB	MW-114A	1 / 16	1 - 1	1	--	1.1E+03	nc	2000	NJ GWSL	No	BSL
	129-00-0	Pyrene	0.282		5		PPB	MW-119B	11 / 16	0.014 - 1	5	--	1.8E+01	nc	200	NJ GWSL	No	BSL

(1) Maximum concentration is used for screening.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Tap Water; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)

Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Xylenes, total was used for o-Xylene, and m,p-Xylene

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
MCL = Maximum Contaminant Level
nc = Noncarcinogenic
ca = Carcinogenic
NA = Not available

Table 2.10
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Min Qual	Maximum Concentration	Max Qual	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Former Lever Brothers Property	7440-38-2	Arsenic	5.3		45.3		PPM	SB-18R	7 / 8	0.72 - 0.82	45.3	--	3.9E-01	ca*	NA	NA	Yes	ASL
	7440-47-3	Chromium	14.2		28.9		PPM	SB-18R	8 / 8	0.57 - 0.65	28.9	--	2.2E+01	nc	NA	NA	Yes	ASL
	18540-29-9	Hexavalent Chromium	0.6	J	4	J	PPM	MW-109A	2 / 8	0.55 - 0.56	4	--	2.2E+01	nc	NA	NA	No	BSL
	7439-92-1	Lead	26.9		166		PPM	MW-120B	8 / 8	0.83 - 0.96	166	--	4.0E+02	nc	NA	NA	No	BSL
	11097-69-1	Aroclor-1254	0.017	J	0.37		PPM	SB-18R	6 / 8	0.0037 - 0.008	0.37	--	1.0E+00	nc	NA	NA	No	BSL
	11096-82-5	Aroclor-1260	0.014	J	0.18	J	PPM	MW-120B	8 / 8	0.0037 - 0.008	0.18	--	1.0E+00	nc	NA	NA	No	BSL
	67-64-1	Acetone	0.019	J	0.054	J	PPM	MW-122A	8 / 8	0.007 - 0.008	0.054	--	1.4E+03	nc	NA	NA	No	BSL
	71-43-2	Benzene	0.0006	J	0.0009	J	PPM	SB-18R	3 / 8	0.0005 - 0.0005	0.0009	--	6.4E-01	ca*	NA	NA	No	BSL
	75-15-0	Carbon disulfide	0.003	J	0.003	J	PPM	MW-106A	1 / 8	0.001 - 0.001	0.003	--	3.6E+01	nc	NA	NA	No	BSL
	91-57-6	2-Methylnaphthalene	0.25		0.47	J	PPM	SB-18R	3 / 8	0.039 - 0.4	0.47	--	5.6E+00	nc	NA	NA	No	BSL
	83-32-9	Acenaphthene	0.043	J	3.5		PPM	MW-120B	7 / 8	0.037 - 0.4	3.5	--	3.7E+02	nc	NA	NA	No	BSL
	208-96-8	Acenaphthylene	0.1	J	1.2	J	PPM	MW-120B	8 / 8	0.037 - 0.4	1.2	--	3.7E+02	nc	NA	NA	No	BSL
	120-12-7	Anthracene	0.13	J	7.1	J	PPM	MW-120B	8 / 8	0.037 - 0.4	7.1	--	2.2E+03	nc	NA	NA	No	BSL
	56-55-3	Benzo(a)anthracene	0.49		20	J	PPM	MW-120B	8 / 8	0.037 - 0.4	20	--	6.2E-01	ca	NA	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.58		20	J	PPM	MW-120B	8 / 8	0.037 - 0.4	20	--	6.2E-02	ca	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.77		26		PPM	MW-120B	8 / 8	0.037 - 0.4	26	--	6.2E-01	ca	NA	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.34		13		PPM	MW-120B	8 / 8	0.037 - 0.4	13	--	2.3E+02	nc	NA	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	0.34		11	J	PPM	MW-120B	8 / 8	0.037 - 0.4	11	--	6.2E+00	ca	NA	NA	Yes	ASL
	92-52-4	1,1'-Biphenyl	0.084	J	0.084	J	PPM	MW-106A	1 / 8	0.039 - 0.039	0.084	--	3.0E+02	nc	NA	NA	No	BSL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.12	J	0.15	J	PPM	MW-122A	2 / 8	0.078 - 0.082	0.15	--	3.5E+01	ca*	NA	NA	No	BSL
	86-74-8	Carbazole	0.05	J	2.2	J	PPM	MW-120B	8 / 8	0.037 - 0.4	2.2	--	2.4E+01	ca	NA	NA	No	BSL
	218-01-9	Chrysene	0.65		19	J	PPM	MW-120B	8 / 8	0.037 - 0.4	19	--	6.2E+01	ca	NA	NA	No	BSL
	53-70-3	Dibenzo(a,h)anthracene	0.065	J	3.3		PPM	MW-120B	8 / 8	0.037 - 0.4	3.3	--	6.2E-02	ca	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	0.042	J	1.6	J	PPM	MW-120B	6 / 8	0.037 - 0.4	1.6	--	1.5E+01	nc	NA	NA	No	BSL
	206-44-0	Fluoranthene	0.88		35	J	PPM	MW-120B	8 / 8	0.037 - 0.4	35	--	2.3E+02	nc	NA	NA	No	BSL
	86-73-7	Fluorene	0.051	J	2.8	J	PPM	MW-120B	7 / 8	0.037 - 0.4	2.8	--	2.7E+02	nc	NA	NA	No	BSL
	193-39-5	Indeno(1,2,3-c,d)pyrene	0.31		12		PPM	MW-120B	8 / 8	0.037 - 0.4	12	--	6.2E-01	ca	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.044	J	1.6	J	PPM	MW-120B	5 / 8	0.037 - 0.4	1.6	--	5.6E+00	nc	NA	NA	No	BSL
	85-01-8	Phenanthrene	0.45		20	J	PPM	MW-120B	8 / 8	0.037 - 0.4	20	--	2.2E+03	nc	NA	NA	No	BSL
	129-00-0	Pyrene	0.95		34	J	PPM	MW-120B	8 / 8	0.037 - 0.4	34	--	2.3E+02	nc	NA	NA	No	BSL

(1) Maximum concentration is used for screening.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Residential Soil; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)

Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Chromium (VI) was used as a surrogate for Chromium
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Pyrene was used as a surrogate for Benzo(ghi)perylene
The residential/commercial soil screening criterion for PCBs (1 ppm) was used for aroclor 1254 and 1260 (see text)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
ca = Carcinogenic
nc = Noncarcinogenic
NA = Not available

Table 2.11
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration Qualifier	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Former Lever Brothers Property	7429-90-5	Aluminum	7490	7490	PPM	CPT-24	1 / 1	20.3 - 20.3	7490	--	7.6E+03	nc	NA	NA	No	BSL
	7440-36-0	Antimony	0.995 J	53.4 J	PPM	GZA-25	6 / 18	1.1 - 1.1	53.4	--	3.1E+00	nc	NA	NA	Yes	ASL
	7440-38-2	Arsenic	3.17	917	PPM	GZA-24	31 / 32	0.67 - 1.4	917	--	3.9E-01	ca*	NA	NA	Yes	ASL
	7440-39-3	Barium	118	118	PPM	CPT-24	1 / 1	0.34 - 0.34	118	--	5.4E+02	nc	NA	NA	No	BSL
	7440-41-7	Beryllium	0.127 J	0.607 J	PPM	GZA-48	18 / 18	0.048 - 0.048	0.607	--	1.5E+01	nc	NA	NA	No	BSL
	7440-43-9	Cadmium	0.12 J	12	PPM	GZA-48	15 / 18	0.096 - 0.096	12	--	3.7E+00	nc	NA	NA	Yes	ASL
	7440-70-2	Calcium	48600	48600	PPM	CPT-24	1 / 1	19.8 - 19.8	48600	--	NA	--	NA	NA	No	NUT
	7440-47-3	Chromium	6.07	67.6 J	PPM	GZA-48	28 / 28	0.27 - 0.65	67.6	--	2.2E+01	nc	NA	NA	Yes	ASL
	18540-29-9	Hexavalent Chromium	0.6 J	4 J	PPM	MW-109A	3 / 24	0.55 - 0.57	4	--	2.2E+01	nc	NA	NA	No	BSL
	7440-48-4	Cobalt	5.2	5.2	PPM	CPT-24	1 / 1	0.31 - 0.31	5.2	--	1.4E+02	nc	NA	NA	No	BSL
	7440-50-8	Copper	7.02	576 J	PPM	GZA-45	18 / 18	0.7 - 0.7	576	--	3.1E+02	nc	NA	NA	Yes	ASL
	7439-89-6	Iron	13700	13700	PPM	CPT-24	1 / 1	11.4 - 11.4	13700	--	2.3E+03	nc	NA	NA	Yes	ASL
	7439-92-1	Lead	4.96 J	3820 J	PPM	GZA-45	32 / 32	0.48 - 0.97	441.03	--	4.0E+02	nc	NA	NA	Yes	ASL
	7439-95-4	Magnesium	3800	3800	PPM	CPT-24	1 / 1	16.8 - 16.8	3800	--	NA	--	NA	NA	No	NUT
	7439-96-5	Manganese	183	183	PPM	CPT-24	1 / 1	0.22 - 0.22	183	--	1.8E+02	nc	NA	NA	Yes	ASL
	7440-02-0	Nickel	6.29 J	303 J	PPM	GZA-45	18 / 18	0.51 - 0.51	303	--	1.6E+02	nc	NA	NA	Yes	ASL
	7440-09-7	Potassium	561	561	PPM	CPT-24	1 / 1	59.1 - 59.1	561	--	NA	--	NA	NA	No	NUT
	7782-49-2	Selenium	0.831 J	10.6	PPM	GZA-24	13 / 18	-	10.6	--	3.9E+01	nc	NA	NA	No	BSL
	7440-22-4	Silver	0.145 J	11.2 J	PPM	GZA-45	8 / 18	-	11.2	--	3.9E+01	nc	NA	NA	No	BSL
	7440-23-5	Sodium	1430	1430	PPM	CPT-24	1 / 1	116 - 116	1430	--	NA	--	NA	NA	No	NUT
	7440-28-0	Thallium	0.95 J	0.95 J	PPM	GZA-27	1 / 18	-	0.95	--	5.2E-01	nc	NA	NA	Yes	ASL
	7440-62-2	Vanadium	39.3 J	75.9	PPM	CPT-24	2 / 2	0.63 - 0.63	75.9	--	7.8E+00	nc	NA	NA	Yes	ASL
	7440-66-6	Zinc	20.5 J	593	PPM	CPT-24	17 / 17	0.94 - 0.94	593	--	2.3E+03	nc	NA	NA	No	BSL
	7439-97-6	Mercury	0.013 J	4.4	PPM	GZA-20	18 / 18	0.02 - 0.02	4.4	--	6.1E-01	nc	NA	NA	Yes	ASL
	72-54-8	4,4'-DDD	0.01	0.01	PPM	CPT-24	1 / 1	-	0.01	--	2.4E+00	ca	NA	NA	No	BSL
	72-43-5	Methoxychlor	0.013	0.013	PPM	CPT-24	1 / 1	-	0.013	--	3.1E+01	nc	NA	NA	No	BSL
	12672-29-6	Aroclor-1248	0.043	0.18	PPM	MW-107DS	2 / 20	0.0038 - 0.0042	0.18	--	1.0E+00	nc	NA	NA	No	BSL
	11097-69-1	Aroclor-1254	0.017 J	0.409	PPM	TL10-3.5	11 / 20	0.0037 - 0.051	0.409	--	1.0E+00	nc	NA	NA	No	BSL
	11096-82-5	Aroclor-1260	0.014 J	0.195 J	PPM	TL10-3.5	13 / 20	0.0037 - 0.022	0.195	--	1.0E+00	nc	NA	NA	No	BSL
	75-34-3	1,1-Dichloroethane	0.13 J	0.13 J	PPM	MW-107DS	1 / 33	0.074 - 0.074	0.13	--	5.1E+01	nc	NA	NA	No	FOD
	78-93-3	2-Butanone (MEK)	0.45 J	0.45 J	PPM	GZA-45	1 / 33	-	0.45	--	2.2E+03	nc	NA	NA	No	FOD
	591-78-6	2-Hexanone	2.7 J	4.1	PPM	GZA-21	2 / 33	-	4.1	--	5.3E+02	nc	NA	NA	No	BSL
	108-10-1	4-Methyl-2-pentanone	1.3 J	1.3 J	PPM	GZA-45	1 / 33	-	1.3	--	5.3E+02	nc	NA	NA	No	FOD
	67-64-1	Acetone	0.012 J	2.5 J	PPM	GZA-45	13 / 33	0.007 - 0.012	2.5	--	1.4E+03	nc	NA	NA	No	BSL
	71-43-2	Benzene	0.0006 J	1.9	PPM	GZA-21	14 / 33	0.0005 - 0.041	1.9	--	6.4E-01	ca*	NA	NA	Yes	ASL
	75-15-0	Carbon disulfide	0.003 J	0.21 J	PPM	GZA-45	2 / 33	0.001 - 0.001	0.21	--	3.6E+01	nc	NA	NA	No	BSL
	156-59-2	cis-1,2-Dichloroethene	0.13 J	0.13 J	PPM	MW-120B	1 / 33	0.083 - 0.083	0.13	--	4.3E+00	nc	NA	NA	No	FOD
	110-82-7	Cyclohexane	0.002 J	0.002 J	PPM	MW-109A	1 / 13	0.001 - 0.001	0.002	--	1.4E+02	sat	NA	NA	No	BSL
	100-41-4	Ethylbenzene	0.064 J	10	PPM	GZA-45	9 / 33	0.001 - 0.083	10	--	1.9E+02	nc	NA	NA	No	BSL
	98-82-8	Isopropylbenzene (Cumene)	0.034	0.13 J	PPM	MW-120B	2 / 13	0.001 - 0.083	0.13	--	5.7E+01	nc	NA	NA	No	BSL
	79-20-9	Methyl Acetate	0.23 J	0.27 J	PPM	MW-120B	2 / 13	0.15 - 0.17	0.27	--	2.2E+03	nc	NA	NA	No	BSL
	108-87-2	Methylcyclohexane	0.003 J	0.003 J	PPM	MW-109A	1 / 13	0.001 - 0.001	0.003	--	2.6E+02	nc	NA	NA	No	BSL
	75-09-2	Methylene chloride	0.007	0.007	PPM	MW-109A	1 / 33	0.002 - 0.002	0.007	--	9.1E+00	ca	NA	NA	No	FOD
	100-42-5	Styrene	0.018	0.15 J	PPM	GZA-45	2 / 33	0.001 - 0.001	0.15	--	4.4E+02	nc	NA	NA	No	BSL
	127-18-4	Tetrachloroethene	0.094 J	0.72	PPM	GZA-45	2 / 33	0.083 - 0.083	0.72	--	4.8E-01	ca*	NA	NA	Yes	ASL
	108-88-3	Toluene	0.064 J	1	PPM	GZA-45	8 / 33	0.001 - 0.083	1	--	6.6E+01	nc	NA	NA	No	BSL
	79-01-6	Trichloroethene	0.21 J	0.48	PPM	MW-120B	3 / 33	0.083 - 0.083	0.48	--	5.3E-02	ca	NA	NA	Yes	ASL

Table 2.11
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Minimum Concentration Qualifier	Maximum Concentration	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
	75-01-4	Vinyl chloride	0.096	J	0.096	J	PPM	MW-120B	1 / 33	0.083 - 0.083	0.096	--	7.9E-02	ca	NA	NA	No	FOD
	XYLENES1314	m,p-Xylene	0.25	J	1.8		PPM	GZA-21	4 / 18	0.1 - 0.15	1.8	--	2.7E+01	nc	NA	NA	No	BSL
	95-47-6	o-Xylene	0.15	J	6.9		PPM	GZA-45	4 / 18	0.04 - 0.058	6.9	--	2.7E+01	nc	NA	NA	No	BSL
	1330-20-7	Xylene (Total)	0.27	J	7.7		PPM	MW-106	4 / 16	0.001 - 0.083	7.7	--	2.7E+01	nc	NA	NA	No	BSL
	95-50-1	1,2-Dichlorobenzene	0.23	J	0.23	J	PPM	MW-120B	1 / 26	0.083 - 0.083	0.23	--	1.1E+02	nc	NA	NA	No	FOD
	105-67-9	2,4-Dimethylphenol	0.032	J	0.032	J	PPM	CPT-24	1 / 14	-	0.032	--	1.2E+02	nc	NA	NA	No	BSL
	91-57-6	2-Methylnaphthalene	0.25		28		PPM	MW-120B	8 / 14	0.039 - 1.9	28	--	5.6E+00	nc	NA	NA	Yes	ASL
	106-44-5	4-Methylphenol	0.032	J	1.9	J	PPM	MW-120B	2 / 13	0.86 - 0.86	1.9	--	3.1E+01	nc	NA	NA	No	BSL
	83-32-9	Acenaphthene	0.042	J	110		PPM	MW-120B	21 / 28	0.037 - 8.6	110	--	3.7E+02	nc	NA	NA	No	BSL
	208-96-8	Acenaphthylene	0.045	J	10		PPM	MW-120B	18 / 28	0.037 - 0.43	10	--	3.7E+02	nc	NA	NA	No	BSL
	120-12-7	Anthracene	0.07	J	180		PPM	MW-109A	25 / 28	0.037 - 8.6	180	--	2.2E+03	nc	NA	NA	No	BSL
	56-55-3	Benzo(a)anthracene	0.2	J	270		PPM	MW-120B	25 / 28	0.037 - 8.6	270	--	6.2E-01	ca	NA	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.17	J	280		PPM	MW-120B	25 / 28	0.037 - 8.6	280	--	6.2E-02	ca	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.23	J	320		PPM	MW-120B	25 / 28	0.037 - 8.6	320	--	6.2E-01	ca	NA	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.07	J	160		PPM	MW-120B	23 / 28	0.037 - 8.6	160	--	2.3E+02	nc	NA	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	0.098	J	130		PPM	MW-120B	25 / 28	0.037 - 8.6	130	--	6.2E+00	ca	NA	NA	Yes	ASL
	92-52-4	1,1'-Biphenyl	0.084	J	11		PPM	MW-120B	5 / 13	0.039 - 0.43	11	--	3.0E+02	nc	NA	NA	No	BSL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.1	J	8.1		PPM	MW-120B	7 / 26	0.078 - 0.86	8.1	--	3.5E+01	ca*	NA	NA	No	BSL
	86-74-8	Carbazole	0.05	J	70		PPM	MW-120B	13 / 14	0.037 - 8.6	70	--	2.4E+01	ca	NA	NA	Yes	ASL
	218-01-9	Chrysene	0.21	J	250		PPM	MW-120B	25 / 28	0.037 - 8.6	250	--	6.2E+01	ca	NA	NA	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	0.065	J	51		PPM	MW-120B	18 / 28	0.037 - 8.6	51	--	6.2E-02	ca	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	0.042	J	48		PPM	MW-120B	11 / 14	0.037 - 8.6	48	--	1.5E+01	nc	NA	NA	Yes	ASL
	206-44-0	Fluoranthene	0.42		530		PPM	MW-120B	27 / 28	0.037 - 8.6	530	--	2.3E+02	nc	NA	NA	Yes	ASL
	86-73-7	Fluorene	0.051	J	94		PPM	GZA-45	19 / 28	0.037 - 8.6	94	--	2.7E+02	nc	NA	NA	No	BSL
	193-39-5	Indeno(1,2,3-c,d)pyrene	0.2	J	150		PPM	MW-120B	20 / 28	0.037 - 8.6	150	--	6.2E-01	ca	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.044	J	75		PPM	MW-120B	17 / 28	0.037 - 8.6	75	--	5.6E+00	nc	NA	NA	Yes	ASL
	86-30-6	N-Nitrosodiphenylamine	2.6		2.6		PPM	MW-120B	1 / 26	0.43 - 0.43	2.6	--	9.9E+01	ca*	NA	NA	No	FOD
	85-01-8	Phenanthrene	0.26		430		PPM	MW-120B	27 / 28	0.037 - 8.6	430	--	2.2E+03	nc	NA	NA	No	BSL
	108-95-2	Phenol	0.026	J	1.2	J	PPM	MW-120B	2 / 14	0.43 - 0.43	1.2	--	1.8E+03	nc	NA	NA	No	BSL
	129-00-0	Pyrene	0.44		440		PPM	MW-120B	25 / 28	0.037 - 8.6	440	--	2.3E+02	nc	NA	NA	Yes	ASL

(1) Maximum concentration is used for screening except for lead. Average concentration is used for screening for lead.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Residential Soil; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)
Frequency of Detection (FOD)

Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Chromium (VI) was used as a surrogate for Chromium
Mercury (methyl) was used as a surrogate for Mercury
Methyl isobutyl ketone was used as a surrogate for 2-Hexanone
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Pyrene was used as a surrogate for Benzo(ghi)perylene
Xylenes (total) was used as a surrogate for m,p-Xylene, m-Xylene, and o-Xylene
The residential/commercial soil screening criterion for PCBs (1 ppm) was used for aroclor 1248, 1254, and 1260 (see text)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
ca = Carcinogenic
nc = Noncarcinogenic
sat = Soil saturation
NA = Not available

Table 2.12
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Min Qual	Maximum Concentration	Max Qual	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Former Lever Brothers Property	7440-38-2	Arsenic	5.7		23200		PPB	MW-107A	25 / 29	0.66 - 165	23200	--	4.5E-02	ca	3	NJ GWSL	Yes	ASL
	22569-72-8	Arsenic (III)	193		30700		PPB	MW-107A	2 / 2	9.6 - 9600	30700	--	4.5E-02	ca	NA		Yes	ASL
	17428-41-0	Arsenic (V)	174		174		PPB	MW-109A	1 / 2	25.3 - 25.3	174	--	4.5E-02	ca	NA		Yes	ASL
	7439-89-6	Iron	2410		401000		PPB	MW-107A	2 / 2	25 - 25	401000	--	1.1E+03	nc	300	NJ GWSL	Yes	ASL
	7439-92-1	Lead	0.2	J	6.3		PPB	MW-106A	16 / 27	0.18 - 0.9	6.3	--	1.5E+01	MCL	5	NJ GWSL	No	BSL
	75-34-3	1,1-Dichloroethane	0.55	J	1.4	J	PPB	MW-122A	2 / 27	0.23 - 1	1.4	--	8.1E+01	nc	50	NJ GWSL	No	BSL
	78-93-3	2-Butanone (MEK)	11	J	11	J	PPB	MW-106A	2 / 27	5 - 5	11	--	7.0E+02	nc	300	NJ GWSL	No	BSL
	591-78-6	2-Hexanone	6	J	6	J	PPB	MW-106A	1 / 27	5 - 5	6	--	2.0E+02	nc	NA		No	FOD
	67-64-1	Acetone	28	J	28	J	PPB	MW-106A	1 / 27	15 - 15	28	--	5.5E+02	nc	6000	NJ GWSL	No	FOD
	98-86-2	Acetophenone	30		30		PPB	MW-107A	1 / 27	0.002 - 0.002	30	--	6.1E+01	nc	700	NJ GWSL	No	FOD
	71-43-2	Benzene	0.1	J	2800		PPB	MW-107A	14 / 27	0.1 - 50	2800	--	3.5E-01	ca	1	NJ GWSL	Yes	ASL
	75-15-0	Carbon disulfide	0.2	J	14	J	PPB	MW-107A	7 / 27	0.1 - 10	14	--	1.0E+02	nc	700	NJ GWSL	No	BSL
	75-00-3	Chloroethane	0.1	J	5.5		PPB	MW-106A	4 / 27	0.1 - 1	5.5	--	4.6E+00	ca	NA		Yes	ASL
	74-87-3	Chloromethane	0.1	J	2.7	J	PPB	MW-106A	5 / 27	0.1 - 1	2.7	--	1.6E+01	nc	NA		No	BSL
	156-59-2	cis-1,2-Dichloroethene	0.1	J	3.3		PPB	MW-29	8 / 27	0.1 - 1	3.3	--	6.1E+00	nc	70	NJ GWSL	No	BSL
	110-82-7	Cyclohexane	0.3	J	81		PPB	MW-106A	6 / 27	0.0001 - 0.001	81	--	1.0E+03	nc	NA		No	BSL
	100-41-4	Ethylbenzene	0.6		550		PPB	MW-107A	15 / 27	0.1 - 10	550	--	1.3E+02	nc	700	NJ GWSL	Yes	ASL
	98-82-8	Isopropylbenzene (Cumene)	0.2	J	55.4		PPB	MW-29	15 / 27	0.0001 - 0.01	55.4	--	6.6E+01	nc	700	NJ GWSL	No	BSL
	108-87-2	Methylcyclohexane	0.2	J	170		PPB	MW-106A	8 / 27	0.0001 - 0.005	170	--	5.2E+02	nc	NA		No	BSL
	108-88-3	Toluene	0.1	J	2000		PPB	MW-107A	14 / 27	0.1 - 50	2000	--	7.2E+01	nc	1000	NJ GWSL	Yes	ASL
	156-60-5	trans-1,2-Dichloroethene	0.44	J	0.44	J	PPB	MW-29	1 / 27	0.42 - 0.42	0.44	--	1.2E+01	nc	100	NJ GWSL	No	FOD
	79-01-6	Trichloroethene	0.68	J	1.4	J	PPB	MW-122A	2 / 27	0.29 - 1	1.4	--	2.8E-02	ca	1	NJ GWSL	Yes	ASL
	75-01-4	Vinyl chloride	1.9		1.9		PPB	MW-29	1 / 27	0.29 - 0.29	1.9	--	2.0E-02	ca	1	NJ GWSL	No	FOD
	XYLENES1314	m,p-Xylene	100		1010		PPB	MW-107A	5 / 8	0.42 - 8.4	1010	--	2.1E+01	nc	NA		Yes	ASL
	95-47-6	o-Xylene	30.7		452		PPB	MW-107A	4 / 8	0.31 - 6.1	452	--	2.1E+01	nc	NA		Yes	ASL
	1330-20-7	Xylene (Total)	1.5		1600		PPB	MW-107A	18 / 27	0.1 - 10	1600	--	2.1E+01	nc	1000	NJ GWSL	Yes	ASL
	120-82-1	1,2,4-Trichlorobenzene	0.5	J	0.5	J	PPB	MW-106A	1 / 27	0.5 - 0.5	0.5	--	7.2E-01	nc	9	NJ GWSL	No	FOD
	105-67-9	2,4-Dimethylphenol	3.8	J	600		PPB	MW-107A	10 / 27	1.6 - 29	600	--	7.3E+01	nc	100	NJ GWSL	Yes	ASL
	91-57-6	2-Methylnaphthalene	2	J	1300		PPB	MW-107A	15 / 27	0.41 - 190	1300	--	6.2E-01	nc	NA		Yes	ASL
	95-48-7	2-Methylphenol	4.2	J	51		PPB	MW-107A	7 / 27	0.9 - 10	51	--	1.8E+02	nc	NA		No	BSL
	34METPH	3&4-Methylphenol	7.1		68.6		PPB	MW-107A	3 / 8	1.3 - 1.3	68.6	--	1.8E+01	nc	NA		Yes	ASL
	106-44-5	4-Methylphenol	7		120		PPB	MW-106A	8 / 19	2 - 19	120	--	1.8E+01	nc	NA		Yes	ASL
	83-32-9	Acenaphthene	4	J	280		PPB	MW-107A	16 / 27	0.017 - 18	280	--	3.7E+01	nc	400	NJ GWSL	Yes	ASL
	208-96-8	Acenaphthylene	0.21		31		PPB	MW-107A	9 / 27	0.0095 - 10	31	--	3.7E+01	nc	NA		No	BSL
	120-12-7	Anthracene	0.501		4.4		PPB	MW-106A	10 / 27	0.021 - 1	4.4	--	1.8E+02	nc	2000	NJ GWSL	No	BSL
	56-55-3	Benzo(a)anthracene	0.232		0.245		PPB	MW-120B	2 / 27	0.0068 - 0.0068	0.245	--	9.2E-02	ca	0.1	NJ GWSL	Yes	ASL
	92-52-4	1,1'-Biphenyl	0.54	J	170		PPB	MW-107A	11 / 27	0.002 - 0.01	170	--	3.0E+01	nc	400	NJ GWSL	Yes	ASL
	105-60-2	Caprolactam	9	J	9	J	PPB	MW-115A	1 / 27	0.005 - 0.005	9	--	1.8E+03	nc	NA		No	FOD
	86-74-8	Carbazole	1	J	229		PPB	MW-122A	13 / 27	0.36 - 19	229	--	3.4E+00	ca	NA		Yes	ASL

Table 2.12
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	CAS Number	Chemical	Minimum Concentration Qualifier		Maximum Concentration Qualifier		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
	132-64-9	Dibenzofuran	1.3	J	150		PPB	MW-107A	16 / 27	0.34 - 10	150	--	1.2E+00	nc	NA		Yes	ASL
	206-44-0	Fluoranthene	0.334		3.51		PPB	MW-106A	13 / 27	0.009 - 1	3.51	--	1.5E+02	nc	300	NJ GWSL	No	BSL
	86-73-7	Fluorene	3	J	110		PPB	MW-107A	15 / 27	0.02 - 10	110	--	2.4E+01	nc	300	NJ GWSL	Yes	ASL
	91-20-3	Naphthalene	1	J	12000		PPB	MW-107A	17 / 27	0.026 - 480	12000	--	6.2E-01	nc	300	NJ GWSL	Yes	ASL
	98-95-3	Nitrobenzene	8		8		PPB	MW-120A	1 / 27	1 - 1	8	--	3.4E-01	nc	6	NJ GWSL	No	FOD
	85-01-8	Phenanthrene	5		23		PPB	MW-106A	16 / 27	0.021 - 10	23	--	1.8E+02	nc	NA		No	BSL
	108-95-2	Phenol	2	J	11		PPB	MW-107A	7 / 27	0.5 - 10	11	--	1.1E+03	nc	2000	NJ GWSL	No	BSL
	129-00-0	Pyrene	0.239		2.43		PPB	MW-106A	13 / 27	0.014 - 1	2.43	--	1.8E+01	nc	200	NJ GWSL	No	BSL

(1) Maximum concentration is used for screening.
(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Tap Water; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1
(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Frequency of Detection (FOD)

Arsenic III and Arsenic IV data are included for informational purposes only and are not carried through the risk calculations
4-Methylphenol was used as a surrogate for 3&4-methylphenol.
Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Arsenic was used as a surrogate for Arsenic (III) and Arsenic (V)
Methyl isobutyl ketone was used as a surrogate for 2-Hexanone
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Xylenes, total was used for o-Xylene, and m,p-Xylene

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
MCL = Maximum Contaminant Level
nc = Noncarcinogenic
ca = Cardinogenic
N(R3) = EPA Region 3 Preliminary Remediation Goals (PRGs) adjusted adjusted using HQ=0.1
NA = Not available

Table 2.13

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Minimum Concentration Qualifier	Maximum Concentration	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Block 93 North	7429-90-5	Aluminum	4970		15700		PPM	SB-11K	13 / 13	4.9 - 12.3	15700	--	7.6E+03	nc	NA	NA	Yes	ASL
	7440-36-0	Antimony	1.23		41		PPM	SB-22	9 / 13	0.79 - 1.23	41	--	3.1E+00	nc	NA	NA	Yes	ASL
	7440-38-2	Arsenic	3.32		913		PPM	SB-13M	14 / 15	0.73 - 1.23	913	--	3.9E-01	ca*	NA	NA	Yes	ASL
	7440-39-3	Barium	49.1		195		PPM	SB-22	13 / 13	0.095 - 12.3	195	--	5.4E+02	nc	NA	NA	No	BSL
	7440-41-7	Beryllium	0.24	J	4.4		PPM	SB-11K	11 / 13	0.021 - 0.615	4.4	--	1.5E+01	nc	NA	NA	No	BSL
	7440-43-9	Cadmium	0.29	J	1.3		PPM	TL14-10.75	9 / 13	0.093 - 0.308	1.3	--	3.7E+00	nc	NA	NA	No	BSL
	7440-70-2	Calcium	1830		41400		PPM	SB-10J	13 / 13	6.7 - 61.5	41400	--	NA	--	NA	NA	No	NUT
	7440-47-3	Chromium	11.9		84.1		PPM	SB-22	14 / 15	0.45 - 2.46	84.1	--	2.2E+01	nc	NA	NA	Yes	ASL
	16065-83-1	Chromium, Trivalent	11.9		84.1		PPM	SB-22	2 / 2	2.2 - 2.5	84.1	--	1.2E+04	nc	NA	NA	No	BSL
	18540-29-9	Hexavalent Chromium	0.56	J	0.56	J	PPM	SB-24	1 / 9	0.25 - 0.25	0.56	--	2.2E+01	nc	NA	NA	No	BSL
	7440-48-4	Cobalt	5.6	J	23		PPM	SB-11K	13 / 13	0.17 - 2.46	23	--	1.4E+02	nc	NA	NA	No	BSL
	7440-50-8	Copper	28.6		472		PPM	SB-11K	13 / 13	0.24 - 2.46	472	--	3.1E+02	nc	NA	NA	Yes	ASL
	7439-89-6	Iron	16800		38300	J	PPM	SB-13M	13 / 13	4 - 30.8	38300	--	2.3E+03	nc	NA	NA	Yes	ASL
	7439-92-1	Lead	17.1		1960		PPM	SB-19	15 / 15	0.33 - 0.96	441	--	4.0E+02	nc	NA	NA	Yes	ASL
	7439-95-4	Magnesium	1750		8340		PPM	QR-03	13 / 13	1.7 - 61.5	8340	--	NA	--	NA	NA	No	NUT
	7439-96-5	Manganese	101		828		PPM	QR-03	13 / 13	0.039 - 6.15	828	--	1.8E+02	nc	NA	NA	Yes	ASL
	7440-02-0	Nickel	17.7		173		PPM	SB-11K	13 / 13	0.33 - 1.23	173	--	1.6E+02	nc	NA	NA	Yes	ASL
	7440-09-7	Potassium	235		1490	J	PPM	SB-10J	13 / 13	2.7 - 61.5	1490	--	NA	--	NA	NA	No	NUT
	7782-49-2	Selenium	1.1	J	28.3		PPM	SB-19	7 / 13	0.82 - 2.46	28.3	--	3.9E+01	nc	NA	NA	No	BSL
	7440-22-4	Silver	0.615		1.8		PPM	SB-13M	8 / 13	0.21 - 0.615	1.8	--	3.9E+01	nc	NA	NA	No	BSL
	7440-23-5	Sodium	189		1450		PPM	SB-11K	8 / 13	35 - 123	1450	--	NA	--	NA	NA	No	NUT
	7440-28-0	Thallium	0.127		4.8		PPM	SB-13M	4 / 13	0.123 - 1.2	4.8	--	5.2E-01	nc	NA	NA	Yes	ASL
	7440-62-2	Vanadium	25.8		95.3		PPM	QR-03	13 / 13	0.11 - 2.46	95.3	--	7.8E+00	nc	NA	NA	Yes	ASL
	7440-66-6	Zinc	55.7		1000		PPM	SB-11K	12 / 12	0.3 - 2.46	1000	--	2.3E+03	nc	NA	NA	No	BSL
	7439-97-6	Mercury	0.069		10		PPM	SB-19	12 / 13	0.0029 - 0.25	10	--	6.1E-01	nc	NA	NA	Yes	ASL
	50-29-3	4,4'-DDT	0.023	J	0.023	J	PPM	SB-111A	1 / 3	0.0073 - 0.0073	0.023	--	1.7E+00	ca*	NA	NA	No	BSL
	33213-65-9	Endosulfan II	0.015	J	0.015	J	PPM	SB-111A	1 / 4	0.0073 - 0.0073	0.015	--	3.7E+01	nc	NA	NA	No	BSL
	53469-21-9	Aroclor-1242	0.051		0.051		PPM	SB-11K	1 / 12	0.0036 - 0.0036	0.051	--	1.0E+00	nc	NA	NA	No	BSL
	12672-29-6	Aroclor-1248	0.77	J	0.77	J	PPM	SB-10J	1 / 12	0.019 - 0.019	0.77	--	1.0E+00	nc	NA	NA	No	BSL
	11097-69-1	Aroclor-1254	0.065		1.66		PPM	TL14-10.75	4 / 12	0.004 - 0.055	1.66	--	1.0E+00	nc	NA	NA	Yes	ASL
	11096-82-5	Aroclor-1260	0.025		3.58		PPM	TL14-10.75	6 / 12	0.0036 - 0.041	3.58	--	1.0E+00	nc	NA	NA	Yes	ASL
	67-64-1	Acetone	0.017	J	0.19	J	PPM	SB-13M	5 / 16	0.007 - 0.01	0.19	--	1.4E+03	nc	NA	NA	No	BSL
	71-43-2	Benzene	0.0008	J	13.9		PPM	TL14-10.75	6 / 17	0.0005 - 2.1	13.9	--	6.4E-01	ca*	NA	NA	Yes	ASL
	75-15-0	Carbon disulfide	0.002	J	0.003	J	PPM	SB-13M	2 / 16	0.001 - 0.001	0.003	--	3.6E+01	nc	NA	NA	No	BSL
	110-82-7	Cyclohexane	3.5		3.5		PPM	B-2-90	1 / 16	-	3.5	--	1.4E+02	sat	NA	NA	No	BSL
	287-92-3	Cyclopentane	4.8		4.8		PPM	B-2-90	1 / 1	-	4.8	--	1.4E+02	sat	NA	NA	No	BSL
	100-41-4	Ethylbenzene	0.021		40.1		PPM	TL14-10.75	4 / 17	0.001 - 2	40.1	--	1.9E+02	nc	NA	NA	No	BSL
	98-82-8	Isopropylbenzene (Cumene)	15.7	J	15.7	J	PPM	TL14-10.75	1 / 15	2 - 2	15.7	--	5.7E+01	nc	NA	NA	No	BSL
	79-20-9	Methyl Acetate	0.15	J	0.15	J	PPM	SB-11K	1 / 15	0.1 - 0.1	0.15	--	2.2E+03	nc	NA	NA	No	BSL
	108-87-2	Methylcyclohexane	0.14	J	0.14	J	PPM	SB-11K	1 / 15	0.083 - 0.083	0.14	--	2.6E+02	nc	NA	NA	No	BSL
	127-18-4	Tetrachloroethene	0.088	J	0.088	J	PPM	SB-11K	1 / 16	0.051 - 0.051	0.088	--	4.8E-01	ca*	NA	NA	No	BSL
	108-88-3	Toluene	0.731		26.6		PPM	TL14-10.75	2 / 17	0.13 - 2.4	26.6	--	6.6E+01	nc	NA	NA	No	BSL
	XYLENES1314	m,p-Xylene	0.643		180		PPM	TL14-10.75	2 / 8	210 - 3800	180	--	2.7E+01	nc	NA	NA	Yes	ASL
	108-38-3	m-Xylene	3.7		3.7		PPM	B-2-90	1 / 1	-	3.7	--	2.7E+01	nc	NA	NA	No	BSL
	95-47-6	o-Xylene	0.25		90.4		PPM	TL14-10.75	2 / 8	120 - 2200	90.4	--	2.7E+01	nc	NA	NA	Yes	ASL
	XYLENES1214	o,p-Xylene	26		26		PPM	B-2-90	1 / 1	-	26	--	2.7E+01	nc	NA	NA	No	BSL
	1330-20-7	Xylene (Total)	0.12		270		PPM	TL14-10.75	3 / 15	0.001 - 2.2	270	--	2.7E+01	nc	NA	NA	Yes	ASL

Table 2.13

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Qualifier	Maximum Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
	105-67-9	2,4-Dimethylphenol	3.23	J	5.63	J	PPM	SB-21	2 / 16	0.45 - 0.49	5.63	--	1.2E+02	nc	NA	NA	No	BSL
	91-57-6	2-Methylnaphthalene	0.336	J	764		PPM	TL14-10.75	12 / 16	0.13 - 25	764	--	5.6E+00	nc	NA	NA	Yes	ASL
	95-48-7	2-Methylphenol	1.19		5.06	J	PPM	SB-21	2 / 16	0.17 - 0.19	5.06	--	3.1E+02	nc	NA	NA	No	BSL
	34METPH	3&4-Methylphenol	12.6	J	12.6	J	PPM	SB-21	1 / 7	250 - 250	12.6	--	3.1E+01	nc	NA	NA	No	BSL
	83-32-9	Acenaphthene	0.867		949		PPM	TL14-10.75	16 / 17	0.021 - 20	949	--	3.7E+02	nc	NA	NA	Yes	ASL
	208-96-8	Acenaphthylene	0.443		20.7	J	PPM	SB-21	15 / 17	0.017 - 7.1	20.7	--	3.7E+02	nc	NA	NA	No	BSL
	120-12-7	Anthracene	1.85		1510		PPM	TL14-10.75	16 / 17	0.016 - 15	1510	--	2.2E+03	nc	NA	NA	No	BSL
	56-55-3	Benzo(a)anthracene	7.71		396		PPM	TL14-10.75	16 / 17	0.099 - 19	396	--	6.2E-01	ca	NA	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	7.8	J	249		PPM	SB-21	16 / 17	0.071 - 13	249	--	6.2E-02	ca	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	7.55		280		PPM	SB-11K	16 / 17	0.093 - 18	280	--	6.2E-01	ca	NA	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	3.98		140		PPM	SB-13M	16 / 17	0.11 - 21	140	--	2.3E+02	nc	NA	NA	No	BSL
	207-08-9	Benzo(k)fluoranthene	3.7	J	185		PPM	SB-21	16 / 17	0.15 - 29	185	--	6.2E+00	ca	NA	NA	Yes	ASL
	92-52-4	1,1'-Biphenyl	0.026	J	120		PPM	TL14-10.75	10 / 15	0.02 - 19	120	--	3.0E+02	nc	NA	NA	No	BSL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.627	J	17		PPM	B-2-90	5 / 17	0.052 - 0.38	17	--	3.5E+01	ca*	NA	NA	No	BSL
	86-74-8	Carbazole	0.35	J	311		PPM	TL14-10.75	15 / 16	0.017 - 16	311	--	2.4E+01	ca	NA	NA	Yes	ASL
	218-01-9	Chrysene	7.4		417		PPM	TL14-10.75	16 / 17	0.076 - 14	417	--	6.2E+01	ca	NA	NA	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	1.5		49.9		PPM	SB-21	15 / 17	0.021 - 20	49.9	--	6.2E-02	ca	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	0.215		688		PPM	TL14-10.75	14 / 16	0.019 - 18	688	--	1.5E+01	nc	NA	NA	Yes	ASL
	206-44-0	Fluoranthene	13	J	2430		PPM	TL14-10.75	16 / 17	0.073 - 14	2430	--	2.3E+02	nc	NA	NA	Yes	ASL
	86-73-7	Fluorene	0.511		1080		PPM	TL14-10.75	15 / 17	0.016 - 15	1080	--	2.7E+02	nc	NA	NA	Yes	ASL
	193-39-5	Indeno(1,2,3-c,d)pyrene	3.9		130		PPM	SB-13M	16 / 17	0.12 - 24	130	--	6.2E-01	ca	NA	NA	Yes	ASL
	91-20-3	Naphthalene	0.252		1600		PPM	TL14-10.75	14 / 17	0.023 - 22	1600	--	5.6E+00	nc	NA	NA	Yes	ASL
	85-01-8	Phenanthrene	5.69		3620		PPM	TL14-10.75	16 / 17	0.09 - 17	3620	--	2.2E+03	nc	NA	NA	Yes	ASL
	108-95-2	Phenol	6.71	J	6.71	J	PPM	SB-21	1 / 16	0.22 - 0.22	6.71	--	1.8E+03	nc	NA	NA	No	BSL
	129-00-0	Pyrene	11.6		1530		PPM	TL14-10.75	16 / 17	0.071 - 13	1530	--	2.3E+02	nc	NA	NA	Yes	ASL

(1) Maximum concentration is used for screening except for lead. Average concentration is used for screening for lead.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Residential Soil; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)

Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Chromium (VI) was used as a surrogate for Chromium
Cyclohexane was used as a surrogate for Cyclopentane
Endosulfan was used as a surrogate for Endosulfan II
Mercury (methyl) was used as a surrogate for Mercury
4-Methylphenol was used as a surrogate for 3&4-Methylphenol
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Pyrene was used as a surrogate for Benzo(ghi)perylene
Xylenes (total) was used as a surrogate for m,p-Xylene, m-Xylene, o-Xylene, and p,o-Xylene
The residential/commercial soil screening criterion for PCB (1 ppm) was used for aroclor 1242, 1248, 1254, and 1260 (see text)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
ca = Carcinogenic
nc = Noncarcinogenic
sat = Soil saturation
NA = Not available

Table 2.14

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Qualifier	Maximum Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Block 93 North	7429-90-5	Aluminum	1150		15700		PPM	SB-11K	31 / 31	4.9 - 502	15700	--	7.6E+03	nc	NA	NA	Yes	ASL
	7440-36-0	Antimony	1.23		41		PPM	SB-22	9 / 31	0.79 - 1.23	41	--	3.1E+00	nc	NA	NA	Yes	ASL
	7440-38-2	Arsenic	2.84		913		PPM	SB-13M	34 / 36	0.73 - 1.72	913	--	3.9E-01	ca*	NA	NA	Yes	ASL
	7440-39-3	Barium	17		445		PPM	3Y-2	31 / 31	0.095 - 17.2	445	--	5.4E+02	nc	NA	NA	No	BSL
	7440-41-7	Beryllium	0.23	J	5.8		PPM	SB-11K	18 / 31	0.021 - 0.615	5.8	--	1.5E+01	nc	NA	NA	No	BSL
	7440-43-9	Cadmium	0.19	J	2.8		PPM	SB-20	20 / 31	0.093 - 0.326	2.8	--	3.7E+00	nc	NA	NA	No	BSL
	7440-70-2	Calcium	830		261000		PPM	3Y-B5	31 / 31	6.7 - 2150	261000	--	NA	--	NA	NA	No	NUT
	7440-47-3	Chromium	5.28		84.1		PPM	SB-22	34 / 35	0.45 - 3.43	84.1	--	2.2E+01	nc	NA	NA	Yes	ASL
	16065-83-1	Chromium, Trivalent	11.9		84.1		PPM	SB-22	2 / 2	2.2 - 2.5	84.1	--	1.2E+04	nc	NA	NA	No	BSL
	18540-29-9	Hexavalent Chromium	0.56	J	0.56	J	PPM	SB-24	1 / 13	0.25 - 0.25	0.56	--	2.2E+01	nc	NA	NA	No	BSL
	7440-48-4	Cobalt	2.3	J	23		PPM	SB-11K	29 / 31	0.17 - 2.61	23	--	1.4E+02	nc	NA	NA	No	BSL
	7440-50-8	Copper	11.1		472		PPM	SB-11K	30 / 31	0.24 - 2.61	472	--	3.1E+02	nc	NA	NA	Yes	ASL
	7439-89-6	Iron	1340		100000		PPM	3Y-1	31 / 31	4 - 1260	100000	--	2.3E+03	nc	NA	NA	Yes	ASL
	7439-92-1	Lead	8.31		1960		PPM	SB-19	36 / 36	0.33 - 0.96	290	--	4.0E+02	nc	NA	NA	No	BSL
	7439-95-4	Magnesium	192	J	9410		PPM	3Y-4	31 / 31	1.7 - 85.8	9410	--	NA	--	NA	NA	No	NUT
	7439-96-5	Manganese	21		987		PPM	SB-20	31 / 31	0.039 - 6.15	987	--	1.8E+02	nc	NA	NA	Yes	ASL
	7440-02-0	Nickel	4.01		173		PPM	SB-11K	31 / 31	0.33 - 1.72	173	--	1.6E+02	nc	NA	NA	Yes	ASL
	7440-09-7	Potassium	154	J	1830		PPM	3Y-1	30 / 31	2.7 - 65.3	1830	--	NA	--	NA	NA	No	NUT
	7782-49-2	Selenium	1	J	28.3		PPM	SB-19	13 / 31	0.82 - 2.46	28.3	--	3.9E+01	nc	NA	NA	No	BSL
	7440-22-4	Silver	0.615		1.8		PPM	SB-13M	8 / 31	0.21 - 0.615	1.8	--	3.9E+01	nc	NA	NA	No	BSL
	7440-23-5	Sodium	160		1450		PPM	SB-11K	21 / 31	35 - 131	1450	--	NA	--	NA	NA	No	NUT
	7440-28-0	Thallium	0.127		4.8		PPM	SB-13M	11 / 31	0.114 - 1.2	4.8	--	5.2E-01	nc	NA	NA	Yes	ASL
	7440-62-2	Vanadium	4.92		95.3		PPM	QR-03	31 / 31	0.11 - 3.43	95.3	--	7.8E+00	nc	NA	NA	Yes	ASL
	7440-66-6	Zinc	8		1000		PPM	SB-11K	30 / 30	0.3 - 3.43	1000	--	2.3E+03	nc	NA	NA	No	BSL
	7439-97-6	Mercury	0.056		10		PPM	SB-19	30 / 31	0.0029 - 0.25	10	--	6.1E-01	nc	NA	NA	Yes	ASL
	72-55-9	4,4'-DDE	0.013	J	0.013	J	PPM	SB-111A	1 / 17	0.0075 - 0.0075	0.013	--	1.7E+00	ca	NA	NA	No	BSL
	50-29-3	4,4'-DDT	0.023	J	0.047		PPM	SB-111A	2 / 16	0.0073 - 0.0075	0.047	--	1.7E+00	ca*	NA	NA	No	BSL
	33213-65-9	Endosulfan II	0.012	J	0.015	J	PPM	SB-111A	2 / 17	0.0073 - 0.0075	0.015	--	3.7E+01	nc	NA	NA	No	BSL
	7421-93-4	Endrin Aldehyde	0.0092	J	0.0092	J	PPM	SB-111A	1 / 17	0.0075 - 0.0075	0.0092	--	1.8E+00	nc	NA	NA	No	BSL
	53469-21-9	Aroclor-1242	0.051		0.051		PPM	SB-11K	1 / 28	0.0036 - 0.0036	0.051	--	1.0E+00	nc	NA	NA	No	FOD
	12672-29-6	Aroclor-1248	0.77	J	0.77	J	PPM	SB-10J	1 / 28	0.019 - 0.019	0.77	--	1.0E+00	nc	NA	NA	No	FOD
	11097-69-1	Aroclor-1254	0.065		1.66		PPM	TL14-10.75	4 / 28	0.004 - 0.055	1.66	--	1.0E+00	nc	NA	NA	Yes	ASL
	11096-82-5	Aroclor-1260	0.025		3.58		PPM	TL14-10.75	7 / 28	0.0036 - 0.041	3.58	--	1.0E+00	nc	NA	NA	Yes	ASL
	78-93-3	2-Butanone (MEK)	0.018	J	0.018	J	PPM	MW-101DS	1 / 35	0.009 - 0.009	0.018	--	2.2E+03	nc	NA	NA	No	FOD
	67-64-1	Acetone	0.017	J	0.19	J	PPM	SB-13M	7 / 35	0.007 - 0.016	0.19	--	1.4E+03	nc	NA	NA	No	BSL
	71-43-2	Benzene	0.0008	J	35.4		PPM	3Y-11	31 / 57	0.0005 - 2.1	35.4	--	6.4E-01	ca*	NA	NA	Yes	ASL
	75-15-0	Carbon disulfide	0.002	J	0.201	J	PPM	TL14-11.25	4 / 35	0.001 - 0.079	0.201	--	3.6E+01	nc	NA	NA	No	BSL
	156-59-2	cis-1,2-Dichloroethene	0.0854	J	0.0854	J	PPM	SB-21	1 / 34	0.066 - 0.066	0.0854	--	4.3E+00	nc	NA	NA	No	FOD
	110-82-7	Cyclohexane	3.5		3.5		PPM	B-2-90	1 / 35	-	3.5	--	1.4E+02	sat	NA	NA	No	FOD
	287-92-3	Cyclopentane	4.8		4.8		PPM	B-2-90	1 / 1	-	4.8	--	1.4E+02	sat	NA	NA	No	BSL
	100-41-4	Ethylbenzene	0.009	J	40.1		PPM	TL14-10.75	25 / 57	0.001 - 2	40.1	--	1.9E+02	nc	NA	NA	No	BSL

Table 2.14
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Minimum Concentration Qualifier	Maximum Concentration	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
	98-82-8	Isopropylbenzene (Cumene)	0.008	J	19.3		PPM	SB-19	6 / 34	0.002 - 2	19.3	--	5.7E+01	nc	NA	NA	No	BSL
	79-20-9	Methyl Acetate	0.15	J	1.46		PPM	TL14-11.25	2 / 34	0.1 - 0.2	1.46	--	2.2E+03	nc	NA	NA	No	BSL
	108-87-2	Methylcyclohexane	0.065		0.14	J	PPM	SB-11K	2 / 34	0.002 - 0.083	0.14	--	2.6E+02	nc	NA	NA	No	BSL
	127-18-4	Tetrachloroethene	0.088	J	0.088	J	PPM	SB-11K	1 / 56	0.051 - 0.051	0.088	--	4.8E-01	ca*	NA	NA	No	FOD
	108-88-3	Toluene	0.009	J	60		PPM	B-25	14 / 57	0.002 - 2.4	60	--	6.6E+01	nc	NA	NA	No	BSL
	156-60-5	trans-1,2-Dichloroethene	0.0816	J	0.222	J	PPM	3Y-9	2 / 56	0.067 - 0.821	0.222	--	6.9E+00	nc	NA	NA	No	FOD
	79-01-6	Trichloroethene	0.0699	J	0.171	J	PPM	3Y-8	2 / 57	0.051 - 0.672	0.171	--	5.3E-02	ca	NA	NA	No	FOD
	XYLENES1314	m,p-Xylene	0.122		180		PPM	TL14-10.75	7 / 13	48 - 3800	180	--	2.7E+01	nc	NA	NA	Yes	ASL
	108-38-3	m-Xylene	3.7		3.7		PPM	B-2-90	1 / 1	-	3.7	--	2.7E+01	nc	NA	NA	No	BSL
	95-47-6	o-Xylene	0.0477	J	90.4		PPM	TL14-10.75	7 / 13	27 - 2200	90.4	--	2.7E+01	nc	NA	NA	Yes	ASL
	XYLENES1214	o,p-Xylene	26		26		PPM	B-2-90	1 / 1	-	26	--	2.7E+01	nc	NA	NA	No	BSL
	1330-20-7	Xylene (Total)	0.002	J	270		PPM	TL14-10.75	23 / 55	0.001 - 2.2	270	--	2.7E+01	nc	NA	NA	Yes	ASL
	105-67-9	2,4-Dimethylphenol	2.4		16		PPM	SB-11K	6 / 36	0.45 - 6	16	--	1.2E+02	nc	NA	NA	No	BSL
	91-57-6	2-Methylnaphthalene	0.136		1400	J	PPM	SB-11K	30 / 37	0.039 - 50	1400	--	5.6E+00	nc	NA	NA	Yes	ASL
	95-48-7	2-Methylphenol	1.19		5.06	J	PPM	SB-21	6 / 36	0.17 - 4	5.06	--	3.1E+02	nc	NA	NA	No	BSL
	34METPH	3&4-Methylphenol	4.02		12.6	J	PPM	SB-21	4 / 12	250 - 690	12.6	--	3.1E+01	nc	NA	NA	No	BSL
	106-44-5	4-Methylphenol	0.21	J	0.21	J	PPM	MW-101DS	1 / 24	0.16 - 0.16	0.21	--	3.1E+01	nc	NA	NA	No	FOD
	83-32-9	Acenaphthene	0.097	J	990	J	PPM	SB-11K	38 / 39	0.021 - 50	990	--	3.7E+02	nc	NA	NA	Yes	ASL
	208-96-8	Acenaphthylene	0.086	J	210		PPM	SB-11K	32 / 39	0.017 - 7.1	210	--	3.7E+02	nc	NA	NA	No	BSL
	120-12-7	Anthracene	0.0941	J	1510		PPM	TL14-10.75	38 / 39	0.016 - 50	1510	--	2.2E+03	nc	NA	NA	No	BSL
	56-55-3	Benzo(a)anthracene	0.0942	J	1400	J	PPM	SB-11K	38 / 39	0.029 - 50	1400	--	6.2E-01	ca	NA	NA	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.079	J	1200	J	PPM	SB-11K	38 / 39	0.021 - 50	1200	--	6.2E-02	ca	NA	NA	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.0518	J	1400	J	PPM	SB-11K	38 / 39	0.028 - 50	1400	--	6.2E-01	ca	NA	NA	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.0417	J	590	J	PPM	SB-11K	38 / 39	0.033 - 50	590	--	2.3E+02	nc	NA	NA	Yes	ASL
	207-08-9	Benzo(k)fluoranthene	0.0633	J	660	J	PPM	SB-11K	38 / 39	0.045 - 50	660	--	6.2E+00	ca	NA	NA	Yes	ASL
	92-52-4	1,1'-Biphenyl	0.026	J	220		PPM	SB-11K	17 / 35	0.02 - 19	220	--	3.0E+02	nc	NA	NA	No	BSL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.116	J	17		PPM	B-2-90	9 / 38	0.052 - 0.83	17	--	3.5E+01	ca*	NA	NA	No	BSL
	85-68-7	Butylbenzylphthalate	7.61		7.61		PPM	3Y-B5	1 / 37	0.105 - 0.105	7.61	--	1.2E+03	nc	NA	NA	No	FOD
	86-74-8	Carbazole	0.0541	J	390	J	PPM	SB-11K	36 / 37	0.017 - 50	390	--	2.4E+01	ca	NA	NA	Yes	ASL
	218-01-9	Chrysene	0.103	J	1300	J	PPM	SB-11K	38 / 39	0.022 - 50	1300	--	6.2E+01	ca	NA	NA	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	0.117		120		PPM	SB-11K	36 / 39	0.021 - 20	120	--	6.2E-02	ca	NA	NA	Yes	ASL
	132-64-9	Dibenzofuran	0.0487	J	870	J	PPM	SB-11K	33 / 37	0.019 - 50	870	--	1.5E+01	nc	NA	NA	Yes	ASL
	84-74-2	Di-n-butylphthalate	0.293	J	0.293	J	PPM	3Y-3	1 / 37	0.476 - 0.476	0.293	--	6.1E+02	nc	NA	NA	No	FOD
	206-44-0	Fluoranthene	0.249		3500	J	PPM	SB-11K	38 / 39	0.021 - 50	3500	--	2.3E+02	nc	NA	NA	Yes	ASL
	86-73-7	Fluorene	0.0633	J	1200	J	PPM	SB-11K	36 / 39	0.016 - 50	1200	--	2.7E+02	nc	NA	NA	Yes	ASL
	193-39-5	Indeno(1,2,3-c,d)pyrene	0.236		540	J	PPM	SB-11K	37 / 39	0.105 - 50	540	--	6.2E-01	ca	NA	NA	Yes	ASL

Table 2.14

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Concentration Qualifier	Maximum Concentration	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
	91-20-3	Naphthalene	0.252	4400	J	PPM	SB-11K	33 / 39	0.023 - 50	4400	--	5.6E+00	nc	NA	NA	Yes	ASL
	85-01-8	Phenanthrene	0.297	4900	J	PPM	SB-11K	38 / 39	0.026 - 50	4900	--	2.2E+03	nc	NA	NA	Yes	ASL
	108-95-2	Phenol	0.36 J	6.71	J	PPM	SB-21	5 / 36	0.078 - 2	6.71	--	1.8E+03	nc	NA	NA	No	BSL
	129-00-0	Pyrene	0.188	3200	J	PPM	SB-11K	38 / 39	0.021 - 50	3200	--	2.3E+02	nc	NA	NA	Yes	ASL

(1) Maximum concentration is used for screening except for lead. Average concentration is used for screening for lead.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Residential Soil; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)

Deletion Reason: Below Screening Level (BSL)
Essential Nutrient (NUT)
Frequency of Detection (FOD)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
ca = Carcinogenic
nc = Noncarcinogenic
sat = Soil saturation
NA = Not available

Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Chromium (VI) was used as a surrogate for Chromium
Cyclohexane was used as a surrogate for Cyclopentane
Endosulfan was used as a surrogate for Endosulfan II
Endrin was used as a surrogate for Endrin aldehyde
Mercury (methyl) was used as a surrogate for Mercury
4-Methylphenol was used as a surrogate for 3&4-Methylphenol
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Pyrene was used as a surrogate for Benzo(ghi)perylene
Xylenes (total) was used as a surrogate for m,p-Xylene, m-Xylene, o-Xylene, and o,p-Xylene
The residential/commercial soil screening criterion for PCB (1 ppm) was used for aroclor 1242, 1248, 1254, and 1260 (see text)

Table 2.15
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Minimum Concentration Qualifier	Maximum Concentration	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Block 93, Lots 1,2 and 3	7440-38-2	Arsenic	14		62100		PPB	MW-111B	13 / 13	0.66 - 660	62100	--	4.5E-02	ca	3	NJ GWSL	Yes	ASL
	22569-72-8	Arsenic (III)	112000		112000		PPB	MW-111B	1 / 1	9600 - 9600	112000	--	4.5E-02	ca	NA		Yes	ASL
	7439-89-6	Iron	137000		137000		PPB	MW-111B	1 / 1	25 - 25	137000	--	1.1E+03	nc	300	NJ GWSL	Yes	ASL
	7439-92-1	Lead	1	J	24		PPB	MW-111B	7 / 12	0.18 - 0.18	24	--	1.5E+01	MCL	5	NJ GWSL	Yes	ASL
	72-54-8	4,4'-DDD	0.0068	J	0.0068	J	PPB	MW-111A	1 / 12	0.0057 - 0.0057	0.0068	--	2.8E-01	ca	0.1	NJ GWSL	No	BSL
	50-29-3	4,4'-DDT	0.013	J	0.013	J	PPB	MW-111A	1 / 12	0.0057 - 0.0057	0.013	--	2.0E-01	ca*	0.1	NJ GWSL	No	BSL
	5103-71-9	alpha-Chlordane	0.0029	J	0.0044	J	PPB	MW-101A	2 / 12	0.0019 - 0.0021	0.0044	--	1.9E-01	ca*	NA		No	BSL
	319-86-8	delta-BHC	0.0044	J	0.04	J	PPB	MW-111A	6 / 12	0.0036 - 0.004	0.04	--	3.7E-02	ca	NA		Yes	ASL
	959-98-8	Endosulfan I	0.0032	J	0.0045	J	PPB	MW-111A	3 / 12	0.0019 - 0.002	0.0045	--	2.2E+01	nc	40	NJ GWSL	No	BSL
	72-20-8	Endrin	0.0056	J	0.0056	J	PPB	MW-111A	1 / 12	0.0038 - 0.0038	0.0056	--	1.1E+00	nc	2	NJ GWSL	No	BSL
	67-64-1	Acetone	8.3	J	8.3	J	PPB	MW-101A	1 / 12	2.4 - 2.4	8.3	--	5.5E+02	nc	6000	NJ GWSL	No	BSL
	71-43-2	Benzene	0.1	J	0.3	J	PPB	MW-111A	2 / 12	0.1 - 0.2	0.3	--	3.5E-01	ca	1	NJ GWSL	No	BSL
	75-15-0	Carbon disulfide	0.1	J	0.2	J	PPB	MW-111A	4 / 12	0.1 - 0.1	0.2	--	1.0E+02	nc	700	NJ GWSL	No	BSL
	74-87-3	Chloromethane	0.4	J	0.4	J	PPB	MW-111A	1 / 12	0.2 - 0.2	0.4	--	1.6E+01	nc	NA		No	BSL
	156-59-2	cis-1,2-Dichloroethene	0.1	J	0.1	J	PPB	MW-101A	1 / 12	0.1 - 0.1	0.1	--	6.1E+00	nc	70	NJ GWSL	No	BSL
	100-41-4	Ethylbenzene	0.2	J	1.6		PPB	MW-111A	5 / 12	0.1 - 0.2	1.6	--	1.3E+02	nc	700	NJ GWSL	No	BSL
	98-82-8	Isopropylbenzene (Cumene)	0.1	J	0.2	J	PPB	MW-111A	2 / 12	0.1 - 0.1	0.2	--	6.6E+01	nc	700	NJ GWSL	No	BSL
	127-18-4	Tetrachloroethene	0.1	J	0.1	J	PPB	MW-101A	1 / 12	0.1 - 0.1	0.1	--	1.0E-01	ca	1	NJ GWSL	No	BSL
	108-88-3	Toluene	0.2	J	0.3	J	PPB	MW-111B	3 / 12	0.1 - 0.2	0.3	--	7.2E+01	nc	1000	NJ GWSL	No	BSL
	79-01-6	Trichloroethene	0.1	J	0.2	J	PPB	MW-101A	3 / 12	0.1 - 0.1	0.2	--	2.8E-02	ca	1	NJ GWSL	Yes	ASL
	1330-20-7	Xylene (Total)	0.4	J	0.9	J	PPB	MW-111A	4 / 12	0.1 - 0.2	0.9	--	2.1E+01	nc	1000	NJ GWSL	No	BSL
	91-57-6	2-Methylnaphthalene	1	J	6		PPB	MW-111A	3 / 12	0.9 - 1	6	--	6.2E-01	nc	NA		Yes	ASL
	83-32-9	Acenaphthene	0.252		24		PPB	MW-111A	8 / 12	0.017 - 1	24	--	3.7E+01	nc	400	NJ GWSL	No	BSL
	120-12-7	Anthracene	0.207		8		PPB	MW-111A	6 / 12	0.021 - 1	8	--	1.8E+02	nc	2000	NJ GWSL	No	BSL
	56-55-3	Benzo(a)anthracene	0.32		0.646		PPB	MW-111A	2 / 12	0.0068 - 0.0073	0.646	--	9.2E-02	ca	0.1	NJ GWSL	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.256		0.256		PPB	MW-101A	1 / 12	0.017 - 0.017	0.256	--	9.2E-03	ca	0.1	NJ GWSL	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.301		0.301		PPB	MW-101A	1 / 12	0.036 - 0.036	0.301	--	9.2E-02	ca	0.2	NJ GWSL	Yes	ASL
	92-52-4	1,1'-Biphenyl	2	J	5		PPB	MW-111A	3 / 12	0.9 - 1	5	--	3.0E+01	nc	400	NJ GWSL	No	BSL
	105-60-2	Caprolactam	8	J	8	J	PPB	MW-101A	1 / 12	5 - 5	8	--	1.8E+03	nc	NA		No	BSL
	86-74-8	Carbazole	2.5		6		PPB	MW-111A	4 / 12	0.39 - 1	6	--	3.4E+00	ca	NA		Yes	ASL
	218-01-9	Chrysene	0.259		0.549		PPB	MW-111A	2 / 12	0.017 - 0.018	0.549	--	9.2E+00	ca	5	NJ GWSL	No	BSL
	132-64-9	Dibenzofuran	0.8	J	10		PPB	MW-111A	6 / 12	0.34 - 1	10	--	1.2E+00	nc	NA		Yes	ASL
	206-44-0	Fluoranthene	1	J	8.92		PPB	MW-111A	8 / 12	0.009 - 1	8.92	--	1.5E+02	nc	300	NJ GWSL	No	BSL
	86-73-7	Fluorene	0.34		21		PPB	MW-111A	7 / 12	0.02 - 1	21	--	2.4E+01	nc	300	NJ GWSL	No	BSL

Table 2.15

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	CAS Number	Chemical	Minimum Concentration Qualifier		Maximum Concentration Qualifier		Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
	1634-04-4	Methyl Tert-butyl Ether	0.1	J	0.3	J	PPB	MW-111B	8 / 12	0.1 - 0.1	0.3	–	6.2E+00	ca	70	NJ GWSL	No	BSL
	91-20-3	Naphthalene	2.35		140		PPB	MW-111A	5 / 12	0.026 - 1	140	–	6.2E-01	nc	300	NJ GWSL	Yes	ASL
	85-01-8	Phenanthrene	0.213		36		PPB	MW-111A	5 / 12	0.021 - 1	36	–	1.8E+02	nc	NA		No	BSL
	129-00-0	Pyrene	0.911		8.56		PPB	MW-111A	8 / 12	0.014 - 1	8.56	–	1.8E+01	nc	200	NJ GWSL	No	BSL

(1) Maximum concentration is used for screening.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Tap Water; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)

Arsenic III data are included for informational purposes only and are not carried through the risk calculations
Anthracene was used as a surrogate for Phenanthrene
Arsenic was used as a surrogate for Arsenic (III)
Chlordane (technical) was used as a surrogate for alpha-Chlordane
Endosulfan was used as a surrogate for Endosulfan I
HCH-technical was used as a surrogate for delta-BHC
Naphthalene was used as a surrogate for 2-Methylnaphthalene

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
MCL = Maximum Contaminant Level
nc = Noncarcinogenic
ca = Carcinogenic
NA = Not available

Table 2.16
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Point	CAS Number	Chemical	Minimum Concentration Qualifier	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Groundwater (Above Clay)	7440-38-2	Arsenic	0.98 J	1590000	PPB	MW-N-1	132 / 151	0.33 - 660	1590000	--	4.5E-02	ca	3	NJ GWSL	Yes	ASL
	22569-72-8	Arsenic (III)	23.1	1830000	PPB	MW-N-1	12 / 12	2.4 - 161000	1830000	--	4.5E-02	ca	NA		Yes	ASL
	17428-41-0	Arsenic (V)	4.8	9500	PPB	MW-113B	4 / 12	3.2 - 1260	9500	--	4.5E-02	ca	NA		Yes	ASL
	7439-89-6	Iron	2410	401000	PPB	MW-107A	12 / 12	25 - 25	401000	--	1.1E+03	nc	300	NJ GWSL	Yes	ASL
	7439-92-1	Lead	0.18 J	4100	PPB	MW-A-2	96 / 136	0.047 - 18	43.7	--	1.5E+01	MCL	5	NJ GWSL	Yes	ASL
	72-54-8	4,4'-DDD	0.0068 J	0.17	PPB	MW-103	6 / 37	0.0057 - 0.029	0.17	--	2.8E-01	ca	0.1	NJ GWSL	No	BSL
	72-55-9	4,4'-DDE	0.0052 J	0.13 J	PPB	MW-103	13 / 37	0.0038 - 0.02	0.13	--	2.0E-01	ca	0.1	NJ GWSL	No	BSL
	50-29-3	4,4'-DDT	0.0065 J	0.034 J	PPB	MW-117B	5 / 37	0.0057 - 0.0057	0.034	--	2.0E-01	ca*	0.1	NJ GWSL	No	BSL
	309-00-2	Aldrin	0.032 J	0.032 J	PPB	MW-117B	1 / 37	0.0047 - 0.0047	0.032	--	4.0E-03	ca	0.04	NJ GWSL	No	FOD
	319-84-6	alpha-BHC	0.045 J	0.048 J	PPB	MW-117B	3 / 37	0.0019 - 0.0095	0.048	--	1.1E-02	ca	0.02	NJ GWSL	Yes	ASL
	5103-71-9	alpha-Chlordane	0.0024 J	0.014 J	PPB	MW-112B	6 / 37	0.0019 - 0.0095	0.014	--	1.9E-01	ca*	NA		No	BSL
	319-86-8	delta-BHC	0.0044 J	0.1	PPB	MW-117A	15 / 37	0.0036 - 0.019	0.1	--	3.7E-02	ca	NA		Yes	ASL
	959-98-8	Endosulfan I	0.0032 J	0.14 J	PPB	MW-112A	12 / 37	0.0019 - 0.096	0.14	--	2.2E+01	nc	40	NJ GWSL	No	BSL
	33213-65-9	Endosulfan II	0.0071 J	0.0071 J	PPB	MW-103A	1 / 37	0.0038 - 0.0038	0.0071	--	2.2E+01	nc	40	NJ GWSL	No	FOD
	1031-07-8	Endosulfan sulfate	0.0084 J	0.02 J	PPB	MW-112B	2 / 37	0.0057 - 0.0057	0.02	--	2.2E+01	nc	40	NJ GWSL	No	BSL
	72-20-8	Endrin	0.0056 J	0.51 J	PPB	MW-112A	8 / 37	0.0038 - 0.19	0.51	--	1.1E+00	nc	2	NJ GWSL	No	BSL
	58-89-9	gamma-BHC (Lindane)	0.0025 J	0.011 J	PPB	MW-117B	2 / 37	0.002 - 0.0095	0.011	--	5.2E-02	ca	0.03	NJ GWSL	No	BSL
	76-44-8	Heptachlor	0.0021 J	0.016 J	PPB	MW-117B	6 / 37	0.0019 - 0.0095	0.016	--	1.5E-02	ca	0.05	NJ GWSL	Yes	ASL
	1024-57-3	Heptachlor epoxide	0.0024 J	0.0037 J	PPB	MW-117B	2 / 37	0.0019 - 0.0019	0.0037	--	7.4E-03	ca*	0.2	NJ GWSL	No	BSL
	72-43-5	Methoxychlor	0.16 J	0.16 J	PPB	MW-103	1 / 37	0.029 - 0.029	0.16	--	1.8E+01	nc	40	NJ GWSL	No	FOD
	71-55-6	1,1,1-Trichloroethane	0.64 J	3	PPB	MW-B	3 / 136	0.1 - 0.28	3	--	3.2E+02	nc	30	NJ GWSL	No	FOD
	76-13-1	Freon 113	0.2 J	0.3 J	PPB	MW-B	2 / 136	0.2 - 0.2	0.3	--	5.9E+03	nc	NA		No	FOD
	75-34-3	1,1-Dichloroethane	0.1 J	120	PPB	MW-B	11 / 136	0.1 - 5	120	--	8.1E+01	nc	50	NJ GWSL	Yes	ASL
	75-35-4	1,1-Dichloroethene	0.2 J	0.3 J	PPB	MW-B	4 / 136	0.1 - 0.1	0.3	--	3.4E+01	nc	1	NJ GWSL	No	FOD
	107-06-2	1,2-Dichloroethane	1	2.9	PPB	MW-B	2 / 136	0.1 - 0.29	2.9	--	1.2E-01	ca*	2	NJ GWSL	No	FOD
	78-87-5	1,2-Dichloropropane	0.2 J	0.3 J	PPB	MW-B	2 / 136	0.1 - 0.1	0.3	--	1.6E-01	ca*	1	NJ GWSL	No	FOD
	78-93-3	2-Butanone (MEK)	1.1 J	61 J	PPB	MW-112A	7 / 136	1 - 50	61	--	7.0E+02	nc	300	NJ GWSL	No	BSL
	591-78-6	2-Hexanone	6 J	6 J	PPB	MW-106A	1 / 136	5 - 5	6	--	2.0E+02	nc	NA		No	FOD
	67-64-1	Acetone	2.9 J	470 J	PPB	MW-112A	11 / 136	2.4 - 150	470	--	5.5E+02	nc	6000	NJ GWSL	No	BSL
	98-86-2	Acetophenone	23 J	30	PPB	MW-107A	2 / 135	0.002 - 19	30	--	6.1E+01	nc	700	NJ GWSL	No	FOD
	71-43-2	Benzene	0.1 J	11000	PPB	MW-102	101 / 135	0.1 - 100	11000	--	3.5E-01	ca	1	NJ GWSL	Yes	ASL
	75-27-4	Bromodichloromethane	0.1 J	0.1 J	PPB	MW-B	2 / 136	0.1 - 0.1	0.1	--	1.8E-01	ca	1	NJ GWSL	No	FOD
	75-15-0	Carbon disulfide	0.1 J	33 J	PPB	MW-102A	39 / 135	0.1 - 20	33	--	1.0E+02	nc	700	NJ GWSL	No	BSL
	108-90-7	Chlorobenzene	0.6	1.8	PPB	MW-108	5 / 136	0.1 - 0.22	1.8	--	1.1E+01	nc	50	NJ GWSL	No	FOD
	75-00-3	Chloroethane	0.1 J	8	PPB	MW-B	14 / 136	0.1 - 1	8	--	4.6E+00	ca	NA		Yes	ASL
	67-66-3	Chloroform	0.3 J	1.7	PPB	MW-B	6 / 136	0.1 - 0.22	1.7	--	1.7E-01	ca	70	NJ GWSL	No	FOD
	74-87-3	Chloromethane	0.1 J	21 J	PPB	MW-102	25 / 136	0.1 - 20	21	--	1.6E+01	nc	NA		Yes	ASL
	156-59-2	cis-1,2-Dichloroethene	0.1 J	6.2	PPB	MW-B	17 / 136	0.1 - 1	6.2	--	6.1E+00	nc	70	NJ GWSL	Yes	ASL
	110-82-7	Cyclohexane	0.1 J	81	PPB	MW-106A	18 / 136	0.0001 - 2	81	--	1.0E+03	nc	NA		No	BSL
	100-41-4	Ethylbenzene	0.1 J	1300	PPB	MW-103	101 / 136	0.1 - 20	1300	--	1.3E+02	nc	700	NJ GWSL	Yes	ASL
	98-82-8	Isopropylbenzene (Cumene)	0.1 J	141	PPB	MW-103A	92 / 136	0.0001 - 20	141	--	6.6E+01	nc	700	NJ GWSL	Yes	ASL
	108-87-2	Methylcyclohexane	0.1 J	170	PPB	MW-106A	23 / 136	0.0001 - 2	170	--	5.2E+02	nc	NA		No	BSL
	75-09-2	Methylene chloride	0.54 J	0.54 J	PPB	MW-B	1 / 136	0.27 - 0.27	0.54	--	4.3E+00	ca	3	NJ GWSL	No	FOD
	100-42-5	Styrene	1.4 J	610 J	PPB	MW-121B	6 / 136	0.1 - 20	610	--	1.6E+02	nc	100	NJ GWSL	No	FOD
	127-18-4	Tetrachloroethene	0.1 J	0.81 J	PPB	MW-B	4 / 136	0.1 - 0.28	0.81	--	1.0E-01	ca	1	NJ GWSL	No	FOD
	108-88-3	Toluene	0.1 J	4800	PPB	MW-121B	95 / 136	0.1 - 100	4800	--	7.2E+01	nc	1000	NJ GWSL	Yes	ASL
	156-60-5	trans-1,2-Dichloroethene	0.44 J	0.44 J	PPB	MW-29	1 / 136	0.42 - 0.42	0.44	--	1.2E+01	nc	100	NJ GWSL	No	FOD

Table 2.16

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Minimum Concentration Qualifier	Maximum Concentration	Maximum Concentration Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
	79-01-6	Trichloroethene	0.1	J	4.7		PPB	MW-113C	13 / 136	0.1 - 1	4.7	--	2.8E-02	ca	1	NJ GWSL	Yes	ASL
	75-01-4	Vinyl chloride	1.9		4.4		PPB	MW-B	4 / 136	0.1 - 0.29	4.4	--	2.0E-02	ca	1	NJ GWSL	No	FOD
	XYLENES1314	m,p-Xylene	0.3	J	1210		PPB	MW-103A	20 / 34	0.1 - 8.4	1210	--	2.1E+01	nc	NA		Yes	ASL
	95-47-6	o-Xylene	0.86	J	704		PPB	MW-103A	18 / 31	0.31 - 6.1	704	--	2.1E+01	nc	NA		Yes	ASL
	1330-20-7	Xylene (Total)	0.1	J	3900		PPB	MW-103	104 / 133	0.1 - 20	3900	--	2.1E+01	nc	1000	NJ GWSL	Yes	ASL
	120-82-1	1,2,4-Trichlorobenzene	0.1	J	13	J	PPB	MW-103A	4 / 136	0.1 - 10	13	--	7.2E-01	nc	9	NJ GWSL	No	FOD
	95-50-1	1,2-Dichlorobenzene	0.2	J	1.1	J	PPB	MW-105A	3 / 136	0.1 - 1	1.1	--	3.7E+01	nc	600	NJ GWSL	No	FOD
	106-46-7	1,4-Dichlorobenzene	0.9		1.4		PPB	MW-113B	3 / 136	0.1 - 0.5	1.4	--	5.0E-01	ca	75	NJ GWSL	No	FOD
	105-67-9	2,4-Dimethylphenol	2.9	J	7400		PPB	MW-102A	63 / 136	1.6 - 710	7400	--	7.3E+01	nc	100	NJ GWSL	Yes	ASL
	91-57-6	2-Methylnaphthalene	0.59	J	8400		PPB	MW-116B	93 / 136	0.41 - 240	8400	--	6.2E-01	nc	NA		Yes	ASL
	95-48-7	2-Methylphenol	1	J	4200		PPB	MW-102A	57 / 136	0.9 - 190	4200	--	1.8E+02	nc	NA		Yes	ASL
	34METPH	3&4-Methylphenol	2	J	68.6		PPB	MW-107A	9 / 31	1.3 - 1.4	68.6	--	1.8E+01	nc	NA		Yes	ASL
	106-44-5	4-Methylphenol	2	J	5800		PPB	MW-102A	46 / 105	2 - 380	5800	--	1.8E+01	nc	NA		Yes	ASL
	83-32-9	Acenaphthene	0.252		3300		PPB	MW-116B	117 / 136	0.017 - 100	3300	--	3.7E+01	nc	400	NJ GWSL	Yes	ASL
	208-96-8	Acenaphthylene	0.21		550		PPB	MW-116B	62 / 135	0.0095 - 10	550	--	3.7E+01	nc	NA		Yes	ASL
	120-12-7	Anthracene	0.207		1600		PPB	MW-116B	96 / 136	0.021 - 100	1600	--	1.8E+02	nc	2000	NJ GWSL	Yes	ASL
	56-55-3	Benzo(a)anthracene	0.202	J	1100		PPB	MW-116B	38 / 135	0.0068 - 10	1100	--	9.2E-02	ca	0.1	NJ GWSL	Yes	ASL
	50-32-8	Benzo(a)pyrene	0.256		800		PPB	MW-116B	16 / 135	0.017 - 10	800	--	9.2E-03	ca	0.1	NJ GWSL	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	0.229		920		PPB	MW-116B	21 / 135	0.036 - 10	920	--	9.2E-02	ca	0.2	NJ GWSL	Yes	ASL
	191-24-2	Benzo(g,h,i)perylene	0.752		420		PPB	MW-116B	9 / 135	0.018 - 10	420	--	1.8E+01	nc	NA		Yes	ASL
	207-08-9	Benzo(k)fluoranthene	0.314		450		PPB	MW-116B	8 / 135	0.016 - 10	450	--	9.2E-01	ca	0.5	NJ GWSL	Yes	ASL
	92-52-4	1,1'-Biphenyl	0.45	J	1100		PPB	MW-116B	75 / 135	0.001 - 10	1100	--	3.0E+01	nc	400	NJ GWSL	Yes	ASL
	117-81-7	bis(2-Ethylhexyl)phthalate	1.2	J	43	J	PPB	MW-107	2 / 135	0.66 - 19	43	--	4.8E+00	ca	3	NJ GWSL	No	FOD
	105-60-2	Caprolactam	4.2		140		PPB	MW-109	13 / 135	0.00032 - 5	140	--	1.8E+03	nc	NA		No	BSL
	86-74-8	Carbazole	0.64	J	790		PPB	MW-116B	100 / 136	0.36 - 190	790	--	3.4E+00	ca	NA		Yes	ASL
	218-01-9	Chrysene	0.243	J	1000		PPB	MW-116B	31 / 135	0.017 - 10	1000	--	9.2E+00	ca	5	NJ GWSL	Yes	ASL
	53-70-3	Dibenzo(a,h)anthracene	0.6		41	J	PPB	MW-112A	5 / 135	0.016 - 10	41	--	9.2E-03	ca	0.3	NJ GWSL	No	FOD
	132-64-9	Dibenzofuran	0.44	J	2200		PPB	MW-116B	104 / 136	0.34 - 100	2200	--	1.2E+00	nc	NA		Yes	ASL
	84-66-2	Diethylphthalate	6.3		18.5		PPB	MW-A-2	2 / 135	0.39 - 0.43	18.5	--	2.9E+03	nc	6000	NJ GWSL	No	FOD
	206-44-0	Fluoranthene	0.208		3400		PPB	MW-116B	103 / 136	0.009 - 100	3400	--	1.5E+02	nc	300	NJ GWSL	Yes	ASL
	86-73-7	Fluorene	0.34		2800		PPB	MW-116B	107 / 136	0.02 - 100	2800	--	2.4E+01	nc	300	NJ GWSL	Yes	ASL
	193-39-5	Indeno(1,2,3-c,d)pyrene	0.736		390		PPB	MW-116B	9 / 135	0.011 - 10	390	--	9.2E-02	ca	0.2	NJ GWSL	Yes	ASL
	78-59-1	Isophorone	3	J	5		PPB	MW-B	2 / 135	0.9 - 1	5	--	7.1E+01	ca	40	NJ GWSL	No	FOD
	1634-04-4	Methyl Tert-butyl Ether	0.1	J	1	J	PPB	MW-C	20 / 136	0.0001 - 0.61	1	--	6.2E+00	ca	70	NJ GWSL	No	BSL
	91-20-3	Naphthalene	0.713	J	36000		PPB	MW-116B	110 / 136	0.026 - 500	36000	--	6.2E-01	nc	300	NJ GWSL	Yes	ASL
	98-95-3	Nitrobenzene	8		8		PPB	MW-120A	1 / 135	1 - 1	8	--	3.4E-01	nc	6	NJ GWSL	No	FOD
	85-01-8	Phenanthrene	0.213		8300		PPB	MW-116B	104 / 136	0.021 - 100	8300	--	1.8E+02	nc	NA		Yes	ASL

Table 2.16

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Qualifier	Maximum Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
	108-95-2	Phenol	1	J	3100		PPB	MW-102A	34 / 135	0.5 - 190	3100	--	1.1E+03	nc	2000	NJ GWSL	Yes	ASL
	129-00-0	Pyrene	0.239		2800		PPB	MW-116B	97 / 136	0.014 - 100	2800	--	1.8E+01	nc	200	NJ GWSL	Yes	ASL

(1) Maximum concentration is used for screening except for lead. Average concentration is used for screening for lead.

(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Tap Water; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1

(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Frequency of Detection (FOD)

Arsenic III and Arsenic IV data are included for informational purposes only and are not carried through the risk calculations
4-Methylphenol was used as a surrogate for 3&4-methylphenol.
Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Arsenic was used as a surrogate for Arsenic (III) and Arsenic (V)
Chlordane (technical) was used as a surrogate for alpha-Chlordane
Endosulfan was used as a surrogate for Endosulfan I, Endosulfan II, Endosulfan Sulfate
HCH-technical was used as a surrogate for delta-BHC
Methyl isobutyl ketone was used as a surrogate for 2-Hexanone
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Pyrene was used as a surrogate for Benzo(ghi)perylene
Xylenes, total was used for o-Xylene, and m,p-Xylene

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
MCL = Maximum Contaminant Level
nc = Noncarcinogenic
ca = Carcinogenic
N(R3) = EPA Region 3 Preliminary Remediation Goals (PRGs) adjusted using HQ=0.1
NA = Not available

Table 2.17
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Qualifier	Maximum Concentration	Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
Groundwater (Below Clay)	7440-38-2	Arsenic	0.67	J	12.7		PPB	MW-107DS	12 / 16	0.33 - 2	12.7	--	4.5E-02	ca	3	NJ GWSL	Yes	ASL
	7439-92-1	Lead	0.26	J	20.2		PPB	MW-107DS	8 / 16	0.047 - 3	3.7	--	1.5E+01	MCL	5	NJ GWSL	No	BSL
	71-55-6	1,1,1-Trichloroethane	0.1	J	2.3		PPB	MW-101DS	10 / 16	0.1 - 1	2.3	--	3.2E+02	nc	30	NJ GWSL	No	BSL
	75-34-3	1,1-Dichloroethane	0.4	J	1.7		PPB	MW-101DS	10 / 16	0.1 - 1	1.7	--	8.1E+01	nc	50	NJ GWSL	No	BSL
	75-35-4	1,1-Dichloroethene	0.4	J	4		PPB	MW-101DS	10 / 16	0.1 - 1	4	--	3.4E+01	nc	1	NJ GWSL	No	BSL
	107-06-2	1,2-Dichloroethane	0.2	J	0.3	J	PPB	MW-101DS	4 / 16	0.1 - 0.2	0.3	--	1.2E-01	ca*	2	NJ GWSL	Yes	ASL
	78-93-3	2-Butanone (MEK)	3.6	J	12		PPB	MW-107DS	4 / 16	1 - 2.6	12	--	7.0E+02	nc	300	NJ GWSL	No	BSL
	67-64-1	Acetone	16	J	16	J	PPB	MW-116DS	1 / 16	15 - 15	16	--	5.5E+02	nc	6000	NJ GWSL	No	BSL
	71-43-2	Benzene	0.2	J	10		PPB	MW-116DS	5 / 15	0.1 - 0.5	10	--	3.5E-01	ca	1	NJ GWSL	Yes	ASL
	75-15-0	Carbon disulfide	0.1	J	0.1	J	PPB	MW-107DS	3 / 16	0.1 - 0.1	0.1	--	1.0E+02	nc	700	NJ GWSL	No	BSL
	108-90-7	Chlorobenzene	0.5	J	0.6		PPB	MW-101DS	2 / 16	0.1 - 0.22	0.6	--	1.1E+01	nc	50	NJ GWSL	No	BSL
	67-66-3	Chloroform	0.1	J	1		PPB	MW-101DS	10 / 16	0.1 - 1	1	--	1.7E-01	ca	70	NJ GWSL	Yes	ASL
	74-87-3	Chloromethane	0.7	J	0.7	J	PPB	MW-101DS	1 / 16	0.5 - 0.5	0.7	--	1.6E+01	nc	NA		No	BSL
	156-59-2	cis-1,2-Dichloroethene	0.5	J	16		PPB	MW-101DS	12 / 16	0.1 - 1	16	--	6.1E+00	nc	70	NJ GWSL	Yes	ASL
	100-41-4	Ethylbenzene	0.2	J	8.1		PPB	MW-116DS	4 / 16	0.1 - 0.5	8.1	--	1.3E+02	nc	700	NJ GWSL	No	BSL
	98-82-8	Isopropylbenzene (Cumene)	0.3	J	0.5	J	PPB	MW-116DS	2 / 16	0.1 - 0.5	0.5	--	6.6E+01	nc	700	NJ GWSL	No	BSL
	127-18-4	Tetrachloroethene	0.7	J	9.6		PPB	MW-101DS	8 / 16	0.1 - 1	9.6	--	1.0E-01	ca	1	NJ GWSL	Yes	ASL
	108-88-3	Toluene	0.4	J	9.4		PPB	MW-116DS	4 / 16	0.1 - 0.5	9.4	--	7.2E+01	nc	1000	NJ GWSL	No	BSL
	156-60-5	trans-1,2-Dichloroethene	0.1	J	0.49	J	PPB	MW-101DS	4 / 16	0.1 - 0.42	0.49	--	1.2E+01	nc	100	NJ GWSL	No	BSL
	79-01-6	Trichloroethene	0.2	J	460		PPB	MW-101DS	16 / 16	0.1 - 10	460	--	2.8E-02	ca	1	NJ GWSL	Yes	ASL
	75-01-4	Vinyl chloride	0.2	J	0.2	J	PPB	MW-101DS	1 / 16	0.1 - 0.1	0.2	--	2.0E-02	ca	1	NJ GWSL	Yes	ASL
	XYLENES1314	m,p-Xylene	0.88	J	0.88	J	PPB	MW-116DS	1 / 4	0.42 - 0.42	0.88	--	2.1E+01	nc	NA		No	BSL
	95-47-6	o-Xylene	0.5	J	0.5	J	PPB	MW-116DS	1 / 4	0.31 - 0.31	0.5	--	2.1E+01	nc	NA		No	BSL
	1330-20-7	Xylene (Total)	0.2	J	24		PPB	MW-116DS	5 / 16	0.1 - 0.5	24	--	2.1E+01	nc	1000	NJ GWSL	Yes	ASL
	105-67-9	2,4-Dimethylphenol	13		13		PPB	MW-116DS	1 / 16	3 - 3	13	--	7.3E+01	nc	100	NJ GWSL	No	BSL
	91-57-6	2-Methylnaphthalene	1.6	J	18		PPB	MW-116DS	5 / 16	0.41 - 1	18	--	6.2E-01	nc	NA		Yes	ASL
	95-48-7	2-Methylphenol	1	J	13		PPB	MW-116DS	2 / 16	0.9 - 1	13	--	1.8E+02	nc	NA		No	BSL
	106-44-5	4-Methylphenol	3	J	11		PPB	MW-116DS	2 / 12	2 - 2	11	--	1.8E+01	nc	NA		No	BSL
	83-32-9	Acenaphthene	1	J	14		PPB	MW-116DS	5 / 16	0.017 - 1	14	--	3.7E+01	nc	400	NJ GWSL	No	BSL
	208-96-8	Acenaphthylene	1	J	1	J	PPB	MW-116DS	1 / 16	1 - 1	1	--	3.7E+01	nc	NA		No	BSL
	120-12-7	Anthracene	0.58		2	J	PPB	MW-116DS	4 / 16	0.021 - 1	2	--	1.8E+02	nc	2000	NJ GWSL	No	BSL
	56-55-3	Benzo(a)anthracene	0.243		0.243		PPB	MW-116DS	1 / 16	0.0068 - 0.0068	0.243	--	9.2E-02	ca	0.1	NJ GWSL	Yes	ASL
	92-52-4	1,1'-Biphenyl	1	J	3	J	PPB	MW-116DS	3 / 16	0.9 - 1	3	--	3.0E+01	nc	400	NJ GWSL	No	BSL
	105-60-2	Caprolactam	6	J	20		PPB	MW-107DS	3 / 16	0.005 - 5	20	--	1.8E+03	nc	NA		No	BSL
	86-74-8	Carbazole	0.73	J	6		PPB	MW-116DS	4 / 16	0.36 - 1	6	--	3.4E+00	ca	NA		Yes	ASL
	132-64-9	Dibenzofuran	1.3	J	6		PPB	MW-116DS	4 / 16	0.34 - 1	6	--	1.2E+00	nc	NA		Yes	ASL
	84-66-2	Diethylphthalate	1.3	J	1.3	J	PPB	MW-107DS	1 / 16	0.41 - 0.41	1.3	--	2.9E+03	nc	6000	NJ GWSL	No	BSL
	206-44-0	Fluoranthene	0.23		3	J	PPB	MW-116DS	5 / 16	0.009 - 1	3	--	1.5E+02	nc	300	NJ GWSL	No	BSL
	86-73-7	Fluorene	0.67		6		PPB	MW-116DS	5 / 16	0.02 - 1	6	--	2.4E+01	nc	300	NJ GWSL	No	BSL
	1634-04-4	Methyl Tert-butyl Ether	0.2	J	2.1	J	PPB	MW-101DS	6 / 16	0.1 - 1	2.1	--	6.2E+00	ca	70	NJ GWSL	No	BSL
	91-20-3	Naphthalene	0.785		200		PPB	MW-116DS	8 / 16	0.026 - 10	200	--	6.2E-01	nc	300	NJ GWSL	Yes	ASL

Table 2.17
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Point	CAS Number	Chemical	Minimum Concentration	Min Qual	Maximum Concentration	Max Qual	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Selection or Deletion (3)
	85-01-8	Phenanthrene	0.449		13		PPB	MW-116DS	7 / 16	0.021 - 1	13	–	1.8E+02	nc	NA		No	BSL
	108-95-2	Phenol	1	J	1	J	PPB	MW-116DS	1 / 16	0.9 - 0.9	1	–	1.1E+03	nc	2000	NJ GWSL	No	BSL
	129-00-0	Pyrene	0.226		2	J	PPB	MW-116DS	5 / 16	0.014 - 1	2	–	1.8E+01	nc	200	NJ GWSL	No	BSL

(1) Maximum concentration is used for screening except for lead. Average concentration is used for screening for lead.
(2) EPA Region 9 Preliminary Remediation Goals (PRGs) for Tap Water; Concentrations based on non-carcinogenic health effects are adjusted using HQ=0.1
(3) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Below Screening Level (BSL)
Frequency of Detection (FOD)

COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/ To Be Considered

J = Estimated Value
MCL = Maximum Contaminant Level
nc = Noncarcinogenic
ca = Carcinogenic

Acenaphthene was used as a surrogate for Acenaphthylene
Anthracene was used as a surrogate for Phenanthrene
Arsenic was used as a surrogate for Arsenic (III) and Arsenic (V)
Naphthalene was used as a surrogate for 2-Methylnaphthalene
Xylenes, total was used for o-Xylene, and m,p-Xylene

Table 3.1.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/06/2007

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Quanta Resources	Aluminum	PPM	5.7E+03	NA		7.6E+03		7.6E+03	PPM	Max	(7)
	Antimony	PPM	2.8E+01	NA		1.7E+02		1.7E+02	PPM	Max	(7)
	Arsenic	PPM	2.8E+02	1.5E+03	NP	3.9E+03		1.5E+03	PPM	99% Cheb-m	(5)
	Cadmium	PPM	2.4E+00	NA		1.0E+01		1.0E+01	PPM	Max	(7)
	Chromium	PPM	1.5E+01	1.9E+01	N	3.8E+01		1.9E+01	PPM	95% Stud-t	(2)
	Copper	PPM	8.9E+02	NA		6.2E+03		6.2E+03	PPM	Max	(7)
	Iron	PPM	6.6E+04	NA		2.6E+05		2.6E+05	PPM	Max	(7)
	Lead	PPM	6.8E+02	1.3E+03	G	7.7E+03		6.8E+02	PPM	Average	(8)
	Manganese	PPM	1.7E+02	NA		3.1E+02		3.1E+02	PPM	Max	(7)
	Thallium	PPM	4.3E+00	NA		8.2E+00		8.2E+00	PPM	Max	(7)
	Vanadium	PPM	4.1E+01	NA		8.2E+01		8.2E+01	PPM	Max	(7)
	Zinc	PPM	6.7E+02	NA		3.8E+03		3.8E+03	PPM	Max	(7)
	Mercury	PPM	1.0E+01	NA		3.0E+01		3.0E+01	PPM	Max	(7)
	Heptachlor	PPM	1.0E-01	NA		3.5E-01	J	3.5E-01	PPM	Max	(7)
	Aroclor-1242	PPM	9.9E-01	5.1E+00	NP	3.2E+00		3.2E+00	PPM	Max	(6)
	Aroclor-1260	PPM	1.4E+00	9.0E+00	NP	1.6E+00		1.6E+00	PPM	Max	(6)
	Benzene	PPM	1.7E+00	2.4E+01	T	1.9E+01		1.9E+01	PPM	Max	(6)
	Tetrachloroethene	PPM	4.3E-01	8.5E-01	G	5.2E-01	J	5.2E-01	PPM	Max	(6)
	Trichloroethene	PPM	4.3E-01	8.3E-01	G	5.4E-01		5.4E-01	PPM	Max	(6)
	m-Xylene	PPM	1.5E+01	NA		4.5E+01		4.5E+01	PPM	Max	(7)
	p,o-Xylene	PPM	2.3E+01	NA		4.9E+01		4.9E+01	PPM	Max	(7)
	2-Methylnaphthalene	PPM	1.5E+02	3.0E+02	G	1.2E+03		3.0E+02	PPM	95% Adj. Gamma	(3,4)
	4-Methylphenol	PPM	1.7E+01	1.3E+02	NP	2.5E+02		1.3E+02	PPM	99% Cheb-m	(5)
	4-Nitroaniline	PPM	7.0E+00	1.2E+01	G	2.9E+01		1.2E+01	PPM	95% App. Gamma	(3,4)
	Acenaphthene	PPM	1.5E+02	2.4E+02	G	1.3E+03		2.4E+02	PPM	95% Adj. Gamma	(3,4)
	Benzo(a)anthracene	PPM	2.2E+02	3.3E+02	G	9.9E+02		3.3E+02	PPM	95% App. Gamma	(3,4)
	Benzo(a)pyrene	PPM	2.0E+02	3.0E+02	G	9.4E+02		3.0E+02	PPM	95% App. Gamma	(3,4)
	Benzo(b)fluoranthene	PPM	2.3E+02	3.5E+02	G	1.1E+03		3.5E+02	PPM	95% App. Gamma	(3,4)
	Benzo(g,h,i)perylene	PPM	1.1E+02	1.6E+02	G	5.5E+02		1.6E+02	PPM	95% App. Gamma	(3,4)
	Benzo(k)fluoranthene	PPM	1.1E+02	1.6E+02	G	6.3E+02		1.6E+02	PPM	95% App. Gamma	(3,4)
	Carbazole	PPM	8.1E+01	1.4E+02	G	5.2E+02		1.4E+02	PPM	95% App. Gamma	(3,4)
	Chrysene	PPM	2.1E+02	3.2E+02	G	9.7E+02		3.2E+02	PPM	95% App. Gamma	(3,4)
	Dibenzo(a,h)anthracene	PPM	4.0E+01	6.0E+01	G	2.2E+02		6.0E+01	PPM	95% App. Gamma	(3,4)
	Dibenzofuran	PPM	1.1E+02	2.0E+02	G	8.2E+02		2.0E+02	PPM	95% Adj. Gamma	(3,4)
	Fluoranthene	PPM	5.3E+02	8.2E+02	G	2.4E+03		8.2E+02	PPM	95% App. Gamma	(3,4)
	Fluorene	PPM	1.9E+02	3.3E+02	G	1.3E+03		3.3E+02	PPM	95% Adj. Gamma	(3,4)
	Indeno(1,2,3-c,d)pyrene	PPM	1.1E+02	1.7E+02	G	5.4E+02		1.7E+02	PPM	95% App. Gamma	(3,4)
	Naphthalene	PPM	4.7E+02	9.1E+02	G	6.2E+03		9.1E+02	PPM	95% Adj. Gamma	(4)
	Phenanthrene	PPM	6.4E+02	1.1E+03	G	4.1E+03		1.1E+03	PPM	95% Adj. Gamma	(3,4)
	Pyrene	PPM	4.2E+02	6.4E+02	G	1.7E+03		6.4E+02	PPM	95% App. Gamma	(3,4)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.

ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb); 99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m); 99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t); 95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma); Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).
(8) The average concentration was used as the UCL for lead.

G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.2.RME
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/06/2007

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Quanta Resources	Aluminum	PPM	4.8E+03	5.9E+03	N	8.3E+03		5.9E+03	PPM	95% Stud-t	(2)
	Antimony	PPM	4.2E+01	2.4E+02	T	2.1E+02		2.1E+02	PPM	Max	(6)
	Arsenic	PPM	9.6E+02	6.1E+03	NP	3.5E+04		6.1E+03	PPM	99% Cheb-m	(5)
	Cadmium	PPM	3.0E+00	5.1E+00	G	1.2E+01		5.1E+00	PPM	95% App. Gamma	(3,4)
	Chromium	PPM	1.6E+01	4.1E+01	NP	1.1E+02		4.1E+01	PPM	99% Cheb-m	(5)
	Copper	PPM	1.5E+03	7.7E+03	T	9.7E+03		7.7E+03	PPM	99% Cheb	(1)
	Iron	PPM	6.6E+04	9.9E+04	G	2.6E+05		9.9E+04	PPM	95% App. Gamma	(3,4)
	Lead	PPM	1.3E+03	7.9E+03	NP	3.9E+04		1.3E+03	PPM	Average	(8)
	Manganese	PPM	1.3E+02	1.7E+02	N	3.1E+02		1.7E+02	PPM	95% Stud-t	(2)
	Selenium	PPM	2.5E+01	4.2E+01	T	3.0E+02		4.2E+01	PPM	95% Cheb	(1)
	Thallium	PPM	7.7E+00	1.5E+01	G	3.6E+01		1.5E+01	PPM	95% App. Gamma	(3,4)
	Vanadium	PPM	3.6E+01	4.6E+01	N	8.2E+01		4.6E+01	PPM	95% Stud-t	(2)
	Zinc	PPM	1.0E+03	4.7E+03	NP	4.8E+03		4.7E+03	PPM	99% Cheb-m	(5)
	Mercury	PPM	1.0E+01	2.0E+01	G	6.9E+01		2.0E+01	PPM	95% App. Gamma	(3,4)
	Dieldrin	PPM	1.9E-01	1.3E+00	T	2.2E-01		2.2E-01	PPM	Max	(6)
	Heptachlor	PPM	9.1E-02	2.5E-01	G	3.5E-01	J	2.5E-01	PPM	95% Adj. Gamma	(3,4)
	Aroclor-1242	PPM	6.5E-01	2.3E+00	NP	3.2E+00		2.3E+00	PPM	97.5% Cheb-m	(5)
	Aroclor-1260	PPM	8.9E-01	4.0E+00	NP	1.6E+00		1.6E+00	PPM	Max	(6)
	Benzene	PPM	4.0E+00	7.7E+01	T	3.3E+01	J	3.3E+01	PPM	Max	(6)
	Tetrachloroethene	PPM	1.0E+00	4.6E+00	NP	5.2E-01	J	5.2E-01	PPM	Max	(6)
	Toluene	PPM	7.9E+00	1.4E+02	T	9.5E+01		9.5E+01	PPM	Max	(6)
	Trichloroethene	PPM	1.0E+00	1.6E+00	G	5.4E-01		5.4E-01	PPM	Max	(6)
	m,p-Xylene	PPM	2.4E+01	NA		1.2E+02		1.2E+02	PPM	Max	(7)
	m-Xylene	PPM	1.9E+01	NA		4.5E+01		4.5E+01	PPM	Max	(7)
	o-Xylene	PPM	1.1E+01	NA		5.5E+01		5.5E+01	PPM	Max	(7)
	p,o-Xylene	PPM	2.6E+01	NA		4.9E+01		4.9E+01	PPM	Max	(7)
	Xylene (Total)	PPM	2.3E+01	3.8E+01	NP	2.3E+02		3.8E+01	PPM	95% Hall	(5)
	2,4-Dimethylphenol	PPM	2.6E+01	1.1E+02	T	3.4E+02		1.1E+02	PPM	97.5% Cheb	(1)
	2,4-Dinitrotoluene	PPM	5.2E+00	7.8E+00	G	2.4E+01		7.8E+00	PPM	95% App. Gamma	(3,4)
	2-Methylnaphthalene	PPM	4.0E+02	1.4E+03	NP	2.5E+03		1.4E+03	PPM	99% Cheb-m	(5)
	4-Methylphenol	PPM	4.8E+01	2.0E+02	T	6.3E+02		2.0E+02	PPM	97.5% Cheb	(1)
	4-Nitroaniline	PPM	1.5E+01	5.0E+01	T	5.8E+01		5.0E+01	PPM	95% Cheb	(1)
	Acenaphthene	PPM	3.2E+02	4.8E+02	G	2.4E+03		4.8E+02	PPM	95% Adj. Gamma	(3,4)
	Benzo(a)anthracene	PPM	4.1E+02	5.7E+02	G	3.7E+03	J	5.7E+02	PPM	95% App. Gamma	(3,4)
	Benzo(a)pyrene	PPM	3.9E+02	5.5E+02	G	3.5E+03	J	5.5E+02	PPM	95% Adj. Gamma	(3,4)
	Benzo(b)fluoranthene	PPM	4.5E+02	6.3E+02	G	4.1E+03	J	6.3E+02	PPM	95% Adj. Gamma	(3,4)
	Benzo(g,h,i)perylene	PPM	2.1E+02	2.9E+02	G	1.9E+03	J	2.9E+02	PPM	95% Adj. Gamma	(3,4)
	Benzo(k)fluoranthene	PPM	2.0E+02	2.8E+02	G	2.0E+03	J	2.8E+02	PPM	95% App. Gamma	(3,4)
	1,1'-Biphenyl	PPM	7.6E+01	1.4E+02	G	5.9E+02		1.4E+02	PPM	95% Adj. Gamma	(4)
	Carbazole	PPM	1.3E+02	2.1E+02	G	1.2E+03		2.1E+02	PPM	95% Adj. Gamma	(3,4)
	Chrysene	PPM	4.3E+02	6.0E+02	G	4.2E+03	J	6.0E+02	PPM	95% Adj. Gamma	(3,4)
	Dibenzo(a,h)anthracene	PPM	6.6E+01	9.1E+01	G	5.1E+02		9.1E+01	PPM	95% App. Gamma	(3,4)
	Dibenzofuran	PPM	2.5E+02	4.1E+02	G	1.9E+03		4.1E+02	PPM	95% Adj. Gamma	(3,4)
	Fluoranthene	PPM	9.9E+02	1.4E+03	G	1.0E+04	J	1.4E+03	PPM	95% Adj. Gamma	(3,4)
	Fluorene	PPM	3.3E+02	4.9E+02	G	2.0E+03		4.9E+02	PPM	95% Adj. Gamma	(3,4)
	Indeno(1,2,3-c,d)pyrene	PPM	2.1E+02	2.9E+02	G	1.7E+03	J	2.9E+02	PPM	95% Adj. Gamma	(3,4)
	Naphthalene	PPM	1.2E+03	3.0E+04	T	1.0E+04	J	1.0E+04	PPM	Max	(6)
	Phenanthrene	PPM	1.2E+03	1.8E+03	G	1.1E+04	J	1.8E+03	PPM	95% Adj. Gamma	(3,4)
	Pyrene	PPM	8.3E+02	1.2E+03	G	8.7E+03	J	1.2E+03	PPM	95% Adj. Gamma	(3,4)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.
ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).
Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb);
99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m);
99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t);
95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma);
Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).
(8) The average concentration was used as the UCL for lead.
G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.3.RME
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/08/2007

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Quanta Resources	Arsenic	PPB	4.0E+00	1.2E+01	NP	2.9E+04		1.2E+01	PPB	95% Cheb-m	(5)
	Arsenic (III)	PPB	NA	NA		1.6E+04		1.6E+04	PPB	Max	(7)
	Arsenic (V)	PPB	NA	NA		9.5E+03		9.5E+03	PPB	Max	(7)
	Iron	PPB	NA	NA		1.9E+05		1.9E+05	PPB	Max	(7)
	Lead	PPB	3.0E+00	1.5E+01	NP	5.0E+01		1.5E+01	PPB	99% Cheb-m	(5)
	alpha-BHC	PPB	2.8E-02	1.3E-01	NP	4.8E-02	J	4.8E-02	PPB	Max	(6)
	delta-BHC	PPB	3.1E-02	1.4E-01	NP	1.0E-01		1.0E-01	PPB	Max	(6)
	Heptachlor	PPB	2.4E-02	1.2E-01	NP	1.6E-02	J	1.6E-02	PPB	Max	(6)
	Benzene	PPB	1.1E+03	1.9E+03	G	1.1E+04		1.9E+03	PPB	95% Adj. Gamma	(4)
	Chloromethane	PPB	1.1E+01	2.9E+01	NP	2.1E+01	J	2.1E+01	PPB	Max	(6)
	Ethylbenzene	PPB	4.4E+02	1.1E+03	NP	1.3E+03		1.1E+03	PPB	99% Cheb-m	(5)
	Isopropylbenzene (Cumene)	PPB	3.9E+01	5.7E+01	G	1.4E+02		5.7E+01	PPB	95% App. Gamma	(3,4)
	Toluene	PPB	6.7E+02	1.2E+03	G	4.4E+03		1.2E+03	PPB	95% Adj. Gamma	(3,4)
	m,p-Xylene	PPB	3.4E+02	NA		1.2E+03		1.2E+03	PPB	Max	(7)
	o-Xylene	PPB	1.9E+02	NA		7.0E+02		7.0E+02	PPB	Max	(7)
	Xylene (Total)	PPB	9.7E+02	2.7E+03	NP	3.9E+03		2.7E+03	PPB	99% Cheb-m	(5)
	1,4-Dichlorobenzene	PPB	1.2E+01	3.3E+01	NP	1.4E+00		1.4E+00	PPB	Max	(6)
	2,4-Dimethylphenol	PPB	9.0E+02	3.7E+03	NP	7.4E+03		3.7E+03	PPB	99% Cheb-m	(5)
	2-Methylnaphthalene	PPB	8.0E+02	2.8E+03	NP	8.4E+03		2.8E+03	PPB	99% Cheb-m	(5)
	2-Methylphenol	PPB	4.2E+02	2.0E+03	NP	4.2E+03		2.0E+03	PPB	99% Cheb-m	(5)
	3&4-Methylphenol	PPB	2.3E+01	NA		6.4E+01		6.4E+01	PPB	Max	(7)
	4-Methylphenol	PPB	5.6E+02	2.8E+03	NP	5.8E+03		2.8E+03	PPB	99% Cheb-m	(5)
	Acenaphthene	PPB	2.4E+02	1.0E+03	NP	3.3E+03		1.0E+03	PPB	99% Cheb-m	(5)
	Acenaphthylene	PPB	5.6E+01	2.4E+02	NP	5.5E+02		2.4E+02	PPB	99% Cheb-m	(5)
	Anthracene	PPB	2.2E+01	5.0E+01	NP	1.6E+03		5.0E+01	PPB	95% Cheb-m	(5)
	Benzo(a)anthracene	PPB	4.3E+01	3.1E+02	NP	1.1E+03		3.1E+02	PPB	99% Cheb-m	(5)
	Benzo(a)pyrene	PPB	3.3E+01	2.3E+02	NP	8.0E+02		2.3E+02	PPB	99% Cheb-m	(5)
	Benzo(b)fluoranthene	PPB	3.7E+01	2.6E+02	NP	9.2E+02		2.6E+02	PPB	99% Cheb-m	(5)
	Benzo(g,h,i)perylene	PPB	2.0E+01	1.2E+02	NP	4.2E+02		1.2E+02	PPB	99% Cheb-m	(5)
	Benzo(k)fluoranthene	PPB	2.1E+01	1.3E+02	NP	4.5E+02		1.3E+02	PPB	99% Cheb-m	(5)
	1,1'-Biphenyl	PPB	8.9E+01	1.3E+02	G	1.1E+03		1.3E+02	PPB	95% App. Gamma	(4)
	Carbazole	PPB	1.8E+02	4.3E+02	NP	7.9E+02		4.3E+02	PPB	99% Cheb-m	(5)
	Chrysene	PPB	4.1E+01	2.9E+02	NP	1.0E+03		2.9E+02	PPB	99% Cheb-m	(5)
	Dibenzo(a,h)anthracene	PPB	7.6E+00	2.3E+01	NP	4.1E+01	J	2.3E+01	PPB	99% Cheb-m	(5)
	Dibenzofuran	PPB	1.5E+02	2.2E+02	G	2.2E+03		2.2E+02	PPB	95% App. Gamma	(4)
	Fluoranthene	PPB	1.3E+02	9.6E+02	NP	3.4E+03		9.6E+02	PPB	99% Cheb-m	(5)
	Fluorene	PPB	1.7E+02	8.4E+02	NP	2.8E+03		8.4E+02	PPB	99% Cheb-m	(5)
	Indeno(1,2,3-c,d)pyrene	PPB	1.9E+01	1.1E+02	NP	3.9E+02		1.1E+02	PPB	99% Cheb-m	(5)
	Naphthalene	PPB	7.1E+03	1.8E+04	NP	3.6E+04		1.8E+04	PPB	99% Cheb-m	(5)
	Phenanthrene	PPB	3.5E+02	2.4E+03	NP	8.3E+03		2.4E+03	PPB	99% Cheb-m	(5)
	Phenol	PPB	2.3E+02	1.2E+03	NP	3.1E+03		1.2E+03	PPB	99% Cheb-m	(5)
	Pyrene	PPB	1.1E+02	8.0E+02	NP	2.8E+03		8.0E+02	PPB	99% Cheb-m	(5)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.
ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).
Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb);
99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m);
99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t);
95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma);
Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).
G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.4.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/06/2007

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Edgewater	Aluminum	PPM	1.2E+04	1.3E+04	G	1.9E+04	1.3E+04	PPM	95% App. Gamma	(3,4)
	Arsenic	PPM	1.4E+01	1.9E+01	G	5.4E+01	1.9E+01	PPM	95% App. Gamma	(3)
	Chromium	PPM	4.0E+01	4.7E+01	G	1.5E+02	4.7E+01	PPM	95% App. Gamma	(4)
	Iron	PPM	2.2E+04	2.3E+04	G	3.8E+04	2.3E+04	PPM	95% App. Gamma	(4)
	Manganese	PPM	3.3E+02	3.6E+02	N	5.8E+02	3.6E+02	PPM	95% Stud-t	(2)
	Thallium	PPM	2.9E-01	4.8E-01	NP	1.4E+00	4.8E-01	PPM	95% Cheb-m	(5)
	Vanadium	PPM	4.1E+01	4.3E+01	N	5.7E+01	4.3E+01	PPM	95% Stud-t	(2)
	Mercury	PPM	5.2E-01	7.2E-01	G	2.6E+00	7.2E-01	PPM	95% App. Gamma	(3,4)
	Benzo(a)anthracene	PPM	2.1E+00	3.2E+00	G	1.0E+01	3.2E+00	PPM	95% App. Gamma	(3,4)
	Benzo(a)pyrene	PPM	2.0E+00	3.0E+00	G	8.9E+00	3.0E+00	PPM	95% App. Gamma	(3,4)
	Benzo(b)fluoranthene	PPM	1.9E+00	2.9E+00	G	9.6E+00	2.9E+00	PPM	95% App. Gamma	(3,4)
	Dibenzo(a,h)anthracene	PPM	4.9E-01	6.9E-01	G	2.2E+00	6.9E-01	PPM	95% App. Gamma	(3,4)
	Indeno(1,2,3-c,d)pyrene	PPM	1.1E+00	1.7E+00	G	5.1E+00	1.7E+00	PPM	95% App. Gamma	(3,4)
	Naphthalene	PPM	1.1E+00	6.8E+00	NP	1.5E+01	6.8E+00	PPM	99% Cheb-m	(5)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.

ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb); 99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m); 99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t); 95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma); Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).

G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.5.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/06/2007

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Edgewater	Aluminum	PPM	9.3E+03	1.2E+04	NP	1.9E+04	1.2E+04	PPM	95% Cheb-m	(5)
	Antimony	PPM	6.2E+00	2.6E+01	NP	1.4E+02	2.6E+01	PPM	97.5% Cheb-m	(5)
	Arsenic	PPM	2.6E+02	4.0E+02	T	5.7E+03	4.0E+02	PPM	95% UCL-t	(1)
	Barium	PPM	1.3E+02	2.1E+02	NP	7.2E+02	2.1E+02	PPM	95% Cheb-m	(5)
	Cadmium	PPM	8.3E-01	1.8E+00	NP	1.2E+01	1.8E+00	PPM	95% Cheb-m	(5)
	Chromium	PPM	2.9E+01	3.5E+01	G	1.5E+02	3.5E+01	PPM	95% App. Gamma	(3,4)
	Copper	PPM	2.1E+02	7.6E+02	NP	4.5E+03	7.6E+02	PPM	97.5% Cheb-m	(5)
	Iron	PPM	2.9E+04	5.4E+04	NP	2.7E+05	5.4E+04	PPM	95% Cheb-m	(5)
	Lead	PPM	9.1E+02	2.7E+03	NP	1.2E+04	9.1E+02	PPM	Average	(8)
	Manganese	PPM	2.4E+02	2.8E+02	N	7.0E+02	2.8E+02	PPM	95% Stud-t	(2)
	Selenium	PPM	7.1E+00	2.1E+01	NP	1.7E+02	2.1E+01	PPM	95% Cheb-m	(5)
	Silver	PPM	2.2E+00	6.0E+00	NP	4.2E+01	6.0E+00	PPM	95% Cheb-m	(5)
	Thallium	PPM	2.1E+00	7.1E+00	NP	3.9E+01	7.1E+00	PPM	97.5% Cheb-m	(5)
	Vanadium	PPM	3.4E+01	4.2E+01	NP	6.9E+01	4.2E+01	PPM	95% Cheb-m	(5)
	Zinc	PPM	2.3E+02	5.7E+02	NP	4.3E+03	5.7E+02	PPM	95% Cheb-m	(5)
	Mercury	PPM	9.8E+00	4.7E+01	NP	3.2E+02	4.7E+01	PPM	97.5% Cheb-m	(5)
	Aroclor-1254	PPM	4.9E-02	2.3E-01	NP	1.5E+00	2.3E-01	PPM	97.5% Cheb-m	(5)
	1,2,4-Trimethylbenzene	PPM	3.1E+00	2.9E+01	NP	3.8E+01	2.9E+01	PPM	99% Cheb-m	(5)
	2-Chlorotoluene	PPM	2.9E+00	2.7E+01	NP	3.4E+01	2.7E+01	PPM	99% Cheb-m	(5)
	Benzene	PPM	8.3E-01	1.8E+00	NP	8.5E+00	1.8E+00	PPM	95% Cheb-m	(5)
	Tetrachloroethene	PPM	3.7E-01	4.1E-01	NP	1.1E+00	4.1E-01	PPM	95% Stud-t	(5)
	Xylene (Total)	PPM	8.2E+00	3.4E+01	NP	2.1E+02	3.4E+01	PPM	97.5% Cheb-m	(5)
	2-Methylnaphthalene	PPM	3.3E+01	1.9E+02	NP	5.8E+02	1.9E+02	PPM	99% Cheb-m	(5)
	Acenaphthene	PPM	2.0E+01	1.2E+02	NP	5.6E+02	1.2E+02	PPM	99% Cheb-m	(5)
	Benzo(a)anthracene	PPM	1.4E+01	3.7E+01	T	2.4E+02	3.7E+01	PPM	95% UCL-t	(1)
	Benzo(a)pyrene	PPM	1.0E+01	2.7E+01	T	1.5E+02	2.7E+01	PPM	95% UCL-t	(1)
	Benzo(b)fluoranthene	PPM	1.0E+01	2.8E+01	T	1.5E+02	2.8E+01	PPM	95% UCL-t	(1)
	Benzo(k)fluoranthene	PPM	7.3E+00	1.7E+01	T	1.2E+02	1.7E+01	PPM	95% UCL-t	(1)
	Carbazole	PPM	3.5E+00	1.1E+01	NP	4.4E+01	1.1E+01	PPM	97.5% Cheb-m	(5)
	Chrysene	PPM	1.4E+01	3.8E+01	T	2.7E+02	3.8E+01	PPM	95% UCL-t	(1)
	Dibenzo(a,h)anthracene	PPM	2.2E+00	3.9E+00	T	3.6E+01	3.9E+00	PPM	95% UCL-t	(1)
	Dibenzofuran	PPM	1.3E+01	7.9E+01	NP	3.5E+02	7.9E+01	PPM	99% Cheb-m	(5)
	Fluoranthene	PPM	3.9E+01	1.2E+02	T	7.6E+02	1.2E+02	PPM	95% Cheb	(1)
	Fluorene	PPM	2.0E+01	1.1E+02	NP	4.7E+02	1.1E+02	PPM	99% Cheb-m	(5)
	Indeno(1,2,3-c,d)pyrene	PPM	5.4E+00	1.2E+01	T	8.2E+01	1.2E+01	PPM	95% UCL-t	(1)
	Naphthalene	PPM	7.8E+01	4.6E+02	NP	1.5E+03	4.6E+02	PPM	99% Cheb-m	(5)
	Pyrene	PPM	3.3E+01	8.9E+01	T	6.5E+02	8.9E+01	PPM	95% Cheb	(1)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.

ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb); 99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m); 99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t); 95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma); Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).
(8) The average concentration was used as the UCL for lead.

G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.6 RME
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/08/2007

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Edgewater	Arsenic	PPB	2.1E+04	3.4E+05 T	1.3E+05	1.3E+05	PPB	Max	(6)
	Arsenic (III)	PPB	3.2E+04	NA	1.4E+05	1.4E+05	PPB	Max	(7)
	Arsenic (V)	PPB	4.9E+03	NA	2.1E+02	2.1E+02	PPB	Max	(7)
	Iron	PPB	9.8E+04	NA	3.7E+05	3.7E+05	PPB	Max	(7)
	Lead	PPB	6.2E+02	NA	4.1E+03	4.1E+03	PPB	Max	(7)
	1,1-Dichloroethane	PPB	3.0E+01	NA	1.2E+02	1.2E+02	PPB	Max	(7)
	1,2-Dichloroethane	PPB	1.5E+00	NA	2.9E+00	2.9E+00	PPB	Max	(7)
	1,2-Dichloropropane	PPB	1.2E+00	NA	3.0E-01 J	3.0E-01	PPB	Max	(7)
	Benzene	PPB	1.1E+01	NA	3.1E+01	3.1E+01	PPB	Max	(7)
	Chloroethane	PPB	3.3E+00	NA	8.0E+00	8.0E+00	PPB	Max	(7)
	Chloroform	PPB	1.5E+00	NA	1.7E+00	1.7E+00	PPB	Max	(7)
	cis-1,2-Dichloroethene	PPB	2.6E+00	NA	6.2E+00	6.2E+00	PPB	Max	(7)
	Tetrachloroethene	PPB	1.3E+00	NA	8.1E-01 J	8.1E-01	PPB	Max	(7)
	Trichloroethene	PPB	1.3E+00	NA	6.4E-01 J	6.4E-01	PPB	Max	(7)
	Vinyl chloride	PPB	2.3E+00	NA	4.4E+00	4.4E+00	PPB	Max	(7)
	2-Methylnaphthalene	PPB	2.7E+01	NA	9.2E+01	9.2E+01	PPB	Max	(7)
	Acenaphthene	PPB	2.6E+01	NA	7.7E+01	7.7E+01	PPB	Max	(7)
	Benzo(a)anthracene	PPB	1.7E+00	NA	2.0E-01 J	2.0E-01	PPB	Max	(7)
	Carbazole	PPB	6.8E+00	NA	1.6E+01	1.6E+01	PPB	Max	(7)
	Dibenzofuran	PPB	1.3E+01	NA	3.5E+01	3.5E+01	PPB	Max	(7)
	Fluorene	PPB	1.3E+01	NA	3.6E+01	3.6E+01	PPB	Max	(7)
	Naphthalene	PPB	3.6E+02	NA	1.2E+03	1.2E+03	PPB	Max	(7)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.
ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).
Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb);
99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m);
99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t);
95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma);
Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).
G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.7.RME
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 02/28/2007

Scenario Timeframe: Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
115 River Road	Arsenic	PPM	9.3E+00	NA	1.3E+01	=	1.3E+01	PPM	Max	(7)
	Chromium	PPM	4.0E+01	NA	1.0E+02	=	1.0E+02	PPM	Max	(7)
	Benzo(a)anthracene	PPM	7.9E+00	NA	2.8E+01	=	2.8E+01	PPM	Max	(7)
	Benzo(a)pyrene	PPM	7.2E+00	NA	2.5E+01	=	2.5E+01	PPM	Max	(7)
	Benzo(b)fluoranthene	PPM	9.0E+00	NA	3.1E+01	=	3.1E+01	PPM	Max	(7)
	Benzo(k)fluoranthene	PPM	4.4E+00	NA	1.6E+01	=	1.6E+01	PPM	Max	(7)
	Dibenz(a,h)anthracene	PPM	1.3E+00	NA	4.6E+00	=	4.6E+00	PPM	Max	(7)
	Indeno(1,2,3-cd)pyrene	PPM	4.4E+00	NA	1.5E+01	=	1.5E+01	PPM	Max	(7)
	Naphthalene	PPM	2.8E+00	NA	1.2E+01	=	1.2E+01	PPM	Max	(7)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.
ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).
Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb); 99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m); 99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t); 95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma); Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).
G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.8.RME
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 02/28/2007

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
115 River Road	Arsenic	PPM	2.2E+01	3.0E+01	N	5.8E+01		3.0E+01	PPM	95% Stud-t	(2)
	Chromium	PPM	3.3E+01	NA		1.0E+02		1.0E+02	PPM	Max	(7)
	Iron	PPM	NA	NA		4.7E+04		4.7E+04	PPM	Max	(7)
	Manganese	PPM	NA	NA		2.4E+02		2.4E+02	PPM	Max	(7)
	Vanadium	PPM	NA	NA		2.7E+01		2.7E+01	PPM	Max	(7)
	Mercury	PPM	NA	NA		9.3E-01		9.3E-01	PPM	Max	(7)
	Benzene	PPM	3.8E+00	4.4E+02	NP	2.9E+01		2.9E+01	PPM	Max	(6)
	Toluene	PPM	8.1E+00	5.3E+02	NP	8.9E+01		8.9E+01	PPM	Max	(6)
	Xylene (Total)	PPM	3.3E+01	5.7E+03	NP	2.4E+02		2.4E+02	PPM	Max	(6)
	2,4-Dinitrotoluene	PPM	3.9E+00	NA		2.9E+01	J	2.9E+01	PPM	Max	(7)
	2-Methylnaphthalene	PPM	2.9E+02	2.1E+03	T	2.1E+03		2.1E+03	PPM	Max	(6)
	Acenaphthene	PPM	1.4E+02	1.5E+03	T	1.3E+03		1.3E+03	PPM	Max	(6)
	Benzo(a)anthracene	PPM	7.9E+01	2.5E+02	G	6.6E+02		2.5E+02	PPM	95% Adj. Gamma	(3)
	Benzo(a)pyrene	PPM	5.4E+01	1.6E+02	G	4.6E+02		1.6E+02	PPM	95% Adj. Gamma	(3,4)
	Benzo(b)fluoranthene	PPM	5.9E+01	1.7E+02	G	5.3E+02		1.7E+02	PPM	95% Adj. Gamma	(4)
	Benzo(k)fluoranthene	PPM	2.2E+01	6.1E+01	G	2.0E+02		6.1E+01	PPM	95% Adj. Gamma	(3,4)
	1,1'-Biphenyl	PPM	4.5E+01	3.8E+02	T	3.8E+02		3.8E+02	PPM	Max	(6)
	Carbazole	PPM	3.2E+01	1.6E+02	T	3.4E+02		1.6E+02	PPM	99% Cheb	(1)
	Chrysene	PPM	7.8E+01	5.3E+02	T	6.1E+02		5.3E+02	PPM	99% Cheb	(1)
	Dibenzo(a,h)anthracene	PPM	9.3E+00	2.7E+01	G	5.8E+01		2.7E+01	PPM	95% Adj. Gamma	(3,4)
	Dibenzofuran	PPM	9.5E+01	8.2E+02	T	9.6E+02		8.2E+02	PPM	99% Cheb-m	(1)
	Fluoranthene	PPM	2.0E+02	6.5E+02	G	2.0E+03		6.5E+02	PPM	95% Adj. Gamma	(4)
	Fluorene	PPM	1.3E+02	1.1E+03	T	1.2E+03		1.1E+03	PPM	99% Cheb	(1)
	Indeno(1,2,3-cd)pyrene	PPM	2.5E+01	7.0E+01	G	2.1E+02		7.0E+01	PPM	95% Adj. Gamma	(3,4)
	Naphthalene	PPM	8.0E+02	2.4E+03	NP	5.8E+03		2.4E+03	PPM	95% Hall	(5)
	Phenanthrene	PPM	4.0E+02	2.3E+03	T	3.9E+03		2.3E+03	PPM	99% Cheb	(1)
	Pyrene	PPM	1.8E+02	5.7E+02	G	1.6E+03		5.7E+02	PPM	95% Adj. Gamma	(4)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.
ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).
Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb);
99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m);
99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t);
95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma);
Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).
G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.9.RME
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/08/2007

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)		Maximum Concentration (Qualifier)	Exposure Point Concentration			
							Value	Units	Statistic	Rationale
115 River Road	Arsenic	PPB	7.1E+00	8.9E+00	N	1.6E+01	8.9E+00	PPB	95% Stud-t	(2)
	Lead	PPB	3.8E+00	6.0E+00	G	1.6E+01	6.0E+00	PPB	95% App. Gamma	(3,4)
	Benzene	PPB	7.1E+01	1.9E+02	G	4.7E+02	1.9E+02	PPB	95% Adj. Gamma	(3,4)
	o-Xylene	PPB	0.0E+00	NA		2.3E+01	2.3E+01	PPB	Max	(7)
	Xylene (Total)	PPB	1.6E+01	1.0E+02	T	8.3E+01	8.3E+01	PPB	Max	(6)
	2-Methylnaphthalene	PPB	1.7E+01	9.7E+01	NP	9.9E+01	9.7E+01	PPB	99% Cheb-m	(5)
	Acenaphthene	PPB	5.3E+01	9.7E+01	T	4.2E+02	9.7E+01	PPB	95% Cheb	(1)
	Benzo(a)anthracene	PPB	2.0E+00	4.4E+00	NP	7.6E-01	7.6E-01	PPB	Max	(6)
	Benzo(a)pyrene	PPB	1.9E+00	4.5E+00	NP	4.8E-01	4.8E-01	PPB	Max	(6)
	Benzo(b)fluoranthene	PPB	1.9E+00	4.5E+00	NP	4.3E-01	4.3E-01	PPB	Max	(6)
	Carbazole	PPB	1.8E+01	3.6E+01	T	1.6E+02	3.6E+01	PPB	95% Cheb	(1)
	Dibenzofuran	PPB	1.3E+01	3.2E+01	T	9.0E+01	3.2E+01	PPB	95% Cheb	(1)
	Fluorene	PPB	1.3E+01	2.4E+01	G	8.8E+01	2.4E+01	PPB	95% App. Gamma	(3,4)
	Naphthalene	PPB	2.3E+02	2.5E+03	T	1.6E+03	1.6E+03	PPB	Max	(6)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.
ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).
Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb); 99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m); 99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t); 95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma); Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).
G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.10.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/09/2007 7:32PM

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)	Maximum Concentration (Qualifier)		Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Former Lever Brothers Property	Arsenic	PPM	1.6E+01	NA	4.5E+01		4.5E+01	PPM	Max	(7)
	Chromium	PPM	2.1E+01	NA	2.9E+01		2.9E+01	PPM	Max	(7)
	Benzo(a)anthracene	PPM	5.8E+00	NA	2.0E+01	J	2.0E+01	PPM	Max	(7)
	Benzo(a)pyrene	PPM	6.1E+00	NA	2.0E+01	J	2.0E+01	PPM	Max	(7)
	Benzo(b)fluoranthene	PPM	7.6E+00	NA	2.6E+01		2.6E+01	PPM	Max	(7)
	Benzo(k)fluoranthene	PPM	3.2E+00	NA	1.1E+01	J	1.1E+01	PPM	Max	(7)
	Dibenzo(a,h)anthracene	PPM	1.1E+00	NA	3.3E+00		3.3E+00	PPM	Max	(7)
	Indeno(1,2,3-c,d)pyrene	PPM	3.6E+00	NA	1.2E+01		1.2E+01	PPM	Max	(7)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.

ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb); 99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m); 99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t); 95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma); Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).

G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.11.RME
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/10/2007 12:08PM

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Former Lever Brothers Property	Antimony	PPM	6.5E+00	4.2E+01	NP	5.3E+01	J	4.2E+01	PPM	99% Cheb-m	(5)
	Arsenic	PPM	6.9E+01	1.2E+02	T	9.2E+02		1.2E+02	PPM	95% UCL-t	(1)
	Cadmium	PPM	1.3E+00	2.6E+00	G	1.2E+01		2.6E+00	PPM	95% App. Gamma	(3,4)
	Chromium	PPM	2.5E+01	3.1E+01	G	6.8E+01	J	3.1E+01	PPM	95% App. Gamma	(3,4)
	Copper	PPM	1.4E+02	2.2E+02	G	5.8E+02	J	2.2E+02	PPM	95% App. Gamma	(3,4)
	Iron	PPM	NA	NA		1.4E+04		1.4E+04	PPM	Max	(7)
	Lead	PPM	4.4E+02	6.6E+02	G	3.8E+03	J	4.4E+02	PPM	Average	(8)
	Manganese	PPM	NA	NA		1.8E+02		1.8E+02	PPM	Max	(7)
	Nickel	PPM	4.0E+01	6.0E+01	T	3.0E+02	J	6.0E+01	PPM	95% UCL-t	(1)
	Thallium	PPM	3.8E-01	4.5E-01	NP	9.5E-01	J	4.5E-01	PPM	95% Stud-t	(5)
	Vanadium	PPM	5.8E+01	NA		7.6E+01		7.6E+01	PPM	Max	(7)
	Mercury	PPM	1.1E+00	1.9E+00	G	4.4E+00		1.9E+00	PPM	95% App. Gamma	(3,4)
	Benzene	PPM	1.8E-01	8.7E-01	T	1.9E+00		8.7E-01	PPM	97.5% Cheb	(1)
	Tetrachloroethene	PPM	9.0E-02	5.0E-01	NP	7.2E-01		5.0E-01	PPM	99% Cheb-m	(5)
	Trichloroethene	PPM	1.4E-01	8.7E-01	NP	4.8E-01		4.8E-01	PPM	Max -	(6)
	2-Methylnaphthalene	PPM	3.9E+00	2.8E+01	NP	2.8E+01		2.8E+01	PPM	99% Cheb-m	(5)
	Benzo(a)anthracene	PPM	2.1E+01	5.4E+01	T	2.7E+02		5.4E+01	PPM	95% Cheb	(1)
	Benzo(a)pyrene	PPM	2.4E+01	6.6E+01	T	2.8E+02		6.6E+01	PPM	95% Cheb	(1)
	Benzo(b)fluoranthene	PPM	2.4E+01	6.2E+01	T	3.2E+02		6.2E+01	PPM	95% Cheb	(1)
	Benzo(k)fluoranthene	PPM	1.2E+01	3.3E+01	T	1.3E+02		3.3E+01	PPM	95% Cheb	(1)
	Carbazole	PPM	1.0E+01	6.0E+01	T	7.0E+01		6.0E+01	PPM	99% Cheb	(1)
	Chrysene	PPM	2.3E+01	6.5E+01	T	2.5E+02		6.5E+01	PPM	95% Cheb	(1)
	Dibenzo(a,h)anthracene	PPM	3.8E+00	1.4E+01	T	5.1E+01		1.4E+01	PPM	97.5% Cheb	(1)
	Dibenzofuran	PPM	5.5E+00	3.0E+01	T	4.8E+01		3.0E+01	PPM	99% Cheb	(1)
	Fluoranthene	PPM	4.1E+01	9.6E+01	T	5.3E+02		9.6E+01	PPM	95% Cheb	(1)
	Indeno(1,2,3-c,d)pyrene	PPM	1.1E+01	4.4E+01	T	1.5E+02		4.4E+01	PPM	97.5% Cheb	(1)
	Naphthalene	PPM	8.3E+00	4.4E+01	NP	7.5E+01		4.4E+01	PPM	99% Cheb-m	(5)
	Pyrene	PPM	3.5E+01	9.1E+01	T	4.4E+02		9.1E+01	PPM	95% Cheb	(1)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.
ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).
Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb); 99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m); 99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t); 95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma); Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).
(8) The average concentration was used as the UCL for lead.
G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.12.RME
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/10/2007 9:16AM

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Former Lever Brothers Property	Arsenic	PPB	5.5E+03	8.3E+03 NP	2.3E+04	8.3E+03	PPB	95% Hall	(5)
	Arsenic (III)	PPB	1.5E+04	NA	3.1E+04	3.1E+04	PPB	Max	(7)
	Arsenic (V)	PPB	2.1E+03	NA	1.7E+02	1.7E+02	PPB	Max	(7)
	Iron	PPB	2.0E+05	NA	4.0E+05	4.0E+05	PPB	Max	(7)
	Benzene	PPB	3.9E+02	6.1E+02 NP	2.8E+03	6.1E+02	PPB	95% Hall	(5)
	Chloroethane	PPB	4.0E+00	1.8E+01 NP	5.5E+00	5.5E+00	PPB	Max	(6)
	Ethylbenzene	PPB	1.2E+02	1.8E+02 NP	5.5E+02	1.8E+02	PPB	95% Hall	(5)
	Toluene	PPB	3.2E+02	4.9E+02 NP	2.0E+03	4.9E+02	PPB	95% Hall	(5)
	Trichloroethene	PPB	3.8E+00	1.7E+01 NP	1.4E+00 J	1.4E+00	PPB	Max	(6)
	m,p-Xylene	PPB	2.1E+02	NA	1.0E+03	1.0E+03	PPB	Max	(7)
	o-Xylene	PPB	8.7E+01	NA	4.5E+02	4.5E+02	PPB	Max	(7)
	Xylene (Total)	PPB	3.0E+02	4.5E+02 NP	1.6E+03	4.5E+02	PPB	95% Hall	(5)
	2,4-Dimethylphenol	PPB	6.2E+01	3.7E+02 NP	6.0E+02	3.7E+02	PPB	99% Cheb-m	(5)
	2-Methylnaphthalene	PPB	2.4E+02	1.1E+03 NP	1.3E+03	1.1E+03	PPB	99% Cheb-m	(5)
	3&4-Methylphenol	PPB	1.3E+01	NA	6.9E+01	6.9E+01	PPB	Max	(7)
	4-Methylphenol	PPB	2.5E+01	1.1E+02 NP	1.2E+02	1.1E+02	PPB	99% Cheb-m	(5)
	Acenaphthene	PPB	6.5E+01	2.5E+02 NP	2.8E+02	2.5E+02	PPB	99% Cheb-m	(5)
	Benzo(a)anthracene	PPB	2.6E+00	1.1E+01 NP	2.5E-01	2.5E-01	PPB	Max	(6)
	1,1'-Biphenyl	PPB	2.8E+01	1.2E+02 NP	1.7E+02	1.2E+02	PPB	99% Cheb-m	(5)
	Carbazole	PPB	3.7E+01	1.6E+02 NP	2.3E+02	1.6E+02	PPB	99% Cheb-m	(5)
	Dibenzofuran	PPB	2.9E+01	1.1E+02 NP	1.5E+02	1.1E+02	PPB	99% Cheb-m	(5)
	Fluorene	PPB	2.6E+01	9.7E+01 NP	1.1E+02	9.7E+01	PPB	99% Cheb-m	(5)
	Naphthalene	PPB	2.1E+03	3.3E+03 NP	1.2E+04	3.3E+03	PPB	95% Hall	(5)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.
ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).
Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb);
99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m);
99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t);
95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma);
Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).
G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.13.RME
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/08/2007

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Block 93 North	Aluminum	PPM	8.7E+03	1.1E+04	G	1.6E+04		1.1E+04	PPM	95% App. Gamma	(4)
	Antimony	PPM	7.9E+00	1.7E+01	G	4.1E+01		1.7E+01	PPM	95% App. Gamma	(3,4)
	Arsenic	PPM	1.1E+02	2.4E+02	T	9.1E+02		2.4E+02	PPM	95% Cheb	(1)
	Chromium	PPM	3.2E+01	4.3E+01	G	8.4E+01		4.3E+01	PPM	95% App. Gamma	(3,4)
	Copper	PPM	1.8E+02	2.4E+02	N	4.7E+02		2.4E+02	PPM	95% Stud-t	(2)
	Iron	PPM	2.6E+04	2.9E+04	N	3.8E+04	J	2.9E+04	PPM	95% Stud-t	(2)
	Lead	PPM	4.4E+02	7.1E+02	G	2.0E+03		4.4E+02	PPM	Average	(8)
	Manganese	PPM	2.7E+02	3.7E+02	G	8.3E+02		3.7E+02	PPM	95% App. Gamma	(3,4)
	Nickel	PPM	4.5E+01	9.8E+01	NP	1.7E+02		9.8E+01	PPM	95% Cheb-m	(5)
	Thallium	PPM	1.7E+00	4.3E+00	T	4.8E+00		4.3E+00	PPM	95% Cheb	(1)
	Vanadium	PPM	4.2E+01	5.1E+01	NP	9.5E+01		5.1E+01	PPM	95% Stud-t	(5)
	Mercury	PPM	1.6E+00	3.9E+00	T	1.0E+01		3.9E+00	PPM	95% Cheb	(1)
	Aroclor-1254	PPM	2.4E-01	6.1E-01	G	1.7E+00		6.1E-01	PPM	95% App. Gamma	(3,4)
	Aroclor-1260	PPM	4.7E-01	1.7E+00	G	3.6E+00		1.7E+00	PPM	95% Adj. Gamma	(3,4)
	Benzene	PPM	9.9E-01	1.0E+01	T	1.4E+01		1.0E+01	PPM	99% Cheb-m	(1)
	m,p-Xylene	PPM	2.6E+01	NA		1.8E+02		1.8E+02	PPM	Max	(7)
	o-Xylene	PPM	1.3E+01	NA		9.0E+01		9.0E+01	PPM	Max	(7)
	Xylene (Total)	PPM	1.8E+01	2.0E+02	NP	2.7E+02		2.0E+02	PPM	99% Cheb-m	(5)
	2-Methylnaphthalene	PPM	6.4E+01	5.4E+02	T	7.6E+02		5.4E+02	PPM	99% Cheb-m	(1)
	Acenaphthene	PPM	9.8E+01	2.8E+02	G	9.5E+02		2.8E+02	PPM	95% Adj. Gamma	(3,4)
	Benzo(a)anthracene	PPM	1.1E+02	2.0E+02	G	4.0E+02		2.0E+02	PPM	95% App. Gamma	(3,4)
	Benzo(a)pyrene	PPM	9.3E+01	1.3E+02	N	2.5E+02		1.3E+02	PPM	95% Stud-t	(2)
	Benzo(b)fluoranthene	PPM	9.7E+01	1.3E+02	N	2.6E+02		1.3E+02	PPM	95% Stud-t	(2)
	Benzo(k)fluoranthene	PPM	6.1E+01	1.1E+02	G	1.9E+02		1.1E+02	PPM	95% App. Gamma	(3,4)
	Carbazole	PPM	3.7E+01	1.0E+02	G	3.1E+02		1.0E+02	PPM	95% Adj. Gamma	(3,4)
	Chrysene	PPM	1.1E+02	2.0E+02	G	4.2E+02		2.0E+02	PPM	95% App. Gamma	(3,4)
	Dibenzo(a,h)anthracene	PPM	1.7E+01	2.3E+01	N	5.0E+01		2.3E+01	PPM	95% Stud-t	(2)
	Dibenzofuran	PPM	7.0E+01	2.2E+02	G	6.9E+02		2.2E+02	PPM	95% Adj. Gamma	(4)
	Fluoranthene	PPM	3.6E+02	8.3E+02	G	2.4E+03		8.3E+02	PPM	95% Adj. Gamma	(3,4)
	Fluorene	PPM	1.2E+02	3.3E+02	G	1.1E+03		3.3E+02	PPM	95% Adj. Gamma	(3,4)
	Indeno(1,2,3-c,d)pyrene	PPM	5.2E+01	7.0E+01	N	1.3E+02		7.0E+01	PPM	95% Stud-t	(2)
	Naphthalene	PPM	1.9E+02	1.8E+03	T	1.8E+03		1.6E+03	PPM	Max	(6)
	Phenanthrene	PPM	4.4E+02	1.2E+03	G	3.6E+03		1.2E+03	PPM	95% Adj. Gamma	(3,4)
	Pyrene	PPM	2.6E+02	5.8E+02	G	1.5E+03		5.8E+02	PPM	95% Adj. Gamma	(3,4)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.
ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).
Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb);
99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m);
99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t);
95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma);
Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).
(8) The average concentration was used as the UCL for lead.
G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.14.RME
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/06/2007

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Block 93 North	Aluminum	PPM	7.6E+03	8.9E+03	N	1.6E+04		8.9E+03	PPM	95% Stud-t	(2)
	Antimony	PPM	3.8E+00	1.9E+01	NP	4.1E+01		1.9E+01	PPM	99% Cheb-m	(5)
	Arsenic	PPM	5.2E+01	7.3E+01	T	9.1E+02		7.3E+01	PPM	95% UCL-t	(1)
	Chromium	PPM	2.6E+01	3.1E+01	G	8.4E+01		3.1E+01	PPM	95% App. Gamma	(3,4)
	Copper	PPM	1.2E+02	1.6E+02	G	4.7E+02		1.6E+02	PPM	95% App. Gamma	(3,4)
	Iron	PPM	2.5E+04	3.2E+04	G	1.0E+05		3.2E+04	PPM	95% App. Gamma	(3,4)
	Manganese	PPM	2.7E+02	3.5E+02	G	9.9E+02		3.5E+02	PPM	95% App. Gamma	(3,4)
	Nickel	PPM	3.2E+01	4.4E+01	T	1.7E+02		4.4E+01	PPM	95% UCL-t	(1)
	Thallium	PPM	9.4E-01	1.7E+00	T	4.8E+00		1.7E+00	PPM	95% UCL-t	(1)
	Vanadium	PPM	3.1E+01	3.8E+01	G	9.5E+01		3.8E+01	PPM	95% App. Gamma	(3,4)
	Mercury	PPM	9.5E-01	1.5E+00	T	1.0E+01		1.5E+00	PPM	95% UCL-t	(1)
	Aroclor-1254	PPM	1.1E-01	7.2E-01	NP	1.7E+00		7.2E-01	PPM	99% Cheb-m	(5)
	Aroclor-1260	PPM	2.2E-01	1.5E+00	NP	3.6E+00		1.5E+00	PPM	99% Cheb-m	(5)
	Benzene	PPM	2.5E+00	1.2E+01	NP	3.5E+01		1.2E+01	PPM	99% Cheb-m	(5)
	m,p-Xylene	PPM	1.8E+01	1.2E+03	T	1.8E+02		1.8E+02	PPM	Max	(6)
	o-Xylene	PPM	9.7E+00	8.5E+01	NP	9.0E+01		8.5E+01	PPM	99% Cheb-m	(5)
	Xylene (Total)	PPM	7.1E+00	5.7E+01	NP	2.7E+02		5.7E+01	PPM	99% Cheb-m	(5)
	2-Methylnaphthalene	PPM	9.2E+01	7.9E+02	T	1.4E+03	J	7.9E+02	PPM	97.5% Cheb	(1)
	Acenaphthene	PPM	1.1E+02	2.0E+02	G	9.9E+02	J	2.0E+02	PPM	95% Adj. Gamma	(4)
	Benzo(a)anthracene	PPM	1.5E+02	2.3E+02	G	1.4E+03	J	2.3E+02	PPM	95% Adj. Gamma	(3,4)
	Benzo(a)pyrene	PPM	1.3E+02	2.0E+02	G	1.2E+03	J	2.0E+02	PPM	95% Adj. Gamma	(3,4)
	Benzo(b)fluoranthene	PPM	1.2E+02	2.0E+02	G	1.4E+03	J	2.0E+02	PPM	95% Adj. Gamma	(3,4)
	Benzo(g,h,i)perylene	PPM	6.4E+01	9.7E+01	G	5.9E+02	J	9.7E+01	PPM	95% App. Gamma	(3,4)
	Benzo(k)fluoranthene	PPM	7.9E+01	1.2E+02	G	6.6E+02	J	1.2E+02	PPM	95% Adj. Gamma	(3,4)
	Carbazole	PPM	4.9E+01	8.7E+01	G	3.9E+02	J	8.7E+01	PPM	95% Adj. Gamma	(3,4)
	Chrysene	PPM	1.4E+02	2.2E+02	G	1.3E+03	J	2.2E+02	PPM	95% Adj. Gamma	(3,4)
	Dibenzo(a,h)anthracene	PPM	2.0E+01	3.0E+01	G	1.2E+02		3.0E+01	PPM	95% App. Gamma	(3,4)
	Dibenzofuran	PPM	8.8E+01	1.3E+03	T	8.7E+02	J	8.7E+02	PPM	Max	(6)
	Fluoranthene	PPM	4.2E+02	6.9E+02	G	3.5E+03	J	6.9E+02	PPM	95% Adj. Gamma	(3,4)
	Fluorene	PPM	1.3E+02	2.3E+02	G	1.2E+03	J	2.3E+02	PPM	95% Adj. Gamma	(4)
	Indeno(1,2,3-c,d)pyrene	PPM	6.1E+01	9.3E+01	G	5.4E+02	J	9.3E+01	PPM	95% App. Gamma	(3,4)
	Naphthalene	PPM	2.9E+02	3.3E+03	T	4.4E+03	J	3.3E+03	PPM	97.5% Cheb	(1)
	Phenanthrene	PPM	5.3E+02	9.3E+02	G	4.9E+03	J	9.3E+02	PPM	95% Adj. Gamma	(3,4)
	Pyrene	PPM	3.3E+02	5.5E+02	G	3.2E+03	J	5.5E+02	PPM	95% Adj. Gamma	(3,4)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.

ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb); 99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m); 99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t); 95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma); Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).

G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.15.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/08/2007

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Block 93 North	Arsenic	PPB	3.1E+04	4.0E+04	NP	6.2E+04		4.0E+04	PPB	95% Hall	(5)
	Arsenic (III)	PPB	NA	NA		1.1E+05		1.1E+05	PPB	Max	(7)
	Iron	PPB	NA	NA		1.4E+05		1.4E+05	PPB	Max	(7)
	Lead	PPB	4.0E+00	9.0E+00	G	2.4E+01		9.0E+00	PPB	95% App. Gamma	(3,4)
	delta-BHC	PPB	1.0E-02	2.2E-02	NP	4.0E-02	J	2.2E-02	PPB	95% Cheb-m	(5)
	Trichloroethene	PPB	3.0E-01	4.1E-01	G	2.0E-01	J	2.0E-01	PPB	Max	(6)
	2-Methylnaphthalene	PPB	2.3E+00	4.0E+00	NP	6.0E+00		4.0E+00	PPB	95% Cheb-m	(5)
	Benzo(a)anthracene	PPB	2.0E+00	4.8E+00	NP	6.5E-01		6.5E-01	PPB	Max	(6)
	Benzo(a)pyrene	PPB	1.9E+00	5.0E+00	NP	2.6E-01		2.6E-01	PPB	Max	(6)
	Benzo(b)fluoranthene	PPB	1.9E+00	4.9E+00	NP	3.0E-01		3.0E-01	PPB	Max	(6)
	Carbazole	PPB	2.7E+00	3.4E+00	NP	6.0E+00		3.4E+00	PPB	95% Stud-t	(5)
	Dibenzofuran	PPB	3.7E+00	6.0E+00	T	1.0E+01		6.0E+00	PPB	95% UCL-t	(1)
	Naphthalene	PPB	1.8E+01	1.3E+02	NP	1.4E+02		1.3E+02	PPB	99% Cheb-m	(5)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.

ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb); 99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m); 99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t); 95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma); Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).

G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.16.RME
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/10/2007 11:16AM

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Groundwater (All - Above Clay)	Arsenic	PPB	1.8E+04	1.2E+05 NP	1.6E+06	1.2E+05	PPB	99% Cheb-m	(5)
	Iron	PPB	1.1E+05	2.5E+05 G	4.0E+05	2.5E+05	PPB	95% App. Gamma	(3,4)
	Lead	PPB	4.4E+01	2.4E+02 NP	4.1E+03	4.4E+01	PPB	Average	(8)
	alpha-BHC	PPB	2.0E-02	8.8E-02 NP	4.8E-02 J	4.8E-02	PPB	Max	(6)
	delta-BHC	PPB	2.4E-02	9.6E-02 NP	1.0E-01	9.6E-02	PPB	99% Cheb-m	(5)
	Heptachlor	PPB	1.8E-02	4.7E-02 NP	1.6E-02 J	1.6E-02	PPB	Max	(6)
	1,1-Dichloroethane	PPB	8.1E+00	1.7E+01 NP	1.2E+02	1.7E+01	PPB	97.5% Cheb-m	(5)
	Benzene	PPB	5.3E+02	1.8E+03 NP	1.1E+04	1.8E+03	PPB	99% Cheb-m	(5)
	Chloroethane	PPB	6.4E+00	1.2E+01 NP	8.0E+00	8.0E+00	PPB	Max	(6)
	Chloromethane	PPB	5.6E+00	1.1E+01 NP	2.1E+01 J	1.1E+01	PPB	97.5% Cheb-m	(5)
	cis-1,2-Dichloroethene	PPB	6.3E+00	1.2E+01 NP	6.2E+00	6.2E+00	PPB	Max	(6)
	Ethylbenzene	PPB	2.2E+02	5.1E+02 NP	1.3E+03	5.1E+02	PPB	99% Cheb-m	(5)
	Isopropylbenzene (Cumene)	PPB	2.1E+01	4.7E+01 NP	1.4E+02	4.7E+01	PPB	99% Cheb-m	(5)
	Toluene	PPB	3.5E+02	1.1E+03 NP	4.8E+03	1.1E+03	PPB	99% Cheb-m	(5)
	Trichloroethene	PPB	6.3E+00	1.2E+01 NP	4.7E+00	4.7E+00	PPB	Max	(6)
	m,p-Xylene	PPB	1.1E+02	5.8E+02 NP	1.2E+03	5.8E+02	PPB	99% Cheb-m	(5)
	o-Xylene	PPB	6.3E+01	3.3E+02 NP	7.0E+02	3.3E+02	PPB	99% Cheb-m	(5)
	Xylene (Total)	PPB	4.6E+02	1.2E+03 NP	3.9E+03	1.2E+03	PPB	99% Cheb-m	(5)
	2,4-Dimethylphenol	PPB	3.4E+02	1.3E+03 NP	7.4E+03	1.3E+03	PPB	99% Cheb-m	(5)
	2-Methylnaphthalene	PPB	3.5E+02	1.1E+03 NP	8.4E+03	1.1E+03	PPB	99% Cheb-m	(5)
	2-Methylphenol	PPB	1.4E+02	4.5E+02 NP	4.2E+03	4.5E+02	PPB	97.5% Cheb-m	(5)
	3&4-Methylphenol	PPB	1.1E+01	4.6E+01 NP	6.9E+01	4.6E+01	PPB	99% Cheb-m	(5)
	4-Methylphenol	PPB	2.1E+02	1.0E+03 NP	5.8E+03	1.0E+03	PPB	99% Cheb-m	(5)
	Acenaphthene	PPB	1.1E+02	3.6E+02 NP	3.3E+03	3.6E+02	PPB	99% Cheb-m	(5)
	Acenaphthylene	PPB	2.2E+01	5.9E+01 NP	5.5E+02	5.9E+01	PPB	97.5% Cheb-m	(5)
	Anthracene	PPB	2.4E+01	1.0E+02 NP	1.6E+03	1.0E+02	PPB	97.5% Cheb-m	(5)
	Benzo(a)anthracene	PPB	1.5E+01	6.9E+01 NP	1.1E+03	6.9E+01	PPB	97.5% Cheb-m	(5)
	Benzo(a)pyrene	PPB	1.2E+01	5.1E+01 NP	8.0E+02	5.1E+01	PPB	97.5% Cheb-m	(5)
	Benzo(b)fluoranthene	PPB	1.3E+01	5.8E+01 NP	9.2E+02	5.8E+01	PPB	97.5% Cheb-m	(5)
	Benzo(g,h,i)perylene	PPB	8.0E+00	2.8E+01 NP	4.2E+02	2.8E+01	PPB	97.5% Cheb-m	(5)
	Benzo(k)fluoranthene	PPB	8.4E+00	3.0E+01 NP	4.5E+02	3.0E+01	PPB	97.5% Cheb-m	(5)
	1,1'-Biphenyl	PPB	4.1E+01	9.7E+01 NP	1.1E+03	9.7E+01	PPB	97.5% Cheb-m	(5)
	Carbazole	PPB	7.6E+01	1.4E+02 NP	7.9E+02	1.4E+02	PPB	97.5% Cheb-m	(5)
	Chrysene	PPB	1.5E+01	6.3E+01 NP	1.0E+03	6.3E+01	PPB	97.5% Cheb-m	(5)
	Dibenzofuran	PPB	6.4E+01	1.7E+02 NP	2.2E+03	1.7E+02	PPB	97.5% Cheb-m	(5)
	Fluoranthene	PPB	4.2E+01	2.0E+02 NP	3.4E+03	2.0E+02	PPB	97.5% Cheb-m	(5)
	Fluorene	PPB	6.9E+01	2.8E+02 NP	2.8E+03	2.8E+02	PPB	99% Cheb-m	(5)
	Indeno(1,2,3-c,d)pyrene	PPB	7.7E+00	2.6E+01 NP	3.9E+02	2.6E+01	PPB	97.5% Cheb-m	(5)
	Naphthalene	PPB	3.3E+03	8.0E+03 NP	3.6E+04	8.0E+03	PPB	99% Cheb-m	(5)
	Phenanthrene	PPB	1.2E+02	7.5E+02 NP	8.3E+03	7.5E+02	PPB	99% Cheb-m	(5)
	Phenol	PPB	7.5E+01	2.8E+02 NP	3.1E+03	2.8E+02	PPB	97.5% Cheb-m	(5)
	Pyrene	PPB	3.6E+01	1.7E+02 NP	2.8E+03	1.7E+02	PPB	97.5% Cheb-m	(5)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.
ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).
Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb); 99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m); 99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t); 95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma); Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).
(8) The average concentration was used as the UCL for lead.
G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

Table 3.17.RME

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Quanta Resources Site, OU1, Edgewater, New Jersey

Updated on 03/10/2007 11:16AM

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (N/T/NP/G)		Maximum Concentration (Qualifier)		Exposure Point Concentration			
								Value	Units	Statistic	Rationale
Groundwater (All - Below Clay)	Arsenic	PPB	3.6E+00	5.5E+00	G	1.3E+01		5.5E+00	PPB	95% App. Gamma	(3,4)
	1,2-Dichloroethane	PPB	5.7E-01	1.2E+00	NP	3.0E-01	J	3.0E-01	PPB	Max	(6)
	Benzene	PPB	1.4E+00	7.9E+00	NP	1.0E+01		7.9E+00	PPB	99% Cheb-m	(5)
	Chloroform	PPB	6.2E-01	7.7E-01	N	1.0E+00		7.7E-01	PPB	95% Stud-t	(2)
	cis-1,2-Dichloroethene	PPB	4.4E+00	8.5E+00	G	1.6E+01		8.5E+00	PPB	95% App. Gamma	(4)
	Tetrachloroethene	PPB	2.5E+00	1.1E+01	NP	9.6E+00		9.6E+00	PPB	Max	(6)
	Trichloroethene	PPB	1.4E+02	3.8E+02	G	4.6E+02		3.8E+02	PPB	95% Adj. Gamma	(3,4)
	Vinyl chloride	PPB	5.9E-01	1.3E+00	NP	2.0E-01	J	2.0E-01	PPB	Max	(6)
	Xylene (Total)	PPB	2.6E+00	1.8E+01	NP	2.4E+01		1.8E+01	PPB	99% Cheb-m	(5)
	2-Methylnaphthalene	PPB	3.9E+00	9.0E+00	NP	1.8E+01		9.0E+00	PPB	95% Cheb-m	(5)
	Benzo(a)anthracene	PPB	1.9E+00	4.5E+00	NP	2.4E-01		2.4E-01	PPB	Max	(6)
	Carbazole	PPB	2.2E+00	3.6E+00	NP	6.0E+00		3.6E+00	PPB	95% Cheb-m	(5)
	Dibenzofuran	PPB	2.8E+00	3.3E+00	NP	6.0E+00		3.3E+00	PPB	95% Stud-t	(5)
	Naphthalene	PPB	2.3E+01	1.6E+02	T	2.0E+02		1.6E+02	PPB	99% Cheb	(1)

For non-detects, 1/2 reporting limit (RL) was used as a proxy concentration.

ProUCL, Version 3.00.02 used to determine distribution of data using the Shapiro-Wilk W Test. ProUCL used to calculate RME EPC, following recommendations based on distribution and standard deviation in users guide (USEPA. April 2004. ProUCL, Version 3.0. Prepared by Lockheed Martin Environmental Services).

Statistics: Maximum Detected Value (Max); 95% UCL of Log-transformed Data, H-Statistic (95% UCL-T); 95% Chebyshev (MVUE) UCL (95% Cheb); 99% Chebyshev (MVUE) UCL (99% Cheb); 95% Chebyshev (mean,std) UCL (95% Cheb-m); 97.5% Chebyshev (mean,std) UCL (97.5% Cheb-m); 99% Chebyshev (mean,std) UCL (99% Cheb-m); 95% modified-t UCL adjusted for skewness (95% Mod-t); 95% Student's-T test UCL (95% Stud-t); 95% Hall's Bootstrap UCL (95% Hall); 95% Approximate Gamma (App. Gamma); 95% Adjusted Gamma (Adj. Gamma); Mean of Log-transformed Data using the Minimum Variance Unbiased Estimate (MVUE) method (Mean-T)

(1) Shapiro-Wilk W Test indicates data are log-normally distributed.
(2) Shapiro-Wilk W Test indicates data are normally distributed.
(3) Anderson-Darling Test indicates data are gamma distributed.
(4) Kolmogorov-Smirnov Test indicates data are gamma distributed.
(5) Distribution tests are inconclusive (data are not normal, log-normal, or gamma-distributed).
(6) The maximum detected concentration was used as the UCL because the value recommended by ProUCL 3.0 was higher than the Max.
(7) The maximum detected concentration was used as the UCL because of the small sample size (< 10 samples).

G = Gamma distribution.
N = Normal distribution.
T = Log-normal distribution.
NP = Non-Parametric distribution.

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				ED	Exposure Duration	24	years	USEPA, 1991	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	
		Child	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	200	mg/day	USEPA, 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
		Child/Adult Aggregate	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				IR-S-Adj	Ingestion Rate of Soil, Age-adjusted	114.29	mg-year/kg-day	Calculated	CS x IR-S-Adj x EF x CF1 x 1/AT
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	IR-S-Adj (mg-year/kd-day) =
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	(ED-C x IR-S-C / BW-C) + (ED-A x IR-S-A / BW-A)
	Commercial Worker	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	USEPA, 2002	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	250	days/year	USEPA, 1991	
				ED	Exposure Duration	25	years	USEPA, 1991	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9125	days	USEPA, 1989	
	Daycare Child	Child	115 River Road property	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 1997	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	250	days/year	(7)	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
	Trespasser	Adult	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	117, 12	days/year	(1)	
				ED	Exposure Duration	30	years	USEPA, 1991	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	10,950	days	USEPA, 1989	

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion (cont.)	Trespasser (cont.)	Adolescent (6-<16 yrs old)	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 1991	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	117, 12	days/year	(1)	
				ED	Exposure Duration	10	years	(2)	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	39	kg	USEPA, 1997 (6)	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	USEPA, 1989	
Dermal	Resident	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	USEPA, 2004 (3)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2-day	USEPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				ED	Exposure Duration	24	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	
		Child	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2,800	cm^2	USEPA, 2004 (4)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				ED	Exposure Duration	6	years	USEPA, 1991	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
		Child/Adult Aggregate	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				DA-Adj	Dermal Absorption, Age-adjusted	361	mg-year/kg-day	Calculated	CS x DA-Adj x DABS x CF1 x EF x 1/AT
				DABS	Dermal Absorption Factor Solids	chem-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	DA-Adj (mg-year/kg-day) =
				EF	Exposure Frequency	350	days/year	USEPA, 1991	(ED-C x SA-C x SSAF-C / BW-C) + (ED-A x SA-A x SSAF-A / BW-A)
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
	Commercial Worker	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	USEPA, 2004 (5)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	250	days/year	USEPA, 1991	
				ED	Exposure Duration	25	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	USEPA, 1989	

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal (cont.)	Daycare Child	Child	115 River Road property (Main Building)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2,800	cm^2	USEPA, 2004 (4)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chemical-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	250	days/year	(7)	
				ED	Exposure Duration	6	years	USEPA, 1991	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
	Trespasser	Adult	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	USEPA, 2004 (3)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2-day	USEPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	117, 12	days/year	(1)	
				ED	Exposure Duration	30	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	10,950	days	USEPA, 1989	
		Adolescent (6-<16 yrs old)	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	4,100	cm^2	USEPA, 2004, (3,6)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2-day	USEPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	117, 12	days/year	(1)	
				ED	Exposure Duration	10	years	(2)	
				BW	Body Weight	39	kg	USEPA, 1997,(6)	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	USEPA, 1989	

Notes:

(a) Evaluation is conducted for each property separately.

(1) Professional judgement - For Block 93, Lots 1,2 and 3 and the Former Lever Brothers Property; assuming 2 days per week for the 26 Spring and Fall weeks, 4 days per week for 13 weeks during the Summer, and 1 day per week for the 13 Winter weeks.
For Quanta Resources; assuming 2 days per month for 6 months per year due to the inaccessibility of the property.

(2) Adolescent trespassers between 6 and 16 years old.

(3) SA includes head, hands, forearms, and lower legs.

(4) SA includes head, hands, forearms, lower legs, and feet.

(5) SA includes head, hands, forearms, and lower legs.

(6) Average value for male and female children between 6 and 16 years old.

(7) Professional judgement assuming Exposure Frequency is the same as that for Commercial Worker.

(8) Based on the ingestion rate of 100 mg/day.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/P-95/002Fa.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. USEPA/540/R/99/005.

TABLE 4.1.RME Supplement A
VALUES USED FOR DAILY INTAKE CALCULATIONS (MUTAGENIC MODE OF ACTION)
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Route	Receptor Population	Exposure Point	Receptor Age		Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	Child/Adult Aggregate	Child (0-<2 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					IR-S-Adj (0-<2)	Age Adjusted Ingestion Rate of Soil (0-<2 yrs)	39.7	mg-yr/day-kg	calculated	CS x IR-S-Adj (0-<2) x EF x CF1 x 1/AT
					EF	Exposure Frequency	350	days/year	EPA, 1991	[for child aged 0-<2 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child/Adolescent Aggregate (2-<16 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					IR-S-Adj (2-<16)	Age Adjusted Ingestion Rate of Soil (2-<16 yrs)	77.82	mg-yr/day-kg	calculated	CS x IR-S-Adj (2-<16) x EF x CF1 x 1/AT
					EF	Exposure Frequency	350	days/year	EPA, 1991	[for child/adolescent aged 2-<16 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Adolescent/Adult Aggregate (16-<30 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					IR-S-Adj (16-<30)	Age Adjusted Ingestion Rate of Soil (16-<30 yrs)	20.7	mg-yr/day-kg	calculated	CS x IR-S-Adj (16-<30) x EF x CF1 x 1/AT
					EF	Exposure Frequency	350	days/year	EPA, 1991	[for adolescent/adult aged 16-<30 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
	Daycare Child	115 River Road Property	Child	Child (0-<2 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					IR-S-Adj (0-<2)	Age Adjusted Ingestion Rate of Soil (0-<2 yrs)	19.8	mg-yr/day-kg	calculated (3)	CS x IR-S-Adj (0-<2) x EF x CF1 x 1/AT
					EF	Exposure Frequency	250	days/year	(2)	[for child aged 0-<2 years]
					CF	Conversion Factor	0.000001	kg/mg	--	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child (2-<6 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					IR-S-Adj (2-<6)	Age Adjusted Ingestion Rate of Soil (2-<6 yrs)	24.9	mg-yr/day-kg	calculated (3)	CS x IR-S-Adj (2-<6) x EF x CF1 x 1/AT
					EF	Exposure Frequency	250	days/year	(2)	[for child aged 2-<6 years]
					CF	Conversion Factor	0.000001	kg/mg	--	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
	Trespasser	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	Child/Adult Aggregate	Child/Adolescent Aggregate 6-<16 yrs	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					IR-S-Adj (6-<16)	Age Adjusted Ingestion Rate of Soil (6-<16 yrs)	28.1	mg-yr/day-kg	calculated	CS x IR-S-Adj (6-<16) x EF x CF1 x 1/AT
					EF	Exposure Frequency	117, 12	days/year	(1)	[for child aged 6-<16 years]
					CF	Conversion Factor	0.000001	kg/mg	--	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
Dermal	Resident	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	Child/Adult Aggregate	Child (0-<2 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					SSAF-Adj (0-<2)	Age Adjusted Soil to Skin Adherence Factor (0-<2 yrs)	103	mg-yr/day-kg	calculated	CS x SSAF-Adj (0-<2) x DABS x CF1 x EF x 1/AT
					DABS	Dermal Absorption Factor Solids	Chemical-Specific	--	EPA, 2004	[for child aged 0-<2 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					EF	Exposure Frequency	350	days/year	EPA, 1991	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child/Adolescent Aggregate (2-<16 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					SSAF-Adj (2-<16)	Age Adjusted Soil to Skin Adherence Factor(2-<16 yrs)	324	mg-yr/day-kg	calculated	CS x SSAF-Adj (2-<16) x DABS x CF1 x EF x 1/AT
					DABS	Dermal Absorption Factor Solids	Chemical-Specific	--	EPA, 2004	[for child/adolescent aged 2-<16 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					EF	Exposure Frequency	350	days/year	EPA, 1991	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Adolescent/Adult Aggregate (16-<30 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					SSAF-Adj (16-<30)	Age Adjusted Soil to Skin Adherence Factor(16-<30 yrs)	82.2	mg-yr/day-kg	calculated	CS x SSAF-Adj (16-<30) x DABS x CF1 x EF x 1/AT
					DABS	Dermal Absorption Factor Solids	Chemical-Specific	--	EPA, 2004	[for adolescent/adult aged 16-<30 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					EF	Exposure Frequency	350	days/year	EPA, 1991	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	

TABLE 4.1.RME Supplement A
VALUES USED FOR DAILY INTAKE CALCULATIONS (MUTAGENIC MODE OF ACTION)
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Route	Receptor Population	Exposure Point	Receptor Age		Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal (cont.)	Daycare Child	115 River Road property (main building)	Child	Child (0-<2 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					SSAF-Adj (0-<2)	Age Adjusted Soil to Skin Adherence Factor (0-<2 yrs)	103	mg-yr/day-kg	calculated	CS x SSAF-Adj (0-<2) x DABS x CF1 x EF x 1/AT
					DABS	Dermal Absorption Factor Solids	Chemical-Specific	--	EPA, 2004	[for child aged 0-<2 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					EF	Exposure Frequency	250	days/year	(2)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child (2-<6 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					SSAF-Adj (2-<6)	Age Adjusted Soil to Skin Adherence Factor(2-<6 yrs)	144	mg-yr/day-kg	calculated	CS x SSAF-Adj (2-<6) x DABS x CF1 x EF x 1/AT
					DABS	Dermal Absorption Factor Solids	Chemical-Specific	--	EPA, 2004	[for child aged 2-<6 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					EF	Exposure Frequency	250	days/year	(2)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
	Trespasser	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	Child/Adult Aggregate	Child/Adolescent Aggregate 6-<16 yrs	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					SSAF-Adj (6-<16)	Age Adjusted Soil to Skin Adherence Factor (6-<16 yrs)	180	mg-yr/day-kg	calculated	CS x SSAF-Adj (6-<16) x DABS x CF1 x EF x 1/AT
					DABS	Dermal Absorption Factor Solids	Chemical-Specific	--	EPA, 2004	[for child aged 6-<16 years]
					CF	Conversion Factor	0.000001	kg/mg	--	
					EF	Exposure Frequency	117, 12	days/year	(1)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	

Notes:

(a) Evaluation is conducted for each property separately.

(1) Professional judgement - For Block 93, Lots 1,2 and 3 and the Former Lever Brothers Property: assuming 2 days per week for the 26 Spring and Fall weeks, 4 days per week for 13 weeks during the Summer, and 1 day per week for the 13 Winter weeks.

For Quanta Resources: assuming 2 days per month for 6 months per year due to the inaccessibility of the property.

(2) Professional judgement assuming Exposure Frequency is the same as that for Commercial Worker.

(3) Half the residential values are used because of lower soil ingestion rate (i.e., 100 mg/day).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. USEPA/540/R/99/005.

cm^2 = Square centimeter

kg = Kilogram

kg/mg = Kilogram per milligram

mg/kg = Milligram per kilogram

mg/kg-day = Milligram per kilogram per day

mg/cm^2-day = Milligram per square centimeter per day

mg/day = Milligram per day

TABLE 4.1.RME Supplement B
Age-Adjusted Exposure Parameters (RME)
Quanta Resources Site, OU1, Edgewater, New Jersey

			INTAKE RATE			DERMAL			AGE-ADJUSTED EFs					
AGE (year)	ED (years)	BW [1] (kg)	WATER IR-W [2] (L/day)	SOIL IR-S [3] (mg/day)	AIR IN [4] (m3/day)	SOIL SSAF [5] (mg/cm2-event)	EXPOSED SA [6] (cm2)	TOTAL SA [7] (cm2)	AGE GROUP	IR-S-Adj (mg-yr/day-kg)	IR-W-Adj (liter-yr/day-kg)	IN-Adj (m3-yr/day-kg)	SSAF-Adj (mg-yr/day-kg)	TOTAL SA (cm2-yr/kg)
0	1	9.1	0.76	200	4.5	0.2	2,625	5,910	0-<2 yrs	39.7	0.22	1.1	103	1,172
1	1	11.3	1.5	200	6.8	0.2	2,571	5,910						
2	1	13.3	1.5	200	6.8	0.2	2,434	5,910	2-<6 yrs	49.8	0.37	2.0	144	1,685
3	1	15.3	1.5	200	8.3	0.2	2,893	6,565						
4	1	17.4	1.5	200	8.3	0.2	3,175	7,185						
5	1	19.7	1.5	200	8.3	0.2	3,255	7,860						
6	1	22.6	1.5	100	10	0.2	2,949	8,545	6-<16 yrs	28.1	0.47	3.4	180	3,234
7	1	24.9	1.5	100	10	0.2	3,182	9,265						
8	1	28.1	1.5	100	10	0.2	3,434	10,000						
9	1	31.5	1.5	100	13.5	0.2	3,657	10,650						
10	1	36.3	1.5	100	13.5	0.2	3,819	11,750						
11	1	41.1	2	100	13.5	0.2	4,111	12,650						
12	1	45.3	2	100	13.5	0.2	4,453	13,700						
13	1	50.4	2	100	13.5	0.07	4,916	14,750						
14	1	56	2	100	13.5	0.07	5,205	15,800						
15	1	58.1	2	100	14.5	0.07	5,386	16,350						
16	1	62.6	2	100	14.5	0.07	5,534	16,800	16-<30 yrs	20.7	0.41	2.8	82.2	3,687
17	1	63.2	2	100	14.5	0.07	5,641	17,150						
18	1	65.1	2	100	14.5	0.07	5,700	18,000						
19	1	66	2	100	13.25	0.07	5,700	18,000						
20	1	67.2	2	100	13.25	0.07	5,700	18,000						
21	1	67.2	2	100	13.25	0.07	5,700	18,000						
22	1	67.2	2	100	13.25	0.07	5,700	18,000						
23	1	67.2	2	100	13.25	0.07	5,700	18,000						
24	1	67.2	2	100	13.25	0.07	5,700	18,000						
25	1	71.5	2	100	13.25	0.07	5,700	18,000						
26	1	71.5	2	100	13.25	0.07	5,700	18,000						
27	1	71.5	2	100	13.25	0.07	5,700	18,000						
28	1	71.5	2	100	13.25	0.07	5,700	18,000						
29	1	71.5	2	100	13.25	0.07	5,700	18,000						

Equations:

IR-S-Adj (mg-yr/day-kg)	$\sum$ (ED * IR-S) / BW
IR-W-Adj (liter-yr/day-kg)	$\sum$ (ED * IR-W) / BW
SSAF-Adj (mg-yr/day-kg)	$\sum$ (ED * EV * SSAF * SA) / BW
IN-Adj (m3-yr/hour-kg)	$\sum$ (ED * IN) / BW

References:

[1] EPA 1997. Exposure Factors Handbook. Tables 7-2 (adults) and 7-3 (children), mean. Values are mean of male and female. Source: National Center of Health Statistics (NCHS) 1987.
[2] EPA 1997. Exposure Factors Handbook. Table 3-30 - Summary of Recommended Drinking Water Intake Rates. 95th Percentile (90th Percentile was used when 95th Percentile is not listed).
[3] EPA 1991. Standard Default Exposure Factors. Default for resident child and adult.
[4] EPA 1997. Exposure Factors Handbook. Table 5-23 - Summary of Recommended Values for Inhalation. Mean of male and female.
[5] EPA 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Recommended default adherence factor for a child resident (0.2) and adult resident (0.07). For older children, the geometric mean weighted adherence factor for children playing in wet soil of was used for children 6 - 12, as a central tendency estimate of a high end soil contact activity (see Exhibit 3-3).
[6] EPA 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Calculated from Exhibit C-1 - Body Part-Specific Surface Area Calculations (Children). Data from Exposure Factors Handbook, Tables 6-6, 6-7 and 6-8. Surface area of head, forearms, hands, lower legs and feet (for child <6 years); feet excluded from surface area calculation for >6 years. Surface area for >18 is recommended default for adult resident (EPA 2004).
[7] EPA 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Exhibit C-1 - Body Part-Specific Surface Area Calculations (Children). Data from Exposure Factors Handbook, Tables 6-6 and 6-7. Total Body Surface Area (50th % tile).

Adolescent Trespasser Exposure Factors (Age 6-16)

AVERAGE =	39	4,100

TABLE 4.2.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Ambient Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x ET x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	0.83	m^3/hour	USEPA, 1991	
				ET	Exposure Time	24	hr/day	USEPA, 1991	
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				ED	Exposure Duration	24	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	
		Child	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x ET x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	0.42	m^3/hour	USEPA, 1997	
				ET	Exposure Time	24	hr/day	USEPA, 1991	
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
		Child/Adult Aggregate	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj x EF x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN-Adj	Inhalation Rate, Adjusted	10.86	m^3-yr/kg-day	--	
				ET	Exposure Time	24	hr/day	USEPA, 1991	IN-Adj (m^3-yr/kg-day) =
				EF	Exposure Frequency	350	days/year	USEPA, 1991	(IN-A x ED-A x ET / BW-A) + (IN-C x ED-C x ET / BW-C)
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	

TABLE 4.2.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Ambient Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation (cont.)	Commercial Worker	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	20	m^3/day	USEPA, 1991	
				EF	Exposure Frequency	250	days/year	USEPA, 2002	
				ED	Exposure Duration	25	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	USEPA, 1989	
	Daycare Child	Child	115 River Road property	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x EF x ET x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	0.42	m^3/hour	USEPA, 1997	
				ET	Exposure Time	12	hr/day	(5)	
				EF	Exposure Frequency	250	days/year	(6)	
				ED	Exposure Duration	6	years	USEPA, 1991	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
	Trespasser	Adult	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x ET x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	0.83	m^3/hour	USEPA, 1991	
				ET	Exposure Time	2	hr/day	USEPA, 1991	
				EF	Exposure Frequency	117, 12	days/year	(2)	
				ED	Exposure Duration	30	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	10,950	days	USEPA, 1989	

TABLE 4.2.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Ambient Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation (cont.)	Trespasser (cont.)	Adolescent (6-<16 yrs old)	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x ET x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	0.83	m^3/hour	USEPA, 1991	
				ET	Exposure Time	2	hr/day	USEPA, 1991	
				EF	Exposure Frequency	117, 12	days/year	(2)	
				ED	Exposure Duration	10	years	(3)	
				BW	Body Weight	39	kg	USEPA, 1997 (4)	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	USEPA, 1989	

Notes:
(a) Evaluation is conducted for each property separately.
(1) Site-specific values will be determined.
(2) Professional judgement - For Block 93, Lots 1,2 and 3 and the Former Lever Brothers Property: assuming 2 days per week for the 26 Spring and Fall weeks, 4 days per week for 13 weeks during the Summer, and 1 day per week for the 13 Winter weeks.
For Quanta Resources: assuming 2 days per month for 6 months per year due to the inaccessibility of the property.
(3) Adolescent trespassers between 6 and 16 years old.
(4) Average value for male and female children between 6 and 16 years old.
(5) Professional judgement assuming exposure time is 12 hours a day.
(6) Professional judgement assuming Exposure Frequency is the same as that for Commercial Worker.

Sources:
USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.
USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.
USEPA, 1996: Soil Screening Guidance: User's Guide. USEPA/540/F-95/041.
USEPA, 1997: Exposure Factors Handbook. USEPA/600/P-95/002Fa.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Table 4.2.RME Supplement A
Particulate Emission Factor - Trespasser/Resident/Daycare Child/Commercial Worker
Reasonable Maximum Exposure
Quanta Resources Site, OU1, Edgewater, New Jersey

PEF Equations:

$$Q/C_{wind} = A \times \exp\left[\frac{(\ln A_{site} - B)^2}{C}\right]$$

Exhibit D-2 (EPA, 2002)

$$PEF = Q/C_{wind} \times \frac{3{,}600 \text{sec/hr}}{0.036 \times (1-V) \times \left(U_m / U_t\right)^3 \times F(x)}$$

Equation 4-5 (EPA, 2002)

PEF and Box Model Input Parameters

Parameter	Definition	Value	Units	Source
Q/C_{wind}	inverse ratio of the geometric mean air concentration to the emission flux at the center of a square source	**57**	g/m^2-s per kg/m^3	g/m^2-s per kg/m^3
A	Constant for Zone 8 (Philadelphia, PA)	14.011	unitless	Exhibit D-2 (EPA, 2002)
B	Constant for Zone 8 (Philadelphia, PA)	19.615	unitless	Exhibit D-2 (EPA, 2002)
C	Constant for Zone 8 (Philadelphia, PA)	225.340	unitless	Exhibit D-2 (EPA, 2002)
A_{site}	Areal extent of site contamination	6.2	acres	site-specific
PEF	particulate emission factor	**8.27E+08**	m^3/kg	calculated
V	fraction of vegetative cover	0.5	unitless	Default (Eqn. 4-5)
Um	mean annual windspeed	4.69	m/s	Default (Eqn. 4-5)
Ut	equivalent threshold value of windpeed at 7 m	11.32	m/s	Default (Eqn. 4-5)
F(x)	function dependent on Um/Ut derived using Cowherd et al. (1985)	0.194	unitless	Default (Eqn. 4-5)

Source:

EPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, EPA Office of Solid Waste and Emergency Response. OSWER 9355.4-24. December.

TABLE 4.3.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Worker (a)	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (b)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	330	mg/day	USEPA, 2002	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	250	days/year	USEPA, 1991	
				ED	Exposure Duration	1	years	USEPA, 2002	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
Dermal	Construction Worker (a)	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (b)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	USEPA, 2004 (1)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.3	mg/cm^2-day	USEPA, 2002	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chem-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	250	days/year	USEPA, 1991	
				ED	Exposure Duration	1	years	USEPA, 2002	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Notes:

(a) Construction worker scenario is used as a conservative representation of the utility worker scenario.

(c) Soil from 3-10 ft interval is used for Former Lever Brothers Property (see text).

(1) SA includes head, hands, and forearms.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. USEPA/540/R/99/005.

TABLE 4.2.RME Supplement B
VALUES USED FOR DAILY INTAKE CALCULATIONS (MUTAGENIC MODE OF ACTION)
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Ambient Air

Exposure Route	Receptor Population	Exposure Point	Receptor Age		Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	Child/Adult Aggregate	Child (0-<2 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj (0-<2) x EF x 1/AT
					IN-Adj-1	Age Adjusted Inhalation Rate (0-<2 yrs)	1.1	m^3-yr/day-kg	calculated	[for child aged 0-<2 years]
					PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
					VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	EPA,1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
					EF	Exposure Frequency	350	days/year	EPA,1991	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child/Adolescent Aggregate (2-<16 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj (2-<16) x EF x 1/AT
					IN-Adj-1	Age Adjusted Inhalation Rate (2-<16 yrs)	5.3	m^3-yr/day-kg	calculated	[for child/adolescent aged 2-<16 years]
					PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
					VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	EPA,1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
					EF	Exposure Frequency	350	days/year	EPA, 1991	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Adolescent/Adult Aggregate (16-<30 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj (16-<30) x EF x 1/AT
					IN-Adj-1	Age Adjusted Inhalation Rate (16-<30 yrs)	2.8	m^3-yr/day-kg	calculated	[for adolescent/adult aged 16-<30 years]
					PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
					VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	EPA,1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
					EF	Exposure Frequency	350	days/year	EPA, 1991	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
	Daycare child	115 River Road property	Child	Child (0-<2 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj (0-<2) x ET x EF x 1/AT
					IN-Adj-1	Age Adjusted Inhalation Rate (0-<2 yrs)	1.1	m^3-yr/day-kg	calculated	[for child aged 0-<2 years]
					PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
					VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	EPA,1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
					ET	Exposure Time	12/24	hr/hr/day	(4)	
					EF	Exposure Frequency	250	days/year	(2)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child (2-<6 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj (2-<6) x ET x EF x 1/AT
					IN-Adj-1	Age Adjusted Inhalation Rate (2-<6 yrs)	2.0	m^3-yr/day-kg	calculated	[for child aged 2-<6 years]
					PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
					VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	EPA,1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
					ET	Exposure Time	12/24	hr/hr/day	(4)	
					EF	Exposure Frequency	250	days/year	(2)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
	Trespasser	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	Child/Adult Aggregate	Child/Adolescent Aggregate 6-<16 yrs	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj (6-<16) x ET x EF x 1/AT
					IN-Adj-1	Age Adjusted Inhalation Rate (6-<16 yrs)	3.4	m^3-yr/day-kg	calculated	[for child aged 6-<16 years]
					PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
					VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	EPA,1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
					EF	Exposure Frequency	117, 12	days/year	(3)	
					ET	Exposure Time	2	hr/hr/day	USEPA, 1991	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	

Notes:

(a) Evaluation is conducted for each property separately.

(1) Site-specific values will be determined.

(2) Professional judgement assuming Exposure Frequency is the same as that for Commercial Worker.

(3) Professional judgement - For Block 93, Lots 1,2 and 3 and the Former Lever Brothers Property: assuming 2 days per week for the 26 Spring and Fall weeks, 4 days per week for 13 weeks during the Summer, and 1 day per week for the 13 Winter weeks.
For Quanta Resources: assuming 2 days per month for 6 months per year due to the inaccessibility of the property.

(4) Professional judgement assuming exposure time is 12 hours a day.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03

USEPA, 1996: Soil Screening Guidance: User's Guide. USEPA/540/F-95/041.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

kg = Kilogram
mg/kg = Milligram per kilogram
mg/kg-day = Milligram per kilogram per day
mg/m^3 = Milligram per cubic meter
m^3/day = Cubic meter per day
m^3/kg = Cubic meter per kilogram

TABLE 4.4.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Ambient Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Worker (a)	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (b)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	20	m^3/day	USEPA, 2002	
				EF	Exposure Frequency	250	days/year	USEPA,1991	
				ED	Exposure Duration	1	years	USEPA, 2002	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Notes:

(a) Construction worker scenario is used as a conservative representation of the utility worker scenario.

(b) Evaluation is conducted for each property separately.

(1) Site-specific values will be determined.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 1996: Soil Screening Guidance: User's Guide. USEPA/540/F-95/041.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Table 4.4.RME Supplement A
Particulate Emission Factor - Construction Worker
Reasonable Maximum Exposure
Quanta Resources Site, OU1, Edgewater, New Jersey

PEF Equations:

$$Q/C_{Sr} = A \times \exp\left[\frac{(\ln A_{site} - B)^2}{C}\right]$$

Equation 5-6 (EPA, 2002)

$$PEF_{SC} = Q/C_{Sr} \times \frac{1}{F_D} \frac{T \times A_R}{556 \times (W/3)^{0.4} \times \left(\frac{365\ d/yr - p}{365\ d/yr}\right)^3 \times \sum VKT}$$

Equation 5-5 (EPA, 2002)

$$F_D = 0.1852 + \frac{5.3537}{t_c} + \frac{-9.6318}{t_c^{\,2}}$$

Equation E-16 (EPA, 2002)

PEF and Box Model Input Parameters

Parameter	Definition	Value	Units	Source
Q/C_{Sr}	inverse ratio of the geometric mean air concentration to the emission flux at the center of a square source	**16.0**	g/m^2-s per kg/m^3	calculated
A	Constant	12.935	unitless	default (Eqn. 5-6)
B	Constant	5.738	unitless	default (Eqn. 5-6)
C	Constant	71.771	unitless	default (Eqn. 5-6)
A_{site}	Areal extent of site contamination	6.2	acres	site-specific
PEF_{SC}	subchronic road particulate emission factor	**2.07E+07**	m^3/kg	calculated
F_D	Dispersion correction factor	0.188	unitless	calculated
t_c	duration of construction (250 days for 8 hr/day)	2,000	hr	assumed
T	total time over which construction occurs (t_c x 3600 s/hr)	7,200,000	s	assumed
A_R	surface area of contaminated road segment	274.21	m^2	default (Eqn. 5-5)
W	mean weight of vehicle [(1 car @ 2 tons/car) + (2 trucks @ 20 tons/truck)] / 3 vehicles)	14	tons	assumed
p	number of days with at least 0.01 inches of precipitation	140	days/yr	site-specific (Exhibit 5-2)
VKT	sum of fleet vehicle kilometers traveled during the exposure duration (assumed 3 vehicles x 0.045 km/day x 250 days)	33.8	km	assumed

Source:

EPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, EPA Office of Solid Waste and Emergency Response. OSWER 9355.4-24. December.

TABLE 4.5.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current or Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Daycare Child	Child	115 River Road property (Main Building)	CA	Chemical Concentration in Air	RME (1)	mg/m^3	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IN	Inhalation Rate	0.42	m^3/hour	USEPA, 1997	CA x IN x ET x EF x ED x 1/BW x 1/AT
				ET	Exposure Time	12	hr/day	(2)	
				EF	Exposure Frequency	250	days/year	(3)	
				ED	Exposure Duration	6	years	USEPA, 1991	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
	Commercial Worker	Adult	115 River Road property (Building 12 and Main Building)	CA	Chemical Concentration in Air	RME (1)	mg/m^3	RME	(CDI) (mg/kg-day) =
				IN	Inhalation Rate	20	m^3/day	USEPA, 1991	CA x IN x ET x EF x ED x 1/BW x 1/AT
				EF	Exposure Frequency	250	days/year	USEPA, 2002	
				ED	Exposure Duration	25	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	USEPA, 1989	

NOTES:

(a) Evaluation is conducted for each property separately.

(1) Measured

(2) Professional judgement assuming exposure time is 12 hours a day.

(3) Professional judgement assuming Exposure Frequency is the same as that for Commercial Worker.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/P-95/002Fa.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

TABLE 4.5.RME Supplement A

VALUES USED FOR DAILY INTAKE CALCULATIONS (MUTAGENIC MODE OF ACTION)

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Route	Receptor Population	Exposure Point	Receptor Age		Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Daycare child	115 River Road property (Main Building)	Child	Child (0-<2 yrs)	CA	Chemical Concentration in Air	RME (1)	mg/m^3	RME	CDI (mg/kg-day) =
					IN-Adj-1	Age Adjusted Inhalation Rate (0-<2 yrs)	1.1	m^3-yr/hour-kg	calculated	CA x IN-Adj (0-<2 yrs) x ET x EF x 1/AT
					ET	Exposure Time	12/24	hr/hr/day	(4)	
					EF	Exposure Frequency	250	days/year	(3)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child (2-<6 yrs)	CA	Chemical Concentration in Air	RME (1)	mg/m^3	RME	CDI (mg/kg-day) =
					IN-Adj-2	Age Adjusted Inhalation Rate (2-<6 yrs)	2.0	m^3-yr/hour-kg	calculated	CA x IN-Adj (2-<6 yrs) x ET x EF x 1/AT
					ET	Exposure Time	12/24	hr/hr/day	(4)	
					EF	Exposure Frequency	250	days/year	(3)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	

Notes:

(a) Evaluation is conducted for each property separately.

(1) Measured

(2) Professional judgement assuming exposure time is 12 hours a day.

(3) Professional judgement assuming Exposure Frequency is the same as that for Commercial Worker.

(4) Professional judgement assuming exposure time is 12 hours a day.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

hr/day = Hour per day

kg = Kilogram

m^3/hour = Cubic meter per hour

mg/kg-day = Milligram per kilogram per day

mg/kg-shower = Milligram per kilogram per shower

mg/µg = Milligram per microgram

mg/m^3 = Milligram per cubic meter

µg/L = Microgram per liter

$µg/m^3$ = Microgram per cubic meter

TABLE 4.6.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current or Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Construction Worker (a)	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (b)	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	chemical-specific	dimensionless	USEPA, 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hr	USEPA, 2004	Inorganics: DAevent (mg/cm^2-event) =
				τ	Lag Time	chemical-specific	hr/event	USEPA, 2004	Kp x CW x t_{event} x CF1 x CF2
				t*	Time to Reach Steady-state	chemical-specific	hours	USEPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical-specific	dimensionless	USEPA, 2004	Organics :
				t_{event}	Event Time	4	hr/event	(1)	$t_{event}<t^*$: DAevent (mg/cm^2-event) =
				SA	Skin Surface Area Available for Contact	2,300	cm^2	USEPA, 2004 (2)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	(1)	x CF1 x CF2
				EF	Exposure Frequency	30	days/year	(3)	
				ED	Exposure Duration	1	years	USEPA, 2002	$t_{event}>t^*$: DAevent (mg/cm^2-event) =
				BW	Body Weight	70	kg	USEPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	((1 + 3B + $3B^2$)/$(1+B)^2$)) x CF1 x CF2
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	mg/µg	--	
				CF2	Conversion Factor 2	0.001	l/cm^3	--	

NOTES:

(a) Construction worker scenario is used as a conservative representation of the utility worker scenario.

(b) Evaluation is conducted for each property separately.

(1) Professional judgement assuming a worker would have contact with ponded water in an excavation for half the workday.

(2) SA consists of hands and forearms.

(3) Professional judgement assuming contact with groundwater in excavations occurs for 30 days.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. USEPA/540/R/99/005.

TABLE 4.7.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Ambient Air (Excavation)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Worker (a)	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (b)	CW	Chemical Concentration in Water	RME	µg/l	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Ambient Air	calculated	mg/m^3	--	CA x IN x EF x ED x 1/BW x 1/AT
				IN	Inhalation Rate	20	m^3/day	USEPA, 2002	
				EF	Exposure Frequency	250	days/year	USEPA,1991	CA calculated based on the Two-Film Model
				ED	Exposure Duration	1	years	USEPA, 2002	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Notes:

(a) Construction worker scenario is used as a conservative representation of the utility worker scenario.

(b) Evaluation is conducted for each property separately.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

TABLE 4.8.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Groundwater (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	2	liters/day	USEPA, 1997	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				ED	Exposure Duration	24	years	USEPA, 1991	
				CF1	Conversion Factor 1	0.001	mg/µg	--	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	
		Child	Groundwater (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) =
				IR-W	Ingestion Rate of Water	1	liters/day	USEPA, 1997	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF1	Conversion Factor 1	0.001	mg/µg	--	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
		Child/Adult Aggregate	Groundwater (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) =
				IR-W-Adj	Ingestion Rate of Water, Age-adjusted	1.09	liter-year/kg-day	calculated	CW x IR-W-Adj x EF x CF1 x 1/AT
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				CF1	Conversion Factor 1	0.001	mg/µg	--	IR-W-Adj (liter-year/kd-day) =
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	(ED-C x IR-W-C / BW-C) + (ED-A x IR-W-A / BW-A)
Dermal	Resident	Adult	Groundwater (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	chemical-specific	dimensionless	USEPA, 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hr	USEPA, 2004	Inorganics: DAevent (mg/cm^2-event) =
				τ	Lag Time	chemical-specific	hr/event	USEPA, 2004	Kp x CW x t_{event} x CF1 x CF2
				t^*	Time to Reach Steady-state	chemical-specific	hours	USEPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical-specific	dimensionless	USEPA, 2004	Organics :
				t_{event}	Event Time	0.58	hr/event	USEPA, 2004	$t_{event}<t^*$: DAevent (mg/cm^2-event) =
				SA	Skin Surface Area Available for Contact	18,000	cm^2	USEPA, 2004 (1)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	USEPA, 2004	x CF1 x CF2
				EF	Exposure Frequency	350	days/year	USEPA, 2004	
				ED	Exposure Duration	24	years	USEPA, 2004	$t_{event}>t^*$: DAevent (mg/cm^2-event) =
				BW	Body Weight	70	kg	USEPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	((1 + 3B + $3B^2$)/(1+B)^2)) x CF1 x CF2
				CF1	Conversion Factor 1	0.001	mg/µg	--	
				CF2	Conversion Factor 2	0.001	l/cm^3	--	

TABLE 4.8.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal (cont.)	Resident	Child	Groundwater (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	chemical-specific	dimensionless	USEPA, 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hr	USEPA, 2004	Inorganics: DAevent (mg/cm^2-event) =
				τ	Lag Time	chemical-specific	hr/event	USEPA, 2004	Kp x CW x t_{event} x CF1 x CF2
				t*	Time to Reach Steady-state	chemical-specific	hours	USEPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical-specific	dimensionless	USEPA, 2004	Organics :
				t_{event}	Event Time	1.00	hr/event	USEPA, 2004	$t_{event}<t^*$: DAevent (mg/cm^2-event) =
				SA	Skin Surface Area Available for Contact	6,600	cm^2	USEPA, 2004 (1)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	USEPA, 2004	x CF1 x CF2
				EF	Exposure Frequency	350	days/year	USEPA, 2004	
				ED	Exposure Duration	6	years	USEPA, 2004	$t_{event}>t^*$: DAevent (mg/cm^2-event) =
				BW	Body Weight	15	kg	USEPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-N	Averaging Time (Non-Cancer)	2190	days	USEPA, 1989	((1 + 3B + $3B^2$)/$(1+B)^2$)) x CF1 x CF2
				CF1	Conversion Factor 1	0.001	mg/µg	--	
				CF2	Conversion Factor 2	0.001	l/cm^3	--	
		Child/Adult Aggregate	Groundwater (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) = DA-Adj x EF x EV x 1/AT
				DA-Adj	Dermally Absorbed Dose, Age-adjusted	Calculated	mg-year/event-kg	calculated	
				EV	Event Frequency	1	events/day	USEPA, 2004	DA-Adj = (DAevent-A x SA-A x ED-A x 1/BW-A)
				EF	Exposure Frequency	350	days/year	USEPA, 2004	+ (Daevent-C x SA-C x ED-C x 1/BW-C)
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	

NOTES:

(a) Evaluation is conducted for all five properties merged together.

(1) Total body Surface Area.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/P-95/002Fa.

USEPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. USEPA/540/R/99/005.

TABLE 4.8.RME Supplement A
VALUES USED FOR DAILY INTAKE CALCULATIONS (MUTAGENIC MODE OF ACTION)
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Route	Receptor Population	Exposure Point	Receptor Age		Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Groundwater (a)	Child/Adult Aggregate	Child (0-<2 yrs)	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) =
					IR-W-Adj (0-<2)	Ingestion Rate of Water, Age-adjusted (0-<2 yrs)	0.22	liter-year/kg-day	calculated	CW x IR-W-Adj (0-<2) x EF x CF1 x 1/AT
					EF	Exposure Frequency	350	days/year	USEPA,1991	[for child aged 0-<2 years]
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
					CF1	Conversion Factor 1	0.001	mg/µg	- -	
				Child/Adolescent Aggregate (2-<16 yrs)	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) =
					IR-W-Adj (2-<16)	Ingestion Rate of Water, Age-adjusted (2-<16 yrs)	0.64	liter-year/kg-day	calculated	CW x IR-W-Adj (2-<16) x EF x CF1 x 1/AT
					EF	Exposure Frequency	350	days/year	USEPA,1991	[for child/adolescent aged 2-<16 years]
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
					CF1	Conversion Factor 1	0.001	mg/µg	- -	
				Adolescent/Adult Aggregate (16-<30 yrs)	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) =
					IR-W-Adj (16-<30)	Ingestion Rate of Water, Age-adjusted (16-<30 yrs)	0.41	liter-year/kg-day	calculated	CW x IR-W-Adj (16-<30) x EF x CF1 x 1/AT
					EF	Exposure Frequency	350	days/year	USEPA,1991	[for adolescent/adult aged 16-<30 years]
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
					CF1	Conversion Factor 1	0.001	mg/µg	- -	
Dermal	Resident	Groundwater (a)	Child/Adult Aggregate	Child/Adult Aggregate	CW	Chemical Concentration in Water	RME	µg/l	RME	Inorganics: DAevent (mg/cm^2-event) =
					DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	Kp x CW x t_{event} x CF1 x CF2
					FA	Fraction absorbed water	chemical-specific	dimensionless	EPA, 2004	Organics :
					Kp	Permeability Coefficient	chemical-specific	cm/hr	EPA, 2004	$t_{event}<t^*$: DAevent (mg/cm^2-event) =
					t	Lag Time	chemical-specific	hr/event	EPA, 2004	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π)) x CF1 x CF2
					t^*	Time to Reach Steady-state	chemical-specific	hours	EPA, 2004	
					B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical-specific	dimensionless	EPA, 2004	$t_{event}>t^*$: DAevent (mg/cm^2-event) =
					t_{event}	Event Time	see below	hr/event	EPA, 2004	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
					CF1	Conversion Factor 1	0.001	mg/µg	- -	((1 + 3B + 3B^2)/(1+B)^2)) x CF1 x CF2
					CF2	Conversion Factor 2	0.001	l/cm^3	- -	
				Child (0-<2 yrs)	DA-Adj	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	CDI (mg/kg-day) =
					SA-Adj (0-<2)	Skin Surface Area, Age-adjusted (0-<2 yrs)	1,172	cm^2-year/kg	calculated	DAevent x SA-Adj (0-<2) x EV x EF x 1/AT
					EV	Event Frequency	1	events/day	EPA, 2004	[for child aged 0-<2 years]
					t_{event}	Event Time (0-<6 yrs)	1.00	hr/event	EPA, 2004	
					EF	Exposure Frequency	350	days/year	EPA, 2004	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child/Adolescent Aggregate (2-<6 yrs)	DA-Adj	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	CDI (mg/kg-day) =
					SA-Adj (2-<6)	Skin Surface Area, Age-adjusted (2-<6 yrs)	1,685	cm^2-year/kg	calculated	DAevent x SA-Adj (2-<6) x EV x EF x 1/AT
					EV	Event Frequency	1	events/day	EPA, 2004	[for child aged 2-<6 years]
					t_{event}	Event Time (0-<6 yrs)	1.00	hr/event	EPA, 2004	
					EF	Exposure Frequency	350	days/year	EPA, 2004	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child/Adolescent Aggregate (6-<16 yrs)	DA-Adj	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	CDI (mg/kg-day) =
					SA-Adj (6-<16)	Skin Surface Area, Age-adjusted (6-<16 yrs)	3,234	cm^2-year/kg	calculated	DAevent x SA-Adj (6-<16) x EV x EF x 1/AT
					EV	Event Frequency	1	events/day	EPA, 2004	[for child/adolescent aged 6-<18 years]
					t_{event}	Event Time (6-<30 yrs)	0.58	hr/event	EPA, 2004	
					EF	Exposure Frequency	350	days/year	EPA, 2004	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Adolescent/Adult Aggregate (16-<30 yrs)	DA-Adj	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	CDI (mg/kg-day) =
					SA-Adj (16-<30)	Skin Surface Area, Age-adjusted (16-<30 yrs)	3,687	cm^2-year/kg	calculated	DAevent x SA-Adj (16-<30) x EV x EF x 1/AT
					EV	Event Frequency	1	events/day	EPA, 2004	[for adolescent/adult aged 16-<30 years]
					t_{event}	Event Time (6-<30 yrs)	0.58	hr/event	EPA, 2004	
					EF	Exposure Frequency	350	days/year	EPA, 2004	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	

Notes:
NOTES:
(a) Evaluation is conducted for all five properties merged together.

Sources:
USEPA, 1989. Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.
USEPA, 1991. Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03
USEPA, 2004. Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. USEPA/540/R/99/005.

cm/hr = Centimeter per hour
cm^2-year/kg = Centimeter squared per year per kilogram
hr/day = Hour per day
hr/event = Hour per event
kg = Kilogram
L/cm^3 = Liter per cubic centimeter
L/day = Liter per day
mg/cm^2-event = Milligram per square centimeter per event
mg/kg-day = Milligram per kilogram per day
mg/L = Milligram per liter

TABLE 4.9.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Indoor Air (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
			(Vapors at Showerhead)	CA	Chemical Concentration in Air from Shower	calculated	mg/m^3	--	CA x IN x ET x EF x ED x 1/BW x 1/AT
				IN	Inhalation Rate	1	m^3/hr	USEPA, 1997	
				ET	Exposure Time	0.58	hr/day	(1)	CA calculated based on CW using Andelman model
				EF	Exposure Frequency	350	days/year	USEPA, 1991	as modified by Schaum et al.
				ED	Exposure Duration	24	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	

Notes:

(a) Evaluation is conducted based on ground water concentrations from all five properties merged together.

(1) USEPA Region 2 and the Andelman model as modified by Schaum et. al.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/P-95/002Fa.

Table 4.9.RME Supplement A

Shower Exposure Concentrations from Upper Glacial Aquifer Groundwater, Andelman Model, as Modified by Schaum

Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	Exposure Point Concentration Cwo (mg/l)	C_{amax} (mg/m^3)	C_a (mg/m^3)
1,1-Dichloroethane	1.5E-02	1.6E-01	1.3E-01
Benzene	1.6E+00	1.7E+01	1.4E+01
Chloroethane	8.0E-03	8.4E-02	6.6E-02
Chloroform	1.7E-03	1.8E-02	1.4E-02
Chloromethane	9.8E-03	1.0E-01	8.1E-02
cis-1,2-Dichloroethene	1.1E-02	1.2E-01	9.4E-02
Ethylbenzene	4.6E-01	4.8E+00	3.8E+00
Isopropylbenzene (Cumene)	4.3E-02	4.5E-01	3.6E-01
Tetrachloroethene	9.6E-03	1.0E-01	7.9E-02
Toluene	9.7E-01	1.0E+01	8.1E+00
Trichloroethene	7.5E-02	7.9E-01	6.2E-01
m,p-Xylene	5.2E-01	5.5E+00	4.3E+00
o-Xylene	3.0E-01	3.1E+00	2.5E+00
Xylene (Total)	1.1E+00	1.1E+01	8.9E+00
2-Methylnaphthalene	9.6E-01	1.0E+01	7.9E+00
Acenaphthene	3.3E-01	3.5E+00	2.7E+00
Acenaphthylene	5.3E-02	5.6E-01	4.4E-01
Anthracene	9.1E-02	9.6E-01	7.5E-01
1,1'-Biphenyl	8.8E-02	9.2E-01	7.2E-01
Dibenzofuran	1.5E-01	1.6E+00	1.3E+00
Fluorene	2.6E-01	2.7E+00	2.1E+00
Naphthalene	7.2E+00	7.6E+01	6.0E+01
Phenanthrene	6.7E-01	7.1E+00	5.5E+00
Pyrene	1.5E-01	1.6E+00	1.3E+00

Variables	Units	Exposure Assumptions
Ca = concentration of chemical in air	mg/m^3	Solved by Eq 1
C_{amax} = maximum concentration of chemical in air	mg/m^3	Solved by Eq 2
t_1 = time in shower	hr	2.5E-01
t_2 = time in bathroom after shower	hr	3.3E-01
f = fraction volatilized for chemical	unitless	**9.0E-01**
F_w = shower water flow rate	L/hr	7.5E+02
V_a = bathroom volume	m^3	1.6E+01

Equation 1:	C_a =	$((C_{amax}/2) * t_1 + C_{amax} - t_2) / (t_1 + t_2)$
Equation 2:	C_{amax} =	$(C_w * f * F_w * t_1) / V_a$

Equations and assumptions from Water Consumption and Health: Integration of Exposure Assessment, Toxicology, and Risk Assessment, edited by Rhoda G.M. Wang. Macel Dekker, Inc., New York. 1994. Exposure to Volatiles in Domestic Water, Schaum et al., Pages 307-320.

TABLE 4.1.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	USEPA, 1997	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	(1)	
				ED	Exposure Duration	9	years	USEPA, 1997	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	USEPA, 1989	
		Child	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 1997	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	(1)	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
		Child/Adult Aggregate	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				IR-S-Adj	Ingestion Rate of Soil, Age-adjusted	46.4	mg-year/kg-day	Calculated	CS x IR-S-Adj x EF x CF1 x 1/AT
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	IR-S-Adj (mg-year/kd-day) =
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	(ED-C x IR-S-C / BW-C) + (ED-A x IR-S-A / BW-A)
	Commercial Worker	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	USEPA, 1997	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	219	days/year	(2)	
				ED	Exposure Duration	6.6	years	USEPA, 1997	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,409	days	USEPA, 1989	
	Daycare Child	Child	115 River Road property	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 1997	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	219	days/year	(2)	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	

TABLE 4.1.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion (cont.)	Trespasser	Adult	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	USEPA, 1997	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	59, 6	days/year	(3)	
				ED	Exposure Duration	9	years	USEPA, 1997	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	USEPA, 1989	
		Adolescent (6-<16 yrs old)	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	50	mg/day	USEPA, 1997	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	59, 6	days/year	(3)	
				ED	Exposure Duration	10	years	(4)	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	39	kg	USEPA, 1997 (8)	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	USEPA, 1989	
Dermal	Resident	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	USEPA, 2004 (5)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.01	mg/cm^2-day	USEPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chemical-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	350	days/year	(1)	
				ED	Exposure Duration	9	years	USEPA, 1997	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	USEPA, 1989	
		Child	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2,800	cm^2	USEPA, 2004 (6)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.04	mg/cm^2-day	USEPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chemical-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	350	days/year	(1)	
				ED	Exposure Duration	6	years	USEPA, 1991	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
		Child/Adult Aggregate	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				DA-Adj	Dermal Absorption, Age-adjusted	52	mg-year/kg-day	Calculated	CS x DA-Adj x DABS x CF1 x EF x 1/AT
				DABS	Dermal Absorption Factor Solids	chem-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	DA-Adj (mg-year/kg-day) =
				EF	Exposure Frequency	350	days/year	USEPA, 1991	(ED-C x SA-C x SSAF-C / BW-C) + (ED-A x SA-A x SSAF-A / BW-A)
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	

TABLE 4.1.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal (cont.)	Commercial Worker	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	USEPA, 2004 (7)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.02	mg/cm^2-day	USEPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chemical-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	219	days/year	(2)	
				ED	Exposure Duration	6.6	years	USEPA, 1997	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,409	days	USEPA, 1989	
	Daycare Child	Child	115 River Road property (Main Building)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2,800	cm^2	USEPA, 2004 (6)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.04	mg/cm^2-day	USEPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chemical-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	219	days/year	(2)	
				ED	Exposure Duration	6	years	USEPA, 1991	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
	Trespasser	Adult	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700	cm^2	USEPA, 2004 (5)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.01	mg/cm^2-day	USEPA, 2004	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chemical-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	59, 6	days/year	(3)	
				ED	Exposure Duration	9	years	USEPA, 1997	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	USEPA, 1989	

TABLE 4.1.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal (cont.)	Trespasser (cont.)	Adolescent (6-<16 yrs old)	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	4,100	cm^2	USEPA, 2004 (5,8)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.01	mg/cm^2-day	USEPA, 2002	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chemical-specific	–	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	59, 6	days/year	(3)	
				ED	Exposure Duration	10	years	(4)	
				BW	Body Weight	39	kg	USEPA, 1997 (8)	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	USEPA, 1989	

Notes:

(a) Evaluation is conducted for each property separately.

(1) Professional judgement assuming the CTE value is the same as the RME value.

(2) Average time spent at work by both full-time and part-time workers (the child's parents) based on 1991 data from the Bureau of Labor Statistics.

(3) Professional judgement assuming 1/2 the RME value for the CTE.

(4) Adolescent trespassers between 6 and 16 years old.

(5) SA includes head, hands, forearms, and lower legs.

(6) SA includes head, hands, forearms, lower legs, and feet.

(7) SA includes head, hands, and forearms.

(8) Average value for male and female children between 6 and 16 years old.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/P-95/002Fa.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. USEPA/540/R/99/005.

TABLE 4.1.C[illegible]ment A

VALUES USED FOR DAILY INTAKE CALCULATIONS (MUTAGENIC MODE OF ACTION)

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Route	Receptor Population	Exposure Point	Receptor Age		Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	Child/Adult Aggregate	Child (0-<2 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					IR-S-Adj (0-<2)	Age Adjusted Ingestion Rate of Soil (0-<2 yrs)	19.8	mg-yr/day-kg	calculated	CS x IR-S-Adj (0-<2) x EF x CF1 x 1/AT
					EF	Exposure Frequency	350	days/year	(2)	[for child aged 0-<2 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child/Adolescent Aggregate (2-<6 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					IR-S-Adj (2-<6)	Age Adjusted Ingestion Rate of Soil (2-<6 yrs)	24.9	mg-yr/day-kg	calculated	CS x IR-S-Adj (2-<6) x EF x CF1 x 1/AT
					EF	Exposure Frequency	350	days/year	(2)	[for child/adolescent aged 2-<6 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Adolescent/Adult Aggregate (16-<30 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					IR-S-Adj (16-<30)	Age Adjusted Ingestion Rate of Soil (16-<30 yrs)	6.4	mg-yr/day-kg	calculated	CS x IR-S-Adj (16-<30) x EF x CF1 x 1/AT
					EF	Exposure Frequency	350	days/year	(2)	[for adolescent/adult aged 16-<30 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
	Daycare Child	115 River Road Property	Child	Child (0-<2 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					IR-S-Adj (0-<2)	Age Adjusted Ingestion Rate of Soil (0-<2 yrs)	19.8	mg-yr/day-kg	calculated	CS x IR-S-Adj (0-<2) x EF x CF1 x 1/AT
					EF	Exposure Frequency	219	days/year	(3)	[for child aged 0-<2 years]
					CF	Conversion Factor	0.000001	kg/mg	--	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child (2-<6 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					IR-S-Adj (2-<6)	Age Adjusted Ingestion Rate of Soil (2-<6 yrs)	24.9	mg-yr/day-kg	calculated	CS x IR-S-Adj (2-<6) x EF x CF1 x 1/AT
					EF	Exposure Frequency	219	days/year	(3)	[for child aged 2-<6 years]
					CF	Conversion Factor	0.000001	kg/mg	--	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
	Trespasser	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	Child/Adult Aggregate	Child/Adolescent Aggregate 6-<16 yrs	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					IR-S-Adj (6-<16)	Age Adjusted Ingestion Rate of Soil (6-<16 yrs)	14.0	mg-yr/day-kg	calculated	CS x IR-S-Adj (6-<16) x EF x CF1 x 1/AT
					EF	Exposure Frequency	59, 6	days/year	(1)	[for child aged 6-<16 years]
					CF	Conversion Factor	0.000001	kg/mg	--	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
Dermal	Resident	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	Child/Adult Aggregate	Child (0-<2 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					SSAF-Adj (0-<2)	Age Adjusted Soil to Skin Adherence Factor (0-<2 yrs)	21	mg-yr/day-kg	calculated	CS x SSAF-Adj (0-<2) x DABS x CF1 x EF x 1/AT
					DABS	Dermal Absorption Factor Solids	Chemical-Specific	--	EPA, 2004	[for child aged 0-<2 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					EF	Exposure Frequency	350	days/year	(2)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child/Adolescent Aggregate (2-<6 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					SSAF-Adj (2-<6)	Age Adjusted Soil to Skin Adherence Factor(2-<6 yrs)	29	mg-yr/day-kg	calculated	CS x SSAF-Adj (2-<6) x DABS x CF1 x EF x 1/AT
					DABS	Dermal Absorption Factor Solids	Chemical-Specific	--	EPA, 2004	[for child/adolescent aged 2-<6 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					EF	Exposure Frequency	350	days/year	(2)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Adolescent/Adult Aggregate (16-<30 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					SSAF-Adj (16-<30)	Age Adjusted Soil to Skin Adherence Factor(16-<30 yrs)	7.3	mg-yr/day-kg	calculated	CS x SSAF-Adj (16-<30) x DABS x CF1 x EF x 1/AT
					DABS	Dermal Absorption Factor Solids	Chemical-Specific	--	EPA, 2004	[for adolescent/adult aged 16-<30 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					EF	Exposure Frequency	350	days/year	(2)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	

TABLE 4.1.CTE Supplement A

VALUES USED FOR DAILY INTAKE CALCULATIONS (MUTAGENIC MODE OF ACTION)

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Surface Soil (0-2 ft)

Exposure Route	Receptor Population	Exposure Point	Receptor Age		Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal (cont.)	Daycare Child	115 River Road property (main building)	Child	Child (0-<2 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					SSAF-Adj (0-<2)	Age Adjusted Soil to Skin Adherence Factor (0-<2 yrs)	21	mg-yr/day-kg	calculated	CS x SSAF-Adj (0-<2) x DABS x CF1 x EF x 1/AT
					DABS	Dermal Absorption Factor Solids	Chemical-Specific	--	EPA, 2004	[for child aged 0-<2 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					EF	Exposure Frequency	219	days/year	(3)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child (2-<6 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					SSAF-Adj (2-<6)	Age Adjusted Soil to Skin Adherence Factor(2-<6 yrs)	29	mg-yr/day-kg	calculated	CS x SSAF-Adj (2-<6) x DABS x CF1 x EF x 1/AT
					DABS	Dermal Absorption Factor Solids	Chemical-Specific	--	EPA, 2004	[for child aged 2-<6 years]
					CF1	Conversion Factor 1	0.000001	kg/mg	--	
					EF	Exposure Frequency	219	days/year	(3)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
	Trespasser	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	Child/Adult Aggregate	Child/Adolescent Aggregate 6-<16 yrs	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					SSAF-Adj (6-<16)	Age Adjusted Soil to Skin Adherence Factor (6-<16 yrs)	7.3	mg-yr/day-kg	calculated	CS x SSAF-Adj (6-<16) x DABS x CF1 x EF x 1/AT
					DABS	Dermal Absorption Factor Solids	Chemical-Specific	--	EPA, 2004	[for child aged 6-<16 years]
					CF	Conversion Factor	0.000001	kg/mg	--	
					EF	Exposure Frequency	59, 6	days/year	(1)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	

Notes:

(a) Evaluation is conducted for each property separately.

(1) Professional judgement assuming 1/2 the RME value for the CTE.

(2) Professional judgement assuming the CTE value is the same as the RME value.

(3) Average time spent at work by both full-time and part-time workers (the child's parents) based on 1991 data from the Bureau of Labor Statistics.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. USEPA/540/R/99/005.

cm^2 = Square centimeter

kg = Kilogram

kg/mg = Kilogram per milligram

mg/kg = Milligram per kilogram

mg/kg-day = Milligram per kilogram per day

mg/cm^2-day = Milligram per square centimeter per day

mg/day = Milligram per day

TABLE 4.1.CTE Supplement B
Age-Adjusted Exposure Parameters (CTE)
Quanta Resources Site, OU1, Edgewater, New Jersey

			INTAKE RATE			DERMAL			AGE-ADJUSTED EFs					
AGE (year)	ED (years)	BW [1] (kg)	WATER IR-W [2] (L/day)	SOIL IR-S [3] (mg/day)	AIR IN [4] (m3/day)	SOIL SSAF [5] (mg/cm2-event)	EXPOSED SA [6] (cm2)	TOTAL SA [7] (cm2)	AGE GROUP	IR-S-Adj (mg-yr/day-kg)	IR-W-Adj (liter-yr/day-kg)	IN-Adj (m3-yr/day-kg)	SSAF-Adj (mg-yr/day-kg)	TOTAL SA (cm2-yr/kg)
0	1	9.1	0.76	100	4.5	0.04	2,625	5,910	0-<2 yrs	19.8	0.22	1.1	21	1,172
1	1	11.3	1.5	100	6.8	0.04	2,571	5,910						
2	1	13.3	1.5	100	6.8	0.04	2,434	5,910	2-<6 yrs	24.9	0.37	2.0	29	1,685
3	1	15.3	1.5	100	8.3	0.04	2,893	6,565						
4	1	17.4	1.5	100	8.3	0.04	3,175	7,185						
5	1	19.7	1.5	100	8.3	0.04	3,255	7,860						
6	1	22.6	1.5	50	10	0.04	2,949	8,545	6-<16 yrs	14.0	0.47	3.4	35	3,234
7	1	24.9	1.5	50	10	0.04	3,182	9,265						
8	1	28.1	1.5	50	10	0.04	3,434	10,000						
9	1	31.5	1.5	50	13.5	0.04	3,657	10,650						
10	1	36.3	1.5	50	13.5	0.04	3,819	11,750						
11	1	41.1	2	50	13.5	0.04	4,111	12,650						
12	1	45.3	2	50	13.5	0.04	4,453	13,700						
13	1	50.4	2	50	13.5	0.01	4,916	14,750						
14	1	56	2	50	13.5	0.01	5,205	15,800						
15	1	58.1	2	50	14.5	0.01	5,386	16,350						
16-<30	9	70	2	50	13.3	0.01	5,700	18,000	16-<30 yrs	6.43	0.26	1.7	7.3	2,314

Equations:

IR-S-Adj (mg-yr/day-kg)	$\sum$ (ED * IR-S) / BW
IR-W-Adj (liter-yr/day-kg)	$\sum$ (ED * IR-W) / BW
SSAF-Adj (mg-yr/day-kg)	$\sum$ (ED * EV * SSAF * SA) / BW
IN-Adj (m3-yr/hour-kg)	$\sum$ (ED * IN) / BW

References:

[1] EPA 1997. Exposure Factors Handbook. Table 7-3 (children) - Values are mean of male and female. Source: National Center of Health Statistics (NCHS) 1987.
EPA 1991. Standard Default Exposure Factors. Body weight for 16-<30 years old is default value for adult.
[2] EPA 1997. Exposure Factors Handbook. Table 3-30 - Summary of Recommended Drinking Water Intake Rates. 95th Percentile (90th Percentile was used when 95th Percentile is not listed).
[3] EPA 1991. Standard Default Exposure Factors. Default for resident child and adult.
[4] EPA 1997. Exposure Factors Handbook. Child: Table 5-23 - Summary of Recommended Values for Inhalation. Mean of male and female.
Adult: Table 1-2 - Recommended Adult Inhalation Rate. Mean of male and female.
[5] EPA 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment).
Recommended default adherence factor for a child resident (0.04) and adult resident (0.01).
[6] EPA 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment)
Calculated from Exhibit C-1 - Body Part-Specific Surface Area Calculations (Children). Data from Exposure Factors Handbook, Tables 6-6, 6-7 and 6-8.
Surface area of head, forearms, hands, lower legs and feet (for child <6 years). Surface area for 16-<30 years old is recommended default for adult resident (EPA 2004).
[7] EPA 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment)
Exhibit C-1 - Body Part-Specific Surface Area Calculations (Children). Data from Exposure Factors Handbook, Tables 6-6 and 6-7.
Total Body Surface Area (50th % tile). Total Surface area for 16-<30 years old is recommended default for adult resident (EPA 2004).

TABLE 4.2.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Ambient Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x ET x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	0.83	m^3/hour	USEPA, 1991	
				ET	Exposure Time	24	hr/day	USEPA, 1991	
				EF	Exposure Frequency	350	days/year	(2)	
				ED	Exposure Duration	9	years	USEPA, 1997	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	USEPA, 1989	
		Child	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x ET x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	0.42	m^3/hour	USEPA, 1997	
				ET	Exposure Time	24	hr/day	USEPA, 1991	
				EF	Exposure Frequency	350	days/year	(2)	
				ED	Exposure Duration	6	years	USEPA, 1991	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
		Child/Adult Aggregate	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj x EF x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN-Adj	Inhalation Rate, Adjusted	6.6	m^3-yr/kg-day	--	
				ET	Exposure Time	24	hr/day	USEPA, 1991	IN-Adj (m^3-yr/kg-day) =
				EF	Exposure Frequency	350	days/year	USEPA, 1991	(IN-A x ED-A x ET / BW-A) + (IN-C x ED-C x ET / BW-C)
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
	Commercial Worker	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	20	m^3/day	USEPA, 1991	
				EF	Exposure Frequency	219	days/year	(3)	
				ED	Exposure Duration	6.6	years	USEPA, 1997	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,409	days	USEPA, 1989	
	Daycare Child	Child	115 River Road property	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x EF x ET x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	
				IN	Inhalation Rate	0.42	m^3/hour	USEPA, 1997	CA (mg/m^3) = CS (1/PEF + 1/VF)
				ET	Exposure Time	10	hr/day	(7)	
				EF	Exposure Frequency	219	days/year	(3)	
				ED	Exposure Duration	6	years	USEPA, 1991	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	

TABLE 4.2.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Ambient Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation (cont.)	Trespasser	Adult	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x ET x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	0.83	m^3/hour	USEPA, 1991	
				ET	Exposure Time	2	hr/day	USEPA, 1991	
				EF	Exposure Frequency	59, 6	days/year	(4)	
				ED	Exposure Duration	9	years	USEPA, 1997	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	USEPA, 1989	
		Adolescent (6-<16 yrs old)	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x ET x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	0.83	m^3/hour	USEPA, 1991	
				ET	Exposure Time	2	hr/day	USEPA, 1991	
				EF	Exposure Frequency	59, 6	days/year	(4)	
				ED	Exposure Duration	10	years	(5)	
				BW	Body Weight	39	kg	USEPA, 1997,(6)	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,650	days	USEPA, 1989	

Notes:

(a) Evaluation is conducted for each property separately.

(1) Site-specific values will be determined.

(2) Professional judgement assuming the CTE value is the same as the RME value.

(3) Average time spent at work by both full-time and part-time workers (the child's parents) based on 1991 data from the Bureau of Labor Statistics.

(4) Professional judgement assuming 1/2 the RME value for the CTE.

(5) Adolescent trespassers between 6 and 16 years old.

(6) Average value for male and female children between 6 and 16 years old.

(7) Professional judgement assuming exposure time is 10 hours a day.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR, USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

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USEPA, 1997: Exposure Factors Handbook. USEPA/600/P-95/002Fa.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Table 4.2.CTE Supplement A
Particulate Emission Factor - Trespasser/Resident/Daycare Child/Commercial Worker
Central Tendency Exposure
Quanta Resources Site, OU1, Edgewater, New Jersey

PEF Equations:

$$Q/C_{wind} = A \times \exp\left[\frac{(\ln A_{site} - B)^2}{C}\right]$$

Exhibit D-2 (EPA, 2002)

$$PEF = Q/C_{wind} \times \frac{3{,}600 \text{sec/hr}}{0.036 \times (1-V) \times \left(U_m / U_t\right)^3 \times F(x)}$$

Equation 4-5 (EPA, 2002)

PEF and Box Model Input Parameters

Parameter	Definition	Value	Units	Source
Q/C_{wind}	inverse ratio of the geometric mean air concentration to the emission flux at the center of a square source	**57**	g/m^2-s per kg/m^3	calculated
A	Constant for Zone 8 (Philadelphia, PA)	14.011	unitless	Exhibit D-2 (EPA, 2002)
B	Constant for Zone 8 (Philadelphia, PA)	19.615	unitless	Exhibit D-2 (EPA, 2002)
C	Constant for Zone 8 (Philadelphia, PA)	225.340	unitless	Exhibit D-2 (EPA, 2002)
A_{site}	Areal extent of site contamination	6.2	acres	site-specific
PEF	particulate emission factor	**8.27E+08**	m^3/kg	calculated
V	fraction of vegetative cover	0.5	unitless	Default (Eqn. 4-5)
Um	mean annual windspeed	4.69	m/s	Default (Eqn. 4-5)
Ut	equivalent threshold value of windpeed at 7 m	11.32	m/s	Default (Eqn. 4-5)
F(x)	function dependent on Um/Ut derived using Cowherd et al. (1985)	0.194	unitless	Default (Eqn. 4-5)

Source:

EPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, EPA Office of Solid Waste and Emergency Response. OSWER 9355.4-24. December.

TABLE 4.2.CTE Supplement B
VALUES USED FOR DAILY INTAKE CALCULATIONS (MUTAGENIC MODE OF ACTION)
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Surface Soil (0-2 ft)
Exposure Medium: Ambient Air

Exposure Route	Receptor Population	Exposure Point	Receptor Age		Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	Child/Adult Aggregate	Child (0-<2 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj (0-<2) x ET x EF x 1/AT
					IN-Adj-1	Age Adjusted Inhalation Rate (0-<2 yrs)	1.1	m^3-yr/day-kg	calculated	[for child aged 0-<2 years]
					PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
					VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	EPA,1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
					EF	Exposure Frequency	350	days/year	(2)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child/Adolescent Aggregate (2-<6 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj (2-<6) x ET x EF x 1/AT
					IN-Adj-1	Age Adjusted Inhalation Rate (2-<6 yrs)	2.0	m^3-yr/day-kg	calculated	[for child/adolescent aged 2-<6 years]
					PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
					VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	EPA,1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
					EF	Exposure Frequency	350	days/year	(2)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Adolescent/Adult Aggregate (16-<30 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj (16-<30) x ET x EF x 1/AT
					IN-Adj-1	Age Adjusted Inhalation Rate (16-<30 yrs)	1.7	m^3-yr/day-kg	calculated	[for adolescent/adult aged 16-<30 years]
					PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
					VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	EPA,1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
					EF	Exposure Frequency	350	days/year	(2)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
	Daycare child	115 River Road property	Child	Child (0-<2 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj (0-<2) x ET x EF x 1/AT
					IN-Adj-1	Age Adjusted Inhalation Rate (0-<2 yrs)	1.1	m^3-yr/day-kg	calculated	[for child aged 0-<2 years]
					PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
					VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	EPA,1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
					ET	Exposure Time	10/24	hr/hr/day	(5)	
					EF	Exposure Frequency	219	days/year	(3)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child (2-<6 yrs)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj (2-<6) x ET x EF x 1/AT
					IN-Adj-1	Age Adjusted Inhalation Rate (2-<6 yrs)	2.0	m^3-yr/day-kg	calculated	[for child aged 2-<6 years]
					PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
					VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	EPA,1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
					ET	Exposure Time	10/24	hr/hr/day	(5)	
					EF	Exposure Frequency	219	days/year	(3)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
	Trespasser	Quanta Resources, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (a)	Child/Adult Aggregate	Child/Adolescent Aggregate 6-<16 yrs	CS	Chemical Concentration in Soil	RME	mg/kg	RME	CDI (mg/kg-day) =
					CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN-Adj (6-<16) x ET x EF x 1/AT
					IN-Adj-1	Age Adjusted Inhalation Rate (6-<16 yrs)	3.4	m^3-yr/day-kg	calculated	[for child aged 6-<16 years]
					PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
					VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	EPA,1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
					ET	Exposure Time	2	hr/hr/day	USEPA, 1991	
					EF	Exposure Frequency	59.6	days/year	(4)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	

Notes:

(a) Evaluation is conducted for each property separately.

(1) Site-specific values will be determined.

(2) Professional judgement assuming the CTE value is the same as the RME value.

(3) Average time spent at work by both full-time and part-time workers ((the child's parents) based on 1991 data from the Bureau of Labor Statistics.

(4) Professional judgement assuming 1/2 the RME value for the CTE.

(5) Professional judgement assuming exposure time 10 hours a day.

Sources:

USEPA, 1989. Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991. Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 1996. Soil Screening Guidance: User's Guide. USEPA/540/F-95/041.

USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

kg = Kilogram
mg/kg = Milligram per kilogram
mg/kg-day = Milligram per kilogram per day
mg/m^3 = Milligram per cubic meter
m^3/day = Cubic meter per day
m^3/kg = Cubic meter per kilogram

TABLE 4.3.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Subsurface Soil (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Worker (a)	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (b)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-S	Ingestion Rate of Soil	100	mg/day	(1)	CS x IR-S x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	219	days/year	(2)	
				ED	Exposure Duration	1	years	USEPA, 2002	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
Dermal	Construction Worker (a)	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (b)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300	cm^2	USEPA, 2004 (3)	CS x SA x SSAF x DABS x CF1 x EF x
				SSAF	Soil to Skin Adherence Factor	0.3	mg/cm^2-day	USEPA, 2002	ED x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	chemical-specific	--	USEPA, 2004	
				CF1	Conversion Factor 1	0.000001	kg/mg	--	
				EF	Exposure Frequency	219	days/year	(2)	
				ED	Exposure Duration	1	years	USEPA, 2002	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Notes:

(a) Construction worker scenario is used as a conservative representation of the utility worker scenario.

(b) Evaluation is conducted for each property separately.

(1) Professional judgement assuming the default RME value for an outdoor worker (USEPA, 2002).

(2) Average time spent at work by both full-time and part-time workers based on 1991 data from the Bureau of Labor Statistics.

(3) SA includes head, hands, and forearms.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. USEPA/540/R/99/005.

TABLE 4.4.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Subsurface Soil (0-10 ft)
Exposure Medium: Ambient Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Worker (a)	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (b)	CS	Chemical Concentration in Soil	RME	mg/kg	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Air	calculated	mg/m^3	calculated	CA x IN x EF x ED x 1/BW x 1/AT
				PEF	Particulate Emission Factor	calculated	m^3/kg	USEPA, 2002 (1)	
				VF	Volatilization Factor for volatile constituents	calculated	m^3/kg	USEPA, 1996	CA (mg/m^3) = CS (1/PEF + 1/VF)
				IN	Inhalation Rate	10	m^3/day	(2)	
				EF	Exposure Frequency	219	days/year	(3)	
				ED	Exposure Duration	1	years	USEPA, 2002	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Notes:

(a) Construction worker scenario is used as a conservative representation of the utility worker scenario.

(b) Evaluation is conducted for each property separately.

(1) Site-specific value calculated.

(2) Professional judgement assuming 1/2 the RME value.

(3) Average time spent at work by both full-time and part-time workers based on 1991 data from the Bureau of Labor Statistics.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 1996: Soil Screening Guidance: User's Guide. USEPA/540/F-95/041.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Table 4.4.CTE Supplement A
Particulate Emission Factor - Construction Worker
Central Tendency Exposure
Quanta Resources Site, OU1, Edgewater, New Jersey

PEF Equations:

$$Q/C_{Sr} = A \times \exp\left[\frac{(\ln A_{site} - B)^2}{C}\right]$$

Equation 5-6 (EPA, 2002)

$$PEF_{SC} = Q/C_{Sr} \times \frac{1}{F_D} \frac{T \times A_R}{556 \times (W/3)^{0.4} \times \left(\frac{365\ d/yr - p}{365\ d/yr}\right)^3 \times \sum VKT}$$

Equation 5-5 (EPA, 2002)

$$F_D = 0.1852 + \frac{5.3537}{t_c} + \frac{-9.6318}{t_c^{\,2}}$$

Equation E-16 (EPA, 2002)

PEF and Box Model Input Parameters

Parameter	Definition	Value	Units	Source
Q/C_{Sr}	inverse ratio of the geometric mean air concentration to the emission flux at the center of a square source	**16.0**	g/m^2-s per kg/m^3	calculated
A	Constant	12.935	unitless	default (Eqn. 5-6)
B	Constant	5.738	unitless	default (Eqn. 5-6)
C	Constant	71.771	unitless	default (Eqn. 5-6)
A_{site}	Areal extent of site contamination	6.2	acres	site-specific
PEF_{SC}	subchronic road particulate emission factor	**1.81E+07**	m^3/kg	calculated
F_D	Dispersion correction factor	0.188	unitless	calculated
t_c	duration of construction (219 days for 8 hr/day)	1,752	hr	assumed
T	total time over which construction occurs (t_c x 3600 s/hr)	6,307,200	s	assumed
A_R	surface area of contaminated road segment	274.21	m^2	default (Eqn. 5-5)
W	mean weight of vehicle [(1 car @ 2 tons/car) + (2 trucks @ 20 tons/truck)] / 3 vehicles)	14	tons	assumed
p	number of days with at least 0.01 inches of precipitation	140	days/yr	site-specific (Exhibit 5-2)
VKT	sum of fleet vehicle kilometers traveled during the exposure duration (assumed 3 vehicles x 0.045 km/day x 250 days)	33.8	km	assumed

Source:

EPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, EPA Office of Solid Waste and Emergency Response. OSWER 9355.4-24. December.

TABLE 4.5.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Daycare Child	Child	115 River Road property (Main Building)	CA	Chemical Concentration in Air	RME (1)	mg/m^3	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IN	Inhalation Rate	0.42	m^3/hour	USEPA, 1997	CA x IN x ET x EF x ED x 1/BW x 1/AT
				ET	Exposure Time	10	hr/day	(2)	
				EF	Exposure Frequency	219	days/year	(3)	
				ED	Exposure Duration	6	years	USEPA, 1991	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
	Commercial Worker	Adult	115 River Road property (Building 12 and Main Building)	CA	Chemical Concentration in Air	RME (1)	mg/m^3	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IN	Inhalation Rate	20	m^3/day	USEPA, 1991	CA x IN x ET x EF x ED x 1/BW x 1/AT
				EF	Exposure Frequency	219	days/year	(3)	
				ED	Exposure Duration	6.6	years	USEPA, 1997	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,409	days	USEPA, 1989	

Notes:

(a) Evaluation is conducted for each property separately.

(1) Measured.

(2) Professional judgement assuming exposure time 10 hours a day.

(3) Average time spent at work by both full-time and part-time workers (the child's parents) based on 1991 data from the Bureau of Labor Statistics.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/P-95/002Fa.

TABLE 4.8.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current or Future
Medium: Groundwater
Exposure Medium: Groundwater (Excavation)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal	Construction Worker (a)	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (b)	CW	Chemical Concentration in Water	RME	µg/l	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	chemical-specific	dimensionless	USEPA, 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hr	USEPA, 2004	Inorganics: DAevent (mg/cm^2-event) =
				τ	Lag Time	chemical-specific	hr/event	USEPA, 2004	Kp x CW x t_{event} x CF1 x CF2
				t^*	Time to Reach Steady-state	chemical-specific	hours	USEPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical-specific	dimensionless	USEPA, 2004	Organics :
				t_{event}	Event Time	0.5	hr/event	(1)	$t_{event}<t^*$: DAevent (mg/cm^2-event) =
				SA	Skin Surface Area Available for Contact	2,300	cm^2	USEPA, 2004 (2)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	- -	x CF1 x CF2
				EF	Exposure Frequency	15	days/year	(3)	
				ED	Exposure Duration	1	years	USEPA, 2002	$t_{event}>t^*$: DAevent (mg/cm^2-event) =
				BW	Body Weight	70	kg	USEPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	$((1 + 3B + 3B^2)/(1+B)^2)$) x CF1 x CF2
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	mg/µg	- -	
				CF2	Conversion Factor 2	0.001	l/cm^3	- -	

Notes:

(a) Construction worker scenario is used as a conservative representation of the utility worker scenario.

(b) Evaluation is conducted for each property separately.

(1) Professional judgement assuming that a worker would have contact with ponded water in an excavation for a half hour.

(2) SA consists of hands and forearms.

(3) Professional judgement assuming groundwater is contacted for 15 days during subsurface activities.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. USEPA/540/R/99/005.

TABLE 4.7.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Ambient Air (Excavation)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Worker (a)	Adult	Quanta Resources, 115 River Road, Edgewater Enterprises, Block 93, Lots 1,2 and 3, and Former Lever Brothers Property (b)	CW	Chemical Concentration in Water	RME	µg/l	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				CA	Chemical Concentration in Ambient Air	calculated	mg/m^3	--	CA x IN x EF x ED x 1/BW x 1/AT
				IN	Inhalation Rate	10	m^3/day	(1)	
				EF	Exposure Frequency	219	days/year	(2)	CA calculated based on the Two-Film Model
				ED	Exposure Duration	1	years	USEPA, 2002	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Notes:

(a) Construction worker scenario is used as a conservative representation of the utility worker scenario.

(b) Evaluation is conducted for each property separately.

(1) Professional judgement assuming 1/2 the RME value.

(2) Average time spent at work by both full-time and part-time workers based on 1991 data from the Bureau of Labor Statistics.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

TABLE 4.6.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Adult	Groundwater (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	1.4	liters/day	USEPA, 1997	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	(1)	
				ED	Exposure Duration	9	years	USEPA, 1997	
				CF1	Conversion Factor 1	0.001	mg/µg	--	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	USEPA, 1989	
		Child	Groundwater (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	1	liters/day	USEPA, 1997	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	(1)	
				ED	Exposure Duration	6	years	USEPA, 1991	
				CF1	Conversion Factor 1	0.001	mg/µg	--	
				BW	Body Weight	15	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
		Child/Adult Aggregate	Groundwater (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) =
				IR-W-Adj	Ingestion Rate of Water, Age-adjusted	0.58	liter-year/kg-day	calculated	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				CF1	Conversion Factor 1	0.001	mg/µg	--	IR-W-Adj (liter-year/kd-day) =
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	(ED-C x IR-W-C / BW-C) + (ED-A x IR-W-A / BW-A)
	Commercial Worker	Adult	Groundwater (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				IR-W	Ingestion Rate of Water	1	liters/day	USEPA, 1991	CW x IR-W x EF x ED x CF1 x 1/BW x 1/AT
				EF	Exposure Frequency	219	days/year	(2)	
				ED	Exposure Duration	6.6	years	USEPA, 1997	
				CF1	Conversion Factor 1	0.001	mg/µg	--	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,409	days	USEPA, 1989	
Dermal	Resident	Adult	Groundwater (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	chemical-specific	dimensionless	USEPA, 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hr	USEPA, 2004	Inorganics: DAevent (mg/cm^2-event) =
				τ	Lag Time	chemical-specific	hr/event	USEPA, 2004	Kp x CW x t_{event} x CF1 x CF2
				t^*	Time to Reach Steady-state	chemical-specific	hours	USEPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical-specific	dimensionless	USEPA, 2004	Organics :
				t_{event}	Event Time	0.25	hr/event	USEPA, 2004	$t_{event}<t^*$: DAevent (mg/cm^2-event) =
				SA	Skin Surface Area Available for Contact	18,000	cm^2	USEPA, 2004 (3)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	USEPA, 2004	x CF1 x CF2
				EF	Exposure Frequency	350	days/year	(1)	
				ED	Exposure Duration	9	years	USEPA, 2004	$t_{event}>t^*$: DAevent (mg/cm^2-event) =
				BW	Body Weight	70	kg	USEPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-N	Averaging Time (Non-Cancer)	3,285	days	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	((1 + 3B + 3B^2)/(1+B)^2)) x CF1 x CF2
				CF1	Conversion Factor 1	0.001	mg/µg	--	
				CF2	Conversion Factor 2	0.001	l/cm^3	--	

TABLE 4.6.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal (cont.)	Resident (cont.)	Child	Groundwater (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
				DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	DAevent x SA x EV x EF x ED x 1/BW x 1/AT
				FA	Fraction absorbed water	chemical-specific	dimensionless	USEPA, 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hr	USEPA, 2004	Inorganics: DAevent (mg/cm^2-event) =
				τ	Lag Time	chemical-specific	hr/event	USEPA, 2004	Kp x CW x t_{event} x CF1 x CF2
				t*	Time to Reach Steady-state	chemical-specific	hours	USEPA, 2004	
				B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical-specific	dimensionless	USEPA, 2004	Organics :
				t_{event}	Event Time	0.33	hr/event	USEPA, 2004	t_{event}<t*: DAevent (mg/cm^2-event) =
				SA	Skin Surface Area Available for Contact	6,600	cm^2	USEPA, 2004 (3)	2 x FA x Kp x CW x (sqrt((6 x τ x t_{event})/π))
				EV	Event Frequency	1	events/day	USEPA, 2004	x CF1 x CF2
				EF	Exposure Frequency	350	days/year	(1)	
				ED	Exposure Duration	6	years	USEPA, 2004	t_{event}>t*: DAevent (mg/cm^2-event) =
				BW	Body Weight	15	kg	USEPA, 1991	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	$((1 + 3B + 3B^2)/(1+B)^2))$ x CF1 x CF2
				CF1	Conversion Factor 1	0.001	mg/µg	--	
				CF2	Conversion Factor 2	0.001	l/cm^3	--	
		Child/Adult Aggregate	Groundwater (a)	CW	Chemical Concentration In Water	RME	µg/l	RME	CDI (mg/kg-day) = DA-Adj x EF x EV x 1/AT
				DA-Adj	Dermally Absorbed Dose, Age-adjusted	Calculated	mg-year/event-kg	calculated	
				EV	Event Frequency	1	events/day	USEPA, 2004	DA-Adj = (DAevent-A x SA-A x ED-A x 1/BW-A)
				EF	Exposure Frequency	350	days/year	USEPA, 2004	+ (Daevent-C x SA-C x ED-C x 1/BW-C)
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	

Notes:

(a) Evaluation is conducted for all five properties merged together.

(1) Professional judgement assuming the CTE value is the same as the RME value.

(2) Average time spent at work by both full-time and part-time workers based on 1991 data from the Bureau of Labor Statistics.

(3) Total body Surface Area.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/P-95/002Fa.

USEPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. USEPA/540/R/99/005.

TABLE 4.[illegible]plement A
VALUES USED FOR DAILY INTAKE CALCULATIONS (MUTAGENIC MODE OF ACTION)
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater (Tap Water)

Exposure Route	Receptor Population	Exposure Point	Receptor Age		Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Groundwater (a)	Child/Adult	Child	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) =
			Aggregate	(0-<2 yrs)	IR-W-Adj (0-<2)	Ingestion Rate of Water, Age-adjusted (0-<2 yrs)	0.22	liter-year/kg-day	calculated	CW x IR-W-Adj (0-<2) x EF x CF1 x 1/AT
					EF	Exposure Frequency	350	days/year	(1)	[for child aged 0-<2 years]
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
					CF1	Conversion Factor 1	0.001	mg/µg	--	
				Child/Adolescent	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) =
				Aggregate	IR-W-Adj (2-<6)	Ingestion Rate of Water, Age-adjusted (2-<6 yrs)	0.37	liter-year/kg-day	calculated	CW x IR-W-Adj (2-<16) x EF x CF1 x 1/AT
				(2-<6 yrs)	EF	Exposure Frequency	350	days/year	(1)	[for child/adolescent aged 2-<6 years]
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
					CF1	Conversion Factor 1	0.001	mg/µg	--	
				Adolescent/Adult	CW	Chemical Concentration in Water	RME	µg/l	RME	CDI (mg/kg-day) =
				Aggregate	IR-W-Adj (16-<30)	Ingestion Rate of Water, Age-adjusted (16-<30 yrs)	0.26	liter-year/kg-day	calculated	CW x IR-W-Adj (16-<30) x EF x CF1 x 1/AT
				(16-<30 yrs)	EF	Exposure Frequency	350	days/year	(1)	[for adolescent/adult aged 16-<30 years]
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
					CF1	Conversion Factor 1	0.001	mg/µg	--	
Dermal	Resident	Groundwater (a)	Child/Adult	Child/Adult	CW	Chemical Concentration in Water	RME	µg/l	RME	Inorganics: DAevent (mg/cm^2-event) =
			Aggregate	Aggregate	DAevent	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	Kp x CW x t_{event} x CF1 x CF2
					FA	Fraction absorbed water	chemical-specific	dimensionless	EPA, 2004	Organics :
					Kp	Permeability Coefficient	chemical-specific	cm/hr	EPA, 2004	$t_{event}<t^*$: DAevent (mg/cm^2-event) =
					τ	Lag Time	chemical-specific	hr/event	EPA, 2004	2 x FA x Kp x CW x {sqrt((6 x τ x t_{event})/π)} x CF1 x CF2
					t^*	Time to Reach Steady-state	chemical-specific	hours	EPA, 2004	
					B	Ratio of Permeability of Stratum Corneum to Epidermis	chemical-specific	dimensionless	EPA, 2004	$t_{event}>t^*$: DAevent (mg/cm^2-event) =
					t_{event}	Event Time	see below	hr/event	EPA, 2004	FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x
					CF1	Conversion Factor 1	0.001	mg/µg	--	((1 + 3B + 3B^2)/(1+B)^2)) x CF1 x CF2
					CF2	Conversion Factor 2	0.001	l/cm^3	--	
				Child	DA-Adj	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	CDI (mg/kg-day) =
				(0-<2 yrs)	SA-Adj (0-<2)	Skin Surface Area, Age-adjusted (0-<2 yrs)	1,172	cm^2-year/kg	calculated	DAevent x SA-Adj (0-<2) x EV x EF x 1/AT
					EV	Event Frequency	0.33	events/day	EPA, 2004	[for child aged 0-<2 years]
					t_{event}	Event Time (0-<6 yrs)	1	hr/event	EPA, 2004	
					EF	Exposure Frequency	350	days/year	(1)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Child/Adolescent	DA-Adj	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	CDI (mg/kg-day) =
				Aggregate	SA-Adj (2-<6)	Skin Surface Area, Age-adjusted (2-<6 yrs)	1,685	cm^2-year/kg	calculated	DAevent x SA-Adj (2-<6) x EV x EF x 1/AT
				(2-<6 yrs)	EV	Event Frequency	1	events/day	EPA, 2004	[for child aged 2-<6 years]
					t_{event}	Event Time (0-<6 yrs)	0.33	hr/event	EPA, 2004	
					EF	Exposure Frequency	350	days/year	(1)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				Adolescent/Adult	DA-Adj	Dermally Absorbed Dose per Event	calculated	mg/cm^2-event	calculated	CDI (mg/kg-day) =
				Aggregate	SA-Adj (16-<30)	Skin Surface Area, Age-adjusted (16-<30 yrs)	2,314	cm^2-year/kg	calculated	DAevent x SA-Adj (16-<30) x EV x EF x 1/AT
				(16-<30 yrs)	EV	Event Frequency	1	events/day	EPA, 2004	[for adolescent/adult aged 16-<30 years]
					t_{event}	Event Time (6-<30 yrs)	0.25	hr/event	EPA, 2004	
					EF	Exposure Frequency	350	days/year	(1)	
					AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	

Notes:

NOTES:

(a) Evaluation is conducted for all five properties merged together.

(1) Professional judgement assuming the CTE value is the same as the RME value.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 2004: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final. USEPA/540/R/99/005.

cm/hr = Centimeter per hour
cm^2 -year/kg = Centimeter squared per year per kilogram
hr/day = Hour per day
hr/event = Hour per event
kg = Kilogram
l/cm^3 = Liter per cubic centimeter
L/day = Liter per day
mg/cm^2 -event = Milligram per square centimeter per event
mg/kg-day = Milligram per kilogram per day

TABLE 4.9.CTE

VALUES USED FOR DAILY INTAKE CALCULATIONS

CENTRAL TENDENCY

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Adult	Indoor Air (a)	CW	Chemical Concentration in Water	RME	µg/l	RME	Chronic Daily Intake (CDI) (mg/kg-day) =
			(Vapors at Showerhead)	CA	Chemical Concentration in Air from Shower	calculated	mg/m^3	--	CA x IN x ET x EF x ED x 1/BW x 1/AT
				IN	Inhalation Rate	1	m^3/hr	USEPA, 1997 (1)	
				ET	Exposure Time	0.25	hr/day	(1)	CA calculated based on CW using Andelman model
				EF	Exposure Frequency	350	days/year	(2)	as modified by Schaum et al.
				ED	Exposure Duration	9	years	USEPA, 1997	
				BW	Body Weight	70	kg	USEPA, 1991	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	3,285	days	USEPA, 1989	

Notes:

(a) Evaluation is conducted based on ground water concentrations from all five properties merged together.

(1) USEPA Region 2 and the Andelman model as modified by Schaum et. al.

(2) Professional judgement assuming the CTE value is the same as the RME value.

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual, Part A. OERR. USEPA/540/1-89/002.

USEPA, 1991: Risk Assessment Guidance for Superfund. Vol.1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER Directive 9285.6-03.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/P-95/002Fa.

TABLE 5.1

NON-CANCER TOXICITY DATA – ORAL/DERMAL

Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)		
		Value	Units	(1)	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)	
1,1'-Biphenyl	Chronic	5.0E-02	mg/kg-day	> 50%	5.0E-02	mg/kg-day	kidney	100/10	IRIS	03/30/2006	
1,1'-Biphenyl	Subchronic	5.0E-02	mg/kg-day	> 50%	5.0E-02	mg/kg-day	kidney	1000	HEAST	07/31/1997	
1,1-Dichloroethane	Chronic	1.0E-01	mg/kg-day	> 50%	1.0E-01	mg/kg-day	None	1000	HEAST	07/31/1997	x
1,1-Dichloroethane	Subchronic	1.0E+00	mg/kg-day	> 50%	1.0E+00	mg/kg-day	None	100	HEAST	07/31/1997	x
1,2-Dichloroethane	Chronic	2.0E-02	mg/kg-day	> 50%	2.0E-02	mg/kg-day	heart, lungs, CNS, kidney, liver, gastrointestinal	3000/1	NCEA (R9)	10/2004	x
1,2-Dichloroethane	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	x
1,2-Dichloropropane	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	x
1,2,4-Trimethylbenzene	Chronic	5.0E-02	mg/kg-day	> 50%	5.0E-02	mg/kg-day	NA	NA	PPRTV (R9)	10/2004	
1,2,4-Trimethylbenzene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1,3,5-Trimethylbenzene	Chronic	5.0E-02	mg/kg-day	> 50%	5.0E-02	mg/kg-day	NA	NA	PPRTV (R9)	10/2004	x
1,3,5-Trimethylbenzene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	x
1,4-Dichlorobenzene	Chronic	3.0E-02	mg/kg-day	> 50%	3.0E-02	mg/kg-day	liver, developmental	1000/1	NCEA (R9)	10/2004	x
1,4-Dichlorobenzene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	x
2,4-Dimethylphenol	Chronic	2.0E-02	mg/kg-day	> 50%	2.0E-02	mg/kg-day	blood	3000/1	IRIS	03/30/2006	
2,4-Dimethylphenol	Subchronic	2.0E-01	mg/kg-day	> 50%	2.0E-01	mg/kg-day	blood, nervous system	300	HEAST	07/31/1997	
2,4-Dinitrotoluene	Chronic	2.0E-03	mg/kg-day	> 50%	2.0E-03	mg/kg-day	GI system, nervous system	100 / 1	IRIS	03/30/2006	
2,4-Dinitrotoluene	Subchronic	2.0E-03	mg/kg-day	> 50%	2.0E-03	mg/kg-day	CNS, erythrocytes, biliary tract	100	HEAST	07/31/1997	
2-Chlorotoluene	Chronic	2.0E-02	mg/kg-day	> 50%	2.0E-02	mg/kg-day	body weight	1000 / 1	IRIS	03/30/2006	
2-Chlorotoluene	Subchronic	2.0E-01	mg/kg-day	> 50%	2.0E-01	mg/kg-day	whole body	100	HEAST	07/31/1997	
2-Methylnaphthalene	Chronic	4.0E-03	mg/kg-day	> 50%	4.0E-03	mg/kg-day	respiratory	1000/1	IRIS	03/30/2006	
2-Methylnaphthalene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2-Methylphenol	Chronic	5.0E-02	mg/kg-day	> 50%	5.0E-02	mg/kg-day	body weight, CNS	1000/1	IRIS	03/09/2007	x
2-Methylphenol	Subchronic	5.0E-01	mg/kg-day	> 50%	5.0E-01	mg/kg-day	body weight, CNS	100	HEAST	07/31/1997	x
3&4-Methylphenol	Chronic	5.0E-03	mg/kg-day	> 50%	5.0E-03	mg/kg-day	CNS, respiratory, whole body	1000	see footnote	–	x
3&4-Methylphenol	Subchronic	5.0E-03	mg/kg-day	> 50%	5.0E-03	mg/kg-day	CNS, respiratory, whole body	1000	see footnote	–	x
4-Methylphenol	Chronic	5.0E-03	mg/kg-day	> 50%	5.0E-03	mg/kg-day	CNS, respiratory, whole body	1000	HEAST	07/31/1997	
4-Methylphenol	Subchronic	5.0E-03	mg/kg-day	> 50%	5.0E-03	mg/kg-day	CNS, respiratory, whole body	1000	HEAST	07/31/1997	
4-Nitroaniline	Chronic	3.0E-03	mg/kg-day	> 50%	3.0E-03	mg/kg-day	NA	NA	PPRTV (R9)	10/2004	
4-Nitroaniline	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Acenaphthene	Chronic	6.0E-02	mg/kg-day	> 50%	6.0E-02	mg/kg-day	liver	3000/1	IRIS	03/30/2006	
Acenaphthene	Subchronic	6.0E-01	mg/kg-day	> 50%	6.0E-01	mg/kg-day	liver	300	HEAST	07/31/1997	
Acenaphthylene	Chronic	6.0E-02	mg/kg-day	> 50%	6.0E-02	mg/kg-day	liver	3000/1	see footnote	–	x
Acenaphthylene	Subchronic	6.0E-01	mg/kg-day	> 50%	6.0E-01	mg/kg-day	liver	300	see footnote	–	x
alpha-BHC	Chronic	5.0E-04	mg/kg-day	> 50%	5.0E-04	mg/kg-day	NA	NA	NCEA (R9)	10/2004	x
alpha-BHC	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	x
Aluminum	Chronic	1.0E+00	mg/kg-day	> 50%	1.0E+00	mg/kg-day	NA	NA	PPRTV (R9)	10/2004	
Aluminum	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Anthracene	Chronic	3.0E-01	mg/kg-day	58-89%	3.0E-01	mg/kg-day	NOE	3000/1	IRIS	03/09/2007	x
Anthracene	Subchronic	3.0E+00	mg/kg-day	58-89%	3.0E+00	mg/kg-day	NOE	300	HEAST	07/31/1997	x
Antimony	Chronic	4.0E-04	mg/kg-day	15%	6.0E-05	mg/kg-day	blood	1000/1	IRIS	03/30/2006	
Antimony	Subchronic	4.0E-04	mg/kg-day	15%	6.0E-05	mg/kg-day	blood, whole body	1000	HEAST	07/31/1997	
Aroclor 1242	Chronic	2.0E-05	mg/kg-day	81-96%	2.0E-05	mg/kg-day	immune system	300/1	see footnote	–	x
Aroclor 1242	Subchronic	5.0E-05	mg/kg-day	81-96%	5.0E-05	mg/kg-day	immune system	100	see footnote	–	x
Aroclor 1254	Chronic	2.0E-05	mg/kg-day	81-96%	2.0E-05	mg/kg-day	immune system	300/1	IRIS	03/30/2006	
Aroclor 1254	Subchronic	5.0E-05	mg/kg-day	81-96%	5.0E-05	mg/kg-day	immune system	100	HEAST	07/31/1997	
Aroclor 1260	Chronic	2.0E-05	mg/kg-day	81-96%	2.0E-05	mg/kg-day	immune system	300/1	see footnote	–	
Aroclor 1260	Subchronic	5.0E-05	mg/kg-day	81-96%	5.0E-05	mg/kg-day	immune system	100	see footnote	–	
Arsenic	Chronic	3.0E-04	mg/kg-day	95%	3.0E-04	mg/kg-day	skin	3/1	IRIS	03/30/2006	
Arsenic	Subchronic	3.0E-04	mg/kg-day	95%	3.0E-04	mg/kg-day	skin	3	HEAST	07/31/1997	
Barium	Chronic	2.0E-01	mg/kg-day	7%	1.4E-02	mg/kg-day	kidney	300/1	IRIS	03/09/2007	x
Barium	Subchronic	7.0E-02	mg/kg-day	7%	4.9E-03	mg/kg-day	kidney, circulatory	3/1	IRIS	03/09/2007	x
Benzene	Chronic	4.0E-03	mg/kg-day	> 50%	4.0E-03	mg/kg-day	blood	300/1	IRIS	03/30/2006	
Benzene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)anthracene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)		
		Value	Units	(1)	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)	
Benzo(a)pyrene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(b)fluoranthene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(ghi)perylene	Chronic	3.0E-02	mg/kg-day	58-89%	3.0E-02	mg/kg-day	kidney	3000/1	see footnote	--	
Benzo(ghi)perylene	Subchronic	3.0E-01	mg/kg-day	58-89%	3.0E-01	mg/kg-day	kidney	300	see footnote	--	
Benzo(k)fluoranthene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Cadmium	Chronic	1.0E-03	mg/kg-day	2.5%	2.5E-05	mg/kg-day	kidney	10/1	IRIS	03/30/2006	
Cadmium	Chronic	5.0E-04	mg/kg-day	5.0%	2.5E-05	mg/kg-day	kidney	10/1	IRIS	03/30/2006	
Cadmium	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Carbazole	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chromium	Chronic	3.0E-03	mg/kg-day	2.5%	7.5E-05	mg/kg-day	NOE	300/3	IRIS	03/30/2006	
Chromium	Subchronic	2.0E-02	mg/kg-day	2.5%	5.0E-04	mg/kg-day	NOE	100	HEAST	07/31/1997	
Chloroethane	Chronic	4.0E-01	mg/kg-day	> 50%	4.0E-01	mg/kg-day	fetus	3000	NCEA	8/30/1996	x
Chloroethane	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	x
Chloroform	Chronic	1.0E-02	mg/kg-day	> 50%	1.0E-02	mg/kg-day	liver	1000/1	IRIS	03/09/2007	x
Chloroform	Subchronic	1.0E-02	mg/kg-day	> 50%	1.0E-02	mg/kg-day	liver	1000	HEAST	07/31/1997	x
Chloromethane	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	x
Chrysene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
cis-1,2-Dichloroethene	Chronic	1.0E-02	mg/kg-day	> 50%	1.0E-02	mg/kg-day	NA	NA	PPRTV (R9)	10/2004	x
cis-1,2-Dichloroethene	Subchronic	1.0E-01	mg/kg-day	> 50%	1.0E-01	mg/kg-day	blood	300	HEAST	07/31/1997	x
Copper	Chronic	4.0E-02	mg/kg-day	> 50%	4.0E-02	mg/kg-day	GI system	NA	HEAST	07/31/1997	
Copper	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
delta-BHC	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Dibenz(a,h)anthracene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Dibenzofuran	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Dieldrin	Chronic	5.0E-05	mg/kg-day	> 50%	5.0E-05	mg/kg-day	liver	100/1	IRIS	03/09/2007	x
Dieldrin	Subchronic	5.0E-05	mg/kg-day	> 50%	5.0E-05	mg/kg-day	liver	100	HEAST	07/31/1997	x
Ethylbenzene	Chronic	1.0E-01	mg/kg-day	> 50%	1.0E-01	mg/kg-day	liver, kidney	1000/1	IRIS	03/09/2007	x
Ethylbenzene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	x
Fluoranthene	Chronic	4.0E-02	mg/kg-day	58-89%	4.0E-02	mg/kg-day	liver	3000/1	IRIS	03/30/2006	
Fluoranthene	Subchronic	4.0E-01	mg/kg-day	58-89%	4.0E-01	mg/kg-day	liver	300	HEAST	07/31/1997	
Fluorene	Chronic	4.0E-02	mg/kg-day	58-89%	4.0E-02	mg/kg-day	blood	3000/1	IRIS	03/30/2006	
Fluorene	Subchronic	4.0E-01	mg/kg-day	58-89%	4.0E-01	mg/kg-day	blood	300	HEAST	07/31/1997	
Heptachlor	Chronic	5.0E-04	mg/kg-day	> 50%	5.0E-04	mg/kg-day	liver	300/1	IRIS	03/30/2006	
Heptachlor	Subchronic	5.0E-04	mg/kg-day	> 50%	5.0E-04	mg/kg-day	liver	300	HEAST	07/31/1997	
Indeno(1,2,3-cd)pyrene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Iron	Chronic	3.0E-01	mg/kg-day	> 50%	3.0E-01	mg/kg-day	NA	NA	NCEA (R9)	10/2004	
Iron	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Isopropylbenzene (Cumene)	Chronic	1.0E-01	mg/kg-day	> 50%	1.0E-01	mg/kg-day	kidney	1000/1	IRIS	03/09/2007	x
Isopropylbenzene (Cumene)	Subchronic	4.0E-01	mg/kg-day	> 50%	4.0E-01	mg/kg-day	kidney	300	HEAST	07/31/1997	x
Lead	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Manganese	Chronic	1.4E-01	mg/kg-day	4.0%	5.6E-03	mg/kg-day	CNS	1/1	IRIS	03/30/2006	
Manganese	Subchronic	1.4E-01	mg/kg-day	4.0%	5.6E-03	mg/kg-day	CNS	1	HEAST	07/31/1997	
Mercury	Chronic	3.0E-04	mg/kg-day	7.0%	2.1E-05	mg/kg-day	immune system	1000/1	IRIS	03/30/2006	
Mercury	Subchronic	3.0E-03	mg/kg-day	7.0%	2.1E-04	mg/kg-day	immune system	100	HEAST	07/31/1997	
Naphthalene	Chronic	2.0E-02	mg/kg-day	58-89%	2.0E-02	mg/kg-day	whole body	3000/1	IRIS	03/30/2006	
Naphthalene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Nickel	Chronic	2.0E-02	mg/kg-day	4.0%	8.0E-04	mg/kg-day	body weight	300 / 1	IRIS	03/30/2006	
Nickel	Subchronic	2.0E-02	mg/kg-day	4.0%	8.0E-04	mg/kg-day	whole body, major organs	300	HEAST	07/31/1997	
Phenanthrene	Chronic	3.0E-01	mg/kg-day	58-89%	3.0E-01	mg/kg-day	NOE	3000/1	see footnote	--	
Phenanthrene	Subchronic	3.0E+00	mg/kg-day	58-89%	3.0E+00	mg/kg-day	NOE	300	see footnote	--	
Phenol	Chronic	3.0E-01	mg/kg-day	> 50%	3.0E-01	mg/kg-day	body weight	300/1	IRIS	03/09/2007	x
Phenol	Subchronic	6.0E-01	mg/kg-day	> 50%	6.0E-01	mg/kg-day	body weight	100	HEAST	07/31/1997	x
Pyrene	Chronic	3.0E-02	mg/kg-day	58-89%	3.0E-02	mg/kg-day	kidney	3000/1	IRIS	03/30/2006	
Pyrene	Subchronic	3.0E-01	mg/kg-day	58-89%	3.0E-01	mg/kg-day	kidney	300	HEAST	07/31/1997	

TABLE 5.1

NON-CANCER TOXICITY DATA – ORAL/DERMAL

Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)		
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)	
Selenium	Chronic	5.0E-03	mg/kg-day	30-80%	5.0E-03	mg/kg-day	whole body	3/1	IRIS	03/09/2007	x
Selenium	Subchronic	5.0E-03	mg/kg-day	30-80%	5.0E-03	mg/kg-day	whole body	3	HEAST	07/31/1997	x
Silver	Chronic	5.0E-03	mg/kg-day	4.0%	2.0E-04	mg/kg-day	skin	3 / 1	IRIS	03/30/2006	
Silver	Subchronic	5.0E-03	mg/kg-day	4.0%	2.0E-04	mg/kg-day	skin	3	HEAST	07/31/1997	
Tetrachloroethene	Chronic	1.0E-02	mg/kg-day	> 50%	1.0E-02	mg/kg-day	liver	1000/1	IRIS	03/30/2006	
Tetrachloroethene	Subchronic	1.0E-01	mg/kg-day	> 50%	1.0E-01	mg/kg-day	liver	100	HEAST	07/31/1997	
Thallium	Chronic	6.6E-05	mg/kg-day	100%	6.6E-05	mg/kg-day	blood	3000/1	IRIS (R9)	10/2004	
Thallium	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Toluene	Chronic	8.0E-02	mg/kg-day	> 50%	8.0E-02	mg/kg-day	kidney	3000/1	IRIS	03/30/2006	
Toluene	Subchronic	2.0E+00	mg/kg-day	> 50%	2.0E+00	mg/kg-day	kidney, liver	100	HEAST	07/31/1997	
Trichloroethene	Chronic	3.0E-04	mg/kg-day	> 50%	3.0E-04	mg/kg-day	liver, kidney, fetus	NA	NCEA (R9)	10/2004	
Trichloroethene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Vanadium	Chronic	1.0E-03	mg/kg-day	2.6%	2.6E-05	mg/kg-day	NA	NA	NCEA (R9)	10/2004	
Vanadium	Subchronic	7.0E-03	mg/kg-day	2.6%	1.8E-04	mg/kg-day	whole body	100	HEAST	07/31/1997	
Vinyl chloride	Chronic	3.0E-03	mg/kg-day	> 50%	3.0E-03	mg/kg-day	liver	30/1	IRIS	03/30/2006	
Vinyl chloride	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Xylenes (total)	Chronic	2.0E-01	mg/kg-day	> 50%	2.0E-01	mg/kg-day	whole body	1000/1	IRIS	03/30/2006	
Xylenes (total)	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Zinc	Chronic	3.0E-01	mg/kg-day	highly variable	3.0E-01	mg/kg-day	blood	3/1	IRIS	03/30/2006	
Zinc	Subchronic	3.0E-01	mg/kg-day	highly variable	3.0E-01	mg/kg-day	blood	3	HEAST	07/31/1997	

Note:

(1) Source: Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Section 4.2 and Exhibit 4-1. EPA recommends that the oral RfD should not be adjusted to estimate the absorbed dose for compounds when the absorption efficiency is greater than 50%. Constituents that do not have oral absorption efficiencies reported on this table were assumed to have an oral absorption efficiency of 100%.

(2) Risk assessment text will describe the derivation of the "Absorbed RfD for Dermal"

Chromium (VI) was used as a surrogate for chromium

Mercuric chloride was used as a surrogate for mercury

Aroclor 1254 was used as a surrogate for Aroclor 1260 and Aroclor 1242

Anthracene was used as a surrogate for phenanthrene

Pyrene was used as a surrogate for benzo(ghi)perylene

Acenaphthene was used as a surrogate for acenaphthylene

4-Methylphenol was used as a surrogate for 3&4-methylphenol

Arsenic was used for arsenic (III) and arsenic (V)

Xylenes (total) was used for m,p-xylene, o,p-xylene, m-xylene, and o-xylene

Definitions:

NA = Not Available

IRIS = Integrated Risk Information System

HEAST = Health Effects Assessment Summary Tables

NCEA = National Center for Environmental Assessment

PPRTV = Preliminary Peer-Reviewed Toxicity Value

R9 = As cited in EPA Region 9 Preliminary Remediation Goal (PRG) Table

GI = Gastrointestinal

CNS = Central Nervous System

NOE = No Observed Effects

TABLE 5.2

NON-CANCER TOXICITY DATA -- INHALATION

Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD (1)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)		
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)	
1,1'-Biphenyl	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
1,1-Dichloroethane	Chronic	5.0E-01	mg/m3	1.4E-01	mg/kg-day	kidney	1000	HEAST	07/31/1997	x
1,1-Dichloroethane	Subchronic	5.0E+00	mg/m3	1.4E+00	mg/kg-day	kidney	100	HEAST	07/31/1997	x
1,2-Dichloroethane	Chronic	5.0E-03	mg/m3	1.4E-03	mg/kg-day	gastrointestinal, liver, kidney	3000	NCEA (R9)	10/2004	x
1,2-Dichloroethane	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
1,2-Dichloropropane	Chronic	4.0E-03	mg/m3	1.1E-03	mg/kg-day	respiratory	300/1	IRIS	03/09/2007	x
1,2-Dichloropropane	Subchronic	1.3E-02	mg/m3	3.7E-03	mg/kg-day	respiratory	100 a	HEAST	07/31/1997	x
1,2,4-Trimethylbenzene	Chronic	NA	NA	1.7E-03	mg/kg-day	NA	NA	PPRTV (R9)	10/2004	
1,2,4-Trimethylbenzene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
1,3,5-Trimethylbenzene	Chronic	NA	NA	1.7E-03	mg/kg-day	NA	NA	PPRTV (R9)	10/2004	x
1,3,5-Trimethylbenzene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
1,4-Dichlorobenzene	Chronic	8.0E-01	mg/m3	2.3E-01	mg/kg-day	liver	100/1	IRIS	03/09/2007	x
1,4-Dichlorobenzene	Subchronic	2.5E+00	mg/m3	7.1E-01	mg/kg-day	liver	30	HEAST	07/31/1997	x
2,4-Dimethylphenol	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
2,4-Dinitrotoluene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
2-Chlorotoluene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
2-Methylnaphthalene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
2-Methylphenol	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	IRIS	03/09/2007	x
3&4-Methylphenol	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
4-Methylphenol	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
4-Nitroaniline	Chronic	NA	NA	1.1E-03	mg/kg-day	NA	NA	PPRTV (R9)	10/2004	
4-Nitroaniline	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Acenaphthene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Acenaphthylene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
alpha-BHC	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
Aluminum	Chronic	NA	NA	1.4E-03	mg/kg-day	NA	NA	PPRTV (R9)	10/2004	
Aluminum	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Anthracene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
Antimony	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Aroclor 1242	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
Aroclor 1254	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Aroclor 1260	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Arsenic	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Barium	Chronic	5.0E-04	mg/m3	1.4E-04	mg/kg-day	fetus	1000	HEAST	07/31/1997	x
Barium	Subchronic	5.0E-03	mg/m3	1.4E-03	mg/kg-day	fetus	100	HEAST	07/31/1997	x
Benzene	Chronic	3.0E-02	mg/m3	8.6E-03	mg/kg-day	blood	300/1	IRIS	03/30/2006	
Benzene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)anthracene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)pyrene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(b)fluoranthene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(ghi)perylene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(k)fluoranthene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Cadmium	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Carbazole	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Chromium	Chronic	1.0E-04	mg/m3	2.9E-05	mg/kg-day	respiratory	300/1	IRIS	03/30/2006	
Chromium	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Chloroethane	Chronic	1.0E+01	mg/m3	2.9E+00	mg/kg-day	developmental	300/1	IRIS	03/09/2007	x
Chloroethane	Subchronic	1.0E+01	mg/m3	2.9E+00	mg/kg-day	developmental	300/1	HEAST	07/31/1997	x
Chloroform	Chronic	NA	NA	1.4E-02	mg/kg-day	NA	300/1	NCEA (R9)	10/2004	x
Chloroform	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
Chloromethane	Chronic	9.0E-02	mg/m3	2.6E-02	mg/kg-day	CNS	1000/1	IRIS	03/09/2007	x
Chloromethane	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
Chrysene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
cis-1,2-Dichloroethene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
Copper	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	

TABLE 5.2

NON-CANCER TOXICITY DATA -- INHALATION

Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD (1)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)		
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)	
delta-BHC	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Dibenz(a,h)anthracene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Dibenzofuran	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Dieldrin	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
Ethylbenzene	Chronic	1.0E+00	mg/m3	2.9E-01	mg/kg-day	developmental	300/1	IRIS	03/09/2007	x
Ethylbenzene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
Fluoranthene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Fluorene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Heptachlor	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Indeno(1,2,3-cd)pyrene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Iron	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Isopropylbenzene (Cumene)	Chronic	4.0E-01	mg/m3	1.1E-01	mg/kg-day	kidney	1000/1	IRIS	03/09/2007	x
Isopropylbenzene (Cumene)	Subchronic	9.0E-02	mg/m3	2.6E-02	mg/kg-day	CNS, respiratory	1000	HEAST	07/31/1997	x
Lead	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Manganese	Chronic	5.0E-05	mg/m3	1.4E-05	mg/kg-day	neurological	1000/1	IRIS	03/30/2006	
Manganese	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Mercury	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Mercury	Chronic	3.0E-04	mg/m3	8.6E-05	mg/kg-day	nervous system	30/1	IRIS	03/30/2006	
Mercury	Subchronic	3.0E-04	mg/m3	8.6E-05	mg/kg-day	nervous system	30	HEAST	07/31/1997	
Naphthalene	Chronic	3.0E-03	mg/m3	8.6E-04	mg/kg-day	respiratory	3000/1	IRIS	03/30/2006	
Naphthalene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Nickel	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Phenanthrene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Phenol	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	IRIS	03/09/2007	x
Pyrene	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Selenium	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	x
Silver	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Tetrachloroethene	Chronic	NA	NA	1.0E-02	mg/kg-day	NA	NA	CalEPA (R9)	10/2004	
Tetrachloroethene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Thallium	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Toluene	Chronic	5.0E+00	mg/m3	1.4E+00	mg/kg-day	neurological	10/1	IRIS	03/30/2006	
Toluene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Trichloroethene	Chronic	4.0E-02	mg/m3	1.1E-02	mg/kg-day	neurological, eyes	NA	EPA, 2001	08/2001	
Trichloroethene	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Vanadium	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Vinyl chloride	Chronic	1.0E-01	mg/m3	2.9E-02	mg/kg-day	liver	30/1	IRIS	03/30/2006	
Vinyl chloride	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Xylenes (total)	Chronic	1.0E-01	mg/m3	2.9E-02	mg/kg-day	neurological	300/1	IRIS	03/30/2006	
Xylenes (total)	Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	
Zinc	Chronic/Subchronic	NA	NA	NA	NA	NA	NA	NA	NA	

Note:

(1) See Risk Assessment text for the derivation of the "Extrapolated RfD".

Chromium (VI) was used as a surrogate for chromium

Mercuric chloride was used as a surrogate for mercury

Xylenes (total) was used for m,p-xylene, o,p-xylene, m-xylene, and o-xylene

Definitions:

NA = Not Available

IRIS = Integrated Risk Information System

HEAST = Health Effects Assessment Summary Tables

NCEA = National Center for Environmental Assessment

PPRTV = Preliminary Peer-Reviewed Toxicity Value

CalEPA = California Environmental Protection Agency

R9 = As cited in EPA Region 9 Preliminary Remediation Goal (PRG) Table

EPA, 2001. Trichloroethylene Health Risk Assessment: Synthesis and Characterization. External Review Draft. Office of Research and Development.

TABLE 6.1

CANCER TOXICITY DATA -- ORAL/DERMAL

Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal	Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline Description	Oral CSF		
	Value	Units	(1)	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)	
1,1'-Biphenyl	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
1,1-Dichloroethane	NA	NA	NA	NA	NA	C	IRIS	03/09/2007	x
1,2-Dichloroethane	9.1E-02	(mg/kg-day)-1	> 50%	9.1E-02	(mg/kg-day)-1	B2	IRIS	03/09/2007	x
1,2-Dichloropropane	6.8E-02	(mg/kg-day)-1	> 50%	6.8E-02	(mg/kg-day)-1	B2	HEAST	07/31/1997	x
1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	
1,3,5-Trimethylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	x
1,4-Dichlorobenzene	2.4E-02	(mg/kg-day)-1	> 50%	2.4E-02	(mg/kg-day)-1	C	HEAST	07/31/1997	x
2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	NA	NA	
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	
2-Chlorotoluene	NA	NA	NA	NA	NA	NA	NA	NA	
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	
2-Methylphenol	NA	NA	NA	NA	NA	C	IRIS	03/09/2007	x
3&4-Methylphenol	NA	NA	NA	NA	NA	C	IRIS	03/09/2007	x
4-Methylphenol	NA	NA	NA	NA	NA	C	IRIS	03/30/2006	
4-Nitroaniline	2.1E-02	$(mg/kg-day)^{-1}$	> 50%	2.1E-02	$(mg/kg-day)^{-1}$	NA	PPRTV (R9)	10/2004	
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	
Acenaphthylene	NA	NA	NA	NA	NA	D	IRIS	03/09/2007	x
alpha-BHC	6.3E+00	(mg/kg-day)-1	> 50%	NA	NA	B2	IRIS	03/09/2007	x
Aluminum	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
Anthracene	NA	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	
Aroclor 1242	2.0E+00	$(mg/kg-day)^{-1}$	81-96%	2.0E+00	$(mg/kg-day)^{-1}$	B2	IRIS	03/09/2007	x
Aroclor 1254	2.0E+00	$(mg/kg-day)^{-1}$	81-96%	2.0E+00	$(mg/kg-day)^{-1}$	B2	IRIS	03/30/2006	
Aroclor 1260	2.0E+00	$(mg/kg-day)^{-1}$	81-96%	2.0E+00	$(mg/kg-day)^{-1}$	B2	IRIS	03/30/2006	
Arsenic	1.5E+00	$(mg/kg-day)^{-1}$	95%	1.5E+00	$(mg/kg-day)^{-1}$	A	IRIS	03/30/2006	
Barium	NA	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Benzene	5.5E-02	$(mg/kg-day)^{-1}$	> 50%	5.5E-02	$(mg/kg-day)^{-1}$	A	IRIS	03/30/2006	
Benzo(a)anthracene	7.3E-01	$(mg/kg-day)^{-1}$	58-89%	7.3E-01	$(mg/kg-day)^{-1}$	B2	NCEA (R9)	10/2004	
Benzo(a)pyrene (3)	7.3E+00	$(mg/kg-day)^{-1}$	58-89%	7.3E+00	$(mg/kg-day)^{-1}$	B2	IRIS	03/30/2006	
Benzo(b)fluoranthene	7.3E-01	$(mg/kg-day)^{-1}$	58-89%	7.3E-01	$(mg/kg-day)^{-1}$	B2	NCEA (R9)	10/2004	
Benzo(ghi)perylene	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
Benzo(k)fluoranthene	7.3E-02	$(mg/kg-day)^{-1}$	58-89%	7.3E-02	$(mg/kg-day)^{-1}$	B2	NCEA (R9)	10/2004	
Cadmium	NA	NA	NA	NA	NA	B1	IRIS	03/30/2006	
Carbazole	2.0E-02	$(mg/kg-day)^{-1}$	> 50%	2.0E-02	$(mg/kg-day)^{-1}$	B2	HEAST	07/31/1997	
Chromium	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
Chloroethane	2.9E-03	(mg/kg-day)-1	> 50%	2.9E-03	(mg/kg-day)-1	B2	NCEA (R9)	10/2004	x
Chloroform	NA	NA	NA	NA	NA	B2	IRIS	03/09/2007	x
Chloromethane	NA	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Chrysene	7.3E-03	$(mg/kg-day)^{-1}$	> 50%	7.3E-03	$(mg/kg-day)^{-1}$	B2	NCEA (R9)	10/2004	
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Copper	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
delta-BHC	1.8E+00	(mg/kg-day)-1	> 50%	1.8E+00	(mg/kg-day)-1	B2	IRIS	03/09/2007	x
Dibenz(a,h)anthracene (3)	7.3E+00	$(mg/kg-day)^{-1}$	58-89%	7.3E+00	$(mg/kg-day)^{-1}$	B2	NCEA (R9)	10/2004	
Dibenzofuran	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
Dieldrin	1.6E+01	$(mg/kg-day)^{-1}$	> 50%	1.6E+01	$(mg/kg-day)^{-1}$	B2	IRIS	03/09/2007	x
Ethylbenzene	NA	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Fluoranthene	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
Fluorene	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
Heptachlor	4.5E+00	$(mg/kg-day)^{-1}$	> 50%	4.5E+00	$(mg/kg-day)^{-1}$	B2	IRIS	03/30/2006	
Indeno(1,2,3-cd)pyrene	7.3E-01	$(mg/kg-day)^{-1}$	58-89%	7.3E-01	$(mg/kg-day)^{-1}$	B2	NCEA (R9)	10/2004	

TABLE 6.1

CANCER TOXICITY DATA -- ORAL/DERMAL

Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal	Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline Description	Oral CSF		
	Value	Units	(1)	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)	
Iron	NA	NA	NA	NA	NA	NA	NA	NA	
Isopropylbenzene (Cumene)	NA	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Lead	NA	NA	NA	NA	NA	B2	IRIS	03/30/2006	
Manganese	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
Mercury	NA	NA	NA	NA	NA	C	IRIS	03/30/2006	
Naphthalene	NA	NA	NA	NA	NA	C	IRIS	03/30/2006	
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	
Phenanthrene	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
Phenol	NA	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Pyrene	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
Selenium	NA	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Silver	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
Tetrachloroethene	5.4E-01	$(mg/kg\text{-}day)^{-1}$	> 50%	5.4E-01	$(mg/kg\text{-}day)^{-1}$	NA	CalEPA (R9)	10/2004	
Thallium	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	
Toluene	NA	NA	NA	NA	NA	NA	NA	NA	
Trichloroethene	NA	NA	NA	4.0E-01	$(mg/kg\text{-}day)^{-1}$	NA	EPA, 2001	08/2001	
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	
Vinyl chloride	7.5E-01	$(mg/kg\text{-}day)^{-1}$	> 50%	7.5E-01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	03/30/2006	
Vinyl chloride	1.5E+00	$(mg/kg\text{-}day)^{-1}$	> 50%	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	03/30/2006	
Xylenes (total)	NA	NA	NA	NA	NA	NA	NA	NA	
Zinc	NA	NA	NA	NA	NA	D	IRIS	03/30/2006	

Note:

(1) Source: Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Section 4.2 and Exhibit 4-1. EPA recommends that the oral RfD should not be adjusted to estimate the absorbed dose for compounds when the absorption efficiency is greater than 50%. Constituents that do not have oral absorption efficiencies reported on this table were assumed to have an oral absorption efficiency of 100%.

(2) Risk assessment text will describe the derivation of the "Absorbed RfD for Dermal"

(3) This chemical operates with a mutagenic mode of action (USEPA 2005).

Definitions:

NA = Not Available

IRIS = Integrated Risk Information System

HEAST = Health Effects Assessment Summary Tables

NCEA = National Center for Environmental Assessment

PPRTV = Preliminary Peer-Reviewed Toxicity Value

CalEPA = California Environmental Protection Agency

R9 = As cited in EPA Region 9 Preliminary Remediation Goal (PRG) Table

EPA, 2001. Trichloroethylene Health Risk Assessment: Synthesis and Characterization. External Review Draft. Office of Research and Development.

Chemical-specific data are not available, thus, USEPA (2005) default age-dependant adjustment factors (ADAF) will be applied to the slope factor as follows:

AGE	AGE ADAF
0-<2	10
2-<16	3
16-<30	1

Weight of Evidence definitions:

Group A chemicals (known human carcinogens) are agents for which there is sufficient evidence to support the causal association between exposure to the agents in humans and cancer.

Group B1 chemicals (probable human carcinogens) are agents for which there is limited evidence of possible carcinogenicity in humans.

Group B2 chemicals (probable human carcinogens) are agents for which there is sufficient evidence of carcinogenicity in animals but inadequate or a lack of evidence in humans.

Group C chemicals (possible human carcinogens) are agents for which there is limited evidence of carcinogenicity in animals and inadequate or a lack of human data.

Group D chemicals (not classifiable as to human carcinogenicity) are agents with inadequate human and animal evidence of carcinogenicity or for which no data are available.

Group E chemicals (evidence of noncarcinogenicity in humans) are agents for which there is no evidence of carcinogenicity from human or animal studies, or both.

Polychlorinated biphenyl (high risk and persistence; upper-bound slope factor) value was used for Aroclors 1242, 1254, and 1260

Arsenic was used for arsenic (III) and arsenic (V)

TABLE 6.2

CANCER TOXICITY DATA – INHALATION

Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF		
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)	
1,1'-Biphenyl	NA	NA	NA	NA	D	IRIS	03/30/2006	
1,1-Dichloroethane	NA	NA	NA	NA	C	IRIS	03/09/2007	x
1,2-Dichloroethane	2.6E-05	$(ug/m^3)^{-1}$	9.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	03/09/2007	x
1,2-Dichloropropane	NA	NA	NA	NA	B2	HEAST	07/31/1997	x
1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	NA	NA	
1,3,5-Trimethylbenzene	NA	NA	NA	NA	NA	NA	NA	x
1,4-Dichlorobenzene	NA	NA	2.2E-02	$(mg/kg\text{-}day)^{-1}$	B2	NCEA (R9)	10/2004	x
2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	NA	
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	
2-Chlorotoluene	NA	NA	NA	NA	NA	NA	NA	
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	
2-Methylphenol	NA	NA	NA	NA	C	IRIS	03/09/2007	x
3&4-Methylphenol	NA	NA	NA	NA	C	IRIS	03/09/2007	x
4-Methylphenol	NA	NA	NA	NA	C	IRIS	03/30/2006	
4-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	
Acenaphthylene	NA	NA	NA	NA	D	IRIS	03/09/2007	x
alpha-BHC	1.8E-03	$(ug/m^3)^{-1}$	6.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	03/09/2007	x
Aluminum	NA	NA	NA	NA	D	IRIS	03/30/2006	
Anthracene	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Antimony	NA	NA	NA	NA	NA	NA	NA	
Aroclor 1242	1.0E-04	$(ug/m^3)^{-1}$	3.5E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	03/09/2007	x
Aroclor 1254	1.0E-04	$(ug/m^3)^{-1}$	3.5E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	03/30/2006	
Aroclor 1260	1.0E-04	$(ug/m^3)^{-1}$	3.5E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	03/30/2006	
Arsenic	4.3E-03	$(ug/m^3)^{-1}$	1.5E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	03/30/2006	
Barium	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Benzene	7.8E-06	$(ug/m^3)^{-1}$	2.7E-02	$(mg/kg\text{-}day)^{-1}$	A	IRIS	03/30/2006	
Benzo(a)anthracene	8.8E-05	$(ug/m^3)^{-1}$	3.1E-01	$(mg/kg\text{-}day)^{-1}$	B2	NCEA (R4)	05/2000	
Benzo(a)pyrene (1)	8.8E-04	$(ug/m^3)^{-1}$	3.1E+00	$(mg/kg\text{-}day)^{-1}$	B2	NCEA (R4)	05/2000	
Benzo(b)fluoranthene	8.8E-05	$(ug/m^3)^{-1}$	3.1E-01	$(mg/kg\text{-}day)^{-1}$	B2	NCEA (R4)	05/2000	
Benzo(ghi)perylene	NA	NA	NA	NA	D	IRIS	03/30/2006	
Benzo(k)fluoranthene	8.8E-06	$(ug/m^3)^{-1}$	3.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	NCEA (R4)	05/2000	
Cadmium	1.8E-03	$(ug/m^3)^{-1}$	6.3E+00	$(mg/kg\text{-}day)^{-1}$	B1	IRIS	03/30/2006	
Carbazole	NA	NA	NA	NA	B2	IRIS	03/30/2006	
Chromium	1.2E-02	$(ug/m^3)^{-1}$	4.2E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	03/30/2006	
Chloroethane	NA	NA	NA	NA	NA	NA	NA	x
Chloroform	2.3E-05	$(ug/m^3)^{-1}$	8.1E-02	$(mg/kg\text{-}day)^{-1}$	B1	IRIS	03/09/2007	x
Chloromethane	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Chrysene	NA	NA	NA	NA	B2	IRIS	03/30/2006	
cis-1,2-Dichloroethene	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Copper	NA	NA	NA	NA	D	IRIS	03/30/2006	
delta-BHC	5.1E-04	$(ug/m^3)^{-1}$	1.8E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	03/10/2006	
Dibenz(a,h)anthracene (1)	8.8E-04	$(ug/m^3)^{-1}$	3.1E+00	$(mg/kg\text{-}day)^{-1}$	B2	NCEA (R4)	05/2000	
Dibenzofuran	NA	NA	NA	NA	D	IRIS	03/30/2006	
Dieldrin	4.6E-03	$(ug/m^3)^{-1}$	1.6E+01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	03/09/2007	x
Ethylbenzene	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Fluoranthene	NA	NA	NA	NA	D	IRIS	03/30/2006	

TABLE 6.2
CANCER TOXICITY DATA – INHALATION
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF		
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)	
Fluorene	NA	NA	NA	NA	D	IRIS	03/30/2006	
Heptachlor	1.3E-03	$(ug/m^3)^{-1}$	4.6E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	03/30/2006	
Indeno(1,2,3-cd)pyrene	8.8E-05	$(ug/m^3)^{-1}$	3.1E-01	$(mg/kg\text{-}day)^{-1}$	B2	NCEA (R4)	05/2000	
Iron	NA	NA	NA	NA	NA	NA	NA	
Isopropylbenzene (Cumene)	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Lead	NA	NA	NA	NA	B2	IRIS	03/30/2006	
Manganese	NA	NA	NA	NA	D	IRIS	03/30/2006	
Mercury	NA	NA	NA	NA	C	IRIS	03/30/2006	
Naphthalene	NA	NA	NA	NA	C	IRIS	03/30/2006	
Nickel	NA	NA	NA	NA	NA	NA	NA	
Phenanthrene	NA	NA	NA	NA	D	IRIS	03/30/2006	
Phenol	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Pyrene	NA	NA	NA	NA	D	IRIS	03/30/2006	
Selenium	NA	NA	NA	NA	D	IRIS	03/09/2007	x
Silver	NA	NA	NA	NA	D	IRIS	03/30/2006	
Tetrachloroethene	NA	NA	2.1E-02	$(mg/kg\text{-}day)^{-1}$	NA	CalEPA (R9)	10/2004	
Thallium	NA	NA	NA	NA	D	IRIS	03/30/2006	
Toluene	NA	NA	NA	NA	NA	NA	NA	
Trichloroethene	NA	NA	4.0E-01	$(mg/kg\text{-}day)^{-1}$	NA	EPA, 2001	08/2001	
Vanadium	NA	NA	NA	NA	NA	NA	NA	
Vinyl chloride	4.4E-06	$(ug/m^3)^{-1}$	1.5E-02	$(mg/kg\text{-}day)^{-1}$	A	IRIS	03/30/2006	
Vinyl chloride	8.8E-06	$(ug/m^3)^{-1}$	3.1E-02	$(mg/kg\text{-}day)^{-1}$	A	IRIS	03/30/2006	
Xylenes (total)	NA	NA	NA	NA	NA	NA	NA	
Zinc	NA	NA	NA	NA	D	IRIS	03/30/2006	

Definitions:

NA = Not Available
IRIS = Integrated Risk Information System
HEAST = Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
PPRTV = Preliminary Peer-Reviewed Toxicity Value
CalEPA = California Environmental Protection Agency
R9 = As cited in EPA Region 9 Preliminary Remediation Goal (PRG) Table
R4 = As cited in EPA Region 4 Human Health Risk Assessment Bulletins– Supplement to RAGS

EPA. 2001. Trichloroethylene Health Risk Assessment: Synthesis and Characterization. External Review Draft. Office of Research and Development.

Weight of Evidence definitions:

Group A chemicals (known human carcinogens) are agents for which there is sufficient evidence to support the causal association between exposure to the agents in humans and cancer.

Group B1 chemicals (probable human carcinogens) are agents for which there is limited evidence of possible carcinogenicity in humans.

Group B2 chemicals (probable human carcinogens) are agents for which there is sufficient evidence of carcinogenicity in animals but inadequate or a lack of evidence in humans.

Group C chemicals (possible human carcinogens) are agents for which there is limited evidence of carcinogenicity in animals and inadequate or a lack of human data.

Group D chemicals (not classifiable as to human carcinogenicity) are agents with inadequate human and animal evidence of carcinogenicity or for which no data are available.

Group E chemicals (evidence of noncarcinogenicity in humans) are agents for which there is no evidence of carcinogenicity from human or animal studies, or both.

Chromium (VI) was used as a surrogate for chromium

Polychlorinated biphenyl (high risk and persistence; upper-bound slope factor) value was used for Aroclors 1242, 1254, and 1260

Arsenic was used for arsenic (III) and arsenic (V)

(1) This chemical operates with a mutagenic mode of action (USEPA 2005).

Chemical-specific data are not available, thus, USEPA (2005) default age-dependant adjustment factors (ADAF) will be applied to the slope factor as follows:

AGE	AGE ADAF
0-<2	10
2-<16	3
16-<30	1

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Ingestion	Aluminum	7.6E+03	mg/kg	1.5E-04	mg/kg/day	NA	NA	NA	3.6E-04	mg/kg/day	1.0E+00	mg/kg/day	3.6E-04
				Antimony	1.7E+02	mg/kg	3.5E-06	mg/kg/day	NA	NA	NA	8.2E-06	mg/kg/day	4.0E-04	mg/kg/day	2.0E-02
				Arsenic	1.5E+03	mg/kg	3.0E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	4.5E-05	7.1E-05	mg/kg/day	3.0E-04	mg/kg/day	2.4E-01
				Cadmium	1.0E+01	mg/kg	2.0E-07	mg/kg/day	NA	NA	NA	4.7E-07	mg/kg/day	1.0E-03	mg/kg/day	4.7E-04
				Chromium	1.9E+01	mg/kg	3.8E-07	mg/kg/day	NA	NA	NA	8.8E-07	mg/kg/day	3.0E-03	mg/kg/day	2.9E-04
				Copper	6.2E+03	mg/kg	1.2E-04	mg/kg/day	NA	NA	NA	2.9E-04	mg/kg/day	4.0E-02	mg/kg/day	7.2E-03
				Iron	2.6E+05	mg/kg	5.2E-03	mg/kg/day	NA	NA	NA	1.2E-02	mg/kg/day	3.0E-01	mg/kg/day	4.0E-02
				Lead	1.3E+03	mg/kg	2.6E-05	mg/kg/day	NA	NA	NA	6.0E-05	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	6.2E-06	mg/kg/day	NA	NA	NA	1.4E-05	mg/kg/day	1.4E-01	mg/kg/day	1.0E-04
				Thallium	8.2E+00	mg/kg	1.7E-07	mg/kg/day	NA	NA	NA	3.9E-07	mg/kg/day	6.6E-05	mg/kg/day	5.8E-03
				Vanadium	8.2E+01	mg/kg	1.7E-06	mg/kg/day	NA	NA	NA	3.9E-06	mg/kg/day	1.0E-03	mg/kg/day	3.9E-03
				Zinc	3.8E+03	mg/kg	7.7E-05	mg/kg/day	NA	NA	NA	1.8E-04	mg/kg/day	3.0E-01	mg/kg/day	6.0E-04
				Mercury	3.0E+01	mg/kg	5.9E-07	mg/kg/day	NA	NA	NA	1.4E-06	mg/kg/day	3.0E-04	mg/kg/day	4.6E-03
				Heptachlor	3.5E-01	mg/kg	7.0E-09	mg/kg/day	4.5E+00	1/(mg/kg/day)	3.2E-08	1.6E-08	mg/kg/day	5.0E-04	mg/kg/day	3.3E-05
				Aroclor-1242	3.2E+00	mg/kg	6.4E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.3E-07	1.5E-07	mg/kg/day	2.0E-05	mg/kg/day	7.5E-03
				Aroclor-1260	1.6E+00	mg/kg	3.2E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	6.4E-08	7.5E-08	mg/kg/day	2.0E-05	mg/kg/day	3.8E-03
				Benzene	1.9E+01	mg/kg	3.8E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.1E-08	8.9E-07	mg/kg/day	4.0E-03	mg/kg/day	2.2E-04
				Tetrachloroethene	5.2E-01	mg/kg	1.0E-08	mg/kg/day	5.4E-01	1/(mg/kg/day)	5.7E-09	2.4E-08	mg/kg/day	1.0E-02	mg/kg/day	2.4E-06
				Trichloroethene	5.4E-01	mg/kg	1.1E-08	mg/kg/day	4.0E-01	1/(mg/kg/day)	4.3E-09	2.5E-08	mg/kg/day	3.0E-04	mg/kg/day	8.5E-05
				m-Xylene	4.5E+01	mg/kg	9.1E-07	mg/kg/day	NA	NA	NA	2.1E-06	mg/kg/day	2.0E-01	mg/kg/day	1.1E-05
				p,o-Xylene	4.9E+01	mg/kg	9.9E-07	mg/kg/day	NA	NA	NA	2.3E-06	mg/kg/day	2.0E-01	mg/kg/day	1.2E-05
				2-Methylnaphthalene	3.0E+02	mg/kg	6.0E-06	mg/kg/day	NA	NA	NA	1.4E-05	mg/kg/day	4.0E-03	mg/kg/day	3.5E-03
				4-Methylphenol	1.3E+02	mg/kg	2.7E-06	mg/kg/day	NA	NA	NA	6.3E-06	mg/kg/day	5.0E-03	mg/kg/day	1.3E-03
				4-Nitroaniline	1.2E+01	mg/kg	2.4E-07	mg/kg/day	2.1E-02	1/(mg/kg/day)	5.0E-09	5.5E-07	mg/kg/day	3.0E-03	mg/kg/day	1.8E-04
				Acenaphthene	2.4E+02	mg/kg	4.9E-06	mg/kg/day	NA	NA	NA	1.2E-05	mg/kg/day	6.0E-02	mg/kg/day	1.9E-04
				Benzo(a)anthracene	3.3E+02	mg/kg	6.6E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.8E-06	1.5E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	6.0E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	4.4E-05	1.4E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	7.1E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.2E-06	1.7E-05	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	3.3E-06	mg/kg/day	NA	NA	NA	7.7E-06	mg/kg/day	3.0E-02	mg/kg/day	2.6E-04
				Benzo(k)fluoranthene	1.6E+02	mg/kg	3.3E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	2.4E-07	7.7E-06	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	2.8E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	5.6E-08	6.5E-06	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	6.4E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	4.7E-08	1.5E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	1.2E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	8.8E-06	2.8E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	4.0E-06	mg/kg/day	NA	NA	NA	9.4E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	1.7E-05	mg/kg/day	NA	NA	NA	3.9E-05	mg/kg/day	4.0E-02	mg/kg/day	9.6E-04
				Fluorene	3.3E+02	mg/kg	6.7E-06	mg/kg/day	NA	NA	NA	1.6E-05	mg/kg/day	4.0E-02	mg/kg/day	3.9E-04
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	3.4E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.5E-06	7.9E-06	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	1.8E-05	mg/kg/day	NA	NA	NA	4.3E-05	mg/kg/day	2.0E-02	mg/kg/day	2.1E-03
				Phenanthrene	1.1E+03	mg/kg	2.1E-05	mg/kg/day	NA	NA	NA	5.0E-05	mg/kg/day	3.0E-01	mg/kg/day	1.7E-04
				Pyrene	6.4E+02	mg/kg	1.3E-05	mg/kg/day	NA	NA	NA	3.0E-05	mg/kg/day	3.0E-02	mg/kg/day	1.0E-03
			Exp. Route Total								1.1E-04					3.4E-01

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Dermal	Aluminum	7.6E+03	mg/kg	6.1E-07	mg/kg/day	NA	NA	NA	1.4E-06	mg/kg/day	1.0E+00	mg/kg/day	1.4E-06
				Antimony	1.7E+02	mg/kg	1.4E-08	mg/kg/day	NA	NA	NA	3.3E-08	mg/kg/day	6.0E-05	mg/kg/day	5.4E-04
				Arsenic	1.5E+03	mg/kg	3.6E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	5.4E-06	8.5E-06	mg/kg/day	3.0E-04	mg/kg/day	2.8E-02
				Cadmium	1.0E+01	mg/kg	8.1E-10	mg/kg/day	NA	NA	NA	1.9E-09	mg/kg/day	2.5E-05	mg/kg/day	7.6E-05
				Chromium	1.9E+01	mg/kg	1.5E-09	mg/kg/day	NA	NA	NA	3.5E-09	mg/kg/day	7.5E-05	mg/kg/day	4.7E-05
				Copper	6.2E+03	mg/kg	5.0E-07	mg/kg/day	NA	NA	NA	1.2E-06	mg/kg/day	4.0E-02	mg/kg/day	2.9E-05
				Iron	2.6E+05	mg/kg	2.1E-05	mg/kg/day	NA	NA	NA	4.8E-05	mg/kg/day	3.0E-01	mg/kg/day	1.6E-04
				Lead	1.3E+03	mg/kg	1.0E-07	mg/kg/day	NA	NA	NA	2.4E-07	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	2.5E-08	mg/kg/day	NA	NA	NA	5.7E-08	mg/kg/day	5.6E-03	mg/kg/day	1.0E-05
				Thallium	8.2E+00	mg/kg	6.6E-10	mg/kg/day	NA	NA	NA	1.5E-09	mg/kg/day	6.6E-05	mg/kg/day	2.3E-05
				Vanadium	8.2E+01	mg/kg	6.6E-09	mg/kg/day	NA	NA	NA	1.5E-08	mg/kg/day	2.6E-05	mg/kg/day	5.9E-04
				Zinc	3.8E+03	mg/kg	3.1E-07	mg/kg/day	NA	NA	NA	7.2E-07	mg/kg/day	3.0E-01	mg/kg/day	2.4E-06
				Mercury	3.0E+01	mg/kg	2.4E-09	mg/kg/day	NA	NA	NA	5.5E-09	mg/kg/day	2.1E-05	mg/kg/day	2.6E-04
				Heptachlor	3.5E-01	mg/kg	2.8E-10	mg/kg/day	4.5E+00	1/(mg/kg/day)	1.3E-09	6.6E-10	mg/kg/day	5.0E-04	mg/kg/day	1.3E-06
				Aroclor-1242	3.2E+00	mg/kg	3.6E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	7.2E-08	8.4E-08	mg/kg/day	2.0E-05	mg/kg/day	4.2E-03
				Aroclor-1260	1.6E+00	mg/kg	1.8E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	3.6E-08	4.2E-08	mg/kg/day	2.0E-05	mg/kg/day	2.1E-03
				Benzene	1.9E+01	mg/kg	1.5E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	8.4E-10	3.6E-08	mg/kg/day	4.0E-03	mg/kg/day	8.9E-06
				Tetrachloroethene	5.2E-01	mg/kg	4.2E-10	mg/kg/day	5.4E-01	1/(mg/kg/day)	2.3E-10	9.7E-10	mg/kg/day	1.0E-02	mg/kg/day	9.7E-08
				Trichloroethene	5.4E-01	mg/kg	4.3E-10	mg/kg/day	4.0E-01	1/(mg/kg/day)	1.7E-10	1.0E-09	mg/kg/day	3.0E-04	mg/kg/day	3.4E-06
				m-Xylene	4.5E+01	mg/kg	3.6E-08	mg/kg/day	NA	NA	NA	8.4E-08	mg/kg/day	2.0E-01	mg/kg/day	4.2E-07
				p,o-Xylene	4.9E+01	mg/kg	3.9E-08	mg/kg/day	NA	NA	NA	9.2E-08	mg/kg/day	2.0E-01	mg/kg/day	4.6E-07
				2-Methylnaphthalene	3.0E+02	mg/kg	2.4E-07	mg/kg/day	NA	NA	NA	5.6E-07	mg/kg/day	4.0E-03	mg/kg/day	1.4E-04
				4-Methylphenol	1.3E+02	mg/kg	1.1E-07	mg/kg/day	NA	NA	NA	2.5E-07	mg/kg/day	5.0E-03	mg/kg/day	5.0E-05
				4-Nitroaniline	1.2E+01	mg/kg	9.4E-09	mg/kg/day	2.1E-02	1/(mg/kg/day)	2.0E-10	2.2E-08	mg/kg/day	3.0E-03	mg/kg/day	7.3E-06
				Acenaphthene	2.4E+02	mg/kg	2.6E-06	mg/kg/day	NA	NA	NA	6.0E-06	mg/kg/day	6.0E-02	mg/kg/day	9.9E-05
				Benzo(a)anthracene	3.3E+02	mg/kg	3.4E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.5E-06	8.0E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	3.1E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.3E-05	7.3E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	3.7E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.7E-06	8.6E-06	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	1.7E-06	mg/kg/day	NA	NA	NA	4.0E-06	mg/kg/day	3.0E-02	mg/kg/day	1.3E-04
				Benzo(k)fluoranthene	1.6E+02	mg/kg	1.7E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	1.2E-07	4.0E-06	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	1.1E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	2.2E-09	2.6E-07	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	3.3E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	2.4E-08	7.7E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	6.3E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	4.6E-06	1.5E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	1.6E-07	mg/kg/day	NA	NA	NA	3.8E-07	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	8.6E-06	mg/kg/day	NA	NA	NA	2.0E-05	mg/kg/day	4.0E-02	mg/kg/day	5.0E-04
				Fluorene	3.3E+02	mg/kg	3.5E-06	mg/kg/day	NA	NA	NA	8.1E-06	mg/kg/day	4.0E-02	mg/kg/day	2.0E-04
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	1.7E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.3E-06	4.1E-06	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	9.5E-06	mg/kg/day	NA	NA	NA	2.2E-05	mg/kg/day	2.0E-02	mg/kg/day	1.1E-03
				Phenanthrene	1.1E+03	mg/kg	8.5E-07	mg/kg/day	NA	NA	NA	2.0E-06	mg/kg/day	3.0E-01	mg/kg/day	6.6E-06
				Pyrene	6.4E+02	mg/kg	6.6E-06	mg/kg/day	NA	NA	NA	1.6E-05	mg/kg/day	3.0E-02	mg/kg/day	5.2E-04
			Exp. Route Total								4.0E-05					3.9E-02
		Exposure Point Total									1.5E-04					3.8E-01
	Exposure Medium Total										1.5E-04					3.8E-01

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air (Upland Area)	Quanta Resources Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	9.2E-06	mg/m3	3.1E-09	mg/kg/day	NA	NA	NA	7.2E-09	mg/kg/day	1.4E-03	mg/kg/day	5.0E-06
				Antimony	2.1E-07	mg/m3	7.0E-11	mg/kg/day	NA	NA	NA	1.6E-10	mg/kg/day	NA	NA	NA
				Arsenic	1.8E-06	mg/m3	6.1E-10	mg/kg/day	1.5E+01	1/(mg/kg/day)	9.2E-09	1.4E-09	mg/kg/day	NA	NA	NA
				Cadmium	1.2E-08	mg/m3	4.1E-12	mg/kg/day	6.3E+00	1/(mg/kg/day)	2.6E-11	9.5E-12	mg/kg/day	NA	NA	NA
				Chromium	2.3E-08	mg/m3	7.6E-12	mg/kg/day	4.2E+01	1/(mg/kg/day)	3.2E-10	1.8E-11	mg/kg/day	2.9E-05	mg/kg/day	6.2E-07
				Copper	7.5E-06	mg/m3	2.5E-09	mg/kg/day	NA	NA	NA	5.8E-09	mg/kg/day	NA	NA	NA
				Iron	3.1E-04	mg/m3	1.0E-07	mg/kg/day	NA	NA	NA	2.4E-07	mg/kg/day	NA	NA	NA
				Lead	1.5E-06	mg/m3	5.1E-10	mg/kg/day	NA	NA	NA	1.2E-09	mg/kg/day	NA	NA	NA
				Manganese	3.7E-07	mg/m3	1.2E-10	mg/kg/day	NA	NA	NA	2.9E-10	mg/kg/day	1.4E-05	mg/kg/day	2.0E-05
				Thallium	9.9E-09	mg/m3	3.3E-12	mg/kg/day	NA	NA	NA	7.7E-12	mg/kg/day	NA	NA	NA
				Vanadium	9.9E-08	mg/m3	3.3E-11	mg/kg/day	NA	NA	NA	7.7E-11	mg/kg/day	NA	NA	NA
				Zinc	4.6E-06	mg/m3	1.5E-09	mg/kg/day	NA	NA	NA	3.6E-09	mg/kg/day	NA	NA	NA
				Mercury	3.6E-08	mg/m3	1.2E-11	mg/kg/day	NA	NA	NA	2.8E-11	mg/kg/day	NA	NA	NA
				Heptachlor	4.2E-10	mg/m3	1.4E-13	mg/kg/day	4.6E+00	1/(mg/kg/day)	6.4E-13	3.3E-13	mg/kg/day	NA	NA	NA
				Aroclor-1242	3.9E-09	mg/m3	1.3E-12	mg/kg/day	3.5E-01	1/(mg/kg/day)	4.5E-13	3.0E-12	mg/kg/day	NA	NA	NA
				Aroclor-1260	1.9E-09	mg/m3	6.5E-13	mg/kg/day	3.5E-01	1/(mg/kg/day)	2.3E-13	1.5E-12	mg/kg/day	NA	NA	NA
				Benzene	8.3E-03	mg/m3	2.8E-06	mg/kg/day	2.7E-02	1/(mg/kg/day)	7.6E-08	6.5E-06	mg/kg/day	8.6E-03	mg/kg/day	7.6E-04
				Tetrachloroethene	2.0E-04	mg/m3	6.7E-08	mg/kg/day	2.1E-02	1/(mg/kg/day)	1.4E-09	1.6E-07	mg/kg/day	1.0E-02	mg/kg/day	1.6E-05
				Trichloroethene	2.5E-04	mg/m3	8.5E-08	mg/kg/day	4.0E-01	1/(mg/kg/day)	3.4E-08	2.0E-07	mg/kg/day	1.1E-02	mg/kg/day	1.7E-05
				m-Xylene	1.3E-02	mg/m3	4.2E-06	mg/kg/day	NA	NA	NA	9.8E-06	mg/kg/day	2.9E-02	mg/kg/day	3.4E-04
				p,o-Xylene	1.2E-02	mg/m3	3.9E-06	mg/kg/day	NA	NA	NA	9.2E-06	mg/kg/day	2.9E-02	mg/kg/day	3.2E-04
				2-Methylnaphthalene	8.6E-04	mg/m3	2.9E-07	mg/kg/day	NA	NA	NA	6.7E-07	mg/kg/day	NA	NA	NA
				4-Methylphenol	1.6E-07	mg/m3	5.4E-11	mg/kg/day	NA	NA	NA	1.3E-10	mg/kg/day	NA	NA	NA
				4-Nitroaniline	1.4E-08	mg/m3	4.7E-12	mg/kg/day	NA	NA	NA	1.1E-11	mg/kg/day	1.1E-03	mg/kg/day	9.7E-09
				Acenaphthene	3.0E-07	mg/m3	9.9E-11	mg/kg/day	NA	NA	NA	2.3E-10	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	4.0E-07	mg/m3	1.3E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	4.1E-11	3.1E-10	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-07	mg/m3	1.2E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	3.7E-10	2.8E-10	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-07	mg/m3	1.4E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	4.4E-11	3.3E-10	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.0E-07	mg/m3	6.6E-11	mg/kg/day	NA	NA	NA	1.5E-10	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	2.0E-07	mg/m3	6.6E-11	mg/kg/day	3.1E-02	1/(mg/kg/day)	2.0E-12	1.5E-10	mg/kg/day	NA	NA	NA
				Carbazole	1.7E-07	mg/m3	5.6E-11	mg/kg/day	NA	NA	NA	1.3E-10	mg/kg/day	NA	NA	NA
				Chrysene	3.8E-07	mg/m3	1.3E-10	mg/kg/day	NA	NA	NA	3.0E-10	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	7.2E-08	mg/m3	2.4E-11	mg/kg/day	3.1E+00	1/(mg/kg/day)	7.4E-11	5.6E-11	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.4E-07	mg/m3	8.1E-11	mg/kg/day	NA	NA	NA	1.9E-10	mg/kg/day	NA	NA	NA
				Fluoranthene	9.9E-07	mg/m3	3.3E-10	mg/kg/day	NA	NA	NA	7.7E-10	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	5.0E-07	mg/kg/day	NA	NA	NA	1.2E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-07	mg/m3	6.8E-11	mg/kg/day	3.1E-01	1/(mg/kg/day)	2.1E-11	1.6E-10	mg/kg/day	NA	NA	NA
				Naphthalene	2.6E-02	mg/m3	8.6E-06	mg/kg/day	NA	NA	NA	2.0E-05	mg/kg/day	8.6E-04	mg/kg/day	2.4E-02
				Phenanthrene	8.9E-02	mg/m3	3.0E-05	mg/kg/day	NA	NA	NA	7.0E-05	mg/kg/day	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	8.5E-08	mg/kg/day	NA	NA	NA	2.0E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.2E-07					2.5E-02
		Exposure Point Total									1.2E-07					2.5E-02
	Exposure Medium Total										1.2E-07					2.5E-02
Soil Total											1.5E-04					4.1E-01
Receptor Total											1.5E-04					4.1E-01

NA = Not applicable.

TABLE 7.2.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Ingestion	Aluminum	7.6E+03	mg/kg	9.2E-05	mg/kg/day	NA	NA	NA	6.4E-04	mg/kg/day	1.0E+00	mg/kg/day	6.4E-04
				Antimony	1.7E+02	mg/kg	2.1E-06	mg/kg/day	NA	NA	NA	1.5E-05	mg/kg/day	4.0E-04	mg/kg/day	3.7E-02
				Arsenic	1.5E+03	mg/kg	1.8E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.7E-05	1.3E-04	mg/kg/day	3.0E-04	mg/kg/day	4.2E-01
				Cadmium	1.0E+01	mg/kg	1.2E-07	mg/kg/day	NA	NA	NA	8.5E-07	mg/kg/day	1.0E-03	mg/kg/day	8.5E-04
				Chromium	1.9E+01	mg/kg	2.3E-07	mg/kg/day	NA	NA	NA	1.6E-06	mg/kg/day	3.0E-03	mg/kg/day	5.3E-04
				Copper	6.2E+03	mg/kg	7.4E-05	mg/kg/day	NA	NA	NA	5.2E-04	mg/kg/day	4.0E-02	mg/kg/day	1.3E-02
				Iron	2.6E+05	mg/kg	3.1E-03	mg/kg/day	NA	NA	NA	2.2E-02	mg/kg/day	3.0E-01	mg/kg/day	7.2E-02
				Lead	1.3E+03	mg/kg	1.5E-05	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	3.7E-06	mg/kg/day	NA	NA	NA	2.6E-05	mg/kg/day	1.4E-01	mg/kg/day	1.8E-04
				Thallium	8.2E+00	mg/kg	9.9E-08	mg/kg/day	NA	NA	NA	6.9E-07	mg/kg/day	6.6E-05	mg/kg/day	1.0E-02
				Vanadium	8.2E+01	mg/kg	9.9E-07	mg/kg/day	NA	NA	NA	6.9E-06	mg/kg/day	1.0E-03	mg/kg/day	6.9E-03
				Zinc	3.8E+03	mg/kg	4.6E-05	mg/kg/day	NA	NA	NA	3.2E-04	mg/kg/day	3.0E-01	mg/kg/day	1.1E-03
				Mercury	3.0E+01	mg/kg	3.6E-07	mg/kg/day	NA	NA	NA	2.5E-06	mg/kg/day	3.0E-04	mg/kg/day	8.3E-03
				Heptachlor	3.5E-01	mg/kg	4.2E-09	mg/kg/day	4.5E+00	1/(mg/kg/day)	1.9E-08	3.0E-08	mg/kg/day	5.0E-04	mg/kg/day	5.9E-05
				Aroclor-1242	3.2E+00	mg/kg	3.9E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	7.7E-08	2.7E-07	mg/kg/day	2.0E-05	mg/kg/day	1.3E-02
				Aroclor-1260	1.6E+00	mg/kg	1.9E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	3.9E-08	1.3E-07	mg/kg/day	2.0E-05	mg/kg/day	6.7E-03
				Benzene	1.9E+01	mg/kg	2.3E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.3E-08	1.6E-06	mg/kg/day	4.0E-03	mg/kg/day	4.0E-04
				Tetrachloroethene	5.2E-01	mg/kg	6.3E-09	mg/kg/day	5.4E-01	1/(mg/kg/day)	3.4E-09	4.4E-08	mg/kg/day	1.0E-02	mg/kg/day	4.4E-06
				Trichloroethene	5.4E-01	mg/kg	6.5E-09	mg/kg/day	4.0E-01	1/(mg/kg/day)	2.6E-09	4.6E-08	mg/kg/day	3.0E-04	mg/kg/day	1.5E-04
				m-Xylene	4.5E+01	mg/kg	5.4E-07	mg/kg/day	NA	NA	NA	3.8E-06	mg/kg/day	2.0E-01	mg/kg/day	1.9E-05
				p,o-Xylene	4.9E+01	mg/kg	5.9E-07	mg/kg/day	NA	NA	NA	4.1E-06	mg/kg/day	2.0E-01	mg/kg/day	2.1E-05
				2-Methylnaphthalene	3.0E+02	mg/kg	3.6E-06	mg/kg/day	NA	NA	NA	2.5E-05	mg/kg/day	4.0E-03	mg/kg/day	6.3E-03
				4-Methylphenol	1.3E+02	mg/kg	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-05	mg/kg/day	5.0E-03	mg/kg/day	2.2E-03
				4-Nitroaniline	1.2E+01	mg/kg	1.4E-07	mg/kg/day	2.1E-02	1/(mg/kg/day)	3.0E-09	9.9E-07	mg/kg/day	3.0E-03	mg/kg/day	3.3E-04
				Acenaphthene	2.4E+02	mg/kg	3.0E-06	mg/kg/day	NA	NA	NA	2.1E-05	mg/kg/day	6.0E-02	mg/kg/day	3.4E-04
				Benzo(a)anthracene	3.3E+02	mg/kg	4.0E-06	mg/kg/day	2.2E+00	1/(mg/kg/day)	9.5E-06	2.8E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	3.6E-06	mg/kg/day	2.2E+01	1/(mg/kg/day)	8.6E-05	2.5E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	4.2E-06	mg/kg/day	2.2E+00	1/(mg/kg/day)	1.0E-05	3.0E-05	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	2.0E-06	mg/kg/day	NA	NA	NA	1.4E-05	mg/kg/day	3.0E-02	mg/kg/day	4.6E-04
				Benzo(k)fluoranthene	1.6E+02	mg/kg	2.0E-06	mg/kg/day	2.2E-01	1/(mg/kg/day)	4.7E-07	1.4E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	1.7E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	3.3E-08	1.2E-05	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	3.8E-06	mg/kg/day	2.2E-02	1/(mg/kg/day)	9.2E-08	2.7E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	7.2E-07	mg/kg/day	2.2E+01	1/(mg/kg/day)	1.7E-05	5.0E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	2.4E-06	mg/kg/day	NA	NA	NA	1.7E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	9.9E-06	mg/kg/day	NA	NA	NA	6.9E-05	mg/kg/day	4.0E-02	mg/kg/day	1.7E-03
				Fluorene	3.3E+02	mg/kg	4.0E-06	mg/kg/day	NA	NA	NA	2.8E-05	mg/kg/day	4.0E-02	mg/kg/day	7.0E-04
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	2.0E-06	mg/kg/day	2.2E+00	1/(mg/kg/day)	4.8E-06	1.4E-05	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	1.1E-05	mg/kg/day	NA	NA	NA	7.7E-05	mg/kg/day	2.0E-02	mg/kg/day	3.9E-03
				Phenanthrene	1.1E+03	mg/kg	1.3E-05	mg/kg/day	NA	NA	NA	8.9E-05	mg/kg/day	3.0E-01	mg/kg/day	3.0E-04
				Pyrene	6.4E+02	mg/kg	7.7E-06	mg/kg/day	NA	NA	NA	5.4E-05	mg/kg/day	3.0E-02	mg/kg/day	1.8E-03
			Exp. Route Total								1.6E-04					6.1E-01

TABLE 7.2.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Dermal	Aluminum	7.6E+03	mg/kg	2.6E-07	mg/kg/day	NA	NA	NA	1.8E-06	mg/kg/day	1.0E+00	mg/kg/day	1.8E-06
				Antimony	1.7E+02	mg/kg	6.0E-09	mg/kg/day	NA	NA	NA	4.2E-08	mg/kg/day	6.0E-05	mg/kg/day	7.0E-04
				Arsenic	1.5E+03	mg/kg	1.6E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.3E-06	1.1E-05	mg/kg/day	3.0E-04	mg/kg/day	3.6E-02
				Cadmium	1.0E+01	mg/kg	3.5E-10	mg/kg/day	NA	NA	NA	2.4E-09	mg/kg/day	2.5E-05	mg/kg/day	9.8E-05
				Chromium	1.9E+01	mg/kg	6.5E-10	mg/kg/day	NA	NA	NA	4.5E-09	mg/kg/day	7.5E-05	mg/kg/day	6.0E-05
				Copper	6.2E+03	mg/kg	2.1E-07	mg/kg/day	NA	NA	NA	1.5E-06	mg/kg/day	4.0E-02	mg/kg/day	3.7E-05
				Iron	2.6E+05	mg/kg	8.9E-06	mg/kg/day	NA	NA	NA	6.2E-05	mg/kg/day	3.0E-01	mg/kg/day	2.1E-04
				Lead	1.3E+03	mg/kg	4.4E-08	mg/kg/day	NA	NA	NA	3.1E-07	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	1.1E-08	mg/kg/day	NA	NA	NA	7.4E-08	mg/kg/day	5.6E-03	mg/kg/day	1.3E-05
				Thallium	8.2E+00	mg/kg	2.8E-10	mg/kg/day	NA	NA	NA	2.0E-09	mg/kg/day	6.6E-05	mg/kg/day	3.0E-05
				Vanadium	8.2E+01	mg/kg	2.8E-09	mg/kg/day	NA	NA	NA	2.0E-08	mg/kg/day	2.6E-05	mg/kg/day	7.6E-04
				Zinc	3.8E+03	mg/kg	1.3E-07	mg/kg/day	NA	NA	NA	9.2E-07	mg/kg/day	3.0E-01	mg/kg/day	3.1E-06
				Mercury	3.0E+01	mg/kg	1.0E-09	mg/kg/day	NA	NA	NA	7.1E-09	mg/kg/day	2.1E-05	mg/kg/day	3.4E-04
				Heptachlor	3.5E-01	mg/kg	1.2E-10	mg/kg/day	4.5E+00	1/(mg/kg/day)	5.4E-10	8.5E-10	mg/kg/day	5.0E-04	mg/kg/day	1.7E-06
				Aroclor-1242	3.2E+00	mg/kg	1.5E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	3.1E-08	1.1E-07	mg/kg/day	2.0E-05	mg/kg/day	5.4E-03
				Aroclor-1260	1.6E+00	mg/kg	7.7E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.5E-08	5.4E-08	mg/kg/day	2.0E-05	mg/kg/day	2.7E-03
				Benzene	1.9E+01	mg/kg	6.6E-09	mg/kg/day	5.5E-02	1/(mg/kg/day)	3.6E-10	4.6E-08	mg/kg/day	4.0E-03	mg/kg/day	1.1E-05
				Tetrachloroethene	5.2E-01	mg/kg	1.8E-10	mg/kg/day	5.4E-01	1/(mg/kg/day)	9.7E-11	1.3E-09	mg/kg/day	1.0E-02	mg/kg/day	1.3E-07
				Trichloroethene	5.4E-01	mg/kg	1.9E-10	mg/kg/day	4.0E-01	1/(mg/kg/day)	7.5E-11	1.3E-09	mg/kg/day	3.0E-04	mg/kg/day	4.4E-06
				m-Xylene	4.5E+01	mg/kg	1.6E-08	mg/kg/day	NA	NA	NA	1.1E-07	mg/kg/day	2.0E-01	mg/kg/day	5.4E-07
				p,o-Xylene	4.9E+01	mg/kg	1.7E-08	mg/kg/day	NA	NA	NA	1.2E-07	mg/kg/day	2.0E-01	mg/kg/day	5.9E-07
				2-Methylnaphthalene	3.0E+02	mg/kg	1.0E-07	mg/kg/day	NA	NA	NA	7.3E-07	mg/kg/day	4.0E-03	mg/kg/day	1.8E-04
				4-Methylphenol	1.3E+02	mg/kg	4.6E-08	mg/kg/day	NA	NA	NA	3.2E-07	mg/kg/day	5.0E-03	mg/kg/day	6.4E-05
				4-Nitroaniline	1.2E+01	mg/kg	4.1E-09	mg/kg/day	2.1E-02	1/(mg/kg/day)	8.5E-11	2.8E-08	mg/kg/day	3.0E-03	mg/kg/day	9.5E-06
				Acenaphthene	2.4E+02	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	7.7E-06	mg/kg/day	6.0E-02	mg/kg/day	1.3E-04
				Benzo(a)anthracene	3.3E+02	mg/kg	1.5E-06	mg/kg/day	2.2E+00	1/(mg/kg/day)	7.9E-06	1.0E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	1.3E-06	mg/kg/day	2.2E+01	1/(mg/kg/day)	7.2E-05	9.4E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	1.6E-06	mg/kg/day	2.2E+00	1/(mg/kg/day)	8.5E-06	1.1E-05	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	7.3E-07	mg/kg/day	NA	NA	NA	5.1E-06	mg/kg/day	3.0E-02	mg/kg/day	1.7E-04
				Benzo(k)fluoranthene	1.6E+02	mg/kg	7.4E-07	mg/kg/day	2.2E-01	1/(mg/kg/day)	3.9E-07	5.1E-06	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	4.8E-08	mg/kg/day	2.0E-02	1/(mg/kg/day)	9.6E-10	3.4E-07	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	1.4E-06	mg/kg/day	2.2E-02	1/(mg/kg/day)	7.6E-08	1.0E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	2.7E-07	mg/kg/day	2.2E+01	1/(mg/kg/day)	1.4E-05	1.9E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	6.9E-08	mg/kg/day	NA	NA	NA	4.9E-07	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	3.7E-06	mg/kg/day	NA	NA	NA	2.6E-05	mg/kg/day	4.0E-02	mg/kg/day	6.4E-04
				Fluorene	3.3E+02	mg/kg	1.5E-06	mg/kg/day	NA	NA	NA	1.0E-05	mg/kg/day	4.0E-02	mg/kg/day	2.6E-04
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	7.5E-07	mg/kg/day	2.2E+00	1/(mg/kg/day)	4.0E-06	5.3E-06	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	4.1E-06	mg/kg/day	NA	NA	NA	2.9E-05	mg/kg/day	2.0E-02	mg/kg/day	1.4E-03
				Phenanthrene	1.1E+03	mg/kg	3.7E-07	mg/kg/day	NA	NA	NA	2.6E-06	mg/kg/day	3.0E-01	mg/kg/day	8.5E-06
				Pyrene	6.4E+02	mg/kg	2.9E-06	mg/kg/day	NA	NA	NA	2.0E-05	mg/kg/day	3.0E-02	mg/kg/day	6.7E-04
			Exp. Route Total								1.1E-04					5.0E-02
		Exposure Point Total									2.7E-04					6.6E-01
	Exposure Medium Total										2.7E-04					6.6E-01

TABLE 7.2.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Quanta Resources Emissions from Surface Soil (0 - 2 ft)	Inhalation	Aluminum	9.2E-06	mg/m3	1.8E-09	mg/kg/day	NA	NA	NA	1.3E-08	mg/kg/day	1.4E-03	mg/kg/day	9.0E-06
				Antimony	2.1E-07	mg/m3	4.2E-11	mg/kg/day	NA	NA	NA	2.9E-10	mg/kg/day	NA	NA	NA
				Arsenic	1.8E-06	mg/m3	3.6E-10	mg/kg/day	1.5E+01	1/(mg/kg/day)	5.5E-09	2.5E-09	mg/kg/day	NA	NA	NA
				Cadmium	1.2E-08	mg/m3	2.4E-12	mg/kg/day	6.3E+00	1/(mg/kg/day)	1.5E-11	1.7E-11	mg/kg/day	NA	NA	NA
				Chromium	2.3E-08	mg/m3	4.5E-12	mg/kg/day	4.2E+01	1/(mg/kg/day)	1.9E-10	3.2E-11	mg/kg/day	2.9E-05	mg/kg/day	1.1E-06
				Copper	7.5E-06	mg/m3	1.5E-09	mg/kg/day	NA	NA	NA	1.0E-08	mg/kg/day	NA	NA	NA
				Iron	3.1E-04	mg/m3	6.2E-08	mg/kg/day	NA	NA	NA	4.3E-07	mg/kg/day	NA	NA	NA
				Lead	1.5E-06	mg/m3	3.1E-10	mg/kg/day	NA	NA	NA	2.2E-09	mg/kg/day	NA	NA	NA
				Manganese	3.7E-07	mg/m3	7.4E-11	mg/kg/day	NA	NA	NA	5.2E-10	mg/kg/day	1.4E-05	mg/kg/day	3.6E-05
				Thallium	9.9E-09	mg/m3	2.0E-12	mg/kg/day	NA	NA	NA	1.4E-11	mg/kg/day	NA	NA	NA
				Vanadium	9.9E-08	mg/m3	2.0E-11	mg/kg/day	NA	NA	NA	1.4E-10	mg/kg/day	NA	NA	NA
				Zinc	4.6E-06	mg/m3	9.2E-10	mg/kg/day	NA	NA	NA	6.5E-09	mg/kg/day	NA	NA	NA
				Mercury	3.6E-08	mg/m3	7.1E-12	mg/kg/day	NA	NA	NA	5.0E-11	mg/kg/day	NA	NA	NA
				Heptachlor	4.2E-10	mg/m3	8.5E-14	mg/kg/day	4.6E+00	1/(mg/kg/day)	3.8E-13	5.9E-13	mg/kg/day	NA	NA	NA
				Aroclor-1242	3.9E-09	mg/m3	7.7E-13	mg/kg/day	3.5E-01	1/(mg/kg/day)	2.7E-13	5.4E-12	mg/kg/day	NA	NA	NA
				Aroclor-1260	1.9E-09	mg/m3	3.9E-13	mg/kg/day	3.5E-01	1/(mg/kg/day)	1.4E-13	2.7E-12	mg/kg/day	NA	NA	NA
				Benzene	8.3E-03	mg/m3	1.7E-06	mg/kg/day	2.7E-02	1/(mg/kg/day)	4.6E-08	1.2E-05	mg/kg/day	8.6E-03	mg/kg/day	1.4E-03
				Tetrachloroethene	2.0E-04	mg/m3	4.0E-08	mg/kg/day	2.1E-02	1/(mg/kg/day)	8.2E-10	2.8E-07	mg/kg/day	1.0E-02	mg/kg/day	2.8E-05
				Trichloroethene	2.5E-04	mg/m3	5.1E-08	mg/kg/day	4.0E-01	1/(mg/kg/day)	2.0E-08	3.6E-07	mg/kg/day	1.1E-02	mg/kg/day	3.1E-05
				m-Xylene	1.3E-02	mg/m3	2.5E-06	mg/kg/day	NA	NA	NA	1.8E-05	mg/kg/day	2.9E-02	mg/kg/day	6.2E-04
				p,o-Xylene	1.2E-02	mg/m3	2.4E-06	mg/kg/day	NA	NA	NA	1.6E-05	mg/kg/day	2.9E-02	mg/kg/day	5.8E-04
				2-Methylnaphthalene	8.6E-04	mg/m3	1.7E-07	mg/kg/day	NA	NA	NA	1.2E-06	mg/kg/day	NA	NA	NA
				4-Methylphenol	1.6E-07	mg/m3	3.2E-11	mg/kg/day	NA	NA	NA	2.3E-10	mg/kg/day	NA	NA	NA
				4-Nitroaniline	1.4E-08	mg/m3	2.8E-12	mg/kg/day	NA	NA	NA	2.0E-11	mg/kg/day	1.1E-03	mg/kg/day	1.7E-08
				Acenaphthene	3.0E-07	mg/m3	5.9E-11	mg/kg/day	NA	NA	NA	4.1E-10	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	4.0E-07	mg/m3	7.9E-11	mg/kg/day	9.2E-01	1/(mg/kg/day)	3.5E-10	5.6E-10	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-07	mg/m3	7.2E-11	mg/kg/day	9.2E+00	1/(mg/kg/day)	3.2E-09	5.1E-10	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-07	mg/m3	8.5E-11	mg/kg/day	9.2E-01	1/(mg/kg/day)	3.8E-10	6.0E-10	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.0E-07	mg/m3	4.0E-11	mg/kg/day	NA	NA	NA	2.8E-10	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	2.0E-07	mg/m3	4.0E-11	mg/kg/day	9.2E-02	1/(mg/kg/day)	1.8E-11	2.8E-10	mg/kg/day	NA	NA	NA
				Carbazole	1.7E-07	mg/m3	3.4E-11	mg/kg/day	NA	NA	NA	2.3E-10	mg/kg/day	NA	NA	NA
				Chrysene	3.8E-07	mg/m3	7.7E-11	mg/kg/day	NA	NA	NA	5.4E-10	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	7.2E-08	mg/m3	1.4E-11	mg/kg/day	9.2E+00	1/(mg/kg/day)	6.5E-10	1.0E-10	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.4E-07	mg/m3	4.9E-11	mg/kg/day	NA	NA	NA	3.4E-10	mg/kg/day	NA	NA	NA
				Fluoranthene	9.9E-07	mg/m3	2.0E-10	mg/kg/day	NA	NA	NA	1.4E-09	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	3.0E-07	mg/kg/day	NA	NA	NA	2.1E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-07	mg/m3	4.0E-11	mg/kg/day	9.2E-01	1/(mg/kg/day)	1.8E-10	2.8E-10	mg/kg/day	NA	NA	NA
				Naphthalene	2.6E-02	mg/m3	5.2E-06	mg/kg/day	NA	NA	NA	3.6E-05	mg/kg/day	8.6E-04	mg/kg/day	4.2E-02
				Phenanthrene	8.9E-02	mg/m3	1.8E-05	mg/kg/day	NA	NA	NA	1.3E-04	mg/kg/day	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	5.1E-08	mg/kg/day	NA	NA	NA	3.6E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								7.7E-08					4.5E-02
		Exposure Point Total									7.7E-08					4.5E-02
	Exposure Medium Total										7.7E-08					4.5E-02
Soil Total											2.7E-04					7.1E-01
Receptor Total											2.7E-04					7.1E-01

NA = Not applicable.

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Ingestion	Aluminum	7.6E+03	mg/kg	1.3E-03	mg/kg/day	NA	NA	NA	3.7E-03	mg/kg/day	1.0E+00	mg/kg/day	3.7E-03
				Antimony	1.7E+02	mg/kg	3.0E-05	mg/kg/day	NA	NA	NA	8.5E-05	mg/kg/day	4.0E-04	mg/kg/day	2.1E-01
				Arsenic	1.5E+03	mg/kg	2.6E-04	mg/kg/day	1.5E+00	1/(mg/kg/day)	3.9E-04	7.4E-04	mg/kg/day	3.0E-04	mg/kg/day	2.5E+00
				Cadmium	1.0E+01	mg/kg	1.8E-06	mg/kg/day	NA	NA	NA	4.9E-06	mg/kg/day	1.0E-03	mg/kg/day	4.9E-03
				Chromium	1.9E+01	mg/kg	3.3E-06	mg/kg/day	NA	NA	NA	9.2E-06	mg/kg/day	3.0E-03	mg/kg/day	3.1E-03
				Copper	6.2E+03	mg/kg	1.1E-03	mg/kg/day	NA	NA	NA	3.0E-03	mg/kg/day	4.0E-02	mg/kg/day	7.5E-02
				Iron	2.6E+05	mg/kg	4.5E-02	mg/kg/day	NA	NA	NA	1.3E-01	mg/kg/day	3.0E-01	mg/kg/day	4.2E-01
				Lead	1.3E+03	mg/kg	2.2E-04	mg/kg/day	NA	NA	NA	6.2E-04	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	5.3E-05	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	1.4E-01	mg/kg/day	1.1E-03
				Thallium	8.2E+00	mg/kg	1.4E-06	mg/kg/day	NA	NA	NA	4.0E-06	mg/kg/day	6.6E-05	mg/kg/day	6.1E-02
				Vanadium	8.2E+01	mg/kg	1.4E-05	mg/kg/day	NA	NA	NA	4.0E-05	mg/kg/day	1.0E-03	mg/kg/day	4.0E-02
				Zinc	3.8E+03	mg/kg	6.7E-04	mg/kg/day	NA	NA	NA	1.9E-03	mg/kg/day	3.0E-01	mg/kg/day	6.2E-03
				Mercury	3.0E+01	mg/kg	5.2E-06	mg/kg/day	NA	NA	NA	1.4E-05	mg/kg/day	3.0E-04	mg/kg/day	4.8E-02
				Heptachlor	3.5E-01	mg/kg	6.1E-08	mg/kg/day	4.5E+00	1/(mg/kg/day)	2.8E-07	1.7E-07	mg/kg/day	5.0E-04	mg/kg/day	3.4E-04
				Aroclor-1242	3.2E+00	mg/kg	5.6E-07	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.1E-06	1.6E-06	mg/kg/day	2.0E-05	mg/kg/day	7.8E-02
				Aroclor-1260	1.6E+00	mg/kg	2.8E-07	mg/kg/day	2.0E+00	1/(mg/kg/day)	5.6E-07	7.8E-07	mg/kg/day	2.0E-05	mg/kg/day	3.9E-02
				Benzene	1.9E+01	mg/kg	3.3E-06	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.8E-07	9.3E-06	mg/kg/day	4.0E-03	mg/kg/day	2.3E-03
				Tetrachloroethene	5.2E-01	mg/kg	9.1E-08	mg/kg/day	5.4E-01	1/(mg/kg/day)	4.9E-08	2.5E-07	mg/kg/day	1.0E-02	mg/kg/day	2.5E-05
				Trichloroethene	5.4E-01	mg/kg	9.4E-08	mg/kg/day	4.0E-01	1/(mg/kg/day)	3.8E-08	2.6E-07	mg/kg/day	3.0E-04	mg/kg/day	8.8E-04
				m-Xylene	4.5E+01	mg/kg	7.9E-06	mg/kg/day	NA	NA	NA	2.2E-05	mg/kg/day	2.0E-01	mg/kg/day	1.1E-04
				p,o-Xylene	4.9E+01	mg/kg	8.6E-06	mg/kg/day	NA	NA	NA	2.4E-05	mg/kg/day	2.0E-01	mg/kg/day	1.2E-04
				2-Methylnaphthalene	3.0E+02	mg/kg	5.2E-05	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	4.0E-03	mg/kg/day	3.7E-02
				4-Methylphenol	1.3E+02	mg/kg	2.3E-05	mg/kg/day	NA	NA	NA	6.5E-05	mg/kg/day	5.0E-03	mg/kg/day	1.3E-02
				4-Nitroaniline	1.2E+01	mg/kg	2.1E-06	mg/kg/day	2.1E-02	1/(mg/kg/day)	4.3E-08	5.8E-06	mg/kg/day	3.0E-03	mg/kg/day	1.9E-03
				Acenaphthene	2.4E+02	mg/kg	4.3E-05	mg/kg/day	NA	NA	NA	1.2E-04	mg/kg/day	6.0E-02	mg/kg/day	2.0E-03
				Benzo(a)anthracene	3.3E+02	mg/kg	5.7E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.2E-05	1.6E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	5.2E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.8E-04	1.5E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	6.2E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.5E-05	1.7E-04	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	2.9E-05	mg/kg/day	NA	NA	NA	8.0E-05	mg/kg/day	3.0E-02	mg/kg/day	2.7E-03
				Benzo(k)fluoranthene	1.6E+02	mg/kg	2.9E-05	mg/kg/day	7.3E-02	1/(mg/kg/day)	2.1E-06	8.0E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	2.4E-05	mg/kg/day	2.0E-02	1/(mg/kg/day)	4.9E-07	6.8E-05	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	5.5E-05	mg/kg/day	7.3E-03	1/(mg/kg/day)	4.0E-07	1.6E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	1.0E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	7.6E-05	2.9E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	3.5E-05	mg/kg/day	NA	NA	NA	9.8E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	1.4E-04	mg/kg/day	NA	NA	NA	4.0E-04	mg/kg/day	4.0E-02	mg/kg/day	1.0E-02
				Fluorene	3.3E+02	mg/kg	5.8E-05	mg/kg/day	NA	NA	NA	1.6E-04	mg/kg/day	4.0E-02	mg/kg/day	4.1E-03
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	2.9E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.1E-05	8.2E-05	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	1.6E-04	mg/kg/day	NA	NA	NA	4.5E-04	mg/kg/day	2.0E-02	mg/kg/day	2.2E-02
				Phenanthrene	1.1E+03	mg/kg	1.9E-04	mg/kg/day	NA	NA	NA	5.2E-04	mg/kg/day	3.0E-01	mg/kg/day	1.7E-03
				Pyrene	6.4E+02	mg/kg	1.1E-04	mg/kg/day	NA	NA	NA	3.1E-04	mg/kg/day	3.0E-02	mg/kg/day	1.0E-02
			Exp. Route Total								9.7E-04					3.6E+00

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Dermal	Aluminum	7.6E+03	mg/kg	1.8E-05	mg/kg/day	NA	NA	NA	4.9E-05	mg/kg/day	1.0E+00	mg/kg/day	4.9E-05
				Antimony	1.7E+02	mg/kg	4.0E-07	mg/kg/day	NA	NA	NA	1.1E-06	mg/kg/day	6.0E-05	mg/kg/day	1.9E-02
				Arsenic	1.5E+03	mg/kg	1.0E-04	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.6E-04	2.9E-04	mg/kg/day	3.0E-04	mg/kg/day	9.7E-01
				Cadmium	1.0E+01	mg/kg	2.3E-08	mg/kg/day	NA	NA	NA	6.5E-08	mg/kg/day	2.5E-05	mg/kg/day	2.6E-03
				Chromium	1.9E+01	mg/kg	4.3E-08	mg/kg/day	NA	NA	NA	1.2E-07	mg/kg/day	7.5E-05	mg/kg/day	1.6E-03
				Copper	6.2E+03	mg/kg	1.4E-05	mg/kg/day	NA	NA	NA	4.0E-05	mg/kg/day	4.0E-02	mg/kg/day	1.0E-03
				Iron	2.6E+05	mg/kg	5.9E-04	mg/kg/day	NA	NA	NA	1.7E-03	mg/kg/day	3.0E-01	mg/kg/day	5.5E-03
				Lead	1.3E+03	mg/kg	2.9E-06	mg/kg/day	NA	NA	NA	8.2E-06	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	7.1E-07	mg/kg/day	NA	NA	NA	2.0E-06	mg/kg/day	5.6E-03	mg/kg/day	3.5E-04
				Thallium	8.2E+00	mg/kg	1.9E-08	mg/kg/day	NA	NA	NA	5.3E-08	mg/kg/day	6.6E-05	mg/kg/day	8.0E-04
				Vanadium	8.2E+01	mg/kg	1.9E-07	mg/kg/day	NA	NA	NA	5.3E-07	mg/kg/day	2.6E-05	mg/kg/day	2.0E-02
				Zinc	3.8E+03	mg/kg	8.8E-06	mg/kg/day	NA	NA	NA	2.5E-05	mg/kg/day	3.0E-01	mg/kg/day	8.2E-05
				Mercury	3.0E+01	mg/kg	6.8E-08	mg/kg/day	NA	NA	NA	1.9E-07	mg/kg/day	2.1E-05	mg/kg/day	9.1E-03
				Heptachlor	3.5E-01	mg/kg	8.1E-09	mg/kg/day	4.5E+00	1/(mg/kg/day)	3.6E-08	2.3E-08	mg/kg/day	5.0E-04	mg/kg/day	4.5E-05
				Aroclor-1242	3.2E+00	mg/kg	1.0E-06	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.1E-06	2.9E-06	mg/kg/day	2.0E-05	mg/kg/day	1.4E-01
				Aroclor-1260	1.6E+00	mg/kg	5.2E-07	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.0E-06	1.4E-06	mg/kg/day	2.0E-05	mg/kg/day	7.2E-02
				Benzene	1.9E+01	mg/kg	4.4E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.4E-08	1.2E-06	mg/kg/day	4.0E-03	mg/kg/day	3.1E-04
				Tetrachloroethene	5.2E-01	mg/kg	1.2E-08	mg/kg/day	5.4E-01	1/(mg/kg/day)	6.5E-09	3.4E-08	mg/kg/day	1.0E-02	mg/kg/day	3.4E-06
				Trichloroethene	5.4E-01	mg/kg	1.2E-08	mg/kg/day	4.0E-01	1/(mg/kg/day)	5.0E-09	3.5E-08	mg/kg/day	3.0E-04	mg/kg/day	1.2E-04
				m-Xylene	4.5E+01	mg/kg	1.0E-06	mg/kg/day	NA	NA	NA	2.9E-06	mg/kg/day	2.0E-01	mg/kg/day	1.5E-05
				p,o-Xylene	4.9E+01	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	3.2E-06	mg/kg/day	2.0E-01	mg/kg/day	1.6E-05
				2-Methylnaphthalene	3.0E+02	mg/kg	6.9E-06	mg/kg/day	NA	NA	NA	1.9E-05	mg/kg/day	4.0E-03	mg/kg/day	4.8E-03
				4-Methylphenol	1.3E+02	mg/kg	3.1E-06	mg/kg/day	NA	NA	NA	8.6E-06	mg/kg/day	5.0E-03	mg/kg/day	1.7E-03
				4-Nitroaniline	1.2E+01	mg/kg	2.7E-07	mg/kg/day	2.1E-02	1/(mg/kg/day)	5.7E-09	7.6E-07	mg/kg/day	3.0E-03	mg/kg/day	2.5E-04
				Acenaphthene	2.4E+02	mg/kg	7.3E-05	mg/kg/day	NA	NA	NA	2.1E-04	mg/kg/day	6.0E-02	mg/kg/day	3.4E-03
				Benzo(a)anthracene	3.3E+02	mg/kg	9.8E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.2E-05	2.8E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	9.0E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.5E-04	2.5E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	1.1E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.7E-05	3.0E-04	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	4.9E-05	mg/kg/day	NA	NA	NA	1.4E-04	mg/kg/day	3.0E-02	mg/kg/day	4.6E-03
				Benzo(k)fluoranthene	1.6E+02	mg/kg	4.9E-05	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.6E-06	1.4E-04	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	3.2E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	6.4E-08	9.0E-06	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	9.5E-05	mg/kg/day	7.3E-03	1/(mg/kg/day)	6.9E-07	2.7E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	1.8E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.3E-04	5.0E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	4.6E-06	mg/kg/day	NA	NA	NA	1.3E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	2.5E-04	mg/kg/day	NA	NA	NA	6.9E-04	mg/kg/day	4.0E-02	mg/kg/day	1.7E-02
				Fluorene	3.3E+02	mg/kg	1.0E-04	mg/kg/day	NA	NA	NA	2.8E-04	mg/kg/day	4.0E-02	mg/kg/day	7.0E-03
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	5.0E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.7E-05	1.4E-04	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	2.7E-04	mg/kg/day	NA	NA	NA	7.7E-04	mg/kg/day	2.0E-02	mg/kg/day	3.8E-02
				Phenanthrene	1.1E+03	mg/kg	2.4E-05	mg/kg/day	NA	NA	NA	6.8E-05	mg/kg/day	3.0E-01	mg/kg/day	2.3E-04
				Pyrene	6.4E+02	mg/kg	1.9E-04	mg/kg/day	NA	NA	NA	5.3E-04	mg/kg/day	3.0E-02	mg/kg/day	1.8E-02
			Exp. Route Total								1.1E-03					1.3E+00
		Exposure Point Total									2.1E-03					4.9E+00
	Exposure Medium Total										2.1E-03					4.9E+00

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	9.2E-06	mg/m3	6.4E-07	mg/kg/day	NA	NA	NA	1.8E-06	mg/kg/day	1.4E-03	mg/kg/day	1.3E-03
				Antimony	2.1E-07	mg/m3	1.5E-08	mg/kg/day	NA	NA	NA	4.1E-08	mg/kg/day	NA	NA	NA
				Arsenic	1.8E-06	mg/m3	1.3E-07	mg/kg/day	1.5E+01	1/(mg/kg/day)	1.9E-06	3.6E-07	mg/kg/day	NA	NA	NA
				Cadmium	1.2E-08	mg/m3	8.5E-10	mg/kg/day	6.3E+00	1/(mg/kg/day)	5.4E-09	2.4E-09	mg/kg/day	NA	NA	NA
				Chromium	2.3E-08	mg/m3	1.6E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	6.6E-08	4.4E-09	mg/kg/day	2.9E-05	mg/kg/day	1.6E-04
				Copper	7.5E-06	mg/m3	5.2E-07	mg/kg/day	NA	NA	NA	1.5E-06	mg/kg/day	NA	NA	NA
				Iron	3.1E-04	mg/m3	2.2E-05	mg/kg/day	NA	NA	NA	6.1E-05	mg/kg/day	NA	NA	NA
				Lead	1.5E-06	mg/m3	1.1E-07	mg/kg/day	NA	NA	NA	3.0E-07	mg/kg/day	NA	NA	NA
				Manganese	3.7E-07	mg/m3	2.6E-08	mg/kg/day	NA	NA	NA	7.2E-08	mg/kg/day	1.4E-05	mg/kg/day	5.1E-03
				Thallium	9.9E-09	mg/m3	6.9E-10	mg/kg/day	NA	NA	NA	1.9E-09	mg/kg/day	NA	NA	NA
				Vanadium	9.9E-08	mg/m3	6.9E-09	mg/kg/day	NA	NA	NA	1.9E-08	mg/kg/day	NA	NA	NA
				Zinc	4.6E-06	mg/m3	3.2E-07	mg/kg/day	NA	NA	NA	9.0E-07	mg/kg/day	NA	NA	NA
				Mercury	3.6E-08	mg/m3	2.5E-09	mg/kg/day	NA	NA	NA	7.0E-09	mg/kg/day	NA	NA	NA
				Heptachlor	4.2E-10	mg/m3	3.0E-11	mg/kg/day	4.6E+00	1/(mg/kg/day)	1.3E-10	8.3E-11	mg/kg/day	NA	NA	NA
				Aroclor-1242	3.9E-09	mg/m3	2.7E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	9.5E-11	7.6E-10	mg/kg/day	NA	NA	NA
				Aroclor-1260	1.9E-09	mg/m3	1.4E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	4.7E-11	3.8E-10	mg/kg/day	NA	NA	NA
				Benzene	8.3E-03	mg/m3	5.8E-04	mg/kg/day	2.7E-02	1/(mg/kg/day)	1.6E-05	1.6E-03	mg/kg/day	8.6E-03	mg/kg/day	1.9E-01
				Tetrachloroethene	2.0E-04	mg/m3	1.4E-05	mg/kg/day	2.1E-02	1/(mg/kg/day)	2.9E-07	3.9E-05	mg/kg/day	1.0E-02	mg/kg/day	3.9E-03
				Trichloroethene	2.5E-04	mg/m3	1.8E-05	mg/kg/day	4.0E-01	1/(mg/kg/day)	7.1E-06	5.0E-05	mg/kg/day	1.1E-02	mg/kg/day	4.4E-03
				m-Xylene	1.3E-02	mg/m3	8.8E-04	mg/kg/day	NA	NA	NA	2.5E-03	mg/kg/day	2.9E-02	mg/kg/day	8.6E-02
				p,o-Xylene	1.2E-02	mg/m3	8.2E-04	mg/kg/day	NA	NA	NA	2.3E-03	mg/kg/day	2.9E-02	mg/kg/day	8.1E-02
				2-Methylnaphthalene	8.6E-04	mg/m3	6.0E-05	mg/kg/day	NA	NA	NA	1.7E-04	mg/kg/day	NA	NA	NA
				4-Methylphenol	1.6E-07	mg/m3	1.1E-08	mg/kg/day	NA	NA	NA	3.2E-08	mg/kg/day	NA	NA	NA
				4-Nitroaniline	1.4E-08	mg/m3	9.9E-10	mg/kg/day	NA	NA	NA	2.8E-09	mg/kg/day	1.1E-03	mg/kg/day	2.4E-06
				Acenaphthene	3.0E-07	mg/m3	2.1E-08	mg/kg/day	NA	NA	NA	5.8E-08	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	4.0E-07	mg/m3	2.8E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	8.5E-09	7.8E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-07	mg/m3	2.5E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	7.8E-08	7.1E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-07	mg/m3	3.0E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	9.2E-09	8.3E-08	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.0E-07	mg/m3	1.4E-08	mg/kg/day	NA	NA	NA	3.9E-08	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	2.0E-07	mg/m3	1.4E-08	mg/kg/day	3.1E-02	1/(mg/kg/day)	4.3E-10	3.9E-08	mg/kg/day	NA	NA	NA
				Carbazole	1.7E-07	mg/m3	1.2E-08	mg/kg/day	NA	NA	NA	3.3E-08	mg/kg/day	NA	NA	NA
				Chrysene	3.8E-07	mg/m3	2.7E-08	mg/kg/day	NA	NA	NA	7.5E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	7.2E-08	mg/m3	5.1E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.6E-08	1.4E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.4E-07	mg/m3	1.7E-08	mg/kg/day	NA	NA	NA	4.7E-08	mg/kg/day	NA	NA	NA
				Fluoranthene	9.9E-07	mg/m3	6.9E-08	mg/kg/day	NA	NA	NA	1.9E-07	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	1.0E-04	mg/kg/day	NA	NA	NA	2.9E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-07	mg/m3	1.4E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	4.4E-09	4.0E-08	mg/kg/day	NA	NA	NA
				Naphthalene	2.6E-02	mg/m3	1.8E-03	mg/kg/day	NA	NA	NA	5.1E-03	mg/kg/day	8.6E-04	mg/kg/day	5.9E+00
				Phenanthrene	8.9E-02	mg/m3	6.2E-03	mg/kg/day	NA	NA	NA	1.7E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	1.8E-05	mg/kg/day	NA	NA	NA	5.0E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								2.5E-05					6.3E+00
		Exposure Point Total									2.5E-05					6.3E+00
	Exposure Medium Total										2.5E-05					6.3E+00
Soil Total											2.1E-03					1.1E+01
Receptor Total											2.1E-03					1.1E+01

NA = Not applicable.

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	Quanta Resources Subsurface Soil (0 - 10 ft)	Ingestion	Aluminum	5.95E+03	mg/kg	2.7E-04	mg/kg/day	NA	NA	NA	1.9E-02	mg/kg/day	1.0E+00	mg/kg/day	1.9E-02
				Antimony	2.05E+02	mg/kg	9.5E-06	mg/kg/day	NA	NA	NA	6.6E-04	mg/kg/day	4.0E-04	mg/kg/day	1.7E+00
				Arsenic	6.09E+03	mg/kg	2.8E-04	mg/kg/day	1.5E+00	1/(mg/kg/day)	4.2E-04	2.0E-02	mg/kg/day	3.0E-04	mg/kg/day	6.6E+01
				Cadmium	5.10E+00	mg/kg	2.4E-07	mg/kg/day	NA	NA	NA	1.6E-05	mg/kg/day	1.0E-03	mg/kg/day	1.6E-02
				Chromium	4.08E+01	mg/kg	1.9E-06	mg/kg/day	NA	NA	NA	1.3E-04	mg/kg/day	2.0E-02	mg/kg/day	6.6E-03
				Copper	7.72E+03	mg/kg	3.6E-04	mg/kg/day	NA	NA	NA	2.5E-02	mg/kg/day	4.0E-02	mg/kg/day	6.2E-01
				Iron	9.92E+04	mg/kg	4.6E-03	mg/kg/day	NA	NA	NA	3.2E-01	mg/kg/day	3.0E-01	mg/kg/day	1.1E+00
				Lead	7.93E+03	mg/kg	3.7E-04	mg/kg/day	NA	NA	NA	2.6E-02	mg/kg/day	NA	NA	NA
				Manganese	1.70E+02	mg/kg	7.8E-06	mg/kg/day	NA	NA	NA	5.5E-04	mg/kg/day	1.4E-01	mg/kg/day	3.9E-03
				Selenium	4.22E+01	mg/kg	1.9E-06	mg/kg/day	NA	NA	NA	1.4E-04	mg/kg/day	5.0E-03	mg/kg/day	2.7E-02
				Thallium	1.48E+01	mg/kg	6.8E-07	mg/kg/day	NA	NA	NA	4.8E-05	mg/kg/day	6.6E-05	mg/kg/day	7.2E-01
				Vanadium	4.59E+01	mg/kg	2.1E-06	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	7.0E-03	mg/kg/day	2.1E-02
				Zinc	4.73E+03	mg/kg	2.2E-04	mg/kg/day	NA	NA	NA	1.5E-02	mg/kg/day	3.0E-01	mg/kg/day	5.1E-02
				Mercury	1.99E+01	mg/kg	9.2E-07	mg/kg/day	NA	NA	NA	6.4E-05	mg/kg/day	3.0E-03	mg/kg/day	2.1E-02
				Dieldrin	2.20E-01	mg/kg	1.0E-08	mg/kg/day	1.6E+01	1/(mg/kg/day)	1.6E-07	7.1E-07	mg/kg/day	5.0E-05	mg/kg/day	1.4E-02
				Heptachlor	2.55E-01	mg/kg	1.2E-08	mg/kg/day	4.5E+00	1/(mg/kg/day)	5.3E-08	8.2E-07	mg/kg/day	5.0E-04	mg/kg/day	1.6E-03
				Aroclor-1242	2.33E+00	mg/kg	1.1E-07	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.1E-07	7.5E-06	mg/kg/day	5.0E-05	mg/kg/day	1.5E-01
				Aroclor-1260	1.60E+00	mg/kg	7.4E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.5E-07	5.2E-06	mg/kg/day	5.0E-05	mg/kg/day	1.0E-01
				Benzene	3.30E+01	mg/kg	1.5E-06	mg/kg/day	5.5E-02	1/(mg/kg/day)	8.4E-08	1.1E-04	mg/kg/day	4.0E-03	mg/kg/day	2.7E-02
				Tetrachloroethene	5.20E-01	mg/kg	2.4E-08	mg/kg/day	5.4E-01	1/(mg/kg/day)	1.3E-08	1.7E-06	mg/kg/day	1.0E-01	mg/kg/day	1.7E-05
				Toluene	9.50E+01	mg/kg	4.4E-06	mg/kg/day	NA	NA	NA	3.1E-04	mg/kg/day	2.0E+00	mg/kg/day	1.5E-04
				Trichloroethene	5.40E-01	mg/kg	2.5E-08	mg/kg/day	4.0E-01	1/(mg/kg/day)	1.0E-08	1.7E-06	mg/kg/day	3.0E-04	mg/kg/day	5.8E-03
				m,p-Xylene	1.22E+02	mg/kg	5.6E-06	mg/kg/day	NA	NA	NA	3.9E-04	mg/kg/day	2.0E-01	mg/kg/day	2.0E-03
				m-Xylene	4.50E+01	mg/kg	2.1E-06	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	2.0E-01	mg/kg/day	7.3E-04
				o-Xylene	5.50E+01	mg/kg	2.5E-06	mg/kg/day	NA	NA	NA	1.8E-04	mg/kg/day	2.0E-01	mg/kg/day	8.9E-04
				p,o-Xylene	4.90E+01	mg/kg	2.3E-06	mg/kg/day	NA	NA	NA	1.6E-04	mg/kg/day	2.0E-01	mg/kg/day	7.9E-04
				Xylene (Total)	3.79E+01	mg/kg	1.7E-06	mg/kg/day	NA	NA	NA	1.2E-04	mg/kg/day	2.0E-01	mg/kg/day	6.1E-04
				2,4-Dimethylphenol	1.09E+02	mg/kg	5.0E-06	mg/kg/day	NA	NA	NA	3.5E-04	mg/kg/day	2.0E-01	mg/kg/day	1.8E-03
				2,4-Dinitrotoluene	7.76E+00	mg/kg	3.6E-07	mg/kg/day	NA	NA	NA	2.5E-05	mg/kg/day	2.0E-03	mg/kg/day	1.3E-02
				2-Methylnaphthalene	1.45E+03	mg/kg	6.7E-05	mg/kg/day	NA	NA	NA	4.7E-03	mg/kg/day	4.0E-03	mg/kg/day	1.2E+00
				4-Methylphenol	1.96E+02	mg/kg	9.0E-06	mg/kg/day	NA	NA	NA	6.3E-04	mg/kg/day	5.0E-03	mg/kg/day	1.3E-01
				4-Nitroaniline	4.97E+01	mg/kg	2.3E-06	mg/kg/day	2.1E-02	1/(mg/kg/day)	4.8E-08	1.6E-04	mg/kg/day	3.0E-03	mg/kg/day	5.4E-02
				Acenaphthene	4.77E+02	mg/kg	2.2E-05	mg/kg/day	NA	NA	NA	1.5E-03	mg/kg/day	6.0E-01	mg/kg/day	2.6E-03
				Benzo(a)anthracene	5.71E+02	mg/kg	2.6E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.9E-05	1.8E-03	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	5.55E+02	mg/kg	2.6E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.9E-04	1.8E-03	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	6.35E+02	mg/kg	2.9E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.1E-05	2.0E-03	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.94E+02	mg/kg	1.4E-05	mg/kg/day	NA	NA	NA	9.5E-04	mg/kg/day	3.0E-01	mg/kg/day	3.2E-03
				Benzo(k)fluoranthene	2.76E+02	mg/kg	1.3E-05	mg/kg/day	7.3E-02	1/(mg/kg/day)	9.3E-07	8.9E-04	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	1.37E+02	mg/kg	6.3E-06	mg/kg/day	NA	NA	NA	4.4E-04	mg/kg/day	5.0E-02	mg/kg/day	8.8E-03
				Carbazole	2.11E+02	mg/kg	9.7E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	1.9E-07	6.8E-04	mg/kg/day	NA	NA	NA
				Chrysene	6.05E+02	mg/kg	2.8E-05	mg/kg/day	7.3E-03	1/(mg/kg/day)	2.0E-07	2.0E-03	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	9.13E+01	mg/kg	4.2E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.1E-05	2.9E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	4.06E+02	mg/kg	1.9E-05	mg/kg/day	NA	NA	NA	1.3E-03	mg/kg/day	NA	NA	NA
				Fluoranthene	1.40E+03	mg/kg	6.5E-05	mg/kg/day	NA	NA	NA	4.5E-03	mg/kg/day	4.0E-01	mg/kg/day	1.1E-02
				Fluorene	4.89E+02	mg/kg	2.3E-05	mg/kg/day	NA	NA	NA	1.6E-03	mg/kg/day	4.0E-01	mg/kg/day	3.9E-03
				Indeno(1,2,3-c,d)pyrene	2.93E+02	mg/kg	1.4E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	9.9E-06	9.5E-04	mg/kg/day	NA	NA	NA
				Naphthalene	1.00E+04	mg/kg	4.6E-04	mg/kg/day	NA	NA	NA	3.2E-02	mg/kg/day	2.0E-02	mg/kg/day	1.6E+00
				Phenanthrene	1.79E+03	mg/kg	8.3E-05	mg/kg/day	NA	NA	NA	5.8E-03	mg/kg/day	3.0E+00	mg/kg/day	1.9E-03
				Pyrene	1.16E+03	mg/kg	5.4E-05	mg/kg/day	NA	NA	NA	3.8E-03	mg/kg/day	3.0E-01	mg/kg/day	1.3E-02
			Exp. Route Total								6.9E-04					7.3E+01

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	Quanta Resources Subsurface Soil (0 - 10 ft)	Dermal	Aluminum	5.9E+03	mg/kg	8.2E-07	mg/kg/day	NA	NA	NA	5.8E-05	mg/kg/day	1.0E+00	mg/kg/day	5.8E-05
				Antimony	2.1E+02	mg/kg	2.8E-08	mg/kg/day	NA	NA	NA	2.0E-06	mg/kg/day	6.0E-05	mg/kg/day	3.3E-02
				Arsenic	6.1E+03	mg/kg	2.5E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	3.8E-05	1.8E-03	mg/kg/day	3.0E-04	mg/kg/day	5.9E+00
				Cadmium	5.1E+00	mg/kg	7.1E-10	mg/kg/day	NA	NA	NA	4.9E-08	mg/kg/day	2.5E-05	mg/kg/day	2.0E-03
				Chromium	4.1E+01	mg/kg	5.7E-09	mg/kg/day	NA	NA	NA	4.0E-07	mg/kg/day	5.0E-04	mg/kg/day	7.9E-04
				Copper	7.7E+03	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	7.5E-05	mg/kg/day	4.0E-02	mg/kg/day	1.9E-03
				Iron	9.9E+04	mg/kg	1.4E-05	mg/kg/day	NA	NA	NA	9.6E-04	mg/kg/day	3.0E-01	mg/kg/day	3.2E-03
				Lead	7.9E+03	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	7.7E-05	mg/kg/day	NA	NA	NA
				Manganese	1.7E+02	mg/kg	2.3E-08	mg/kg/day	NA	NA	NA	1.6E-06	mg/kg/day	5.6E-03	mg/kg/day	2.9E-04
				Selenium	4.2E+01	mg/kg	5.8E-09	mg/kg/day	NA	NA	NA	4.1E-07	mg/kg/day	5.0E-03	mg/kg/day	8.2E-05
				Thallium	1.5E+01	mg/kg	2.0E-09	mg/kg/day	NA	NA	NA	1.4E-07	mg/kg/day	6.6E-05	mg/kg/day	2.2E-03
				Vanadium	4.6E+01	mg/kg	6.3E-09	mg/kg/day	NA	NA	NA	4.4E-07	mg/kg/day	1.8E-04	mg/kg/day	2.4E-03
				Zinc	4.7E+03	mg/kg	6.6E-07	mg/kg/day	NA	NA	NA	4.6E-05	mg/kg/day	3.0E-01	mg/kg/day	1.5E-04
				Mercury	2.0E+01	mg/kg	2.8E-09	mg/kg/day	NA	NA	NA	1.9E-07	mg/kg/day	2.1E-04	mg/kg/day	9.2E-04
				Dieldrin	2.2E-01	mg/kg	3.0E-10	mg/kg/day	1.6E+01	1/(mg/kg/day)	4.9E-09	2.1E-08	mg/kg/day	5.0E-05	mg/kg/day	4.3E-04
				Heptachlor	2.5E-01	mg/kg	3.5E-10	mg/kg/day	4.5E+00	1/(mg/kg/day)	1.6E-09	2.5E-08	mg/kg/day	5.0E-04	mg/kg/day	4.9E-05
				Aroclor-1242	2.3E+00	mg/kg	4.5E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	9.0E-08	3.2E-06	mg/kg/day	5.0E-05	mg/kg/day	6.3E-02
				Aroclor-1260	1.6E+00	mg/kg	3.1E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	6.2E-08	2.2E-06	mg/kg/day	5.0E-05	mg/kg/day	4.3E-02
				Benzene	3.3E+01	mg/kg	4.6E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.5E-09	3.2E-06	mg/kg/day	4.0E-03	mg/kg/day	8.0E-04
				Tetrachloroethene	5.2E-01	mg/kg	7.2E-10	mg/kg/day	5.4E-01	1/(mg/kg/day)	3.9E-10	5.0E-08	mg/kg/day	1.0E-01	mg/kg/day	5.0E-07
				Toluene	9.5E+01	mg/kg	1.3E-07	mg/kg/day	NA	NA	NA	9.2E-06	mg/kg/day	2.0E+00	mg/kg/day	4.6E-06
				Trichloroethene	5.4E-01	mg/kg	7.5E-10	mg/kg/day	4.0E-01	1/(mg/kg/day)	3.0E-10	5.2E-08	mg/kg/day	3.0E-04	mg/kg/day	1.7E-04
				m,p-Xylene	1.2E+02	mg/kg	1.7E-07	mg/kg/day	NA	NA	NA	1.2E-05	mg/kg/day	2.0E-01	mg/kg/day	5.9E-05
				m-Xylene	4.5E+01	mg/kg	6.2E-08	mg/kg/day	NA	NA	NA	4.4E-06	mg/kg/day	2.0E-01	mg/kg/day	2.2E-05
				o-Xylene	5.5E+01	mg/kg	7.6E-08	mg/kg/day	NA	NA	NA	5.3E-06	mg/kg/day	2.0E-01	mg/kg/day	2.7E-05
				p,o-Xylene	4.9E+01	mg/kg	6.8E-08	mg/kg/day	NA	NA	NA	4.7E-06	mg/kg/day	2.0E-01	mg/kg/day	2.4E-05
				Xylene (Total)	3.8E+01	mg/kg	5.2E-08	mg/kg/day	NA	NA	NA	3.7E-06	mg/kg/day	2.0E-01	mg/kg/day	1.8E-05
				2,4-Dimethylphenol	1.1E+02	mg/kg	1.5E-07	mg/kg/day	NA	NA	NA	1.1E-05	mg/kg/day	2.0E-01	mg/kg/day	5.3E-05
				2,4-Dinitrotoluene	7.8E+00	mg/kg	1.1E-07	mg/kg/day	NA	NA	NA	7.7E-06	mg/kg/day	2.0E-03	mg/kg/day	3.8E-03
				2-Methylnaphthalene	1.4E+03	mg/kg	2.0E-06	mg/kg/day	NA	NA	NA	1.4E-04	mg/kg/day	4.0E-03	mg/kg/day	3.5E-02
				4-Methylphenol	2.0E+02	mg/kg	2.7E-07	mg/kg/day	NA	NA	NA	1.9E-05	mg/kg/day	5.0E-03	mg/kg/day	3.8E-03
				4-Nitroaniline	5.0E+01	mg/kg	6.9E-08	mg/kg/day	2.1E-02	1/(mg/kg/day)	1.4E-09	4.8E-06	mg/kg/day	3.0E-03	mg/kg/day	1.6E-03
				Acenaphthene	4.8E+02	mg/kg	8.6E-06	mg/kg/day	NA	NA	NA	6.0E-04	mg/kg/day	6.0E-01	mg/kg/day	1.0E-03
				Benzo(a)anthracene	5.7E+02	mg/kg	1.0E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.5E-06	7.2E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	5.5E+02	mg/kg	1.0E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	7.3E-05	7.0E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	6.3E+02	mg/kg	1.1E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.3E-06	8.0E-04	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.9E+02	mg/kg	5.3E-06	mg/kg/day	NA	NA	NA	3.7E-04	mg/kg/day	3.0E-01	mg/kg/day	1.2E-03
				Benzo(k)fluoranthene	2.8E+02	mg/kg	5.0E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.6E-07	3.5E-04	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	1.4E+02	mg/kg	1.9E-07	mg/kg/day	NA	NA	NA	1.3E-05	mg/kg/day	5.0E-02	mg/kg/day	2.6E-04
				Carbazole	2.1E+02	mg/kg	2.9E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	5.8E-09	2.0E-05	mg/kg/day	NA	NA	NA
				Chrysene	6.0E+02	mg/kg	1.1E-05	mg/kg/day	7.3E-03	1/(mg/kg/day)	7.9E-08	7.6E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	9.1E+01	mg/kg	1.6E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.2E-05	1.2E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	4.1E+02	mg/kg	5.6E-07	mg/kg/day	NA	NA	NA	3.9E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	1.4E+03	mg/kg	2.5E-05	mg/kg/day	NA	NA	NA	1.8E-03	mg/kg/day	4.0E-01	mg/kg/day	4.4E-03
				Fluorene	4.9E+02	mg/kg	8.8E-06	mg/kg/day	NA	NA	NA	6.2E-04	mg/kg/day	4.0E-01	mg/kg/day	1.5E-03
				Indeno(1,2,3-c,d)pyrene	2.9E+02	mg/kg	5.3E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.9E-06	3.7E-04	mg/kg/day	NA	NA	NA
				Naphthalene	1.0E+04	mg/kg	1.8E-04	mg/kg/day	NA	NA	NA	1.3E-02	mg/kg/day	2.0E-02	mg/kg/day	6.3E-01
				Phenanthrene	1.8E+03	mg/kg	2.5E-06	mg/kg/day	NA	NA	NA	1.7E-04	mg/kg/day	3.0E+00	mg/kg/day	5.8E-05
				Pyrene	1.2E+03	mg/kg	2.1E-05	mg/kg/day	NA	NA	NA	1.5E-03	mg/kg/day	3.0E-01	mg/kg/day	4.9E-03
			Exp. Route Total								1.4E-04					6.7E+00
		Exposure Point Total									8.3E-04					8.0E+01
	Exposure Medium Total										8.3E-04					8.0E+01

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Quanta Resources Emissions from Subsurface Soil (0 - 10 ft)	Inhalation	Aluminum	2.9E-04	mg/m3	8.0E-07	mg/kg/day	NA	NA	NA	5.6E-05	mg/kg/day	1.4E-03	mg/kg/day	3.9E-02
				Antimony	9.9E-06	mg/m3	2.8E-08	mg/kg/day	NA	NA	NA	1.9E-06	mg/kg/day	NA	NA	NA
				Arsenic	2.9E-04	mg/m3	8.2E-07	mg/kg/day	1.5E+01	1/(mg/kg/day)	1.2E-05	5.8E-05	mg/kg/day	NA	NA	NA
				Cadmium	2.5E-07	mg/m3	6.9E-10	mg/kg/day	6.3E+00	1/(mg/kg/day)	4.3E-09	4.8E-08	mg/kg/day	NA	NA	NA
				Chromium	2.0E-06	mg/m3	5.5E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	2.3E-07	3.9E-07	mg/kg/day	2.9E-05	mg/kg/day	1.4E-02
				Copper	3.7E-04	mg/m3	1.0E-06	mg/kg/day	NA	NA	NA	7.3E-05	mg/kg/day	NA	NA	NA
				Iron	4.8E-03	mg/m3	1.3E-05	mg/kg/day	NA	NA	NA	9.4E-04	mg/kg/day	NA	NA	NA
				Lead	3.8E-04	mg/m3	1.1E-06	mg/kg/day	NA	NA	NA	7.5E-05	mg/kg/day	NA	NA	NA
				Manganese	8.2E-06	mg/m3	2.3E-08	mg/kg/day	NA	NA	NA	1.6E-06	mg/kg/day	1.4E-05	mg/kg/day	1.1E-01
				Selenium	2.0E-06	mg/m3	5.7E-09	mg/kg/day	NA	NA	NA	4.0E-07	mg/kg/day	NA	NA	NA
				Thallium	7.2E-07	mg/m3	2.0E-09	mg/kg/day	NA	NA	NA	1.4E-07	mg/kg/day	NA	NA	NA
				Vanadium	2.2E-06	mg/m3	6.2E-09	mg/kg/day	NA	NA	NA	4.3E-07	mg/kg/day	NA	NA	NA
				Zinc	2.3E-04	mg/m3	6.4E-07	mg/kg/day	NA	NA	NA	4.5E-05	mg/kg/day	NA	NA	NA
				Mercury	9.6E-07	mg/m3	2.7E-09	mg/kg/day	NA	NA	NA	1.9E-07	mg/kg/day	8.6E-05	mg/kg/day	2.2E-03
				Dieldrin	1.1E-08	mg/m3	3.0E-11	mg/kg/day	1.6E+01	1/(mg/kg/day)	4.8E-10	2.1E-09	mg/kg/day	NA	NA	NA
				Heptachlor	1.2E-08	mg/m3	3.4E-11	mg/kg/day	4.6E+00	1/(mg/kg/day)	1.6E-10	2.4E-09	mg/kg/day	NA	NA	NA
				Aroclor-1242	1.1E-07	mg/m3	3.1E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	1.1E-10	2.2E-08	mg/kg/day	NA	NA	NA
				Aroclor-1260	7.7E-08	mg/m3	2.2E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	7.6E-11	1.5E-08	mg/kg/day	NA	NA	NA
				Benzene	1.4E-02	mg/m3	4.0E-05	mg/kg/day	2.7E-02	1/(mg/kg/day)	1.1E-06	2.8E-03	mg/kg/day	8.6E-03	mg/kg/day	3.3E-01
				Tetrachloroethene	2.0E-04	mg/m3	5.6E-07	mg/kg/day	2.1E-02	1/(mg/kg/day)	1.2E-08	3.9E-05	mg/kg/day	1.0E-02	mg/kg/day	3.9E-03
				Toluene	3.3E-02	mg/m3	9.1E-05	mg/kg/day	NA	NA	NA	6.4E-03	mg/kg/day	1.4E+00	mg/kg/day	4.5E-03
				Trichloroethene	2.5E-04	mg/m3	7.1E-07	mg/kg/day	4.0E-01	1/(mg/kg/day)	2.8E-07	5.0E-05	mg/kg/day	1.1E-02	mg/kg/day	4.4E-03
				m,p-Xylene	3.4E-02	mg/m3	9.5E-05	mg/kg/day	NA	NA	NA	6.7E-03	mg/kg/day	2.9E-02	mg/kg/day	2.3E-01
				m-Xylene	1.3E-02	mg/m3	3.5E-05	mg/kg/day	NA	NA	NA	2.5E-03	mg/kg/day	2.9E-02	mg/kg/day	8.6E-02
				o-Xylene	1.3E-02	mg/m3	3.7E-05	mg/kg/day	NA	NA	NA	2.6E-03	mg/kg/day	2.9E-02	mg/kg/day	9.1E-02
				p,o-Xylene	1.2E-02	mg/m3	3.3E-05	mg/kg/day	NA	NA	NA	2.3E-03	mg/kg/day	2.9E-02	mg/kg/day	8.1E-02
				Xylene (Total)	9.1E-03	mg/m3	2.5E-05	mg/kg/day	NA	NA	NA	1.8E-03	mg/kg/day	2.9E-02	mg/kg/day	6.2E-02
				2,4-Dimethylphenol	5.3E-06	mg/m3	1.5E-08	mg/kg/day	NA	NA	NA	1.0E-06	mg/kg/day	NA	NA	NA
				2,4-Dinitrotoluene	3.8E-07	mg/m3	1.0E-09	mg/kg/day	NA	NA	NA	7.3E-08	mg/kg/day	NA	NA	NA
				2-Methylnaphthalene	4.2E-03	mg/m3	1.2E-05	mg/kg/day	NA	NA	NA	8.2E-04	mg/kg/day	NA	NA	NA
				4-Methylphenol	9.5E-06	mg/m3	2.6E-08	mg/kg/day	NA	NA	NA	1.9E-06	mg/kg/day	NA	NA	NA
				4-Nitroaniline	2.4E-06	mg/m3	6.7E-09	mg/kg/day	NA	NA	NA	4.7E-07	mg/kg/day	1.1E-03	mg/kg/day	4.1E-04
				Acenaphthene	2.3E-05	mg/m3	6.5E-08	mg/kg/day	NA	NA	NA	4.5E-06	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E-05	mg/m3	7.7E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	2.4E-08	5.4E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.7E-05	mg/m3	7.5E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	2.3E-07	5.3E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E-05	mg/m3	8.6E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	2.6E-08	6.0E-06	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.4E-05	mg/m3	4.0E-08	mg/kg/day	NA	NA	NA	2.8E-06	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-05	mg/m3	3.7E-08	mg/kg/day	3.1E-02	1/(mg/kg/day)	1.1E-09	2.6E-06	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	1.0E-03	mg/m3	2.8E-06	mg/kg/day	NA	NA	NA	2.0E-04	mg/kg/day	NA	NA	NA
				Carbazole	1.0E-05	mg/m3	2.9E-08	mg/kg/day	NA	NA	NA	2.0E-06	mg/kg/day	NA	NA	NA
				Chrysene	2.9E-05	mg/m3	8.2E-08	mg/kg/day	NA	NA	NA	5.7E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.4E-06	mg/m3	1.2E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	3.8E-08	8.6E-07	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E-05	mg/m3	5.5E-08	mg/kg/day	NA	NA	NA	3.8E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	6.8E-05	mg/m3	1.9E-07	mg/kg/day	NA	NA	NA	1.3E-05	mg/kg/day	NA	NA	NA
				Fluorene	2.2E-03	mg/m3	6.2E-06	mg/kg/day	NA	NA	NA	4.3E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.4E-05	mg/m3	4.0E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.2E-08	2.8E-06	mg/kg/day	NA	NA	NA
				Naphthalene	2.8E-01	mg/m3	7.9E-04	mg/kg/day	NA	NA	NA	5.5E-02	mg/kg/day	8.6E-04	mg/kg/day	6.5E+01
				Phenanthrene	1.5E-01	mg/m3	4.2E-04	mg/kg/day	NA	NA	NA	3.0E-02	mg/kg/day	NA	NA	NA
				Pyrene	5.2E-04	mg/m3	1.5E-06	mg/kg/day	NA	NA	NA	1.0E-04	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.4E-05					6.6E+01
		Exposure Point Total									1.4E-05					6.6E+01
	Exposure Medium Total										1.4E-05					6.6E+01
Soil Total											8.5E-04					1.5E+02

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Scenario Timeframe: Future
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Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater (Excavation)	Quanta Resources (Excavation)	Dermal	Arsenic	1.2E+01	ug/L	1.9E-09	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.8E-09	1.3E-07	mg/kg/day	3.0E-04	mg/kg/day	4.3E-04
				Iron	1.9E+05	ug/L	3.0E-05	mg/kg/day	NA	NA	NA	2.1E-03	mg/kg/day	3.0E-01	mg/kg/day	6.9E-03
				Lead	1.5E+01	ug/L	2.3E-09	mg/kg/day	NA	NA	NA	1.6E-07	mg/kg/day	NA	NA	NA
				alpha-BHC	4.8E-02	ug/L	5.2E-10	mg/kg/day	NA	NA	NA	3.7E-08	mg/kg/day	5.0E-04	mg/kg/day	7.3E-05
				delta-BHC	1.0E-01	ug/L	7.3E-10	mg/kg/day	1.8E+00	1/(mg/kg/day)	1.3E-09	5.1E-08	mg/kg/day	NA	NA	NA
				Heptachlor	1.6E-02	ug/L	8.6E-11	mg/kg/day	4.5E+00	1/(mg/kg/day)	3.9E-10	6.0E-09	mg/kg/day	5.0E-04	mg/kg/day	1.2E-05
				Benzene	1.9E+03	ug/L	4.9E-06	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.7E-07	3.4E-04	mg/kg/day	4.0E-03	mg/kg/day	8.5E-02
				Chloromethane	2.1E+01	ug/L	1.2E-08	mg/kg/day	NA	NA	NA	8.1E-07	mg/kg/day	NA	NA	NA
				Ethylbenzene	1.1E+03	ug/L	9.2E-06	mg/kg/day	NA	NA	NA	6.4E-04	mg/kg/day	1.0E-01	mg/kg/day	6.4E-03
				Isopropylbenzene (Cumene)	5.7E+01	ug/L	6.2E-07	mg/kg/day	NA	NA	NA	4.3E-05	mg/kg/day	4.0E-01	mg/kg/day	1.1E-04
				Toluene	1.2E+03	ug/L	6.3E-06	mg/kg/day	NA	NA	NA	4.4E-04	mg/kg/day	2.0E+00	mg/kg/day	2.2E-04
				m,p-Xylene	1.2E+03	ug/L	1.1E-05	mg/kg/day	NA	NA	NA	7.4E-04	mg/kg/day	2.0E-01	mg/kg/day	3.7E-03
				o-Xylene	7.0E+02	ug/L	5.6E-06	mg/kg/day	NA	NA	NA	3.9E-04	mg/kg/day	2.0E-01	mg/kg/day	1.9E-03
				Xylene (Total)	2.7E+03	ug/L	2.0E-05	mg/kg/day	NA	NA	NA	1.4E-03	mg/kg/day	2.0E-01	mg/kg/day	7.0E-03
				1,4-Dichlorobenzene	1.4E+00	ug/L	1.1E-08	mg/kg/day	2.4E-02	1/(mg/kg/day)	2.7E-10	8.0E-07	mg/kg/day	3.0E-02	mg/kg/day	2.7E-05
				2,4-Dimethylphenol	3.7E+03	ug/L	1.2E-05	mg/kg/day	NA	NA	NA	8.3E-04	mg/kg/day	2.0E-01	mg/kg/day	4.2E-03
				2-Methylnaphthalene	2.8E+03	ug/L	3.7E-05	mg/kg/day	NA	NA	NA	2.6E-03	mg/kg/day	4.0E-03	mg/kg/day	6.6E-01
				2-Methylphenol	2.0E+03	ug/L	3.2E-06	mg/kg/day	NA	NA	NA	2.3E-04	mg/kg/day	5.0E-01	mg/kg/day	4.5E-04
				3&4-Methylphenol	6.4E+01	ug/L	1.1E-07	mg/kg/day	NA	NA	NA	7.4E-06	mg/kg/day	5.0E-03	mg/kg/day	1.5E-03
				4-Methylphenol	2.8E+03	ug/L	4.6E-06	mg/kg/day	NA	NA	NA	3.2E-04	mg/kg/day	5.0E-03	mg/kg/day	6.4E-02
				Acenaphthene	1.0E+03	ug/L	2.2E-05	mg/kg/day	NA	NA	NA	1.6E-03	mg/kg/day	6.0E-01	mg/kg/day	2.6E-03
				Acenaphthylene	2.4E+02	ug/L	3.9E-06	mg/kg/day	NA	NA	NA	2.8E-04	mg/kg/day	6.0E-01	mg/kg/day	4.6E-04
				Anthracene	5.0E+01	ug/L	1.3E-06	mg/kg/day	NA	NA	NA	9.0E-05	mg/kg/day	3.0E+00	mg/kg/day	3.0E-05
				Benzo(a)anthracene	3.1E+02	ug/L	4.5E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.3E-05	3.2E-03	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.3E+02	ug/L	5.6E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	4.1E-04	3.9E-03	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.6E+02	ug/L	6.5E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.8E-05	4.6E-03	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.2E+02	ug/L	5.9E-05	mg/kg/day	NA	NA	NA	4.2E-03	mg/kg/day	3.0E-01	mg/kg/day	1.4E-02
				Benzo(k)fluoranthene	1.3E+02	ug/L	3.0E-05	mg/kg/day	7.3E-02	1/(mg/kg/day)	2.2E-06	2.1E-03	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	1.3E+02	ug/L	1.7E-06	mg/kg/day	NA	NA	NA	1.2E-04	mg/kg/day	5.0E-02	mg/kg/day	2.4E-03
				Carbazole	4.3E+02	ug/L	2.7E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	5.3E-08	1.9E-04	mg/kg/day	NA	NA	NA
				Chrysene	2.9E+02	ug/L	4.1E-05	mg/kg/day	7.3E-03	1/(mg/kg/day)	3.0E-07	2.9E-03	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	ug/L	8.8E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.5E-05	6.2E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	ug/L	3.6E-06	mg/kg/day	NA	NA	NA	2.6E-04	mg/kg/day	NA	NA	NA
				Fluoranthene	9.6E+02	ug/L	5.5E-05	mg/kg/day	NA	NA	NA	3.8E-03	mg/kg/day	4.0E-01	mg/kg/day	9.6E-03
				Fluorene	8.4E+02	ug/L	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	4.0E-01	mg/kg/day	2.8E-04
				Indeno(1,2,3-c,d)pyrene	1.1E+02	ug/L	2.9E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.1E-05	2.0E-03	mg/kg/day	NA	NA	NA
				Naphthalene	1.8E+04	ug/L	1.5E-04	mg/kg/day	NA	NA	NA	1.1E-02	mg/kg/day	2.0E-02	mg/kg/day	5.3E-01
				Phenanthrene	2.4E+03	ug/L	7.5E-05	mg/kg/day	NA	NA	NA	5.2E-03	mg/kg/day	3.0E+00	mg/kg/day	1.7E-03
				Phenol	1.2E+03	ug/L	9.8E-07	mg/kg/day	NA	NA	NA	6.8E-05	mg/kg/day	6.0E-01	mg/kg/day	1.1E-04
				Pyrene	8.0E+02	ug/L	4.3E-05	mg/kg/day	NA	NA	NA	3.0E-03	mg/kg/day	3.0E-01	mg/kg/day	9.9E-03
			Exp. Route Total								5.8E-04					1.4E+00
		Exposure Point Total									5.8E-04					1.4E+00
	Exposure Medium Total										5.8E-04					1.4E+00

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Ambient Air (Excavation)	Quanta Resources (Excavation)	Inhalation	Benzene	8.1E-02	mg/m3	2.7E-05	mg/kg/day	2.7E-02	1/(mg/kg/day)	7.4E-07	1.9E-03	mg/kg/day	8.6E-03	mg/kg/day	2.2E-01
				Chloromethane	6.8E-04	mg/m3	2.3E-07	mg/kg/day	NA	NA	NA	1.6E-05	mg/kg/day	2.6E-02	mg/kg/day	6.2E-04
				Ethylbenzene	4.0E-02	mg/m3	1.4E-05	mg/kg/day	NA	NA	NA	9.5E-04	mg/kg/day	2.9E-01	mg/kg/day	3.3E-03
				Isopropylbenzene (Cumene)	2.0E-03	mg/m3	6.6E-07	mg/kg/day	NA	NA	NA	4.6E-05	mg/kg/day	2.6E-02	mg/kg/day	1.8E-03
				Toluene	4.7E-02	mg/m3	1.6E-05	mg/kg/day	NA	NA	NA	1.1E-03	mg/kg/day	1.4E+00	mg/kg/day	7.7E-04
				m,p-Xylene	4.4E-02	mg/m3	1.5E-05	mg/kg/day	NA	NA	NA	1.0E-03	mg/kg/day	2.9E-02	mg/kg/day	3.6E-02
				o-Xylene	3.0E-02	mg/m3	1.0E-05	mg/kg/day	NA	NA	NA	7.1E-04	mg/kg/day	2.9E-02	mg/kg/day	2.5E-02
				Xylene (Total)	1.1E-01	mg/m3	3.8E-05	mg/kg/day	NA	NA	NA	2.7E-03	mg/kg/day	2.9E-02	mg/kg/day	9.4E-02
				1,4-Dichlorobenzene	5.1E-05	mg/m3	1.7E-08	mg/kg/day	2.2E-02	1/(mg/kg/day)	3.8E-10	1.2E-06	mg/kg/day	7.1E-01	mg/kg/day	1.7E-06
				2-Methylnaphthalene	2.7E-02	mg/m3	9.1E-06	mg/kg/day	NA	NA	NA	6.4E-04	mg/kg/day	NA	NA	NA
				Acenaphthene	2.9E-02	mg/m3	9.7E-06	mg/kg/day	NA	NA	NA	6.8E-04	mg/kg/day	NA	NA	NA
				Acenaphthylene	6.1E-03	mg/m3	2.0E-06	mg/kg/day	NA	NA	NA	1.4E-04	mg/kg/day	NA	NA	NA
				Anthracene	1.0E-03	mg/m3	3.5E-07	mg/kg/day	NA	NA	NA	2.4E-05	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	4.4E-03	mg/m3	1.5E-06	mg/kg/day	NA	NA	NA	1.0E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.4E-03	mg/m3	8.2E-07	mg/kg/day	NA	NA	NA	5.7E-05	mg/kg/day	NA	NA	NA
				Fluorene	2.2E-02	mg/m3	7.3E-06	mg/kg/day	NA	NA	NA	5.1E-04	mg/kg/day	NA	NA	NA
				Naphthalene	6.0E-01	mg/m3	2.0E-04	mg/kg/day	NA	NA	NA	1.4E-02	mg/kg/day	8.6E-04	mg/kg/day	1.7E+01
				Phenanthrene	6.2E-02	mg/m3	2.1E-05	mg/kg/day	NA	NA	NA	1.4E-03	mg/kg/day	NA	NA	NA
				Pyrene	4.8E-03	mg/m3	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	NA	NA	NA
			Exp. Route Total								7.4E-07					1.7E+01
		Exposure Point Total									7.4E-07					1.7E+01
	Exposure Medium Total										7.4E-07					1.7E+01
Groundwater Total											5.8E-04					1.8E+01
Receptor Total											1.4E-03					1.6E+02

NA = Not applicable.

TABLE 7.4.RME SUPPLEMENT A
CALCULATION OF DAEVENT
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Groundwater Concentration (CW) (ug/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t^* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm^2-event)	Eq
Arsenic	1.21E+01	1.0E-03	NA	NA	NA	NA	4.0	4.8E-08	1
Iron	1.93E+05	1.0E-03	NA	NA	NA	NA	4.0	7.7E-04	1
Lead	1.50E+01	1.0E-03	NA	NA	NA	NA	4.0	6.0E-08	1
alpha-BHC	4.80E-02	2.4E-02	1.6E-01	4.5E+00	1.1E+01	1.0E+00	4.0	1.4E-08	2
delta-BHC	1.00E-01	1.6E-02	1.1E-01	4.5E+00	1.1E+01	1.0E+00	4.0	1.9E-08	2
Heptachlor	1.60E-02	8.6E-03	6.4E-02	1.3E+01	3.2E+01	8.0E-01	4.0	2.2E-09	2
Benzene	1.92E+03	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	4.0	1.3E-04	3
Chloromethane	2.10E+01	3.3E-03	9.0E-03	2.0E-01	4.9E-01	1.0E+00	4.0	3.0E-07	3
Ethylbenzene	1.11E+03	4.9E-02	2.0E-01	4.2E-01	1.0E+00	1.0E+00	4.0	2.4E-04	3
Isopropylbenzene (Cumene)	5.74E+01	6.4E-02	2.7E-01	4.9E-01	1.2E+00	1.0E+00	4.0	1.6E-05	3
Toluene	1.21E+03	3.1E-02	1.1E-01	3.5E-01	8.4E-01	1.0E+00	4.0	1.6E-04	3
m,p-Xylene	1.21E+03	5.2E-02	2.1E-01	4.1E-01	9.9E-01	1.0E+00	4.0	2.7E-04	3
o-Xylene	7.04E+02	4.7E-02	1.9E-01	4.1E-01	9.9E-01	1.0E+00	4.0	1.4E-04	3
Xylene (Total)	2.66E+03	4.4E-02	1.8E-01	4.1E-01	9.9E-01	1.0E+00	4.0	5.2E-04	3
1,4-Dichlorobenzene	1.40E+00	4.2E-02	2.0E-01	7.1E-01	1.7E+00	1.0E+00	4.0	3.0E-07	3
2,4-Dimethylphenol	3.70E+03	1.7E-02	7.4E-02	5.1E-01	1.2E+00	1.0E+00	4.0	3.1E-04	3
2-Methylnaphthalene	2.84E+03	7.2E-02	3.3E-01	6.6E-01	1.6E+00	1.0E+00	4.0	9.7E-04	3
2-Methylphenol	1.95E+03	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	4.0	8.3E-05	3
3&4-Methylphenol	6.41E+01	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	4.0	2.7E-06	3
4-Methylphenol	2.78E+03	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	4.0	1.2E-04	3
Acenaphthene	1.00E+03	1.2E-01	5.7E-01	7.7E-01	1.8E+00	1.0E+00	4.0	5.8E-04	3
Acenaphthylene	2.36E+02	8.9E-02	4.2E-01	7.5E-01	1.8E+00	1.0E+00	4.0	1.0E-04	3
Anthracene	4.98E+01	1.2E-01	6.1E-01	1.0E+00	4.2E+00	1.0E+00	4.0	3.3E-05	2
Benzo(a)anthracene	3.13E+02	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	4.0	1.2E-03	2
Benzo(a)pyrene	2.29E+02	7.0E-01	4.3E+00	2.7E+00	1.2E+01	1.0E+00	4.0	1.5E-03	2
Benzo(b)fluoranthene	2.62E+02	7.0E-01	4.3E+00	2.8E+00	1.2E+01	1.0E+00	4.0	1.7E-03	2
Benzo(g,h,i)perylene	1.22E+02	1.2E+00	7.6E+00	3.7E+00	1.7E+01	1.0E+00	4.0	1.5E-03	2
Benzo(k)fluoranthene	1.30E+02	6.6E-01	4.0E+00	2.7E+00	1.2E+01	1.0E+00	4.0	7.8E-04	2
1,1'-Biphenyl	1.33E+02	6.6E-02	3.1E-01	7.7E-01	1.8E+00	1.0E+00	4.0	4.4E-05	3
Carbazole	4.35E+02	2.9E-02	1.4E-01	9.1E-01	2.2E+00	1.0E+00	4.0	6.9E-05	3
Chrysene	2.87E+02	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	4.0	1.1E-03	2
Dibenz(a,h)anthracene	2.33E+01	1.5E+00	9.7E+00	3.9E+00	1.8E+01	6.0E-01	4.0	2.3E-04	2
Dibenzofuran	2.22E+02	7.9E-02	4.0E-01	9.2E-01	2.2E+00	1.0E+00	4.0	9.4E-05	3
Fluoranthene	9.57E+02	2.2E-01	1.2E+00	1.5E+00	5.7E+00	1.0E+00	4.0	1.4E-03	2
Fluorene	8.42E+02	7.8E-03	4.1E-02	1.2E+00	2.8E+00	1.0E+00	4.0	4.1E-05	3
Indeno(1,2,3-c,d)pyrene	1.13E+02	1.0E+00	6.7E+00	3.8E+00	1.7E+01	6.0E-01	4.0	7.6E-04	2
Naphthalene	1.81E+04	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	4.0	3.9E-03	3
Phenanthrene	2.35E+03	1.4E-01	7.4E-01	1.1E+00	4.1E+00	1.0E+00	4.0	1.9E-03	2
Phenol	1.25E+03	4.3E-03	1.6E-02	3.6E-01	8.6E-01	1.0E+00	4.0	2.5E-05	3
Pyrene	7.97E+02	2.1E-01	1.1E+00	1.4E+00	5.5E+00	1.0E+00	4.0	1.1E-03	2

Inorganics: DAevent (mg/cm2-event) =

$$DA_{event} = Kp \times CW \times tevent \times 0.001\ mg/ug \times 0.001\ l/cm^3 \quad \text{(Eq 1)}$$

Organics: DAevent (mg/cm2-event) =

DA_{event} = $t_{event} < t^*$: DA_{event} (mg/cm^2-event) =

$$2 \times FA \times Kp \times Cw \times (\sqrt{(6 \times \tau \times t_{event}) / (3.1415)}) \times CF1 \times CF2 \quad \text{(Eq 2)}$$

$t_{event} > t^*$: DA_{event} (mg/cm^2-event) =

$$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau \times ((1 + 3B + 3B^2)/(1+B)^2)) \times CF1 \times CF2 \quad \text{(Eq 3)}$$

Notes:

NA - Not applicable

Permeability constants from EPA 2004, *Risk Assessment Guidence for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final)*. EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).

t^* - Time to reach steady-state

TABLE 7.4.RME SUPPLEMENT B
CALCULATION OF CONSTITUENT CONCENTRATIONS IN AIR FROM STANDING WATER
FUTURE CONSTRUCTION WORKER SCENARIO (QUANTA RESOURCES)
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	Concentration in Water (mg/L)	Concentration in Water (g/m^3) C_L	Dimensionless Henry's Law Constant (H') K_{eq}	Diffusion coefficient in air (cm^2/s) D_a	Diffusion coefficient in water (cm^2/s) D_w	Schmidt Number Sc_a	Effective diameter of source (m) d_s	Liquid-phase mass transfer coef (m/s) k_L	k_G (m/s)	1/K	K (m/s)	E (g/s)	Concentration in Air (mg/m^3) C_{air}
Benzene	1.92E+00	1.92E+00	2.28E-01	8.80E-02	9.80E-06	1.71E+00	1.13E+01	3.06E-06	2.57E-03	3.29E+05	3.04E-06	5.85E-04	8.12E-02
Chloromethane	2.10E-02	2.10E-02	9.84E-01	1.09E-01	6.50E-06	1.39E+00	1.13E+01	2.32E-06	2.97E-03	4.30E+05	2.32E-06	4.88E-06	6.78E-04
Ethylbenzene	1.11E+00	1.11E+00	3.23E-01	7.50E-02	7.80E-06	2.01E+00	1.13E+01	2.63E-06	2.31E-03	3.82E+05	2.62E-06	2.90E-04	4.03E-02
Isopropylbenzene (Cumene)	5.74E-02	5.74E-02	4.92E+01	7.50E-02	7.10E-06	2.01E+00	1.13E+01	2.47E-06	2.31E-03	4.06E+05	2.47E-06	1.42E-05	1.97E-03
Toluene	1.21E+00	1.21E+00	2.72E-01	8.70E-02	8.60E-06	1.73E+00	1.13E+01	2.80E-06	2.55E-03	3.58E+05	2.79E-06	3.38E-04	4.69E-02
m,p-Xylene	1.21E+00	1.21E+00	3.01E-01	7.00E-02	7.80E-06	2.15E+00	1.13E+01	2.63E-06	2.21E-03	3.82E+05	2.61E-06	3.16E-04	4.39E-02
o-Xylene	7.04E-01	7.04E-01	2.13E-01	8.70E-02	1.00E-05	1.73E+00	1.13E+01	3.10E-06	2.55E-03	3.25E+05	3.08E-06	2.17E-04	3.01E-02
Xylene (Total)	2.66E+00	2.66E+00	2.13E-01	8.70E-02	1.00E-05	1.73E+00	1.13E+01	3.10E-06	2.55E-03	3.25E+05	3.08E-06	8.21E-04	1.14E-01
1,4-Dichlorobenzene	1.40E-03	1.40E-03	9.96E-02	6.90E-02	7.90E-06	2.19E+00	1.13E+01	2.65E-06	2.19E-03	3.82E+05	2.62E-06	3.66E-07	5.09E-05
2-Methylnaphthalene	2.84E+00	2.84E+00	5.17E-04	5.22E-02	7.75E-06	2.89E+00	1.13E+01	2.61E-06	1.81E-03	1.45E+06	6.90E-07	1.96E-04	2.72E-02
Acenaphthene	1.00E+00	1.00E+00	6.36E-03	4.21E-02	7.69E-06	3.58E+00	1.13E+01	2.60E-06	1.57E-03	4.85E+05	2.06E-06	2.07E-04	2.88E-02
Acenaphthylene	2.36E-01	2.36E-01	4.74E-03	4.39E-02	7.07E-06	3.44E+00	1.13E+01	2.46E-06	1.61E-03	5.38E+05	1.86E-06	4.38E-05	6.09E-03
Anthracene	4.98E-02	4.98E-02	2.67E-03	3.24E-02	7.74E-06	4.66E+00	1.13E+01	2.61E-06	1.32E-03	6.68E+05	1.50E-06	7.46E-06	1.04E-03
1,1'-Biphenyl	1.33E-01	1.33E-01	1.23E-02	4.04E-02	8.20E-06	3.73E+00	1.13E+01	2.71E-06	1.53E-03	4.22E+05	2.37E-06	3.14E-05	4.37E-03
Dibenzofuran	2.22E-01	2.22E-01	5.33E-04	6.01E-02	1.00E-05	2.51E+00	1.13E+01	3.10E-06	1.99E-03	1.26E+06	7.91E-07	1.76E-05	2.44E-03
Fluorene	8.42E-01	8.42E-01	3.16E-03	6.08E-02	7.88E-06	2.48E+00	1.13E+01	2.64E-06	2.01E-03	5.36E+05	1.87E-06	1.57E-04	2.18E-02
Naphthalene	1.81E+01	1.81E+01	1.98E-02	5.90E-02	7.50E-06	2.56E+00	1.13E+01	2.56E-06	1.97E-03	4.17E+05	2.40E-06	4.35E-03	6.05E-01
Phenanthrene	2.35E+00	2.35E+00	5.40E-03	3.33E-02	7.47E-06	4.53E+00	1.13E+01	2.55E-06	1.34E-03	5.30E+05	1.89E-06	4.44E-04	6.16E-02
Pyrene	7.97E-01	7.97E-01	4.51E-04	2.72E-02	7.24E-06	5.55E+00	1.13E+01	2.50E-06	1.17E-03	2.29E+06	4.36E-07	3.48E-05	4.83E-03

Concentration in Air (C_{air}) = (mg/m^3)	$1000 * E/H * V_{wind} * L$
Emissions from Liquid surface (E) = (g/s)	$K * A * C_L$
Overall Mas Transfer Coefficient (K) = (m/s)	$1/K = 1/k_L + 1/k_G * K_{eq}$
Liquid-phase Mass Transfer Coefficient (k_L) = (m/s)	$2.78E\text{-}06 * (D_w/D_{ether})^{2/3}$
Gas-phase Mass Transfer Coefficient (k_G) = (m/g)	$4.82E\text{-}03 * U^{0.78} * Sc_G^{-0.67} * d_s^{-0.11}$
Effective Diameter of Source (d_s) = (m)	$(4 * A / \pi)^{0.5}$
Schmidt Number Calculation (Sc_G) =	$u_G/p_G * D_a$

Parameters		Values
C_L	Concentration in liquid phase (g/m^3)	chemical specific
K	overall mass transfer coefficient (m/s)	calculated
k_L	liquid-phase mass transfer coefficient (m/s)	calculated
k_G	gas-phase mass transfer coefficient (m/s)	calculated
K_{eq}	Equilibrium constant (Henry's Law constant)	chemical specific
D_{ether}	Diffusion coefficient of ether in water (cm^2/s)	8.50E-06
D_w	Diffusion coefficient in water (cm^2/s)	chemical specific
U	Windspeed (m/s)	1
A	Area of the source (m^2)	100
u_G	viscosity of air (g/cm-s)	1.81E-04
p_G	density of air (g/cm^3)	1.20E-03
D_a	Diffusion coefficient in air (cm^2/s)	chemical specific
H	Height of breathing zone (m)	2
Vwind	Average wind speed in breathing zone (m/s)	2.25
L	Length of breathing zone perpendicular to wind (m)	1.6

Chemical and physical properties from EPA Region 9 PRG Table (EPA, 10/2004).

TABLE 7.5.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Ingestion	Aluminum	7.6E+03	mg/kg	NA	NA	NA	NA	NA	1.0E-02	mg/kg/day	1.0E+00	mg/kg/day	1.0E-02
				Antimony	1.7E+02	mg/kg	NA	NA	NA	NA	NA	2.4E-04	mg/kg/day	4.0E-04	mg/kg/day	6.0E-01
				Arsenic	1.5E+03	mg/kg	NA	NA	NA	NA	NA	2.1E-03	mg/kg/day	3.0E-04	mg/kg/day	6.9E+00
				Cadmium	1.0E+01	mg/kg	NA	NA	NA	NA	NA	1.4E-05	mg/kg/day	1.0E-03	mg/kg/day	1.4E-02
				Chromium	1.9E+01	mg/kg	NA	NA	NA	NA	NA	2.6E-05	mg/kg/day	3.0E-03	mg/kg/day	8.8E-03
				Copper	6.2E+03	mg/kg	NA	NA	NA	NA	NA	8.5E-03	mg/kg/day	4.0E-02	mg/kg/day	2.1E-01
				Iron	2.6E+05	mg/kg	NA	NA	NA	NA	NA	3.5E-01	mg/kg/day	3.0E-01	mg/kg/day	1.2E+00
				Lead	1.3E+03	mg/kg	NA	NA	NA	NA	NA	1.7E-03	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	NA	NA	NA	NA	NA	4.2E-04	mg/kg/day	1.4E-01	mg/kg/day	3.0E-03
				Thallium	8.2E+00	mg/kg	NA	NA	NA	NA	NA	1.1E-05	mg/kg/day	6.6E-05	mg/kg/day	1.7E-01
				Vanadium	8.2E+01	mg/kg	NA	NA	NA	NA	NA	1.1E-04	mg/kg/day	1.0E-03	mg/kg/day	1.1E-01
				Zinc	3.8E+03	mg/kg	NA	NA	NA	NA	NA	5.2E-03	mg/kg/day	3.0E-01	mg/kg/day	1.7E-02
				Mercury	3.0E+01	mg/kg	NA	NA	NA	NA	NA	4.0E-05	mg/kg/day	3.0E-04	mg/kg/day	1.3E-01
				Heptachlor	3.5E-01	mg/kg	NA	NA	NA	NA	NA	4.8E-07	mg/kg/day	5.0E-04	mg/kg/day	9.6E-04
				Aroclor-1242	3.2E+00	mg/kg	NA	NA	NA	NA	NA	4.4E-06	mg/kg/day	2.0E-05	mg/kg/day	2.2E-01
				Aroclor-1260	1.6E+00	mg/kg	NA	NA	NA	NA	NA	2.2E-06	mg/kg/day	2.0E-05	mg/kg/day	1.1E-01
				Benzene	1.9E+01	mg/kg	NA	NA	NA	NA	NA	2.6E-05	mg/kg/day	4.0E-03	mg/kg/day	6.5E-03
				Tetrachloroethene	5.2E-01	mg/kg	NA	NA	NA	NA	NA	7.1E-07	mg/kg/day	1.0E-02	mg/kg/day	7.1E-05
				Trichloroethene	5.4E-01	mg/kg	NA	NA	NA	NA	NA	7.4E-07	mg/kg/day	3.0E-04	mg/kg/day	2.5E-03
				m-Xylene	4.5E+01	mg/kg	NA	NA	NA	NA	NA	6.2E-05	mg/kg/day	2.0E-01	mg/kg/day	3.1E-04
				p,o-Xylene	4.9E+01	mg/kg	NA	NA	NA	NA	NA	6.7E-05	mg/kg/day	2.0E-01	mg/kg/day	3.4E-04
				2-Methylnaphthalene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	4.1E-04	mg/kg/day	4.0E-03	mg/kg/day	1.0E-01
				4-Methylphenol	1.3E+02	mg/kg	NA	NA	NA	NA	NA	1.8E-04	mg/kg/day	5.0E-03	mg/kg/day	3.7E-02
				4-Nitroaniline	1.2E+01	mg/kg	NA	NA	NA	NA	NA	1.6E-05	mg/kg/day	3.0E-03	mg/kg/day	5.4E-03
				Acenaphthene	2.4E+02	mg/kg	NA	NA	NA	NA	NA	3.4E-04	mg/kg/day	6.0E-02	mg/kg/day	5.6E-03
				Benzo(a)anthracene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	4.5E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	4.1E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	NA	NA	NA	NA	NA	4.8E-04	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	2.2E-04	mg/kg/day	3.0E-02	mg/kg/day	7.5E-03
				Benzo(k)fluoranthene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	2.2E-04	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	NA	NA	NA	NA	NA	1.9E-04	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	NA	NA	NA	NA	NA	4.3E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	NA	NA	NA	NA	NA	8.2E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	NA	NA	NA	NA	NA	2.8E-04	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-03	mg/kg/day	4.0E-02	mg/kg/day	2.8E-02
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	4.6E-04	mg/kg/day	4.0E-02	mg/kg/day	1.1E-02
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	NA	NA	NA	NA	NA	2.3E-04	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-03	mg/kg/day	2.0E-02	mg/kg/day	6.3E-02
				Phenanthrene	1.1E+03	mg/kg	NA	NA	NA	NA	NA	1.5E-03	mg/kg/day	3.0E-01	mg/kg/day	4.8E-03
				Pyrene	6.4E+02	mg/kg	NA	NA	NA	NA	NA	8.7E-04	mg/kg/day	3.0E-02	mg/kg/day	2.9E-02
			Exp. Route Total								0.0E+00					1.0E+01

TABLE 7.5,RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Dermal	Aluminum	7.6E+03	mg/kg	NA	NA	NA	NA	NA	4.2E-05	mg/kg/day	1.0E+00	mg/kg/day	4.2E-05
				Antimony	1.7E+02	mg/kg	NA	NA	NA	NA	NA	9.5E-07	mg/kg/day	6.0E-05	mg/kg/day	1.6E-02
				Arsenic	1.5E+03	mg/kg	NA	NA	NA	NA	NA	2.5E-04	mg/kg/day	3.0E-04	mg/kg/day	8.2E-01
				Cadmium	1.0E+01	mg/kg	NA	NA	NA	NA	NA	5.5E-08	mg/kg/day	2.5E-05	mg/kg/day	2.2E-03
				Chromium	1.9E+01	mg/kg	NA	NA	NA	NA	NA	1.0E-07	mg/kg/day	7.5E-05	mg/kg/day	1.4E-03
				Copper	6.2E+03	mg/kg	NA	NA	NA	NA	NA	3.4E-05	mg/kg/day	4.0E-02	mg/kg/day	8.4E-04
				Iron	2.6E+05	mg/kg	NA	NA	NA	NA	NA	1.4E-03	mg/kg/day	3.0E-01	mg/kg/day	4.7E-03
				Lead	1.3E+03	mg/kg	NA	NA	NA	NA	NA	6.9E-06	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	NA	NA	NA	NA	NA	1.7E-06	mg/kg/day	5.6E-03	mg/kg/day	3.0E-04
				Thallium	8.2E+00	mg/kg	NA	NA	NA	NA	NA	4.5E-08	mg/kg/day	6.6E-05	mg/kg/day	6.8E-04
				Vanadium	8.2E+01	mg/kg	NA	NA	NA	NA	NA	4.5E-07	mg/kg/day	2.6E-05	mg/kg/day	1.7E-02
				Zinc	3.8E+03	mg/kg	NA	NA	NA	NA	NA	2.1E-05	mg/kg/day	3.0E-01	mg/kg/day	7.0E-05
				Mercury	3.0E+01	mg/kg	NA	NA	NA	NA	NA	1.6E-07	mg/kg/day	2.1E-05	mg/kg/day	7.7E-03
				Heptachlor	3.5E-01	mg/kg	NA	NA	NA	NA	NA	1.9E-08	mg/kg/day	5.0E-04	mg/kg/day	3.8E-05
				Aroclor-1242	3.2E+00	mg/kg	NA	NA	NA	NA	NA	2.4E-06	mg/kg/day	2.0E-05	mg/kg/day	1.2E-01
				Aroclor-1260	1.6E+00	mg/kg	NA	NA	NA	NA	NA	1.2E-06	mg/kg/day	2.0E-05	mg/kg/day	6.1E-02
				Benzene	1.9E+01	mg/kg	NA	NA	NA	NA	NA	1.0E-06	mg/kg/day	4.0E-03	mg/kg/day	2.6E-04
				Tetrachloroethene	5.2E-01	mg/kg	NA	NA	NA	NA	NA	2.8E-08	mg/kg/day	1.0E-02	mg/kg/day	2.8E-06
				Trichloroethene	5.4E-01	mg/kg	NA	NA	NA	NA	NA	3.0E-08	mg/kg/day	3.0E-04	mg/kg/day	9.8E-05
				m-Xylene	4.5E+01	mg/kg	NA	NA	NA	NA	NA	2.5E-06	mg/kg/day	2.0E-01	mg/kg/day	1.2E-05
				p,o-Xylene	4.9E+01	mg/kg	NA	NA	NA	NA	NA	2.7E-06	mg/kg/day	2.0E-01	mg/kg/day	1.3E-05
				2-Methylnaphthalene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	1.6E-05	mg/kg/day	4.0E-03	mg/kg/day	4.1E-03
				4-Methylphenol	1.3E+02	mg/kg	NA	NA	NA	NA	NA	7.3E-06	mg/kg/day	5.0E-03	mg/kg/day	1.5E-03
				4-Nitroaniline	1.2E+01	mg/kg	NA	NA	NA	NA	NA	6.4E-07	mg/kg/day	3.0E-03	mg/kg/day	2.1E-04
				Acenaphthene	2.4E+02	mg/kg	NA	NA	NA	NA	NA	1.7E-04	mg/kg/day	6.0E-02	mg/kg/day	2.9E-03
				Benzo(a)anthracene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	2.3E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	2.1E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	NA	NA	NA	NA	NA	2.5E-04	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	1.2E-04	mg/kg/day	3.0E-02	mg/kg/day	3.9E-03
				Benzo(k)fluoranthene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	1.2E-04	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	NA	NA	NA	NA	NA	7.6E-06	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	NA	NA	NA	NA	NA	2.3E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	NA	NA	NA	NA	NA	4.3E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	NA	NA	NA	NA	NA	5.8E-04	mg/kg/day	4.0E-02	mg/kg/day	1.5E-02
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	2.4E-04	mg/kg/day	4.0E-02	mg/kg/day	5.9E-03
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	NA	NA	NA	NA	NA	1.2E-04	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	NA	NA	NA	NA	NA	6.5E-04	mg/kg/day	2.0E-02	mg/kg/day	3.2E-02
				Phenanthrene	1.1E+03	mg/kg	NA	NA	NA	NA	NA	5.8E-05	mg/kg/day	3.0E-01	mg/kg/day	1.9E-04
				Pyrene	6.4E+02	mg/kg	NA	NA	NA	NA	NA	4.5E-04	mg/kg/day	3.0E-02	mg/kg/day	1.5E-02
			Exp. Route Total								0.0E+00					1.1E+00
		Exposure Point Total									0.0E+00					1.1E+01
	Exposure Medium Total										0.0E+00					1.1E+01

TABLE 7.5.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	9.2E-06	mg/m3	NA	NA	NA	NA	NA	2.5E-06	mg/kg/day	1.4E-03	mg/kg/day	1.8E-03
				Antimony	2.1E-07	mg/m3	NA	NA	NA	NA	NA	5.7E-08	mg/kg/day	NA	NA	NA
				Arsenic	1.8E-06	mg/m3	NA	NA	NA	NA	NA	5.0E-07	mg/kg/day	NA	NA	NA
				Cadmium	1.2E-08	mg/m3	NA	NA	NA	NA	NA	3.3E-09	mg/kg/day	NA	NA	NA
				Chromium	2.3E-08	mg/m3	NA	NA	NA	NA	NA	6.2E-09	mg/kg/day	2.9E-05	mg/kg/day	2.2E-04
				Copper	7.5E-06	mg/m3	NA	NA	NA	NA	NA	2.0E-06	mg/kg/day	NA	NA	NA
				Iron	3.1E-04	mg/m3	NA	NA	NA	NA	NA	8.5E-05	mg/kg/day	NA	NA	NA
				Lead	1.5E-06	mg/m3	NA	NA	NA	NA	NA	4.2E-07	mg/kg/day	NA	NA	NA
				Manganese	3.7E-07	mg/m3	NA	NA	NA	NA	NA	1.0E-07	mg/kg/day	1.4E-05	mg/kg/day	7.1E-03
				Thallium	9.9E-09	mg/m3	NA	NA	NA	NA	NA	2.7E-09	mg/kg/day	NA	NA	NA
				Vanadium	9.9E-08	mg/m3	NA	NA	NA	NA	NA	2.7E-08	mg/kg/day	NA	NA	NA
				Zinc	4.6E-06	mg/m3	NA	NA	NA	NA	NA	1.3E-06	mg/kg/day	NA	NA	NA
				Mercury	3.6E-08	mg/m3	NA	NA	NA	NA	NA	9.7E-09	mg/kg/day	NA	NA	NA
				Heptachlor	4.2E-10	mg/m3	NA	NA	NA	NA	NA	1.2E-10	mg/kg/day	NA	NA	NA
				Aroclor-1242	3.9E-09	mg/m3	NA	NA	NA	NA	NA	1.1E-09	mg/kg/day	NA	NA	NA
				Aroclor-1260	1.9E-09	mg/m3	NA	NA	NA	NA	NA	5.3E-10	mg/kg/day	NA	NA	NA
				Benzene	8.3E-03	mg/m3	NA	NA	NA	NA	NA	2.3E-03	mg/kg/day	8.6E-03	mg/kg/day	2.7E-01
				Tetrachloroethene	2.0E-04	mg/m3	NA	NA	NA	NA	NA	5.4E-05	mg/kg/day	1.0E-02	mg/kg/day	5.4E-03
				Trichloroethene	2.5E-04	mg/m3	NA	NA	NA	NA	NA	6.9E-05	mg/kg/day	1.1E-02	mg/kg/day	6.1E-03
				m-Xylene	1.3E-02	mg/m3	NA	NA	NA	NA	NA	3.4E-03	mg/kg/day	2.9E-02	mg/kg/day	1.2E-01
				p,o-Xylene	1.2E-02	mg/m3	NA	NA	NA	NA	NA	3.2E-03	mg/kg/day	2.9E-02	mg/kg/day	1.1E-01
				2-Methylnaphthalene	8.6E-04	mg/m3	NA	NA	NA	NA	NA	2.3E-04	mg/kg/day	NA	NA	NA
				4-Methylphenol	1.6E-07	mg/m3	NA	NA	NA	NA	NA	4.4E-08	mg/kg/day	NA	NA	NA
				4-Nitroaniline	1.4E-08	mg/m3	NA	NA	NA	NA	NA	3.9E-09	mg/kg/day	1.1E-03	mg/kg/day	3.4E-06
				Acenaphthene	3.0E-07	mg/m3	NA	NA	NA	NA	NA	8.1E-08	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	4.0E-07	mg/m3	NA	NA	NA	NA	NA	1.1E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-07	mg/m3	NA	NA	NA	NA	NA	9.9E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-07	mg/m3	NA	NA	NA	NA	NA	1.2E-07	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.0E-07	mg/m3	NA	NA	NA	NA	NA	5.4E-08	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	2.0E-07	mg/m3	NA	NA	NA	NA	NA	5.4E-08	mg/kg/day	NA	NA	NA
				Carbazole	1.7E-07	mg/m3	NA	NA	NA	NA	NA	4.6E-08	mg/kg/day	NA	NA	NA
				Chrysene	3.8E-07	mg/m3	NA	NA	NA	NA	NA	1.0E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	7.2E-08	mg/m3	NA	NA	NA	NA	NA	2.0E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.4E-07	mg/m3	NA	NA	NA	NA	NA	6.6E-08	mg/kg/day	NA	NA	NA
				Fluoranthene	9.9E-07	mg/m3	NA	NA	NA	NA	NA	2.7E-07	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	NA	NA	NA	NA	NA	4.1E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-07	mg/m3	NA	NA	NA	NA	NA	5.5E-08	mg/kg/day	NA	NA	NA
				Naphthalene	2.6E-02	mg/m3	NA	NA	NA	NA	NA	7.1E-03	mg/kg/day	8.6E-04	mg/kg/day	8.2E+00
				Phenanthrene	8.9E-02	mg/m3	NA	NA	NA	NA	NA	2.4E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	NA	NA	NA	NA	NA	7.0E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								0.0E+00					8.7E+00
		Exposure Point Total									0.0E+00					8.7E+00
	Exposure Medium Total										0.0E+00					8.7E+00
Soil Total											0.0E+00					2.0E+01
Receptor Total											0.0E+00					2.0E+01

NA = Not applicable.

TABLE 7.6.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Ingestion	Aluminum	7.6E+03	mg/kg	NA	NA	NA	NA	NA	9.8E-02	mg/kg/day	1.0E+00	mg/kg/day	9.8E-02
				Antimony	1.7E+02	mg/kg	NA	NA	NA	NA	NA	2.2E-03	mg/kg/day	4.0E-04	mg/kg/day	5.6E+00
				Arsenic	1.5E+03	mg/kg	NA	NA	NA	NA	NA	1.9E-02	mg/kg/day	3.0E-04	mg/kg/day	6.4E+01
				Cadmium	1.0E+01	mg/kg	NA	NA	NA	NA	NA	1.3E-04	mg/kg/day	1.0E-03	mg/kg/day	1.3E-01
				Chromium	1.9E+01	mg/kg	NA	NA	NA	NA	NA	2.4E-04	mg/kg/day	3.0E-03	mg/kg/day	8.0E-02
				Copper	6.2E+03	mg/kg	NA	NA	NA	NA	NA	7.9E-02	mg/kg/day	4.0E-02	mg/kg/day	2.0E+00
				Iron	2.6E+05	mg/kg	NA	NA	NA	NA	NA	3.3E+00	mg/kg/day	3.0E-01	mg/kg/day	1.1E+01
				Lead	1.3E+03	mg/kg	NA	NA	NA	NA	NA	1.6E-02	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	NA	NA	NA	NA	NA	3.9E-03	mg/kg/day	1.4E-01	mg/kg/day	2.8E-02
				Thallium	8.2E+00	mg/kg	NA	NA	NA	NA	NA	1.0E-04	mg/kg/day	6.6E-05	mg/kg/day	1.6E+00
				Vanadium	8.2E+01	mg/kg	NA	NA	NA	NA	NA	1.1E-03	mg/kg/day	1.0E-03	mg/kg/day	1.1E+00
				Zinc	3.8E+03	mg/kg	NA	NA	NA	NA	NA	4.9E-02	mg/kg/day	3.0E-01	mg/kg/day	1.6E-01
				Mercury	3.0E+01	mg/kg	NA	NA	NA	NA	NA	3.8E-04	mg/kg/day	3.0E-04	mg/kg/day	1.3E+00
				Heptachlor	3.5E-01	mg/kg	NA	NA	NA	NA	NA	4.5E-06	mg/kg/day	5.0E-04	mg/kg/day	8.9E-03
				Aroclor-1242	3.2E+00	mg/kg	NA	NA	NA	NA	NA	4.1E-05	mg/kg/day	2.0E-05	mg/kg/day	2.0E+00
				Aroclor-1260	1.6E+00	mg/kg	NA	NA	NA	NA	NA	2.0E-05	mg/kg/day	2.0E-05	mg/kg/day	1.0E+00
				Benzene	1.9E+01	mg/kg	NA	NA	NA	NA	NA	2.4E-04	mg/kg/day	4.0E-03	mg/kg/day	6.1E-02
				Tetrachloroethene	5.2E-01	mg/kg	NA	NA	NA	NA	NA	6.6E-06	mg/kg/day	1.0E-02	mg/kg/day	6.6E-04
				Trichloroethene	5.4E-01	mg/kg	NA	NA	NA	NA	NA	6.9E-06	mg/kg/day	3.0E-04	mg/kg/day	2.3E-02
				m-Xylene	4.5E+01	mg/kg	NA	NA	NA	NA	NA	5.8E-04	mg/kg/day	2.0E-01	mg/kg/day	2.9E-03
				p,o-Xylene	4.9E+01	mg/kg	NA	NA	NA	NA	NA	6.3E-04	mg/kg/day	2.0E-01	mg/kg/day	3.1E-03
				2-Methylnaphthalene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	3.8E-03	mg/kg/day	4.0E-03	mg/kg/day	9.6E-01
				4-Methylphenol	1.3E+02	mg/kg	NA	NA	NA	NA	NA	1.7E-03	mg/kg/day	5.0E-03	mg/kg/day	3.4E-01
				4-Nitroaniline	1.2E+01	mg/kg	NA	NA	NA	NA	NA	1.5E-04	mg/kg/day	3.0E-03	mg/kg/day	5.0E-02
				Acenaphthene	2.4E+02	mg/kg	NA	NA	NA	NA	NA	3.1E-03	mg/kg/day	6.0E-02	mg/kg/day	5.2E-02
				Benzo(a)anthracene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	4.2E-03	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	3.8E-03	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	NA	NA	NA	NA	NA	4.5E-03	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	2.1E-03	mg/kg/day	3.0E-02	mg/kg/day	7.0E-02
				Benzo(k)fluoranthene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	2.1E-03	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	NA	NA	NA	NA	NA	1.8E-03	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	NA	NA	NA	NA	NA	4.1E-03	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	NA	NA	NA	NA	NA	7.7E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	NA	NA	NA	NA	NA	2.6E-03	mg/kg/day	NA	NA	NA
				Fluoranthene	6.2E+02	mg/kg	NA	NA	NA	NA	NA	1.0E-02	mg/kg/day	4.0E-02	mg/kg/day	2.6E-01
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	4.2E-03	mg/kg/day	4.0E-02	mg/kg/day	1.1E-01
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	NA	NA	NA	NA	NA	2.1E-03	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	NA	NA	NA	NA	NA	1.2E-02	mg/kg/day	2.0E-02	mg/kg/day	5.8E-01
				Phenanthrene	1.1E+03	mg/kg	NA	NA	NA	NA	NA	1.4E-02	mg/kg/day	3.0E-01	mg/kg/day	4.5E-02
				Pyrene	6.4E+02	mg/kg	NA	NA	NA	NA	NA	8.1E-03	mg/kg/day	3.0E-02	mg/kg/day	2.7E-01
			Exp. Route Total								0.0E+00					9.3E+01

TABLE 7.6.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Dermal	Aluminum	7.6E+03	mg/kg	NA	NA	NA	NA	NA	2.7E-04	mg/kg/day	1.0E+00	mg/kg/day	2.7E-04
				Antimony	1.7E+02	mg/kg	NA	NA	NA	NA	NA	6.2E-06	mg/kg/day	6.0E-05	mg/kg/day	1.0E-01
				Arsenic	1.5E+03	mg/kg	NA	NA	NA	NA	NA	1.6E-03	mg/kg/day	3.0E-04	mg/kg/day	5.4E+00
				Cadmium	1.0E+01	mg/kg	NA	NA	NA	NA	NA	3.6E-07	mg/kg/day	2.5E-05	mg/kg/day	1.4E-02
				Chromium	1.9E+01	mg/kg	NA	NA	NA	NA	NA	6.7E-07	mg/kg/day	7.5E-05	mg/kg/day	8.9E-03
				Copper	6.2E+03	mg/kg	NA	NA	NA	NA	NA	2.2E-04	mg/kg/day	4.0E-02	mg/kg/day	5.5E-03
				Iron	2.6E+05	mg/kg	NA	NA	NA	NA	NA	9.2E-03	mg/kg/day	3.0E-01	mg/kg/day	3.1E-02
				Lead	1.3E+03	mg/kg	NA	NA	NA	NA	NA	4.6E-05	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-05	mg/kg/day	5.6E-03	mg/kg/day	2.0E-03
				Thallium	8.2E+00	mg/kg	NA	NA	NA	NA	NA	2.9E-07	mg/kg/day	6.6E-05	mg/kg/day	4.4E-03
				Vanadium	8.2E+01	mg/kg	NA	NA	NA	NA	NA	2.9E-06	mg/kg/day	2.6E-05	mg/kg/day	1.1E-01
				Zinc	3.8E+03	mg/kg	NA	NA	NA	NA	NA	1.4E-04	mg/kg/day	3.0E-01	mg/kg/day	4.6E-04
				Mercury	3.0E+01	mg/kg	NA	NA	NA	NA	NA	1.1E-06	mg/kg/day	2.1E-05	mg/kg/day	5.0E-02
				Heptachlor	3.5E-01	mg/kg	NA	NA	NA	NA	NA	1.3E-07	mg/kg/day	5.0E-04	mg/kg/day	2.5E-04
				Aroclor-1242	3.2E+00	mg/kg	NA	NA	NA	NA	NA	1.6E-05	mg/kg/day	2.0E-05	mg/kg/day	8.0E-01
				Aroclor-1260	1.6E+00	mg/kg	NA	NA	NA	NA	NA	8.0E-06	mg/kg/day	2.0E-05	mg/kg/day	4.0E-01
				Benzene	1.9E+01	mg/kg	NA	NA	NA	NA	NA	6.8E-06	mg/kg/day	4.0E-03	mg/kg/day	1.7E-03
				Tetrachloroethene	5.2E-01	mg/kg	NA	NA	NA	NA	NA	1.9E-07	mg/kg/day	1.0E-02	mg/kg/day	1.9E-05
				Trichloroethene	5.4E-01	mg/kg	NA	NA	NA	NA	NA	1.9E-07	mg/kg/day	3.0E-04	mg/kg/day	6.4E-04
				m-Xylene	4.5E+01	mg/kg	NA	NA	NA	NA	NA	1.6E-05	mg/kg/day	2.0E-01	mg/kg/day	8.1E-05
				p,o-Xylene	4.9E+01	mg/kg	NA	NA	NA	NA	NA	1.8E-05	mg/kg/day	2.0E-01	mg/kg/day	8.8E-05
				2-Methylnaphthalene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-04	mg/kg/day	4.0E-03	mg/kg/day	2.7E-02
				4-Methylphenol	1.3E+02	mg/kg	NA	NA	NA	NA	NA	4.8E-05	mg/kg/day	5.0E-03	mg/kg/day	9.5E-03
				4-Nitroaniline	1.2E+01	mg/kg	NA	NA	NA	NA	NA	4.2E-06	mg/kg/day	3.0E-03	mg/kg/day	1.4E-03
				Acenaphthene	2.4E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-03	mg/kg/day	6.0E-02	mg/kg/day	1.9E-02
				Benzo(a)anthracene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	1.5E-03	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-03	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	NA	NA	NA	NA	NA	1.6E-03	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	7.6E-04	mg/kg/day	3.0E-02	mg/kg/day	2.5E-02
				Benzo(k)fluoranthene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	7.6E-04	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	NA	NA	NA	NA	NA	5.0E-05	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	NA	NA	NA	NA	NA	1.5E-03	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	NA	NA	NA	NA	NA	2.8E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	NA	NA	NA	NA	NA	7.2E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	NA	NA	NA	NA	NA	3.8E-03	mg/kg/day	4.0E-02	mg/kg/day	9.5E-02
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	1.5E-03	mg/kg/day	4.0E-02	mg/kg/day	3.9E-02
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	NA	NA	NA	NA	NA	7.8E-04	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	NA	NA	NA	NA	NA	4.3E-03	mg/kg/day	2.0E-02	mg/kg/day	2.1E-01
				Phenanthrene	1.1E+03	mg/kg	NA	NA	NA	NA	NA	3.8E-04	mg/kg/day	3.0E-01	mg/kg/day	1.3E-03
				Pyrene	6.4E+02	mg/kg	NA	NA	NA	NA	NA	3.0E-03	mg/kg/day	3.0E-02	mg/kg/day	9.9E-02
			Exp. Route Total								0.0E+00					7.5E+00
		Exposure Point Total									0.0E+00					1.0E+02
	Exposure Medium Total										0.0E+00					1.0E+02

TABLE 7.6.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	9.2E-06	mg/m3	NA	NA	NA	NA	NA	5.9E-06	mg/kg/day	1.4E-03	mg/kg/day	4.2E-03
				Antimony	2.1E-07	mg/m3	NA	NA	NA	NA	NA	1.4E-07	mg/kg/day	NA	NA	NA
				Arsenic	1.8E-06	mg/m3	NA	NA	NA	NA	NA	1.2E-06	mg/kg/day	NA	NA	NA
				Cadmium	1.2E-08	mg/m3	NA	NA	NA	NA	NA	7.9E-09	mg/kg/day	NA	NA	NA
				Chromium	2.3E-08	mg/m3	NA	NA	NA	NA	NA	1.5E-08	mg/kg/day	2.9E-05	mg/kg/day	5.1E-04
				Copper	7.5E-06	mg/m3	NA	NA	NA	NA	NA	4.8E-06	mg/kg/day	NA	NA	NA
				Iron	3.1E-04	mg/m3	NA	NA	NA	NA	NA	2.0E-04	mg/kg/day	NA	NA	NA
				Lead	1.5E-06	mg/m3	NA	NA	NA	NA	NA	9.9E-07	mg/kg/day	NA	NA	NA
				Manganese	3.7E-07	mg/m3	NA	NA	NA	NA	NA	2.4E-07	mg/kg/day	1.4E-05	mg/kg/day	1.7E-02
				Thallium	9.9E-09	mg/m3	NA	NA	NA	NA	NA	6.4E-09	mg/kg/day	NA	NA	NA
				Vanadium	9.9E-08	mg/m3	NA	NA	NA	NA	NA	6.4E-08	mg/kg/day	NA	NA	NA
				Zinc	4.6E-06	mg/m3	NA	NA	NA	NA	NA	3.0E-06	mg/kg/day	NA	NA	NA
				Mercury	3.6E-08	mg/m3	NA	NA	NA	NA	NA	2.3E-08	mg/kg/day	NA	NA	NA
				Heptachlor	4.2E-10	mg/m3	NA	NA	NA	NA	NA	2.7E-10	mg/kg/day	NA	NA	NA
				Aroclor-1242	3.9E-09	mg/m3	NA	NA	NA	NA	NA	2.5E-09	mg/kg/day	NA	NA	NA
				Aroclor-1260	1.9E-09	mg/m3	NA	NA	NA	NA	NA	1.2E-09	mg/kg/day	NA	NA	NA
				Benzene	8.3E-03	mg/m3	NA	NA	NA	NA	NA	5.4E-03	mg/kg/day	8.6E-03	mg/kg/day	6.3E-01
				Tetrachloroethene	2.0E-04	mg/m3	NA	NA	NA	NA	NA	1.3E-04	mg/kg/day	1.0E-02	mg/kg/day	1.3E-02
				Trichloroethene	2.5E-04	mg/m3	NA	NA	NA	NA	NA	1.6E-04	mg/kg/day	1.1E-02	mg/kg/day	1.4E-02
				m-Xylene	1.3E-02	mg/m3	NA	NA	NA	NA	NA	8.1E-03	mg/kg/day	2.9E-02	mg/kg/day	2.8E-01
				p,o-Xylene	1.2E-02	mg/m3	NA	NA	NA	NA	NA	7.6E-03	mg/kg/day	2.9E-02	mg/kg/day	2.7E-01
				2-Methylnaphthalene	8.6E-04	mg/m3	NA	NA	NA	NA	NA	5.5E-04	mg/kg/day	NA	NA	NA
				4-Methylphenol	1.6E-07	mg/m3	NA	NA	NA	NA	NA	1.0E-07	mg/kg/day	NA	NA	NA
				4-Nitroaniline	1.4E-08	mg/m3	NA	NA	NA	NA	NA	9.2E-09	mg/kg/day	1.1E-03	mg/kg/day	8.0E-06
				Acenaphthene	3.0E-07	mg/m3	NA	NA	NA	NA	NA	1.9E-07	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	4.0E-07	mg/m3	NA	NA	NA	NA	NA	2.6E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-07	mg/m3	NA	NA	NA	NA	NA	2.3E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-07	mg/m3	NA	NA	NA	NA	NA	2.7E-07	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.0E-07	mg/m3	NA	NA	NA	NA	NA	1.3E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	2.0E-07	mg/m3	NA	NA	NA	NA	NA	1.3E-07	mg/kg/day	NA	NA	NA
				Carbazole	1.7E-07	mg/m3	NA	NA	NA	NA	NA	1.1E-07	mg/kg/day	NA	NA	NA
				Chrysene	3.8E-07	mg/m3	NA	NA	NA	NA	NA	2.5E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	7.2E-08	mg/m3	NA	NA	NA	NA	NA	4.7E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.4E-07	mg/m3	NA	NA	NA	NA	NA	1.6E-07	mg/kg/day	NA	NA	NA
				Fluoranthene	9.9E-07	mg/m3	NA	NA	NA	NA	NA	6.4E-07	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	NA	NA	NA	NA	NA	9.6E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-07	mg/m3	NA	NA	NA	NA	NA	1.3E-07	mg/kg/day	NA	NA	NA
				Naphthalene	2.6E-02	mg/m3	NA	NA	NA	NA	NA	1.7E-02	mg/kg/day	8.6E-04	mg/kg/day	1.9E+01
				Phenanthrene	8.9E-02	mg/m3	NA	NA	NA	NA	NA	5.8E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	NA	NA	NA	NA	NA	1.6E-04	mg/kg/day	NA	NA	NA
			Exp. Route Total								0.0E+00					2.1E+01
		Exposure Point Total									0.0E+00					2.1E+01
	Exposure Medium Total										0.0E+00					2.1E+01
Soil Total											0.0E+00					1.2E+02
Receptor Total											0.0E+00					1.2E+02

NA = Not applicable.

TABLE 7.7.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Ingestion	Aluminum	7.6E+03	mg/kg	1.2E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Antimony	1.7E+02	mg/kg	2.7E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	1.5E+03	mg/kg	2.4E-03	mg/kg/day	1.5E+00	1/(mg/kg/day)	3.5E-03	NA	NA	NA	NA	NA
				Cadmium	1.0E+01	mg/kg	1.6E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Chromium	1.9E+01	mg/kg	2.9E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Copper	6.2E+03	mg/kg	9.7E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	2.6E+05	mg/kg	4.0E-01	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	1.3E+03	mg/kg	2.0E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	3.1E+02	mg/kg	4.8E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	8.2E+00	mg/kg	1.3E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	8.2E+01	mg/kg	1.3E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Zinc	3.8E+03	mg/kg	6.0E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	3.0E+01	mg/kg	4.6E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Heptachlor	3.5E-01	mg/kg	5.5E-07	mg/kg/day	4.5E+00	1/(mg/kg/day)	2.5E-06	NA	NA	NA	NA	NA
				Aroclor-1242	3.2E+00	mg/kg	5.0E-06	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.0E-05	NA	NA	NA	NA	NA
				Aroclor-1260	1.6E+00	mg/kg	2.5E-06	mg/kg/day	2.0E+00	1/(mg/kg/day)	5.0E-06	NA	NA	NA	NA	NA
				Benzene	1.9E+01	mg/kg	3.0E-05	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.6E-06	NA	NA	NA	NA	NA
				Tetrachloroethene	5.2E-01	mg/kg	8.1E-07	mg/kg/day	5.4E-01	1/(mg/kg/day)	4.4E-07	NA	NA	NA	NA	NA
				Trichloroethene	5.4E-01	mg/kg	8.5E-07	mg/kg/day	4.0E-01	1/(mg/kg/day)	3.4E-07	NA	NA	NA	NA	NA
				m-Xylene	4.5E+01	mg/kg	7.0E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				p,o-Xylene	4.9E+01	mg/kg	7.7E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	3.0E+02	mg/kg	4.7E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Methylphenol	1.3E+02	mg/kg	2.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Nitroaniline	1.2E+01	mg/kg	1.8E-05	mg/kg/day	2.1E-02	1/(mg/kg/day)	3.9E-07	NA	NA	NA	NA	NA
				Acenaphthene	2.4E+02	mg/kg	3.8E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	3.3E+02	mg/kg	5.1E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.1E-03	NA	NA	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	4.7E-04	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.9E-02	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	5.5E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.3E-03	NA	NA	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	2.6E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+02	mg/kg	2.6E-04	mg/kg/day	7.3E-02	1/(mg/kg/day)	1.1E-04	NA	NA	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	2.2E-04	mg/kg/day	2.0E-02	1/(mg/kg/day)	4.3E-06	NA	NA	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	5.0E-04	mg/kg/day	7.3E-03	1/(mg/kg/day)	2.1E-05	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	9.4E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.9E-03	NA	NA	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	3.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	1.3E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	3.3E+02	mg/kg	5.2E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	2.6E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.1E-03	NA	NA	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	1.4E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	1.1E+03	mg/kg	1.7E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	6.4E+02	mg/kg	1.0E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								3.3E-02					0.0E+00

TABLE 7.7.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Dermal	Aluminum	7.6E+03	mg/kg	3.8E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Antimony	1.7E+02	mg/kg	8.6E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	1.5E+03	mg/kg	2.2E-04	mg/kg/day	1.5E+00	1/(mg/kg/day)	3.4E-04	NA	NA	NA	NA	NA
				Cadmium	1.0E+01	mg/kg	5.0E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Chromium	1.9E+01	mg/kg	9.3E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Copper	6.2E+03	mg/kg	3.0E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	2.6E+05	mg/kg	1.3E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	1.3E+03	mg/kg	6.3E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	3.1E+02	mg/kg	1.5E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	8.2E+00	mg/kg	4.1E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	8.2E+01	mg/kg	4.1E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Zinc	3.8E+03	mg/kg	1.9E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	3.0E+01	mg/kg	1.5E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Heptachlor	3.5E-01	mg/kg	1.7E-08	mg/kg/day	4.5E+00	1/(mg/kg/day)	7.8E-08	NA	NA	NA	NA	NA
				Aroclor-1242	3.2E+00	mg/kg	2.2E-06	mg/kg/day	2.0E+00	1/(mg/kg/day)	4.4E-06	NA	NA	NA	NA	NA
				Aroclor-1260	1.6E+00	mg/kg	1.1E-06	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.2E-06	NA	NA	NA	NA	NA
				Benzene	1.9E+01	mg/kg	9.4E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	5.2E-08	NA	NA	NA	NA	NA
				Tetrachloroethene	5.2E-01	mg/kg	2.6E-08	mg/kg/day	5.4E-01	1/(mg/kg/day)	1.4E-08	NA	NA	NA	NA	NA
				Trichloroethene	5.4E-01	mg/kg	2.7E-08	mg/kg/day	4.0E-01	1/(mg/kg/day)	1.1E-08	NA	NA	NA	NA	NA
				m-Xylene	4.5E+01	mg/kg	2.2E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				p,o-Xylene	4.9E+01	mg/kg	2.4E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	3.0E+02	mg/kg	1.5E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Methylphenol	1.3E+02	mg/kg	6.6E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Nitroaniline	1.2E+01	mg/kg	5.8E-07	mg/kg/day	2.1E-02	1/(mg/kg/day)	1.2E-08	NA	NA	NA	NA	NA
				Acenaphthene	2.4E+02	mg/kg	1.6E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	3.3E+02	mg/kg	2.1E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.9E-04	NA	NA	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	1.9E-04	mg/kg/day	7.3E+00	1/(mg/kg/day)	8.1E-03	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	2.3E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	9.6E-04	NA	NA	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	1.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+02	mg/kg	1.1E-04	mg/kg/day	7.3E-02	1/(mg/kg/day)	4.4E-05	NA	NA	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	6.9E-05	mg/kg/day	2.0E-02	1/(mg/kg/day)	1.4E-07	NA	NA	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	2.0E-04	mg/kg/day	7.3E-03	1/(mg/kg/day)	8.6E-06	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	3.8E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.6E-03	NA	NA	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	9.9E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	5.3E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	3.3E+02	mg/kg	2.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	1.1E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.5E-04	NA	NA	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	5.9E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	1.1E+03	mg/kg	5.2E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	6.4E+02	mg/kg	4.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								1.2E-02					0.0E+00
		Exposure Point Total									4.5E-02					0.0E+00
	Exposure Medium Total										4.5E-02					0.0E+00

TABLE 7.7.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	9.2E-06	mg/m3	1.4E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Antimony	2.1E-07	mg/m3	3.1E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	1.8E-06	mg/m3	2.7E-07	mg/kg/day	1.5E+01	1/(mg/kg/day)	4.1E-06	NA	NA	NA	NA	NA
				Cadmium	1.2E-08	mg/m3	1.8E-09	mg/kg/day	6.3E+00	1/(mg/kg/day)	1.1E-08	NA	NA	NA	NA	NA
				Chromium	2.3E-08	mg/m3	3.4E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	1.4E-07	NA	NA	NA	NA	NA
				Copper	7.5E-06	mg/m3	1.1E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	3.1E-04	mg/m3	4.6E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	1.5E-06	mg/m3	2.3E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	3.7E-07	mg/m3	5.5E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	9.9E-09	mg/m3	1.5E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	9.9E-08	mg/m3	1.5E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Zinc	4.6E-06	mg/m3	6.9E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	3.6E-08	mg/m3	5.3E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Heptachlor	4.2E-10	mg/m3	6.3E-11	mg/kg/day	4.6E+00	1/(mg/kg/day)	2.9E-10	NA	NA	NA	NA	NA
				Aroclor-1242	3.9E-09	mg/m3	5.8E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	2.0E-10	NA	NA	NA	NA	NA
				Aroclor-1260	1.9E-09	mg/m3	2.9E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	1.0E-10	NA	NA	NA	NA	NA
				Benzene	8.3E-03	mg/m3	1.2E-03	mg/kg/day	2.7E-02	1/(mg/kg/day)	3.4E-05	NA	NA	NA	NA	NA
				Tetrachloroethene	2.0E-04	mg/m3	3.0E-05	mg/kg/day	2.1E-02	1/(mg/kg/day)	6.1E-07	NA	NA	NA	NA	NA
				Trichloroethene	2.5E-04	mg/m3	3.8E-05	mg/kg/day	4.0E-01	1/(mg/kg/day)	1.5E-05	NA	NA	NA	NA	NA
				m-Xylene	1.3E-02	mg/m3	1.9E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				p,o-Xylene	1.2E-02	mg/m3	1.6E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	8.6E-04	mg/m3	1.3E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Methylphenol	1.6E-07	mg/m3	2.4E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Nitroaniline	1.4E-08	mg/m3	2.1E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Acenaphthene	3.0E-07	mg/m3	4.4E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	4.0E-07	mg/m3	5.9E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	3.0E-08	NA	NA	NA	NA	NA
				Benzo(a)pyrene	3.6E-07	mg/m3	5.4E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	2.8E-07	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-07	mg/m3	6.3E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	3.3E-08	NA	NA	NA	NA	NA
				Benzo(g,h,i)perylene	2.0E-07	mg/m3	2.9E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	2.0E-07	mg/m3	2.9E-08	mg/kg/day	3.1E-02	1/(mg/kg/day)	1.5E-09	NA	NA	NA	NA	NA
				Carbazole	1.7E-07	mg/m3	2.5E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Chrysene	3.8E-07	mg/m3	5.7E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	7.2E-08	mg/m3	1.1E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	5.5E-08	NA	NA	NA	NA	NA
				Dibenzofuran	2.4E-07	mg/m3	3.6E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	9.9E-07	mg/m3	1.5E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	2.2E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-07	mg/m3	3.0E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.5E-08	NA	NA	NA	NA	NA
				Naphthalene	2.6E-02	mg/m3	3.8E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	8.9E-02	mg/m3	1.3E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	3.8E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								5.4E-05					0.0E+00
		Exposure Point Total									5.4E-05					0.0E+00
	Exposure Medium Total										5.4E-05					0.0E+00
Soil Total											4.5E-02					0.0E+00
Receptor Total											4.5E-02					0.0E+00

NA = Not applicable.

TABLE 7.8.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.3E+04	mg/kg	2.3E-03	mg/kg/day	NA	NA	NA	6.3E-03	mg/kg/day	1.0E+00	mg/kg/day	6.3E-03
				Arsenic	1.9E+01	mg/kg	3.2E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	4.9E-06	9.1E-06	mg/kg/day	3.0E-04	mg/kg/day	3.0E-02
				Chromium	4.7E+01	mg/kg	8.2E-06	mg/kg/day	NA	NA	NA	2.3E-05	mg/kg/day	3.0E-03	mg/kg/day	7.7E-03
				Iron	2.3E+04	mg/kg	4.1E-03	mg/kg/day	NA	NA	NA	1.1E-02	mg/kg/day	3.0E-01	mg/kg/day	3.8E-02
				Lead	3.0E+02	mg/kg	5.2E-05	mg/kg/day	NA	NA	NA	1.4E-04	mg/kg/day	NA	NA	NA
				Manganese	3.6E+02	mg/kg	6.3E-05	mg/kg/day	NA	NA	NA	1.8E-04	mg/kg/day	1.4E-01	mg/kg/day	1.3E-03
				Thallium	4.8E-01	mg/kg	8.4E-08	mg/kg/day	NA	NA	NA	2.4E-07	mg/kg/day	6.6E-05	mg/kg/day	3.6E-03
				Vanadium	4.3E+01	mg/kg	7.5E-06	mg/kg/day	NA	NA	NA	2.1E-05	mg/kg/day	1.0E-03	mg/kg/day	2.1E-02
				Mercury	7.2E-01	mg/kg	1.3E-07	mg/kg/day	NA	NA	NA	3.5E-07	mg/kg/day	3.0E-04	mg/kg/day	1.2E-03
				Benzo(a)anthracene	3.2E+00	mg/kg	5.5E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.0E-07	1.6E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+00	mg/kg	5.2E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.8E-06	1.5E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.9E+00	mg/kg	5.0E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.7E-07	1.4E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.9E-01	mg/kg	1.2E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	8.8E-07	3.4E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.7E+00	mg/kg	2.9E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.1E-07	8.2E-07	mg/kg/day	NA	NA	NA
				Naphthalene	6.8E+00	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	3.3E-06	mg/kg/day	2.0E-02	mg/kg/day	1.7E-04
			Exp. Route Total								1.1E-05					1.1E-01

TABLE 7.8.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.3E+04	mg/kg	3.0E-05	mg/kg/day	NA	NA	NA	8.4E-05	mg/kg/day	1.0E+00	mg/kg/day	8.4E-05
				Arsenic	1.9E+01	mg/kg	1.3E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.9E-06	3.6E-06	mg/kg/day	3.0E-04	mg/kg/day	1.2E-02
				Chromium	4.7E+01	mg/kg	1.1E-07	mg/kg/day	NA	NA	NA	3.0E-07	mg/kg/day	7.5E-05	mg/kg/day	4.1E-03
				Iron	2.3E+04	mg/kg	5.4E-05	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	3.0E-01	mg/kg/day	5.0E-04
				Lead	3.0E+02	mg/kg	6.8E-07	mg/kg/day	NA	NA	NA	1.9E-06	mg/kg/day	NA	NA	NA
				Manganese	3.6E+02	mg/kg	8.3E-07	mg/kg/day	NA	NA	NA	2.3E-06	mg/kg/day	5.6E-03	mg/kg/day	4.1E-04
				Thallium	4.8E-01	mg/kg	1.1E-09	mg/kg/day	NA	NA	NA	3.1E-09	mg/kg/day	6.6E-05	mg/kg/day	4.7E-05
				Vanadium	4.3E+01	mg/kg	9.9E-08	mg/kg/day	NA	NA	NA	2.8E-07	mg/kg/day	2.6E-05	mg/kg/day	1.1E-02
				Mercury	7.2E-01	mg/kg	1.7E-09	mg/kg/day	NA	NA	NA	4.6E-09	mg/kg/day	2.1E-05	mg/kg/day	2.2E-04
				Benzo(a)anthracene	3.2E+00	mg/kg	9.5E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.9E-07	2.7E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+00	mg/kg	9.0E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.6E-06	2.5E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.9E+00	mg/kg	8.6E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.3E-07	2.4E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.9E-01	mg/kg	2.1E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.5E-06	5.8E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.7E+00	mg/kg	5.0E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.7E-07	1.4E-06	mg/kg/day	NA	NA	NA
				Naphthalene	6.8E+00	mg/kg	2.0E-06	mg/kg/day	NA	NA	NA	5.7E-06	mg/kg/day	2.0E-02	mg/kg/day	2.8E-04
			Exp. Route Total								1.2E-05					2.8E-02
		Exposure Point Total									2.2E-05					1.4E-01
	Exposure Medium Total										2.2E-05					1.4E-01

TABLE 7.8.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Edgewater Enterprises Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	1.6E-05	mg/m3	1.1E-06	mg/kg/day	NA	NA	NA	3.1E-06	mg/kg/day	1.4E-03	mg/kg/day	2.1E-03
				Arsenic	2.2E-08	mg/m3	1.6E-09	mg/kg/day	1.5E+01	1/(mg/kg/day)	2.4E-08	4.4E-09	mg/kg/day	NA	NA	NA
				Chromium	5.7E-08	mg/m3	4.0E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	1.7E-07	1.1E-08	mg/kg/day	2.9E-05	mg/kg/day	3.9E-04
				Iron	2.8E-05	mg/m3	2.0E-06	mg/kg/day	NA	NA	NA	5.5E-06	mg/kg/day	NA	NA	NA
				Lead	3.6E-07	mg/m3	2.5E-08	mg/kg/day	NA	NA	NA	7.0E-08	mg/kg/day	NA	NA	NA
				Manganese	4.3E-07	mg/m3	3.0E-08	mg/kg/day	NA	NA	NA	8.5E-08	mg/kg/day	1.4E-05	mg/kg/day	5.9E-03
				Thallium	5.8E-10	mg/m3	4.1E-11	mg/kg/day	NA	NA	NA	1.1E-10	mg/kg/day	NA	NA	NA
				Vanadium	5.2E-08	mg/m3	3.6E-09	mg/kg/day	NA	NA	NA	1.0E-08	mg/kg/day	NA	NA	NA
				Mercury	8.7E-10	mg/m3	6.1E-11	mg/kg/day	NA	NA	NA	1.7E-10	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	3.8E-09	mg/m3	2.7E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	8.3E-11	7.5E-10	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-09	mg/m3	2.5E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	7.8E-10	7.1E-10	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E-09	mg/m3	2.4E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	7.5E-11	6.8E-10	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	8.4E-10	mg/m3	5.9E-11	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.8E-10	1.6E-10	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-09	mg/m3	1.4E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	4.4E-11	4.0E-10	mg/kg/day	NA	NA	NA
				Naphthalene	1.9E-04	mg/m3	1.3E-05	mg/kg/day	NA	NA	NA	3.8E-05	mg/kg/day	8.6E-04	mg/kg/day	4.4E-02
			Exp. Route Total								1.9E-07					5.2E-02
		Exposure Point Total									1.9E-07					5.2E-02
	Exposure Medium Total										1.9E-07					5.2E-02
Soil Total											2.2E-05					1.9E-01
Receptor Total											2.2E-05					1.9E-01

NA = Not applicable.

TABLE 7.9.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	Edgewater Enterprises Subsurface Soil (0 - 10 ft)	Ingestion	Aluminum	1.19E+04	mg/kg	5.5E-04	mg/kg/day	NA	NA	NA	3.8E-02	mg/kg/day	1.0E+00	mg/kg/day	3.8E-02
				Antimony	2.55E+01	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	8.2E-05	mg/kg/day	4.0E-04	mg/kg/day	2.1E-01
				Arsenic	4.01E+02	mg/kg	1.9E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.8E-05	1.3E-03	mg/kg/day	3.0E-04	mg/kg/day	4.3E+00
				Barium	2.09E+02	mg/kg	9.6E-06	mg/kg/day	NA	NA	NA	6.7E-04	mg/kg/day	7.0E-02	mg/kg/day	9.6E-03
				Cadmium	1.83E+00	mg/kg	8.4E-08	mg/kg/day	NA	NA	NA	5.9E-06	mg/kg/day	1.0E-03	mg/kg/day	5.9E-03
				Chromium	3.46E+01	mg/kg	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	2.0E-02	mg/kg/day	5.6E-03
				Copper	7.58E+02	mg/kg	3.5E-05	mg/kg/day	NA	NA	NA	2.4E-03	mg/kg/day	4.0E-02	mg/kg/day	6.1E-02
				Iron	5.43E+04	mg/kg	2.5E-03	mg/kg/day	NA	NA	NA	1.8E-01	mg/kg/day	3.0E-01	mg/kg/day	5.8E-01
				Lead	2.74E+03	mg/kg	1.3E-04	mg/kg/day	NA	NA	NA	8.9E-03	mg/kg/day	NA	NA	NA
				Manganese	2.76E+02	mg/kg	1.3E-05	mg/kg/day	NA	NA	NA	8.9E-04	mg/kg/day	1.4E-01	mg/kg/day	6.4E-03
				Selenium	2.05E+01	mg/kg	9.5E-07	mg/kg/day	NA	NA	NA	6.6E-05	mg/kg/day	5.0E-03	mg/kg/day	1.3E-02
				Silver	5.98E+00	mg/kg	2.8E-07	mg/kg/day	NA	NA	NA	1.9E-05	mg/kg/day	5.0E-03	mg/kg/day	3.9E-03
				Thallium	7.11E+00	mg/kg	3.3E-07	mg/kg/day	NA	NA	NA	2.3E-05	mg/kg/day	6.6E-05	mg/kg/day	3.5E-01
				Vanadium	4.24E+01	mg/kg	2.0E-06	mg/kg/day	NA	NA	NA	1.4E-04	mg/kg/day	7.0E-03	mg/kg/day	2.0E-02
				Zinc	5.75E+02	mg/kg	2.7E-05	mg/kg/day	NA	NA	NA	1.9E-03	mg/kg/day	3.0E-01	mg/kg/day	6.2E-03
				Mercury	4.74E+01	mg/kg	2.2E-06	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	3.0E-03	mg/kg/day	5.1E-02
				Aroclor-1254	2.31E-01	mg/kg	1.1E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.1E-08	7.5E-07	mg/kg/day	5.0E-05	mg/kg/day	1.5E-02
				1,2,4-Trimethylbenzene	2.95E+01	mg/kg	1.4E-06	mg/kg/day	NA	NA	NA	9.5E-05	mg/kg/day	5.0E-02	mg/kg/day	1.9E-03
				2-Chlorotoluene	2.70E+01	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	8.7E-05	mg/kg/day	2.0E-01	mg/kg/day	4.4E-04
				Benzene	1.80E+00	mg/kg	8.3E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	4.6E-09	5.8E-06	mg/kg/day	4.0E-03	mg/kg/day	1.4E-03
				Tetrachloroethene	4.14E-01	mg/kg	1.9E-08	mg/kg/day	5.4E-01	1/(mg/kg/day)	1.0E-08	1.3E-06	mg/kg/day	1.0E-01	mg/kg/day	1.3E-05
				Xylene (Total)	3.39E+01	mg/kg	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	2.0E-01	mg/kg/day	5.5E-04
				2-Methylnaphthalene	1.86E+02	mg/kg	8.6E-06	mg/kg/day	NA	NA	NA	6.0E-04	mg/kg/day	4.0E-03	mg/kg/day	1.5E-01
Soil	Subsurface Soil	Edgewater Enterprises Subsurface Soil (0 - 10 ft)	Ingestion	Acenaphthene	1.24E+02	mg/kg	5.7E-06	mg/kg/day	NA	NA	NA	4.0E-04	mg/kg/day	6.0E-01	mg/kg/day	6.7E-04
				Benzo(a)anthracene	3.67E+01	mg/kg	1.7E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.2E-06	1.2E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.75E+01	mg/kg	1.3E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	9.2E-06	8.9E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.78E+01	mg/kg	1.3E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	9.4E-07	9.0E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.73E+01	mg/kg	8.0E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	5.8E-08	5.6E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.07E+01	mg/kg	4.9E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	9.9E-09	3.5E-05	mg/kg/day	NA	NA	NA
				Chrysene	3.77E+01	mg/kg	1.7E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	1.3E-08	1.2E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.89E+00	mg/kg	1.8E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.3E-06	1.3E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	7.93E+01	mg/kg	3.7E-06	mg/kg/day	NA	NA	NA	2.6E-04	mg/kg/day	NA	NA	NA
				Fluoranthene	1.17E+02	mg/kg	5.4E-06	mg/kg/day	NA	NA	NA	3.8E-04	mg/kg/day	4.0E-01	mg/kg/day	9.5E-04
				Fluorene	1.14E+02	mg/kg	5.3E-06	mg/kg/day	NA	NA	NA	3.7E-04	mg/kg/day	4.0E-01	mg/kg/day	9.2E-04
				Indeno(1,2,3-c,d)pyrene	1.18E+01	mg/kg	5.4E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.0E-07	3.8E-05	mg/kg/day	NA	NA	NA
				Naphthalene	4.58E+02	mg/kg	2.1E-05	mg/kg/day	NA	NA	NA	1.5E-03	mg/kg/day	2.0E-02	mg/kg/day	7.4E-02
				Pyrene	8.94E+01	mg/kg	4.1E-06	mg/kg/day	NA	NA	NA	2.9E-04	mg/kg/day	3.0E-01	mg/kg/day	9.6E-04
			Exp. Route Total								4.1E-05					5.9E+00

TABLE 7.9.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	Edgewater Enterprises Subsurface Soil (0 - 10 ft)	Dermal	Aluminum	1.2E+04	mg/kg	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	1.0E+00	mg/kg/day	1.1E-04
				Antimony	2.6E+01	mg/kg	3.5E-09	mg/kg/day	NA	NA	NA	2.5E-07	mg/kg/day	6.0E-05	mg/kg/day	4.1E-03
				Arsenic	4.0E+02	mg/kg	1.7E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.5E-06	1.2E-04	mg/kg/day	3.0E-04	mg/kg/day	3.9E-01
				Barium	2.1E+02	mg/kg	2.9E-08	mg/kg/day	NA	NA	NA	2.0E-06	mg/kg/day	4.9E-03	mg/kg/day	4.1E-04
				Cadmium	1.8E+00	mg/kg	2.5E-10	mg/kg/day	NA	NA	NA	1.8E-08	mg/kg/day	2.5E-05	mg/kg/day	7.1E-04
				Chromium	3.5E+01	mg/kg	4.8E-09	mg/kg/day	NA	NA	NA	3.3E-07	mg/kg/day	5.0E-04	mg/kg/day	6.7E-04
				Copper	7.6E+02	mg/kg	1.0E-07	mg/kg/day	NA	NA	NA	7.3E-06	mg/kg/day	4.0E-02	mg/kg/day	1.8E-04
				Iron	5.4E+04	mg/kg	7.5E-06	mg/kg/day	NA	NA	NA	5.3E-04	mg/kg/day	3.0E-01	mg/kg/day	1.8E-03
				Lead	2.7E+03	mg/kg	3.8E-07	mg/kg/day	NA	NA	NA	2.7E-05	mg/kg/day	NA	NA	NA
				Manganese	2.8E+02	mg/kg	3.8E-08	mg/kg/day	NA	NA	NA	2.7E-06	mg/kg/day	5.6E-03	mg/kg/day	4.8E-04
				Selenium	2.1E+01	mg/kg	2.8E-09	mg/kg/day	NA	NA	NA	2.0E-07	mg/kg/day	5.0E-03	mg/kg/day	4.0E-05
				Silver	6.0E+00	mg/kg	8.3E-10	mg/kg/day	NA	NA	NA	5.8E-08	mg/kg/day	2.0E-04	mg/kg/day	2.9E-04
				Thallium	7.1E+00	mg/kg	9.8E-10	mg/kg/day	NA	NA	NA	6.9E-08	mg/kg/day	6.6E-05	mg/kg/day	1.0E-03
				Vanadium	4.2E+01	mg/kg	5.9E-09	mg/kg/day	NA	NA	NA	4.1E-07	mg/kg/day	1.8E-04	mg/kg/day	2.3E-03
				Zinc	5.7E+02	mg/kg	8.0E-08	mg/kg/day	NA	NA	NA	5.6E-06	mg/kg/day	3.0E-01	mg/kg/day	1.9E-05
				Mercury	4.7E+01	mg/kg	6.6E-09	mg/kg/day	NA	NA	NA	4.6E-07	mg/kg/day	2.1E-04	mg/kg/day	2.2E-03
				Aroclor-1254	2.3E-01	mg/kg	4.5E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	9.0E-09	3.1E-07	mg/kg/day	5.0E-05	mg/kg/day	6.3E-03
				1,2,4-Trimethylbenzene	2.9E+01	mg/kg	4.1E-08	mg/kg/day	NA	NA	NA	2.9E-06	mg/kg/day	5.0E-02	mg/kg/day	5.7E-05
				2-Chlorotoluene	2.7E+01	mg/kg	3.7E-08	mg/kg/day	NA	NA	NA	2.6E-06	mg/kg/day	2.0E-01	mg/kg/day	1.3E-05
				Benzene	1.8E+00	mg/kg	2.5E-09	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.4E-10	1.7E-07	mg/kg/day	4.0E-03	mg/kg/day	4.3E-05
				Tetrachloroethene	4.1E-01	mg/kg	5.7E-10	mg/kg/day	5.4E-01	1/(mg/kg/day)	3.1E-10	4.0E-08	mg/kg/day	1.0E-01	mg/kg/day	4.0E-07
				Xylene (Total)	3.4E+01	mg/kg	4.7E-08	mg/kg/day	NA	NA	NA	3.3E-06	mg/kg/day	2.0E-01	mg/kg/day	1.6E-05
				2-Methylnaphthalene	1.9E+02	mg/kg	2.6E-07	mg/kg/day	NA	NA	NA	1.8E-05	mg/kg/day	4.0E-03	mg/kg/day	4.5E-03
Soil	Subsurface Soil	Edgewater Enterprises Subsurface Soil (0 - 10 ft)	Dermal	Acenaphthene	1.2E+02	mg/kg	2.2E-06	mg/kg/day	NA	NA	NA	1.6E-04	mg/kg/day	6.0E-01	mg/kg/day	2.6E-04
				Benzo(a)anthracene	3.7E+01	mg/kg	6.6E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.8E-07	4.6E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.7E+01	mg/kg	4.9E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.6E-06	3.5E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.8E+01	mg/kg	5.0E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.6E-07	3.5E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.7E+01	mg/kg	3.1E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	2.3E-08	2.2E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.1E+01	mg/kg	1.5E-08	mg/kg/day	2.0E-02	1/(mg/kg/day)	3.0E-10	1.0E-06	mg/kg/day	NA	NA	NA
				Chrysene	3.8E+01	mg/kg	6.8E-07	mg/kg/day	7.3E-03	1/(mg/kg/day)	4.9E-09	4.7E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.9E+00	mg/kg	7.0E-08	mg/kg/day	7.3E+00	1/(mg/kg/day)	5.1E-07	4.9E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	7.9E+01	mg/kg	1.1E-07	mg/kg/day	NA	NA	NA	7.7E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	1.2E+02	mg/kg	2.1E-06	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	4.0E-01	mg/kg/day	3.7E-04
				Fluorene	1.1E+02	mg/kg	2.0E-06	mg/kg/day	NA	NA	NA	1.4E-04	mg/kg/day	4.0E-01	mg/kg/day	3.6E-04
				Indeno(1,2,3-c,d)pyrene	1.2E+01	mg/kg	2.1E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.6E-07	1.5E-05	mg/kg/day	NA	NA	NA
				Naphthalene	4.6E+02	mg/kg	8.2E-06	mg/kg/day	NA	NA	NA	5.8E-04	mg/kg/day	2.0E-02	mg/kg/day	2.9E-02
				Pyrene	8.9E+01	mg/kg	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	3.0E-01	mg/kg/day	3.8E-04
			Exp. Route Total								7.7E-06					4.4E-01
		Exposure Point Total									4.9E-05					6.4E+00
	Exposure Medium Total										4.9E-05					6.4E+00

TABLE 7.9.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Edgewater Enterprises Emissions from Subsurface Soil (0 - 10 ft)	Inhalation	Aluminum	5.7E-04	mg/m3	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	1.4E-03	mg/kg/day	7.9E-02
				Antimony	1.2E-06	mg/m3	3.5E-09	mg/kg/day	NA	NA	NA	2.4E-07	mg/kg/day	NA	NA	NA
				Arsenic	1.9E-05	mg/m3	5.4E-08	mg/kg/day	1.5E+01	1/(mg/kg/day)	8.2E-07	3.8E-06	mg/kg/day	NA	NA	NA
				Barium	1.0E-05	mg/m3	2.8E-08	mg/kg/day	NA	NA	NA	2.0E-06	mg/kg/day	1.4E-03	mg/kg/day	1.4E-03
				Cadmium	8.8E-08	mg/m3	2.5E-10	mg/kg/day	6.3E+00	1/(mg/kg/day)	1.6E-09	1.7E-08	mg/kg/day	NA	NA	NA
				Chromium	1.7E-06	mg/m3	4.7E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	2.0E-07	3.3E-07	mg/kg/day	2.9E-05	mg/kg/day	1.1E-02
				Copper	3.7E-05	mg/m3	1.0E-07	mg/kg/day	NA	NA	NA	7.2E-06	mg/kg/day	NA	NA	NA
				Iron	2.6E-03	mg/m3	7.3E-06	mg/kg/day	NA	NA	NA	5.1E-04	mg/kg/day	NA	NA	NA
				Lead	1.3E-04	mg/m3	3.7E-07	mg/kg/day	NA	NA	NA	2.6E-05	mg/kg/day	NA	NA	NA
				Manganese	1.3E-05	mg/m3	3.7E-08	mg/kg/day	NA	NA	NA	2.6E-06	mg/kg/day	1.4E-05	mg/kg/day	1.8E-01
				Selenium	9.9E-07	mg/m3	2.8E-09	mg/kg/day	NA	NA	NA	1.9E-07	mg/kg/day	NA	NA	NA
				Silver	2.9E-07	mg/m3	8.1E-10	mg/kg/day	NA	NA	NA	5.7E-08	mg/kg/day	NA	NA	NA
				Thallium	3.4E-07	mg/m3	9.6E-10	mg/kg/day	NA	NA	NA	6.7E-08	mg/kg/day	NA	NA	NA
				Vanadium	2.1E-06	mg/m3	5.7E-09	mg/kg/day	NA	NA	NA	4.0E-07	mg/kg/day	NA	NA	NA
				Zinc	2.8E-05	mg/m3	7.8E-08	mg/kg/day	NA	NA	NA	5.4E-06	mg/kg/day	NA	NA	NA
				Mercury	2.3E-06	mg/m3	6.4E-09	mg/kg/day	NA	NA	NA	4.5E-07	mg/kg/day	8.6E-05	mg/kg/day	5.2E-03
				Aroclor-1254	1.1E-08	mg/m3	3.1E-11	mg/kg/day	3.5E-01	1/(mg/kg/day)	1.1E-11	2.2E-09	mg/kg/day	NA	NA	NA
				1,2,4-Trimethylbenzene	1.8E-03	mg/m3	5.1E-06	mg/kg/day	NA	NA	NA	3.6E-04	mg/kg/day	1.7E-03	mg/kg/day	2.1E-01
				2-Chlorotoluene	5.9E-03	mg/m3	1.6E-05	mg/kg/day	NA	NA	NA	1.1E-03	mg/kg/day	NA	NA	NA
				Benzene	7.9E-04	mg/m3	2.2E-06	mg/kg/day	2.7E-02	1/(mg/kg/day)	6.0E-08	1.5E-04	mg/kg/day	8.6E-03	mg/kg/day	1.8E-02
				Tetrachloroethene	1.6E-04	mg/m3	4.4E-07	mg/kg/day	2.1E-02	1/(mg/kg/day)	9.2E-09	3.1E-05	mg/kg/day	1.0E-02	mg/kg/day	3.1E-03
				Xylene (Total)	8.2E-03	mg/m3	2.3E-05	mg/kg/day	NA	NA	NA	1.6E-03	mg/kg/day	2.9E-02	mg/kg/day	5.6E-02
				2-Methylnaphthalene	5.4E-04	mg/m3	1.5E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	NA	NA	NA
				Acenaphthene	6.0E-06	mg/m3	1.7E-08	mg/kg/day	NA	NA	NA	1.2E-06	mg/kg/day	NA	NA	NA
Soil	Ambient Air	Edgewater Enterprises Emissions from Subsurface Soil (0 - 10 ft)	Inhalation	Benzo(a)anthracene	1.8E-06	mg/m3	5.0E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.5E-09	3.5E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E-06	mg/m3	3.7E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.1E-08	2.6E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E-06	mg/m3	3.8E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.2E-09	2.6E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	8.4E-07	mg/m3	2.3E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	7.2E-11	1.6E-07	mg/kg/day	NA	NA	NA
				Carbazole	5.2E-07	mg/m3	1.4E-09	mg/kg/day	NA	NA	NA	1.0E-07	mg/kg/day	NA	NA	NA
				Chrysene	1.8E-06	mg/m3	5.1E-09	mg/kg/day	NA	NA	NA	3.6E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	1.9E-07	mg/m3	5.3E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.6E-09	3.7E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.8E-06	mg/m3	1.1E-08	mg/kg/day	NA	NA	NA	7.5E-07	mg/kg/day	NA	NA	NA
				Fluoranthene	5.7E-06	mg/m3	1.6E-08	mg/kg/day	NA	NA	NA	1.1E-06	mg/kg/day	NA	NA	NA
				Fluorene	5.2E-04	mg/m3	1.4E-06	mg/kg/day	NA	NA	NA	1.0E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	5.7E-07	mg/m3	1.6E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	4.9E-10	1.1E-07	mg/kg/day	NA	NA	NA
				Naphthalene	1.3E-02	mg/m3	3.6E-05	mg/kg/day	NA	NA	NA	2.5E-03	mg/kg/day	8.6E-04	mg/kg/day	3.0E+00
				Pyrene	4.0E-05	mg/m3	1.1E-07	mg/kg/day	NA	NA	NA	7.8E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.1E-06					3.5E+00
		Exposure Point Total									1.1E-06					3.5E+00
	Exposure Medium Total										1.1E-06					3.5E+00
Soil Total											5.0E-05					9.9E+00

TABLE 7.9.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater (Excavation)	Edgewater Enterprises (Excavation)	Dermal	Arsenic	1.3E+05	ug/L	1.9E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.9E-05	1.4E-03	mg/kg/day	3.0E-04	mg/kg/day	4.5E+00
				Iron	3.7E+05	ug/L	5.7E-05	mg/kg/day	NA	NA	NA	4.0E-03	mg/kg/day	3.0E-01	mg/kg/day	1.3E-02
				Lead	4.1E+03	ug/L	6.3E-07	mg/kg/day	NA	NA	NA	4.4E-05	mg/kg/day	NA	NA	NA
				1,1-Dichloroethane	1.2E+02	ug/L	1.5E-07	mg/kg/day	NA	NA	NA	1.0E-05	mg/kg/day	1.0E+00	mg/kg/day	1.0E-05
				1,2-Dichloroethane	2.9E+00	ug/L	2.2E-09	mg/kg/day	9.1E-02	1/(mg/kg/day)	2.0E-10	1.5E-07	mg/kg/day	2.0E-02	mg/kg/day	7.7E-06
				1,2-Dichloropropane	3.0E-01	ug/L	4.3E-10	mg/kg/day	6.8E-02	1/(mg/kg/day)	2.9E-11	3.0E-08	mg/kg/day	NA	NA	NA
				Benzene	3.1E+01	ug/L	7.9E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	4.3E-09	5.5E-06	mg/kg/day	4.0E-03	mg/kg/day	1.4E-03
				Chloroethane	8.0E+00	ug/L	8.3E-09	mg/kg/day	2.9E-03	1/(mg/kg/day)	2.4E-11	5.8E-07	mg/kg/day	4.0E-01	mg/kg/day	1.5E-06
				Chloroform	1.7E+00	ug/L	2.2E-09	mg/kg/day	NA	NA	NA	1.5E-07	mg/kg/day	1.0E-02	mg/kg/day	1.5E-05
				cis-1,2-Dichloroethene	6.2E+00	ug/L	8.5E-09	mg/kg/day	NA	NA	NA	6.0E-07	mg/kg/day	1.0E-01	mg/kg/day	6.0E-06
				Tetrachloroethene	8.1E-01	ug/L	5.8E-09	mg/kg/day	5.4E-01	1/(mg/kg/day)	3.1E-09	4.1E-07	mg/kg/day	1.0E-01	mg/kg/day	4.1E-06
				Trichloroethene	6.4E-01	ug/L	1.4E-09	mg/kg/day	4.0E-01	1/(mg/kg/day)	5.8E-10	1.0E-07	mg/kg/day	3.0E-04	mg/kg/day	3.4E-04
				Vinyl chloride	4.4E+00	ug/L	4.2E-09	mg/kg/day	7.5E-01	1/(mg/kg/day)	3.1E-09	2.9E-07	mg/kg/day	3.0E-03	mg/kg/day	9.8E-05
				2-Methylnaphthalene	9.2E+01	ug/L	1.2E-06	mg/kg/day	NA	NA	NA	8.5E-05	mg/kg/day	4.0E-03	mg/kg/day	2.1E-02
				Acenaphthene	7.7E+01	ug/L	1.7E-06	mg/kg/day	NA	NA	NA	1.2E-04	mg/kg/day	6.0E-01	mg/kg/day	2.0E-04
				Benzo(a)anthracene	2.0E-01	ug/L	2.9E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.1E-08	2.0E-06	mg/kg/day	NA	NA	NA
				Carbazole	1.6E+01	ug/L	9.9E-08	mg/kg/day	2.0E-02	1/(mg/kg/day)	2.0E-09	7.0E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.5E+01	ug/L	5.7E-07	mg/kg/day	NA	NA	NA	4.0E-05	mg/kg/day	NA	NA	NA
				Fluorene	3.6E+01	ug/L	6.8E-08	mg/kg/day	NA	NA	NA	4.8E-06	mg/kg/day	4.0E-01	mg/kg/day	1.2E-05
				Naphthalene	1.2E+03	ug/L	1.0E-05	mg/kg/day	NA	NA	NA	7.0E-04	mg/kg/day	2.0E-02	mg/kg/day	3.5E-02
			Exp. Route Total								2.9E-05					4.6E+00
		Exposure Point Total									2.9E-05					4.6E+00
	Exposure Medium Total										2.9E-05					4.6E+00

TABLE 7.9.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Ambient Air (Excavation)	Edgewater Enterprises (Excavation)	Inhalation	1,1-Dichloroethane	5.3E-03	mg/m3	1.8E-06	mg/kg/day	NA	NA	NA	1.2E-04	mg/kg/day	1.4E+00	mg/kg/day	8.7E-05
				1,2-Dichloroethane	1.2E-04	mg/m3	4.1E-08	mg/kg/day	9.1E-02	1/(mg/kg/day)	3.7E-09	2.8E-06	mg/kg/day	1.4E-03	mg/kg/day	2.0E-03
				1,2-Dichloropropane	1.2E-05	mg/m3	3.9E-09	mg/kg/day	NA	NA	NA	2.7E-07	mg/kg/day	3.7E-03	mg/kg/day	7.4E-05
				Benzene	1.3E-03	mg/m3	4.4E-07	mg/kg/day	2.7E-02	1/(mg/kg/day)	1.2E-08	3.1E-05	mg/kg/day	8.6E-03	mg/kg/day	3.6E-03
				Chloroethane	3.8E-04	mg/m3	1.3E-07	mg/kg/day	NA	NA	NA	8.9E-06	mg/kg/day	2.9E+00	mg/kg/day	3.1E-06
				Chloroform	7.3E-05	mg/m3	2.4E-08	mg/kg/day	8.1E-02	1/(mg/kg/day)	2.0E-09	1.7E-06	mg/kg/day	1.4E-02	mg/kg/day	1.2E-04
				cis-1,2-Dichloroethene	2.9E-04	mg/m3	9.6E-08	mg/kg/day	NA	NA	NA	6.7E-06	mg/kg/day	NA	NA	NA
				Tetrachloroethene	3.0E-05	mg/m3	1.0E-08	mg/kg/day	2.1E-02	1/(mg/kg/day)	2.1E-10	7.2E-07	mg/kg/day	1.0E-02	mg/kg/day	7.2E-05
				Trichloroethene	2.6E-05	mg/m3	8.7E-09	mg/kg/day	4.0E-01	1/(mg/kg/day)	3.5E-09	6.1E-07	mg/kg/day	1.1E-02	mg/kg/day	5.3E-05
				Vinyl chloride	4.7E-05	mg/m3	1.6E-08	mg/kg/day	1.5E-02	1/(mg/kg/day)	2.4E-10	1.1E-06	mg/kg/day	2.9E-02	mg/kg/day	3.8E-05
				2-Methylnaphthalene	8.8E-04	mg/m3	3.0E-07	mg/kg/day	NA	NA	NA	2.1E-05	mg/kg/day	NA	NA	NA
				Acenaphthene	2.2E-03	mg/m3	7.4E-07	mg/kg/day	NA	NA	NA	5.2E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.8E-04	mg/m3	1.3E-07	mg/kg/day	NA	NA	NA	9.0E-06	mg/kg/day	NA	NA	NA
				Fluorene	9.3E-04	mg/m3	3.1E-07	mg/kg/day	NA	NA	NA	2.2E-05	mg/kg/day	NA	NA	NA
				Naphthalene	4.0E-02	mg/m3	1.3E-05	mg/kg/day	NA	NA	NA	9.4E-04	mg/kg/day	8.6E-04	mg/kg/day	1.1E+00
			Exp. Route Total								2.2E-08					1.1E+00
		Exposure Point Total									2.2E-08					1.1E+00
	Exposure Medium Total										2.2E-08					1.1E+00
Groundwater Total											2.9E-05					5.7E+00
Receptor Total											7.9E-05					1.6E+01

NA = Not applicable.

TABLE 7.9.RME SUPPLEMENT A
CALCULATION OF DAEVENT
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Groundwater Concentration (CW) (ug/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm^2-event)	Eq
Arsenic	1.26E+05	1.0E-03	NA	NA	NA	NA	4.0	5.0E-04	1
Iron	3.69E+05	1.0E-03	NA	NA	NA	NA	4.0	1.5E-03	1
Lead	4.10E+03	1.0E-03	NA	NA	NA	NA	4.0	1.6E-05	1
1,1-Dichloroethane	1.20E+02	6.7E-03	2.6E-02	3.8E-01	9.2E-01	1.0E+00	4.0	3.8E-06	3
1,2-Dichloroethane	2.90E+00	4.2E-03	1.6E-02	3.8E-01	9.2E-01	1.0E+00	4.0	5.7E-08	3
1,2-Dichloropropane	3.00E-01	7.8E-03	3.2E-02	4.6E-01	1.1E+00	1.0E+00	4.0	1.1E-08	3
Benzene	3.10E+01	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	4.0	2.0E-06	3
Chloroethane	8.00E+00	6.1E-03	1.9E-02	2.4E-01	5.9E-01	1.0E+00	4.0	2.1E-07	3
Chloroform	1.70E+00	6.8E-03	2.9E-02	5.0E-01	1.2E+00	1.0E+00	4.0	5.7E-08	3
cis-1,2-Dichloroethene	6.20E+00	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	4.0	2.2E-07	3
Tetrachloroethene	8.10E-01	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	4.0	1.5E-07	3
Trichloroethene	6.40E-01	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	4.0	3.7E-08	3
Vinyl chloride	4.40E+00	5.6E-03	1.7E-02	2.4E-01	5.7E-01	1.0E+00	4.0	1.1E-07	3
2-Methylnaphthalene	9.20E+01	7.2E-02	3.3E-01	6.6E-01	1.6E+00	1.0E+00	4.0	3.1E-05	3
Acenaphthene	7.70E+01	1.2E-01	5.7E-01	7.7E-01	1.8E+00	1.0E+00	4.0	4.4E-05	3
Benzo(a)anthracene	2.02E-01	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	4.0	7.5E-07	2
Carbazole	1.62E+01	2.9E-02	1.4E-01	9.1E-01	2.2E+00	1.0E+00	4.0	2.6E-06	3
Dibenzofuran	3.50E+01	7.9E-02	4.0E-01	9.2E-01	2.2E+00	1.0E+00	4.0	1.5E-05	3
Fluorene	3.60E+01	7.8E-03	4.1E-02	1.2E+00	2.8E+00	1.0E+00	4.0	1.8E-06	3
Naphthalene	1.20E+03	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	4.0	2.6E-04	3

Inorganics: DAevent (mg/cm2-event) =

DA_{event} = $Kp \times CW \times tevent \times 0.001\ mg/ug \times 0.001\ l/cm^3$ (Eq 1)

Organics: DAevent (mg/cm2-event) =

DA_{event} = $t_{event} < t^*$: DA_{event} (mg/cm^2-event) =
$2 \times FA \times Kp \times Cw \times (sqrt((6 \times \tau \times t_{event}) / (3.1415))) \times CF1 \times CF2$ (Eq 2)

$t_{event} > t^*$: DA_{event} (mg/cm^2-event) =
$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau \times ((1 + 3B + 3B^2)/(1+B)^2)) \times CF1 \times CF2$ (Eq 3)

Notes:
NA - Not applicable
Permeability constants from EPA 2004, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final).* EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.
B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
t* - Time to reach steady-state

TABLE 7.9.RME SUPPLEMENT B

CALCULATION OF CONSTITUENT CONCENTRATIONS IN AIR FROM STANDING WATER

FUTURE CONSTRUCTION WORKER SCENARIO (QUANTA RESOURCES)

Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	Concentration in Water (mg/L)	Concentration in Water (g/m^3) C_L	Dimensionless Henry's Law Constant (H') K_{eq}	Diffusion coefficient in air (cm^2/s) D_a	Diffusion coefficient in water (cm^2/s) D_w	Schmidt Number Sc_g	Effective diameter of source (m) d_e	Liquid-phase mass transfer coef (m/s) k_L	k_G (m/s)	1/K	K (m/s)	E (g/s)	Concentration in Air (mg/m^3) C_{air}
1,1-Dichloroethane	1.20E-01	1.20E-01	2.30E-01	7.42E-02	1.05E-05	2.03E+00	1.13E+01	3.20E-06	2.30E-03	3.14E+05	3.18E-06	3.82E-05	5.30E-03
1,2-Dichloroethane	2.90E-03	2.90E-03	4.01E-02	1.04E-01	9.90E-06	1.45E+00	1.13E+01	3.08E-06	2.88E-03	3.34E+05	3.00E-06	8.69E-07	1.21E-04
1,2-Dichloropropane	3.00E-04	3.00E-04	1.15E-01	7.82E-02	8.73E-06	1.93E+00	1.13E+01	2.83E-06	2.38E-03	3.57E+05	2.80E-06	8.40E-08	1.17E-05
Benzene	3.10E-02	3.10E-02	2.28E-01	8.80E-02	9.80E-06	1.71E+00	1.13E+01	3.06E-06	2.57E-03	3.29E+05	3.04E-06	9.43E-06	1.31E-03
Chloroethane	8.00E-03	8.00E-03	4.51E-01	1.04E-01	1.15E-05	1.45E+00	1.13E+01	3.40E-06	2.88E-03	2.95E+05	3.39E-06	2.71E-06	3.77E-04
Chloroform	1.70E-03	1.70E-03	1.50E-01	1.04E-01	1.00E-05	1.45E+00	1.13E+01	3.10E-06	2.88E-03	3.25E+05	3.08E-06	5.23E-07	7.26E-05
cis-1,2-Dichloroethene	6.20E-03	6.20E-03	1.67E-01	7.36E-02	1.13E-05	2.05E+00	1.13E+01	3.36E-06	2.28E-03	3.00E+05	3.33E-06	2.07E-06	2.87E-04
Tetrachloroethene	8.10E-04	8.10E-04	7.54E-01	7.20E-02	8.20E-06	2.09E+00	1.13E+01	2.71E-06	2.25E-03	3.69E+05	2.71E-06	2.19E-07	3.05E-05
Trichloroethene	6.40E-04	6.40E-04	4.22E-01	7.90E-02	9.10E-06	1.91E+00	1.13E+01	2.91E-06	2.39E-03	3.45E+05	2.90E-06	1.86E-07	2.58E-05
Vinyl chloride	4.40E-03	4.40E-03	1.11E+00	1.06E-01	1.23E-06	1.42E+00	1.13E+01	7.66E-07	2.92E-03	1.31E+06	7.66E-07	3.37E-07	4.68E-05
2-Methylnaphthalene	9.20E-02	9.20E-02	5.17E-04	5.22E-02	7.75E-06	2.89E+00	1.13E+01	2.61E-06	1.81E-03	1.45E+06	6.90E-07	6.35E-06	8.81E-04
Acenaphthene	7.70E-02	7.70E-02	6.36E-03	4.21E-02	7.69E-06	3.58E+00	1.13E+01	2.60E-06	1.57E-03	4.85E+05	2.06E-06	1.59E-05	2.21E-03
Dibenzofuran	3.50E-02	3.50E-02	5.33E-04	6.01E-02	1.00E-05	2.51E+00	1.13E+01	3.10E-06	1.99E-03	1.26E+06	7.91E-07	2.77E-06	3.85E-04
Fluorene	3.60E-02	3.60E-02	3.16E-03	6.08E-02	7.88E-06	2.48E+00	1.13E+01	2.64E-06	2.01E-03	5.36E+05	1.87E-06	6.72E-06	9.33E-04
Naphthalene	1.20E+00	1.20E+00	1.98E-02	5.90E-02	7.50E-06	2.56E+00	1.13E+01	2.56E-06	1.97E-03	4.17E+05	2.40E-06	2.88E-04	4.00E-02

Concentration in Air (C_{air}) = (mg/m^3)	**$1000 * E/H * V_{wind} * L$**
Emissions from Liquid surface (E) = (g/s)	**$K * A * C_L$**
Overall Mas Transfer Coefficient (K) = (m/s)	**$1/K = 1/k_L + 1/k_G * K_{eq}$**
Liquid-phase Mass Transfer Coefficient (k_L) = (m/s)	**$2.78E\text{-}06 * (D_w/D_{ether})^{2/3}$**
Gas-phase Mass Transfer Coefficient (k_G) = (m/g)	**$4.82E\text{-}03 * U^{0.78} * Sc_G^{-0.67} * d_e^{-0.11}$**
Effective Diameter of Source (d_e) = (m)	**$(4 * A / \pi)^{0.5}$**
Schmidt Number Calculation (Sc_G) =	**$u_G/p_G * D_a$**

Parameters		Values
C_L	Concentration in liquid phase (g/m^3)	chemical specific
K	overall mass transfer coefficient (m/s)	calculated
k_L	liquid-phase mass transfer coefficient (m/s)	calculated
k_G	gas-phase mass transfer coefficient (m/s)	calculated
K_{eq}	Equilibrium constant (Henry's Law constant)	chemical specific
D_{ether}	Diffusion coefficient of ether in water (cm^2/s)	8.50E-06
D_w	Diffusion coefficient in water (cm^2/s)	chemical specific
U	Windspeed (m/s)	1
A	Area of the source (m^2)	100
u_G	viscosity of air (g/cm-s)	1.81E-04
p_G	density of air (g/cm^3)	1.20E-03
D_a	Diffusion coefficient in air (cm^2/s)	chemical specific
H	Height of breathing zone (m)	2
Vwind	Average wind speed in breathing zone (m/s)	2.25
L	Length of breathing zone perpendicular to wind (m)	1.6

Chemical and physical properties from EPA Region 9 PRG Table (EPA, 10/2004).

TABLE 7.10.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.3E+04	mg/kg	NA	NA	NA	NA	NA	1.8E-02	mg/kg/day	1.0E+00	mg/kg/day	1.8E-02
				Arsenic	1.9E+01	mg/kg	NA	NA	NA	NA	NA	2.5E-05	mg/kg/day	3.0E-04	mg/kg/day	8.5E-02
				Chromium	4.7E+01	mg/kg	NA	NA	NA	NA	NA	6.5E-05	mg/kg/day	3.0E-03	mg/kg/day	2.2E-02
				Iron	2.3E+04	mg/kg	NA	NA	NA	NA	NA	3.2E-02	mg/kg/day	3.0E-01	mg/kg/day	1.1E-01
				Lead	3.0E+02	mg/kg	NA	NA	NA	NA	NA	4.0E-04	mg/kg/day	NA	NA	NA
				Manganese	3.6E+02	mg/kg	NA	NA	NA	NA	NA	4.9E-04	mg/kg/day	1.4E-01	mg/kg/day	3.5E-03
				Thallium	4.8E-01	mg/kg	NA	NA	NA	NA	NA	6.6E-07	mg/kg/day	6.6E-05	mg/kg/day	1.0E-02
				Vanadium	4.3E+01	mg/kg	NA	NA	NA	NA	NA	5.9E-05	mg/kg/day	1.0E-03	mg/kg/day	5.9E-02
				Mercury	7.2E-01	mg/kg	NA	NA	NA	NA	NA	9.8E-07	mg/kg/day	3.0E-04	mg/kg/day	3.3E-03
				Benzo(a)anthracene	3.2E+00	mg/kg	NA	NA	NA	NA	NA	4.3E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+00	mg/kg	NA	NA	NA	NA	NA	4.1E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.9E+00	mg/kg	NA	NA	NA	NA	NA	3.9E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.9E-01	mg/kg	NA	NA	NA	NA	NA	9.5E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.7E+00	mg/kg	NA	NA	NA	NA	NA	2.3E-06	mg/kg/day	NA	NA	NA
				Naphthalene	6.8E+00	mg/kg	NA	NA	NA	NA	NA	9.3E-06	mg/kg/day	2.0E-02	mg/kg/day	4.6E-04
			Exp. Route Total								0.0E+00					3.1E-01

TABLE 7.10.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.3E+04	mg/kg	NA	NA	NA	NA	NA	7.1E-05	mg/kg/day	1.0E+00	mg/kg/day	7.1E-05
				Arsenic	1.9E+01	mg/kg	NA	NA	NA	NA	NA	3.0E-06	mg/kg/day	3.0E-04	mg/kg/day	1.0E-02
				Chromium	4.7E+01	mg/kg	NA	NA	NA	NA	NA	2.6E-07	mg/kg/day	7.5E-05	mg/kg/day	3.4E-03
				Iron	2.3E+04	mg/kg	NA	NA	NA	NA	NA	1.3E-04	mg/kg/day	3.0E-01	mg/kg/day	4.3E-04
				Lead	3.0E+02	mg/kg	NA	NA	NA	NA	NA	1.6E-06	mg/kg/day	NA	NA	NA
				Manganese	3.6E+02	mg/kg	NA	NA	NA	NA	NA	2.0E-06	mg/kg/day	5.6E-03	mg/kg/day	3.5E-04
				Thallium	4.8E-01	mg/kg	NA	NA	NA	NA	NA	2.6E-09	mg/kg/day	6.6E-05	mg/kg/day	4.0E-05
				Vanadium	4.3E+01	mg/kg	NA	NA	NA	NA	NA	2.3E-07	mg/kg/day	2.6E-05	mg/kg/day	9.0E-03
				Mercury	7.2E-01	mg/kg	NA	NA	NA	NA	NA	3.9E-09	mg/kg/day	2.1E-05	mg/kg/day	1.9E-04
				Benzo(a)anthracene	3.2E+00	mg/kg	NA	NA	NA	NA	NA	2.3E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+00	mg/kg	NA	NA	NA	NA	NA	2.1E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.9E+00	mg/kg	NA	NA	NA	NA	NA	2.0E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.9E-01	mg/kg	NA	NA	NA	NA	NA	4.9E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.7E+00	mg/kg	NA	NA	NA	NA	NA	1.2E-06	mg/kg/day	NA	NA	NA
				Naphthalene	6.8E+00	mg/kg	NA	NA	NA	NA	NA	4.8E-06	mg/kg/day	2.0E-02	mg/kg/day	2.4E-04
			Exp. Route Total								0.0E+00					2.4E-02
		Exposure Point Total									0.0E+00					3.3E-01
	Exposure Medium Total										0.0E+00					3.3E-01

TABLE 7.10.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Edgewater Enterprises Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	1.6E-05	mg/m3	NA	NA	NA	NA	NA	4.3E-06	mg/kg/day	1.4E-03	mg/kg/day	3.0E-03
				Arsenic	2.2E-08	mg/m3	NA	NA	NA	NA	NA	6.1E-09	mg/kg/day	NA	NA	NA
				Chromium	5.7E-08	mg/m3	NA	NA	NA	NA	NA	1.6E-08	mg/kg/day	2.9E-05	mg/kg/day	5.4E-04
				Iron	2.8E-05	mg/m3	NA	NA	NA	NA	NA	7.7E-06	mg/kg/day	NA	NA	NA
				Lead	3.6E-07	mg/m3	NA	NA	NA	NA	NA	9.7E-08	mg/kg/day	NA	NA	NA
				Manganese	4.3E-07	mg/m3	NA	NA	NA	NA	NA	1.2E-07	mg/kg/day	1.4E-05	mg/kg/day	8.3E-03
				Thallium	5.8E-10	mg/m3	NA	NA	NA	NA	NA	1.6E-10	mg/kg/day	NA	NA	NA
				Vanadium	5.2E-08	mg/m3	NA	NA	NA	NA	NA	1.4E-08	mg/kg/day	NA	NA	NA
				Mercury	8.7E-10	mg/m3	NA	NA	NA	NA	NA	2.4E-10	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	3.8E-09	mg/m3	NA	NA	NA	NA	NA	1.0E-09	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-09	mg/m3	NA	NA	NA	NA	NA	9.9E-10	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E-09	mg/m3	NA	NA	NA	NA	NA	9.4E-10	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	8.4E-10	mg/m3	NA	NA	NA	NA	NA	2.3E-10	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-09	mg/m3	NA	NA	NA	NA	NA	5.5E-10	mg/kg/day	NA	NA	NA
				Naphthalene	1.9E-04	mg/m3	NA	NA	NA	NA	NA	5.2E-05	mg/kg/day	8.6E-04	mg/kg/day	6.1E-02
			Exp. Route Total								0.0E+00					7.3E-02
		Exposure Point Total									0.0E+00					7.3E-02
	Exposure Medium Total										0.0E+00					7.3E-02
Soil Total											0.0E+00					4.0E-01
Receptor Total											0.0E+00					4.0E-01

NA = Not applicable.

TABLE 7.11.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.3E+04	mg/kg	NA	NA	NA	NA	NA	1.7E-01	mg/kg/day	1.0E+00	mg/kg/day	1.7E-01
				Arsenic	1.9E+01	mg/kg	NA	NA	NA	NA	NA	2.4E-04	mg/kg/day	3.0E-04	mg/kg/day	7.9E-01
				Chromium	4.7E+01	mg/kg	NA	NA	NA	NA	NA	6.0E-04	mg/kg/day	3.0E-03	mg/kg/day	2.0E-01
				Iron	2.3E+04	mg/kg	NA	NA	NA	NA	NA	3.0E-01	mg/kg/day	3.0E-01	mg/kg/day	1.0E+00
				Lead	3.0E+02	mg/kg	NA	NA	NA	NA	NA	3.8E-03	mg/kg/day	NA	NA	NA
				Manganese	3.6E+02	mg/kg	NA	NA	NA	NA	NA	4.6E-03	mg/kg/day	1.4E-01	mg/kg/day	3.3E-02
				Thallium	4.8E-01	mg/kg	NA	NA	NA	NA	NA	6.2E-06	mg/kg/day	6.6E-05	mg/kg/day	9.3E-02
				Vanadium	4.3E+01	mg/kg	NA	NA	NA	NA	NA	5.5E-04	mg/kg/day	1.0E-03	mg/kg/day	5.5E-01
				Mercury	7.2E-01	mg/kg	NA	NA	NA	NA	NA	9.2E-06	mg/kg/day	3.0E-04	mg/kg/day	3.1E-02
				Benzo(a)anthracene	3.2E+00	mg/kg	NA	NA	NA	NA	NA	4.1E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+00	mg/kg	NA	NA	NA	NA	NA	3.8E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.9E+00	mg/kg	NA	NA	NA	NA	NA	3.7E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.9E-01	mg/kg	NA	NA	NA	NA	NA	8.9E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.7E+00	mg/kg	NA	NA	NA	NA	NA	2.1E-05	mg/kg/day	NA	NA	NA
				Naphthalene	6.8E+00	mg/kg	NA	NA	NA	NA	NA	8.7E-05	mg/kg/day	2.0E-02	mg/kg/day	4.3E-03
			Exp. Route Total								0.0E+00					2.9E+00

TABLE 7.11.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.3E+04	mg/kg	NA	NA	NA	NA	NA	4.6E-04	mg/kg/day	1.0E+00	mg/kg/day	4.6E-04
				Arsenic	1.9E+01	mg/kg	NA	NA	NA	NA	NA	2.0E-05	mg/kg/day	3.0E-04	mg/kg/day	6.7E-02
				Chromium	4.7E+01	mg/kg	NA	NA	NA	NA	NA	1.7E-06	mg/kg/day	7.5E-05	mg/kg/day	2.3E-02
				Iron	2.3E+04	mg/kg	NA	NA	NA	NA	NA	8.4E-04	mg/kg/day	3.0E-01	mg/kg/day	2.8E-03
				Lead	3.0E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-05	mg/kg/day	NA	NA	NA
				Manganese	3.6E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-05	mg/kg/day	5.6E-03	mg/kg/day	2.3E-03
				Thallium	4.8E-01	mg/kg	NA	NA	NA	NA	NA	1.7E-08	mg/kg/day	6.6E-05	mg/kg/day	2.6E-04
				Vanadium	4.3E+01	mg/kg	NA	NA	NA	NA	NA	1.5E-06	mg/kg/day	2.6E-05	mg/kg/day	5.9E-02
				Mercury	7.2E-01	mg/kg	NA	NA	NA	NA	NA	2.6E-08	mg/kg/day	2.1E-05	mg/kg/day	1.2E-03
				Benzo(a)anthracene	3.2E+00	mg/kg	NA	NA	NA	NA	NA	1.5E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+00	mg/kg	NA	NA	NA	NA	NA	1.4E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.9E+00	mg/kg	NA	NA	NA	NA	NA	1.3E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.9E-01	mg/kg	NA	NA	NA	NA	NA	3.2E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.7E+00	mg/kg	NA	NA	NA	NA	NA	7.8E-06	mg/kg/day	NA	NA	NA
				Naphthalene	6.8E+00	mg/kg	NA	NA	NA	NA	NA	3.2E-05	mg/kg/day	2.0E-02	mg/kg/day	1.6E-03
			Exp. Route Total								0.0E+00					1.6E-01
		Exposure Point Total									0.0E+00					3.0E+00
	Exposure Medium Total										0.0E+00					3.0E+00

TABLE 7.11.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Edgewater Enterprises Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	1.6E-05	mg/m3	NA	NA	NA	NA	NA	1.0E-05	mg/kg/day	1.4E-03	mg/kg/day	7.1E-03
				Arsenic	2.2E-08	mg/m3	NA	NA	NA	NA	NA	1.4E-08	mg/kg/day	NA	NA	NA
				Chromium	5.7E-08	mg/m3	NA	NA	NA	NA	NA	3.7E-08	mg/kg/day	2.9E-05	mg/kg/day	1.3E-03
				Iron	2.8E-05	mg/m3	NA	NA	NA	NA	NA	1.8E-05	mg/kg/day	NA	NA	NA
				Lead	3.6E-07	mg/m3	NA	NA	NA	NA	NA	2.3E-07	mg/kg/day	NA	NA	NA
				Manganese	4.3E-07	mg/m3	NA	NA	NA	NA	NA	2.8E-07	mg/kg/day	1.4E-05	mg/kg/day	2.0E-02
				Thallium	5.8E-10	mg/m3	NA	NA	NA	NA	NA	3.7E-10	mg/kg/day	NA	NA	NA
				Vanadium	5.2E-08	mg/m3	NA	NA	NA	NA	NA	3.3E-08	mg/kg/day	NA	NA	NA
				Mercury	8.7E-10	mg/m3	NA	NA	NA	NA	NA	5.6E-10	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	3.8E-09	mg/m3	NA	NA	NA	NA	NA	2.5E-09	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-09	mg/m3	NA	NA	NA	NA	NA	2.3E-09	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E-09	mg/m3	NA	NA	NA	NA	NA	2.2E-09	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	8.4E-10	mg/m3	NA	NA	NA	NA	NA	5.4E-10	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-09	mg/m3	NA	NA	NA	NA	NA	1.3E-09	mg/kg/day	NA	NA	NA
				Naphthalene	1.9E-04	mg/m3	NA	NA	NA	NA	NA	1.2E-04	mg/kg/day	8.6E-04	mg/kg/day	1.4E-01
			Exp. Route Total								0.0E+00					1.7E-01
		Exposure Point Total									0.0E+00					1.7E-01
	Exposure Medium Total										0.0E+00					1.7E-01
Soil Total											0.0E+00					3.2E+00
Receptor Total											0.0E+00					3.2E+00

NA = Not applicable.

TABLE 7.12.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.3E+04	mg/kg	2.0E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	1.9E+01	mg/kg	2.9E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	4.4E-05	NA	NA	NA	NA	NA
				Chromium	4.7E+01	mg/kg	7.4E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	2.3E+04	mg/kg	3.7E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	3.0E+02	mg/kg	4.6E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	3.6E+02	mg/kg	5.6E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	4.8E-01	mg/kg	7.5E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	4.3E+01	mg/kg	6.7E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	7.2E-01	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	3.2E+00	mg/kg	5.0E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.1E-05	NA	NA	NA	NA	NA
				Benzo(a)pyrene	3.0E+00	mg/kg	4.7E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.9E-04	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	2.9E+00	mg/kg	4.5E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.9E-05	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	6.9E-01	mg/kg	1.1E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	4.5E-05	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.7E+00	mg/kg	2.6E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.1E-05	NA	NA	NA	NA	NA
				Naphthalene	6.8E+00	mg/kg	1.1E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								3.3E-04					0.0E+00

TABLE 7.12.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.3E+04	mg/kg	6.4E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	1.9E+01	mg/kg	2.8E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	4.1E-06	NA	NA	NA	NA	NA
				Chromium	4.7E+01	mg/kg	2.3E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	2.3E+04	mg/kg	1.2E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	3.0E+02	mg/kg	1.5E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	3.6E+02	mg/kg	1.8E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	4.8E-01	mg/kg	2.4E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	4.3E+01	mg/kg	2.1E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	7.2E-01	mg/kg	3.5E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	3.2E+00	mg/kg	2.0E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.6E-06	NA	NA	NA	NA	NA
				Benzo(a)pyrene	3.0E+00	mg/kg	1.9E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	8.1E-05	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	2.9E+00	mg/kg	1.8E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.8E-06	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	6.9E-01	mg/kg	4.5E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.9E-05	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.7E+00	mg/kg	1.1E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.6E-06	NA	NA	NA	NA	NA
				Naphthalene	6.8E+00	mg/kg	4.4E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								1.2E-04					0.0E+00
		Exposure Point Total									4.6E-04					0.0E+00
	Exposure Medium Total										4.6E-04					0.0E+00

TABLE 7.12.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Edgewater Enterprises Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	1.6E-05	mg/m3	2.3E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	2.2E-08	mg/m3	3.3E-09	mg/kg/day	1.5E+01	1/(mg/kg/day)	5.0E-08	NA	NA	NA	NA	NA
				Chromium	5.7E-08	mg/m3	8.5E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	3.6E-07	NA	NA	NA	NA	NA
				Iron	2.8E-05	mg/m3	4.2E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	3.6E-07	mg/m3	5.3E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	4.3E-07	mg/m3	6.4E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	5.8E-10	mg/m3	8.7E-11	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	5.2E-08	mg/m3	7.7E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	8.7E-10	mg/m3	1.3E-10	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	3.8E-09	mg/m3	5.7E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	2.9E-10	NA	NA	NA	NA	NA
				Benzo(a)pyrene	3.6E-09	mg/m3	5.4E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	2.8E-09	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	3.5E-09	mg/m3	5.2E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	2.6E-10	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	8.4E-10	mg/m3	1.2E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	6.4E-10	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-09	mg/m3	3.0E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.6E-10	NA	NA	NA	NA	NA
				Naphthalene	1.9E-04	mg/m3	2.9E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								4.1E-07					0.0E+00
		Exposure Point Total									4.1E-07					0.0E+00
	Exposure Medium Total										4.1E-07					0.0E+00
Soil Total											4.6E-04					0.0E+00
Receptor Total											4.6E-04					0.0E+00

NA = Not applicable.

TABLE 7.13.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Ingestion	Arsenic	1.3E+01	mg/kg	2.3E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	3.4E-06	6.4E-06	mg/kg/day	3.0E-04	mg/kg/day	2.1E-02
				Chromium	1.0E+02	mg/kg	1.8E-05	mg/kg/day	NA	NA	NA	4.9E-05	mg/kg/day	3.0E-03	mg/kg/day	1.6E-02
				Lead	5.6E+02	mg/kg	9.7E-05	mg/kg/day	NA	NA	NA	2.7E-04	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	4.9E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.6E-06	1.4E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	4.4E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.2E-05	1.2E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	5.4E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.0E-06	1.5E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	2.8E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	2.0E-07	7.8E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	8.0E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	5.9E-06	2.3E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	2.6E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.9E-06	7.3E-06	mg/kg/day	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	2.1E-06	mg/kg/day	NA	NA	NA	5.9E-06	mg/kg/day	2.0E-02	mg/kg/day	2.9E-04
			Exp. Route Total								5.1E-05					3.8E-02
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Dermal	Arsenic	1.3E+01	mg/kg	9.0E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.3E-06	2.5E-06	mg/kg/day	3.0E-04	mg/kg/day	8.4E-03
				Chromium	1.0E+02	mg/kg	2.3E-07	mg/kg/day	NA	NA	NA	6.5E-07	mg/kg/day	7.5E-05	mg/kg/day	8.7E-03
				Lead	5.6E+02	mg/kg	1.3E-06	mg/kg/day	NA	NA	NA	3.6E-06	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	8.4E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.1E-06	2.4E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	7.5E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	5.5E-05	2.1E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	9.3E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.8E-06	2.6E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	4.8E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.5E-07	1.3E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	1.4E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.0E-05	3.9E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	4.5E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.3E-06	1.3E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	3.6E-06	mg/kg/day	NA	NA	NA	1.0E-05	mg/kg/day	2.0E-02	mg/kg/day	5.0E-04
			Exp. Route Total								8.3E-05					1.8E-02
		Exposure Point Total									1.3E-04					5.6E-02
	Exposure Medium Total										1.3E-04					5.6E-02

TABLE 7.13.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Inhalation	Arsenic	1.6E-08	mg/m3	1.1E-09	mg/kg/day	1.5E+01	1/(mg/kg/day)	1.7E-08	3.1E-09	mg/kg/day	NA	NA	NA
				Chromium	1.2E-07	mg/m3	8.5E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	3.6E-07	2.4E-08	mg/kg/day	2.9E-05	mg/kg/day	8.4E-04
				Lead	6.7E-07	mg/m3	4.7E-08	mg/kg/day	NA	NA	NA	1.3E-07	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	3.4E-08	mg/m3	2.4E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	7.3E-10	6.6E-09	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E-08	mg/m3	2.1E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	6.5E-09	5.9E-09	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.7E-08	mg/m3	2.6E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	8.1E-10	7.3E-09	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.9E-08	mg/m3	1.4E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	4.2E-11	3.8E-09	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	5.6E-09	mg/m3	3.9E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.2E-09	1.1E-09	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.8E-08	mg/m3	1.3E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	3.9E-10	3.5E-09	mg/kg/day	NA	NA	NA
				Naphthalene	3.4E-04	mg/m3	2.4E-05	mg/kg/day	NA	NA	NA	6.6E-05	mg/kg/day	8.6E-04	mg/kg/day	7.7E-02
			Exp. Route Total								3.8E-07					7.8E-02
		Exposure Point Total									3.8E-07					7.8E-02
	Exposure Medium Total										3.8E-07					7.8E-02
Soil Total											1.3E-04					1.3E-01
Receptor Total											1.3E-04					1.3E-01

NA = Not applicable.

TABLE 7.14.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Daycare Child
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Ingestion	Arsenic	1.3E+01	mg/kg	5.1E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	7.6E-06	5.9E-05	mg/kg/day	3.0E-04	mg/kg/day	2.0E-01
				Chromium	1.0E+02	mg/kg	4.0E-05	mg/kg/day	NA	NA	NA	4.6E-04	mg/kg/day	3.0E-03	mg/kg/day	1.5E-01
				Lead	5.6E+02	mg/kg	2.2E-04	mg/kg/day	NA	NA	NA	2.5E-03	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	1.1E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.5E-05	1.3E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	9.8E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	4.9E-04	1.1E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	1.2E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.0E-05	1.4E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	6.3E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.1E-06	7.3E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	1.8E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	9.0E-05	2.1E-05	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	5.9E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.9E-05	6.8E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	4.7E-06	mg/kg/day	NA	NA	NA	5.5E-05	mg/kg/day	2.0E-02	mg/kg/day	2.7E-03
			Exp. Route Total								7.3E-04					3.5E-01
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Dermal	Arsenic	1.3E+01	mg/kg	8.5E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.3E-06	1.0E-05	mg/kg/day	3.0E-04	mg/kg/day	3.3E-02
				Chromium	1.0E+02	mg/kg	2.2E-07	mg/kg/day	NA	NA	NA	2.6E-06	mg/kg/day	7.5E-05	mg/kg/day	3.4E-02
				Lead	5.6E+02	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	1.4E-05	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	8.0E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.8E-05	9.3E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	7.1E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.4E-04	8.3E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	8.8E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.2E-05	1.0E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	4.6E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	2.2E-06	5.3E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	1.3E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.3E-05	1.5E-05	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	4.3E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.0E-05	5.0E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	3.4E-06	mg/kg/day	NA	NA	NA	4.0E-05	mg/kg/day	2.0E-02	mg/kg/day	2.0E-03
			Exp. Route Total								5.1E-04					7.0E-02
		Exposure Point Total									1.2E-03					4.2E-01
	Exposure Medium Total										1.2E-03					4.2E-01

TABLE 7.14.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Daycare Child
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Inhalation	Arsenic	1.6E-08	mg/m3	7.4E-09	mg/kg/day	1.5E+01	1/(mg/kg/day)	1.1E-07	8.7E-08	mg/kg/day	NA	NA	NA
				Chromium	1.2E-07	mg/m3	5.8E-08	mg/kg/day	4.2E+01	1/(mg/kg/day)	2.4E-06	6.7E-07	mg/kg/day	2.9E-05	mg/kg/day	2.4E-02
				Lead	6.7E-07	mg/m3	3.2E-07	mg/kg/day	NA	NA	NA	3.7E-06	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	3.4E-08	mg/m3	1.6E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.0E-09	1.9E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E-08	mg/m3	1.4E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	9.3E-09	1.7E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.7E-08	mg/m3	1.8E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.2E-09	2.1E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.9E-08	mg/m3	9.2E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	6.0E-11	1.1E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	5.6E-09	mg/m3	2.6E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.7E-09	3.1E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.8E-08	mg/m3	8.6E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	5.6E-10	1.0E-07	mg/kg/day	NA	NA	NA
				Naphthalene	3.4E-04	mg/m3	1.6E-04	mg/kg/day	NA	NA	NA	1.9E-03	mg/kg/day	8.6E-04	mg/kg/day	2.2E+00
			Exp. Route Total								2.6E-06					2.2E+00
		Exposure Point Total									2.6E-06					2.2E+00
	Exposure Medium Total										2.6E-06					2.2E+00
Soil Total											1.2E-03					2.6E+00
Receptor Total											1.2E-03					2.6E+00

NA = Not applicable.

TABLE 7.15.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	115 River Road Subsurface Soil (0 - 10 ft)	Ingestion	Arsenic	2.95E+01	mg/kg	1.4E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.0E-06	9.5E-05	mg/kg/day	3.0E-04	mg/kg/day	3.2E-01
				Chromium	1.01E+02	mg/kg	4.7E-06	mg/kg/day	NA	NA	NA	3.3E-04	mg/kg/day	2.0E-02	mg/kg/day	1.6E-02
				Iron	4.68E+04	mg/kg	2.2E-03	mg/kg/day	NA	NA	NA	1.5E-01	mg/kg/day	3.0E-01	mg/kg/day	5.0E-01
				Lead	6.27E+02	mg/kg	2.9E-05	mg/kg/day	NA	NA	NA	2.0E-03	mg/kg/day	NA	NA	NA
				Manganese	2.43E+02	mg/kg	1.1E-05	mg/kg/day	NA	NA	NA	7.8E-04	mg/kg/day	1.4E-01	mg/kg/day	5.6E-03
				Vanadium	2.69E+01	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	8.7E-05	mg/kg/day	7.0E-03	mg/kg/day	1.2E-02
				Mercury	9.30E-01	mg/kg	4.3E-08	mg/kg/day	NA	NA	NA	3.0E-06	mg/kg/day	3.0E-03	mg/kg/day	1.0E-03
				Benzene	2.90E+01	mg/kg	1.3E-06	mg/kg/day	5.5E-02	1/(mg/kg/day)	7.4E-08	9.4E-05	mg/kg/day	4.0E-03	mg/kg/day	2.3E-02
				Toluene	8.90E+01	mg/kg	4.1E-06	mg/kg/day	NA	NA	NA	2.9E-04	mg/kg/day	2.0E+00	mg/kg/day	1.4E-04
				Xylene (Total)	2.40E+02	mg/kg	1.1E-05	mg/kg/day	NA	NA	NA	7.7E-04	mg/kg/day	2.0E-01	mg/kg/day	3.9E-03
				2,4-Dinitrotoluene	2.90E+01	mg/kg	1.3E-06	mg/kg/day	NA	NA	NA	9.4E-05	mg/kg/day	2.0E-03	mg/kg/day	4.7E-02
				2-Methylnaphthalene	2.10E+03	mg/kg	9.7E-05	mg/kg/day	NA	NA	NA	6.8E-03	mg/kg/day	4.0E-03	mg/kg/day	1.7E+00
				Acenaphthene	1.30E+03	mg/kg	6.0E-05	mg/kg/day	NA	NA	NA	4.2E-03	mg/kg/day	6.0E-01	mg/kg/day	7.0E-03
				Benzo(a)anthracene	2.47E+02	mg/kg	1.1E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.3E-06	8.0E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.58E+02	mg/kg	7.3E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	5.3E-05	5.1E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.68E+02	mg/kg	7.7E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.7E-06	5.4E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	6.12E+01	mg/kg	2.8E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	2.1E-07	2.0E-04	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	3.80E+02	mg/kg	1.8E-05	mg/kg/day	NA	NA	NA	1.2E-03	mg/kg/day	5.0E-02	mg/kg/day	2.5E-02
				Carbazole	1.59E+02	mg/kg	7.3E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	1.5E-07	5.1E-04	mg/kg/day	NA	NA	NA
				Chrysene	5.26E+02	mg/kg	2.4E-05	mg/kg/day	7.3E-03	1/(mg/kg/day)	1.8E-07	1.7E-03	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.66E+01	mg/kg	1.2E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	9.0E-06	8.6E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	8.24E+02	mg/kg	3.8E-05	mg/kg/day	NA	NA	NA	2.7E-03	mg/kg/day	NA	NA	NA
				Fluoranthene	6.48E+02	mg/kg	3.0E-05	mg/kg/day	NA	NA	NA	2.1E-03	mg/kg/day	4.0E-01	mg/kg/day	5.2E-03
				Fluorene	1.14E+03	mg/kg	5.3E-05	mg/kg/day	NA	NA	NA	3.7E-03	mg/kg/day	4.0E-01	mg/kg/day	9.2E-03
				Indeno(1,2,3-c,d)pyrene	7.03E+01	mg/kg	3.2E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.4E-06	2.3E-04	mg/kg/day	NA	NA	NA
				Naphthalene	2.43E+03	mg/kg	1.1E-04	mg/kg/day	NA	NA	NA	7.8E-03	mg/kg/day	2.0E-02	mg/kg/day	3.9E-01
				Phenanthrene	2.34E+03	mg/kg	1.1E-04	mg/kg/day	NA	NA	NA	7.6E-03	mg/kg/day	3.0E+00	mg/kg/day	2.5E-03
				Pyrene	5.66E+02	mg/kg	2.6E-05	mg/kg/day	NA	NA	NA	1.8E-03	mg/kg/day	3.0E-01	mg/kg/day	6.1E-03
			Exp. Route Total								8.1E-05					3.1E+00

TABLE 7.15.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	115 River Road Subsurface Soil (0 - 10 ft)	Dermal	Arsenic	3.0E+01	mg/kg	1.2E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.8E-07	8.6E-06	mg/kg/day	3.0E-04	mg/kg/day	2.9E-02
				Chromium	1.0E+02	mg/kg	1.4E-08	mg/kg/day	NA	NA	NA	9.8E-07	mg/kg/day	5.0E-04	mg/kg/day	2.0E-03
				Iron	4.7E+04	mg/kg	6.5E-06	mg/kg/day	NA	NA	NA	4.5E-04	mg/kg/day	3.0E-01	mg/kg/day	1.5E-03
				Lead	6.3E+02	mg/kg	8.7E-08	mg/kg/day	NA	NA	NA	6.1E-06	mg/kg/day	NA	NA	NA
				Manganese	2.4E+02	mg/kg	3.4E-08	mg/kg/day	NA	NA	NA	2.4E-06	mg/kg/day	5.6E-03	mg/kg/day	4.2E-04
				Vanadium	2.7E+01	mg/kg	3.7E-09	mg/kg/day	NA	NA	NA	2.6E-07	mg/kg/day	1.8E-04	mg/kg/day	1.4E-03
				Mercury	9.3E-01	mg/kg	1.3E-10	mg/kg/day	NA	NA	NA	9.0E-09	mg/kg/day	2.1E-04	mg/kg/day	4.3E-05
				Benzene	2.9E+01	mg/kg	4.0E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.2E-09	2.8E-06	mg/kg/day	4.0E-03	mg/kg/day	7.0E-04
				Toluene	8.9E+01	mg/kg	1.2E-07	mg/kg/day	NA	NA	NA	8.6E-06	mg/kg/day	2.0E+00	mg/kg/day	4.3E-06
				Xylene (Total)	2.4E+02	mg/kg	3.3E-07	mg/kg/day	NA	NA	NA	2.3E-05	mg/kg/day	2.0E-01	mg/kg/day	1.2E-04
				2,4-Dinitrotoluene	2.9E+01	mg/kg	4.1E-07	mg/kg/day	NA	NA	NA	2.9E-05	mg/kg/day	2.0E-03	mg/kg/day	1.4E-02
				2-Methylnaphthalene	2.1E+03	mg/kg	2.9E-06	mg/kg/day	NA	NA	NA	2.0E-04	mg/kg/day	4.0E-03	mg/kg/day	5.1E-02
				Acenaphthene	1.3E+03	mg/kg	2.3E-05	mg/kg/day	NA	NA	NA	1.6E-03	mg/kg/day	6.0E-01	mg/kg/day	2.7E-03
				Benzo(a)anthracene	2.5E+02	mg/kg	4.4E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.2E-06	3.1E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.6E+02	mg/kg	2.8E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.1E-05	2.0E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.7E+02	mg/kg	3.0E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.2E-06	2.1E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	6.1E+01	mg/kg	1.1E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	8.0E-08	7.7E-05	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	3.8E+02	mg/kg	5.3E-07	mg/kg/day	NA	NA	NA	3.7E-05	mg/kg/day	5.0E-02	mg/kg/day	7.4E-04
				Carbazole	1.6E+02	mg/kg	2.2E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	4.4E-09	1.5E-05	mg/kg/day	NA	NA	NA
				Chrysene	5.3E+02	mg/kg	9.5E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	6.9E-08	6.6E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.7E+01	mg/kg	4.8E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.5E-06	3.4E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	8.2E+02	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	8.0E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	6.5E+02	mg/kg	1.2E-05	mg/kg/day	NA	NA	NA	8.2E-04	mg/kg/day	4.0E-01	mg/kg/day	2.0E-03
				Fluorene	1.1E+03	mg/kg	2.1E-05	mg/kg/day	NA	NA	NA	1.4E-03	mg/kg/day	4.0E-01	mg/kg/day	3.6E-03
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	1.3E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	9.2E-07	8.8E-05	mg/kg/day	NA	NA	NA
				Naphthalene	2.4E+03	mg/kg	4.4E-05	mg/kg/day	NA	NA	NA	3.1E-03	mg/kg/day	2.0E-02	mg/kg/day	1.5E-01
				Phenanthrene	2.3E+03	mg/kg	3.2E-06	mg/kg/day	NA	NA	NA	2.3E-04	mg/kg/day	3.0E+00	mg/kg/day	7.6E-05
				Pyrene	5.7E+02	mg/kg	1.0E-05	mg/kg/day	NA	NA	NA	7.1E-04	mg/kg/day	3.0E-01	mg/kg/day	2.4E-03
			Exp. Route Total								3.1E-05					2.6E-01
		Exposure Point Total									1.1E-04					3.3E+00
	Exposure Medium Total										1.1E-04					3.3E+00

TABLE 7.15.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	115 River Road Emissions from Subsurface Soil (0 - 10 ft)	Inhalation	Arsenic	1.4E-06	mg/m3	4.0E-09	mg/kg/day	1.5E+01	1/(mg/kg/day)	6.0E-08	2.8E-07	mg/kg/day	NA	NA	NA
				Chromium	4.9E-06	mg/m3	1.4E-08	mg/kg/day	4.2E+01	1/(mg/kg/day)	5.7E-07	9.6E-07	mg/kg/day	2.9E-05	mg/kg/day	3.3E-02
				Iron	2.3E-03	mg/m3	6.3E-06	mg/kg/day	NA	NA	NA	4.4E-04	mg/kg/day	NA	NA	NA
				Lead	3.0E-05	mg/m3	8.5E-08	mg/kg/day	NA	NA	NA	5.9E-06	mg/kg/day	NA	NA	NA
				Manganese	1.2E-05	mg/m3	3.3E-08	mg/kg/day	NA	NA	NA	2.3E-06	mg/kg/day	1.4E-05	mg/kg/day	1.6E-01
				Vanadium	1.3E-06	mg/m3	3.6E-09	mg/kg/day	NA	NA	NA	2.5E-07	mg/kg/day	NA	NA	NA
				Mercury	4.5E-08	mg/m3	1.3E-10	mg/kg/day	NA	NA	NA	8.8E-09	mg/kg/day	8.6E-05	mg/kg/day	1.0E-04
				Benzene	1.3E-02	mg/m3	3.6E-05	mg/kg/day	2.7E-02	1/(mg/kg/day)	9.7E-07	2.5E-03	mg/kg/day	8.6E-03	mg/kg/day	2.9E-01
				Toluene	3.1E-02	mg/m3	8.6E-05	mg/kg/day	NA	NA	NA	6.0E-03	mg/kg/day	1.4E+00	mg/kg/day	4.2E-03
				Xylene (Total)	5.8E-02	mg/m3	1.6E-04	mg/kg/day	NA	NA	NA	1.1E-02	mg/kg/day	2.9E-02	mg/kg/day	4.0E-01
				2,4-Dinitrotoluene	1.4E-06	mg/m3	3.9E-09	mg/kg/day	NA	NA	NA	2.7E-07	mg/kg/day	NA	NA	NA
				2-Methylnaphthalene	6.1E-03	mg/m3	1.7E-05	mg/kg/day	NA	NA	NA	1.2E-03	mg/kg/day	NA	NA	NA
				Acenaphthene	6.3E-05	mg/m3	1.8E-07	mg/kg/day	NA	NA	NA	1.2E-05	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	1.2E-05	mg/m3	3.3E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.0E-08	2.3E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	7.7E-06	mg/m3	2.1E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	6.6E-08	1.5E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	8.1E-06	mg/m3	2.3E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	7.0E-09	1.6E-06	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	3.0E-06	mg/m3	8.3E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	2.5E-10	5.8E-07	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	2.8E-03	mg/m3	7.8E-06	mg/kg/day	NA	NA	NA	5.4E-04	mg/kg/day	NA	NA	NA
				Carbazole	7.7E-06	mg/m3	2.1E-08	mg/kg/day	NA	NA	NA	1.5E-06	mg/kg/day	NA	NA	NA
				Chrysene	2.5E-05	mg/m3	7.1E-08	mg/kg/day	NA	NA	NA	5.0E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	1.3E-06	mg/m3	3.6E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.1E-08	2.5E-07	mg/kg/day	NA	NA	NA
				Dibenzofuran	4.0E-05	mg/m3	1.1E-07	mg/kg/day	NA	NA	NA	7.8E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	3.1E-05	mg/m3	8.8E-08	mg/kg/day	NA	NA	NA	6.1E-06	mg/kg/day	NA	NA	NA
				Fluorene	5.2E-03	mg/m3	1.5E-05	mg/kg/day	NA	NA	NA	1.0E-03	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	3.4E-06	mg/m3	9.5E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	2.9E-09	6.7E-07	mg/kg/day	NA	NA	NA
				Naphthalene	6.9E-02	mg/m3	1.9E-04	mg/kg/day	NA	NA	NA	1.3E-02	mg/kg/day	8.6E-04	mg/kg/day	1.6E+01
				Phenanthrene	2.0E-01	mg/m3	5.5E-04	mg/kg/day	NA	NA	NA	3.9E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.5E-04	mg/m3	7.1E-07	mg/kg/day	NA	NA	NA	5.0E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.7E-06					1.7E+01
		Exposure Point Total									1.7E-06					1.7E+01
	Exposure Medium Total										1.7E-06					1.7E+01
Soil Total											1.1E-04					2.0E+01

TABLE 7.15.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater (Excavation)	115 River Road (Excavation)	Dermal	Arsenic	8.9E+00	ug/L	1.4E-09	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.1E-09	9.6E-08	mg/kg/day	3.0E-04	mg/kg/day	3.2E-04
				Lead	6.0E+00	ug/L	9.3E-10	mg/kg/day	NA	NA	NA	6.5E-08	mg/kg/day	NA	NA	NA
				Benzene	1.9E+02	ug/L	4.8E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.6E-08	3.3E-05	mg/kg/day	4.0E-03	mg/kg/day	8.3E-03
				o-Xylene	2.3E+01	ug/L	1.8E-07	mg/kg/day	NA	NA	NA	1.3E-05	mg/kg/day	2.0E-01	mg/kg/day	6.3E-05
				Xylene (Total)	8.3E+01	ug/L	6.2E-07	mg/kg/day	NA	NA	NA	4.3E-05	mg/kg/day	2.0E-01	mg/kg/day	2.2E-04
				2-Methylnaphthalene	9.7E+01	ug/L	1.3E-06	mg/kg/day	NA	NA	NA	9.0E-05	mg/kg/day	4.0E-03	mg/kg/day	2.2E-02
				Acenaphthene	9.7E+01	ug/L	2.2E-06	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	6.0E-01	mg/kg/day	2.5E-04
				Benzo(a)anthracene	7.6E-01	ug/L	1.1E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.0E-08	7.7E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	4.8E-01	ug/L	1.2E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	8.7E-07	8.3E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-01	ug/L	1.1E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.8E-08	7.5E-06	mg/kg/day	NA	NA	NA
				Carbazole	3.6E+01	ug/L	2.2E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	4.4E-09	1.6E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.2E+01	ug/L	5.3E-07	mg/kg/day	NA	NA	NA	3.7E-05	mg/kg/day	NA	NA	NA
				Fluorene	2.4E+01	ug/L	4.4E-06	mg/kg/day	NA	NA	NA	3.1E-06	mg/kg/day	4.0E-01	mg/kg/day	7.8E-06
				Naphthalene	1.6E+03	ug/L	1.3E-05	mg/kg/day	NA	NA	NA	9.4E-04	mg/kg/day	2.0E-02	mg/kg/day	4.7E-02
			Exp. Route Total								1.1E-06					7.9E-02
		Exposure Point Total									1.1E-06					7.9E-02
	Exposure Medium Total										1.1E-06					7.9E-02
Groundwater	Ambient Air (Excavation)	115 River Road (Excavation)	Inhalation	Benzene	7.9E-03	mg/m3	2.7E-06	mg/kg/day	2.7E-02	1/(mg/kg/day)	7.3E-08	1.9E-04	mg/kg/day	8.6E-03	mg/kg/day	2.2E-02
				o-Xylene	9.8E-04	mg/m3	3.3E-07	mg/kg/day	NA	NA	NA	2.3E-05	mg/kg/day	2.9E-02	mg/kg/day	8.1E-04
				Xylene (Total)	3.6E-03	mg/m3	1.2E-06	mg/kg/day	NA	NA	NA	8.3E-05	mg/kg/day	2.9E-02	mg/kg/day	2.9E-03
				2-Methylnaphthalene	9.3E-04	mg/m3	3.1E-07	mg/kg/day	NA	NA	NA	2.2E-05	mg/kg/day	NA	NA	NA
				Acenaphthene	2.8E-03	mg/m3	9.4E-07	mg/kg/day	NA	NA	NA	6.6E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.5E-04	mg/m3	1.2E-07	mg/kg/day	NA	NA	NA	8.3E-06	mg/kg/day	NA	NA	NA
				Fluorene	6.1E-04	mg/m3	2.0E-07	mg/kg/day	NA	NA	NA	1.4E-05	mg/kg/day	NA	NA	NA
				Naphthalene	5.3E-02	mg/m3	1.8E-05	mg/kg/day	NA	NA	NA	1.3E-03	mg/kg/day	8.6E-04	mg/kg/day	1.5E+00
			Exp. Route Total								7.3E-08					1.5E+00
		Exposure Point Total									7.3E-08					1.5E+00
	Exposure Medium Total										7.3E-08					1.5E+00
Groundwater Total											1.1E-06					1.6E+00
Receptor Total											1.2E-04					2.1E+01

NA = Not applicable.

TABLE 7.15.RME SUPPLEMENT A
CALCULATION OF DAEVENT
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Groundwater Concentration (CW) (ug/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm^2-event)	Eq
Arsenic	8.89E+00	1.0E-03	NA	NA	NA	NA	4.0	3.6E-08	1
Lead	6.00E+00	1.0E-03	NA	NA	NA	NA	4.0	2.4E-08	1
Benzene	1.88E+02	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	4.0	1.2E-05	3
o-Xylene	2.29E+01	4.7E-02	1.9E-01	4.1E-01	9.9E-01	1.0E+00	4.0	4.7E-06	3
Xylene (Total)	8.30E+01	4.4E-02	1.8E-01	4.1E-01	9.9E-01	1.0E+00	4.0	1.6E-05	3
2-Methylnaphthalene	9.70E+01	7.2E-02	3.3E-01	6.6E-01	1.6E+00	1.0E+00	4.0	3.3E-05	3
Acenaphthene	9.74E+01	1.2E-01	5.7E-01	7.7E-01	1.8E+00	1.0E+00	4.0	5.6E-05	3
Benzo(a)anthracene	7.61E-01	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	4.0	2.8E-06	2
Benzo(a)pyrene	4.84E-01	7.0E-01	4.3E+00	2.7E+00	1.2E+01	1.0E+00	4.0	3.1E-06	2
Benzo(b)fluoranthene	4.29E-01	7.0E-01	4.3E+00	2.8E+00	1.2E+01	1.0E+00	4.0	2.8E-06	2
Carbazole	3.61E+01	2.9E-02	1.4E-01	9.1E-01	2.2E+00	1.0E+00	4.0	5.7E-06	3
Dibenzofuran	3.20E+01	7.9E-02	4.0E-01	9.2E-01	2.2E+00	1.0E+00	4.0	1.4E-05	3
Fluorene	2.35E+01	7.8E-03	4.1E-02	1.2E+00	2.8E+00	1.0E+00	4.0	1.2E-06	3
Naphthalene	1.60E+03	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	4.0	3.5E-04	3

Inorganics: DAevent (mg/cm2-event) =

DA_{event} = $Kp \times CW \times tevent \times 0.001\ mg/ug \times 0.001\ l/cm^3$ (Eq 1)

Organics: DAevent (mg/cm2-event) =

DA_{event} = $t_{event} < t^*$: DA_{event} (mg/cm^2-event) =
$2 \times FA \times Kp \times Cw \times (\sqrt{((6 \times \tau \times t_{event}) / (3.1415))}) \times CF1 \times CF2$ (Eq 2)

$t_{event} > t^*$: DA_{event} (mg/cm^2-event) =
$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau \times ((1 + 3B + 3B^2)/(1+B)^2)) \times CF1 \times CF2$ (Eq 3)

Notes:
NA - Not applicable
Permeability constants from EPA 2004, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final).* EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.
B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
t* - Time to reach steady-state

TABLE 7.15.RME SUPPLEMENT B
CALCULATION OF CONSTITUENT CONCENTRATIONS IN AIR FROM STANDING WATER
FUTURE CONSTRUCTION WORKER SCENARIO (QUANTA RESOURCES)
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	Concentration in Water (mg/L)	Concentration in Water (g/m^3) C_L	Dimensionless Henry's Law Constant (H') K_{eq}	Diffusion coefficient in air (cm^2/s) D_a	Diffusion coefficient in water (cm^2/s) D_w	Schmidt Number Sc_g	Effective diameter of source (m) d_e	Liquid-phase mass transfer coef (m/s) k_L	k_G (m/s)	1/K	K (m/s)	E (g/s)	Concentration in Air (mg/m^3) C_{air}
Benzene	1.88E-01	1.88E-01	2.28E-01	8.80E-02	9.80E-06	1.71E+00	1.13E+01	3.06E-06	2.57E-03	3.29E+05	3.04E-06	5.72E-05	7.94E-03
o-Xylene	2.29E-02	2.29E-02	2.13E-01	8.70E-02	1.00E-05	1.73E+00	1.13E+01	3.10E-06	2.55E-03	3.25E+05	3.08E-06	7.05E-06	9.80E-04
Xylene (Total)	8.30E-02	8.30E-02	2.13E-01	8.70E-02	1.00E-05	1.73E+00	1.13E+01	3.10E-06	2.55E-03	3.25E+05	3.08E-06	2.56E-05	3.55E-03
2-Methylnaphthalene	9.70E-02	9.70E-02	5.17E-04	5.22E-02	7.75E-06	2.89E+00	1.13E+01	2.61E-06	1.81E-03	1.45E+06	6.90E-07	6.69E-06	9.30E-04
Acenaphthene	9.74E-02	9.74E-02	6.36E-03	4.21E-02	7.69E-06	3.58E+00	1.13E+01	2.60E-06	1.57E-03	4.85E+05	2.06E-06	2.01E-05	2.79E-03
Dibenzofuran	3.20E-02	3.20E-02	5.33E-04	6.01E-02	1.00E-05	2.51E+00	1.13E+01	3.10E-06	1.99E-03	1.26E+06	7.91E-07	2.53E-06	3.52E-04
Fluorene	2.35E-02	2.35E-02	3.16E-03	6.08E-02	7.88E-06	2.48E+00	1.13E+01	2.64E-06	2.01E-03	5.36E+05	1.87E-06	4.39E-06	6.09E-04
Naphthalene	1.60E+00	1.60E+00	1.98E-02	5.90E-02	7.50E-06	2.56E+00	1.13E+01	2.56E-06	1.97E-03	4.17E+05	2.40E-06	3.84E-04	5.33E-02

Concentration in Air (C_{air}) = (mg/m^3)	$1000 * E/H * V_{wind} * L$
Emissions from Liquid surface (E) = (g/s)	$K * A * C_L$
Overall Mas Transfer Coefficient (K) = (m/s)	$1/K = 1/k_L + 1/k_G * K_{eq}$
Liquid-phase Mass Transfer Coefficient (k_L) = (m/s)	$2.78E-06 * (D_w/D_{ether})^{2/3}$
Gas-phase Mass Transfer Coefficient (k_G) = (m/g)	$4.82E-03 * U^{0.78} * Sc_G^{-0.67} * d_e^{-0.11}$
Effective Diameter of Source (d_e) = (m)	$(4 * A / \pi)^{0.5}$
Schmidt Number Calculation (Sc_G) =	$u_G/\rho_G * D_a$

Parameters		Values
C_L	Concentration in liquid phase (g/m^3)	chemical specific
K	overall mass transfer coefficient (m/s)	calculated
k_L	liquid-phase mass transfer coefficient (m/s)	calculated
k_G	gas-phase mass transfer coefficient (m/s)	calculated
K_{eq}	Equilibrium constant (Henry's Law constant)	chemical specific
D_{ether}	Diffusion coefficient of ether in water (cm^2/s)	8.50E-06
D_w	Diffusion coefficient in water (cm^2/s)	chemical specific
U	Windspeed (m/s)	1
A	Area of the source (m^2)	100
u_G	viscosity of air (g/cm-s)	1.81E-04
ρ_G	density of air (g/cm^3)	1.20E-03
D_a	Diffusion coefficient in air (cm^2/s)	chemical specific
H	Height of breathing zone (m)	2
Vwind	Average wind speed in breathing zone (m/s)	2.25
L	Length of breathing zone perpendicular to wind (m)	1.6

Chemical and physical properties from EPA Region 9 PRG Table (EPA, 10/2004).

TABLE 7.16.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Ingestion	Arsenic	1.3E+01	mg/kg	NA	NA	NA	NA	NA	1.8E-05	mg/kg/day	3.0E-04	mg/kg/day	5.9E-02
				Chromium	1.0E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-04	mg/kg/day	3.0E-03	mg/kg/day	4.6E-02
				Lead	5.6E+02	mg/kg	NA	NA	NA	NA	NA	7.6E-04	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	NA	NA	NA	NA	NA	3.8E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	NA	NA	NA	NA	NA	3.4E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	NA	NA	NA	NA	NA	4.2E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	NA	NA	NA	NA	NA	2.2E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	NA	NA	NA	NA	NA	6.3E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	NA	NA	NA	NA	NA	2.1E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	NA	NA	NA	NA	NA	1.6E-05	mg/kg/day	2.0E-02	mg/kg/day	8.2E-04
			Exp. Route Total								0.0E+00					1.1E-01
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Dermal	Arsenic	1.3E+01	mg/kg	NA	NA	NA	NA	NA	2.1E-06	mg/kg/day	3.0E-04	mg/kg/day	7.1E-03
				Chromium	1.0E+02	mg/kg	NA	NA	NA	NA	NA	5.5E-07	mg/kg/day	7.5E-05	mg/kg/day	7.4E-03
				Lead	5.6E+02	mg/kg	NA	NA	NA	NA	NA	3.0E-06	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	NA	NA	NA	NA	NA	2.0E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	NA	NA	NA	NA	NA	1.8E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	NA	NA	NA	NA	NA	2.2E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	NA	NA	NA	NA	NA	1.1E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	NA	NA	NA	NA	NA	3.3E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	NA	NA	NA	NA	NA	1.1E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	NA	NA	NA	NA	NA	8.5E-06	mg/kg/day	2.0E-02	mg/kg/day	4.3E-04
			Exp. Route Total								0.0E+00					1.5E-02
		Exposure Point Total									0.0E+00					1.2E-01
	Exposure Medium Total										0.0E+00					1.2E-01

TABLE 7.16.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Inhalation	Arsenic	1.6E-08	mg/m3	NA	NA	NA	NA	NA	4.3E-09	mg/kg/day	NA	NA	NA
				Chromium	1.2E-07	mg/m3	NA	NA	NA	NA	NA	3.3E-08	mg/kg/day	2.9E-05	mg/kg/day	1.2E-03
				Lead	6.7E-07	mg/m3	NA	NA	NA	NA	NA	1.8E-07	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	3.4E-08	mg/m3	NA	NA	NA	NA	NA	9.2E-09	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E-08	mg/m3	NA	NA	NA	NA	NA	8.2E-09	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.7E-08	mg/m3	NA	NA	NA	NA	NA	1.0E-08	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.9E-08	mg/m3	NA	NA	NA	NA	NA	5.3E-09	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	5.6E-09	mg/m3	NA	NA	NA	NA	NA	1.5E-09	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.8E-08	mg/m3	NA	NA	NA	NA	NA	4.9E-09	mg/kg/day	NA	NA	NA
				Naphthalene	3.4E-04	mg/m3	NA	NA	NA	NA	NA	9.3E-05	mg/kg/day	8.6E-04	mg/kg/day	1.1E-01
			Exp. Route Total								0.0E+00					1.1E-01
		Exposure Point Total									0.0E+00					1.1E-01
	Exposure Medium Total										0.0E+00					1.1E-01
Soil Total											0.0E+00					2.3E-01
Receptor Total											0.0E+00					2.3E-01

NA = Not applicable.

TABLE 7.17.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Ingestion	Arsenic	1.3E+01	mg/kg	NA	NA	NA	NA	NA	1.7E-04	mg/kg/day	3.0E-04	mg/kg/day	5.5E-01
				Chromium	1.0E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-03	mg/kg/day	3.0E-03	mg/kg/day	4.3E-01
				Lead	5.6E+02	mg/kg	NA	NA	NA	NA	NA	7.1E-03	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	NA	NA	NA	NA	NA	3.6E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	NA	NA	NA	NA	NA	3.2E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	NA	NA	NA	NA	NA	4.0E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	NA	NA	NA	NA	NA	2.0E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	NA	NA	NA	NA	NA	5.9E-05	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	NA	NA	NA	NA	NA	1.9E-04	mg/kg/day	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	NA	NA	NA	NA	NA	1.5E-04	mg/kg/day	2.0E-02	mg/kg/day	7.7E-03
			Exp. Route Total								0.0E+00					9.9E-01
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Dermal	Arsenic	1.3E+01	mg/kg	NA	NA	NA	NA	NA	1.4E-05	mg/kg/day	3.0E-04	mg/kg/day	4.7E-02
				Chromium	1.0E+02	mg/kg	NA	NA	NA	NA	NA	3.6E-06	mg/kg/day	7.5E-05	mg/kg/day	4.8E-02
				Lead	5.6E+02	mg/kg	NA	NA	NA	NA	NA	2.0E-05	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	NA	NA	NA	NA	NA	1.3E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	NA	NA	NA	NA	NA	1.2E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	NA	NA	NA	NA	NA	1.4E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	NA	NA	NA	NA	NA	7.4E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	NA	NA	NA	NA	NA	2.1E-05	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	NA	NA	NA	NA	NA	7.0E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	NA	NA	NA	NA	NA	5.6E-05	mg/kg/day	2.0E-02	mg/kg/day	2.8E-03
			Exp. Route Total								0.0E+00					9.8E-02
		Exposure Point Total									0.0E+00					1.1E+00
	Exposure Medium Total										0.0E+00					1.1E+00

TABLE 7.17.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Inhalation	Arsenic	1.6E-08	mg/m3	NA	NA	NA	NA	NA	1.0E-08	mg/kg/day	NA	NA	NA
				Chromium	1.2E-07	mg/m3	NA	NA	NA	NA	NA	7.9E-08	mg/kg/day	2.9E-05	mg/kg/day	2.8E-03
				Lead	6.7E-07	mg/m3	NA	NA	NA	NA	NA	4.3E-07	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	3.4E-08	mg/m3	NA	NA	NA	NA	NA	2.2E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E-08	mg/m3	NA	NA	NA	NA	NA	1.9E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.7E-08	mg/m3	NA	NA	NA	NA	NA	2.4E-08	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.9E-08	mg/m3	NA	NA	NA	NA	NA	1.2E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	5.6E-09	mg/m3	NA	NA	NA	NA	NA	3.6E-09	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.8E-08	mg/m3	NA	NA	NA	NA	NA	1.2E-08	mg/kg/day	NA	NA	NA
				Naphthalene	3.4E-04	mg/m3	NA	NA	NA	NA	NA	2.2E-04	mg/kg/day	8.6E-04	mg/kg/day	2.6E-01
			Exp. Route Total								0.0E+00					2.6E-01
		Exposure Point Total									0.0E+00					2.6E-01
	Exposure Medium Total										0.0E+00					2.6E-01
Soil Total											0.0E+00					1.3E+00
Receptor Total											0.0E+00					1.3E+00

NA = Not applicable.

TABLE 7.18.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Ingestion	Arsenic	1.3E+01	mg/kg	2.0E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	3.1E-05	NA	NA	NA	NA	NA
				Chromium	1.0E+02	mg/kg	1.6E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	5.6E+02	mg/kg	8.7E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	4.4E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.2E-05	NA	NA	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	3.9E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.6E-03	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	4.9E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.5E-05	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	2.5E-05	mg/kg/day	7.3E-02	1/(mg/kg/day)	1.8E-06	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	7.2E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.0E-04	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	2.3E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.7E-05	NA	NA	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	1.9E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								2.0E-03					0.0E+00
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Dermal	Arsenic	1.3E+01	mg/kg	1.9E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.9E-06	NA	NA	NA	NA	NA
				Chromium	1.0E+02	mg/kg	5.0E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	5.6E+02	mg/kg	2.8E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	1.8E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.3E-05	NA	NA	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	1.6E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.8E-04	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	2.0E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.5E-05	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	1.0E-05	mg/kg/day	7.3E-02	1/(mg/kg/day)	7.5E-07	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	3.0E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.2E-04	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	9.6E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.0E-06	NA	NA	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	7.7E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								8.4E-04					0.0E+00
		Exposure Point Total									2.9E-03					0.0E+00
	Exposure Medium Total										2.9E-03					0.0E+00

TABLE 7.18.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Inhalation	Arsenic	1.6E-08	mg/m3	2.3E-09	mg/kg/day	1.5E+01	1/(mg/kg/day)	3.5E-08	NA	NA	NA	NA	NA
				Chromium	1.2E-07	mg/m3	1.8E-08	mg/kg/day	4.2E+01	1/(mg/kg/day)	7.6E-07	NA	NA	NA	NA	NA
				Lead	6.7E-07	mg/m3	1.0E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	3.4E-08	mg/m3	5.0E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.6E-09	NA	NA	NA	NA	NA
				Benzo(a)pyrene	3.0E-08	mg/m3	4.5E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	2.3E-08	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	3.7E-08	mg/m3	5.6E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.7E-09	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.9E-08	mg/m3	2.9E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	8.9E-11	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	5.6E-09	mg/m3	8.3E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	4.2E-09	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.8E-08	mg/m3	2.7E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	8.3E-10	NA	NA	NA	NA	NA
				Naphthalene	3.4E-04	mg/m3	5.0E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								8.3E-07					0.0E+00
		Exposure Point Total									8.3E-07					0.0E+00
	Exposure Medium Total										8.3E-07					0.0E+00
Soil Total											2.9E-03					0.0E+00
Receptor Total											2.9E-03					0.0E+00

NA = Not applicable.

TABLE 7.19.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Ingestion	Arsenic	4.5E+01	mg/kg	8.9E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.3E-05	2.1E-05	mg/kg/day	3.0E-04	mg/kg/day	6.9E-02
				Chromium	2.9E+01	mg/kg	5.7E-06	mg/kg/day	NA	NA	NA	1.3E-05	mg/kg/day	3.0E-03	mg/kg/day	4.4E-03
				Benzo(a)anthracene	2.0E+01	mg/kg	3.9E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.9E-06	9.2E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.0E+01	mg/kg	3.9E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.9E-05	9.2E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.6E+01	mg/kg	5.1E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.7E-06	1.2E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+01	mg/kg	2.2E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	1.6E-07	5.0E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.3E+00	mg/kg	6.5E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	4.7E-06	1.5E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.2E+01	mg/kg	2.4E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.7E-06	5.5E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								5.5E-05					7.4E-02
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Dermal	Arsenic	4.5E+01	mg/kg	1.1E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.6E-06	2.5E-06	mg/kg/day	3.0E-04	mg/kg/day	8.3E-03
				Chromium	2.9E+01	mg/kg	2.3E-08	mg/kg/day	NA	NA	NA	5.3E-08	mg/kg/day	7.5E-05	mg/kg/day	7.0E-04
				Benzo(a)anthracene	2.0E+01	mg/kg	2.0E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.5E-06	4.8E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.0E+01	mg/kg	2.0E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.5E-05	4.8E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.6E+01	mg/kg	2.6E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.9E-06	6.2E-06	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+01	mg/kg	1.1E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	8.2E-08	2.6E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.3E+00	mg/kg	3.4E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.5E-06	7.8E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.2E+01	mg/kg	1.2E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.9E-07	2.9E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								2.3E-05					9.0E-03
		Exposure Point Total									7.8E-05					8.3E-02
	Exposure Medium Total										7.8E-05					8.3E-02

TABLE 7.19.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air (Upland Area)	Former Lever Brothers Property Emissions from Surface Soil (0-2 ft)	Inhalation	Arsenic	5.5E-08	mg/m3	1.8E-10	mg/kg/day	1.5E+01	1/(mg/kg/day)	2.7E-09	4.2E-10	mg/kg/day	NA	NA	NA
				Chromium	3.5E-08	mg/m3	1.1E-10	mg/kg/day	4.2E+01	1/(mg/kg/day)	4.8E-09	2.7E-10	mg/kg/day	2.9E-05	mg/kg/day	9.3E-06
				Benzo(a)anthracene	2.4E-08	mg/m3	7.9E-11	mg/kg/day	3.1E-01	1/(mg/kg/day)	2.4E-11	1.8E-10	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.4E-08	mg/m3	7.9E-11	mg/kg/day	3.1E+00	1/(mg/kg/day)	2.4E-10	1.8E-10	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E-08	mg/m3	1.0E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	3.2E-11	2.4E-10	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-08	mg/m3	4.3E-11	mg/kg/day	3.1E-02	1/(mg/kg/day)	1.3E-12	1.0E-10	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.0E-09	mg/m3	1.3E-11	mg/kg/day	3.1E+00	1/(mg/kg/day)	4.0E-11	3.0E-11	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E-08	mg/m3	4.7E-11	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.5E-11	1.1E-10	mg/kg/day	NA	NA	NA
			Exp. Route Total								7.8E-09					9.3E-06
		Exposure Point Total									7.8E-09					9.3E-06
	Exposure Medium Total										7.8E-09					9.3E-06
Soil Total											7.8E-05					8.3E-02
Receptor Total											7.8E-05					8.3E-02

NA = Not applicable.

TABLE 7.29.RME SUPPLEMENT B
CALCULATION OF CONSTITUENT CONCENTRATIONS IN AIR FROM STANDING WATER
FUTURE CONSTRUCTION WORKER SCENARIO (QUANTA RESOURCES)
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	Concentration in Water (mg/L)	Concentration in Water (g/m^3) C_L	Dimensionless Henry's Law Constant (H') K_{eq}	Diffusion coefficient in air (cm^2/s) D_a	Diffusion coefficient in water (cm^2/s) D_w	Schmidt Number Sc_g	Effective diameter of source (m) d_e	Liquid-phase mass transfer coef (m/s) k_L	k_G (m/s)	1/K	K (m/s)	E (g/s)	Concentration in Air (mg/m^3) C_{air}
Trichloroethene	2.00E-04	2.00E-04	4.22E-01	7.90E-02	9.10E-06	1.91E+00	1.13E+01	2.91E-06	2.39E-03	3.45E+05	2.90E-06	5.80E-08	8.06E-06
2-Methylnaphthalene	3.98E-03	3.98E-03	5.17E-04	5.22E-02	7.75E-06	2.89E+00	1.13E+01	2.61E-06	1.81E-03	1.45E+06	6.90E-07	2.74E-07	3.81E-05
Dibenzofuran	6.00E-03	6.00E-03	5.33E-04	6.01E-02	1.00E-05	2.51E+00	1.13E+01	3.10E-06	1.99E-03	1.26E+06	7.91E-07	4.75E-07	6.60E-05
Naphthalene	1.32E-01	1.32E-01	1.98E-02	5.90E-02	7.50E-06	2.56E+00	1.13E+01	2.56E-06	1.97E-03	4.17E+05	2.40E-06	3.18E-05	4.41E-03

Concentration in Air (C_{air}) = (mg/m^3)	$1000 * E/H * V_{wind} * L$
Emissions from Liquid surface (E) = (g/s)	$K * A * C_L$
Overall Mas Transfer Coefficient (K) = (m/s)	$1/K = 1/k_L + 1/k_G * K_{eq}$
Liquid-phase Mass Transfer Coefficient (k_L) = (m/s)	$2.78E\text{-}06 * (D_w/D_{ether})^{2/3}$
Gas-phase Mass Transfer Coefficient (k_G) = (m/g)	$4.82E\text{-}03 * U^{0.78} * Sc_G^{-0.67} * d_e^{-0.11}$
Effective Diameter of Source (d_e) = (m)	$(4 * A / \pi)^{0.5}$
Schmidt Number Calculation (Sc_G) =	$u_G/p_G * D_a$

Parameters		Values
C_L	Concentration in liquid phase (g/m^3)	chemical specific
K	overall mass transfer coefficient (m/s)	calculated
k_L	liquid-phase mass transfer coefficient (m/s)	calculated
k_G	gas-phase mass transfer coefficient (m/s)	calculated
K_{eq}	Equilibrium constant (Henry's Law constant)	chemical specific
D_{ether}	Diffusion coefficient of ether in water (cm^2/s)	8.50E-06
D_w	Diffusion coefficient in water (cm^2/s)	chemical specific
U	Windspeed (m/s)	1
A	Area of the source (m^2)	100
u_G	viscosity of air (g/cm-s)	1.81E-04
p_G	density of air (g/cm^3)	1.20E-03
D_a	Diffusion coefficient in air (cm^2/s)	chemical specific
H	Height of breathing zone (m)	2
Vwind	Average wind speed in breathing zone (m/s)	2.25
L	Length of breathing zone perpendicular to wind (m)	1.6

Chemical and physical properties from EPA Region 9 PRG Table (EPA, 10/2004).

TABLE 7.30.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.1E+04	mg/kg	NA	NA	NA	NA	NA	1.5E-02	mg/kg/day	1.0E+00	mg/kg/day	1.5E-02
				Antimony	1.7E+01	mg/kg	NA	NA	NA	NA	NA	2.4E-05	mg/kg/day	4.0E-04	mg/kg/day	5.9E-02
				Arsenic	2.4E+02	mg/kg	NA	NA	NA	NA	NA	3.3E-04	mg/kg/day	3.0E-04	mg/kg/day	1.1E+00
				Chromium	4.3E+01	mg/kg	NA	NA	NA	NA	NA	5.9E-05	mg/kg/day	3.0E-03	mg/kg/day	2.0E-02
				Copper	2.4E+02	mg/kg	NA	NA	NA	NA	NA	3.3E-04	mg/kg/day	4.0E-02	mg/kg/day	8.2E-03
				Iron	2.9E+04	mg/kg	NA	NA	NA	NA	NA	4.0E-02	mg/kg/day	3.0E-01	mg/kg/day	1.3E-01
				Lead	7.1E+02	mg/kg	NA	NA	NA	NA	NA	9.8E-04	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	NA	NA	NA	NA	NA	5.1E-04	mg/kg/day	1.4E-01	mg/kg/day	3.6E-03
				Nickel	9.8E+01	mg/kg	NA	NA	NA	NA	NA	1.3E-04	mg/kg/day	2.0E-02	mg/kg/day	6.7E-03
				Thallium	4.3E+00	mg/kg	NA	NA	NA	NA	NA	5.9E-06	mg/kg/day	6.6E-05	mg/kg/day	8.9E-02
				Vanadium	5.1E+01	mg/kg	NA	NA	NA	NA	NA	6.9E-05	mg/kg/day	1.0E-03	mg/kg/day	6.9E-02
				Mercury	3.9E+00	mg/kg	NA	NA	NA	NA	NA	5.3E-06	mg/kg/day	3.0E-04	mg/kg/day	1.8E-02
				Aroclor-1254	6.1E-01	mg/kg	NA	NA	NA	NA	NA	8.4E-07	mg/kg/day	2.0E-05	mg/kg/day	4.2E-02
				Aroclor-1260	1.7E+00	mg/kg	NA	NA	NA	NA	NA	2.3E-06	mg/kg/day	2.0E-05	mg/kg/day	1.2E-01
				Benzene	1.0E+01	mg/kg	NA	NA	NA	NA	NA	1.4E-05	mg/kg/day	4.0E-03	mg/kg/day	3.5E-03
				m,p-Xylene	1.8E+02	mg/kg	NA	NA	NA	NA	NA	2.5E-04	mg/kg/day	2.0E-01	mg/kg/day	1.2E-03
				o-Xylene	9.0E+01	mg/kg	NA	NA	NA	NA	NA	1.2E-04	mg/kg/day	2.0E-01	mg/kg/day	6.2E-04
				Xylene (Total)	2.0E+02	mg/kg	NA	NA	NA	NA	NA	2.7E-04	mg/kg/day	2.0E-01	mg/kg/day	1.4E-03
				2-Methylnaphthalene	5.4E+02	mg/kg	NA	NA	NA	NA	NA	7.4E-04	mg/kg/day	4.0E-03	mg/kg/day	1.8E-01
				Acenaphthene	2.8E+02	mg/kg	NA	NA	NA	NA	NA	3.8E-04	mg/kg/day	6.0E-02	mg/kg/day	6.3E-03
				Benzo(a)anthracene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	2.8E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	1.7E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	1.8E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	NA	NA	NA	NA	NA	1.5E-04	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-04	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	2.7E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	NA	NA	NA	NA	NA	3.2E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	NA	NA	NA	NA	NA	3.1E-04	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-03	mg/kg/day	4.0E-02	mg/kg/day	2.9E-02
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	4.6E-04	mg/kg/day	4.0E-02	mg/kg/day	1.1E-02
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	NA	NA	NA	NA	NA	9.6E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	NA	NA	NA	NA	NA	2.2E-03	mg/kg/day	2.0E-02	mg/kg/day	1.1E-01
				Phenanthrene	1.2E+03	mg/kg	NA	NA	NA	NA	NA	1.6E-03	mg/kg/day	3.0E-01	mg/kg/day	5.3E-03
				Pyrene	5.8E+02	mg/kg	NA	NA	NA	NA	NA	8.0E-04	mg/kg/day	3.0E-02	mg/kg/day	2.7E-02
			Exp. Route Total								0.0E+00					2.1E+00

TABLE 7.30.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.1E+04	mg/kg	NA	NA	NA	NA	NA	6.0E-05	mg/kg/day	1.0E+00	mg/kg/day	6.0E-05
				Antimony	1.7E+01	mg/kg	NA	NA	NA	NA	NA	9.4E-08	mg/kg/day	6.0E-05	mg/kg/day	1.6E-03
				Arsenic	2.4E+02	mg/kg	NA	NA	NA	NA	NA	4.0E-05	mg/kg/day	3.0E-04	mg/kg/day	1.3E-01
				Chromium	4.3E+01	mg/kg	NA	NA	NA	NA	NA	2.4E-07	mg/kg/day	7.5E-05	mg/kg/day	3.2E-03
				Copper	2.4E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-06	mg/kg/day	4.0E-02	mg/kg/day	3.3E-05
				Iron	2.9E+04	mg/kg	NA	NA	NA	NA	NA	1.6E-04	mg/kg/day	3.0E-01	mg/kg/day	5.3E-04
				Lead	7.1E+02	mg/kg	NA	NA	NA	NA	NA	3.9E-06	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	NA	NA	NA	NA	NA	2.0E-06	mg/kg/day	5.6E-03	mg/kg/day	3.6E-04
				Nickel	9.8E+01	mg/kg	NA	NA	NA	NA	NA	5.4E-07	mg/kg/day	8.0E-04	mg/kg/day	6.7E-04
				Thallium	4.3E+00	mg/kg	NA	NA	NA	NA	NA	2.4E-08	mg/kg/day	6.6E-05	mg/kg/day	3.6E-04
				Vanadium	5.1E+01	mg/kg	NA	NA	NA	NA	NA	2.8E-07	mg/kg/day	2.6E-05	mg/kg/day	1.1E-02
				Mercury	3.9E+00	mg/kg	NA	NA	NA	NA	NA	2.1E-08	mg/kg/day	2.1E-05	mg/kg/day	1.0E-03
				Aroclor-1254	6.1E-01	mg/kg	NA	NA	NA	NA	NA	4.7E-07	mg/kg/day	2.0E-05	mg/kg/day	2.3E-02
				Aroclor-1260	1.7E+00	mg/kg	NA	NA	NA	NA	NA	1.3E-06	mg/kg/day	2.0E-05	mg/kg/day	6.5E-02
				Benzene	1.0E+01	mg/kg	NA	NA	NA	NA	NA	5.6E-07	mg/kg/day	4.0E-03	mg/kg/day	1.4E-04
				m,p-Xylene	1.8E+02	mg/kg	NA	NA	NA	NA	NA	9.8E-06	mg/kg/day	2.0E-01	mg/kg/day	4.9E-05
				o-Xylene	9.0E+01	mg/kg	NA	NA	NA	NA	NA	4.9E-06	mg/kg/day	2.0E-01	mg/kg/day	2.5E-05
				Xylene (Total)	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-05	mg/kg/day	2.0E-01	mg/kg/day	5.4E-05
				2-Methylnaphthalene	5.4E+02	mg/kg	NA	NA	NA	NA	NA	2.9E-05	mg/kg/day	4.0E-03	mg/kg/day	7.4E-03
				Acenaphthene	2.8E+02	mg/kg	NA	NA	NA	NA	NA	2.0E-04	mg/kg/day	6.0E-02	mg/kg/day	3.3E-03
				Benzo(a)anthracene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	9.0E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	9.4E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	NA	NA	NA	NA	NA	7.9E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	NA	NA	NA	NA	NA	5.5E-06	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	NA	NA	NA	NA	NA	1.7E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	NA	NA	NA	NA	NA	1.2E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	NA	NA	NA	NA	NA	5.9E-04	mg/kg/day	4.0E-02	mg/kg/day	1.5E-02
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	2.4E-04	mg/kg/day	4.0E-02	mg/kg/day	5.9E-03
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	NA	NA	NA	NA	NA	5.0E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	NA	NA	NA	NA	NA	1.1E-03	mg/kg/day	2.0E-02	mg/kg/day	5.7E-02
				Phenanthrene	1.2E+03	mg/kg	NA	NA	NA	NA	NA	6.4E-05	mg/kg/day	3.0E-01	mg/kg/day	2.1E-04
				Pyrene	5.8E+02	mg/kg	NA	NA	NA	NA	NA	4.1E-04	mg/kg/day	3.0E-02	mg/kg/day	1.4E-02
			Exp. Route Total								0.0E+00					3.4E-01
		Exposure Point Total									0.0E+00					2.4E+00
	Exposure Medium Total										0.0E+00					2.4E+00

TABLE 7.30.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Block 93 North Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	1.3E-05	mg/m3	NA	NA	NA	NA	NA	3.6E-06	mg/kg/day	1.4E-03	mg/kg/day	2.5E-03
				Antimony	2.1E-08	mg/m3	NA	NA	NA	NA	NA	5.7E-09	mg/kg/day	NA	NA	NA
				Arsenic	2.9E-07	mg/m3	NA	NA	NA	NA	NA	8.0E-08	mg/kg/day	NA	NA	NA
				Chromium	5.2E-08	mg/m3	NA	NA	NA	NA	NA	1.4E-08	mg/kg/day	2.9E-05	mg/kg/day	5.0E-04
				Copper	2.9E-07	mg/m3	NA	NA	NA	NA	NA	7.9E-08	mg/kg/day	NA	NA	NA
				Iron	3.5E-05	mg/m3	NA	NA	NA	NA	NA	9.7E-06	mg/kg/day	NA	NA	NA
				Lead	8.6E-07	mg/m3	NA	NA	NA	NA	NA	2.4E-07	mg/kg/day	NA	NA	NA
				Manganese	4.5E-07	mg/m3	NA	NA	NA	NA	NA	1.2E-07	mg/kg/day	1.4E-05	mg/kg/day	8.5E-03
				Nickel	1.2E-07	mg/m3	NA	NA	NA	NA	NA	3.2E-08	mg/kg/day	NA	NA	NA
				Thallium	5.2E-09	mg/m3	NA	NA	NA	NA	NA	1.4E-09	mg/kg/day	NA	NA	NA
				Vanadium	6.1E-08	mg/m3	NA	NA	NA	NA	NA	1.7E-08	mg/kg/day	NA	NA	NA
				Mercury	4.7E-09	mg/m3	NA	NA	NA	NA	NA	1.3E-09	mg/kg/day	NA	NA	NA
				Aroclor-1254	7.4E-10	mg/m3	NA	NA	NA	NA	NA	2.0E-10	mg/kg/day	NA	NA	NA
				Aroclor-1260	2.0E-09	mg/m3	NA	NA	NA	NA	NA	5.6E-10	mg/kg/day	NA	NA	NA
				Benzene	4.5E-03	mg/m3	NA	NA	NA	NA	NA	1.2E-03	mg/kg/day	8.6E-03	mg/kg/day	1.4E-01
				m,p-Xylene	5.0E-02	mg/m3	NA	NA	NA	NA	NA	1.4E-02	mg/kg/day	2.9E-02	mg/kg/day	4.8E-01
				o-Xylene	2.2E-02	mg/m3	NA	NA	NA	NA	NA	5.9E-03	mg/kg/day	2.9E-02	mg/kg/day	2.1E-01
				Xylene (Total)	4.7E-02	mg/m3	NA	NA	NA	NA	NA	1.3E-02	mg/kg/day	2.9E-02	mg/kg/day	4.5E-01
				2-Methylnaphthalene	1.5E-03	mg/m3	NA	NA	NA	NA	NA	4.2E-04	mg/kg/day	NA	NA	NA
				Acenaphthene	3.3E-07	mg/m3	NA	NA	NA	NA	NA	9.1E-08	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.5E-07	mg/m3	NA	NA	NA	NA	NA	6.7E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.5E-07	mg/m3	NA	NA	NA	NA	NA	4.2E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.6E-07	mg/m3	NA	NA	NA	NA	NA	4.4E-08	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-07	mg/m3	NA	NA	NA	NA	NA	3.6E-08	mg/kg/day	NA	NA	NA
				Carbazole	1.2E-07	mg/m3	NA	NA	NA	NA	NA	3.3E-08	mg/kg/day	NA	NA	NA
				Chrysene	2.4E-07	mg/m3	NA	NA	NA	NA	NA	6.6E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.8E-08	mg/m3	NA	NA	NA	NA	NA	7.7E-09	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.7E-07	mg/m3	NA	NA	NA	NA	NA	7.4E-08	mg/kg/day	NA	NA	NA
				Fluoranthene	1.0E-06	mg/m3	NA	NA	NA	NA	NA	2.8E-07	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	NA	NA	NA	NA	NA	4.1E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	8.4E-08	mg/m3	NA	NA	NA	NA	NA	2.3E-08	mg/kg/day	NA	NA	NA
				Naphthalene	4.5E-02	mg/m3	NA	NA	NA	NA	NA	1.2E-02	mg/kg/day	8.6E-04	mg/kg/day	1.4E+01
				Phenanthrene	9.9E-02	mg/m3	NA	NA	NA	NA	NA	2.7E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.3E-04	mg/m3	NA	NA	NA	NA	NA	6.4E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								0.0E+00					1.6E+01
		Exposure Point Total									0.0E+00					1.6E+01
	Exposure Medium Total										0.0E+00					1.6E+01
Soil Total											0.0E+00					1.8E+01
Receptor Total											0.0E+00					1.8E+01

NA = Not applicable.

TABLE 7.31.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.1E+04	mg/kg	NA	NA	NA	NA	NA	1.4E-01	mg/kg/day	1.0E+00	mg/kg/day	1.4E-01
				Antimony	1.7E+01	mg/kg	NA	NA	NA	NA	NA	2.2E-04	mg/kg/day	4.0E-04	mg/kg/day	5.5E-01
				Arsenic	2.4E+02	mg/kg	NA	NA	NA	NA	NA	3.1E-03	mg/kg/day	3.0E-04	mg/kg/day	1.0E+01
				Chromium	4.3E+01	mg/kg	NA	NA	NA	NA	NA	5.5E-04	mg/kg/day	3.0E-03	mg/kg/day	1.8E-01
				Copper	2.4E+02	mg/kg	NA	NA	NA	NA	NA	3.1E-03	mg/kg/day	4.0E-02	mg/kg/day	7.7E-02
				Iron	2.9E+04	mg/kg	NA	NA	NA	NA	NA	3.7E-01	mg/kg/day	3.0E-01	mg/kg/day	1.2E+00
				Lead	7.1E+02	mg/kg	NA	NA	NA	NA	NA	9.1E-03	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	NA	NA	NA	NA	NA	4.7E-03	mg/kg/day	1.4E-01	mg/kg/day	3.4E-02
				Nickel	9.8E+01	mg/kg	NA	NA	NA	NA	NA	1.3E-03	mg/kg/day	2.0E-02	mg/kg/day	6.3E-02
				Thallium	4.3E+00	mg/kg	NA	NA	NA	NA	NA	5.5E-05	mg/kg/day	6.6E-05	mg/kg/day	8.3E-01
				Vanadium	5.1E+01	mg/kg	NA	NA	NA	NA	NA	6.5E-04	mg/kg/day	1.0E-03	mg/kg/day	6.5E-01
				Mercury	3.9E+00	mg/kg	NA	NA	NA	NA	NA	5.0E-05	mg/kg/day	3.0E-04	mg/kg/day	1.7E-01
				Aroclor-1254	6.1E-01	mg/kg	NA	NA	NA	NA	NA	7.8E-06	mg/kg/day	2.0E-05	mg/kg/day	3.9E-01
				Aroclor-1260	1.7E+00	mg/kg	NA	NA	NA	NA	NA	2.2E-05	mg/kg/day	2.0E-05	mg/kg/day	1.1E+00
				Benzene	1.0E+01	mg/kg	NA	NA	NA	NA	NA	1.3E-04	mg/kg/day	4.0E-03	mg/kg/day	3.2E-02
				m,p-Xylene	1.8E+02	mg/kg	NA	NA	NA	NA	NA	2.3E-03	mg/kg/day	2.0E-01	mg/kg/day	1.2E-02
				o-Xylene	9.0E+01	mg/kg	NA	NA	NA	NA	NA	1.2E-03	mg/kg/day	2.0E-01	mg/kg/day	5.8E-03
				Xylene (Total)	2.0E+02	mg/kg	NA	NA	NA	NA	NA	2.5E-03	mg/kg/day	2.0E-01	mg/kg/day	1.3E-02
				2-Methylnaphthalene	5.4E+02	mg/kg	NA	NA	NA	NA	NA	6.9E-03	mg/kg/day	4.0E-03	mg/kg/day	1.7E+00
				Acenaphthene	2.8E+02	mg/kg	NA	NA	NA	NA	NA	3.5E-03	mg/kg/day	6.0E-02	mg/kg/day	5.9E-02
				Benzo(a)anthracene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	2.6E-03	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	1.6E-03	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	1.7E-03	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-03	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-03	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	2.6E-03	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	NA	NA	NA	NA	NA	3.0E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	NA	NA	NA	NA	NA	2.9E-03	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-02	mg/kg/day	4.0E-02	mg/kg/day	2.7E-01
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	4.3E-03	mg/kg/day	4.0E-02	mg/kg/day	1.1E-01
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	NA	NA	NA	NA	NA	8.9E-04	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	NA	NA	NA	NA	NA	2.0E-02	mg/kg/day	2.0E-02	mg/kg/day	1.0E+00
				Phenanthrene	1.2E+03	mg/kg	NA	NA	NA	NA	NA	1.5E-02	mg/kg/day	3.0E-01	mg/kg/day	5.0E-02
				Pyrene	5.8E+02	mg/kg	NA	NA	NA	NA	NA	7.4E-03	mg/kg/day	3.0E-02	mg/kg/day	2.5E-01
			Exp. Route Total								0.0E+00					1.9E+01

TABLE 7.31.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.1E+04	mg/kg	NA	NA	NA	NA	NA	3.9E-04	mg/kg/day	1.0E+00	mg/kg/day	3.9E-04
				Antimony	1.7E+01	mg/kg	NA	NA	NA	NA	NA	6.2E-07	mg/kg/day	6.0E-05	mg/kg/day	1.0E-02
				Arsenic	2.4E+02	mg/kg	NA	NA	NA	NA	NA	2.6E-04	mg/kg/day	3.0E-04	mg/kg/day	8.7E-01
				Chromium	4.3E+01	mg/kg	NA	NA	NA	NA	NA	1.5E-06	mg/kg/day	7.5E-05	mg/kg/day	2.1E-02
				Copper	2.4E+02	mg/kg	NA	NA	NA	NA	NA	8.6E-06	mg/kg/day	4.0E-02	mg/kg/day	2.2E-04
				Iron	2.9E+04	mg/kg	NA	NA	NA	NA	NA	1.0E-03	mg/kg/day	3.0E-01	mg/kg/day	3.5E-03
				Lead	7.1E+02	mg/kg	NA	NA	NA	NA	NA	2.6E-05	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-05	mg/kg/day	5.6E-03	mg/kg/day	2.4E-03
				Nickel	9.8E+01	mg/kg	NA	NA	NA	NA	NA	3.5E-06	mg/kg/day	8.0E-04	mg/kg/day	4.4E-03
				Thallium	4.3E+00	mg/kg	NA	NA	NA	NA	NA	1.5E-07	mg/kg/day	6.6E-05	mg/kg/day	2.3E-03
				Vanadium	5.1E+01	mg/kg	NA	NA	NA	NA	NA	1.8E-06	mg/kg/day	2.6E-05	mg/kg/day	7.0E-02
				Mercury	3.9E+00	mg/kg	NA	NA	NA	NA	NA	1.4E-07	mg/kg/day	2.1E-05	mg/kg/day	6.6E-03
				Aroclor-1254	6.1E-01	mg/kg	NA	NA	NA	NA	NA	3.1E-06	mg/kg/day	2.0E-05	mg/kg/day	1.5E-01
				Aroclor-1260	1.7E+00	mg/kg	NA	NA	NA	NA	NA	8.5E-06	mg/kg/day	2.0E-05	mg/kg/day	4.2E-01
				Benzene	1.0E+01	mg/kg	NA	NA	NA	NA	NA	3.6E-06	mg/kg/day	4.0E-03	mg/kg/day	9.1E-04
				m,p-Xylene	1.8E+02	mg/kg	NA	NA	NA	NA	NA	6.4E-05	mg/kg/day	2.0E-01	mg/kg/day	3.2E-04
				o-Xylene	9.0E+01	mg/kg	NA	NA	NA	NA	NA	3.2E-05	mg/kg/day	2.0E-01	mg/kg/day	1.6E-04
				Xylene (Total)	2.0E+02	mg/kg	NA	NA	NA	NA	NA	7.1E-05	mg/kg/day	2.0E-01	mg/kg/day	3.5E-04
				2-Methylnaphthalene	5.4E+02	mg/kg	NA	NA	NA	NA	NA	1.9E-04	mg/kg/day	4.0E-03	mg/kg/day	4.8E-02
				Acenaphthene	2.8E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-03	mg/kg/day	6.0E-02	mg/kg/day	2.1E-02
				Benzo(a)anthracene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	9.5E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	5.9E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	6.2E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	NA	NA	NA	NA	NA	5.1E-04	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	NA	NA	NA	NA	NA	3.6E-05	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	9.3E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	NA	NA	NA	NA	NA	1.1E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	NA	NA	NA	NA	NA	8.0E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	NA	NA	NA	NA	NA	3.9E-03	mg/kg/day	4.0E-02	mg/kg/day	9.7E-02
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	1.6E-03	mg/kg/day	4.0E-02	mg/kg/day	3.9E-02
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	NA	NA	NA	NA	NA	3.2E-04	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	NA	NA	NA	NA	NA	7.4E-03	mg/kg/day	2.0E-02	mg/kg/day	3.7E-01
				Phenanthrene	1.2E+03	mg/kg	NA	NA	NA	NA	NA	4.2E-04	mg/kg/day	3.0E-01	mg/kg/day	1.4E-03
				Pyrene	5.8E+02	mg/kg	NA	NA	NA	NA	NA	2.7E-03	mg/kg/day	3.0E-02	mg/kg/day	9.0E-02
			Exp. Route Total								0.0E+00					2.2E+00
		Exposure Point Total									0.0E+00					2.2E+01
	Exposure Medium Total										0.0E+00					2.2E+01

TABLE 7.31.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Block 93 North Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	1.3E-05	mg/m3	NA	NA	NA	NA	NA	8.6E-06	mg/kg/day	1.4E-03	mg/kg/day	6.0E-03
				Antimony	2.1E-08	mg/m3	NA	NA	NA	NA	NA	1.3E-08	mg/kg/day	NA	NA	NA
				Arsenic	2.9E-07	mg/m3	NA	NA	NA	NA	NA	1.9E-07	mg/kg/day	NA	NA	NA
				Chromium	5.2E-08	mg/m3	NA	NA	NA	NA	NA	3.4E-08	mg/kg/day	2.9E-05	mg/kg/day	1.2E-03
				Copper	2.9E-07	mg/m3	NA	NA	NA	NA	NA	1.9E-07	mg/kg/day	NA	NA	NA
				Iron	3.5E-05	mg/m3	NA	NA	NA	NA	NA	2.3E-05	mg/kg/day	NA	NA	NA
				Lead	8.6E-07	mg/m3	NA	NA	NA	NA	NA	5.6E-07	mg/kg/day	NA	NA	NA
				Manganese	4.5E-07	mg/m3	NA	NA	NA	NA	NA	2.9E-07	mg/kg/day	1.4E-05	mg/kg/day	2.0E-02
				Nickel	1.2E-07	mg/m3	NA	NA	NA	NA	NA	7.6E-08	mg/kg/day	NA	NA	NA
				Thallium	5.2E-09	mg/m3	NA	NA	NA	NA	NA	3.3E-09	mg/kg/day	NA	NA	NA
				Vanadium	6.1E-08	mg/m3	NA	NA	NA	NA	NA	3.9E-08	mg/kg/day	NA	NA	NA
				Mercury	4.7E-09	mg/m3	NA	NA	NA	NA	NA	3.0E-09	mg/kg/day	NA	NA	NA
				Aroclor-1254	7.4E-10	mg/m3	NA	NA	NA	NA	NA	4.8E-10	mg/kg/day	NA	NA	NA
				Aroclor-1260	2.0E-09	mg/m3	NA	NA	NA	NA	NA	1.3E-09	mg/kg/day	NA	NA	NA
				Benzene	4.5E-03	mg/m3	NA	NA	NA	NA	NA	2.9E-03	mg/kg/day	8.6E-03	mg/kg/day	3.4E-01
				m,p-Xylene	5.0E-02	mg/m3	NA	NA	NA	NA	NA	3.2E-02	mg/kg/day	2.9E-02	mg/kg/day	1.1E+00
				o-Xylene	2.2E-02	mg/m3	NA	NA	NA	NA	NA	1.4E-02	mg/kg/day	2.9E-02	mg/kg/day	4.9E-01
				Xylene (Total)	4.7E-02	mg/m3	NA	NA	NA	NA	NA	3.1E-02	mg/kg/day	2.9E-02	mg/kg/day	1.1E+00
				2-Methylnaphthalene	1.5E-03	mg/m3	NA	NA	NA	NA	NA	9.9E-04	mg/kg/day	NA	NA	NA
				Acenaphthene	3.3E-07	mg/m3	NA	NA	NA	NA	NA	2.2E-07	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.5E-07	mg/m3	NA	NA	NA	NA	NA	1.6E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.5E-07	mg/m3	NA	NA	NA	NA	NA	9.9E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.6E-07	mg/m3	NA	NA	NA	NA	NA	1.0E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-07	mg/m3	NA	NA	NA	NA	NA	8.6E-08	mg/kg/day	NA	NA	NA
				Carbazole	1.2E-07	mg/m3	NA	NA	NA	NA	NA	7.8E-08	mg/kg/day	NA	NA	NA
				Chrysene	2.4E-07	mg/m3	NA	NA	NA	NA	NA	1.6E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.8E-08	mg/m3	NA	NA	NA	NA	NA	1.8E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.7E-07	mg/m3	NA	NA	NA	NA	NA	1.7E-07	mg/kg/day	NA	NA	NA
				Fluoranthene	1.0E-06	mg/m3	NA	NA	NA	NA	NA	6.5E-07	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	NA	NA	NA	NA	NA	9.7E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	8.4E-08	mg/m3	NA	NA	NA	NA	NA	5.4E-08	mg/kg/day	NA	NA	NA
				Naphthalene	4.5E-02	mg/m3	NA	NA	NA	NA	NA	2.9E-02	mg/kg/day	8.6E-04	mg/kg/day	3.4E+01
				Phenanthrene	9.9E-02	mg/m3	NA	NA	NA	NA	NA	6.4E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.3E-04	mg/m3	NA	NA	NA	NA	NA	1.5E-04	mg/kg/day	NA	NA	NA
			Exp. Route Total								0.0E+00					3.7E+01
		Exposure Point Total									0.0E+00					3.7E+01
	Exposure Medium Total										0.0E+00					3.7E+01
Soil Total											0.0E+00					5.9E+01
Receptor Total											0.0E+00					5.9E+01

NA = Not applicable.

TABLE 7.32.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.1E+04	mg/kg	1.7E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Antimony	1.7E+01	mg/kg	2.7E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	2.4E+02	mg/kg	3.8E-04	mg/kg/day	1.5E+00	1/(mg/kg/day)	5.7E-04	NA	NA	NA	NA	NA
				Chromium	4.3E+01	mg/kg	6.8E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Copper	2.4E+02	mg/kg	3.8E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	2.9E+04	mg/kg	4.6E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	7.1E+02	mg/kg	1.1E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	3.7E+02	mg/kg	5.8E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Nickel	9.8E+01	mg/kg	1.5E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	4.3E+00	mg/kg	6.7E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	5.1E+01	mg/kg	7.9E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	3.9E+00	mg/kg	6.1E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Aroclor-1254	6.1E-01	mg/kg	9.6E-07	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.9E-06	NA	NA	NA	NA	NA
				Aroclor-1260	1.7E+00	mg/kg	2.6E-06	mg/kg/day	2.0E+00	1/(mg/kg/day)	5.3E-06	NA	NA	NA	NA	NA
				Benzene	1.0E+01	mg/kg	1.6E-05	mg/kg/day	5.5E-02	1/(mg/kg/day)	8.8E-07	NA	NA	NA	NA	NA
				m,p-Xylene	1.8E+02	mg/kg	2.8E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				o-Xylene	9.0E+01	mg/kg	1.4E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Xylene (Total)	2.0E+02	mg/kg	3.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	5.4E+02	mg/kg	8.4E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Acenaphthene	2.8E+02	mg/kg	4.3E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.0E+02	mg/kg	3.2E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.3E-03	NA	NA	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	2.0E-04	mg/kg/day	7.3E+00	1/(mg/kg/day)	8.3E-03	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	2.1E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.6E-04	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	1.7E-04	mg/kg/day	7.3E-02	1/(mg/kg/day)	7.2E-05	NA	NA	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	1.6E-04	mg/kg/day	2.0E-02	1/(mg/kg/day)	3.1E-06	NA	NA	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	3.1E-04	mg/kg/day	7.3E-03	1/(mg/kg/day)	1.3E-05	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	3.7E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.5E-03	NA	NA	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	3.5E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	1.3E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	3.3E+02	mg/kg	5.2E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	1.1E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.5E-04	NA	NA	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	2.5E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	1.2E+03	mg/kg	1.8E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	5.8E+02	mg/kg	9.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								1.3E-02					0.0E+00

TABLE 7.32.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.1E+04	mg/kg	5.4E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Antimony	1.7E+01	mg/kg	8.5E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	2.4E+02	mg/kg	3.6E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	5.4E-05	NA	NA	NA	NA	NA
				Chromium	4.3E+01	mg/kg	2.1E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Copper	2.4E+02	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	2.9E+04	mg/kg	1.4E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	7.1E+02	mg/kg	3.5E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	3.7E+02	mg/kg	1.8E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Nickel	9.8E+01	mg/kg	4.9E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	4.3E+00	mg/kg	2.1E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	5.1E+01	mg/kg	2.5E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	3.9E+00	mg/kg	1.9E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Aroclor-1254	6.1E-01	mg/kg	4.2E-07	mg/kg/day	2.0E+00	1/(mg/kg/day)	8.5E-07	NA	NA	NA	NA	NA
				Aroclor-1260	1.7E+00	mg/kg	1.2E-06	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.3E-06	NA	NA	NA	NA	NA
				Benzene	1.0E+01	mg/kg	5.0E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.8E-08	NA	NA	NA	NA	NA
				m,p-Xylene	1.8E+02	mg/kg	8.9E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				o-Xylene	9.0E+01	mg/kg	4.5E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Xylene (Total)	2.0E+02	mg/kg	9.7E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	5.4E+02	mg/kg	2.7E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Acenaphthene	2.8E+02	mg/kg	1.8E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.0E+02	mg/kg	1.3E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.5E-04	NA	NA	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	8.2E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.4E-03	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	8.5E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.6E-04	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	7.1E-05	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.0E-05	NA	NA	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	4.9E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	9.9E-08	NA	NA	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	1.3E-04	mg/kg/day	7.3E-03	1/(mg/kg/day)	5.4E-06	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	1.5E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.4E-04	NA	NA	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	1.1E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	5.4E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	3.3E+02	mg/kg	2.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	4.5E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.9E-04	NA	NA	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	1.0E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	1.2E+03	mg/kg	5.8E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	5.8E+02	mg/kg	3.7E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								5.3E-03					0.0E+00
		Exposure Point Total									1.8E-02					0.0E+00
	Exposure Medium Total										1.8E-02					0.0E+00

TABLE 7.32.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Block 93 North Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	1.3E-05	mg/m3	2.0E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Antimony	2.1E-08	mg/m3	3.1E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	2.9E-07	mg/m3	4.4E-08	mg/kg/day	1.5E+01	1/(mg/kg/day)	6.6E-07	NA	NA	NA	NA	NA
				Chromium	5.2E-08	mg/m3	7.8E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	3.3E-07	NA	NA	NA	NA	NA
				Copper	2.9E-07	mg/m3	4.3E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	3.5E-05	mg/m3	5.3E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	8.6E-07	mg/m3	1.3E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	4.5E-07	mg/m3	6.7E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Nickel	1.2E-07	mg/m3	1.8E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	5.2E-09	mg/m3	7.7E-10	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	6.1E-08	mg/m3	9.1E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	4.7E-09	mg/m3	7.0E-10	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Aroclor-1254	7.4E-10	mg/m3	1.1E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	3.9E-11	NA	NA	NA	NA	NA
				Aroclor-1260	2.0E-09	mg/m3	3.0E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	1.1E-10	NA	NA	NA	NA	NA
				Benzene	4.5E-03	mg/m3	6.6E-04	mg/kg/day	2.7E-02	1/(mg/kg/day)	1.8E-05	NA	NA	NA	NA	NA
				m,p-Xylene	5.0E-02	mg/m3	7.5E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				o-Xylene	2.2E-02	mg/m3	3.2E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Xylene (Total)	4.7E-02	mg/m3	7.1E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	1.5E-03	mg/m3	2.3E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Acenaphthene	3.3E-07	mg/m3	5.0E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.5E-07	mg/m3	3.7E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.9E-08	NA	NA	NA	NA	NA
				Benzo(a)pyrene	1.5E-07	mg/m3	2.3E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.2E-07	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	1.6E-07	mg/m3	2.4E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.2E-08	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-07	mg/m3	2.0E-08	mg/kg/day	3.1E-02	1/(mg/kg/day)	1.0E-09	NA	NA	NA	NA	NA
				Carbazole	1.2E-07	mg/m3	1.8E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Chrysene	2.4E-07	mg/m3	3.6E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	2.8E-08	mg/m3	4.2E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	2.2E-08	NA	NA	NA	NA	NA
				Dibenzofuran	2.7E-07	mg/m3	4.0E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	1.0E-06	mg/m3	1.5E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	2.2E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	8.4E-08	mg/m3	1.3E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	6.4E-09	NA	NA	NA	NA	NA
				Naphthalene	4.5E-02	mg/m3	6.7E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	9.9E-02	mg/m3	1.5E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	2.3E-04	mg/m3	3.5E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								1.9E-05					0.0E+00
		Exposure Point Total									1.9E-05					0.0E+00
	Exposure Medium Total										1.9E-05					0.0E+00
Soil Total											1.8E-02					0.0E+00
Receptor Total											1.8E-02					0.0E+00

NA = Not applicable.

TABLE 7.33.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	OU1 Above Clay - Tap Water	Ingestion	Arsenic	1.2E+05	ug/L	NA	NA	NA	NA	NA	3.4E+00	mg/kg/day	3.0E-04	mg/kg/day	1.1E+04
				Iron	2.5E+05	ug/L	NA	NA	NA	NA	NA	6.9E+00	mg/kg/day	3.0E-01	mg/kg/day	2.3E+01
				Lead	2.4E+02	ug/L	NA	NA	NA	NA	NA	6.5E-03	mg/kg/day	NA	NA	NA
				alpha-BHC	4.8E-02	ug/L	NA	NA	NA	NA	NA	1.3E-06	mg/kg/day	5.0E-04	mg/kg/day	2.6E-03
				delta-BHC	9.6E-02	ug/L	NA	NA	NA	NA	NA	2.6E-06	mg/kg/day	NA	NA	NA
				Heptachlor	1.6E-02	ug/L	NA	NA	NA	NA	NA	4.4E-07	mg/kg/day	5.0E-04	mg/kg/day	8.8E-04
				1,1-Dichloroethane	1.7E+01	ug/L	NA	NA	NA	NA	NA	4.6E-04	mg/kg/day	1.0E-01	mg/kg/day	4.6E-03
				Benzene	1.8E+03	ug/L	NA	NA	NA	NA	NA	5.0E-02	mg/kg/day	4.0E-03	mg/kg/day	1.2E+01
				Chloroethane	8.0E+00	ug/L	NA	NA	NA	NA	NA	2.2E-04	mg/kg/day	4.0E-01	mg/kg/day	5.5E-04
				Chloromethane	1.1E+01	ug/L	NA	NA	NA	NA	NA	3.0E-04	mg/kg/day	NA	NA	NA
				cis-1,2-Dichloroethene	6.2E+00	ug/L	NA	NA	NA	NA	NA	1.7E-04	mg/kg/day	1.0E-02	mg/kg/day	1.7E-02
				Ethylbenzene	5.1E+02	ug/L	NA	NA	NA	NA	NA	1.4E-02	mg/kg/day	1.0E-01	mg/kg/day	1.4E-01
				Isopropylbenzene (Cumene)	4.7E+01	ug/L	NA	NA	NA	NA	NA	1.3E-03	mg/kg/day	1.0E-01	mg/kg/day	1.3E-02
				Toluene	1.1E+03	ug/L	NA	NA	NA	NA	NA	3.0E-02	mg/kg/day	8.0E-02	mg/kg/day	3.7E-01
				Trichloroethene	4.7E+00	ug/L	NA	NA	NA	NA	NA	1.3E-04	mg/kg/day	3.0E-04	mg/kg/day	4.3E-01
				m,p-Xylene	5.8E+02	ug/L	NA	NA	NA	NA	NA	1.6E-02	mg/kg/day	2.0E-01	mg/kg/day	7.9E-02
				o-Xylene	3.3E+02	ug/L	NA	NA	NA	NA	NA	9.1E-03	mg/kg/day	2.0E-01	mg/kg/day	4.6E-02
				Xylene (Total)	1.2E+03	ug/L	NA	NA	NA	NA	NA	3.3E-02	mg/kg/day	2.0E-01	mg/kg/day	1.6E-01
				2,4-Dimethylphenol	1.3E+03	ug/L	NA	NA	NA	NA	NA	3.5E-02	mg/kg/day	2.0E-02	mg/kg/day	1.8E+00
				2-Methylnaphthalene	1.1E+03	ug/L	NA	NA	NA	NA	NA	2.9E-02	mg/kg/day	4.0E-03	mg/kg/day	7.3E+00
				2-Methylphenol	4.5E+02	ug/L	NA	NA	NA	NA	NA	1.2E-02	mg/kg/day	5.0E-02	mg/kg/day	2.5E-01
				3&4-Methylphenol	4.6E+01	ug/L	NA	NA	NA	NA	NA	1.3E-03	mg/kg/day	5.0E-03	mg/kg/day	2.5E-01
				4-Methylphenol	1.0E+03	ug/L	NA	NA	NA	NA	NA	2.8E-02	mg/kg/day	5.0E-03	mg/kg/day	5.6E+00
				Acenaphthene	3.6E+02	ug/L	NA	NA	NA	NA	NA	1.0E-02	mg/kg/day	6.0E-02	mg/kg/day	1.7E-01
				Acenaphthylene	5.9E+01	ug/L	NA	NA	NA	NA	NA	1.6E-03	mg/kg/day	6.0E-02	mg/kg/day	2.7E-02
				Anthracene	1.0E+02	ug/L	NA	NA	NA	NA	NA	2.8E-03	mg/kg/day	3.0E-01	mg/kg/day	9.2E-03
				Benzo(a)anthracene	6.9E+01	ug/L	NA	NA	NA	NA	NA	1.9E-03	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	5.1E+01	ug/L	NA	NA	NA	NA	NA	1.4E-03	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	5.8E+01	ug/L	NA	NA	NA	NA	NA	1.6E-03	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.8E+01	ug/L	NA	NA	NA	NA	NA	7.8E-04	mg/kg/day	3.0E-02	mg/kg/day	2.6E-02
				Benzo(k)fluoranthene	3.0E+01	ug/L	NA	NA	NA	NA	NA	8.2E-04	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	9.7E+01	ug/L	NA	NA	NA	NA	NA	2.7E-03	mg/kg/day	5.0E-02	mg/kg/day	5.3E-02
				Carbazole	1.4E+02	ug/L	NA	NA	NA	NA	NA	3.9E-03	mg/kg/day	NA	NA	NA
				Chrysene	6.3E+01	ug/L	NA	NA	NA	NA	NA	1.7E-03	mg/kg/day	NA	NA	NA
				Dibenzofuran	1.7E+02	ug/L	NA	NA	NA	NA	NA	4.7E-03	mg/kg/day	NA	NA	NA
				Fluoranthene	2.0E+02	ug/L	NA	NA	NA	NA	NA	5.6E-03	mg/kg/day	4.0E-02	mg/kg/day	1.4E-01
				Fluorene	2.8E+02	ug/L	NA	NA	NA	NA	NA	7.8E-03	mg/kg/day	4.0E-02	mg/kg/day	1.9E-01
				Indeno(1,2,3-c,d)pyrene	2.6E+01	ug/L	NA	NA	NA	NA	NA	7.3E-04	mg/kg/day	NA	NA	NA
				Naphthalene	8.0E+03	ug/L	NA	NA	NA	NA	NA	2.2E-01	mg/kg/day	2.0E-02	mg/kg/day	1.1E+01
				Phenanthrene	7.5E+02	ug/L	NA	NA	NA	NA	NA	2.0E-02	mg/kg/day	3.0E-01	mg/kg/day	6.8E-02
				Phenol	2.8E+02	ug/L	NA	NA	NA	NA	NA	7.7E-03	mg/kg/day	3.0E-01	mg/kg/day	2.6E-02
				Pyrene	1.7E+02	ug/L	NA	NA	NA	NA	NA	4.7E-03	mg/kg/day	3.0E-02	mg/kg/day	1.6E-01
			Exp. Route Total								NA					1.1E+04

TABLE 7.33.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				Arsenic	1.2E+05	ug/L	NA	NA	NA	NA	NA	1.8E-02	mg/kg/day	3.0E-04	mg/kg/day	5.9E+01
				Iron	2.5E+05	ug/L	NA	NA	NA	NA	NA	3.6E-02	mg/kg/day	3.0E-01	mg/kg/day	1.2E-01
				Lead	2.4E+02	ug/L	NA	NA	NA	NA	NA	3.4E-05	mg/kg/day	NA	NA	NA
				alpha-BHC	4.8E-02	ug/L	NA	NA	NA	NA	NA	1.3E-06	mg/kg/day	5.0E-04	mg/kg/day	2.5E-03
				delta-BHC	9.6E-02	ug/L	NA	NA	NA	NA	NA	1.7E-06	mg/kg/day	NA	NA	NA
				Heptachlor	1.6E-02	ug/L	NA	NA	NA	NA	NA	2.1E-07	mg/kg/day	5.0E-04	mg/kg/day	4.2E-04
				1,1-Dichloroethane	1.7E+01	ug/L	NA	NA	NA	NA	NA	3.6E-05	mg/kg/day	1.0E-01	mg/kg/day	3.6E-04
				Benzene	1.8E+03	ug/L	NA	NA	NA	NA	NA	7.6E-03	mg/kg/day	4.0E-03	mg/kg/day	1.9E+00
				Chloroethane	8.0E+00	ug/L	NA	NA	NA	NA	NA	1.2E-05	mg/kg/day	4.0E-01	mg/kg/day	3.1E-05
				Chloromethane	1.1E+01	ug/L	NA	NA	NA	NA	NA	8.7E-06	mg/kg/day	NA	NA	NA
				cis-1,2-Dichloroethene	6.2E+00	ug/L	NA	NA	NA	NA	NA	1.5E-05	mg/kg/day	1.0E-02	mg/kg/day	1.5E-03
				Ethylbenzene	5.1E+02	ug/L	NA	NA	NA	NA	NA	8.4E-03	mg/kg/day	1.0E-01	mg/kg/day	8.4E-02
				Isopropylbenzene (Cumene)	4.7E+01	ug/L	NA	NA	NA	NA	NA	1.1E-03	mg/kg/day	1.0E-01	mg/kg/day	1.1E-02
				Toluene	1.1E+03	ug/L	NA	NA	NA	NA	NA	1.0E-02	mg/kg/day	8.0E-02	mg/kg/day	1.3E-01
				Trichloroethene	4.7E+00	ug/L	NA	NA	NA	NA	NA	2.2E-05	mg/kg/day	3.0E-04	mg/kg/day	7.2E-02
				m,p-Xylene	5.8E+02	ug/L	NA	NA	NA	NA	NA	1.0E-02	mg/kg/day	2.0E-01	mg/kg/day	5.0E-02
				o-Xylene	3.3E+02	ug/L	NA	NA	NA	NA	NA	5.2E-03	mg/kg/day	2.0E-01	mg/kg/day	2.6E-02
				Xylene (Total)	1.2E+03	ug/L	NA	NA	NA	NA	NA	1.8E-02	mg/kg/day	2.0E-01	mg/kg/day	8.8E-02
				2,4-Dimethylphenol	1.3E+03	ug/L	NA	NA	NA	NA	NA	8.3E-03	mg/kg/day	2.0E-02	mg/kg/day	4.1E-01
				2-Methylnaphthalene	1.1E+03	ug/L	NA	NA	NA	NA	NA	3.2E-02	mg/kg/day	4.0E-03	mg/kg/day	8.1E+00
				2-Methylphenol	4.5E+02	ug/L	NA	NA	NA	NA	NA	1.4E-03	mg/kg/day	5.0E-02	mg/kg/day	2.7E-02
				3&4-Methylphenol	4.6E+01	ug/L	NA	NA	NA	NA	NA	1.4E-04	mg/kg/day	5.0E-03	mg/kg/day	2.8E-02
				4-Methylphenol	1.0E+03	ug/L	NA	NA	NA	NA	NA	3.1E-03	mg/kg/day	5.0E-03	mg/kg/day	6.3E-01
				Acenaphthene	3.6E+02	ug/L	NA	NA	NA	NA	NA	2.0E-02	mg/kg/day	6.0E-02	mg/kg/day	3.3E-01
				Acenaphthylene	5.9E+01	ug/L	NA	NA	NA	NA	NA	2.4E-03	mg/kg/day	6.0E-02	mg/kg/day	3.9E-02
				Anthracene	1.0E+02	ug/L	NA	NA	NA	NA	NA	6.4E-03	mg/kg/day	3.0E-01	mg/kg/day	2.1E-02
				Benzo(a)anthracene	6.9E+01	ug/L	NA	NA	NA	NA	NA	2.4E-02	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	5.1E+01	ug/L	NA	NA	NA	NA	NA	3.5E-02	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	5.8E+01	ug/L	NA	NA	NA	NA	NA	3.5E-02	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.8E+01	ug/L	NA	NA	NA	NA	NA	3.4E-02	mg/kg/day	3.0E-02	mg/kg/day	1.1E+00
				Benzo(k)fluoranthene	3.0E+01	ug/L	NA	NA	NA	NA	NA	1.7E-02	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	9.7E+01	ug/L	NA	NA	NA	NA	NA	2.9E-03	mg/kg/day	5.0E-02	mg/kg/day	5.8E-02
				Carbazole	1.4E+02	ug/L	NA	NA	NA	NA	NA	2.0E-03	mg/kg/day	NA	NA	NA
				Chrysene	6.3E+01	ug/L	NA	NA	NA	NA	NA	2.2E-02	mg/kg/day	NA	NA	NA
				Dibenzofuran	1.7E+02	ug/L	NA	NA	NA	NA	NA	6.7E-03	mg/kg/day	NA	NA	NA
				Fluoranthene	2.0E+02	ug/L	NA	NA	NA	NA	NA	2.9E-02	mg/kg/day	4.0E-02	mg/kg/day	7.1E-01
				Fluorene	2.8E+02	ug/L	NA	NA	NA	NA	NA	1.2E-03	mg/kg/day	4.0E-02	mg/kg/day	3.1E-02
				Indeno(1,2,3-c,d)pyrene	2.6E+01	ug/L	NA	NA	NA	NA	NA	1.7E-02	mg/kg/day	NA	NA	NA
				Naphthalene	8.0E+03	ug/L	NA	NA	NA	NA	NA	1.4E-01	mg/kg/day	2.0E-02	mg/kg/day	7.2E+00
				Phenanthrene	7.5E+02	ug/L	NA	NA	NA	NA	NA	5.8E-02	mg/kg/day	3.0E-01	mg/kg/day	1.9E-01
				Phenol	2.8E+02	ug/L	NA	NA	NA	NA	NA	3.8E-04	mg/kg/day	3.0E-01	mg/kg/day	1.3E-03
				Pyrene	1.7E+02	ug/L	NA	NA	NA	NA	NA	2.2E-02	mg/kg/day	3.0E-02	mg/kg/day	7.4E-01
			Exp. Route Total								NA					8.1E+01
		Exposure Point Total									NA					1.1E+04
	Exposure Medium Total										NA					1.1E+04

TABLE 7.33.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Air	OU1 Above Clay Shallow Aquifer Water Vapors at Showerhead	Inhalation	1,1-Dichloroethane	1.4E-01	mg/m^3	NA	NA	NA	NA	NA	1.1E-03	mg/kg/day	1.4E-01	mg/kg/day	7.7E-03
				Benzene	1.5E+01	mg/m^3	NA	NA	NA	NA	NA	1.2E-01	mg/kg/day	8.6E-03	mg/kg/day	1.4E+01
				Chloroethane	6.6E-02	mg/m^3	NA	NA	NA	NA	NA	5.3E-04	mg/kg/day	2.9E+00	mg/kg/day	1.8E-04
				Chloromethane	9.0E-02	mg/m^3	NA	NA	NA	NA	NA	7.1E-04	mg/kg/day	2.6E-02	mg/kg/day	2.8E-02
				cis-1,2-Dichloroethene	5.1E-02	mg/m^3	NA	NA	NA	NA	NA	4.1E-04	mg/kg/day	NA	NA	NA
				Ethylbenzene	4.2E+00	mg/m^3	NA	NA	NA	NA	NA	3.3E-02	mg/kg/day	2.9E-01	mg/kg/day	1.2E-01
				Isopropylbenzene (Cumene)	3.9E-01	mg/m^3	NA	NA	NA	NA	NA	3.1E-03	mg/kg/day	1.1E-01	mg/kg/day	2.7E-02
				Toluene	9.0E+00	mg/m^3	NA	NA	NA	NA	NA	7.1E-02	mg/kg/day	1.4E+00	mg/kg/day	5.0E-02
				Trichloroethene	3.9E-02	mg/m^3	NA	NA	NA	NA	NA	3.1E-04	mg/kg/day	1.1E-02	mg/kg/day	2.7E-02
				m,p-Xylene	4.8E+00	mg/m^3	NA	NA	NA	NA	NA	3.8E-02	mg/kg/day	2.9E-02	mg/kg/day	1.3E+00
				o-Xylene	2.8E+00	mg/m^3	NA	NA	NA	NA	NA	2.2E-02	mg/kg/day	2.9E-02	mg/kg/day	7.7E-01
				Xylene (Total)	9.9E+00	mg/m^3	NA	NA	NA	NA	NA	7.8E-02	mg/kg/day	2.9E-02	mg/kg/day	2.7E+00
				2-Methylnaphthalene	8.8E+00	mg/m^3	NA	NA	NA	NA	NA	7.0E-02	mg/kg/day	NA	NA	NA
				Acenaphthene	3.0E+00	mg/m^3	NA	NA	NA	NA	NA	2.4E-02	mg/kg/day	NA	NA	NA
				Acenaphthylene	4.9E-01	mg/m^3	NA	NA	NA	NA	NA	3.9E-03	mg/kg/day	NA	NA	NA
				Anthracene	8.4E-01	mg/m^3	NA	NA	NA	NA	NA	6.7E-03	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	8.1E-01	mg/m^3	NA	NA	NA	NA	NA	6.4E-03	mg/kg/day	NA	NA	NA
				Dibenzofuran	1.4E+00	mg/m^3	NA	NA	NA	NA	NA	1.1E-02	mg/kg/day	NA	NA	NA
				Fluorene	2.4E+00	mg/m^3	NA	NA	NA	NA	NA	1.9E-02	mg/kg/day	NA	NA	NA
				Naphthalene	6.6E+01	mg/m^3	NA	NA	NA	NA	NA	5.2E-01	mg/kg/day	8.6E-04	mg/kg/day	6.1E+02
				Phenanthrene	6.2E+00	mg/m^3	NA	NA	NA	NA	NA	4.9E-02	mg/kg/day	NA	NA	NA
				Pyrene	1.4E+00	mg/m^3	NA	NA	NA	NA	NA	1.1E-02	mg/kg/day	NA	NA	NA
			Exp. Route Total								NA					6.3E+02
		Exposure Point Total									NA					6.3E+02
Groundwater Total											NA					1.2E+04
Receptor Total											NA					1.2E+04

Notes-
NA = Not applicable.

DAevent for exposure to groundwater while showering calculated on Table 7.1.RME Supplement A and Supplement B.
EPC for inhalation of volatiles from shallow aquifer groundwater from shower calculated on Table 7.1.RME Supplement C.

Table 7.33.RME Supplement A
Calculation of DAevent
Resident Adult Ground Water
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm²-event)	Eq
Arsenic	1.2E+05	1.0E-03	NA	NA	NA	NA	0.58	7.1E-05	1
Iron	2.5E+05	1.0E-03	NA	NA	NA	NA	0.58	1.5E-04	1
Lead	2.4E+02	1.0E-03	NA	NA	NA	NA	0.58	1.4E-07	1
alpha-BHC	4.8E-02	2.4E-02	1.6E-01	4.5E+00	1.1E+01	1.0E+00	0.58	5.2E-09	2
delta-BHC	9.6E-02	1.6E-02	1.1E-01	4.5E+00	1.1E+01	1.0E+00	0.58	6.9E-09	2
Heptachlor	1.6E-02	8.6E-03	6.4E-02	1.3E+01	3.2E+01	8.0E-01	0.58	8.5E-10	2
1,1-Dichloroethane	1.7E+01	6.7E-03	2.6E-02	3.8E-01	9.2E-01	1.0E+00	0.58	1.5E-07	2
Benzene	1.8E+03	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	0.58	3.1E-05	2
Chloroethane	8.0E+00	6.1E-03	1.9E-02	2.4E-01	5.9E-01	1.0E+00	0.58	5.1E-08	2
Chloromethane	1.1E+01	3.3E-03	9.0E-03	2.0E-01	4.9E-01	1.0E+00	0.58	3.5E-08	3
cis-1,2-Dichloroethene	6.2E+00	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	0.58	6.1E-08	2
Ethylbenzene	5.1E+02	4.9E-02	2.0E-01	4.2E-01	1.0E+00	1.0E+00	0.58	3.4E-05	2
Isopropylbenzene (Cumene)	4.7E+01	6.4E-02	2.7E-01	4.9E-01	1.2E+00	1.0E+00	0.58	4.5E-06	2
Toluene	1.1E+03	3.1E-02	1.1E-01	3.5E-01	8.4E-01	1.0E+00	0.58	4.2E-05	2
Trichloroethene	4.7E+00	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	0.58	8.8E-08	2
m,p-Xylene	5.8E+02	5.2E-02	2.1E-01	4.1E-01	9.9E-01	1.0E+00	0.58	4.1E-05	2
o-Xylene	3.3E+02	4.7E-02	1.9E-01	4.1E-01	9.9E-01	1.0E+00	0.58	2.1E-05	2
Xylene (Total)	1.2E+03	4.4E-02	1.8E-01	4.1E-01	9.9E-01	1.0E+00	0.58	7.1E-05	2
2,4-Dimethylphenol	1.3E+03	1.7E-02	7.4E-02	5.1E-01	1.2E+00	1.0E+00	0.58	3.4E-05	2
2-Methylnaphthalene	1.1E+03	7.2E-02	3.3E-01	6.6E-01	1.6E+00	1.0E+00	0.58	1.3E-04	2
2-Methylphenol	4.5E+02	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	0.58	5.5E-06	2
3&4-Methylphenol	4.6E+01	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	0.58	5.7E-07	2
4-Methylphenol	1.0E+03	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	0.58	1.3E-05	2
Acenaphthene	3.6E+02	1.2E-01	5.7E-01	7.7E-01	1.8E+00	1.0E+00	0.58	8.0E-05	2
Acenaphthylene	5.9E+01	8.9E-02	4.2E-01	7.5E-01	1.8E+00	1.0E+00	0.58	9.6E-06	2
Anthracene	1.0E+02	1.2E-01	6.1E-01	1.0E+00	4.2E+00	1.0E+00	0.58	2.6E-05	2
Benzo(a)anthracene	6.9E+01	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	0.58	9.8E-05	2
Benzo(a)pyrene	5.1E+01	7.0E-01	4.3E+00	2.7E+00	1.2E+01	1.0E+00	0.58	1.2E-04	2
Benzo(b)fluoranthene	5.8E+01	7.0E-01	4.3E+00	2.8E+00	1.2E+01	1.0E+00	0.58	1.4E-04	2
Benzo(g,h,i)perylene	2.8E+01	1.2E+00	7.6E+00	3.7E+00	1.7E+01	1.0E+00	0.58	1.4E-04	2
Benzo(k)fluoranthene	3.0E+01	6.6E-01	4.0E+00	2.7E+00	1.2E+01	1.0E+00	0.58	6.9E-05	2
1,1'-Biphenyl	9.7E+01	6.6E-02	3.1E-01	7.7E-01	1.8E+00	1.0E+00	0.58	1.2E-05	2
Carbazole	1.4E+02	2.9E-02	1.4E-01	9.1E-01	2.2E+00	1.0E+00	0.58	8.1E-06	2
Chrysene	6.3E+01	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	0.58	9.0E-05	2
Dibenzofuran	1.7E+02	7.9E-02	4.0E-01	9.2E-01	2.2E+00	1.0E+00	0.58	2.7E-05	2
Fluoranthene	2.0E+02	2.2E-01	1.2E+00	1.5E+00	5.7E+00	1.0E+00	0.58	1.2E-04	2

Table 7.33.RME Supplement A
Calculation of DAevent
Resident Adult Ground Water
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm^2-event)	Eq
Fluorene	2.8E+02	7.8E-03	4.1E-02	1.2E+00	2.8E+00	1.0E+00	0.58	5.1E-06	2
Indeno(1,2,3-c,d)pyrene	2.6E+01	1.0E+00	6.7E+00	3.8E+00	1.7E+01	6.0E-01	0.58	6.8E-05	2
Naphthalene	8.0E+03	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	0.58	5.8E-04	2
Phenanthrene	7.5E+02	1.4E-01	7.4E-01	1.1E+00	4.1E+00	1.0E+00	0.58	2.3E-04	2
Phenol	2.8E+02	4.3E-03	1.6E-02	3.6E-01	8.6E-01	1.0E+00	0.58	1.5E-06	2
Pyrene	1.7E+02	2.1E-01	1.1E+00	1.4E+00	5.5E+00	1.0E+00	0.58	9.0E-05	2

Inorganics: DAevent (mg/cm^2-event) =

$Kp \times CW \times t_{event} \times 0.001\ mg/ug \times 0.001\ l/cm^3$ (eq 1)

Organics: DAevent (mg/cm^2-event) =

If tevent<t*, then DAevent =

$2 \times FA \times Kp \times CW \times (sqrt((6 \times \tau_{event} \times t_{event})/\pi)) \times 0.001\ mg/ug \times 0.001\ l/cm^3$ (eq 2)

If tevent>t*, then DAevent =

$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau_{event} \times ((1 + 3xB + 3xB^2)/(1+B)^2) \times 0.001\ mg/ug \times 0.001\ l/cm^3$ (eq 3)

Notes:

NA - Not applicable

Permeability constants from EPA 2004, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final).* EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).

t* - Time to reach steady-state

Table 7.33.RME Supplement B
Calculation of DAevent
Resident Adult, Groundwater
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	MW	log Kow	Kow	log Kp^1	Kp (cm/hr)	B^1	log $D_{sc}/l_{sc}{}^1$	$D_{sc}/l_{sc}{}^1$	l_{sc} (cm)	D_{sc} (cm^2/hr)	$\tau_{event}{}^1$ (hr)	c^1	b^1	t^{*1} (hr)
alpha-BHC	2.91E+02	4.26E+00	1.82E+04	-1.62E+00	2.41E-02	1.58E-01	-4.43E+00	3.72E-05	1.00E-03	3.72E-08	4.48E+00	4.46E-01	4.08E-01	1.08E+01
delta-BHC	2.91E+02	4.00E+00	1.00E+04	-1.79E+00	1.62E-02	1.07E-01	-4.43E+00	3.72E-05	1.00E-03	3.72E-08	4.48E+00	4.08E-01	3.72E-01	1.08E+01
cis-1,2-Dichloroethene	9.69E+01	1.86E+00	7.24E+01	-2.12E+00	7.67E-03	2.91E-02	-3.34E+00	4.54E-04	1.00E-03	4.54E-07	3.67E-01	3.53E-01	3.21E-01	8.80E-01
Isopropylbenzene (Cumene)	1.20E+02	3.45E+00	2.82E+03	-1.20E+00	6.38E-02	2.69E-01	-3.47E+00	3.37E-04	1.00E-03	3.37E-07	4.94E-01	5.32E-01	4.93E-01	1.19E+00
m,p-Xylene	1.06E+02	3.20E+00	1.58E+03	-1.28E+00	5.23E-02	2.07E-01	-3.39E+00	4.04E-04	1.00E-03	4.04E-07	4.13E-01	4.83E-01	4.44E-01	9.90E-01
o-Xylene	1.06E+02	3.13E+00	1.35E+03	-1.33E+00	4.70E-02	1.86E-01	-3.39E+00	4.04E-04	1.00E-03	4.04E-07	4.13E-01	4.67E-01	4.29E-01	9.90E-01
Xylene (Total)	1.06E+02	3.09E+00	1.23E+03	-1.35E+00	4.42E-02	1.75E-01	-3.39E+00	4.04E-04	1.00E-03	4.04E-07	4.13E-01	4.59E-01	4.20E-01	9.90E-01
2,4-Dimethylphenol	1.22E+02	2.61E+00	4.07E+02	-1.76E+00	1.74E-02	7.37E-02	-3.48E+00	3.29E-04	1.00E-03	3.29E-07	5.07E-01	3.84E-01	3.50E-01	1.22E+00
2-Methylnaphthalene	1.42E+02	3.72E+00	5.25E+03	-1.14E+00	7.24E-02	3.32E-01	-3.60E+00	2.54E-04	1.00E-03	2.54E-07	6.56E-01	5.82E-01	5.47E-01	1.57E+00
2-Methylphenol	1.08E+02	2.06E+00	1.15E+02	-2.05E+00	9.01E-03	3.60E-02	-3.40E+00	3.94E-04	1.00E-03	3.94E-07	4.23E-01	3.58E-01	3.26E-01	1.02E+00
3&4-Methylphenol	1.08E+02	2.06E+00	1.15E+02	-2.05E+00	9.01E-03	3.60E-02	-3.40E+00	3.94E-04	1.00E-03	3.94E-07	4.23E-01	3.58E-01	3.26E-01	1.02E+00
4-Methylphenol	1.08E+02	2.06E+00	1.15E+02	-2.05E+00	9.01E-03	3.60E-02	-3.40E+00	3.94E-04	1.00E-03	3.94E-07	4.23E-01	3.58E-01	3.26E-01	1.02E+00
Acenaphthene	1.54E+02	4.15E+00	1.41E+04	-9.23E-01	1.19E-01	5.69E-01	-3.66E+00	2.18E-04	1.00E-03	2.18E-07	7.66E-01	7.82E-01	7.86E-01	1.84E+00
Acenaphthylene	1.52E+02	3.94E+00	8.71E+03	-1.05E+00	8.90E-02	4.22E-01	-3.65E+00	2.23E-04	1.00E-03	2.23E-07	7.47E-01	6.56E-01	6.31E-01	1.79E+00
Anthracene	1.78E+02	4.35E+00	2.24E+04	-9.26E-01	1.19E-01	6.09E-01	-3.80E+00	1.60E-04	1.00E-03	1.60E-07	1.04E+00	8.16E-01	8.32E-01	4.20E+00
Benzo(g,h,i)perylene	2.76E+02	6.70E+00	5.01E+06	7.64E-02	1.19E+00	7.62E+00	-4.35E+00	4.51E-05	1.00E-03	4.51E-08	3.69E+00	7.66E+00	3.96E+01	1.65E+01
Benzo(k)fluoranthene	2.52E+02	6.11E+00	1.29E+06	-1.79E-01	6.63E-01	4.05E+00	-4.21E+00	6.15E-05	1.00E-03	6.15E-08	2.71E+00	4.11E+00	1.21E+01	1.17E+01
1,1'-Biphenyl	1.54E+02	3.76E+00	5.75E+03	-1.18E+00	6.59E-02	3.15E-01	-3.66E+00	2.18E-04	1.00E-03	2.18E-07	7.66E-01	5.68E-01	5.32E-01	1.84E+00
Carbazole	1.67E+02	3.32E+00	2.09E+03	-1.54E+00	2.86E-02	1.42E-01	-3.74E+00	1.84E-04	1.00E-03	1.84E-07	9.06E-01	4.34E-01	3.96E-01	2.17E+00
Dibenzofuran	1.68E+02	4.00E+00	1.00E+04	-1.10E+00	7.93E-02	3.95E-01	-3.74E+00	1.82E-04	1.00E-03	1.82E-07	9.18E-01	6.34E-01	6.05E-01	2.20E+00
Fluorene	1.88E+02	2.64E+00	4.02E+00	-2.11E+00	7.77E-03	4.10E-02	-3.85E+00	1.41E-04	1.00E-03	1.41E-07	1.19E+00	3.61E-01	3.29E-01	2.84E+00
Pyrene	2.02E+02	4.93E+00	8.51E+04	-6.77E-01	2.10E-01	1.15E+00	-3.93E+00	1.17E-04	1.00E-03	1.17E-07	1.42E+00	1.30E+00	1.64E+00	5.53E+00

1. Equations from Risk Assessment Guidance for Superfund Volume 1; Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment, EPA/540/R/99/005. July 2004.
MW and log Kow from TCEQ, 2007, Texas Risk Reduction Program (TRRP) Rule Chemical/Physical Properties Table.

You need to put in the value of MW and log Kow for each chemical

Table 7.33.RME Supplement C

Shower Exposure Concentrations from Upper Glacial Aquifer Groundwater, Andelman Model, as Modified by Schaum

Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	Exposure Point Concentration Cwo (mg/l)	C_{amax} (mg/m^3)	C_a (mg/m^3)
1,1-Dichloroethane	1.7E-02	1.8E-01	1.4E-01
Benzene	1.8E+00	1.9E+01	1.5E+01
Chloroethane	8.0E-03	8.4E-02	6.6E-02
Chloromethane	1.1E-02	1.1E-01	9.0E-02
cis-1,2-Dichloroethene	6.2E-03	6.5E-02	5.1E-02
Ethylbenzene	5.1E-01	5.3E+00	4.2E+00
Isopropylbenzene (Cumene)	4.7E-02	5.0E-01	3.9E-01
Toluene	1.1E+00	1.1E+01	9.0E+00
Trichloroethene	4.7E-03	5.0E-02	3.9E-02
m,p-Xylene	5.8E-01	6.1E+00	4.8E+00
o-Xylene	3.3E-01	3.5E+00	2.8E+00
Xylene (Total)	1.2E+00	1.3E+01	9.9E+00
2-Methylnaphthalene	1.1E+00	1.1E+01	8.8E+00
Acenaphthene	3.6E-01	3.8E+00	3.0E+00
Acenaphthylene	5.9E-02	6.2E-01	4.9E-01
Anthracene	1.0E-01	1.1E+00	8.4E-01
1,1'-Biphenyl	9.7E-02	1.0E+00	8.1E-01
Dibenzofuran	1.7E-01	1.8E+00	1.4E+00
Fluorene	2.8E-01	3.0E+00	2.4E+00
Naphthalene	8.0E+00	8.4E+01	6.6E+01
Phenanthrene	7.5E-01	7.9E+00	6.2E+00
Pyrene	1.7E-01	1.8E+00	1.4E+00

Variables	Units	Exposure Assumptions
Ca = concentration of chemical in air	mg/m^3	Solved by Eq 1
C_{amax} = maximum concentration of chemical in air	mg/m^3	Solved by Eq 2
t_1 = time in shower	hr	2.5E-01
t_2 = time in bathroom after shower	hr	3.3E-01
f = fraction volatilized for chemical	unitless	**9.0E-01**
F_w = shower water flow rate	L/hr	7.5E+02
V_a = bathroom volume	m^3	1.6E+01

Equation 1:	C_a =	$((C_{amax}/2) * t_1 + C_{amax} \cdot t_2) / (t_1 + t_2)$
Equation 2:	C_{amax} =	$(C_w * f * F_w * t_1) / V_a$

Equations and assumptions from Water Consumption and Health: Integration of Exposure Assessment, Toxicology, and Risk Assessment, edited by Rhoda G.M. Wang. Macel Dekker, Inc., New York. 1994. Exposure to Volatiles in Domestic Water, Schaum et al., Pages 307-320.

TABLE 7.34.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	OU1 Above Clay - Tap Water	Ingestion	Arsenic	1.2E+05	ug/L	NA	NA	NA	NA	NA	7.9E+00	mg/kg/day	3.0E-04	mg/kg/day	2.6E+04
				Iron	2.5E+05	ug/L	NA	NA	NA	NA	NA	1.6E+01	mg/kg/day	3.0E-01	mg/kg/day	5.4E+01
				Lead	2.4E+02	ug/L	NA	NA	NA	NA	NA	1.5E-02	mg/kg/day	NA	NA	NA
				alpha-BHC	4.8E-02	ug/L	NA	NA	NA	NA	NA	3.1E-06	mg/kg/day	5.0E-04	mg/kg/day	6.1E-03
				delta-BHC	9.6E-02	ug/L	NA	NA	NA	NA	NA	6.1E-06	mg/kg/day	NA	NA	NA
				Heptachlor	1.6E-02	ug/L	NA	NA	NA	NA	NA	1.0E-06	mg/kg/day	5.0E-04	mg/kg/day	2.0E-03
				1,1-Dichloroethane	1.7E+01	ug/L	NA	NA	NA	NA	NA	1.1E-03	mg/kg/day	1.0E-01	mg/kg/day	1.1E-02
				Benzene	1.8E+03	ug/L	NA	NA	NA	NA	NA	1.2E-01	mg/kg/day	4.0E-03	mg/kg/day	2.9E+01
				Chloroethane	8.0E+00	ug/L	NA	NA	NA	NA	NA	5.1E-04	mg/kg/day	4.0E-01	mg/kg/day	1.3E-03
				Chloromethane	1.1E+01	ug/L	NA	NA	NA	NA	NA	6.9E-04	mg/kg/day	NA	NA	NA
				cis-1,2-Dichloroethene	6.2E+00	ug/L	NA	NA	NA	NA	NA	4.0E-04	mg/kg/day	1.0E-02	mg/kg/day	4.0E-02
				Ethylbenzene	5.1E+02	ug/L	NA	NA	NA	NA	NA	3.2E-02	mg/kg/day	1.0E-01	mg/kg/day	3.2E-01
				Isopropylbenzene (Cumene)	4.7E+01	ug/L	NA	NA	NA	NA	NA	3.0E-03	mg/kg/day	1.0E-01	mg/kg/day	3.0E-02
				Toluene	1.1E+03	ug/L	NA	NA	NA	NA	NA	6.9E-02	mg/kg/day	8.0E-02	mg/kg/day	8.7E-01
				Trichloroethene	4.7E+00	ug/L	NA	NA	NA	NA	NA	3.0E-04	mg/kg/day	3.0E-04	mg/kg/day	1.0E+00
				m,p-Xylene	5.8E+02	ug/L	NA	NA	NA	NA	NA	3.7E-02	mg/kg/day	2.0E-01	mg/kg/day	1.8E-01
				o-Xylene	3.3E+02	ug/L	NA	NA	NA	NA	NA	2.1E-02	mg/kg/day	2.0E-01	mg/kg/day	1.1E-01
				Xylene (Total)	1.2E+03	ug/L	NA	NA	NA	NA	NA	7.6E-02	mg/kg/day	2.0E-01	mg/kg/day	3.8E-01
				2,4-Dimethylphenol	1.3E+03	ug/L	NA	NA	NA	NA	NA	8.2E-02	mg/kg/day	2.0E-02	mg/kg/day	4.1E+00
				2-Methylnaphthalene	1.1E+03	ug/L	NA	NA	NA	NA	NA	6.8E-02	mg/kg/day	4.0E-03	mg/kg/day	1.7E+01
				2-Methylphenol	4.5E+02	ug/L	NA	NA	NA	NA	NA	2.9E-02	mg/kg/day	5.0E-02	mg/kg/day	5.7E-01
				3&4-Methylphenol	4.6E+01	ug/L	NA	NA	NA	NA	NA	3.0E-03	mg/kg/day	5.0E-03	mg/kg/day	5.9E-01
				4-Methylphenol	1.0E+03	ug/L	NA	NA	NA	NA	NA	6.6E-02	mg/kg/day	5.0E-03	mg/kg/day	1.3E+01
				Acenaphthene	3.6E+02	ug/L	NA	NA	NA	NA	NA	2.3E-02	mg/kg/day	6.0E-02	mg/kg/day	3.9E-01
				Acenaphthylene	5.9E+01	ug/L	NA	NA	NA	NA	NA	3.8E-03	mg/kg/day	6.0E-02	mg/kg/day	6.3E-02
				Anthracene	1.0E+02	ug/L	NA	NA	NA	NA	NA	6.5E-03	mg/kg/day	3.0E-01	mg/kg/day	2.2E-02
				Benzo(a)anthracene	6.9E+01	ug/L	NA	NA	NA	NA	NA	4.4E-03	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	5.1E+01	ug/L	NA	NA	NA	NA	NA	3.3E-03	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	5.8E+01	ug/L	NA	NA	NA	NA	NA	3.7E-03	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.8E+01	ug/L	NA	NA	NA	NA	NA	1.8E-03	mg/kg/day	3.0E-02	mg/kg/day	6.0E-02
				Benzo(k)fluoranthene	3.0E+01	ug/L	NA	NA	NA	NA	NA	1.9E-03	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	9.7E+01	ug/L	NA	NA	NA	NA	NA	6.2E-03	mg/kg/day	5.0E-02	mg/kg/day	1.2E-01
				Carbazole	1.4E+02	ug/L	NA	NA	NA	NA	NA	9.1E-03	mg/kg/day	NA	NA	NA
				Chrysene	6.3E+01	ug/L	NA	NA	NA	NA	NA	4.0E-03	mg/kg/day	NA	NA	NA
				Dibenzofuran	1.7E+02	ug/L	NA	NA	NA	NA	NA	1.1E-02	mg/kg/day	NA	NA	NA
				Fluoranthene	2.0E+02	ug/L	NA	NA	NA	NA	NA	1.3E-02	mg/kg/day	4.0E-02	mg/kg/day	3.3E-01
				Fluorene	2.8E+02	ug/L	NA	NA	NA	NA	NA	1.8E-02	mg/kg/day	4.0E-02	mg/kg/day	4.5E-01
				Indeno(1,2,3-c,d)pyrene	2.6E+01	ug/L	NA	NA	NA	NA	NA	1.7E-03	mg/kg/day	NA	NA	NA
				Naphthalene	8.0E+03	ug/L	NA	NA	NA	NA	NA	5.1E-01	mg/kg/day	2.0E-02	mg/kg/day	2.5E+01
				Phenanthrene	7.5E+02	ug/L	NA	NA	NA	NA	NA	4.8E-02	mg/kg/day	3.0E-01	mg/kg/day	1.6E-01
				Phenol	2.8E+02	ug/L	NA	NA	NA	NA	NA	1.8E-02	mg/kg/day	3.0E-01	mg/kg/day	6.0E-02
				Pyrene	1.7E+02	ug/L	NA	NA	NA	NA	NA	1.1E-02	mg/kg/day	3.0E-02	mg/kg/day	3.6E-01
			Exp. Route Total								NA					2.6E+04

TABLE 7.34.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				Arsenic	1.2E+05	ug/L	NA	NA	NA	NA	NA	5.2E-02	mg/kg/day	3.0E-04	mg/kg/day	1.7E+02
				Iron	2.5E+05	ug/L	NA	NA	NA	NA	NA	1.1E-01	mg/kg/day	3.0E-01	mg/kg/day	3.6E-01
				Lead	2.4E+02	ug/L	NA	NA	NA	NA	NA	1.0E-04	mg/kg/day	NA	NA	NA
				alpha-BHC	4.8E-02	ug/L	NA	NA	NA	NA	NA	2.9E-06	mg/kg/day	5.0E-04	mg/kg/day	5.7E-03
				delta-BHC	9.6E-02	ug/L	NA	NA	NA	NA	NA	3.8E-06	mg/kg/day	NA	NA	NA
				Heptachlor	1.6E-02	ug/L	NA	NA	NA	NA	NA	4.7E-07	mg/kg/day	5.0E-04	mg/kg/day	9.4E-04
				1,1-Dichloroethane	1.7E+01	ug/L	NA	NA	NA	NA	NA	8.4E-05	mg/kg/day	1.0E-01	mg/kg/day	8.4E-04
				Benzene	1.8E+03	ug/L	NA	NA	NA	NA	NA	1.8E-02	mg/kg/day	4.0E-03	mg/kg/day	4.5E+00
				Chloroethane	8.0E+00	ug/L	NA	NA	NA	NA	NA	3.0E-05	mg/kg/day	4.0E-01	mg/kg/day	7.6E-05
				Chloromethane	1.1E+01	ug/L	NA	NA	NA	NA	NA	2.1E-05	mg/kg/day	NA	NA	NA
				cis-1,2-Dichloroethene	6.2E+00	ug/L	NA	NA	NA	NA	NA	3.5E-05	mg/kg/day	1.0E-02	mg/kg/day	3.5E-03
				Ethylbenzene	5.1E+02	ug/L	NA	NA	NA	NA	NA	1.9E-02	mg/kg/day	1.0E-01	mg/kg/day	1.9E-01
				Isopropylbenzene (Cumene)	4.7E+01	ug/L	NA	NA	NA	NA	NA	2.5E-03	mg/kg/day	1.0E-01	mg/kg/day	2.5E-02
				Toluene	1.1E+03	ug/L	NA	NA	NA	NA	NA	2.4E-02	mg/kg/day	8.0E-02	mg/kg/day	3.0E-01
				Trichloroethene	4.7E+00	ug/L	NA	NA	NA	NA	NA	4.9E-05	mg/kg/day	3.0E-04	mg/kg/day	1.6E-01
				m,p-Xylene	5.8E+02	ug/L	NA	NA	NA	NA	NA	2.3E-02	mg/kg/day	2.0E-01	mg/kg/day	1.2E-01
				o-Xylene	3.3E+02	ug/L	NA	NA	NA	NA	NA	1.2E-02	mg/kg/day	2.0E-01	mg/kg/day	6.0E-02
				Xylene (Total)	1.2E+03	ug/L	NA	NA	NA	NA	NA	4.0E-02	mg/kg/day	2.0E-01	mg/kg/day	2.0E-01
				2,4-Dimethylphenol	1.3E+03	ug/L	NA	NA	NA	NA	NA	1.9E-02	mg/kg/day	2.0E-02	mg/kg/day	9.3E-01
				2-Methylnaphthalene	1.1E+03	ug/L	NA	NA	NA	NA	NA	7.3E-02	mg/kg/day	4.0E-03	mg/kg/day	1.8E+01
				2-Methylphenol	4.5E+02	ug/L	NA	NA	NA	NA	NA	3.1E-03	mg/kg/day	5.0E-02	mg/kg/day	6.1E-02
				3&4-Methylphenol	4.6E+01	ug/L	NA	NA	NA	NA	NA	3.2E-04	mg/kg/day	5.0E-03	mg/kg/day	6.3E-02
				4-Methylphenol	1.0E+03	ug/L	NA	NA	NA	NA	NA	7.0E-03	mg/kg/day	5.0E-03	mg/kg/day	1.4E+00
				Acenaphthene	3.6E+02	ug/L	NA	NA	NA	NA	NA	4.4E-02	mg/kg/day	6.0E-02	mg/kg/day	7.4E-01
				Acenaphthylene	5.9E+01	ug/L	NA	NA	NA	NA	NA	5.3E-03	mg/kg/day	6.0E-02	mg/kg/day	8.8E-02
				Anthracene	1.0E+02	ug/L	NA	NA	NA	NA	NA	1.4E-02	mg/kg/day	3.0E-01	mg/kg/day	4.8E-02
				Benzo(a)anthracene	6.9E+01	ug/L	NA	NA	NA	NA	NA	5.4E-02	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	5.1E+01	ug/L	NA	NA	NA	NA	NA	2.0E-01	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	5.8E+01	ug/L	NA	NA	NA	NA	NA	7.9E-02	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.8E+01	ug/L	NA	NA	NA	NA	NA	7.6E-02	mg/kg/day	3.0E-02	mg/kg/day	2.5E+00
				Benzo(k)fluoranthene	3.0E+01	ug/L	NA	NA	NA	NA	NA	3.8E-02	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	9.7E+01	ug/L	NA	NA	NA	NA	NA	6.6E-03	mg/kg/day	5.0E-02	mg/kg/day	1.3E-01
				Carbazole	1.4E+02	ug/L	NA	NA	NA	NA	NA	4.5E-03	mg/kg/day	NA	NA	NA
				Chrysene	6.3E+01	ug/L	NA	NA	NA	NA	NA	5.0E-02	mg/kg/day	NA	NA	NA
				Dibenzofuran	1.7E+02	ug/L	NA	NA	NA	NA	NA	1.5E-02	mg/kg/day	NA	NA	NA
				Fluoranthene	2.0E+02	ug/L	NA	NA	NA	NA	NA	6.4E-02	mg/kg/day	4.0E-02	mg/kg/day	1.6E+00
				Fluorene	2.8E+02	ug/L	NA	NA	NA	NA	NA	2.8E-03	mg/kg/day	4.0E-02	mg/kg/day	7.0E-02
				Indeno(1,2,3-c,d)pyrene	2.6E+01	ug/L	NA	NA	NA	NA	NA	3.8E-02	mg/kg/day	NA	NA	NA
				Naphthalene	8.0E+03	ug/L	NA	NA	NA	NA	NA	3.2E-01	mg/kg/day	2.0E-02	mg/kg/day	1.6E+01
				Phenanthrene	7.5E+02	ug/L	NA	NA	NA	NA	NA	1.3E-01	mg/kg/day	3.0E-01	mg/kg/day	4.3E-01
				Phenol	2.8E+02	ug/L	NA	NA	NA	NA	NA	8.8E-04	mg/kg/day	3.0E-01	mg/kg/day	2.9E-03
				Pyrene	1.7E+02	ug/L	NA	NA	NA	NA	NA	5.0E-02	mg/kg/day	3.0E-02	mg/kg/day	1.7E+00
			Exp. Route Total								NA					2.2E+02
		Exposure Point Total									NA					2.7E+04
	Exposure Medium Total										NA					2.7E+04
Groundwater Total											NA					2.7E+04
Receptor Total											NA					2.7E+04

Notes-

Table 7.34.RME Supplement A
Calculation of DAevent
Resident Child, Groundwater
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm²-event)	Eq
Arsenic	1.2E+05	1.0E-03	NA	NA	NA	NA	1	1.2E-04	1
Iron	2.5E+05	1.0E-03	NA	NA	NA	NA	1	2.5E-04	1
Lead	2.4E+02	1.0E-03	NA	NA	NA	NA	1	2.4E-07	1
alpha-BHC	4.8E-02	2.4E-02	1.6E-01	4.5E+00	1.1E+01	1.0E+00	1	6.8E-09	2
delta-BHC	9.6E-02	1.6E-02	1.1E-01	4.5E+00	1.1E+01	1.0E+00	1	9.1E-09	2
Heptachlor	1.6E-02	8.6E-03	6.4E-02	1.3E+01	3.2E+01	8.0E-01	1	1.1E-09	2
1,1-Dichloroethane	1.7E+01	6.7E-03	2.6E-02	3.8E-01	9.2E-01	1.0E+00	1	2.0E-07	3
Benzene	1.8E+03	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	1	4.2E-05	3
Chloroethane	8.0E+00	6.1E-03	1.9E-02	2.4E-01	5.9E-01	1.0E+00	1	7.2E-08	3
Chloromethane	1.1E+01	3.3E-03	9.0E-03	2.0E-01	4.9E-01	1.0E+00	1	5.0E-08	3
cis-1,2-Dichloroethene	6.2E+00	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	1	8.2E-08	3
Ethylbenzene	5.1E+02	4.9E-02	2.0E-01	4.2E-01	1.0E+00	1.0E+00	1	4.5E-05	2
Isopropylbenzene (Cumene)	4.7E+01	6.4E-02	2.7E-01	4.9E-01	1.2E+00	1.0E+00	1	5.9E-06	2
Toluene	1.1E+03	3.1E-02	1.1E-01	3.5E-01	8.4E-01	1.0E+00	1	5.6E-05	3
Trichloroethene	4.7E+00	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	1	1.2E-07	2
m,p-Xylene	5.8E+02	5.2E-02	2.1E-01	4.1E-01	9.9E-01	1.0E+00	1	5.5E-05	3
o-Xylene	3.3E+02	4.7E-02	1.9E-01	4.1E-01	9.9E-01	1.0E+00	1	2.8E-05	3
Xylene (Total)	1.2E+03	4.4E-02	1.8E-01	4.1E-01	9.9E-01	1.0E+00	1	9.6E-05	3
2,4-Dimethylphenol	1.3E+03	1.7E-02	7.4E-02	5.1E-01	1.2E+00	1.0E+00	1	4.4E-05	2
2-Methylnaphthalene	1.1E+03	7.2E-02	3.3E-01	6.6E-01	1.6E+00	1.0E+00	1	1.7E-04	2
2-Methylphenol	4.5E+02	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	1	7.3E-06	2
3&4-Methylphenol	4.6E+01	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	1	7.5E-07	2
4-Methylphenol	1.0E+03	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	1	1.7E-05	2
Acenaphthene	3.6E+02	1.2E-01	5.7E-01	7.7E-01	1.8E+00	1.0E+00	1	1.1E-04	2
Acenaphthylene	5.9E+01	8.9E-02	4.2E-01	7.5E-01	1.8E+00	1.0E+00	1	1.3E-05	2
Anthracene	1.0E+02	1.2E-01	6.1E-01	1.0E+00	4.2E+00	1.0E+00	1	3.4E-05	2
Benzo(a)anthracene	6.9E+01	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	1	1.3E-04	2
Benzo(a)pyrene	5.1E+01	7.0E-01	4.3E+00	2.7E+00	1.2E+01	1.0E+00		4.7E-04	2
Benzo(b)fluoranthene	5.8E+01	7.0E-01	4.3E+00	2.8E+00	1.2E+01	1.0E+00	1	1.9E-04	2
Benzo(g,h,i)perylene	2.8E+01	1.2E+00	7.6E+00	3.7E+00	1.7E+01	1.0E+00	1	1.8E-04	2
Benzo(k)fluoranthene	3.0E+01	6.6E-01	4.0E+00	2.7E+00	1.2E+01	1.0E+00	1	9.1E-05	2
1,1'-Biphenyl	9.7E+01	6.6E-02	3.1E-01	7.7E-01	1.8E+00	1.0E+00	1	1.6E-05	2
Carbazole	1.4E+02	2.9E-02	1.4E-01	9.1E-01	2.2E+00	1.0E+00	1	1.1E-05	2
Chrysene	6.3E+01	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	1	1.2E-04	2
Dibenzofuran	1.7E+02	7.9E-02	4.0E-01	9.2E-01	2.2E+00	1.0E+00	1	3.6E-05	2
Fluoranthene	2.0E+02	2.2E-01	1.2E+00	1.5E+00	5.7E+00	1.0E+00	1	1.5E-04	2

Table 7.34.RME Supplement A
Calculation of DAevent
Resident Child, Groundwater
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm^2-event)	Eq
Fluorene	2.8E+02	7.8E-03	4.1E-02	1.2E+00	2.8E+00	1.0E+00	1	6.6E-06	2
Indeno(1,2,3-c,d)pyrene	2.6E+01	1.0E+00	6.7E+00	3.8E+00	1.7E+01	6.0E-01	1	8.9E-05	2
Naphthalene	8.0E+03	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	1	7.7E-04	2
Phenanthrene	7.5E+02	1.4E-01	7.4E-01	1.1E+00	4.1E+00	1.0E+00	1	3.1E-04	2
Phenol	2.8E+02	4.3E-03	1.6E-02	3.6E-01	8.6E-01	1.0E+00	1	2.1E-06	3
Pyrene	1.7E+02	2.1E-01	1.1E+00	1.4E+00	5.5E+00	1.0E+00	1	1.2E-04	2

Inorganics: DAevent (mg/cm^2-event) =

$Kp \times CW \times t_{event} \times 0.001$ mg/ug $\times 0.001$ l/cm^3 (eq 1)

Organics: DAevent (mg/cm^2-event) =

If tevent<t*, then DAevent =

$2 \times FA \times Kp \times CW \times (\sqrt{(6 \times \tau_{event} \times t_{event})/\pi}) \times 0.001$ mg/ug $\times 0.001$ l/cm^3 (eq 2)

If tevent>t*, then DAevent =

$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau_{event} \times ((1 + 3xB + 3xB^2)/(1+B)^2) \times 0.001$ mg/ug $\times 0.001$ l/cm^3 (eq 3)

Notes:

NA - Not applicable

Permeability constants from EPA 2004, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final).* EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).

t* - Time to reach steady-state

TABLE 7.35.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	OU1 Above Clay - Tap Water	Ingestion	Arsenic	1.2E+05	ug/L	1.8E+00	mg/kg-day	1.5E+00	1/(mg/kg-day)	9.4E-01	NA	NA	NA	NA	NA
				Iron	2.5E+05	ug/L	3.8E+00	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	2.4E+02	ug/L	3.5E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				alpha-BHC	4.8E-02	ug/L	7.2E-07	mg/kg-day	6.3E+00	1/(mg/kg-day)	4.5E-06	NA	NA	NA	NA	NA
				delta-BHC	9.6E-02	ug/L	1.4E-06	mg/kg-day	1.8E+00	1/(mg/kg-day)	2.6E-06	NA	NA	NA	NA	NA
				Heptachlor	1.6E-02	ug/L	2.4E-07	mg/kg-day	4.5E+00	1/(mg/kg-day)	1.1E-06	NA	NA	NA	NA	NA
				1,1-Dichloroethane	1.7E+01	ug/L	2.5E-04	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzene	1.8E+03	ug/L	2.7E-02	mg/kg-day	5.5E-02	1/(mg/kg-day)	1.5E-03	NA	NA	NA	NA	NA
				Chloroethane	8.0E+00	ug/L	1.2E-04	mg/kg-day	2.9E-03	1/(mg/kg-day)	3.5E-07	NA	NA	NA	NA	NA
				Chloromethane	1.1E+01	ug/L	1.6E-04	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				cis-1,2-Dichloroethene	6.2E+00	ug/L	9.3E-05	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Ethylbenzene	5.1E+02	ug/L	7.6E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Isopropylbenzene (Cumene)	4.7E+01	ug/L	7.1E-04	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Toluene	1.1E+03	ug/L	1.6E-02	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Trichloroethene	4.7E+00	ug/L	7.0E-05	mg/kg-day	4.0E-01	1/(mg/kg-day)	2.8E-05	NA	NA	NA	NA	NA
				m,p-Xylene	5.8E+02	ug/L	8.6E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				o-Xylene	3.3E+02	ug/L	5.0E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Xylene (Total)	1.2E+03	ug/L	1.8E-02	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				2,4-Dimethylphenol	1.3E+03	ug/L	1.9E-02	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	1.1E+03	ug/L	1.6E-02	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylphenol	4.5E+02	ug/L	6.7E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				3&4-Methylphenol	4.6E+01	ug/L	6.9E-04	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Methylphenol	1.0E+03	ug/L	1.5E-02	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Acenaphthene	3.6E+02	ug/L	5.4E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Acenaphthylene	5.9E+01	ug/L	8.8E-04	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Anthracene	1.0E+02	ug/L	1.5E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	6.9E+01	ug/L	1.4E-03	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.5E-03	NA	NA	NA	NA	NA
				Benzo(a)pyrene	5.1E+01	ug/L	1.0E-03	mg/kg-day	7.3E+00	1/(mg/kg-day)	2.6E-02	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	5.8E+01	ug/L	1.2E-03	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.0E-03	NA	NA	NA	NA	NA
				Benzo(g,h,i)perylene	2.8E+01	ug/L	4.2E-04	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	3.0E+01	ug/L	6.1E-04	mg/kg-day	7.3E-02	1/(mg/kg-day)	1.5E-04	NA	NA	NA	NA	NA
				1,1'-Biphenyl	9.7E+01	ug/L	1.5E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Carbazole	1.4E+02	ug/L	2.1E-03	mg/kg-day	2.0E-02	1/(mg/kg-day)	4.2E-05	NA	NA	NA	NA	NA
				Chrysene	6.3E+01	ug/L	1.3E-03	mg/kg-day	7.3E-03	1/(mg/kg-day)	3.2E-05	NA	NA	NA	NA	NA
				Dibenzofuran	1.7E+02	ug/L	2.6E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	2.0E+02	ug/L	3.1E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	2.8E+02	ug/L	4.2E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.6E+01	ug/L	5.4E-04	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.4E-03	NA	NA	NA	NA	NA
				Naphthalene	8.0E+03	ug/L	1.2E-01	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	7.5E+02	ug/L	1.1E-02	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenol	2.8E+02	ug/L	4.2E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	1.7E+02	ug/L	2.5E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								9.7E-01					NA

TABLE 7.35.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				Arsenic	1.2E+05	ug/L	1.0E-02	mg/kg/day	1.5E+00	1/(mg/kg-day)	1.6E-02	NA	NA	NA	NA	NA
				Iron	2.5E+05	ug/L	2.2E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	2.4E+02	ug/L	2.0E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				alpha-BHC	4.8E-02	ug/L	6.8E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				delta-BHC	9.6E-02	ug/L	9.1E-07	mg/kg/day	1.8E+00	1/(mg/kg-day)	1.6E-06	NA	NA	NA	NA	NA
				Heptachlor	1.6E-02	ug/L	1.1E-07	mg/kg/day	4.5E+00	1/(mg/kg-day)	5.0E-07	NA	NA	NA	NA	NA
				1,1-Dichloroethane	1.7E+01	ug/L	2.0E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzene	1.8E+03	ug/L	4.1E-03	mg/kg/day	5.5E-02	1/(mg/kg-day)	2.3E-04	NA	NA	NA	NA	NA
				Chloroethane	8.0E+00	ug/L	6.9E-06	mg/kg/day	2.9E-03	1/(mg/kg-day)	2.0E-08	NA	NA	NA	NA	NA
				Chloromethane	1.1E+01	ug/L	4.8E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				cis-1,2-Dichlorcethene	6.2E+00	ug/L	8.1E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Ethylbenzene	5.1E+02	ug/L	4.5E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Isopropylbenzene (Cumene)	4.7E+01	ug/L	5.9E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Toluene	1.1E+03	ug/L	5.6E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Trichloroethene	4.7E+00	ug/L	1.2E-05	mg/kg/day	4.0E-01	1/(mg/kg-day)	4.6E-06	NA	NA	NA	NA	NA
				m,p-Xylene	5.8E+02	ug/L	5.4E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				o-Xylene	3.3E+02	ug/L	2.8E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Xylene (Total)	1.2E+03	ug/L	9.5E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2,4-Dimethylphenol	1.3E+03	ug/L	4.4E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	1.1E+03	ug/L	1.7E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylphenol	4.5E+02	ug/L	7.3E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				3&4-Methylphenol	4.6E+01	ug/L	7.6E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Methylphenol	1.0E+03	ug/L	1.7E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Acenaphthene	3.6E+02	ug/L	1.1E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Acenaphthylene	5.9E+01	ug/L	1.3E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Anthracene	1.0E+02	ug/L	3.4E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	6.9E+01	ug/L	1.4E-02	mg/kg/day	7.3E-01	1/(mg/kg-day)	3.4E-02	NA	NA	NA	NA	NA
				Benzo(a)pyrene	5.1E+01	ug/L	3.0E-02	mg/kg/day	7.3E+00	1/(mg/kg-day)	7.7E-01	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	5.8E+01	ug/L	2.1E-02	mg/kg/day	7.3E-01	1/(mg/kg-day)	5.0E-02	NA	NA	NA	NA	NA
				Benzo(g,h,i)perylene	2.8E+01	ug/L	1.8E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	3.0E+01	ug/L	1.0E-02	mg/kg/day	7.3E-02	1/(mg/kg-day)	2.4E-03	NA	NA	NA	NA	NA
				1,1'-Biphenyl	9.7E+01	ug/L	1.6E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Carbazole	1.4E+02	ug/L	1.1E-03	mg/kg/day	2.0E-02	1/(mg/kg-day)	2.1E-05	NA	NA	NA	NA	NA
				Chrysene	6.3E+01	ug/L	1.3E-02	mg/kg/day	7.3E-03	1/(mg/kg-day)	3.2E-04	NA	NA	NA	NA	NA
				Dibenzofuran	1.7E+02	ug/L	3.6E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	2.0E+02	ug/L	1.5E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	2.8E+02	ug/L	6.7E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.6E+01	ug/L	9.9E-03	mg/kg/day	7.3E-01	1/(mg/kg-day)	2.4E-02	NA	NA	NA	NA	NA
				Naphthalene	8.0E+03	ug/L	7.7E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	7.5E+02	ug/L	3.1E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenol	2.8E+02	ug/L	2.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	1.7E+02	ug/L	1.2E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								9.0E-01					NA
		Exposure Point Total									1.0E+00					NA
	Exposure Medium Total										1.0E+00					NA

TABLE 7.36.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	OU1 Below Clay - Tap Water	Ingestion	Arsenic	5.5E+00	ug/L	NA	NA	NA	NA	NA	1.5E-04	mg/kg/day	3.0E-04	mg/kg/day	5.0E-01
				Lead	9.1E+00	ug/L	NA	NA	NA	NA	NA	2.5E-04	mg/kg/day	NA	NA	NA
				1,2-Dichloroethane	3.0E-01	ug/L	NA	NA	NA	NA	NA	8.2E-06	mg/kg/day	2.0E-02	mg/kg/day	4.1E-04
				Benzene	7.9E+00	ug/L	NA	NA	NA	NA	NA	2.2E-04	mg/kg/day	4.0E-03	mg/kg/day	5.4E-02
				Chloroform	7.7E-01	ug/L	NA	NA	NA	NA	NA	2.1E-05	mg/kg/day	1.0E-02	mg/kg/day	2.1E-03
				cis-1,2-Dichloroethene	8.5E+00	ug/L	NA	NA	NA	NA	NA	2.3E-04	mg/kg/day	1.0E-02	mg/kg/day	2.3E-02
				Tetrachloroethene	9.6E+00	ug/L	NA	NA	NA	NA	NA	2.6E-04	mg/kg/day	1.0E-02	mg/kg/day	2.6E-02
				Trichloroethene	3.8E+02	ug/L	NA	NA	NA	NA	NA	1.0E-02	mg/kg/day	3.0E-04	mg/kg/day	3.4E+01
				Vinyl chloride	2.0E-01	ug/L	NA	NA	NA	NA	NA	5.5E-06	mg/kg/day	3.0E-03	mg/kg/day	1.8E-03
				Xylene (Total)	1.8E+01	ug/L	NA	NA	NA	NA	NA	4.8E-04	mg/kg/day	2.0E-01	mg/kg/day	2.4E-03
				2-Methylnaphthalene	9.0E+00	ug/L	NA	NA	NA	NA	NA	2.5E-04	mg/kg/day	4.0E-03	mg/kg/day	6.1E-02
				Benzo(a)anthracene	2.4E-01	ug/L	NA	NA	NA	NA	NA	6.7E-06	mg/kg/day	NA	NA	NA
				Carbazole	3.6E+00	ug/L	NA	NA	NA	NA	NA	9.7E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.3E+00	ug/L	NA	NA	NA	NA	NA	9.0E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+02	ug/L	NA	NA	NA	NA	NA	4.5E-03	mg/kg/day	2.0E-02	mg/kg/day	2.3E-01
			Exp. Route Total								NA					3.5E+01
			Dermal	Arsenic	5.5E+00	ug/L	NA	NA	NA	NA	NA	7.9E-07	mg/kg/day	3.0E-04	mg/kg/day	2.6E-03
				Lead	9.1E+00	ug/L	NA	NA	NA	NA	NA	1.3E-06	mg/kg/day	NA	NA	NA
				1,2-Dichloroethane	3.0E-01	ug/L	NA	NA	NA	NA	NA	4.0E-07	mg/kg/day	2.0E-02	mg/kg/day	2.0E-05
				Benzene	7.9E+00	ug/L	NA	NA	NA	NA	NA	3.3E-05	mg/kg/day	4.0E-03	mg/kg/day	8.2E-03
				Chloroform	7.7E-01	ug/L	NA	NA	NA	NA	NA	1.9E-06	mg/kg/day	1.0E-02	mg/kg/day	1.9E-04
				cis-1,2-Dichloroethene	8.5E+00	ug/L	NA	NA	NA	NA	NA	2.0E-05	mg/kg/day	1.0E-02	mg/kg/day	2.0E-03
				Tetrachloroethene	9.6E+00	ug/L	NA	NA	NA	NA	NA	1.6E-04	mg/kg/day	1.0E-02	mg/kg/day	1.6E-02
				Trichloroethene	3.8E+02	ug/L	NA	NA	NA	NA	NA	1.7E-03	mg/kg/day	3.0E-04	mg/kg/day	5.8E+00
				Vinyl chloride	2.0E-01	ug/L	NA	NA	NA	NA	NA	2.9E-07	mg/kg/day	3.0E-03	mg/kg/day	9.7E-05
				Xylene (Total)	1.8E+01	ug/L	NA	NA	NA	NA	NA	2.6E-04	mg/kg/day	2.0E-01	mg/kg/day	1.3E-03
				2-Methylnaphthalene	9.0E+00	ug/L	NA	NA	NA	NA	NA	2.7E-04	mg/kg/day	4.0E-03	mg/kg/day	6.8E-02
				Benzo(a)anthracene	2.4E-01	ug/L	NA	NA	NA	NA	NA	8.5E-05	mg/kg/day	NA	NA	NA
				Carbazole	3.6E+00	ug/L	NA	NA	NA	NA	NA	5.0E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.3E+00	ug/L	NA	NA	NA	NA	NA	1.3E-04	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+02	ug/L	NA	NA	NA	NA	NA	3.0E-03	mg/kg/day	2.0E-02	mg/kg/day	1.5E-01
			Exp. Route Total								NA					6.0E+00
		Exposure Point Total									NA					4.1E+01
	Exposure Medium Total										NA					4.1E+01

TABLE 7.36.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Air	OU1 Below Clay Shallow Aquifer Water Vapors at Showerhead	Inhalation	1,2-Dichloroethane	2.5E-03	mg/m^3	NA	NA	NA	NA	NA	2.0E-05	mg/kg/day	1.4E-03	mg/kg/day	1.4E-02
				Benzene	6.5E-02	mg/m^3	NA	NA	NA	NA	NA	5.2E-04	mg/kg/day	8.6E-03	mg/kg/day	6.0E-02
				Chloroform	6.4E-03	mg/m^3	NA	NA	NA	NA	NA	5.1E-05	mg/kg/day	1.4E-02	mg/kg/day	3.6E-03
				cis-1,2-Dichloroethene	7.0E-02	mg/m^3	NA	NA	NA	NA	NA	5.6E-04	mg/kg/day	NA	NA	NA
				Tetrachloroethene	7.9E-02	mg/m^3	NA	NA	NA	NA	NA	6.3E-04	mg/kg/day	1.0E-02	mg/kg/day	6.3E-02
				Trichloroethene	3.1E+00	mg/m^3	NA	NA	NA	NA	NA	2.5E-02	mg/kg/day	1.1E-02	mg/kg/day	2.2E+00
				Vinyl chloride	1.7E-03	mg/m^3	NA	NA	NA	NA	NA	1.3E-05	mg/kg/day	2.9E-02	mg/kg/day	4.6E-04
				Xylene (Total)	1.4E-01	mg/m^3	NA	NA	NA	NA	NA	1.2E-03	mg/kg/day	2.9E-02	mg/kg/day	4.0E-02
				2-Methylnaphthalene	7.4E-02	mg/m^3	NA	NA	NA	NA	NA	5.9E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.7E-02	mg/m^3	NA	NA	NA	NA	NA	2.2E-04	mg/kg/day	NA	NA	NA
				Naphthalene	1.4E+00	mg/m^3	NA	NA	NA	NA	NA	1.1E-02	mg/kg/day	8.6E-04	mg/kg/day	1.3E+01
			Exp. Route Total								NA					1.5E+01
		Exposure Point Total									NA					1.5E+01
	Exposure Medium Total										NA					1.5E+01
Groundwater Total											NA					5.6E+01
Receptor Total											NA					5.6E+01

Notes-
NA = Not applicable.

DAevent for exposure to groundwater while showering calculated on Table 7.37.RME Supplement A and Supplement B.
EPC for inhalation of volatiles from shallow aquifer groundwater from shower calculated on Table 7.37.RME Supplement C.

Table 7.36.RME Supplement A
Calculation of DAevent
Resident Adult Ground Water
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm^2-event)	Eq
Arsenic	5.5E+00	1.0E-03	NA	NA	NA	NA	0.58	3.2E-09	1
Lead	9.1E+00	1.0E-03	NA	NA	NA	NA	0.58	5.3E-09	1
1,2-Dichloroethane	3.0E-01	4.2E-03	1.6E-02	3.8E-01	9.2E-01	1.0E+00	0.58	1.6E-09	2
Benzene	7.9E+00	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	0.58	1.3E-07	2
Chloroform	7.7E-01	6.8E-03	2.9E-02	5.0E-01	1.2E+00	1.0E+00	0.58	7.8E-09	2
cis-1,2-Dichloroethene	8.5E+00	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	0.58	8.3E-08	2
Tetrachloroethene	9.6E+00	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	0.58	6.4E-07	2
Trichloroethene	3.8E+02	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	0.58	7.1E-06	2
Vinyl chloride	2.0E-01	5.6E-03	1.7E-02	2.4E-01	5.7E-01	1.0E+00	0.58	1.2E-09	3
Xylene (Total)	1.8E+01	4.4E-02	1.8E-01	4.1E-01	9.9E-01	1.0E+00	0.58	1.0E-06	2
2-Methylnaphthalene	9.0E+00	7.2E-02	3.3E-01	6.6E-01	1.6E+00	1.0E+00	0.58	1.1E-06	2
Benzo(a)anthracene	2.4E-01	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	0.58	3.5E-07	2
Carbazole	3.6E+00	2.9E-02	1.4E-01	9.1E-01	2.2E+00	1.0E+00	0.58	2.0E-07	2
Dibenzofuran	3.3E+00	7.9E-02	4.0E-01	9.2E-01	2.2E+00	1.0E+00	0.58	5.2E-07	2
Naphthalene	1.6E+02	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	0.58	1.2E-05	2

Inorganics: DAevent (mg/cm^2-event) =

$Kp \times CW \times t_{event} \times 0.001\ mg/ug \times 0.001\ l/cm^3$ (eq 1)

Organics: DAevent (mg/cm^2-event) =

If tevent<t*, then DAevent =

$2 \times FA \times Kp \times CW \times (sqrt((6 \times \tau_{event} \times t_{event})/\pi)) \times 0.001\ mg/ug \times 0.001\ l/cm^3$ (eq 2)

If tevent>t*, then DAevent =

$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau_{event} \times ((1 + 3xB + 3xB^2)/(1+B)^2) \times 0.001\ mg/ug \times 0.001\ l/cm^3$ (eq 3)

Notes:

NA - Not applicable

Permeability constants from EPA 2004, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final).* EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).

t* - Time to reach steady-state

Table 7.36.RME Supplement B
Calculation of DAevent
Resident Adult, Groundwater
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	MW	log Kow	Kow	log Kp^1	Kp (cm/hr)	B^1	log $D_{sc}/l_{sc}{}^1$	$D_{sc}/l_{sc}{}^1$	l_{sc} (cm)	D_{sc} (cm^2/hr)	$\tau_{event}{}^1$ (hr)	c^1	b^1	t^{*1} (hr)
cis-1,2-Dichloroethene	9.69E+01	1.86E+00	7.24E+01	-2.12E+00	7.67E-03	2.91E-02	-3.34E+00	4.54E-04	1.00E-03	4.54E-07	3.67E-01	3.53E-01	3.21E-01	8.80E-01
Xylene (Total)	1.06E+02	3.09E+00	1.23E+03	-1.35E+00	4.42E-02	1.75E-01	-3.39E+00	4.04E-04	1.00E-03	4.04E-07	4.13E-01	4.59E-01	4.20E-01	9.90E-01
2-Methylnaphthalene	1.42E+02	3.72E+00	5.25E+03	-1.14E+00	7.24E-02	3.32E-01	-3.60E+00	2.54E-04	1.00E-03	2.54E-07	6.56E-01	5.82E-01	5.47E-01	1.57E+00
Carbazole	1.67E+02	3.32E+00	2.09E+03	-1.54E+00	2.86E-02	1.42E-01	-3.74E+00	1.84E-04	1.00E-03	1.84E-07	9.06E-01	4.34E-01	3.96E-01	2.17E+00
Dibenzofuran	1.68E+02	4.00E+00	1.00E+04	-1.10E+00	7.93E-02	3.95E-01	-3.74E+00	1.82E-04	1.00E-03	1.82E-07	9.18E-01	6.34E-01	6.05E-01	2.20E+00

1. Equations from Risk Assessment Guidance for Superfund Volume 1; Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment, EPA/540/R/99/005. July 2004.
MW and log Kow from TCEQ, 2007, Texas Risk Reduction Program (TRRP) Rule Chemical/Physical Properties Table.

Table 7.36.RME Supplement C

Shower Exposure Concentrations from Upper Glacial Aquifer Groundwater, Andelman Model, as Modified by Schaum

Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	Exposure Point Concentration Cwo (mg/l)	C_{amax} (mg/m^3)	C_a (mg/m^3)
1,2-Dichloroethane	3.0E-04	3.2E-03	2.5E-03
Benzene	7.9E-03	8.3E-02	6.5E-02
Chloroform	7.7E-04	8.1E-03	6.4E-03
cis-1,2-Dichloroethene	8.5E-03	8.9E-02	7.0E-02
Tetrachloroethene	9.6E-03	1.0E-01	7.9E-02
Trichloroethene	3.8E-01	4.0E+00	3.1E+00
Vinyl chloride	2.0E-04	2.1E-03	1.7E-03
Xylene (Total)	1.8E-02	1.8E-01	1.4E-01
2-Methylnaphthalene	9.0E-03	9.4E-02	7.4E-02
Dibenzofuran	3.3E-03	3.4E-02	2.7E-02
Naphthalene	1.6E-01	1.7E+00	1.4E+00

Variables	Units	Exposure Assumptions
Ca = concentration of chemical in air	mg/m^3	Solved by Eq 1
C_{amax} = maximum concentration of chemical in air	mg/m^3	Solved by Eq 2
t_1 = time in shower	hr	2.5E-01
t_2 = time in bathroom after shower	hr	3.3E-01
f = fraction volatilized for chemical	unitless	**9.0E-01**
F_w = shower water flow rate	L/hr	7.5E+02
V_a = bathroom volume	m^3	1.6E+01

Equation 1:	C_a =	$((C_{amax}/2) * t_1 + C_{amax} * t_2) / (t_1 + t_2)$
Equation 2:	C_{amax} =	$(C_w * f * F_w * t_1) / V_a$

Equations and assumptions from Water Consumption and Health: Integration of Exposure Assessment, Toxicology, and Risk Assessment, edited by Rhoda G.M. Wang. Macel Dekker, Inc., New York. 1994. Exposure to Volatiles in Domestic Water, Schaum et al., Pages 307-320.

TABLE 7.37.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	OU1 Above Clay - Tap Water	Ingestion	Arsenic	5.5E+00	ug/L	NA	NA	NA	NA	NA	3.5E-04	mg/kg/day	3.0E-04	mg/kg/day	1.2E+00
				Lead	9.1E+00	ug/L	NA	NA	NA	NA	NA	5.8E-04	mg/kg/day	NA	NA	NA
				1,2-Dichloroethane	3.0E-01	ug/L	NA	NA	NA	NA	NA	1.9E-05	mg/kg/day	2.0E-02	mg/kg/day	9.6E-04
				Benzene	7.9E+00	ug/L	NA	NA	NA	NA	NA	5.0E-04	mg/kg/day	4.0E-03	mg/kg/day	1.3E-01
				Chloroform	7.7E-01	ug/L	NA	NA	NA	NA	NA	4.9E-05	mg/kg/day	1.0E-02	mg/kg/day	4.9E-03
				cis-1,2-Dichloroethene	8.5E+00	ug/L	NA	NA	NA	NA	NA	5.4E-04	mg/kg/day	1.0E-02	mg/kg/day	5.4E-02
				Tetrachloroethene	9.6E+00	ug/L	NA	NA	NA	NA	NA	6.1E-04	mg/kg/day	1.0E-02	mg/kg/day	6.1E-02
				Trichloroethene	3.8E+02	ug/L	NA	NA	NA	NA	NA	2.4E-02	mg/kg/day	3.0E-04	mg/kg/day	8.0E+01
				Vinyl chloride	2.0E-01	ug/L	NA	NA	NA	NA	NA	1.3E-05	mg/kg/day	3.0E-03	mg/kg/day	4.3E-03
				Xylene (Total)	1.8E+01	ug/L	NA	NA	NA	NA	NA	1.1E-03	mg/kg/day	2.0E-01	mg/kg/day	5.6E-03
				2-Methylnaphthalene	9.0E+00	ug/L	NA	NA	NA	NA	NA	5.7E-04	mg/kg/day	4.0E-03	mg/kg/day	1.4E-01
				Benzo(a)anthracene	2.4E-01	ug/L	NA	NA	NA	NA	NA	1.6E-05	mg/kg/day	NA	NA	NA
				Carbazole	3.6E+00	ug/L	NA	NA	NA	NA	NA	2.3E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.3E+00	ug/L	NA	NA	NA	NA	NA	2.1E-04	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+02	ug/L	NA	NA	NA	NA	NA	1.1E-02	mg/kg/day	2.0E-02	mg/kg/day	5.3E-01
			Exp. Route Total								NA					8.3E+01
			Dermal	Arsenic	5.5E+00	ug/L	NA	NA	NA	NA	NA	2.3E-06	mg/kg/day	3.0E-04	mg/kg/day	7.7E-03
				Lead	9.1E+00	ug/L	NA	NA	NA	NA	NA	3.8E-06	mg/kg/day	NA	NA	NA
				1,2-Dichloroethane	3.0E-01	ug/L	NA	NA	NA	NA	NA	9.4E-07	mg/kg/day	2.0E-02	mg/kg/day	4.7E-05
				Benzene	7.9E+00	ug/L	NA	NA	NA	NA	NA	7.7E-05	mg/kg/day	4.0E-03	mg/kg/day	1.9E-02
				Chloroform	7.7E-01	ug/L	NA	NA	NA	NA	NA	4.3E-06	mg/kg/day	1.0E-02	mg/kg/day	4.3E-04
				cis-1,2-Dichloroethene	8.5E+00	ug/L	NA	NA	NA	NA	NA	4.7E-05	mg/kg/day	1.0E-02	mg/kg/day	4.7E-03
				Tetrachloroethene	9.6E+00	ug/L	NA	NA	NA	NA	NA	3.6E-04	mg/kg/day	1.0E-02	mg/kg/day	3.6E-02
				Trichloroethene	3.8E+02	ug/L	NA	NA	NA	NA	NA	3.9E-03	mg/kg/day	3.0E-04	mg/kg/day	1.3E+01
				Vinyl chloride	2.0E-01	ug/L	NA	NA	NA	NA	NA	6.9E-07	mg/kg/day	3.0E-03	mg/kg/day	2.3E-04
				Xylene (Total)	1.8E+01	ug/L	NA	NA	NA	NA	NA	5.9E-04	mg/kg/day	2.0E-01	mg/kg/day	3.0E-03
				2-Methylnaphthalene	9.0E+00	ug/L	NA	NA	NA	NA	NA	6.1E-04	mg/kg/day	4.0E-03	mg/kg/day	1.5E-01
				Benzo(a)anthracene	2.4E-01	ug/L	NA	NA	NA	NA	NA	1.9E-04	mg/kg/day	NA	NA	NA
				Carbazole	3.6E+00	ug/L	NA	NA	NA	NA	NA	1.1E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.3E+00	ug/L	NA	NA	NA	NA	NA	2.9E-04	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+02	ug/L	NA	NA	NA	NA	NA	6.7E-03	mg/kg/day	2.0E-02	mg/kg/day	3.3E-01
			Exp. Route Total								NA					1.4E+01
		Exposure Point Total									NA					9.6E+01
	Exposure Medium Total										NA					9.6E+01
Groundwater Total											NA					9.6E+01
Receptor Total											NA					9.6E+01

Notes-

NA = Not applicable.

DAevent for exposure to groundwater while showering calculated on Table 7.38.RME Supplement A.

Table 7.37.RME Supplement A
Calculation of DAevent
Resident Child, Groundwater
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Water Concentration (CW) (µg/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm^2-event)	Eq
Arsenic	5.5E+00	1.0E-03	NA	NA	NA	NA	1	5.5E-09	1
Lead	9.1E+00	1.0E-03	NA	NA	NA	NA	1	9.1E-09	1
1,2-Dichloroethane	3.0E-01	4.2E-03	1.6E-02	3.8E-01	9.2E-01	1.0E+00	1	2.2E-09	3
Benzene	7.9E+00	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	1	1.8E-07	3
Chloroform	7.7E-01	6.8E-03	2.9E-02	5.0E-01	1.2E+00	1.0E+00	1	1.0E-08	2
cis-1,2-Dichloroethene	8.5E+00	7.7E-03	2.9E-02	3.7E-01	8.8E-01	1.0E+00	1	1.1E-07	3
Tetrachloroethene	9.6E+00	3.3E-02	1.7E-01	9.1E-01	2.2E+00	1.0E+00	1	8.4E-07	2
Trichloroethene	3.8E+02	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	1	9.3E-06	2
Vinyl chloride	2.0E-01	5.6E-03	1.7E-02	2.4E-01	5.7E-01	1.0E+00	1	1.6E-09	3
Xylene (Total)	1.8E+01	4.4E-02	1.8E-01	4.1E-01	9.9E-01	1.0E+00	1	1.4E-06	3
2-Methylnaphthalene	9.0E+00	7.2E-02	3.3E-01	6.6E-01	1.6E+00	1.0E+00	1	1.5E-06	2
Benzo(a)anthracene	2.4E-01	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	1	4.5E-07	2
Carbazole	3.6E+00	2.9E-02	1.4E-01	9.1E-01	2.2E+00	1.0E+00	1	2.7E-07	2
Dibenzofuran	3.3E+00	7.9E-02	4.0E-01	9.2E-01	2.2E+00	1.0E+00	1	6.9E-07	2
Naphthalene	1.6E+02	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	1	1.6E-05	2

Inorganics: DAevent (mg/cm^2-event) =

$Kp \times CW \times t_{event} \times 0.001\ mg/ug \times 0.001\ l/cm^3$ (eq 1)

Organics: DAevent (mg/cm^2-event) =

If tevent<t*, then DAevent =

$2 \times FA \times Kp \times CW \times (sqrt((6 \times \tau_{event} \times t_{event})/\pi)) \times 0.001\ mg/ug \times 0.001\ l/cm^3$ (eq 2)

If tevent>t*, then DAevent =

$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau_{event} \times ((1 + 3xB + 3xB^2)/(1+B)^2) \times 0.001\ mg/ug \times 0.001\ l/cm^3$ (eq 3)

Notes:

NA - Not applicable

Permeability constants from EPA 2004, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final).* EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).

t* - Time to reach steady-state

TABLE 7.38.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater	OU1 Below Clay - Tap Water	Ingestion	Arsenic	5.5E+00	ug/L	8.2E-05	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.2E-04	NA	NA	NA	NA	NA
				Lead	9.1E+00	ug/L	1.4E-04	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				1,2-Dichloroethane	3.0E-01	ug/L	4.5E-06	mg/kg-day	9.1E-02	1/(mg/kg-day)	4.1E-07	NA	NA	NA	NA	NA
				Benzene	7.9E+00	ug/L	1.2E-04	mg/kg-day	5.5E-02	1/(mg/kg-day)	6.5E-06	NA	NA	NA	NA	NA
				Chloroform	7.7E-01	ug/L	1.1E-05	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				cis-1,2-Dichloroethene	8.5E+00	ug/L	1.3E-04	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Tetrachloroethene	9.6E+00	ug/L	1.4E-04	mg/kg-day	5.4E-01	1/(mg/kg-day)	7.7E-05	NA	NA	NA	NA	NA
				Trichloroethene	3.8E+02	ug/L	5.6E-03	mg/kg-day	4.0E-01	1/(mg/kg-day)	2.3E-03	NA	NA	NA	NA	NA
				Vinyl chloride	2.0E-01	ug/L	3.0E-06	mg/kg-day	7.5E-01	1/(mg/kg-day)	2.2E-06	NA	NA	NA	NA	NA
				Xylene (Total)	1.8E+01	ug/L	2.6E-04	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	9.0E+00	ug/L	1.3E-04	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.4E-01	ug/L	4.9E-06	mg/kg-day	7.3E-01	1/(mg/kg-day)	1.2E-05	NA	NA	NA	NA	NA
				Carbazole	3.6E+00	ug/L	5.3E-05	mg/kg-day	2.0E-02	1/(mg/kg-day)	1.1E-06	NA	NA	NA	NA	NA
				Dibenzofuran	3.3E+00	ug/L	4.9E-05	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
				Naphthalene	1.6E+02	ug/L	2.5E-03	mg/kg-day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								2.5E-03					NA

TABLE 7.3B.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
			Dermal													
				Arsenic	5.5E+00	ug/L	4.7E-07	mg/kg/day	1.5E+00	1/(mg/kg-day)	7.0E-07	NA	NA	NA	NA	NA
				Lead	9.1E+00	ug/L	7.8E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				1,2-Dichloroethane	3.0E-01	ug/L	2.2E-07	mg/kg/day	9.1E-02	1/(mg/kg-day)	2.0E-08	NA	NA	NA	NA	NA
				Benzene	7.9E+00	ug/L	1.8E-05	mg/kg/day	5.5E-02	1/(mg/kg-day)	9.8E-07	NA	NA	NA	NA	NA
				Chloroform	7.7E-01	ug/L	1.0E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				cis-1,2-Dichloroethene	8.5E+00	ug/L	1.1E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Tetrachloroethene	9.6E+00	ug/L	8.5E-05	mg/kg/day	5.4E-01	1/(mg/kg-day)	4.6E-05	NA	NA	NA	NA	NA
				Trichloroethene	3.8E+02	ug/L	9.3E-04	mg/kg/day	4.0E-01	1/(mg/kg-day)	3.7E-04	NA	NA	NA	NA	NA
				Vinyl chloride	2.0E-01	ug/L	1.6E-07	mg/kg/day	7.5E-01	1/(mg/kg-day)	1.2E-07	NA	NA	NA	NA	NA
				Xylene (Total)	1.8E+01	ug/L	1.4E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	9.0E+00	ug/L	1.5E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.4E-01	ug/L	5.0E-05	mg/kg/day	7.3E-01	1/(mg/kg-day)	1.2E-04	NA	NA	NA	NA	NA
				Carbazole	3.6E+00	ug/L	2.7E-05	mg/kg/day	2.0E-02	1/(mg/kg-day)	5.4E-07	NA	NA	NA	NA	NA
				Dibenzofuran	3.3E+00	ug/L	6.9E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Naphthalene	1.6E+02	ug/L	1.6E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								5.4E-04					NA
		Exposure Point Total									3.0E-03					NA
	Exposure Medium Total										3.0E-03					NA
	Air	OU1 Below Clay Shallow Aquifer	Inhalation									NA	NA	NA	NA	NA
		Water Vapors at Showerhead		1,2-Dichloroethane	2.5E-03	mg/m^3	6.8E-06	mg/kg/day	9.1E-02	1/(mg/kg-day)	6.2E-07					
				Benzene	6.5E-02	mg/m^3	1.8E-04	mg/kg/day	2.7E-02	1/(mg/kg-day)	4.8E-06	NA	NA	NA	NA	NA
				Chloroform	6.4E-03	mg/m^3	1.7E-05	mg/kg/day	8.1E-02	1/(mg/kg-day)	1.4E-06	NA	NA	NA	NA	NA
				cis-1,2-Dichloroethene	7.0E-02	mg/m^3	1.9E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Tetrachloroethene	7.9E-02	mg/m^3	2.2E-04	mg/kg/day	2.1E-02	1/(mg/kg-day)	4.5E-06	NA	NA	NA	NA	NA
				Trichloroethene	3.1E+00	mg/m^3	8.5E-03	mg/kg/day	4.0E-01	1/(mg/kg-day)	3.4E-03	NA	NA	NA	NA	NA
				Vinyl chloride	1.7E-03	mg/m^3	4.5E-06	mg/kg/day	1.5E-02	1/(mg/kg-day)	6.9E-08	NA	NA	NA	NA	NA
				Xylene (Total)	1.4E-01	mg/m^3	3.9E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	7.4E-02	mg/m^3	2.0E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Dibenzofuran	2.7E-02	mg/m^3	7.4E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Naphthalene	1.4E+00	mg/m^3	3.7E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								3.4E-03					NA
		Exposure Point Total									3.4E-03					NA
	Exposure Medium Total										3.4E-03					NA
Groundwater Total											6.4E-03					NA
Receptor Total											6.4E-03					NA

Notes-
NA = Not applicable.

DAevent for exposure to groundwater while showering calculated on Table 7.1.RME Supplements A and B and Table 7.2.RME Supplement A.
DAevent for exposure to groundwater while showering calculated on Table 7.1.RME Supplement C.

TABLE 7.1.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Ingestion	Aluminum	7.6E+03	mg/kg	1.2E-05	mg/kg/day	NA	NA	NA	9.0E-05	mg/kg/day	1.0E+00	mg/kg/day	9.0E-05
				Antimony	1.7E+02	mg/kg	2.6E-07	mg/kg/day	NA	NA	NA	2.0E-06	mg/kg/day	4.0E-04	mg/kg/day	5.1E-03
				Arsenic	1.5E+03	mg/kg	2.3E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	3.4E-06	1.8E-05	mg/kg/day	3.0E-04	mg/kg/day	5.9E-02
				Cadmium	1.0E+01	mg/kg	1.5E-08	mg/kg/day	NA	NA	NA	1.2E-07	mg/kg/day	1.0E-03	mg/kg/day	1.2E-04
				Chromium	1.9E+01	mg/kg	2.8E-08	mg/kg/day	NA	NA	NA	2.2E-07	mg/kg/day	3.0E-03	mg/kg/day	7.3E-05
				Copper	6.2E+03	mg/kg	9.3E-06	mg/kg/day	NA	NA	NA	7.2E-05	mg/kg/day	4.0E-02	mg/kg/day	1.8E-03
				Iron	2.6E+05	mg/kg	3.9E-04	mg/kg/day	NA	NA	NA	3.0E-03	mg/kg/day	3.0E-01	mg/kg/day	1.0E-02
				Lead	1.3E+03	mg/kg	1.9E-06	mg/kg/day	NA	NA	NA	1.5E-05	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	4.6E-07	mg/kg/day	NA	NA	NA	3.6E-06	mg/kg/day	1.4E-01	mg/kg/day	2.6E-05
				Thallium	8.2E+00	mg/kg	1.2E-08	mg/kg/day	NA	NA	NA	9.6E-08	mg/kg/day	6.6E-05	mg/kg/day	1.5E-03
				Vanadium	8.2E+01	mg/kg	1.2E-07	mg/kg/day	NA	NA	NA	9.7E-07	mg/kg/day	1.0E-03	mg/kg/day	9.7E-04
				Zinc	3.8E+03	mg/kg	5.8E-06	mg/kg/day	NA	NA	NA	4.5E-05	mg/kg/day	3.0E-01	mg/kg/day	1.5E-04
				Mercury	3.0E+01	mg/kg	4.5E-08	mg/kg/day	NA	NA	NA	3.5E-07	mg/kg/day	3.0E-04	mg/kg/day	1.2E-03
				Heptachlor	3.5E-01	mg/kg	5.3E-10	mg/kg/day	4.5E+00	1/(mg/kg/day)	2.4E-09	4.1E-09	mg/kg/day	5.0E-04	mg/kg/day	8.2E-06
				Aroclor-1242	3.2E+00	mg/kg	4.8E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	9.7E-09	3.8E-08	mg/kg/day	2.0E-05	mg/kg/day	1.9E-03
				Aroclor-1260	1.6E+00	mg/kg	2.4E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	4.8E-09	1.9E-08	mg/kg/day	2.0E-05	mg/kg/day	9.4E-04
				Benzene	1.9E+01	mg/kg	2.9E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.6E-09	2.2E-07	mg/kg/day	4.0E-03	mg/kg/day	5.6E-05
				Tetrachloroethene	5.2E-01	mg/kg	7.9E-10	mg/kg/day	5.4E-01	1/(mg/kg/day)	4.2E-10	6.1E-09	mg/kg/day	1.0E-02	mg/kg/day	6.1E-07
				Trichloroethene	5.4E-01	mg/kg	8.2E-10	mg/kg/day	4.0E-01	1/(mg/kg/day)	3.3E-10	6.3E-09	mg/kg/day	3.0E-04	mg/kg/day	2.1E-05
				m-Xylene	4.5E+01	mg/kg	6.8E-08	mg/kg/day	NA	NA	NA	5.3E-07	mg/kg/day	2.0E-01	mg/kg/day	2.6E-06
				p,o-Xylene	4.9E+01	mg/kg	7.4E-08	mg/kg/day	NA	NA	NA	5.8E-07	mg/kg/day	2.0E-01	mg/kg/day	2.9E-06
				2-Methylnaphthalene	3.0E+02	mg/kg	4.5E-07	mg/kg/day	NA	NA	NA	3.5E-06	mg/kg/day	4.0E-03	mg/kg/day	8.8E-04
				4-Methylphenol	1.3E+02	mg/kg	2.0E-07	mg/kg/day	NA	NA	NA	1.6E-06	mg/kg/day	5.0E-03	mg/kg/day	3.1E-04
				4-Nitroaniline	1.2E+01	mg/kg	1.8E-08	mg/kg/day	2.1E-02	1/(mg/kg/day)	3.7E-10	1.4E-07	mg/kg/day	3.0E-03	mg/kg/day	4.6E-05
				Acenaphthene	2.4E+02	mg/kg	3.7E-07	mg/kg/day	NA	NA	NA	2.9E-06	mg/kg/day	6.0E-02	mg/kg/day	4.8E-05
				Benzo(a)anthracene	3.3E+02	mg/kg	5.0E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.4E-06	3.9E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	4.5E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.2E-05	3.5E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	5.3E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.5E-06	4.1E-06	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	2.5E-07	mg/kg/day	NA	NA	NA	1.9E-06	mg/kg/day	3.0E-02	mg/kg/day	6.4E-05
				Benzo(k)fluoranthene	1.6E+02	mg/kg	2.5E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	1.2E-07	1.9E-06	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	2.1E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	4.2E-09	1.6E-06	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	4.8E-07	mg/kg/day	2.3E-03	1/(mg/kg/day)	1.1E-14	3.7E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	9.0E-08	mg/kg/day	4.3E-06	1/(mg/kg/day)	3.9E-13	7.0E-07	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	3.0E-07	mg/kg/day	NA	NA	NA	2.4E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	9.6E-06	mg/kg/day	4.0E-02	mg/kg/day	2.4E-04
				Fluorene	3.3E+02	mg/kg	5.0E-07	mg/kg/day	NA	NA	NA	3.9E-06	mg/kg/day	4.0E-02	mg/kg/day	9.8E-05
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	2.5E-07	mg/kg/day	1.2E-06	1/(mg/kg/day)	3.0E-13	2.0E-06	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	1.4E-06	mg/kg/day	NA	NA	NA	1.1E-05	mg/kg/day	2.0E-02	mg/kg/day	5.4E-04
				Phenanthrene	1.1E+03	mg/kg	1.6E-06	mg/kg/day	NA	NA	NA	1.2E-05	mg/kg/day	3.0E-01	mg/kg/day	4.1E-05
				Pyrene	6.4E+02	mg/kg	9.6E-07	mg/kg/day	NA	NA	NA	7.5E-06	mg/kg/day	3.0E-02	mg/kg/day	2.5E-04
			Exp. Route Total								3.0E-05					8.5E-02

TABLE 7.1.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Dermal	Aluminum	7.6E+03	mg/kg	1.3E-08	mg/kg/day	NA	NA	NA	1.0E-07	mg/kg/day	1.0E+00	mg/kg/day	1.0E-07
				Antimony	1.7E+02	mg/kg	3.0E-10	mg/kg/day	NA	NA	NA	2.3E-09	mg/kg/day	6.0E-05	mg/kg/day	3.9E-05
				Arsenic	1.5E+03	mg/kg	7.8E-08	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.2E-07	6.0E-07	mg/kg/day	3.0E-04	mg/kg/day	2.0E-03
				Cadmium	1.0E+01	mg/kg	1.7E-11	mg/kg/day	NA	NA	NA	1.4E-10	mg/kg/day	2.5E-05	mg/kg/day	5.4E-06
				Chromium	1.9E+01	mg/kg	3.2E-11	mg/kg/day	NA	NA	NA	2.5E-10	mg/kg/day	7.5E-05	mg/kg/day	3.3E-06
				Copper	6.2E+03	mg/kg	1.1E-08	mg/kg/day	NA	NA	NA	8.3E-08	mg/kg/day	4.0E-02	mg/kg/day	2.1E-06
				Iron	2.6E+05	mg/kg	4.4E-07	mg/kg/day	NA	NA	NA	3.4E-06	mg/kg/day	3.0E-01	mg/kg/day	1.1E-05
				Lead	1.3E+03	mg/kg	2.2E-09	mg/kg/day	NA	NA	NA	1.7E-08	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	5.3E-10	mg/kg/day	NA	NA	NA	4.1E-09	mg/kg/day	5.6E-03	mg/kg/day	7.3E-07
				Thallium	8.2E+00	mg/kg	1.4E-11	mg/kg/day	NA	NA	NA	1.1E-10	mg/kg/day	6.6E-05	mg/kg/day	1.7E-06
				Vanadium	8.2E+01	mg/kg	1.4E-10	mg/kg/day	NA	NA	NA	1.1E-09	mg/kg/day	2.6E-05	mg/kg/day	4.2E-05
				Zinc	3.8E+03	mg/kg	6.6E-09	mg/kg/day	NA	NA	NA	5.1E-08	mg/kg/day	3.0E-01	mg/kg/day	1.7E-07
				Mercury	3.0E+01	mg/kg	5.1E-11	mg/kg/day	NA	NA	NA	3.9E-10	mg/kg/day	2.1E-05	mg/kg/day	1.9E-05
				Heptachlor	3.5E-01	mg/kg	6.0E-12	mg/kg/day	4.5E+00	1/(mg/kg/day)	2.7E-11	4.7E-11	mg/kg/day	5.0E-04	mg/kg/day	9.4E-08
				Aroclor-1242	3.2E+00	mg/kg	7.7E-10	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.5E-09	6.0E-09	mg/kg/day	2.0E-05	mg/kg/day	3.0E-04
				Aroclor-1260	1.6E+00	mg/kg	3.9E-10	mg/kg/day	2.0E+00	1/(mg/kg/day)	7.7E-10	3.0E-09	mg/kg/day	2.0E-05	mg/kg/day	1.5E-04
				Benzene	1.9E+01	mg/kg	3.3E-10	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.8E-11	2.5E-09	mg/kg/day	4.0E-03	mg/kg/day	6.4E-07
				Tetrachloroethene	5.2E-01	mg/kg	8.9E-12	mg/kg/day	5.4E-01	1/(mg/kg/day)	4.8E-12	7.0E-11	mg/kg/day	1.0E-02	mg/kg/day	7.0E-09
				Trichloroethene	5.4E-01	mg/kg	9.3E-12	mg/kg/day	4.0E-01	1/(mg/kg/day)	3.7E-12	7.2E-11	mg/kg/day	3.0E-04	mg/kg/day	2.4E-07
				m-Xylene	4.5E+01	mg/kg	7.7E-10	mg/kg/day	NA	NA	NA	6.0E-09	mg/kg/day	2.0E-01	mg/kg/day	3.0E-08
				p,o-Xylene	4.9E+01	mg/kg	8.4E-10	mg/kg/day	NA	NA	NA	6.6E-09	mg/kg/day	2.0E-01	mg/kg/day	3.3E-08
				2-Methylnaphthalene	3.0E+02	mg/kg	5.2E-09	mg/kg/day	NA	NA	NA	4.0E-08	mg/kg/day	4.0E-03	mg/kg/day	1.0E-05
				4-Methylphenol	1.3E+02	mg/kg	2.3E-09	mg/kg/day	NA	NA	NA	1.8E-08	mg/kg/day	5.0E-03	mg/kg/day	3.6E-06
				4-Nitroaniline	1.2E+01	mg/kg	2.0E-10	mg/kg/day	2.1E-02	1/(mg/kg/day)	4.2E-12	1.6E-09	mg/kg/day	3.0E-03	mg/kg/day	5.2E-07
				Acenaphthene	2.4E+02	mg/kg	5.5E-08	mg/kg/day	NA	NA	NA	4.3E-07	mg/kg/day	6.0E-02	mg/kg/day	7.1E-06
				Benzo(a)anthracene	3.3E+02	mg/kg	7.3E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.6E-07	5.7E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	6.7E-08	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.5E-06	5.2E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	7.9E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.7E-07	6.1E-07	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	3.7E-08	mg/kg/day	NA	NA	NA	2.8E-07	mg/kg/day	3.0E-02	mg/kg/day	9.5E-06
				Benzo(k)fluoranthene	1.6E+02	mg/kg	3.7E-08	mg/kg/day	7.3E-02	1/(mg/kg/day)	8.0E-09	2.8E-07	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	2.4E-09	mg/kg/day	2.0E-02	1/(mg/kg/day)	4.8E-11	1.9E-08	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	7.1E-08	mg/kg/day	7.3E-03	1/(mg/kg/day)	1.6E-09	5.5E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	1.3E-08	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.9E-07	1.0E-07	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	3.5E-09	mg/kg/day	NA	NA	NA	2.7E-08	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	1.8E-07	mg/kg/day	NA	NA	NA	1.4E-06	mg/kg/day	4.0E-02	mg/kg/day	3.6E-05
				Fluorene	3.3E+02	mg/kg	7.4E-08	mg/kg/day	NA	NA	NA	5.8E-07	mg/kg/day	4.0E-02	mg/kg/day	1.4E-05
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	3.7E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.2E-08	2.9E-07	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	2.0E-07	mg/kg/day	NA	NA	NA	1.6E-06	mg/kg/day	2.0E-02	mg/kg/day	8.0E-05
				Phenanthrene	1.1E+03	mg/kg	1.8E-08	mg/kg/day	NA	NA	NA	1.4E-07	mg/kg/day	3.0E-01	mg/kg/day	4.7E-07
				Pyrene	6.4E+02	mg/kg	1.4E-07	mg/kg/day	NA	NA	NA	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	3.7E-05
			Exp. Route Total								2.3E-06					2.8E-03
		Exposure Point Total									3.2E-05					8.8E-02
	Exposure Medium Total										3.2E-05					8.8E-02

TABLE 7.1.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air (Upland Area)	Quanta Resources Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	9.2E-06	mg/m3	4.6E-10	mg/kg/day	NA	NA	NA	3.6E-09	mg/kg/day	1.4E-03	mg/kg/day	2.5E-06
				Antimony	2.1E-07	mg/m3	1.1E-11	mg/kg/day	NA	NA	NA	8.2E-11	mg/kg/day	NA	NA	NA
				Arsenic	1.8E-06	mg/m3	9.1E-11	mg/kg/day	1.5E+01	1/(mg/kg/day)	1.4E-09	7.1E-10	mg/kg/day	NA	NA	NA
				Cadmium	1.2E-08	mg/m3	6.1E-13	mg/kg/day	6.3E+00	1/(mg/kg/day)	3.9E-12	4.8E-12	mg/kg/day	NA	NA	NA
				Chromium	2.3E-08	mg/m3	1.1E-12	mg/kg/day	4.2E+01	1/(mg/kg/day)	4.8E-11	8.8E-12	mg/kg/day	2.9E-05	mg/kg/day	3.1E-07
				Copper	7.5E-06	mg/m3	3.7E-10	mg/kg/day	NA	NA	NA	2.9E-09	mg/kg/day	NA	NA	NA
				Iron	3.1E-04	mg/m3	1.6E-08	mg/kg/day	NA	NA	NA	1.2E-07	mg/kg/day	NA	NA	NA
				Lead	1.5E-06	mg/m3	7.7E-11	mg/kg/day	NA	NA	NA	6.0E-10	mg/kg/day	NA	NA	NA
				Manganese	3.7E-07	mg/m3	1.9E-11	mg/kg/day	NA	NA	NA	1.4E-10	mg/kg/day	1.4E-05	mg/kg/day	1.0E-05
				Thallium	9.9E-09	mg/m3	5.0E-13	mg/kg/day	NA	NA	NA	3.9E-12	mg/kg/day	NA	NA	NA
				Vanadium	9.9E-08	mg/m3	5.0E-12	mg/kg/day	NA	NA	NA	3.9E-11	mg/kg/day	NA	NA	NA
				Zinc	4.6E-06	mg/m3	2.3E-10	mg/kg/day	NA	NA	NA	1.8E-09	mg/kg/day	NA	NA	NA
				Mercury	3.6E-08	mg/m3	1.8E-12	mg/kg/day	NA	NA	NA	1.4E-11	mg/kg/day	NA	NA	NA
				Heptachlor	4.2E-10	mg/m3	2.1E-14	mg/kg/day	4.6E+00	1/(mg/kg/day)	9.6E-14	1.6E-13	mg/kg/day	NA	NA	NA
				Aroclor-1242	3.9E-09	mg/m3	1.9E-13	mg/kg/day	3.5E-01	1/(mg/kg/day)	6.8E-14	1.5E-12	mg/kg/day	NA	NA	NA
				Aroclor-1260	1.9E-09	mg/m3	9.7E-14	mg/kg/day	3.5E-01	1/(mg/kg/day)	3.4E-14	7.5E-13	mg/kg/day	NA	NA	NA
				Benzene	8.3E-03	mg/m3	4.2E-07	mg/kg/day	2.7E-02	1/(mg/kg/day)	1.1E-08	3.3E-06	mg/kg/day	8.6E-03	mg/kg/day	3.8E-04
				Tetrachloroethene	2.0E-04	mg/m3	1.0E-08	mg/kg/day	2.1E-02	1/(mg/kg/day)	2.1E-10	7.8E-08	mg/kg/day	1.0E-02	mg/kg/day	7.8E-06
				Trichloroethene	2.5E-04	mg/m3	1.3E-08	mg/kg/day	4.0E-01	1/(mg/kg/day)	5.1E-09	9.9E-08	mg/kg/day	1.1E-02	mg/kg/day	8.7E-06
				m-Xylene	1.3E-02	mg/m3	6.3E-07	mg/kg/day	NA	NA	NA	4.9E-06	mg/kg/day	2.9E-02	mg/kg/day	1.7E-04
				p,o-Xylene	1.2E-02	mg/m3	5.9E-07	mg/kg/day	NA	NA	NA	4.6E-06	mg/kg/day	2.9E-02	mg/kg/day	1.6E-04
				2-Methylnaphthalene	8.6E-04	mg/m3	4.3E-08	mg/kg/day	NA	NA	NA	3.3E-07	mg/kg/day	NA	NA	NA
				4-Methylphenol	1.6E-07	mg/m3	8.1E-12	mg/kg/day	NA	NA	NA	6.3E-11	mg/kg/day	NA	NA	NA
				4-Nitroaniline	1.4E-08	mg/m3	7.1E-13	mg/kg/day	NA	NA	NA	5.5E-12	mg/kg/day	1.1E-03	mg/kg/day	4.8E-09
				Acenaphthene	3.0E-07	mg/m3	1.5E-11	mg/kg/day	NA	NA	NA	1.2E-10	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	4.0E-07	mg/m3	2.0E-11	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.8E-10	1.5E-10	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-07	mg/m3	1.8E-11	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.6E-09	1.4E-10	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-07	mg/m3	2.1E-11	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.9E-10	1.7E-10	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.0E-07	mg/m3	9.9E-12	mg/kg/day	NA	NA	NA	7.7E-11	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	2.0E-07	mg/m3	9.9E-12	mg/kg/day	3.1E-02	1/(mg/kg/day)	8.8E-12	7.7E-11	mg/kg/day	NA	NA	NA
				Carbazole	1.7E-07	mg/m3	8.4E-12	mg/kg/day	NA	NA	NA	6.5E-11	mg/kg/day	NA	NA	NA
				Chrysene	3.8E-07	mg/m3	1.9E-11	mg/kg/day	NA	NA	NA	1.5E-10	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	7.2E-08	mg/m3	3.6E-12	mg/kg/day	3.1E+00	1/(mg/kg/day)	3.2E-10	2.8E-11	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.4E-07	mg/m3	1.2E-11	mg/kg/day	NA	NA	NA	9.5E-11	mg/kg/day	NA	NA	NA
				Fluoranthene	9.9E-07	mg/m3	5.0E-11	mg/kg/day	NA	NA	NA	3.9E-10	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	7.5E-08	mg/kg/day	NA	NA	NA	5.8E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-07	mg/m3	1.0E-11	mg/kg/day	3.1E-01	1/(mg/kg/day)	9.0E-11	7.9E-11	mg/kg/day	NA	NA	NA
				Naphthalene	2.6E-02	mg/m3	1.3E-06	mg/kg/day	NA	NA	NA	1.0E-05	mg/kg/day	8.6E-04	mg/kg/day	1.2E-02
				Phenanthrene	8.9E-02	mg/m3	4.5E-06	mg/kg/day	NA	NA	NA	3.5E-05	mg/kg/day	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	1.3E-08	mg/kg/day	NA	NA	NA	9.9E-08	mg/kg/day	NA	NA	NA
			Exp. Route Total								2.1E-08					1.2E-02
		Exposure Point Total									2.1E-08					1.2E-02
	Exposure Medium Total										2.1E-08					1.2E-02
Soil Total											3.2E-05					1.0E-01
Receptor Total											3.2E-05					1.0E-01

NA = Not applicable.

TABLE 7.2.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Ingestion	Aluminum	7.6E+03	mg/kg	2.3E-05	mg/kg/day	NA	NA	NA	1.6E-04	mg/kg/day	1.0E+00	mg/kg/day	1.6E-04
				Antimony	1.7E+02	mg/kg	5.2E-07	mg/kg/day	NA	NA	NA	3.7E-06	mg/kg/day	4.0E-04	mg/kg/day	9.2E-03
				Arsenic	1.5E+03	mg/kg	4.5E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	6.8E-06	3.2E-05	mg/kg/day	3.0E-04	mg/kg/day	1.1E-01
				Cadmium	1.0E+01	mg/kg	3.0E-08	mg/kg/day	NA	NA	NA	2.1E-07	mg/kg/day	1.0E-03	mg/kg/day	2.1E-04
				Chromium	1.9E+01	mg/kg	5.6E-08	mg/kg/day	NA	NA	NA	3.9E-07	mg/kg/day	3.0E-03	mg/kg/day	1.3E-04
				Copper	6.2E+03	mg/kg	1.9E-05	mg/kg/day	NA	NA	NA	1.3E-04	mg/kg/day	4.0E-02	mg/kg/day	3.3E-03
				Iron	2.6E+05	mg/kg	7.7E-04	mg/kg/day	NA	NA	NA	5.4E-03	mg/kg/day	3.0E-01	mg/kg/day	1.8E-02
				Lead	1.3E+03	mg/kg	3.8E-06	mg/kg/day	NA	NA	NA	2.7E-05	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	9.2E-07	mg/kg/day	NA	NA	NA	6.4E-06	mg/kg/day	1.4E-01	mg/kg/day	4.6E-05
				Thallium	8.2E+00	mg/kg	2.5E-08	mg/kg/day	NA	NA	NA	1.7E-07	mg/kg/day	6.6E-05	mg/kg/day	2.6E-03
				Vanadium	8.2E+01	mg/kg	2.5E-07	mg/kg/day	NA	NA	NA	1.7E-06	mg/kg/day	1.0E-03	mg/kg/day	1.7E-03
				Zinc	3.8E+03	mg/kg	1.2E-05	mg/kg/day	NA	NA	NA	8.1E-05	mg/kg/day	3.0E-01	mg/kg/day	2.7E-04
				Mercury	3.0E+01	mg/kg	8.9E-08	mg/kg/day	NA	NA	NA	6.2E-07	mg/kg/day	3.0E-04	mg/kg/day	2.1E-03
				Heptachlor	3.5E-01	mg/kg	1.1E-09	mg/kg/day	4.5E+00	1/(mg/kg/day)	4.7E-09	7.4E-09	mg/kg/day	5.0E-04	mg/kg/day	1.5E-05
				Aroclor-1242	3.2E+00	mg/kg	9.6E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.9E-08	6.7E-08	mg/kg/day	2.0E-05	mg/kg/day	3.4E-03
				Aroclor-1260	1.6E+00	mg/kg	4.8E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	9.6E-09	3.4E-08	mg/kg/day	2.0E-05	mg/kg/day	1.7E-03
				Benzene	1.9E+01	mg/kg	5.7E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	3.1E-09	4.0E-07	mg/kg/day	4.0E-03	mg/kg/day	1.0E-04
				Tetrachloroethene	5.2E-01	mg/kg	1.6E-09	mg/kg/day	5.4E-01	1/(mg/kg/day)	8.5E-10	1.1E-08	mg/kg/day	1.0E-02	mg/kg/day	1.1E-06
				Trichloroethene	5.4E-01	mg/kg	1.6E-09	mg/kg/day	4.0E-01	1/(mg/kg/day)	6.5E-10	1.1E-08	mg/kg/day	3.0E-04	mg/kg/day	3.8E-05
				m-Xylene	4.5E+01	mg/kg	1.4E-07	mg/kg/day	NA	NA	NA	9.5E-07	mg/kg/day	2.0E-01	mg/kg/day	4.7E-06
				p,o-Xylene	4.9E+01	mg/kg	1.5E-07	mg/kg/day	NA	NA	NA	1.0E-06	mg/kg/day	2.0E-01	mg/kg/day	5.2E-06
				2-Methylnaphthalene	3.0E+02	mg/kg	9.0E-07	mg/kg/day	NA	NA	NA	6.3E-06	mg/kg/day	4.0E-03	mg/kg/day	1.6E-03
				4-Methylphenol	1.3E+02	mg/kg	4.0E-07	mg/kg/day	NA	NA	NA	2.8E-06	mg/kg/day	5.0E-03	mg/kg/day	5.6E-04
				4-Nitroaniline	1.2E+01	mg/kg	3.5E-08	mg/kg/day	2.1E-02	1/(mg/kg/day)	7.4E-10	2.5E-07	mg/kg/day	3.0E-03	mg/kg/day	8.3E-05
				Acenaphthene	2.4E+02	mg/kg	7.4E-07	mg/kg/day	NA	NA	NA	5.2E-06	mg/kg/day	6.0E-02	mg/kg/day	8.6E-05
				Benzo(a)anthracene	3.3E+02	mg/kg	9.9E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.2E-07	6.9E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	9.0E-07	mg/kg/day	2.2E+01	1/(mg/kg/day)	2.2E-05	6.3E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	1.1E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.8E-07	7.4E-06	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	4.9E-07	mg/kg/day	NA	NA	NA	3.4E-06	mg/kg/day	3.0E-02	mg/kg/day	1.1E-04
				Benzo(k)fluoranthene	1.6E+02	mg/kg	4.9E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.6E-08	3.5E-06	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	4.2E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	8.4E-09	2.9E-06	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	9.6E-07	mg/kg/day	7.3E-03	1/(mg/kg/day)	7.0E-09	6.7E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	1.8E-07	mg/kg/day	2.2E+01	1/(mg/kg/day)	4.3E-06	1.3E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	6.0E-07	mg/kg/day	NA	NA	NA	4.2E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	2.5E-06	mg/kg/day	NA	NA	NA	1.7E-05	mg/kg/day	4.0E-02	mg/kg/day	4.3E-04
				Fluorene	3.3E+02	mg/kg	1.0E-06	mg/kg/day	NA	NA	NA	7.0E-06	mg/kg/day	4.0E-02	mg/kg/day	1.8E-04
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	5.0E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.7E-07	3.5E-06	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	2.8E-06	mg/kg/day	NA	NA	NA	1.9E-05	mg/kg/day	2.0E-02	mg/kg/day	9.6E-04
				Phenanthrene	1.1E+03	mg/kg	3.2E-06	mg/kg/day	NA	NA	NA	2.2E-05	mg/kg/day	3.0E-01	mg/kg/day	7.4E-05
				Pyrene	6.4E+02	mg/kg	1.9E-06	mg/kg/day	NA	NA	NA	1.3E-05	mg/kg/day	3.0E-02	mg/kg/day	4.5E-04
			Exp. Route Total								3.5E-05					1.5E-01

TABLE 7.2.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Dermal	Aluminum	7.6E+03	mg/kg	1.9E-08	mg/kg/day	NA	NA	NA	1.3E-07	mg/kg/day	1.0E+00	mg/kg/day	1.3E-07
				Antimony	1.7E+02	mg/kg	4.3E-10	mg/kg/day	NA	NA	NA	3.0E-09	mg/kg/day	6.0E-05	mg/kg/day	5.0E-05
				Arsenic	1.5E+03	mg/kg	1.1E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.7E-07	7.8E-07	mg/kg/day	3.0E-04	mg/kg/day	2.6E-03
				Cadmium	1.0E+01	mg/kg	2.5E-11	mg/kg/day	NA	NA	NA	1.7E-10	mg/kg/day	2.5E-05	mg/kg/day	7.0E-06
				Chromium	1.9E+01	mg/kg	4.6E-11	mg/kg/day	NA	NA	NA	3.2E-10	mg/kg/day	7.5E-05	mg/kg/day	4.3E-06
				Copper	6.2E+03	mg/kg	1.5E-08	mg/kg/day	NA	NA	NA	1.1E-07	mg/kg/day	4.0E-02	mg/kg/day	2.7E-06
				Iron	2.6E+05	mg/kg	6.3E-07	mg/kg/day	NA	NA	NA	4.4E-06	mg/kg/day	3.0E-01	mg/kg/day	1.5E-05
				Lead	1.3E+03	mg/kg	3.1E-09	mg/kg/day	NA	NA	NA	2.2E-08	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	7.6E-10	mg/kg/day	NA	NA	NA	5.3E-09	mg/kg/day	5.6E-03	mg/kg/day	9.4E-07
				Thallium	8.2E+00	mg/kg	2.0E-11	mg/kg/day	NA	NA	NA	1.4E-10	mg/kg/day	6.6E-05	mg/kg/day	2.1E-06
				Vanadium	8.2E+01	mg/kg	2.0E-10	mg/kg/day	NA	NA	NA	1.4E-09	mg/kg/day	2.6E-05	mg/kg/day	5.5E-05
				Zinc	3.8E+03	mg/kg	9.4E-09	mg/kg/day	NA	NA	NA	6.6E-08	mg/kg/day	3.0E-01	mg/kg/day	2.2E-07
				Mercury	3.0E+01	mg/kg	7.3E-11	mg/kg/day	NA	NA	NA	5.1E-10	mg/kg/day	2.1E-05	mg/kg/day	2.4E-05
				Heptachlor	3.5E-01	mg/kg	8.6E-12	mg/kg/day	4.5E+00	1/(mg/kg/day)	3.9E-11	6.0E-11	mg/kg/day	5.0E-04	mg/kg/day	1.2E-07
				Aroclor-1242	3.2E+00	mg/kg	1.1E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.2E-09	7.7E-09	mg/kg/day	2.0E-05	mg/kg/day	3.9E-04
				Aroclor-1260	1.6E+00	mg/kg	5.5E-10	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.1E-09	3.9E-09	mg/kg/day	2.0E-05	mg/kg/day	1.9E-04
				Benzene	1.9E+01	mg/kg	4.7E-10	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.6E-11	3.3E-09	mg/kg/day	4.0E-03	mg/kg/day	8.2E-07
				Tetrachloroethene	5.2E-01	mg/kg	1.3E-11	mg/kg/day	5.4E-01	1/(mg/kg/day)	6.9E-12	9.0E-11	mg/kg/day	1.0E-02	mg/kg/day	9.0E-09
				Trichloroethene	5.4E-01	mg/kg	1.3E-11	mg/kg/day	4.0E-01	1/(mg/kg/day)	5.3E-12	9.3E-11	mg/kg/day	3.0E-04	mg/kg/day	3.1E-07
				m-Xylene	4.5E+01	mg/kg	1.1E-09	mg/kg/day	NA	NA	NA	7.8E-09	mg/kg/day	2.0E-01	mg/kg/day	3.9E-08
				p,o-Xylene	4.9E+01	mg/kg	1.2E-09	mg/kg/day	NA	NA	NA	8.5E-09	mg/kg/day	2.0E-01	mg/kg/day	4.2E-08
				2-Methylnaphthalene	3.0E+02	mg/kg	7.4E-09	mg/kg/day	NA	NA	NA	5.2E-08	mg/kg/day	4.0E-03	mg/kg/day	1.3E-05
				4-Methylphenol	1.3E+02	mg/kg	3.3E-09	mg/kg/day	NA	NA	NA	2.3E-08	mg/kg/day	5.0E-03	mg/kg/day	4.6E-06
				4-Nitroaniline	1.2E+01	mg/kg	2.9E-10	mg/kg/day	2.1E-02	1/(mg/kg/day)	6.1E-12	2.0E-09	mg/kg/day	3.0E-03	mg/kg/day	6.8E-07
				Acenaphthene	2.4E+02	mg/kg	7.9E-08	mg/kg/day	NA	NA	NA	5.5E-07	mg/kg/day	6.0E-02	mg/kg/day	9.2E-06
				Benzo(a)anthracene	3.3E+02	mg/kg	1.1E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.7E-08	7.4E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	9.6E-08	mg/kg/day	2.2E+01	1/(mg/kg/day)	1.5E-06	6.7E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	1.1E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.3E-08	7.9E-07	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	5.2E-08	mg/kg/day	NA	NA	NA	3.7E-07	mg/kg/day	3.0E-02	mg/kg/day	1.2E-05
				Benzo(k)fluoranthene	1.6E+02	mg/kg	5.3E-08	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.8E-09	3.7E-07	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	3.4E-09	mg/kg/day	2.0E-02	1/(mg/kg/day)	6.9E-11	2.4E-08	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	1.0E-07	mg/kg/day	7.3E-03	1/(mg/kg/day)	7.4E-10	7.1E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	1.9E-08	mg/kg/day	2.2E+01	1/(mg/kg/day)	2.9E-07	1.3E-07	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	5.0E-09	mg/kg/day	NA	NA	NA	3.5E-08	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	2.6E-07	mg/kg/day	NA	NA	NA	1.8E-06	mg/kg/day	4.0E-02	mg/kg/day	4.6E-05
				Fluorene	3.3E+02	mg/kg	1.1E-07	mg/kg/day	NA	NA	NA	7.5E-07	mg/kg/day	4.0E-02	mg/kg/day	1.9E-05
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	5.4E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.9E-08	3.8E-07	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	2.9E-07	mg/kg/day	NA	NA	NA	2.1E-06	mg/kg/day	2.0E-02	mg/kg/day	1.0E-04
				Phenanthrene	1.1E+03	mg/kg	2.6E-08	mg/kg/day	NA	NA	NA	1.8E-07	mg/kg/day	3.0E-01	mg/kg/day	6.1E-07
				Pyrene	6.4E+02	mg/kg	2.0E-07	mg/kg/day	NA	NA	NA	1.4E-06	mg/kg/day	3.0E-02	mg/kg/day	4.8E-05
			Exp. Route Total								2.1E-06					3.6E-03
		Exposure Point Total									3.7E-05					1.6E-01
	Exposure Medium Total										3.7E-05					1.6E-01

TABLE 7.2.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Quanta Resources Emissions from Surface Soil (0 - 2 ft)	Inhalation	Aluminum	9.2E-06	mg/m3	9.2E-10	mg/kg/day	NA	NA	NA	6.5E-09	mg/kg/day	1.4E-03	mg/kg/day	4.5E-06
				Antimony	2.1E-07	mg/m3	2.1E-11	mg/kg/day	NA	NA	NA	1.5E-10	mg/kg/day	NA	NA	NA
				Arsenic	1.8E-06	mg/m3	1.8E-10	mg/kg/day	1.5E+01	1/(mg/kg/day)	2.7E-09	1.3E-09	mg/kg/day	NA	NA	NA
				Cadmium	1.2E-08	mg/m3	1.2E-12	mg/kg/day	6.3E+00	1/(mg/kg/day)	7.7E-12	8.5E-12	mg/kg/day	NA	NA	NA
				Chromium	2.3E-08	mg/m3	2.3E-12	mg/kg/day	4.2E+01	1/(mg/kg/day)	9.5E-11	1.6E-11	mg/kg/day	2.9E-05	mg/kg/day	5.5E-07
				Copper	7.5E-06	mg/m3	7.5E-10	mg/kg/day	NA	NA	NA	5.2E-09	mg/kg/day	NA	NA	NA
				Iron	3.1E-04	mg/m3	3.1E-08	mg/kg/day	NA	NA	NA	2.2E-07	mg/kg/day	NA	NA	NA
				Lead	1.5E-06	mg/m3	1.5E-10	mg/kg/day	NA	NA	NA	1.1E-09	mg/kg/day	NA	NA	NA
				Manganese	3.7E-07	mg/m3	3.7E-11	mg/kg/day	NA	NA	NA	2.6E-10	mg/kg/day	1.4E-05	mg/kg/day	1.8E-05
				Thallium	9.9E-09	mg/m3	9.9E-13	mg/kg/day	NA	NA	NA	6.9E-12	mg/kg/day	NA	NA	NA
				Vanadium	9.9E-08	mg/m3	9.9E-12	mg/kg/day	NA	NA	NA	7.0E-11	mg/kg/day	NA	NA	NA
				Zinc	4.6E-06	mg/m3	4.6E-10	mg/kg/day	NA	NA	NA	3.2E-09	mg/kg/day	NA	NA	NA
				Mercury	3.6E-08	mg/m3	3.6E-12	mg/kg/day	NA	NA	NA	2.5E-11	mg/kg/day	NA	NA	NA
				Heptachlor	4.2E-10	mg/m3	4.2E-14	mg/kg/day	4.6E+00	1/(mg/kg/day)	1.9E-13	3.0E-13	mg/kg/day	NA	NA	NA
				Aroclor-1242	3.9E-09	mg/m3	3.9E-13	mg/kg/day	3.5E-01	1/(mg/kg/day)	1.4E-13	2.7E-12	mg/kg/day	NA	NA	NA
				Aroclor-1260	1.9E-09	mg/m3	1.9E-13	mg/kg/day	3.5E-01	1/(mg/kg/day)	6.8E-14	1.4E-12	mg/kg/day	NA	NA	NA
				Benzene	8.3E-03	mg/m3	8.3E-07	mg/kg/day	2.7E-02	1/(mg/kg/day)	2.3E-08	5.8E-06	mg/kg/day	8.6E-03	mg/kg/day	6.8E-04
				Tetrachloroethene	2.0E-04	mg/m3	2.0E-08	mg/kg/day	2.1E-02	1/(mg/kg/day)	4.1E-10	1.4E-07	mg/kg/day	1.0E-02	mg/kg/day	1.4E-05
				Trichloroethene	2.5E-04	mg/m3	2.5E-08	mg/kg/day	4.0E-01	1/(mg/kg/day)	1.0E-08	1.8E-07	mg/kg/day	1.1E-02	mg/kg/day	1.6E-05
				m-Xylene	1.3E-02	mg/m3	1.3E-06	mg/kg/day	NA	NA	NA	8.8E-06	mg/kg/day	2.9E-02	mg/kg/day	3.1E-04
				p,o-Xylene	1.2E-02	mg/m3	1.2E-06	mg/kg/day	NA	NA	NA	8.2E-06	mg/kg/day	2.9E-02	mg/kg/day	2.9E-04
				2-Methylnaphthalene	8.6E-04	mg/m3	8.6E-08	mg/kg/day	NA	NA	NA	6.0E-07	mg/kg/day	NA	NA	NA
				4-Methylphenol	1.6E-07	mg/m3	1.6E-11	mg/kg/day	NA	NA	NA	1.1E-10	mg/kg/day	NA	NA	NA
				4-Nitroaniline	1.4E-08	mg/m3	1.4E-12	mg/kg/day	NA	NA	NA	9.9E-12	mg/kg/day	1.1E-03	mg/kg/day	8.7E-09
				Acenaphthene	3.0E-07	mg/m3	3.0E-11	mg/kg/day	NA	NA	NA	2.1E-10	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	4.0E-07	mg/m3	4.0E-11	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.2E-11	2.8E-10	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-07	mg/m3	3.6E-11	mg/kg/day	9.2E+00	1/(mg/kg/day)	1.6E-09	2.5E-10	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-07	mg/m3	4.3E-11	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.3E-11	3.0E-10	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.0E-07	mg/m3	2.0E-11	mg/kg/day	NA	NA	NA	1.4E-10	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	2.0E-07	mg/m3	2.0E-11	mg/kg/day	3.1E-02	1/(mg/kg/day)	6.1E-13	1.4E-10	mg/kg/day	NA	NA	NA
				Carbazole	1.7E-07	mg/m3	1.7E-11	mg/kg/day	NA	NA	NA	1.2E-10	mg/kg/day	NA	NA	NA
				Chrysene	3.8E-07	mg/m3	3.8E-11	mg/kg/day	NA	NA	NA	2.7E-10	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	7.2E-08	mg/m3	7.2E-12	mg/kg/day	9.2E+00	1/(mg/kg/day)	3.2E-10	5.1E-11	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.4E-07	mg/m3	2.4E-11	mg/kg/day	NA	NA	NA	1.7E-10	mg/kg/day	NA	NA	NA
				Fluoranthene	9.9E-07	mg/m3	9.9E-11	mg/kg/day	NA	NA	NA	6.9E-10	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	1.5E-07	mg/kg/day	NA	NA	NA	1.0E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-07	mg/m3	2.0E-11	mg/kg/day	3.1E-01	1/(mg/kg/day)	6.2E-12	1.4E-10	mg/kg/day	NA	NA	NA
				Naphthalene	2.6E-02	mg/m3	2.6E-06	mg/kg/day	NA	NA	NA	1.8E-05	mg/kg/day	6.6E-04	mg/kg/day	2.1E-02
				Phenanthrene	8.9E-02	mg/m3	8.9E-06	mg/kg/day	NA	NA	NA	6.3E-05	mg/kg/day	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	2.5E-08	mg/kg/day	NA	NA	NA	1.8E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								3.8E-08					2.2E-02
		Exposure Point Total									3.8E-08					2.2E-02
	Exposure Medium Total										3.8E-08					2.2E-02
Soil Total											3.7E-05					1.8E-01
Receptor Total											3.7E-05					1.8E-01

[1]Consistent with the Cancer Guidelines and Supplemental Guidance (EPA, 2005a and 2005b), Benzo(a)pyrene and Dibenz(a,h)anthracene are evaluated based on their mutagenic mode of action.

TABLE 7.3.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Ingestion	Aluminum	7.6E+03	mg/kg	3.1E-04	mg/kg/day	NA	NA	NA	3.3E-03	mg/kg/day	1.0E+00	mg/kg/day	3.3E-03
				Antimony	1.7E+02	mg/kg	7.0E-06	mg/kg/day	NA	NA	NA	7.5E-05	mg/kg/day	4.0E-04	mg/kg/day	1.9E-01
				Arsenic	1.5E+03	mg/kg	6.1E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	9.1E-05	6.5E-04	mg/kg/day	3.0E-04	mg/kg/day	2.2E+00
				Cadmium	1.0E+01	mg/kg	4.1E-07	mg/kg/day	NA	NA	NA	4.3E-06	mg/kg/day	1.0E-03	mg/kg/day	4.3E-03
				Chromium	1.9E+01	mg/kg	7.6E-07	mg/kg/day	NA	NA	NA	8.0E-06	mg/kg/day	3.0E-03	mg/kg/day	2.7E-03
				Copper	6.2E+03	mg/kg	2.5E-04	mg/kg/day	NA	NA	NA	2.6E-03	mg/kg/day	4.0E-02	mg/kg/day	6.6E-02
				Iron	2.6E+05	mg/kg	1.0E-02	mg/kg/day	NA	NA	NA	1.1E-01	mg/kg/day	3.0E-01	mg/kg/day	3.7E-01
				Lead	1.3E+03	mg/kg	5.1E-05	mg/kg/day	NA	NA	NA	5.4E-04	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	1.2E-05	mg/kg/day	NA	NA	NA	1.3E-04	mg/kg/day	1.4E-01	mg/kg/day	9.4E-04
				Thallium	8.2E+00	mg/kg	3.3E-07	mg/kg/day	NA	NA	NA	3.5E-06	mg/kg/day	6.6E-05	mg/kg/day	5.3E-02
				Vanadium	8.2E+01	mg/kg	3.3E-06	mg/kg/day	NA	NA	NA	3.5E-05	mg/kg/day	1.0E-03	mg/kg/day	3.5E-02
				Zinc	3.8E+03	mg/kg	1.5E-04	mg/kg/day	NA	NA	NA	1.6E-03	mg/kg/day	3.0E-01	mg/kg/day	5.5E-03
				Mercury	3.0E+01	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	1.3E-05	mg/kg/day	3.0E-04	mg/kg/day	4.2E-02
				Heptachlor	3.5E-01	mg/kg	1.4E-08	mg/kg/day	4.5E+00	1/(mg/kg/day)	6.4E-08	1.5E-07	mg/kg/day	5.0E-04	mg/kg/day	3.0E-04
				Aroclor-1242	3.2E+00	mg/kg	1.3E-07	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.6E-07	1.4E-06	mg/kg/day	2.0E-05	mg/kg/day	6.9E-02
				Aroclor-1260	1.6E+00	mg/kg	6.5E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.3E-07	6.9E-07	mg/kg/day	2.0E-05	mg/kg/day	3.4E-02
				Benzene	1.9E+01	mg/kg	7.7E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	4.2E-08	8.1E-06	mg/kg/day	4.0E-03	mg/kg/day	2.0E-03
				Tetrachloroethene	5.2E-01	mg/kg	2.1E-08	mg/kg/day	5.4E-01	1/(mg/kg/day)	1.1E-08	2.2E-07	mg/kg/day	1.0E-02	mg/kg/day	2.2E-05
				Trichloroethene	5.4E-01	mg/kg	2.2E-08	mg/kg/day	4.0E-01	1/(mg/kg/day)	8.7E-09	2.3E-07	mg/kg/day	3.0E-04	mg/kg/day	7.7E-04
				m-Xylene	4.5E+01	mg/kg	1.8E-06	mg/kg/day	NA	NA	NA	1.9E-05	mg/kg/day	2.0E-01	mg/kg/day	9.6E-05
				p,o-Xylene	4.9E+01	mg/kg	2.0E-06	mg/kg/day	NA	NA	NA	2.1E-05	mg/kg/day	2.0E-01	mg/kg/day	1.1E-04
				2-Methylnaphthalene	3.0E+02	mg/kg	1.2E-05	mg/kg/day	NA	NA	NA	1.3E-04	mg/kg/day	4.0E-03	mg/kg/day	3.2E-02
				4-Methylphenol	1.3E+02	mg/kg	5.4E-06	mg/kg/day	NA	NA	NA	5.7E-05	mg/kg/day	5.0E-03	mg/kg/day	1.1E-02
				4-Nitroaniline	1.2E+01	mg/kg	4.8E-07	mg/kg/day	2.1E-02	1/(mg/kg/day)	1.0E-08	5.0E-06	mg/kg/day	3.0E-03	mg/kg/day	1.7E-03
				Acenaphthene	2.4E+02	mg/kg	9.9E-06	mg/kg/day	NA	NA	NA	1.0E-04	mg/kg/day	6.0E-02	mg/kg/day	1.7E-03
				Benzo(a)anthracene	3.3E+02	mg/kg	1.3E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	9.7E-06	1.4E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	1.2E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	8.8E-05	1.3E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	1.4E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.0E-05	1.5E-04	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	6.6E-06	mg/kg/day	NA	NA	NA	7.0E-05	mg/kg/day	3.0E-02	mg/kg/day	2.3E-03
				Benzo(k)fluoranthene	1.6E+02	mg/kg	6.6E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	4.8E-07	7.0E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	5.6E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	1.1E-07	6.0E-05	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	1.3E-05	mg/kg/day	7.3E-03	1/(mg/kg/day)	9.4E-08	1.4E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	2.4E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.8E-05	2.6E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	8.1E-06	mg/kg/day	NA	NA	NA	8.6E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	3.3E-05	mg/kg/day	NA	NA	NA	3.5E-04	mg/kg/day	4.0E-02	mg/kg/day	8.8E-03
				Fluorene	3.3E+02	mg/kg	1.3E-05	mg/kg/day	NA	NA	NA	1.4E-04	mg/kg/day	4.0E-02	mg/kg/day	3.6E-03
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	6.8E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.9E-06	7.2E-05	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	3.7E-05	mg/kg/day	NA	NA	NA	3.9E-04	mg/kg/day	2.0E-02	mg/kg/day	2.0E-02
				Phenanthrene	1.1E+03	mg/kg	4.3E-05	mg/kg/day	NA	NA	NA	4.5E-04	mg/kg/day	3.0E-01	mg/kg/day	1.5E-03
				Pyrene	6.4E+02	mg/kg	2.6E-05	mg/kg/day	NA	NA	NA	2.7E-04	mg/kg/day	3.0E-02	mg/kg/day	9.1E-03
			Exp. Route Total								2.2E-04					3.1E+00

TABLE 7.3.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Dermal	Aluminum	7.6E+03	mg/kg	4.1E-07	mg/kg/day	NA	NA	NA	4.3E-06	mg/kg/day	1.0E+00	mg/kg/day	4.3E-06
				Antimony	1.7E+02	mg/kg	9.3E-09	mg/kg/day	NA	NA	NA	9.8E-08	mg/kg/day	6.0E-05	mg/kg/day	1.6E-03
				Arsenic	1.5E+03	mg/kg	2.4E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	3.6E-06	2.6E-05	mg/kg/day	3.0E-04	mg/kg/day	8.5E-02
				Cadmium	1.0E+01	mg/kg	5.4E-10	mg/kg/day	NA	NA	NA	5.7E-09	mg/kg/day	2.5E-05	mg/kg/day	2.3E-04
				Chromium	1.9E+01	mg/kg	1.0E-09	mg/kg/day	NA	NA	NA	1.1E-08	mg/kg/day	7.5E-05	mg/kg/day	1.4E-04
				Copper	6.2E+03	mg/kg	3.3E-07	mg/kg/day	NA	NA	NA	3.5E-06	mg/kg/day	4.0E-02	mg/kg/day	8.7E-05
				Iron	2.6E+05	mg/kg	1.4E-05	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	3.0E-01	mg/kg/day	4.8E-04
				Lead	1.3E+03	mg/kg	6.8E-08	mg/kg/day	NA	NA	NA	7.2E-07	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	1.6E-08	mg/kg/day	NA	NA	NA	1.7E-07	mg/kg/day	5.6E-03	mg/kg/day	3.1E-05
				Thallium	8.2E+00	mg/kg	4.4E-10	mg/kg/day	NA	NA	NA	4.6E-09	mg/kg/day	6.6E-05	mg/kg/day	7.0E-05
				Vanadium	8.2E+01	mg/kg	4.4E-09	mg/kg/day	NA	NA	NA	4.7E-08	mg/kg/day	2.6E-05	mg/kg/day	1.8E-03
				Zinc	3.8E+03	mg/kg	2.0E-07	mg/kg/day	NA	NA	NA	2.2E-06	mg/kg/day	3.0E-01	mg/kg/day	7.2E-06
				Mercury	3.0E+01	mg/kg	1.6E-09	mg/kg/day	NA	NA	NA	1.7E-08	mg/kg/day	2.1E-05	mg/kg/day	7.9E-04
				Heptachlor	3.5E-01	mg/kg	1.9E-10	mg/kg/day	4.5E+00	1/(mg/kg/day)	8.4E-10	2.0E-09	mg/kg/day	5.0E-04	mg/kg/day	4.0E-06
				Aroclor-1242	3.2E+00	mg/kg	2.4E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	4.8E-08	2.5E-07	mg/kg/day	2.0E-05	mg/kg/day	1.3E-02
				Aroclor-1260	1.6E+00	mg/kg	1.2E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.4E-08	1.3E-07	mg/kg/day	2.0E-05	mg/kg/day	6.3E-03
				Benzene	1.9E+01	mg/kg	1.0E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	5.6E-10	1.1E-07	mg/kg/day	4.0E-03	mg/kg/day	2.7E-05
				Tetrachloroethene	5.2E-01	mg/kg	2.8E-10	mg/kg/day	5.4E-01	1/(mg/kg/day)	1.5E-10	2.9E-09	mg/kg/day	1.0E-02	mg/kg/day	2.9E-07
				Trichloroethene	5.4E-01	mg/kg	2.9E-10	mg/kg/day	4.0E-01	1/(mg/kg/day)	1.2E-10	3.1E-09	mg/kg/day	3.0E-04	mg/kg/day	1.0E-05
				m-Xylene	4.5E+01	mg/kg	2.4E-08	mg/kg/day	NA	NA	NA	2.5E-07	mg/kg/day	2.0E-01	mg/kg/day	1.3E-06
				p,o-Xylene	4.9E+01	mg/kg	2.6E-08	mg/kg/day	NA	NA	NA	2.8E-07	mg/kg/day	2.0E-01	mg/kg/day	1.4E-06
				2-Methylnaphthalene	3.0E+02	mg/kg	1.6E-07	mg/kg/day	NA	NA	NA	1.7E-06	mg/kg/day	4.0E-03	mg/kg/day	4.2E-04
				4-Methylphenol	1.3E+02	mg/kg	7.1E-08	mg/kg/day	NA	NA	NA	7.5E-07	mg/kg/day	5.0E-03	mg/kg/day	1.5E-04
				4-Nitroaniline	1.2E+01	mg/kg	6.3E-09	mg/kg/day	2.1E-02	1/(mg/kg/day)	1.3E-10	6.7E-08	mg/kg/day	3.0E-03	mg/kg/day	2.2E-05
				Acenaphthene	2.4E+02	mg/kg	1.7E-06	mg/kg/day	NA	NA	NA	1.8E-05	mg/kg/day	6.0E-02	mg/kg/day	3.0E-04
				Benzo(a)anthracene	3.3E+02	mg/kg	2.3E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.7E-06	2.4E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	2.1E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.5E-05	2.2E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	2.4E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.8E-06	2.6E-05	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	1.2E-05	mg/kg/day	3.0E-02	mg/kg/day	4.0E-04
				Benzo(k)fluoranthene	1.6E+02	mg/kg	1.1E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	8.3E-08	1.2E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	7.4E-08	mg/kg/day	2.0E-02	1/(mg/kg/day)	1.5E-09	7.9E-07	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	2.2E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	1.6E-08	2.3E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	4.2E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.0E-06	4.4E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	1.1E-07	mg/kg/day	NA	NA	NA	1.1E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	5.7E-06	mg/kg/day	NA	NA	NA	6.0E-05	mg/kg/day	4.0E-02	mg/kg/day	1.5E-03
				Fluorene	3.3E+02	mg/kg	2.3E-06	mg/kg/day	NA	NA	NA	2.4E-05	mg/kg/day	4.0E-02	mg/kg/day	6.1E-04
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	1.2E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.5E-07	1.2E-05	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	6.3E-06	mg/kg/day	NA	NA	NA	6.7E-05	mg/kg/day	2.0E-02	mg/kg/day	3.4E-03
				Phenanthrene	1.1E+03	mg/kg	5.7E-07	mg/kg/day	NA	NA	NA	6.0E-06	mg/kg/day	3.0E-01	mg/kg/day	2.0E-05
				Pyrene	6.4E+02	mg/kg	4.4E-06	mg/kg/day	NA	NA	NA	4.7E-05	mg/kg/day	3.0E-02	mg/kg/day	1.6E-03
			Exp. Route Total								2.6E-05					1.2E-01
		Exposure Point Total									2.5E-04					3.2E+00
	Exposure Medium Total										2.5E-04					3.2E+00

TABLE 7.3.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	9.2E-06	mg/m3	1.5E-07	mg/kg/day	NA	NA	NA	1.6E-06	mg/kg/day	1.4E-03	mg/kg/day	1.1E-03
				Antimony	2.1E-07	mg/m3	3.4E-09	mg/kg/day	NA	NA	NA	3.6E-08	mg/kg/day	NA	NA	NA
				Arsenic	1.8E-06	mg/m3	2.9E-08	mg/kg/day	1.5E+01	1/(mg/kg/day)	4.4E-07	3.1E-07	mg/kg/day	NA	NA	NA
				Cadmium	1.2E-08	mg/m3	2.0E-10	mg/kg/day	6.3E+00	1/(mg/kg/day)	1.2E-09	2.1E-09	mg/kg/day	NA	NA	NA
				Chromium	2.3E-08	mg/m3	3.7E-10	mg/kg/day	4.2E+01	1/(mg/kg/day)	1.5E-08	3.9E-09	mg/kg/day	2.9E-05	mg/kg/day	1.4E-04
				Copper	7.5E-06	mg/m3	1.2E-07	mg/kg/day	NA	NA	NA	1.3E-06	mg/kg/day	NA	NA	NA
				Iron	3.1E-04	mg/m3	5.0E-06	mg/kg/day	NA	NA	NA	5.3E-05	mg/kg/day	NA	NA	NA
				Lead	1.5E-06	mg/m3	2.5E-08	mg/kg/day	NA	NA	NA	2.6E-07	mg/kg/day	NA	NA	NA
				Manganese	3.7E-07	mg/m3	6.0E-09	mg/kg/day	NA	NA	NA	6.3E-08	mg/kg/day	1.4E-05	mg/kg/day	4.4E-03
				Thallium	9.9E-09	mg/m3	1.6E-10	mg/kg/day	NA	NA	NA	1.7E-09	mg/kg/day	NA	NA	NA
				Vanadium	9.9E-08	mg/m3	1.6E-09	mg/kg/day	NA	NA	NA	1.7E-08	mg/kg/day	NA	NA	NA
				Zinc	4.6E-06	mg/m3	7.5E-08	mg/kg/day	NA	NA	NA	7.9E-07	mg/kg/day	NA	NA	NA
				Mercury	3.6E-08	mg/m3	5.8E-10	mg/kg/day	NA	NA	NA	6.1E-09	mg/kg/day	NA	NA	NA
				Heptachlor	4.2E-10	mg/m3	6.8E-12	mg/kg/day	4.6E+00	1/(mg/kg/day)	3.1E-11	7.3E-11	mg/kg/day	NA	NA	NA
				Aroclor-1242	3.9E-09	mg/m3	6.3E-11	mg/kg/day	3.5E-01	1/(mg/kg/day)	2.2E-11	6.6E-10	mg/kg/day	NA	NA	NA
				Aroclor-1260	1.9E-09	mg/m3	3.1E-11	mg/kg/day	3.5E-01	1/(mg/kg/day)	1.1E-11	3.3E-10	mg/kg/day	NA	NA	NA
				Benzene	8.3E-03	mg/m3	1.3E-04	mg/kg/day	2.7E-02	1/(mg/kg/day)	3.7E-06	1.4E-03	mg/kg/day	8.6E-03	mg/kg/day	1.7E-01
				Tetrachloroethene	2.0E-04	mg/m3	3.2E-06	mg/kg/day	2.1E-02	1/(mg/kg/day)	6.7E-08	3.4E-05	mg/kg/day	1.0E-02	mg/kg/day	3.4E-03
				Trichloroethene	2.5E-04	mg/m3	4.1E-06	mg/kg/day	4.0E-01	1/(mg/kg/day)	1.6E-06	4.4E-05	mg/kg/day	1.1E-02	mg/kg/day	3.8E-03
				m-Xylene	1.3E-02	mg/m3	2.0E-04	mg/kg/day	NA	NA	NA	2.2E-03	mg/kg/day	2.9E-02	mg/kg/day	7.6E-02
				p,o-Xylene	1.2E-02	mg/m3	1.9E-04	mg/kg/day	NA	NA	NA	2.0E-03	mg/kg/day	2.9E-02	mg/kg/day	7.1E-02
				2-Methylnaphthalene	8.6E-04	mg/m3	1.4E-05	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	NA	NA	NA
				4-Methylphenol	1.6E-07	mg/m3	2.6E-09	mg/kg/day	NA	NA	NA	2.8E-08	mg/kg/day	NA	NA	NA
				4-Nitroaniline	1.4E-08	mg/m3	2.3E-10	mg/kg/day	NA	NA	NA	2.4E-09	mg/kg/day	1.1E-03	mg/kg/day	2.1E-06
				Acenaphthene	3.0E-07	mg/m3	4.8E-09	mg/kg/day	NA	NA	NA	5.1E-08	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	4.0E-07	mg/m3	6.4E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	2.0E-09	6.8E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-07	mg/m3	5.8E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.8E-08	6.2E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-07	mg/m3	6.9E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	2.1E-09	7.3E-08	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.0E-07	mg/m3	3.2E-09	mg/kg/day	NA	NA	NA	3.4E-08	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	2.0E-07	mg/m3	3.2E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	9.9E-11	3.4E-08	mg/kg/day	NA	NA	NA
				Carbazole	1.7E-07	mg/m3	2.7E-09	mg/kg/day	NA	NA	NA	2.9E-08	mg/kg/day	NA	NA	NA
				Chrysene	3.8E-07	mg/m3	6.2E-09	mg/kg/day	NA	NA	NA	6.6E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	7.2E-08	mg/m3	1.2E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	3.6E-09	1.2E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.4E-07	mg/m3	3.9E-09	mg/kg/day	NA	NA	NA	4.2E-08	mg/kg/day	NA	NA	NA
				Fluoranthene	9.9E-07	mg/m3	1.6E-08	mg/kg/day	NA	NA	NA	1.7E-07	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	2.4E-05	mg/kg/day	NA	NA	NA	2.6E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-07	mg/m3	3.3E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.0E-09	3.5E-08	mg/kg/day	NA	NA	NA
				Naphthalene	2.6E-02	mg/m3	4.2E-04	mg/kg/day	NA	NA	NA	4.4E-03	mg/kg/day	8.6E-04	mg/kg/day	5.2E+00
				Phenanthrene	8.9E-02	mg/m3	1.4E-03	mg/kg/day	NA	NA	NA	1.5E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	4.1E-06	mg/kg/day	NA	NA	NA	4.4E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								5.9E-06					5.5E+00
		Exposure Point Total									5.9E-06					5.5E+00
	Exposure Medium Total										5.9E-06					5.5E+00
Soil Total											2.6E-04					8.7E+00
Receptor Total											2.6E-04					8.7E+00

NA = Not applicable.

TABLE 7.4 CTE

CALCULATION OF CHEMICAL CANC[redacted]S AND NON-CANCER HAZARDS

CENTRAL TEN[redacted] EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	Quanta Resources Subsurface Soil (0 - 10 ft)	Ingestion	Aluminum	5.95E+03	mg/kg	7.3E-05	mg/kg/day	NA	NA	NA	5.1E-03	mg/kg/day	1.0E+00	mg/kg/day	5.1E-03
				Antimony	2.05E+02	mg/kg	2.5E-06	mg/kg/day	NA	NA	NA	1.8E-04	mg/kg/day	4.0E-04	mg/kg/day	4.4E-01
				Arsenic	6.09E+03	mg/kg	7.5E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.1E-04	5.2E-03	mg/kg/day	3.0E-04	mg/kg/day	1.7E+01
				Cadmium	5.10E+00	mg/kg	6.2E-08	mg/kg/day	NA	NA	NA	4.4E-06	mg/kg/day	1.0E-03	mg/kg/day	4.4E-03
				Chromium	4.08E+01	mg/kg	5.0E-07	mg/kg/day	NA	NA	NA	3.5E-05	mg/kg/day	2.0E-02	mg/kg/day	1.8E-03
				Copper	7.72E+03	mg/kg	9.5E-05	mg/kg/day	NA	NA	NA	6.6E-03	mg/kg/day	4.0E-02	mg/kg/day	1.7E-01
				Iron	9.92E+04	mg/kg	1.2E-03	mg/kg/day	NA	NA	NA	8.5E-02	mg/kg/day	3.0E-01	mg/kg/day	2.8E-01
				Lead	7.93E+03	mg/kg	9.7E-05	mg/kg/day	NA	NA	NA	6.8E-03	mg/kg/day	NA	NA	NA
				Manganese	1.70E+02	mg/kg	2.1E-06	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	1.4E-01	mg/kg/day	1.0E-03
				Selenium	4.22E+01	mg/kg	5.2E-07	mg/kg/day	NA	NA	NA	3.6E-05	mg/kg/day	5.0E-03	mg/kg/day	7.2E-03
				Thallium	1.48E+01	mg/kg	1.8E-07	mg/kg/day	NA	NA	NA	1.3E-05	mg/kg/day	6.6E-05	mg/kg/day	1.9E-01
				Vanadium	4.59E+01	mg/kg	5.6E-07	mg/kg/day	NA	NA	NA	3.9E-05	mg/kg/day	7.0E-03	mg/kg/day	5.6E-03
				Zinc	4.73E+03	mg/kg	5.8E-05	mg/kg/day	NA	NA	NA	4.1E-03	mg/kg/day	3.0E-01	mg/kg/day	1.4E-02
				Mercury	1.99E+01	mg/kg	2.4E-07	mg/kg/day	NA	NA	NA	1.7E-05	mg/kg/day	3.0E-03	mg/kg/day	5.7E-03
				Dieldrin	2.20E-01	mg/kg	2.7E-09	mg/kg/day	1.6E+01	1/(mg/kg/day)	4.3E-08	1.9E-07	mg/kg/day	5.0E-05	mg/kg/day	3.8E-03
				Heptachlor	2.55E-01	mg/kg	3.1E-09	mg/kg/day	4.5E+00	1/(mg/kg/day)	1.4E-08	2.2E-07	mg/kg/day	5.0E-04	mg/kg/day	4.4E-04
				Aroclor-1242	2.33E+00	mg/kg	2.9E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	5.7E-08	2.0E-06	mg/kg/day	5.0E-05	mg/kg/day	4.0E-02
				Aroclor-1260	1.60E+00	mg/kg	2.0E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	3.9E-08	1.4E-06	mg/kg/day	5.0E-05	mg/kg/day	2.7E-02
				Benzene	3.30E+01	mg/kg	4.0E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.2E-08	2.8E-05	mg/kg/day	4.0E-03	mg/kg/day	7.1E-03
				Tetrachloroethene	5.20E-01	mg/kg	6.4E-09	mg/kg/day	5.4E-01	1/(mg/kg/day)	3.4E-09	4.5E-07	mg/kg/day	1.0E-01	mg/kg/day	4.5E-06
				Toluene	9.50E+01	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	8.1E-05	mg/kg/day	2.0E+00	mg/kg/day	4.1E-05
				Trichloroethene	5.40E-01	mg/kg	6.6E-09	mg/kg/day	4.0E-01	1/(mg/kg/day)	2.6E-09	4.6E-07	mg/kg/day	3.0E-04	mg/kg/day	1.5E-03
				m,p-Xylene	1.22E+02	mg/kg	1.5E-06	mg/kg/day	NA	NA	NA	1.0E-04	mg/kg/day	2.0E-01	mg/kg/day	5.2E-04
				m-Xylene	4.50E+01	mg/kg	5.5E-07	mg/kg/day	NA	NA	NA	3.9E-05	mg/kg/day	2.0E-01	mg/kg/day	1.9E-04
				o-Xylene	5.50E+01	mg/kg	6.7E-07	mg/kg/day	NA	NA	NA	4.7E-05	mg/kg/day	2.0E-01	mg/kg/day	2.4E-04
				p,o-Xylene	4.90E+01	mg/kg	6.0E-07	mg/kg/day	NA	NA	NA	4.2E-05	mg/kg/day	2.0E-01	mg/kg/day	2.1E-04
				Xylene (Total)	3.79E+01	mg/kg	4.6E-07	mg/kg/day	NA	NA	NA	3.2E-05	mg/kg/day	2.0E-01	mg/kg/day	1.6E-04
				2,4-Dimethylphenol	1.09E+02	mg/kg	1.3E-06	mg/kg/day	NA	NA	NA	9.4E-05	mg/kg/day	2.0E-01	mg/kg/day	4.7E-04
				2,4-Dinitrotoluene	7.76E+00	mg/kg	9.5E-08	mg/kg/day	NA	NA	NA	6.6E-06	mg/kg/day	2.0E-03	mg/kg/day	3.3E-03
				2-Methylnaphthalene	1.45E+03	mg/kg	1.8E-05	mg/kg/day	NA	NA	NA	1.2E-03	mg/kg/day	4.0E-03	mg/kg/day	3.1E-01
				4-Methylphenol	1.96E+02	mg/kg	2.4E-06	mg/kg/day	NA	NA	NA	1.7E-04	mg/kg/day	5.0E-03	mg/kg/day	3.4E-02
				4-Nitroaniline	4.97E+01	mg/kg	6.1E-07	mg/kg/day	2.1E-02	1/(mg/kg/day)	1.3E-08	4.3E-05	mg/kg/day	3.0E-03	mg/kg/day	1.4E-02
				Acenaphthene	4.77E+02	mg/kg	5.8E-06	mg/kg/day	NA	NA	NA	4.1E-04	mg/kg/day	6.0E-01	mg/kg/day	6.8E-04
				Benzo(a)anthracene	5.71E+02	mg/kg	7.0E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.1E-06	4.9E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	5.55E+02	mg/kg	6.8E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	5.0E-05	4.8E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	6.35E+02	mg/kg	7.8E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.7E-06	5.4E-04	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.94E+02	mg/kg	3.6E-06	mg/kg/day	NA	NA	NA	2.5E-04	mg/kg/day	3.0E-01	mg/kg/day	8.4E-04
				Benzo(k)fluoranthene	2.76E+02	mg/kg	3.4E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	2.5E-07	2.4E-04	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	1.37E+02	mg/kg	1.7E-06	mg/kg/day	NA	NA	NA	1.2E-04	mg/kg/day	5.0E-02	mg/kg/day	2.3E-03
				Carbazole	2.11E+02	mg/kg	2.6E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	5.2E-08	1.8E-04	mg/kg/day	NA	NA	NA
				Chrysene	6.05E+02	mg/kg	7.4E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	5.4E-08	5.2E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	9.13E+01	mg/kg	1.1E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	8.2E-06	7.8E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	4.06E+02	mg/kg	5.0E-06	mg/kg/day	NA	NA	NA	3.5E-04	mg/kg/day	NA	NA	NA
				Fluoranthene	1.40E+03	mg/kg	1.7E-05	mg/kg/day	NA	NA	NA	1.2E-03	mg/kg/day	4.0E-01	mg/kg/day	3.0E-03
				Fluorene	4.89E+02	mg/kg	6.0E-06	mg/kg/day	NA	NA	NA	4.2E-04	mg/kg/day	4.0E-01	mg/kg/day	1.0E-03
				Indeno(1,2,3-c,d)pyrene	2.93E+02	mg/kg	3.6E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.6E-06	2.5E-04	mg/kg/day	NA	NA	NA
				Naphthalene	1.00E+04	mg/kg	1.2E-04	mg/kg/day	NA	NA	NA	8.6E-03	mg/kg/day	2.0E-02	mg/kg/day	4.3E-01
				Phenanthrene	1.79E+03	mg/kg	2.2E-05	mg/kg/day	NA	NA	NA	1.5E-03	mg/kg/day	3.0E+00	mg/kg/day	5.1E-04
				Pyrene	1.16E+03	mg/kg	1.4E-05	mg/kg/day	NA	NA	NA	1.0E-03	mg/kg/day	3.0E-01	mg/kg/day	3.3E-03
			Exp. Route Total								1.8E-04					1.9E+01

TABLE 7.4.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	Quanta Resources Subsurface Soil (0 - 10 ft)	Dermal	Aluminum	5.9E+03	mg/kg	7.2E-07	mg/kg/day	NA	NA	NA	5.0E-05	mg/kg/day	1.0E+00	mg/kg/day	5.0E-05
				Antimony	2.1E+02	mg/kg	2.5E-08	mg/kg/day	NA	NA	NA	1.7E-06	mg/kg/day	6.0E-05	mg/kg/day	2.9E-02
				Arsenic	6.1E+03	mg/kg	2.2E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	3.3E-05	1.5E-03	mg/kg/day	3.0E-04	mg/kg/day	5.2E+00
				Cadmium	5.1E+00	mg/kg	6.2E-10	mg/kg/day	NA	NA	NA	4.3E-08	mg/kg/day	2.5E-05	mg/kg/day	1.7E-03
				Chromium	4.1E+01	mg/kg	5.0E-09	mg/kg/day	NA	NA	NA	3.5E-07	mg/kg/day	5.0E-04	mg/kg/day	6.9E-04
				Copper	7.7E+03	mg/kg	9.4E-07	mg/kg/day	NA	NA	NA	6.6E-05	mg/kg/day	4.0E-02	mg/kg/day	1.6E-03
				Iron	9.9E+04	mg/kg	1.2E-05	mg/kg/day	NA	NA	NA	8.4E-04	mg/kg/day	3.0E-01	mg/kg/day	2.8E-03
				Lead	7.9E+03	mg/kg	9.6E-07	mg/kg/day	NA	NA	NA	6.7E-05	mg/kg/day	NA	NA	NA
				Manganese	1.7E+02	mg/kg	2.1E-08	mg/kg/day	NA	NA	NA	1.4E-06	mg/kg/day	5.6E-03	mg/kg/day	2.6E-04
				Selenium	4.2E+01	mg/kg	5.1E-09	mg/kg/day	NA	NA	NA	3.6E-07	mg/kg/day	5.0E-03	mg/kg/day	7.2E-05
				Thallium	1.5E+01	mg/kg	1.8E-09	mg/kg/day	NA	NA	NA	1.3E-07	mg/kg/day	6.6E-05	mg/kg/day	1.9E-03
				Vanadium	4.6E+01	mg/kg	5.6E-09	mg/kg/day	NA	NA	NA	3.9E-07	mg/kg/day	1.8E-04	mg/kg/day	2.1E-03
				Zinc	4.7E+03	mg/kg	5.7E-07	mg/kg/day	NA	NA	NA	4.0E-05	mg/kg/day	3.0E-01	mg/kg/day	1.3E-04
				Mercury	2.0E+01	mg/kg	2.4E-09	mg/kg/day	NA	NA	NA	1.7E-07	mg/kg/day	2.1E-04	mg/kg/day	8.0E-04
				Dieldrin	2.2E-01	mg/kg	2.7E-10	mg/kg/day	1.6E+01	1/(mg/kg/day)	4.3E-09	1.9E-08	mg/kg/day	5.0E-05	mg/kg/day	3.7E-04
				Heptachlor	2.5E-01	mg/kg	3.1E-10	mg/kg/day	4.5E+00	1/(mg/kg/day)	1.4E-09	2.2E-08	mg/kg/day	5.0E-04	mg/kg/day	4.3E-05
				Aroclor-1242	2.3E+00	mg/kg	4.0E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	7.9E-08	2.8E-06	mg/kg/day	5.0E-05	mg/kg/day	5.5E-02
				Aroclor-1260	1.6E+00	mg/kg	2.7E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	5.4E-08	1.9E-06	mg/kg/day	5.0E-05	mg/kg/day	3.8E-02
				Benzene	3.3E+01	mg/kg	4.0E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.2E-09	2.8E-06	mg/kg/day	4.0E-03	mg/kg/day	7.0E-04
				Tetrachloroethene	5.2E-01	mg/kg	6.3E-10	mg/kg/day	5.4E-01	1/(mg/kg/day)	3.4E-10	4.4E-08	mg/kg/day	1.0E-01	mg/kg/day	4.4E-07
				Toluene	9.5E+01	mg/kg	1.2E-07	mg/kg/day	NA	NA	NA	8.1E-06	mg/kg/day	2.0E+00	mg/kg/day	4.0E-06
				Trichloroethene	5.4E-01	mg/kg	6.5E-10	mg/kg/day	4.0E-01	1/(mg/kg/day)	2.6E-10	4.6E-08	mg/kg/day	3.0E-04	mg/kg/day	1.5E-04
				m,p-Xylene	1.2E+02	mg/kg	1.5E-07	mg/kg/day	NA	NA	NA	1.0E-05	mg/kg/day	2.0E-01	mg/kg/day	5.2E-05
				m-Xylene	4.5E+01	mg/kg	5.5E-08	mg/kg/day	NA	NA	NA	3.8E-06	mg/kg/day	2.0E-01	mg/kg/day	1.9E-05
				o-Xylene	5.5E+01	mg/kg	6.7E-08	mg/kg/day	NA	NA	NA	4.7E-06	mg/kg/day	2.0E-01	mg/kg/day	2.3E-05
				p,o-Xylene	4.9E+01	mg/kg	5.9E-08	mg/kg/day	NA	NA	NA	4.2E-06	mg/kg/day	2.0E-01	mg/kg/day	2.1E-05
				Xylene (Total)	3.8E+01	mg/kg	4.6E-08	mg/kg/day	NA	NA	NA	3.2E-06	mg/kg/day	2.0E-01	mg/kg/day	1.6E-05
				2,4-Dimethylphenol	1.1E+02	mg/kg	1.3E-07	mg/kg/day	NA	NA	NA	9.3E-06	mg/kg/day	2.0E-01	mg/kg/day	4.6E-05
				2,4-Dinitrotoluene	7.8E+00	mg/kg	9.6E-08	mg/kg/day	NA	NA	NA	6.7E-06	mg/kg/day	2.0E-03	mg/kg/day	3.4E-03
				2-Methylnaphthalene	1.4E+03	mg/kg	1.8E-06	mg/kg/day	NA	NA	NA	1.2E-04	mg/kg/day	4.0E-03	mg/kg/day	3.1E-02
				4-Methylphenol	2.0E+02	mg/kg	2.4E-07	mg/kg/day	NA	NA	NA	1.7E-05	mg/kg/day	5.0E-03	mg/kg/day	3.3E-03
				4-Nitroaniline	5.0E+01	mg/kg	6.0E-08	mg/kg/day	2.1E-02	1/(mg/kg/day)	1.3E-09	4.2E-06	mg/kg/day	3.0E-03	mg/kg/day	1.4E-03
				Acenaphthene	4.8E+02	mg/kg	7.5E-06	mg/kg/day	NA	NA	NA	5.3E-04	mg/kg/day	6.0E-01	mg/kg/day	8.8E-04
				Benzo(a)anthracene	5.7E+02	mg/kg	9.0E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.6E-06	6.3E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	5.5E+02	mg/kg	8.7E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.4E-05	6.1E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	6.3E+02	mg/kg	1.0E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.3E-06	7.0E-04	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.9E+02	mg/kg	4.6E-06	mg/kg/day	NA	NA	NA	3.2E-04	mg/kg/day	3.0E-01	mg/kg/day	1.1E-03
				Benzo(k)fluoranthene	2.8E+02	mg/kg	4.4E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.2E-07	3.0E-04	mg/kg/day	NA	NA	NA

TABLE 7.4.CTE
CALCULATION OF CHEMICAL CANC[redacted]S AND NON-CANCER HAZARDS
CENTRAL TEN[redacted]EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				1,1'-Biphenyl	1.4E+02	mg/kg	1.7E-07	mg/kg/day	NA	NA	NA	1.2E-05	mg/kg/day	5.0E-02	mg/kg/day	2.3E-04
				Carbazole	2.1E+02	mg/kg	2.6E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	5.1E-09	1.8E-05	mg/kg/day	NA	NA	NA
				Chrysene	6.0E+02	mg/kg	9.5E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	7.0E-08	6.7E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	9.1E+01	mg/kg	1.4E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.1E-05	1.0E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	4.1E+02	mg/kg	4.9E-07	mg/kg/day	NA	NA	NA	3.4E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	1.4E+03	mg/kg	2.2E-05	mg/kg/day	NA	NA	NA	1.5E-03	mg/kg/day	4.0E-01	mg/kg/day	3.9E-03
				Fluorene	4.9E+02	mg/kg	7.7E-06	mg/kg/day	NA	NA	NA	5.4E-04	mg/kg/day	4.0E-01	mg/kg/day	1.3E-03
				Indeno(1,2,3-c,d)pyrene	2.9E+02	mg/kg	4.6E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.4E-06	3.2E-04	mg/kg/day	NA	NA	NA
				Naphthalene	1.0E+04	mg/kg	1.6E-04	mg/kg/day	NA	NA	NA	1.1E-02	mg/kg/day	2.0E-02	mg/kg/day	5.5E-01
				Phenanthrene	1.8E+03	mg/kg	2.2E-06	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	3.0E+00	mg/kg/day	5.1E-05
				Pyrene	1.2E+03	mg/kg	1.8E-05	mg/kg/day	NA	NA	NA	1.3E-03	mg/kg/day	3.0E-01	mg/kg/day	4.3E-03
			Exp. Route Total								1.3E-04					5.9E+00
		Exposure Point Total									3.1E-04					2.5E+01
	Exposure Medium Total										3.1E-04					2.5E+01

TABLE 7.4.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Quanta Resources Emissions from Subsurface Soil (0 - 10 ft)	Inhalation	Aluminum	3.3E-04	mg/m3	4.0E-07	mg/kg/day	NA	NA	NA	2.8E-05	mg/kg/day	1.4E-03	mg/kg/day	2.0E-02
				Antimony	1.1E-05	mg/m3	1.4E-08	mg/kg/day	NA	NA	NA	9.7E-07	mg/kg/day	NA	NA	NA
				Arsenic	3.4E-04	mg/m3	4.1E-07	mg/kg/day	1.5E+01	1/(mg/kg/day)	6.2E-06	2.9E-05	mg/kg/day	NA	NA	NA
				Cadmium	2.8E-07	mg/m3	3.5E-10	mg/kg/day	6.3E+00	1/(mg/kg/day)	2.2E-09	2.4E-08	mg/kg/day	NA	NA	NA
				Chromium	2.3E-06	mg/m3	2.8E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	1.2E-07	1.9E-07	mg/kg/day	2.9E-05	mg/kg/day	6.8E-03
				Copper	4.3E-04	mg/m3	5.2E-07	mg/kg/day	NA	NA	NA	3.7E-05	mg/kg/day	NA	NA	NA
				Iron	5.5E-03	mg/m3	6.7E-06	mg/kg/day	NA	NA	NA	4.7E-04	mg/kg/day	NA	NA	NA
				Lead	4.4E-04	mg/m3	5.4E-07	mg/kg/day	NA	NA	NA	3.8E-05	mg/kg/day	NA	NA	NA
				Manganese	9.4E-06	mg/m3	1.1E-08	mg/kg/day	NA	NA	NA	8.0E-07	mg/kg/day	1.4E-05	mg/kg/day	5.6E-02
				Selenium	2.3E-06	mg/m3	2.9E-09	mg/kg/day	NA	NA	NA	2.0E-07	mg/kg/day	NA	NA	NA
				Thallium	8.2E-07	mg/m3	1.0E-09	mg/kg/day	NA	NA	NA	7.0E-08	mg/kg/day	NA	NA	NA
				Vanadium	2.5E-06	mg/m3	3.1E-09	mg/kg/day	NA	NA	NA	2.2E-07	mg/kg/day	NA	NA	NA
				Zinc	2.6E-04	mg/m3	3.2E-07	mg/kg/day	NA	NA	NA	2.2E-05	mg/kg/day	NA	NA	NA
				Mercury	1.1E-06	mg/m3	1.3E-09	mg/kg/day	NA	NA	NA	9.4E-08	mg/kg/day	8.6E-05	mg/kg/day	1.1E-03
				Dieldrin	1.2E-08	mg/m3	1.5E-11	mg/kg/day	1.6E+01	1/(mg/kg/day)	2.4E-10	1.0E-09	mg/kg/day	NA	NA	NA
				Heptachlor	1.4E-08	mg/m3	1.7E-11	mg/kg/day	4.6E+00	1/(mg/kg/day)	7.9E-11	1.2E-09	mg/kg/day	NA	NA	NA
				Aroclor-1242	1.3E-07	mg/m3	1.6E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	5.5E-11	1.1E-08	mg/kg/day	NA	NA	NA
				Aroclor-1260	8.9E-08	mg/m3	1.1E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	3.8E-11	7.6E-09	mg/kg/day	NA	NA	NA
				Benzene	1.4E-02	mg/m3	1.8E-05	mg/kg/day	2.7E-02	1/(mg/kg/day)	4.8E-07	1.2E-03	mg/kg/day	8.6E-03	mg/kg/day	1.4E-01
				Tetrachloroethene	2.0E-04	mg/m3	2.4E-07	mg/kg/day	2.1E-02	1/(mg/kg/day)	5.0E-09	1.7E-05	mg/kg/day	1.0E-02	mg/kg/day	1.7E-03
				Toluene	3.3E-02	mg/m3	4.0E-05	mg/kg/day	NA	NA	NA	2.8E-03	mg/kg/day	1.4E+00	mg/kg/day	2.0E-03
				Trichloroethene	2.5E-04	mg/m3	3.1E-07	mg/kg/day	4.0E-01	1/(mg/kg/day)	1.2E-07	2.2E-05	mg/kg/day	1.1E-02	mg/kg/day	1.9E-03
				m,p-Xylene	3.4E-02	mg/m3	4.2E-05	mg/kg/day	NA	NA	NA	2.9E-03	mg/kg/day	2.9E-02	mg/kg/day	1.0E-01
				m-Xylene	1.3E-02	mg/m3	1.5E-05	mg/kg/day	NA	NA	NA	1.1E-03	mg/kg/day	2.9E-02	mg/kg/day	3.8E-02
				o-Xylene	1.3E-02	mg/m3	1.6E-05	mg/kg/day	NA	NA	NA	1.1E-03	mg/kg/day	2.9E-02	mg/kg/day	4.0E-02
				p,o-Xylene	1.2E-02	mg/m3	1.4E-05	mg/kg/day	NA	NA	NA	1.0E-03	mg/kg/day	2.9E-02	mg/kg/day	3.5E-02
				Xylene (Total)	9.1E-03	mg/m3	1.1E-05	mg/kg/day	NA	NA	NA	7.8E-04	mg/kg/day	2.9E-02	mg/kg/day	2.7E-02
				2,4-Dimethylphenol	6.0E-06	mg/m3	7.4E-09	mg/kg/day	NA	NA	NA	5.2E-07	mg/kg/day	NA	NA	NA
				2,4-Dinitrotoluene	4.3E-07	mg/m3	5.3E-10	mg/kg/day	NA	NA	NA	3.7E-08	mg/kg/day	NA	NA	NA
				2-Methylnaphthalene	4.2E-03	mg/m3	5.2E-06	mg/kg/day	NA	NA	NA	3.6E-04	mg/kg/day	NA	NA	NA
				4-Methylphenol	1.1E-05	mg/m3	1.3E-08	mg/kg/day	NA	NA	NA	9.3E-07	mg/kg/day	NA	NA	NA
				4-Nitroaniline	2.8E-06	mg/m3	3.4E-09	mg/kg/day	NA	NA	NA	2.4E-07	mg/kg/day	1.1E-03	mg/kg/day	2.1E-04
				Acenaphthene	2.6E-05	mg/m3	3.2E-08	mg/kg/day	NA	NA	NA	2.3E-06	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	3.2E-05	mg/m3	3.9E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.2E-08	2.7E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.1E-05	mg/m3	3.8E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.2E-07	2.6E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E-05	mg/m3	4.3E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.3E-08	3.0E-06	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E-05	mg/m3	2.0E-08	mg/kg/day	NA	NA	NA	1.4E-06	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.5E-05	mg/m3	1.9E-08	mg/kg/day	3.1E-02	1/(mg/kg/day)	5.8E-10	1.3E-06	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	1.0E-03	mg/m3	1.2E-06	mg/kg/day	NA	NA	NA	8.6E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.2E-05	mg/m3	1.4E-08	mg/kg/day	NA	NA	NA	1.0E-06	mg/kg/day	NA	NA	NA

TABLE 7.4 CTE

CALCULATION OF CHEMICAL CAN[redacted]S AND NON-CANCER HAZARDS

CENTRAL TEN[redacted]EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Chrysene	3.3E-05	mg/m3	4.1E-08	mg/kg/day	NA	NA	NA	2.9E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	5.1E-06	mg/m3	6.2E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.9E-08	4.3E-07	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E-05	mg/m3	2.8E-08	mg/kg/day	NA	NA	NA	1.9E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	7.7E-05	mg/m3	9.5E-08	mg/kg/day	NA	NA	NA	6.6E-06	mg/kg/day	NA	NA	NA
				Fluorene	2.2E-03	mg/m3	2.7E-06	mg/kg/day	NA	NA	NA	1.9E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.6E-05	mg/m3	2.0E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	6.1E-09	1.4E-06	mg/kg/day	NA	NA	NA
				Naphthalene	2.8E-01	mg/m3	3.5E-04	mg/kg/day	NA	NA	NA	2.4E-02	mg/kg/day	8.6E-04	mg/kg/day	2.8E+01
				Phenanthrene	1.5E-01	mg/m3	1.9E-04	mg/kg/day	NA	NA	NA	1.3E-02	mg/kg/day	NA	NA	NA
				Pyrene	5.3E-04	mg/m3	6.5E-07	mg/kg/day	NA	NA	NA	4.5E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								7.1E-06					2.9E+01
		Exposure Point Total									7.1E-06					2.9E+01
	Exposure Medium Total										7.1E-06					2.9E+01
Soil Total											3.2E-04					5.4E+01

TABLE 7.4.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater (Excavation)	Quanta Resources (Excavation)	Dermal	Arsenic	1.2E+01	ug/L	9.3E-10	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.4E-09	6.5E-08	mg/kg/day	3.0E-04	mg/kg/day	2.2E-04
				Iron	1.9E+05	ug/L	1.5E-05	mg/kg/day	NA	NA	NA	1.0E-03	mg/kg/day	3.0E-01	mg/kg/day	3.5E-03
				Lead	1.5E+01	ug/L	1.2E-09	mg/kg/day	NA	NA	NA	8.1E-08	mg/kg/day	NA	NA	NA
				alpha-BHC	4.8E-02	ug/L	2.6E-10	mg/kg/day	NA	NA	NA	1.8E-08	mg/kg/day	5.0E-04	mg/kg/day	3.7E-05
				delta-BHC	1.0E-01	ug/L	3.7E-10	mg/kg/day	1.8E+00	1/(mg/kg/day)	6.6E-10	2.6E-08	mg/kg/day	NA	NA	NA
				Heptachlor	1.6E-02	ug/L	4.3E-11	mg/kg/day	4.5E+00	1/(mg/kg/day)	1.9E-10	3.0E-09	mg/kg/day	5.0E-04	mg/kg/day	6.0E-06
				Benzene	1.9E+03	ug/L	2.4E-06	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.3E-07	1.7E-04	mg/kg/day	4.0E-03	mg/kg/day	4.3E-02
				Chloromethane	2.1E+01	ug/L	5.8E-09	mg/kg/day	NA	NA	NA	4.1E-07	mg/kg/day	NA	NA	NA
				Ethylbenzene	1.1E+03	ug/L	4.6E-06	mg/kg/day	NA	NA	NA	3.2E-04	mg/kg/day	1.0E-01	mg/kg/day	3.2E-03
				Isopropylbenzene (Cumene)	5.7E+01	ug/L	3.1E-07	mg/kg/day	NA	NA	NA	2.2E-05	mg/kg/day	4.0E-01	mg/kg/day	5.4E-05
				Toluene	1.2E+03	ug/L	3.2E-06	mg/kg/day	NA	NA	NA	2.2E-04	mg/kg/day	2.0E+00	mg/kg/day	1.1E-04
				m,p-Xylene	1.2E+03	ug/L	5.3E-06	mg/kg/day	NA	NA	NA	3.7E-04	mg/kg/day	2.0E-01	mg/kg/day	1.8E-03
				o-Xylene	7.0E+02	ug/L	2.8E-06	mg/kg/day	NA	NA	NA	1.9E-04	mg/kg/day	2.0E-01	mg/kg/day	9.7E-04
				Xylene (Total)	2.7E+03	ug/L	9.9E-06	mg/kg/day	NA	NA	NA	7.0E-04	mg/kg/day	2.0E-01	mg/kg/day	3.5E-03
				1,4-Dichlorobenzene	1.4E+00	ug/L	5.7E-09	mg/kg/day	2.4E-02	1/(mg/kg/day)	1.4E-10	4.0E-07	mg/kg/day	3.0E-02	mg/kg/day	1.3E-05
				2,4-Dimethylphenol	3.7E+03	ug/L	6.0E-06	mg/kg/day	NA	NA	NA	4.2E-04	mg/kg/day	2.0E-01	mg/kg/day	2.1E-03
				2-Methylnaphthalene	2.8E+03	ug/L	1.9E-05	mg/kg/day	NA	NA	NA	1.3E-03	mg/kg/day	4.0E-03	mg/kg/day	3.3E-01
				2-Methylphenol	2.0E+03	ug/L	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	5.0E-01	mg/kg/day	2.3E-04
				3&4-Methylphenol	6.4E+01	ug/L	5.3E-08	mg/kg/day	NA	NA	NA	3.7E-06	mg/kg/day	5.0E-03	mg/kg/day	7.4E-04
				4-Methylphenol	2.8E+03	ug/L	2.3E-06	mg/kg/day	NA	NA	NA	1.6E-04	mg/kg/day	5.0E-03	mg/kg/day	3.2E-02
				Acenaphthene	1.0E+03	ug/L	1.1E-05	mg/kg/day	NA	NA	NA	7.8E-04	mg/kg/day	6.0E-01	mg/kg/day	1.3E-03
				Acenaphthylene	2.4E+02	ug/L	2.0E-06	mg/kg/day	NA	NA	NA	1.4E-04	mg/kg/day	6.0E-01	mg/kg/day	2.3E-04
				Anthracene	5.0E+01	ug/L	6.4E-07	mg/kg/day	NA	NA	NA	4.5E-05	mg/kg/day	3.0E+00	mg/kg/day	1.5E-05
				Benzo(a)anthracene	3.1E+02	ug/L	2.3E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.6E-05	1.6E-03	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.3E+02	ug/L	2.8E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.1E-04	2.0E-03	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.6E+02	ug/L	3.3E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.4E-05	2.3E-03	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.2E+02	ug/L	3.0E-05	mg/kg/day	NA	NA	NA	2.1E-03	mg/kg/day	3.0E-01	mg/kg/day	6.9E-03
				Benzo(k)fluoranthene	1.3E+02	ug/L	1.5E-05	mg/kg/day	7.3E-02	1/(mg/kg/day)	1.1E-06	1.1E-03	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	1.3E+02	ug/L	8.5E-07	mg/kg/day	NA	NA	NA	5.9E-05	mg/kg/day	5.0E-02	mg/kg/day	1.2E-03
				Carbazole	4.3E+02	ug/L	1.3E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	2.7E-08	9.3E-05	mg/kg/day	NA	NA	NA
				Chrysene	2.9E+02	ug/L	2.1E-05	mg/kg/day	7.3E-03	1/(mg/kg/day)	1.5E-07	1.4E-03	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	ug/L	4.4E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.2E-05	3.1E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	ug/L	1.8E-06	mg/kg/day	NA	NA	NA	1.3E-04	mg/kg/day	NA	NA	NA
				Fluoranthene	9.6E+02	ug/L	2.7E-05	mg/kg/day	NA	NA	NA	1.9E-03	mg/kg/day	4.0E-01	mg/kg/day	4.8E-03
				Fluorene	8.4E+02	ug/L	8.0E-07	mg/kg/day	NA	NA	NA	5.6E-05	mg/kg/day	4.0E-01	mg/kg/day	1.4E-04
				Indeno(1,2,3-c,d)pyrene	1.1E+02	ug/L	1.5E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.1E-05	1.0E-03	mg/kg/day	NA	NA	NA
				Naphthalene	1.8E+04	ug/L	7.6E-05	mg/kg/day	NA	NA	NA	5.3E-03	mg/kg/day	2.0E-02	mg/kg/day	2.7E-01
				Phenanthrene	2.4E+03	ug/L	3.7E-05	mg/kg/day	NA	NA	NA	2.6E-03	mg/kg/day	3.0E+00	mg/kg/day	8.7E-04
				Phenol	1.2E+03	ug/L	4.9E-07	mg/kg/day	NA	NA	NA	3.4E-05	mg/kg/day	6.0E-01	mg/kg/day	5.7E-05
				Pyrene	8.0E+02	ug/L	2.1E-05	mg/kg/day	NA	NA	NA	1.5E-03	mg/kg/day	3.0E-01	mg/kg/day	5.0E-03
			Exp. Route Total								2.9E-04					7.1E-01
		Exposure Point Total									2.9E-04					7.1E-01
	Exposure Medium Total										2.9E-04					7.1E-01

TABLE 7.4 CTE

CALCULATION OF CHEMICAL CA[redacted]S AND NON-CANCER HAZARDS

CENTRAL TEN[redacted] EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Ambient Air (Excavation)	Quanta Resources (Excavation)	Inhalation	Benzene	8.1E-02	mg/m3	6.8E-06	mg/kg/day	2.7E-02	1/(mg/kg/day)	1.9E-07	4.8E-04	mg/kg/day	8.6E-03	mg/kg/day	5.6E-02
				Chloromethane	6.8E-04	mg/m3	5.7E-08	mg/kg/day	NA	NA	NA	4.0E-06	mg/kg/day	2.6E-02	mg/kg/day	1.5E-04
				Ethylbenzene	4.0E-02	mg/m3	3.4E-06	mg/kg/day	NA	NA	NA	2.4E-04	mg/kg/day	2.9E-01	mg/kg/day	8.3E-04
				Isopropylbenzene (Cumene)	2.0E-03	mg/m3	1.6E-07	mg/kg/day	NA	NA	NA	1.2E-05	mg/kg/day	2.6E-02	mg/kg/day	4.5E-04
				Toluene	4.7E-02	mg/m3	3.9E-06	mg/kg/day	NA	NA	NA	2.8E-04	mg/kg/day	1.4E+00	mg/kg/day	1.9E-04
				m,p-Xylene	4.4E-02	mg/m3	3.7E-06	mg/kg/day	NA	NA	NA	2.6E-04	mg/kg/day	2.9E-02	mg/kg/day	9.0E-03
				o-Xylene	3.0E-02	mg/m3	2.5E-06	mg/kg/day	NA	NA	NA	1.8E-04	mg/kg/day	2.9E-02	mg/kg/day	6.2E-03
				Xylene (Total)	1.1E-01	mg/m3	9.6E-06	mg/kg/day	NA	NA	NA	6.7E-04	mg/kg/day	2.9E-02	mg/kg/day	2.3E-02
				1,4-Dichlorobenzene	5.1E-05	mg/m3	4.3E-09	mg/kg/day	2.2E-02	1/(mg/kg/day)	9.4E-11	3.0E-07	mg/kg/day	7.1E-01	mg/kg/day	4.2E-07
				2-Methylnaphthalene	2.7E-02	mg/m3	2.3E-06	mg/kg/day	NA	NA	NA	1.6E-04	mg/kg/day	NA	NA	NA
				Acenaphthene	2.9E-02	mg/m3	2.4E-06	mg/kg/day	NA	NA	NA	1.7E-04	mg/kg/day	NA	NA	NA
				Acenaphthylene	6.1E-03	mg/m3	5.1E-07	mg/kg/day	NA	NA	NA	3.6E-05	mg/kg/day	NA	NA	NA
				Anthracene	1.0E-03	mg/m3	8.7E-08	mg/kg/day	NA	NA	NA	6.1E-06	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	4.4E-03	mg/m3	3.7E-07	mg/kg/day	NA	NA	NA	2.6E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.4E-03	mg/m3	2.0E-07	mg/kg/day	NA	NA	NA	1.4E-05	mg/kg/day	NA	NA	NA
				Fluorene	2.2E-02	mg/m3	1.8E-06	mg/kg/day	NA	NA	NA	1.3E-04	mg/kg/day	NA	NA	NA
				Naphthalene	6.0E-01	mg/m3	5.1E-05	mg/kg/day	NA	NA	NA	3.5E-03	mg/kg/day	8.6E-04	mg/kg/day	4.1E+00[2]
				Phenanthrene	6.2E-02	mg/m3	5.2E-06	mg/kg/day	NA	NA	NA	3.6E-04	mg/kg/day	NA	NA	NA
				Pyrene	4.8E-03	mg/m3	4.0E-07	mg/kg/day	NA	NA	NA	2.8E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.9E-07					4.2E+00
		Exposure Point Total									1.9E-07					4.2E+00
	Exposure Medium Total										1.9E-07					4.2E+00
Groundwater Total											2.9E-04					4.9E+00
Receptor Total											6.1E-04					5.9E+01

NA = Not applicable.

TABLE 7.4.CTE SUPPLEMENT A
CALCULATION OF DAEVENT
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Groundwater Concentration (CW) (ug/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm^2-event)	Eq
Arsenic	1.21E+01	1.0E-03	NA	NA	NA	NA	4.0	4.8E-08	1
Iron	1.93E+05	1.0E-03	NA	NA	NA	NA	4.0	7.7E-04	1
Lead	1.50E+01	1.0E-03	NA	NA	NA	NA	4.0	6.0E-08	1
alpha-BHC	4.80E-02	2.4E-02	1.6E-01	4.5E+00	1.1E+01	1.0E+00	4.0	1.4E-08	2
delta-BHC	1.00E-01	1.6E-02	1.1E-01	4.5E+00	1.1E+01	1.0E+00	4.0	1.9E-08	2
Heptachlor	1.60E-02	8.6E-03	6.4E-02	1.3E+01	3.2E+01	8.0E-01	4.0	2.2E-09	2
Benzene	1.92E+03	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	4.0	1.3E-04	3
Chloromethane	2.10E+01	3.3E-03	9.0E-03	2.0E-01	4.9E-01	1.0E+00	4.0	3.0E-07	3
Ethylbenzene	1.11E+03	4.9E-02	2.0E-01	4.2E-01	1.0E+00	1.0E+00	4.0	2.4E-04	3
Isopropylbenzene (Cumene)	5.74E+01	6.4E-02	2.7E-01	4.9E-01	1.2E+00	1.0E+00	4.0	1.6E-05	3
Toluene	1.21E+03	3.1E-02	1.1E-01	3.5E-01	8.4E-01	1.0E+00	4.0	1.6E-04	3
m,p-Xylene	1.21E+03	5.2E-02	2.1E-01	4.1E-01	9.9E-01	1.0E+00	4.0	2.7E-04	3
o-Xylene	7.04E+02	4.7E-02	1.9E-01	4.1E-01	9.9E-01	1.0E+00	4.0	1.4E-04	3
Xylene (Total)	2.66E+03	4.4E-02	1.8E-01	4.1E-01	9.9E-01	1.0E+00	4.0	5.2E-04	3
1,4-Dichlorobenzene	1.40E+00	4.2E-02	2.0E-01	7.1E-01	1.7E+00	1.0E+00	4.0	3.0E-07	3
2,4-Dimethylphenol	3.70E+03	1.7E-02	7.4E-02	5.1E-01	1.2E+00	1.0E+00	4.0	3.1E-04	3
2-Methylnaphthalene	2.84E+03	7.2E-02	3.3E-01	6.6E-01	1.6E+00	1.0E+00	4.0	9.7E-04	3
2-Methylphenol	1.95E+03	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	4.0	8.3E-05	3
3&4-Methylphenol	6.41E+01	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	4.0	2.7E-06	3
4-Methylphenol	2.78E+03	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	4.0	1.2E-04	3
Acenaphthene	1.00E+03	1.2E-01	5.7E-01	7.7E-01	1.8E+00	1.0E+00	4.0	5.8E-04	3
Acenaphthylene	2.36E+02	8.9E-02	4.2E-01	7.5E-01	1.8E+00	1.0E+00	4.0	1.0E-04	3
Anthracene	4.98E+01	1.2E-01	6.1E-01	1.0E+00	4.2E+00	1.0E+00	4.0	3.3E-05	2
Benzo(a)anthracene	3.13E+02	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	4.0	1.2E-03	2
Benzo(a)pyrene	2.29E+02	7.0E-01	4.3E+00	2.7E+00	1.2E+01	1.0E+00	4.0	1.5E-03	2
Benzo(b)fluoranthene	2.62E+02	7.0E-01	4.3E+00	2.8E+00	1.2E+01	1.0E+00	4.0	1.7E-03	2
Benzo(g,h,i)perylene	1.22E+02	1.2E+00	7.6E+00	3.7E+00	1.7E+01	1.0E+00	4.0	1.5E-03	2
Benzo(k)fluoranthene	1.30E+02	6.6E-01	4.0E+00	2.7E+00	1.2E+01	1.0E+00	4.0	7.8E-04	2
1,1'-Biphenyl	1.33E+02	6.6E-02	3.1E-01	7.7E-01	1.8E+00	1.0E+00	4.0	4.4E-05	3
Carbazole	4.35E+02	2.9E-02	1.4E-01	9.1E-01	2.2E+00	1.0E+00	4.0	6.9E-05	3
Chrysene	2.87E+02	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	4.0	1.1E-03	2
Dibenz(a,h)anthracene	2.33E+01	1.5E+00	9.7E+00	3.9E+00	1.8E+01	6.0E-01	4.0	2.3E-04	2
Dibenzofuran	2.22E+02	7.9E-02	4.0E-01	9.2E-01	2.2E+00	1.0E+00	4.0	9.4E-05	3
Fluoranthene	9.57E+02	2.2E-01	1.2E+00	1.5E+00	5.7E+00	1.0E+00	4.0	1.4E-03	2
Fluorene	8.42E+02	7.8E-03	4.1E-02	1.2E+00	2.8E+00	1.0E+00	4.0	4.1E-05	3
Indeno(1,2,3-c,d)pyrene	1.13E+02	1.0E+00	6.7E+00	3.8E+00	1.7E+01	6.0E-01	4.0	7.6E-04	2
Naphthalene	1.81E+04	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	4.0	3.9E-03	3
Phenanthrene	2.35E+03	1.4E-01	7.4E-01	1.1E+00	4.1E+00	1.0E+00	4.0	1.9E-03	2
Phenol	1.25E+03	4.3E-03	1.6E-02	3.6E-01	8.6E-01	1.0E+00	4.0	2.5E-05	3
Pyrene	7.97E+02	2.1E-01	1.1E+00	1.4E+00	5.5E+00	1.0E+00	4.0	1.1E-03	2

Inorganics: DAevent (mg/cm2-event) =

$$DA_{event} = Kp \times CW \times tevent \times 0.001\ mg/ug \times 0.001\ l/cm^3 \quad \text{(Eq 1)}$$

Organics: DAevent (mg/cm2-event) =

DA_{event} = $t_{event} < t^*$: DA_{event} (mg/cm^2-event) =

$$2 \times FA \times Kp \times Cw \times (sqrt((6 \times \tau \times t_{event}) / (3.1415))) \times CF1 \times CF2 \quad \text{(Eq 2)}$$

$t_{event} > t^*$: DA_{event} (mg/cm^2-event) =

$$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau \times ((1 + 3B + 3B^2)/(1+B)^2)) \times CF1 \times CF2 \quad \text{(Eq 3)}$$

Notes:

NA - Not applicable

Permeability constants from EPA 2004, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final).* EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).

t* - Time to reach steady-state

TABLE 7.4.CTE SUPPLEMENT B
CALCULATION OF CONSTITUENT CONCENTRATIONS IN AIR FROM STANDING WATER
FUTURE CONSTRUCTION WORKER SCENARIO (QUANTA RESOURCES)
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	Concentration in Water (mg/L)	Concentration in Water (g/m^3) C_L	Dimensionless Henry's Law Constant (H') K_{eq}	Diffusion coefficient in air (cm^2/s) D_a	Diffusion coefficient in water (cm^2/s) D_w	Schmidt Number Sc_g	Effective diameter of source (m) d_e	Liquid-phase mass transfer coef (m/s) k_L	k_G (m/s)	1/K	K (m/s)	E (g/s)	Concentration in Air (mg/m^3) C_{air}
Benzene	1.92E+00	1.92E+00	2.28E-01	8.80E-02	9.80E-06	1.71E+00	1.13E+01	3.06E-06	2.57E-03	3.29E+05	3.04E-06	5.85E-04	8.12E-02
Chloromethane	2.10E-02	2.10E-02	9.84E-01	1.09E-01	6.50E-06	1.39E+00	1.13E+01	2.32E-06	2.97E-03	4.30E+05	2.32E-06	4.88E-06	6.78E-04
Ethylbenzene	1.11E+00	1.11E+00	3.23E-01	7.50E-02	7.80E-06	2.01E+00	1.13E+01	2.63E-06	2.31E-03	3.82E+05	2.62E-06	2.90E-04	4.03E-02
Isopropylbenzene (Cumene)	5.74E-02	5.74E-02	4.92E+01	7.50E-02	7.10E-06	2.01E+00	1.13E+01	2.47E-06	2.31E-03	4.06E+05	2.47E-06	1.42E-05	1.97E-03
Toluene	1.21E+00	1.21E+00	2.72E-01	8.70E-02	8.60E-06	1.73E+00	1.13E+01	2.80E-06	2.55E-03	3.58E+05	2.79E-06	3.38E-04	4.69E-02
m,p-Xylene	1.21E+00	1.21E+00	3.01E-01	7.00E-02	7.80E-06	2.15E+00	1.13E+01	2.63E-06	2.21E-03	3.82E+05	2.61E-06	3.16E-04	4.39E-02
o-Xylene	7.04E-01	7.04E-01	2.13E-01	8.70E-02	1.00E-05	1.73E+00	1.13E+01	3.10E-06	2.55E-03	3.25E+05	3.08E-06	2.17E-04	3.01E-02
Xylene (Total)	2.66E+00	2.66E+00	2.13E-01	8.70E-02	1.00E-05	1.73E+00	1.13E+01	3.10E-06	2.55E-03	3.25E+05	3.08E-06	8.21E-04	1.14E-01
1,4-Dichlorobenzene	1.40E-03	1.40E-03	9.96E-02	6.90E-02	7.90E-06	2.19E+00	1.13E+01	2.65E-06	2.19E-03	3.82E+05	2.62E-06	3.66E-07	5.09E-05
2-Methylnaphthalene	2.84E+00	2.84E+00	5.17E-04	5.22E-02	7.75E-06	2.89E+00	1.13E+01	2.61E-06	1.81E-03	1.45E+06	6.90E-07	1.96E-04	2.72E-02
Acenaphthene	1.00E+00	1.00E+00	6.36E-03	4.21E-02	7.69E-06	3.58E+00	1.13E+01	2.60E-06	1.57E-03	4.85E+05	2.06E-06	2.07E-04	2.88E-02
Acenaphthylene	2.36E-01	2.36E-01	4.74E-03	4.39E-02	7.07E-06	3.44E+00	1.13E+01	2.46E-06	1.61E-03	5.38E+05	1.86E-06	4.38E-05	6.09E-03
Anthracene	4.98E-02	4.98E-02	2.67E-03	3.24E-02	7.74E-06	4.66E+00	1.13E+01	2.61E-06	1.32E-03	6.68E+05	1.50E-06	7.46E-06	1.04E-03
1,1'-Biphenyl	1.33E-01	1.33E-01	1.23E-02	4.04E-02	8.20E-06	3.73E+00	1.13E+01	2.71E-06	1.53E-03	4.22E+05	2.37E-06	3.14E-05	4.37E-03
Dibenzofuran	2.22E-01	2.22E-01	5.33E-04	6.01E-02	1.00E-05	2.51E+00	1.13E+01	3.10E-06	1.99E-03	1.26E+06	7.91E-07	1.76E-05	2.44E-03
Fluorene	8.42E-01	8.42E-01	3.16E-03	6.08E-02	7.88E-06	2.48E+00	1.13E+01	2.64E-06	2.01E-03	5.36E+05	1.87E-06	1.57E-04	2.18E-02
Naphthalene	1.81E+01	1.81E+01	1.98E-02	5.90E-02	7.50E-06	2.56E+00	1.13E+01	2.56E-06	1.97E-03	4.17E+05	2.40E-06	4.35E-03	6.05E-01
Phenanthrene	2.35E+00	2.35E+00	5.40E-03	3.33E-02	7.47E-06	4.53E+00	1.13E+01	2.55E-06	1.34E-03	5.30E+05	1.89E-06	4.44E-04	6.16E-02
Pyrene	7.97E-01	7.97E-01	4.51E-04	2.72E-02	7.24E-06	5.55E+00	1.13E+01	2.50E-06	1.17E-03	2.29E+06	4.36E-07	3.48E-05	4.83E-03

Concentration in Air (C_{air}) = (mg/m^3)	$1000 * E/H * V_{wind} * L$
Emissions from Liquid surface (E) = (g/s)	$K * A * C_L$
Overall Mas Transfer Coefficient (K) = (m/s)	$1/K = 1/k_L + 1/k_G * K_{eq}$
Liquid-phase Mass Transfer Coefficient (k_L) = (m/s)	$2.78E\text{-}06 * (D_w/D_{ether})^{2/3}$
Gas-phase Mass Transfer Coefficient (k_G) = (m/g)	$4.82E\text{-}03 * U^{0.78} * Sc_G^{-0.67} * d_e^{-0.11}$
Effective Diameter of Source (d_e) = (m)	$(4 * A / \pi)^{0.5}$
Schmidt Number Calculation (Sc_G) =	$u_G/p_G * D_a$

TABLE 7.4.CTE SUPPLEMENT B
CALCULATION OF CONSTITUENT CONCENTRATIONS IN AIR FROM STANDING WATER
FUTURE CONSTRUCTION WORKER SCENARIO (QUANTA RESOURCES)
Quanta Resources Site, OU1, Edgewater, New Jersey

Parameters		Values
C_L	Concentration in liquid phase (g/m^3)	chemical specific
K	overall mass transfer coefficient (m/s)	calculated
k_L	liquid-phase mass transfer coefficient (m/s)	calculated
k_G	gas-phase mass transfer coefficient (m/s)	calculated
K_{eq}	Equilibrium constant (Henry's Law constant)	chemical specific
D_{ether}	Diffusion coefficient of ether in water (cm^2/s)	8.50E-06
D_w	Diffusion coefficient in water (cm^2/s)	chemical specific
U	Windspeed (m/s)	1
A	Area of the source (m^2)	100
u_G	viscosity of air (g/cm-s)	1.81E-04
p_G	density of air (g/cm^3)	1.20E-03
D_a	Diffusion coefficient in air (cm^2/s)	chemical specific
H	Height of breathing zone (m)	2
Vwind	Average wind speed in breathing zone (m/s)	2.25
L	Length of breathing zone perpendicular to wind (m)	1.6

Chemical and physical properties from EPA Region 9 PRG Table (EPA, 10/2004).

TABLE 7.5.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Ingestion	Aluminum	7.6E+03	mg/kg	NA	NA	NA	NA	NA	5.2E-03	mg/kg/day	1.0E+00	mg/kg/day	5.2E-03
				Antimony	1.7E+02	mg/kg	NA	NA	NA	NA	NA	1.2E-04	mg/kg/day	4.0E-04	mg/kg/day	3.0E-01
				Arsenic	1.5E+03	mg/kg	NA	NA	NA	NA	NA	1.0E-03	mg/kg/day	3.0E-04	mg/kg/day	3.4E+00
				Cadmium	1.0E+01	mg/kg	NA	NA	NA	NA	NA	6.9E-06	mg/kg/day	1.0E-03	mg/kg/day	6.9E-03
				Chromium	1.9E+01	mg/kg	NA	NA	NA	NA	NA	1.3E-05	mg/kg/day	3.0E-03	mg/kg/day	4.3E-03
				Copper	6.2E+03	mg/kg	NA	NA	NA	NA	NA	4.2E-03	mg/kg/day	4.0E-02	mg/kg/day	1.1E-01
				Iron	2.6E+05	mg/kg	NA	NA	NA	NA	NA	1.8E-01	mg/kg/day	3.0E-01	mg/kg/day	5.9E-01
				Lead	1.3E+03	mg/kg	NA	NA	NA	NA	NA	8.7E-04	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	NA	NA	NA	NA	NA	2.1E-04	mg/kg/day	1.4E-01	mg/kg/day	1.5E-03
				Thallium	8.2E+00	mg/kg	NA	NA	NA	NA	NA	5.6E-06	mg/kg/day	6.6E-05	mg/kg/day	8.5E-02
				Vanadium	8.2E+01	mg/kg	NA	NA	NA	NA	NA	5.6E-05	mg/kg/day	1.0E-03	mg/kg/day	5.6E-02
				Zinc	3.8E+03	mg/kg	NA	NA	NA	NA	NA	2.6E-03	mg/kg/day	3.0E-01	mg/kg/day	8.7E-03
				Mercury	3.0E+01	mg/kg	NA	NA	NA	NA	NA	2.0E-05	mg/kg/day	3.0E-04	mg/kg/day	6.7E-02
				Heptachlor	3.5E-01	mg/kg	NA	NA	NA	NA	NA	2.4E-07	mg/kg/day	5.0E-04	mg/kg/day	4.8E-04
				Aroclor-1242	3.2E+00	mg/kg	NA	NA	NA	NA	NA	2.2E-06	mg/kg/day	2.0E-05	mg/kg/day	1.1E-01
				Aroclor-1260	1.6E+00	mg/kg	NA	NA	NA	NA	NA	1.1E-06	mg/kg/day	2.0E-05	mg/kg/day	5.5E-02
				Benzene	1.9E+01	mg/kg	NA	NA	NA	NA	NA	1.3E-05	mg/kg/day	4.0E-03	mg/kg/day	3.3E-03
				Tetrachloroethene	5.2E-01	mg/kg	NA	NA	NA	NA	NA	3.6E-07	mg/kg/day	1.0E-02	mg/kg/day	3.6E-05
				Trichloroethene	5.4E-01	mg/kg	NA	NA	NA	NA	NA	3.7E-07	mg/kg/day	3.0E-04	mg/kg/day	1.2E-03
				m-Xylene	4.5E+01	mg/kg	NA	NA	NA	NA	NA	3.1E-05	mg/kg/day	2.0E-01	mg/kg/day	1.5E-04
				p,o-Xylene	4.9E+01	mg/kg	NA	NA	NA	NA	NA	3.4E-05	mg/kg/day	2.0E-01	mg/kg/day	1.7E-04
				2-Methylnaphthalene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	2.1E-04	mg/kg/day	4.0E-03	mg/kg/day	5.1E-02
				4-Methylphenol	1.3E+02	mg/kg	NA	NA	NA	NA	NA	9.1E-05	mg/kg/day	5.0E-03	mg/kg/day	1.8E-02
				4-Nitroaniline	1.2E+01	mg/kg	NA	NA	NA	NA	NA	8.1E-06	mg/kg/day	3.0E-03	mg/kg/day	2.7E-03
				Acenaphthene	2.4E+02	mg/kg	NA	NA	NA	NA	NA	1.7E-04	mg/kg/day	6.0E-02	mg/kg/day	2.8E-03
				Benzo(a)anthracene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	2.2E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	2.0E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	NA	NA	NA	NA	NA	2.4E-04	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-04	mg/kg/day	3.0E-02	mg/kg/day	3.7E-03
				Benzo(k)fluoranthene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-04	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	NA	NA	NA	NA	NA	9.5E-05	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	NA	NA	NA	NA	NA	2.2E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	NA	NA	NA	NA	NA	4.1E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-04	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	NA	NA	NA	NA	NA	5.6E-04	mg/kg/day	4.0E-02	mg/kg/day	1.4E-02
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	2.3E-04	mg/kg/day	4.0E-02	mg/kg/day	5.7E-03
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-04	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	NA	NA	NA	NA	NA	6.3E-04	mg/kg/day	2.0E-02	mg/kg/day	3.1E-02
				Phenanthrene	1.1E+03	mg/kg	NA	NA	NA	NA	NA	7.3E-04	mg/kg/day	3.0E-01	mg/kg/day	2.4E-03
				Pyrene	6.4E+02	mg/kg	NA	NA	NA	NA	NA	4.4E-04	mg/kg/day	3.0E-02	mg/kg/day	1.5E-02
			Exp. Route Total								0.0E+00					5.0E+00

TABLE 7.5.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Dermal	Aluminum	7.6E+03	mg/kg	NA	NA	NA	NA	NA	6.0E-06	mg/kg/day	1.0E+00	mg/kg/day	6.0E-06
				Antimony	1.7E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-07	mg/kg/day	6.0E-05	mg/kg/day	2.3E-03
				Arsenic	1.5E+03	mg/kg	NA	NA	NA	NA	NA	3.5E-05	mg/kg/day	3.0E-04	mg/kg/day	1.2E-01
				Cadmium	1.0E+01	mg/kg	NA	NA	NA	NA	NA	7.9E-09	mg/kg/day	2.5E-05	mg/kg/day	3.2E-04
				Chromium	1.9E+01	mg/kg	NA	NA	NA	NA	NA	1.5E-08	mg/kg/day	7.5E-05	mg/kg/day	1.9E-04
				Copper	6.2E+03	mg/kg	NA	NA	NA	NA	NA	4.8E-06	mg/kg/day	4.0E-02	mg/kg/day	1.2E-04
				Iron	2.6E+05	mg/kg	NA	NA	NA	NA	NA	2.0E-04	mg/kg/day	3.0E-01	mg/kg/day	6.7E-04
				Lead	1.3E+03	mg/kg	NA	NA	NA	NA	NA	9.9E-07	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	NA	NA	NA	NA	NA	2.4E-07	mg/kg/day	5.6E-03	mg/kg/day	4.3E-05
				Thallium	8.2E+00	mg/kg	NA	NA	NA	NA	NA	6.4E-09	mg/kg/day	6.6E-05	mg/kg/day	9.7E-05
				Vanadium	8.2E+01	mg/kg	NA	NA	NA	NA	NA	6.4E-08	mg/kg/day	2.6E-05	mg/kg/day	2.5E-03
				Zinc	3.8E+03	mg/kg	NA	NA	NA	NA	NA	3.0E-06	mg/kg/day	3.0E-01	mg/kg/day	9.9E-06
				Mercury	3.0E+01	mg/kg	NA	NA	NA	NA	NA	2.3E-08	mg/kg/day	2.1E-05	mg/kg/day	1.1E-03
				Heptachlor	3.5E-01	mg/kg	NA	NA	NA	NA	NA	2.7E-09	mg/kg/day	5.0E-04	mg/kg/day	5.5E-06
				Aroclor-1242	3.2E+00	mg/kg	NA	NA	NA	NA	NA	3.5E-07	mg/kg/day	2.0E-05	mg/kg/day	1.7E-02
				Aroclor-1260	1.6E+00	mg/kg	NA	NA	NA	NA	NA	1.7E-07	mg/kg/day	2.0E-05	mg/kg/day	8.7E-03
				Benzene	1.9E+01	mg/kg	NA	NA	NA	NA	NA	1.5E-07	mg/kg/day	4.0E-03	mg/kg/day	3.7E-05
				Tetrachloroethene	5.2E-01	mg/kg	NA	NA	NA	NA	NA	4.1E-09	mg/kg/day	1.0E-02	mg/kg/day	4.1E-07
				Trichloroethene	5.4E-01	mg/kg	NA	NA	NA	NA	NA	4.2E-09	mg/kg/day	3.0E-04	mg/kg/day	1.4E-05
				m-Xylene	4.5E+01	mg/kg	NA	NA	NA	NA	NA	3.5E-07	mg/kg/day	2.0E-01	mg/kg/day	1.8E-06
				p,o-Xylene	4.9E+01	mg/kg	NA	NA	NA	NA	NA	3.8E-07	mg/kg/day	2.0E-01	mg/kg/day	1.9E-06
				2-Methylnaphthalene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	2.3E-06	mg/kg/day	4.0E-03	mg/kg/day	5.9E-04
				4-Methylphenol	1.3E+02	mg/kg	NA	NA	NA	NA	NA	1.0E-06	mg/kg/day	5.0E-03	mg/kg/day	2.1E-04
				4-Nitroaniline	1.2E+01	mg/kg	NA	NA	NA	NA	NA	9.2E-08	mg/kg/day	3.0E-03	mg/kg/day	3.1E-05
				Acenaphthene	2.4E+02	mg/kg	NA	NA	NA	NA	NA	2.5E-05	mg/kg/day	6.0E-02	mg/kg/day	4.1E-04
				Benzo(a)anthracene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	3.3E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	3.0E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	NA	NA	NA	NA	NA	3.6E-05	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	1.7E-05	mg/kg/day	3.0E-02	mg/kg/day	5.5E-04
				Benzo(k)fluoranthene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	1.7E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-06	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	NA	NA	NA	NA	NA	3.2E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	NA	NA	NA	NA	NA	6.1E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.6E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	NA	NA	NA	NA	NA	8.3E-05	mg/kg/day	4.0E-02	mg/kg/day	2.1E-03
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	3.4E-05	mg/kg/day	4.0E-02	mg/kg/day	8.4E-04
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	NA	NA	NA	NA	NA	1.7E-05	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	NA	NA	NA	NA	NA	9.3E-05	mg/kg/day	2.0E-02	mg/kg/day	4.6E-03
				Phenanthrene	1.1E+03	mg/kg	NA	NA	NA	NA	NA	8.3E-06	mg/kg/day	3.0E-01	mg/kg/day	2.8E-05
				Pyrene	6.4E+02	mg/kg	NA	NA	NA	NA	NA	6.5E-05	mg/kg/day	3.0E-02	mg/kg/day	2.2E-03
			Exp. Route Total								0.0E+00					1.6E-01
		Exposure Point Total									0.0E+00					5.1E+00
	Exposure Medium Total										0.0E+00					5.1E+00

TABLE 7.5.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	9.2E-06	mg/m3	NA	NA	NA	NA	NA	2.5E-06	mg/kg/day	1.4E-03	mg/kg/day	1.8E-03
				Antimony	2.1E-07	mg/m3	NA	NA	NA	NA	NA	5.7E-08	mg/kg/day	NA	NA	NA
				Arsenic	1.8E-06	mg/m3	NA	NA	NA	NA	NA	5.0E-07	mg/kg/day	NA	NA	NA
				Cadmium	1.2E-08	mg/m3	NA	NA	NA	NA	NA	3.3E-09	mg/kg/day	NA	NA	NA
				Chromium	2.3E-08	mg/m3	NA	NA	NA	NA	NA	6.2E-09	mg/kg/day	2.9E-05	mg/kg/day	2.2E-04
				Copper	7.5E-06	mg/m3	NA	NA	NA	NA	NA	2.0E-06	mg/kg/day	NA	NA	NA
				Iron	3.1E-04	mg/m3	NA	NA	NA	NA	NA	8.5E-05	mg/kg/day	NA	NA	NA
				Lead	1.5E-06	mg/m3	NA	NA	NA	NA	NA	4.2E-07	mg/kg/day	NA	NA	NA
				Manganese	3.7E-07	mg/m3	NA	NA	NA	NA	NA	1.0E-07	mg/kg/day	1.4E-05	mg/kg/day	7.1E-03
				Thallium	9.9E-09	mg/m3	NA	NA	NA	NA	NA	2.7E-09	mg/kg/day	NA	NA	NA
				Vanadium	9.9E-08	mg/m3	NA	NA	NA	NA	NA	2.7E-08	mg/kg/day	NA	NA	NA
				Zinc	4.6E-06	mg/m3	NA	NA	NA	NA	NA	1.3E-06	mg/kg/day	NA	NA	NA
				Mercury	3.6E-08	mg/m3	NA	NA	NA	NA	NA	9.7E-09	mg/kg/day	NA	NA	NA
				Heptachlor	4.2E-10	mg/m3	NA	NA	NA	NA	NA	1.2E-10	mg/kg/day	NA	NA	NA
				Aroclor-1242	3.9E-09	mg/m3	NA	NA	NA	NA	NA	1.1E-09	mg/kg/day	NA	NA	NA
				Aroclor-1260	1.9E-09	mg/m3	NA	NA	NA	NA	NA	5.3E-10	mg/kg/day	NA	NA	NA
				Benzene	8.3E-03	mg/m3	NA	NA	NA	NA	NA	2.3E-03	mg/kg/day	8.6E-03	mg/kg/day	2.7E-01
				Tetrachloroethene	2.0E-04	mg/m3	NA	NA	NA	NA	NA	5.4E-05	mg/kg/day	1.0E-02	mg/kg/day	5.4E-03
				Trichloroethene	2.5E-04	mg/m3	NA	NA	NA	NA	NA	6.9E-05	mg/kg/day	1.1E-02	mg/kg/day	6.1E-03
				m-Xylene	1.3E-02	mg/m3	NA	NA	NA	NA	NA	3.4E-03	mg/kg/day	2.9E-02	mg/kg/day	1.2E-01
				p,o-Xylene	1.2E-02	mg/m3	NA	NA	NA	NA	NA	3.2E-03	mg/kg/day	2.9E-02	mg/kg/day	1.1E-01
				2-Methylnaphthalene	8.6E-04	mg/m3	NA	NA	NA	NA	NA	2.3E-04	mg/kg/day	NA	NA	NA
				4-Methylphenol	1.6E-07	mg/m3	NA	NA	NA	NA	NA	4.4E-08	mg/kg/day	NA	NA	NA
				4-Nitroaniline	1.4E-08	mg/m3	NA	NA	NA	NA	NA	3.9E-09	mg/kg/day	1.1E-03	mg/kg/day	3.4E-06
				Acenaphthene	3.0E-07	mg/m3	NA	NA	NA	NA	NA	8.1E-08	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	4.0E-07	mg/m3	NA	NA	NA	NA	NA	1.1E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-07	mg/m3	NA	NA	NA	NA	NA	9.9E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-07	mg/m3	NA	NA	NA	NA	NA	1.2E-07	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.0E-07	mg/m3	NA	NA	NA	NA	NA	5.4E-08	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	2.0E-07	mg/m3	NA	NA	NA	NA	NA	5.4E-08	mg/kg/day	NA	NA	NA
				Carbazole	1.7E-07	mg/m3	NA	NA	NA	NA	NA	4.6E-08	mg/kg/day	NA	NA	NA
				Chrysene	3.8E-07	mg/m3	NA	NA	NA	NA	NA	1.0E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	7.2E-08	mg/m3	NA	NA	NA	NA	NA	2.0E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.4E-07	mg/m3	NA	NA	NA	NA	NA	6.6E-08	mg/kg/day	NA	NA	NA
				Fluoranthene	9.9E-07	mg/m3	NA	NA	NA	NA	NA	2.7E-07	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	NA	NA	NA	NA	NA	4.1E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-07	mg/m3	NA	NA	NA	NA	NA	5.5E-08	mg/kg/day	NA	NA	NA
				Naphthalene	2.6E-02	mg/m3	NA	NA	NA	NA	NA	7.1E-03	mg/kg/day	8.6E-04	mg/kg/day	8.2E+00
				Phenanthrene	8.9E-02	mg/m3	NA	NA	NA	NA	NA	2.4E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	NA	NA	NA	NA	NA	7.0E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								0.0E+00					8.7E+00
		Exposure Point Total									0.0E+00					8.7E+00
	Exposure Medium Total										0.0E+00					8.7E+00
Soil Total											0.0E+00					1.4E+01
Receptor Total											0.0E+00					1.4E+01

NA = Not applicable.

TABLE 7.6.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Ingestion	Aluminum	7.6E+03	mg/kg	NA	NA	NA	NA	NA	4.9E-02	mg/kg/day	1.0E+00	mg/kg/day	4.9E-02
				Antimony	1.7E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-03	mg/kg/day	4.0E-04	mg/kg/day	2.8E+00
				Arsenic	1.5E+03	mg/kg	NA	NA	NA	NA	NA	9.6E-03	mg/kg/day	3.0E-04	mg/kg/day	3.2E+01
				Cadmium	1.0E+01	mg/kg	NA	NA	NA	NA	NA	6.5E-05	mg/kg/day	1.0E-03	mg/kg/day	6.5E-02
				Chromium	1.9E+01	mg/kg	NA	NA	NA	NA	NA	1.2E-04	mg/kg/day	3.0E-03	mg/kg/day	4.0E-02
				Copper	6.2E+03	mg/kg	NA	NA	NA	NA	NA	3.9E-02	mg/kg/day	4.0E-02	mg/kg/day	9.9E-01
				Iron	2.6E+05	mg/kg	NA	NA	NA	NA	NA	1.6E+00	mg/kg/day	3.0E-01	mg/kg/day	5.5E+00
				Lead	1.3E+03	mg/kg	NA	NA	NA	NA	NA	8.1E-03	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	NA	NA	NA	NA	NA	2.0E-03	mg/kg/day	1.4E-01	mg/kg/day	1.4E-02
				Thallium	8.2E+00	mg/kg	NA	NA	NA	NA	NA	5.2E-05	mg/kg/day	6.6E-05	mg/kg/day	7.9E-01
				Vanadium	8.2E+01	mg/kg	NA	NA	NA	NA	NA	5.3E-04	mg/kg/day	1.0E-03	mg/kg/day	5.3E-01
				Zinc	3.8E+03	mg/kg	NA	NA	NA	NA	NA	2.4E-02	mg/kg/day	3.0E-01	mg/kg/day	8.1E-02
				Mercury	3.0E+01	mg/kg	NA	NA	NA	NA	NA	1.9E-04	mg/kg/day	3.0E-04	mg/kg/day	6.3E-01
				Heptachlor	3.5E-01	mg/kg	NA	NA	NA	NA	NA	2.2E-06	mg/kg/day	5.0E-04	mg/kg/day	4.5E-03
				Aroclor-1242	3.2E+00	mg/kg	NA	NA	NA	NA	NA	2.0E-05	mg/kg/day	2.0E-05	mg/kg/day	1.0E+00
				Aroclor-1260	1.6E+00	mg/kg	NA	NA	NA	NA	NA	1.0E-05	mg/kg/day	2.0E-05	mg/kg/day	5.1E-01
				Benzene	1.9E+01	mg/kg	NA	NA	NA	NA	NA	1.2E-04	mg/kg/day	4.0E-03	mg/kg/day	3.0E-02
				Tetrachloroethene	5.2E-01	mg/kg	NA	NA	NA	NA	NA	3.3E-06	mg/kg/day	1.0E-02	mg/kg/day	3.3E-04
				Trichloroethene	5.4E-01	mg/kg	NA	NA	NA	NA	NA	3.5E-06	mg/kg/day	3.0E-04	mg/kg/day	1.2E-02
				m-Xylene	4.5E+01	mg/kg	NA	NA	NA	NA	NA	2.9E-04	mg/kg/day	2.0E-01	mg/kg/day	1.4E-03
				p,o-Xylene	4.9E+01	mg/kg	NA	NA	NA	NA	NA	3.1E-04	mg/kg/day	2.0E-01	mg/kg/day	1.6E-03
				2-Methylnaphthalene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	1.9E-03	mg/kg/day	4.0E-03	mg/kg/day	4.8E-01
				4-Methylphenol	1.3E+02	mg/kg	NA	NA	NA	NA	NA	8.5E-04	mg/kg/day	5.0E-03	mg/kg/day	1.7E-01
				4-Nitroaniline	1.2E+01	mg/kg	NA	NA	NA	NA	NA	7.5E-05	mg/kg/day	3.0E-03	mg/kg/day	2.5E-02
				Acenaphthene	2.4E+02	mg/kg	NA	NA	NA	NA	NA	1.6E-03	mg/kg/day	6.0E-02	mg/kg/day	2.6E-02
				Benzo(a)anthracene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	2.1E-03	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	1.9E-03	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	NA	NA	NA	NA	NA	2.3E-03	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	1.0E-03	mg/kg/day	3.0E-02	mg/kg/day	3.5E-02
				Benzo(k)fluoranthene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	1.0E-03	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	NA	NA	NA	NA	NA	8.9E-04	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	NA	NA	NA	NA	NA	2.0E-03	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	NA	NA	NA	NA	NA	3.8E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-03	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	NA	NA	NA	NA	NA	5.2E-03	mg/kg/day	4.0E-02	mg/kg/day	1.3E-01
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	2.1E-03	mg/kg/day	4.0E-02	mg/kg/day	5.3E-02
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-03	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	NA	NA	NA	NA	NA	5.8E-03	mg/kg/day	2.0E-02	mg/kg/day	2.9E-01
				Phenanthrene	1.1E+03	mg/kg	NA	NA	NA	NA	NA	6.8E-03	mg/kg/day	3.0E-01	mg/kg/day	2.3E-02
				Pyrene	6.4E+02	mg/kg	NA	NA	NA	NA	NA	4.1E-03	mg/kg/day	3.0E-02	mg/kg/day	1.4E-01
			Exp. Route Total								0.0E+00					4.6E+01

TABLE 7.6.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Dermal	Aluminum	7.6E+03	mg/kg	NA	NA	NA	NA	NA	5.5E-05	mg/kg/day	1.0E+00	mg/kg/day	5.5E-05
				Antimony	1.7E+02	mg/kg	NA	NA	NA	NA	NA	1.2E-06	mg/kg/day	6.0E-05	mg/kg/day	2.1E-02
				Arsenic	1.5E+03	mg/kg	NA	NA	NA	NA	NA	3.2E-04	mg/kg/day	3.0E-04	mg/kg/day	1.1E+00
				Cadmium	1.0E+01	mg/kg	NA	NA	NA	NA	NA	7.2E-08	mg/kg/day	2.5E-05	mg/kg/day	2.9E-03
				Chromium	1.9E+01	mg/kg	NA	NA	NA	NA	NA	1.3E-07	mg/kg/day	7.5E-05	mg/kg/day	1.8E-03
				Copper	6.2E+03	mg/kg	NA	NA	NA	NA	NA	4.4E-05	mg/kg/day	4.0E-02	mg/kg/day	1.1E-03
				Iron	2.6E+05	mg/kg	NA	NA	NA	NA	NA	1.8E-03	mg/kg/day	3.0E-01	mg/kg/day	6.1E-03
				Lead	1.3E+03	mg/kg	NA	NA	NA	NA	NA	9.1E-06	mg/kg/day	NA	NA	NA
				Manganese	3.1E+02	mg/kg	NA	NA	NA	NA	NA	2.2E-06	mg/kg/day	5.6E-03	mg/kg/day	3.9E-04
				Thallium	8.2E+00	mg/kg	NA	NA	NA	NA	NA	5.9E-08	mg/kg/day	6.6E-05	mg/kg/day	8.9E-04
				Vanadium	8.2E+01	mg/kg	NA	NA	NA	NA	NA	5.9E-07	mg/kg/day	2.6E-05	mg/kg/day	2.3E-02
				Zinc	3.8E+03	mg/kg	NA	NA	NA	NA	NA	2.7E-05	mg/kg/day	3.0E-01	mg/kg/day	9.1E-05
				Mercury	3.0E+01	mg/kg	NA	NA	NA	NA	NA	2.1E-07	mg/kg/day	2.1E-05	mg/kg/day	1.0E-02
				Heptachlor	3.5E-01	mg/kg	NA	NA	NA	NA	NA	2.5E-08	mg/kg/day	5.0E-04	mg/kg/day	5.0E-05
				Aroclor-1242	3.2E+00	mg/kg	NA	NA	NA	NA	NA	3.2E-06	mg/kg/day	2.0E-05	mg/kg/day	1.6E-01
				Aroclor-1260	1.6E+00	mg/kg	NA	NA	NA	NA	NA	1.6E-06	mg/kg/day	2.0E-05	mg/kg/day	8.0E-02
				Benzene	1.9E+01	mg/kg	NA	NA	NA	NA	NA	1.4E-06	mg/kg/day	4.0E-03	mg/kg/day	3.4E-04
				Tetrachloroethene	5.2E-01	mg/kg	NA	NA	NA	NA	NA	3.7E-08	mg/kg/day	1.0E-02	mg/kg/day	3.7E-06
				Trichloroethene	5.4E-01	mg/kg	NA	NA	NA	NA	NA	3.9E-08	mg/kg/day	3.0E-04	mg/kg/day	1.3E-04
				m-Xylene	4.5E+01	mg/kg	NA	NA	NA	NA	NA	3.2E-06	mg/kg/day	2.0E-01	mg/kg/day	1.6E-05
				p,o-Xylene	4.9E+01	mg/kg	NA	NA	NA	NA	NA	3.5E-06	mg/kg/day	2.0E-01	mg/kg/day	1.8E-05
				2-Methylnaphthalene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	2.1E-05	mg/kg/day	4.0E-03	mg/kg/day	5.4E-03
				4-Methylphenol	1.3E+02	mg/kg	NA	NA	NA	NA	NA	9.5E-06	mg/kg/day	5.0E-03	mg/kg/day	1.9E-03
				4-Nitroaniline	1.2E+01	mg/kg	NA	NA	NA	NA	NA	8.4E-07	mg/kg/day	3.0E-03	mg/kg/day	2.8E-04
				Acenaphthene	2.4E+02	mg/kg	NA	NA	NA	NA	NA	2.3E-04	mg/kg/day	6.0E-02	mg/kg/day	3.8E-03
				Benzo(a)anthracene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	3.1E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	NA	NA	NA	NA	NA	2.8E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	NA	NA	NA	NA	NA	3.3E-04	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	1.5E-04	mg/kg/day	3.0E-02	mg/kg/day	5.1E-03
				Benzo(k)fluoranthene	1.6E+02	mg/kg	NA	NA	NA	NA	NA	1.5E-04	mg/kg/day	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	NA	NA	NA	NA	NA	9.9E-06	mg/kg/day	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	NA	NA	NA	NA	NA	3.0E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	NA	NA	NA	NA	NA	5.6E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	NA	NA	NA	NA	NA	7.6E-04	mg/kg/day	4.0E-02	mg/kg/day	1.9E-02
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	3.1E-04	mg/kg/day	4.0E-02	mg/kg/day	7.7E-03
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	NA	NA	NA	NA	NA	1.6E-04	mg/kg/day	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	NA	NA	NA	NA	NA	8.5E-04	mg/kg/day	2.0E-02	mg/kg/day	4.3E-02
				Phenanthrene	1.1E+03	mg/kg	NA	NA	NA	NA	NA	7.6E-05	mg/kg/day	3.0E-01	mg/kg/day	2.5E-04
				Pyrene	6.4E+02	mg/kg	NA	NA	NA	NA	NA	5.9E-04	mg/kg/day	3.0E-02	mg/kg/day	2.0E-02
			Exp. Route Total								0.0E+00					1.5E+00
		Exposure Point Total									0.0E+00					4.8E+01
	Exposure Medium Total										0.0E+00					4.8E+01

TABLE 7.6.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	9.2E-06	mg/m3	NA	NA	NA	NA	NA	5.9E-06	mg/kg/day	1.4E-03	mg/kg/day	4.2E-03
				Antimony	2.1E-07	mg/m3	NA	NA	NA	NA	NA	1.4E-07	mg/kg/day	NA	NA	NA
				Arsenic	1.8E-06	mg/m3	NA	NA	NA	NA	NA	1.2E-06	mg/kg/day	NA	NA	NA
				Cadmium	1.2E-08	mg/m3	NA	NA	NA	NA	NA	7.9E-09	mg/kg/day	NA	NA	NA
				Chromium	2.3E-08	mg/m3	NA	NA	NA	NA	NA	1.5E-08	mg/kg/day	2.9E-05	mg/kg/day	5.1E-04
				Copper	7.5E-06	mg/m3	NA	NA	NA	NA	NA	4.8E-06	mg/kg/day	NA	NA	NA
				Iron	3.1E-04	mg/m3	NA	NA	NA	NA	NA	2.0E-04	mg/kg/day	NA	NA	NA
				Lead	1.5E-06	mg/m3	NA	NA	NA	NA	NA	9.9E-07	mg/kg/day	NA	NA	NA
				Manganese	3.7E-07	mg/m3	NA	NA	NA	NA	NA	2.4E-07	mg/kg/day	1.4E-05	mg/kg/day	1.7E-02
				Thallium	9.9E-09	mg/m3	NA	NA	NA	NA	NA	6.4E-09	mg/kg/day	NA	NA	NA
				Vanadium	9.9E-08	mg/m3	NA	NA	NA	NA	NA	6.4E-08	mg/kg/day	NA	NA	NA
				Zinc	4.6E-06	mg/m3	NA	NA	NA	NA	NA	3.0E-06	mg/kg/day	NA	NA	NA
				Mercury	3.6E-08	mg/m3	NA	NA	NA	NA	NA	2.3E-08	mg/kg/day	NA	NA	NA
				Heptachlor	4.2E-10	mg/m3	NA	NA	NA	NA	NA	2.7E-10	mg/kg/day	NA	NA	NA
				Aroclor-1242	3.9E-09	mg/m3	NA	NA	NA	NA	NA	2.5E-09	mg/kg/day	NA	NA	NA
				Aroclor-1260	1.9E-09	mg/m3	NA	NA	NA	NA	NA	1.2E-09	mg/kg/day	NA	NA	NA
				Benzene	8.3E-03	mg/m3	NA	NA	NA	NA	NA	5.4E-03	mg/kg/day	8.6E-03	mg/kg/day	6.3E-01
				Tetrachloroethene	2.0E-04	mg/m3	NA	NA	NA	NA	NA	1.3E-04	mg/kg/day	1.0E-02	mg/kg/day	1.3E-02
				Trichloroethene	2.5E-04	mg/m3	NA	NA	NA	NA	NA	1.6E-04	mg/kg/day	1.1E-02	mg/kg/day	1.4E-02
				m-Xylene	1.3E-02	mg/m3	NA	NA	NA	NA	NA	8.1E-03	mg/kg/day	2.9E-02	mg/kg/day	2.8E-01
				p,o-Xylene	1.2E-02	mg/m3	NA	NA	NA	NA	NA	7.6E-03	mg/kg/day	2.9E-02	mg/kg/day	2.7E-01
				2-Methylnaphthalene	8.6E-04	mg/m3	NA	NA	NA	NA	NA	5.5E-04	mg/kg/day	NA	NA	NA
				4-Methylphenol	1.6E-07	mg/m3	NA	NA	NA	NA	NA	1.0E-07	mg/kg/day	NA	NA	NA
				4-Nitroaniline	1.4E-08	mg/m3	NA	NA	NA	NA	NA	9.2E-09	mg/kg/day	1.1E-03	mg/kg/day	8.0E-06
				Acenaphthene	3.0E-07	mg/m3	NA	NA	NA	NA	NA	1.9E-07	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	4.0E-07	mg/m3	NA	NA	NA	NA	NA	2.6E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.6E-07	mg/m3	NA	NA	NA	NA	NA	2.3E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-07	mg/m3	NA	NA	NA	NA	NA	2.7E-07	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	2.0E-07	mg/m3	NA	NA	NA	NA	NA	1.3E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	2.0E-07	mg/m3	NA	NA	NA	NA	NA	1.3E-07	mg/kg/day	NA	NA	NA
				Carbazole	1.7E-07	mg/m3	NA	NA	NA	NA	NA	1.1E-07	mg/kg/day	NA	NA	NA
				Chrysene	3.8E-07	mg/m3	NA	NA	NA	NA	NA	2.5E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	7.2E-08	mg/m3	NA	NA	NA	NA	NA	4.7E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.4E-07	mg/m3	NA	NA	NA	NA	NA	1.6E-07	mg/kg/day	NA	NA	NA
				Fluoranthene	9.9E-07	mg/m3	NA	NA	NA	NA	NA	6.4E-07	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	NA	NA	NA	NA	NA	9.6E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-07	mg/m3	NA	NA	NA	NA	NA	1.3E-07	mg/kg/day	NA	NA	NA
				Naphthalene	2.6E-02	mg/m3	NA	NA	NA	NA	NA	1.7E-02	mg/kg/day	8.6E-04	mg/kg/day	1.9E+01
				Phenanthrene	8.9E-02	mg/m3	NA	NA	NA	NA	NA	5.8E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	NA	NA	NA	NA	NA	1.6E-04	mg/kg/day	NA	NA	NA
			Exp. Route Total								0.0E+00					2.1E+01
		Exposure Point Total									0.0E+00					2.1E+01
	Exposure Medium Total										0.0E+00					2.1E+01
Soil Total											0.0E+00					6.9E+01
Receptor Total											0.0E+00					6.9E+01

NA = Not applicable.

TABLE 7.7.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Ingestion	Aluminum	7.6E+03	mg/kg	4.8E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Antimony	1.7E+02	mg/kg	1.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	1.5E+03	mg/kg	9.6E-04	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.4E-03	NA	NA	NA	NA	NA
				Cadmium	1.0E+01	mg/kg	6.4E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Chromium	1.9E+01	mg/kg	1.2E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Copper	6.2E+03	mg/kg	3.9E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	2.6E+05	mg/kg	1.6E-01	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	1.3E+03	mg/kg	8.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	3.1E+02	mg/kg	1.9E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	8.2E+00	mg/kg	5.2E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	8.2E+01	mg/kg	5.2E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Zinc	3.8E+03	mg/kg	2.4E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	3.0E+01	mg/kg	1.9E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Heptachlor	3.5E-01	mg/kg	2.2E-07	mg/kg/day	4.5E+00	1/(mg/kg/day)	1.0E-06	NA	NA	NA	NA	NA
				Aroclor-1242	3.2E+00	mg/kg	2.0E-06	mg/kg/day	2.0E+00	1/(mg/kg/day)	4.1E-06	NA	NA	NA	NA	NA
				Aroclor-1260	1.6E+00	mg/kg	1.0E-06	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.0E-06	NA	NA	NA	NA	NA
				Benzene	1.9E+01	mg/kg	1.2E-05	mg/kg/day	5.5E-02	1/(mg/kg/day)	6.6E-07	NA	NA	NA	NA	NA
				Tetrachloroethene	5.2E-01	mg/kg	3.3E-07	mg/kg/day	5.4E-01	1/(mg/kg/day)	1.8E-07	NA	NA	NA	NA	NA
				Trichloroethene	5.4E-01	mg/kg	3.4E-07	mg/kg/day	4.0E-01	1/(mg/kg/day)	1.4E-07	NA	NA	NA	NA	NA
				m-Xylene	4.5E+01	mg/kg	2.9E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				p,o-Xylene	4.9E+01	mg/kg	3.1E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	3.0E+02	mg/kg	1.9E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Methylphenol	1.3E+02	mg/kg	8.5E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Nitroaniline	1.2E+01	mg/kg	7.5E-06	mg/kg/day	2.1E-02	1/(mg/kg/day)	1.6E-07	NA	NA	NA	NA	NA
				Acenaphthene	2.4E+02	mg/kg	1.6E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	3.3E+02	mg/kg	2.1E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.7E-04	NA	NA	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	1.9E-04	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.1E-03	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	2.2E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.2E-04	NA	NA	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	1.0E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+02	mg/kg	1.0E-04	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.4E-05	NA	NA	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	8.8E-05	mg/kg/day	2.0E-02	1/(mg/kg/day)	1.8E-06	NA	NA	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	2.0E-04	mg/kg/day	7.3E-03	1/(mg/kg/day)	6.5E-06	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	3.8E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.2E-03	NA	NA	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	1.3E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	5.2E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	3.3E+02	mg/kg	2.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	1.1E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.4E-04	NA	NA	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	5.8E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	1.1E+03	mg/kg	6.7E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	6.4E+02	mg/kg	4.0E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								1.1E-02					0.0E+00

TABLE 7.7.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Dermal	Aluminum	7.6E+03	mg/kg	5.4E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Antimony	1.7E+02	mg/kg	1.2E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	1.5E+03	mg/kg	3.2E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	4.8E-05	NA	NA	NA	NA	NA
				Cadmium	1.0E+01	mg/kg	7.2E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Chromium	1.9E+01	mg/kg	1.3E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Copper	6.2E+03	mg/kg	4.4E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	2.6E+05	mg/kg	1.8E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	1.3E+03	mg/kg	9.1E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	3.1E+02	mg/kg	2.2E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	8.2E+00	mg/kg	5.8E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	8.2E+01	mg/kg	5.9E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Zinc	3.8E+03	mg/kg	2.7E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	3.0E+01	mg/kg	2.1E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Heptachlor	3.5E-01	mg/kg	2.5E-09	mg/kg/day	4.5E+00	1/(mg/kg/day)	1.1E-08	NA	NA	NA	NA	NA
				Aroclor-1242	3.2E+00	mg/kg	3.2E-07	mg/kg/day	2.0E+00	1/(mg/kg/day)	6.4E-07	NA	NA	NA	NA	NA
				Aroclor-1260	1.6E+00	mg/kg	1.6E-07	mg/kg/day	2.0E+00	1/(mg/kg/day)	3.2E-07	NA	NA	NA	NA	NA
				Benzene	1.9E+01	mg/kg	1.4E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	7.4E-09	NA	NA	NA	NA	NA
				Tetrachloroethene	5.2E-01	mg/kg	3.7E-09	mg/kg/day	5.4E-01	1/(mg/kg/day)	2.0E-09	NA	NA	NA	NA	NA
				Trichloroethene	5.4E-01	mg/kg	3.8E-09	mg/kg/day	4.0E-01	1/(mg/kg/day)	1.5E-09	NA	NA	NA	NA	NA
				m-Xylene	4.5E+01	mg/kg	3.2E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				p,o-Xylene	4.9E+01	mg/kg	3.5E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	3.0E+02	mg/kg	2.1E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Methylphenol	1.3E+02	mg/kg	9.5E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Nitroaniline	1.2E+01	mg/kg	8.4E-08	mg/kg/day	2.1E-02	1/(mg/kg/day)	1.8E-09	NA	NA	NA	NA	NA
				Acenaphthene	2.4E+02	mg/kg	2.3E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	3.3E+02	mg/kg	3.0E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	9.1E-05	NA	NA	NA	NA	NA
				Benzo(a)pyrene	3.0E+02	mg/kg	2.8E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	8.3E-04	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	3.5E+02	mg/kg	3.3E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	9.6E-05	NA	NA	NA	NA	NA
				Benzo(g,h,i)perylene	1.6E+02	mg/kg	1.5E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+02	mg/kg	1.5E-05	mg/kg/day	7.3E-02	1/(mg/kg/day)	4.5E-06	NA	NA	NA	NA	NA
				Carbazole	1.4E+02	mg/kg	9.9E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	2.0E-08	NA	NA	NA	NA	NA
				Chrysene	3.2E+02	mg/kg	2.9E-05	mg/kg/day	7.3E-03	1/(mg/kg/day)	8.8E-07	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	6.0E+01	mg/kg	5.5E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.7E-04	NA	NA	NA	NA	NA
				Dibenzofuran	2.0E+02	mg/kg	1.4E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	8.2E+02	mg/kg	7.6E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	3.3E+02	mg/kg	3.1E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.7E+02	mg/kg	1.5E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.6E-05	NA	NA	NA	NA	NA
				Naphthalene	9.1E+02	mg/kg	8.5E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	1.1E+03	mg/kg	7.5E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	6.4E+02	mg/kg	5.9E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								1.3E-03					0.0E+00
		Exposure Point Total									1.2E-02					0.0E+00
	Exposure Medium Total										1.2E-02					0.0E+00

TABLE 7.7.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	9.2E-06	mg/m3	8.3E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Antimony	2.1E-07	mg/m3	1.9E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	1.8E-06	mg/m3	1.6E-07	mg/kg/day	1.5E+01	1/(mg/kg/day)	2.5E-06	NA	NA	NA	NA	NA
				Cadmium	1.2E-08	mg/m3	1.1E-09	mg/kg/day	6.3E+00	1/(mg/kg/day)	7.0E-09	NA	NA	NA	NA	NA
				Chromium	2.3E-08	mg/m3	2.0E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	8.6E-08	NA	NA	NA	NA	NA
				Copper	7.5E-06	mg/m3	6.7E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	3.1E-04	mg/m3	2.8E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	1.5E-06	mg/m3	1.4E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	3.7E-07	mg/m3	3.3E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	9.9E-09	mg/m3	9.0E-10	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	9.9E-08	mg/m3	9.0E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Zinc	4.6E-06	mg/m3	4.2E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	3.6E-08	mg/m3	3.2E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Heptachlor	4.2E-10	mg/m3	3.8E-11	mg/kg/day	4.6E+00	1/(mg/kg/day)	1.7E-10	NA	NA	NA	NA	NA
				Aroclor-1242	3.9E-09	mg/m3	3.5E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	1.2E-10	NA	NA	NA	NA	NA
				Aroclor-1260	1.9E-09	mg/m3	1.7E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	6.1E-11	NA	NA	NA	NA	NA
				Benzene	8.3E-03	mg/m3	7.5E-04	mg/kg/day	2.7E-02	1/(mg/kg/day)	2.1E-05	NA	NA	NA	NA	NA
				Tetrachloroethene	2.0E-04	mg/m3	1.8E-05	mg/kg/day	2.1E-02	1/(mg/kg/day)	3.7E-07	NA	NA	NA	NA	NA
				Trichloroethene	2.5E-04	mg/m3	2.3E-05	mg/kg/day	4.0E-01	1/(mg/kg/day)	9.2E-06	NA	NA	NA	NA	NA
				m-Xylene	1.3E-02	mg/m3	1.1E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				p,o-Xylene	1.2E-02	mg/m3	1.1E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	8.6E-04	mg/m3	7.7E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Methylphenol	1.6E-07	mg/m3	1.5E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				4-Nitroaniline	1.4E-08	mg/m3	1.3E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Acenaphthene	3.0E-07	mg/m3	2.7E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	4.0E-07	mg/m3	3.6E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.3E-08	NA	NA	NA	NA	NA
				Benzo(a)pyrene	3.6E-07	mg/m3	3.3E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.2E-07	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-07	mg/m3	3.9E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.4E-08	NA	NA	NA	NA	NA
				Benzo(g,h,i)perylene	2.0E-07	mg/m3	1.8E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	2.0E-07	mg/m3	1.8E-08	mg/kg/day	3.1E-02	1/(mg/kg/day)	6.4E-10	NA	NA	NA	NA	NA
				Carbazole	1.7E-07	mg/m3	1.5E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Chrysene	3.8E-07	mg/m3	3.5E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	7.2E-08	mg/m3	6.5E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	2.4E-08	NA	NA	NA	NA	NA
				Dibenzofuran	2.4E-07	mg/m3	2.2E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	9.9E-07	mg/m3	9.0E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	1.3E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.0E-07	mg/m3	1.8E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	6.6E-09	NA	NA	NA	NA	NA
				Naphthalene	2.6E-02	mg/m3	2.3E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	8.9E-02	mg/m3	8.1E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	2.3E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								3.3E-05					0.0E+00
		Exposure Point Total									3.3E-05					0.0E+00
	Exposure Medium Total										3.3E-05					0.0E+00
Soil Total											1.2E-02					0.0E+00
Receptor Total											1.2E-02					0.0E+00

[1]Consistent with the Cancer Guidelines and Supplemental Guidance (EPA, 2005a and 2005b), Benzo(a)pyrene and Dibenz(a,h)anthracene are evaluated based on their mutagenic mode of action.

TABLE 7.9.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	Edgewater Enterprises Subsurface Soil (0 - 10 ft)	Ingestion	Aluminum	1.19E+04	mg/kg	1.5E-04	mg/kg/day	NA	NA	NA	1.0E-02	mg/kg/day	1.0E+00	mg/kg/day	1.0E-02
				Antimony	2.55E+01	mg/kg	3.1E-07	mg/kg/day	NA	NA	NA	2.2E-05	mg/kg/day	4.0E-04	mg/kg/day	5.5E-02
				Arsenic	4.01E+02	mg/kg	4.9E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	7.4E-06	3.4E-04	mg/kg/day	3.0E-04	mg/kg/day	1.1E+00
				Barium	2.09E+02	mg/kg	2.6E-06	mg/kg/day	NA	NA	NA	1.8E-04	mg/kg/day	7.0E-02	mg/kg/day	2.6E-03
				Cadmium	1.83E+00	mg/kg	2.2E-08	mg/kg/day	NA	NA	NA	1.6E-06	mg/kg/day	1.0E-03	mg/kg/day	1.6E-03
				Chromium	3.46E+01	mg/kg	4.2E-07	mg/kg/day	NA	NA	NA	3.0E-05	mg/kg/day	2.0E-02	mg/kg/day	1.5E-03
				Copper	7.58E+02	mg/kg	9.3E-06	mg/kg/day	NA	NA	NA	6.5E-04	mg/kg/day	4.0E-02	mg/kg/day	1.6E-02
				Iron	5.43E+04	mg/kg	6.7E-04	mg/kg/day	NA	NA	NA	4.7E-02	mg/kg/day	3.0E-01	mg/kg/day	1.6E-01
				Lead	2.74E+03	mg/kg	3.4E-05	mg/kg/day	NA	NA	NA	2.4E-03	mg/kg/day	NA	NA	NA
				Manganese	2.76E+02	mg/kg	3.4E-06	mg/kg/day	NA	NA	NA	2.4E-04	mg/kg/day	1.4E-01	mg/kg/day	1.7E-03
				Selenium	2.05E+01	mg/kg	2.5E-07	mg/kg/day	NA	NA	NA	1.8E-05	mg/kg/day	5.0E-03	mg/kg/day	3.5E-03
				Silver	5.98E+00	mg/kg	7.3E-08	mg/kg/day	NA	NA	NA	5.1E-06	mg/kg/day	5.0E-03	mg/kg/day	1.0E-03
				Thallium	7.11E+00	mg/kg	8.7E-08	mg/kg/day	NA	NA	NA	6.1E-06	mg/kg/day	6.6E-05	mg/kg/day	9.2E-02
				Vanadium	4.24E+01	mg/kg	5.2E-07	mg/kg/day	NA	NA	NA	3.6E-05	mg/kg/day	7.0E-03	mg/kg/day	5.2E-03
				Zinc	5.75E+02	mg/kg	7.0E-06	mg/kg/day	NA	NA	NA	4.9E-04	mg/kg/day	3.0E-01	mg/kg/day	1.6E-03
				Mercury	4.74E+01	mg/kg	5.8E-07	mg/kg/day	NA	NA	NA	4.1E-05	mg/kg/day	3.0E-03	mg/kg/day	1.4E-02
				Aroclor-1254	2.31E-01	mg/kg	2.8E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	5.7E-09	2.0E-07	mg/kg/day	5.0E-05	mg/kg/day	4.0E-03
				1,2,4-Trimethylbenzene	2.95E+01	mg/kg	3.6E-07	mg/kg/day	NA	NA	NA	2.5E-05	mg/kg/day	5.0E-02	mg/kg/day	5.0E-04
				2-Chlorotoluene	2.70E+01	mg/kg	3.3E-07	mg/kg/day	NA	NA	NA	2.3E-05	mg/kg/day	2.0E-01	mg/kg/day	1.2E-04
				Benzene	1.80E+00	mg/kg	2.2E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.2E-09	1.5E-06	mg/kg/day	4.0E-03	mg/kg/day	3.8E-04
				Tetrachloroethene	4.14E-01	mg/kg	5.1E-09	mg/kg/day	5.4E-01	1/(mg/kg/day)	2.7E-09	3.5E-07	mg/kg/day	1.0E-01	mg/kg/day	3.5E-06
				Xylene (Total)	3.39E+01	mg/kg	4.2E-07	mg/kg/day	NA	NA	NA	2.9E-05	mg/kg/day	2.0E-01	mg/kg/day	1.5E-04
				2-Methylnaphthalene	1.86E+02	mg/kg	2.3E-06	mg/kg/day	NA	NA	NA	1.6E-04	mg/kg/day	4.0E-03	mg/kg/day	4.0E-02
				Acenaphthene	1.24E+02	mg/kg	1.5E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	6.0E-01	mg/kg/day	1.8E-04
				Benzo(a)anthracene	3.67E+01	mg/kg	4.5E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.3E-07	3.1E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.75E+01	mg/kg	3.4E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.5E-06	2.4E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.78E+01	mg/kg	3.4E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.5E-07	2.4E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.73E+01	mg/kg	2.1E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	1.5E-08	1.5E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.07E+01	mg/kg	1.3E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	2.6E-09	9.2E-06	mg/kg/day	NA	NA	NA
				Chrysene	3.77E+01	mg/kg	4.6E-07	mg/kg/day	7.3E-03	1/(mg/kg/day)	3.4E-09	3.2E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.89E+00	mg/kg	4.8E-08	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.5E-07	3.3E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	7.93E+01	mg/kg	9.7E-07	mg/kg/day	NA	NA	NA	6.8E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	1.17E+02	mg/kg	1.4E-06	mg/kg/day	NA	NA	NA	1.0E-04	mg/kg/day	4.0E-01	mg/kg/day	2.5E-04
				Fluorene	1.14E+02	mg/kg	1.4E-06	mg/kg/day	NA	NA	NA	9.8E-05	mg/kg/day	4.0E-01	mg/kg/day	2.4E-04
				Indeno(1,2,3-c,d)pyrene	1.18E+01	mg/kg	1.4E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.1E-07	1.0E-05	mg/kg/day	NA	NA	NA
				Naphthalene	4.58E+02	mg/kg	5.6E-06	mg/kg/day	NA	NA	NA	3.9E-04	mg/kg/day	2.0E-02	mg/kg/day	2.0E-02
				Pyrene	8.94E+01	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	7.7E-05	mg/kg/day	3.0E-01	mg/kg/day	2.6E-04
			Exp. Route Total								1.1E-05					1.6E+00

TABLE 7.9.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	Edgewater Enterprises Subsurface Soil (0 - 10 ft)	Dermal	Aluminum	1.2E+04	mg/kg	1.4E-06	mg/kg/day	NA	NA	NA	1.0E-04	mg/kg/day	1.0E+00	mg/kg/day	1.0E-04
				Antimony	2.6E+01	mg/kg	3.1E-09	mg/kg/day	NA	NA	NA	2.2E-07	mg/kg/day	6.0E-05	mg/kg/day	3.6E-03
				Arsenic	4.0E+02	mg/kg	1.5E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.2E-06	1.0E-04	mg/kg/day	3.0E-04	mg/kg/day	3.4E-01
				Barium	2.1E+02	mg/kg	2.5E-08	mg/kg/day	NA	NA	NA	1.8E-06	mg/kg/day	4.9E-03	mg/kg/day	3.6E-04
				Cadmium	1.8E+00	mg/kg	2.2E-10	mg/kg/day	NA	NA	NA	1.5E-08	mg/kg/day	2.5E-05	mg/kg/day	6.2E-04
				Chromium	3.5E+01	mg/kg	4.2E-09	mg/kg/day	NA	NA	NA	2.9E-07	mg/kg/day	5.0E-04	mg/kg/day	5.9E-04
				Copper	7.6E+02	mg/kg	9.2E-08	mg/kg/day	NA	NA	NA	6.4E-06	mg/kg/day	4.0E-02	mg/kg/day	1.6E-04
				Iron	5.4E+04	mg/kg	6.6E-06	mg/kg/day	NA	NA	NA	4.6E-04	mg/kg/day	3.0E-01	mg/kg/day	1.5E-03
				Lead	2.7E+03	mg/kg	3.3E-07	mg/kg/day	NA	NA	NA	2.3E-05	mg/kg/day	NA	NA	NA
				Manganese	2.8E+02	mg/kg	3.3E-08	mg/kg/day	NA	NA	NA	2.3E-06	mg/kg/day	5.6E-03	mg/kg/day	4.2E-04
				Selenium	2.1E+01	mg/kg	2.5E-09	mg/kg/day	NA	NA	NA	1.7E-07	mg/kg/day	5.0E-03	mg/kg/day	3.5E-05
				Silver	6.0E+00	mg/kg	7.2E-10	mg/kg/day	NA	NA	NA	5.1E-08	mg/kg/day	2.0E-04	mg/kg/day	2.5E-04
				Thallium	7.1E+00	mg/kg	8.6E-10	mg/kg/day	NA	NA	NA	6.0E-08	mg/kg/day	6.6E-05	mg/kg/day	9.1E-04
				Vanadium	4.2E+01	mg/kg	5.1E-09	mg/kg/day	NA	NA	NA	3.6E-07	mg/kg/day	1.8E-04	mg/kg/day	2.0E-03
				Zinc	5.7E+02	mg/kg	7.0E-08	mg/kg/day	NA	NA	NA	4.9E-06	mg/kg/day	3.0E-01	mg/kg/day	1.6E-05
				Mercury	4.7E+01	mg/kg	5.8E-09	mg/kg/day	NA	NA	NA	4.0E-07	mg/kg/day	2.1E-04	mg/kg/day	1.9E-03
				Aroclor-1254	2.3E-01	mg/kg	3.9E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	7.8E-09	2.7E-07	mg/kg/day	5.0E-05	mg/kg/day	5.5E-03
				1,2,4-Trimethylbenzene	2.9E+01	mg/kg	3.6E-08	mg/kg/day	NA	NA	NA	2.5E-06	mg/kg/day	5.0E-02	mg/kg/day	5.0E-05
				2-Chlorotoluene	2.7E+01	mg/kg	3.3E-08	mg/kg/day	NA	NA	NA	2.3E-06	mg/kg/day	2.0E-01	mg/kg/day	1.1E-05
				Benzene	1.8E+00	mg/kg	2.2E-09	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.2E-10	1.5E-07	mg/kg/day	4.0E-03	mg/kg/day	3.8E-05
				Tetrachloroethene	4.1E-01	mg/kg	5.0E-10	mg/kg/day	5.4E-01	1/(mg/kg/day)	2.7E-10	3.5E-08	mg/kg/day	1.0E-01	mg/kg/day	3.5E-07
				Xylene (Total)	3.4E+01	mg/kg	4.1E-08	mg/kg/day	NA	NA	NA	2.9E-06	mg/kg/day	2.0E-01	mg/kg/day	1.4E-05
				2-Methylnaphthalene	1.9E+02	mg/kg	2.3E-07	mg/kg/day	NA	NA	NA	1.6E-05	mg/kg/day	4.0E-03	mg/kg/day	3.9E-03
				Acenaphthene	1.2E+02	mg/kg	1.9E-06	mg/kg/day	NA	NA	NA	1.4E-04	mg/kg/day	6.0E-01	mg/kg/day	2.3E-04
				Benzo(a)anthracene	3.7E+01	mg/kg	5.8E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.2E-07	4.0E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.7E+01	mg/kg	4.3E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.2E-06	3.0E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.8E+01	mg/kg	4.4E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.2E-07	3.1E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.7E+01	mg/kg	2.7E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	2.0E-08	1.9E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.1E+01	mg/kg	1.3E-08	mg/kg/day	2.0E-02	1/(mg/kg/day)	2.6E-10	9.1E-07	mg/kg/day	NA	NA	NA
				Chrysene	3.8E+01	mg/kg	5.9E-07	mg/kg/day	7.3E-03	1/(mg/kg/day)	4.3E-09	4.2E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.9E+00	mg/kg	6.1E-08	mg/kg/day	7.3E+00	1/(mg/kg/day)	4.5E-07	4.3E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	7.9E+01	mg/kg	9.6E-08	mg/kg/day	NA	NA	NA	6.7E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	1.2E+02	mg/kg	1.9E-06	mg/kg/day	NA	NA	NA	1.3E-04	mg/kg/day	4.0E-01	mg/kg/day	3.2E-04
				Fluorene	1.1E+02	mg/kg	1.8E-06	mg/kg/day	NA	NA	NA	1.3E-04	mg/kg/day	4.0E-01	mg/kg/day	3.1E-04
				Indeno(1,2,3-c,d)pyrene	1.2E+01	mg/kg	1.9E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.4E-07	1.3E-05	mg/kg/day	NA	NA	NA
				Naphthalene	4.6E+02	mg/kg	7.2E-06	mg/kg/day	NA	NA	NA	5.1E-04	mg/kg/day	2.0E-02	mg/kg/day	2.5E-02
				Pyrene	8.9E+01	mg/kg	1.4E-06	mg/kg/day	NA	NA	NA	9.9E-05	mg/kg/day	3.0E-01	mg/kg/day	3.3E-04
			Exp. Route Total								6.7E-06					3.9E-01
		Exposure Point Total									1.8E-05					2.0E+00
	Exposure Medium Total										1.8E-05					2.0E+00

TABLE 7.9.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Edgewater Enterprises Emissions from Subsurface Soil (0 - 10 ft)	Inhalation	Aluminum	6.6E-04	mg/m3	8.0E-07	mg/kg/day	NA	NA	NA	5.6E-05	mg/kg/day	1.4E-03	mg/kg/day	3.9E-02
				Antimony	1.4E-06	mg/m3	1.7E-09	mg/kg/day	NA	NA	NA	1.2E-07	mg/kg/day	NA	NA	NA
				Arsenic	2.2E-05	mg/m3	2.7E-08	mg/kg/day	1.5E+01	1/(mg/kg/day)	4.1E-07	1.9E-06	mg/kg/day	NA	NA	NA
				Barium	1.2E-05	mg/m3	1.4E-08	mg/kg/day	NA	NA	NA	9.9E-07	mg/kg/day	1.4E-03	mg/kg/day	6.9E-04
				Cadmium	1.0E-07	mg/m3	1.2E-10	mg/kg/day	6.3E+00	1/(mg/kg/day)	7.8E-10	8.7E-09	mg/kg/day	NA	NA	NA
				Chromium	1.9E-06	mg/m3	2.3E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	9.8E-08	1.6E-07	mg/kg/day	2.9E-05	mg/kg/day	5.7E-03
				Copper	4.2E-05	mg/m3	5.1E-08	mg/kg/day	NA	NA	NA	3.6E-06	mg/kg/day	NA	NA	NA
				Iron	3.0E-03	mg/m3	3.7E-06	mg/kg/day	NA	NA	NA	2.6E-04	mg/kg/day	NA	NA	NA
				Lead	1.5E-04	mg/m3	1.9E-07	mg/kg/day	NA	NA	NA	1.3E-05	mg/kg/day	NA	NA	NA
				Manganese	1.5E-05	mg/m3	1.9E-08	mg/kg/day	NA	NA	NA	1.3E-06	mg/kg/day	1.4E-05	mg/kg/day	9.2E-02
				Selenium	1.1E-06	mg/m3	1.4E-09	mg/kg/day	NA	NA	NA	9.7E-08	mg/kg/day	NA	NA	NA
				Silver	3.3E-07	mg/m3	4.1E-10	mg/kg/day	NA	NA	NA	2.8E-08	mg/kg/day	NA	NA	NA
				Thallium	3.9E-07	mg/m3	4.8E-10	mg/kg/day	NA	NA	NA	3.4E-08	mg/kg/day	NA	NA	NA
				Vanadium	2.3E-06	mg/m3	2.9E-09	mg/kg/day	NA	NA	NA	2.0E-07	mg/kg/day	NA	NA	NA
				Zinc	3.2E-05	mg/m3	3.9E-08	mg/kg/day	NA	NA	NA	2.7E-06	mg/kg/day	NA	NA	NA
				Mercury	2.6E-06	mg/m3	3.2E-09	mg/kg/day	NA	NA	NA	2.2E-07	mg/kg/day	8.6E-05	mg/kg/day	2.6E-03
				Aroclor-1254	1.3E-08	mg/m3	1.6E-11	mg/kg/day	3.5E-01	1/(mg/kg/day)	5.5E-12	1.1E-09	mg/kg/day	NA	NA	NA
				1,2,4-Trimethylbenzene	1.8E-03	mg/m3	2.2E-06	mg/kg/day	NA	NA	NA	1.6E-04	mg/kg/day	1.7E-03	mg/kg/day	9.2E-02
				2-Chlorotoluene	5.9E-03	mg/m3	7.2E-06	mg/kg/day	NA	NA	NA	5.0E-04	mg/kg/day	NA	NA	NA
				Benzene	7.9E-04	mg/m3	9.7E-07	mg/kg/day	2.7E-02	1/(mg/kg/day)	2.6E-08	6.8E-05	mg/kg/day	8.6E-03	mg/kg/day	7.9E-03
				Tetrachloroethene	1.6E-04	mg/m3	1.9E-07	mg/kg/day	2.1E-02	1/(mg/kg/day)	4.0E-09	1.4E-05	mg/kg/day	1.0E-02	mg/kg/day	1.4E-03
				Xylene (Total)	8.2E-03	mg/m3	1.0E-05	mg/kg/day	NA	NA	NA	7.0E-04	mg/kg/day	2.9E-02	mg/kg/day	2.4E-02
				2-Methylnaphthalene	5.4E-04	mg/m3	6.6E-07	mg/kg/day	NA	NA	NA	4.6E-05	mg/kg/day	NA	NA	NA
				Acenaphthene	6.8E-06	mg/m3	8.4E-09	mg/kg/day	NA	NA	NA	5.9E-07	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.0E-06	mg/m3	2.5E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	7.6E-10	1.7E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.5E-06	mg/m3	1.9E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	5.7E-09	1.3E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.5E-06	mg/m3	1.9E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	5.8E-10	1.3E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	9.6E-07	mg/m3	1.2E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	3.6E-11	8.2E-08	mg/kg/day	NA	NA	NA
				Carbazole	5.9E-07	mg/m3	7.3E-10	mg/kg/day	NA	NA	NA	5.1E-08	mg/kg/day	NA	NA	NA
				Chrysene	2.1E-06	mg/m3	2.6E-09	mg/kg/day	NA	NA	NA	1.8E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.2E-07	mg/m3	2.6E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	8.1E-10	1.8E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	4.4E-06	mg/m3	5.4E-09	mg/kg/day	NA	NA	NA	3.8E-07	mg/kg/day	NA	NA	NA
				Fluoranthene	6.5E-06	mg/m3	8.0E-09	mg/kg/day	NA	NA	NA	5.6E-07	mg/kg/day	NA	NA	NA
				Fluorene	5.2E-04	mg/m3	6.3E-07	mg/kg/day	NA	NA	NA	4.4E-05	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	6.5E-07	mg/m3	8.0E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	2.5E-10	5.6E-08	mg/kg/day	NA	NA	NA
				Naphthalene	1.3E-02	mg/m3	1.6E-05	mg/kg/day	NA	NA	NA	1.1E-03	mg/kg/day	8.6E-04	mg/kg/day	1.3E+00
				Pyrene	4.1E-05	mg/m3	5.0E-08	mg/kg/day	NA	NA	NA	3.5E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								5.5E-07					1.6E+00
		Exposure Point Total									5.5E-07					1.6E+00
	Exposure Medium Total										5.5E-07					1.6E+00
Soil Total											1.8E-05					3.5E+00

TABLE 7.9.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater (Excavation)	Edgewater Enterprises (Excavation)	Dermal	Arsenic	1.3E+05	ug/L	9.7E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.5E-05	6.8E-04	mg/kg/day	3.0E-04	mg/kg/day	2.3E+00
				Iron	3.7E+05	ug/L	2.8E-05	mg/kg/day	NA	NA	NA	2.0E-03	mg/kg/day	3.0E-01	mg/kg/day	6.6E-03
				Lead	4.1E+03	ug/L	3.2E-07	mg/kg/day	NA	NA	NA	2.2E-05	mg/kg/day	NA	NA	NA
				1,1-Dichloroethane	1.2E+02	ug/L	7.3E-08	mg/kg/day	NA	NA	NA	5.1E-06	mg/kg/day	1.0E+00	mg/kg/day	5.1E-06
				1,2-Dichloroethane	2.9E+00	ug/L	1.1E-09	mg/kg/day	9.1E-02	1/(mg/kg/day)	1.0E-10	7.7E-08	mg/kg/day	2.0E-02	mg/kg/day	3.9E-06
				1,2-Dichloropropane	3.0E-01	ug/L	2.2E-10	mg/kg/day	6.8E-02	1/(mg/kg/day)	1.5E-11	1.5E-08	mg/kg/day	NA	NA	NA
				Benzene	3.1E+01	ug/L	3.9E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.2E-09	2.8E-06	mg/kg/day	4.0E-03	mg/kg/day	6.9E-04
				Chloroethane	8.0E+00	ug/L	4.1E-09	mg/kg/day	2.9E-03	1/(mg/kg/day)	1.2E-11	2.9E-07	mg/kg/day	4.0E-01	mg/kg/day	7.3E-07
				Chloroform	1.7E+00	ug/L	1.1E-09	mg/kg/day	NA	NA	NA	7.7E-08	mg/kg/day	1.0E-02	mg/kg/day	7.7E-06
				cis-1,2-Dichloroethene	6.2E+00	ug/L	4.3E-09	mg/kg/day	NA	NA	NA	3.0E-07	mg/kg/day	1.0E-01	mg/kg/day	3.0E-06
				Tetrachloroethene	8.1E-01	ug/L	2.9E-09	mg/kg/day	5.4E-01	1/(mg/kg/day)	1.6E-09	2.0E-07	mg/kg/day	1.0E-01	mg/kg/day	2.0E-06
				Trichloroethene	6.4E-01	ug/L	7.2E-10	mg/kg/day	4.0E-01	1/(mg/kg/day)	2.9E-10	5.1E-08	mg/kg/day	3.0E-04	mg/kg/day	1.7E-04
				Vinyl chloride	4.4E+00	ug/L	2.1E-09	mg/kg/day	7.5E-01	1/(mg/kg/day)	1.6E-09	1.5E-07	mg/kg/day	3.0E-03	mg/kg/day	4.9E-05
				2-Methylnaphthalene	9.2E+01	ug/L	6.1E-07	mg/kg/day	NA	NA	NA	4.3E-05	mg/kg/day	4.0E-03	mg/kg/day	1.1E-02
				Acenaphthene	7.7E+01	ug/L	8.6E-07	mg/kg/day	NA	NA	NA	6.0E-05	mg/kg/day	6.0E-01	mg/kg/day	1.0E-04
				Benzo(a)anthracene	2.0E-01	ug/L	1.5E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.1E-08	1.0E-06	mg/kg/day	NA	NA	NA
				Carbazole	1.6E+01	ug/L	5.0E-08	mg/kg/day	2.0E-02	1/(mg/kg/day)	9.9E-10	3.5E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.5E+01	ug/L	2.9E-07	mg/kg/day	NA	NA	NA	2.0E-05	mg/kg/day	NA	NA	NA
				Fluorene	3.6E+01	ug/L	3.4E-08	mg/kg/day	NA	NA	NA	2.4E-06	mg/kg/day	4.0E-01	mg/kg/day	6.0E-06
				Naphthalene	1.2E+03	ug/L	5.0E-06	mg/kg/day	NA	NA	NA	3.5E-04	mg/kg/day	2.0E-02	mg/kg/day	1.8E-02
			Exp. Route Total								1.5E-05					2.3E+00
		Exposure Point Total									1.5E-05					2.3E+00
	Exposure Medium Total										1.5E-05					2.3E+00
Groundwater	Ambient Air (Excavation)	Edgewater Enterprises (Excavation)	Inhalation	1,1-Dichloroethane	5.3E-03	mg/m3	4.4E-07	mg/kg/day	NA	NA	NA	3.1E-05	mg/kg/day	1.4E+00	mg/kg/day	2.2E-05
				1,2-Dichloroethane	1.2E-04	mg/m3	1.0E-08	mg/kg/day	9.1E-02	1/(mg/kg/day)	9.2E-10	7.1E-07	mg/kg/day	1.4E-03	mg/kg/day	5.0E-04
				1,2-Dichloropropane	1.2E-05	mg/m3	9.8E-10	mg/kg/day	NA	NA	NA	6.9E-08	mg/kg/day	3.7E-03	mg/kg/day	1.8E-05
				Benzene	1.3E-03	mg/m3	1.1E-07	mg/kg/day	2.7E-02	1/(mg/kg/day)	3.0E-09	7.7E-06	mg/kg/day	8.6E-03	mg/kg/day	9.0E-04
				Chloroethane	3.8E-04	mg/m3	3.2E-08	mg/kg/day	NA	NA	NA	2.2E-06	mg/kg/day	2.9E+00	mg/kg/day	7.7E-07
				Chloroform	7.3E-05	mg/m3	6.1E-09	mg/kg/day	8.1E-02	1/(mg/kg/day)	4.9E-10	4.3E-07	mg/kg/day	1.4E-02	mg/kg/day	3.0E-05
				cis-1,2-Dichloroethene	2.9E-04	mg/m3	2.4E-08	mg/kg/day	NA	NA	NA	1.7E-06	mg/kg/day	NA	NA	NA
				Tetrachloroethene	3.0E-05	mg/m3	2.6E-09	mg/kg/day	2.1E-02	1/(mg/kg/day)	5.3E-11	1.8E-07	mg/kg/day	1.0E-02	mg/kg/day	1.8E-05
				Trichloroethene	2.6E-05	mg/m3	2.2E-09	mg/kg/day	4.0E-01	1/(mg/kg/day)	8.7E-10	1.5E-07	mg/kg/day	1.1E-02	mg/kg/day	1.3E-05
				Vinyl chloride	4.7E-05	mg/m3	3.9E-09	mg/kg/day	1.5E-02	1/(mg/kg/day)	6.0E-11	2.7E-07	mg/kg/day	2.9E-02	mg/kg/day	9.6E-06
				2-Methylnaphthalene	8.8E-04	mg/m3	7.4E-08	mg/kg/day	NA	NA	NA	5.2E-06	mg/kg/day	NA	NA	NA
				Acenaphthene	2.2E-03	mg/m3	1.9E-07	mg/kg/day	NA	NA	NA	1.3E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.8E-04	mg/m3	3.2E-08	mg/kg/day	NA	NA	NA	2.3E-06	mg/kg/day	NA	NA	NA
				Fluorene	9.3E-04	mg/m3	7.8E-08	mg/kg/day	NA	NA	NA	5.5E-06	mg/kg/day	NA	NA	NA
				Naphthalene	4.0E-02	mg/m3	3.4E-06	mg/kg/day	NA	NA	NA	2.3E-04	mg/kg/day	8.6E-04	mg/kg/day	2.7E-01
			Exp. Route Total								5.4E-09					2.8E-01
		Exposure Point Total									5.4E-09					2.8E-01
	Exposure Medium Total										5.4E-09					2.8E-01
Groundwater Total											1.5E-05					2.6E+00
Receptor Total											3.3E-05					6.1E+00

NA = Not applicable.

TABLE 7.14.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Daycare Child
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Ingestion	Arsenic	1.3E+01	mg/kg	5.1E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	7.6E-06	5.9E-05	mg/kg/day	3.0E-04	mg/kg/day	2.0E-01
				Chromium	1.0E+02	mg/kg	4.0E-05	mg/kg/day	NA	NA	NA	4.6E-04	mg/kg/day	3.0E-03	mg/kg/day	1.5E-01
				Lead	5.6E+02	mg/kg	2.2E-04	mg/kg/day	NA	NA	NA	2.5E-03	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	1.1E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.4E-05	1.3E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	9.8E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.1E-04	1.1E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	1.2E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.6E-05	1.4E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	6.3E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	1.4E-06	7.3E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	1.8E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.9E-05	2.1E-05	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	5.9E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.3E-05	6.8E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	4.7E-06	mg/kg/day	NA	NA	NA	5.5E-05	mg/kg/day	2.0E-02	mg/kg/day	2.7E-03
			Exp. Route Total								3.3E-04					3.5E-01

TABLE 7.14.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Daycare Child
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Dermal	Arsenic	1.3E+01	mg/kg	8.5E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.3E-06	1.0E-05	mg/kg/day	3.0E-04	mg/kg/day	3.3E-02
				Chromium	1.0E+02	mg/kg	2.2E-07	mg/kg/day	NA	NA	NA	2.6E-06	mg/kg/day	7.5E-05	mg/kg/day	3.4E-02
				Lead	5.6E+02	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	1.4E-05	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	8.0E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.7E-06	9.3E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	7.1E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.0E-05	8.3E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	8.8E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.4E-06	1.0E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	4.6E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.8E-07	5.3E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	1.3E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.1E-05	1.5E-05	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	4.3E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.6E-06	5.0E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	3.4E-06	mg/kg/day	NA	NA	NA	4.0E-05	mg/kg/day	2.0E-02	mg/kg/day	2.0E-03
			Exp. Route Total								9.0E-05					7.0E-02
		Exposure Point Total									4.1E-04					4.2E-01
	Exposure Medium Total										4.1E-04					4.2E-01

TABLE 7.14.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Daycare Child
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Inhalation	Arsenic	1.6E-08	mg/m3	2.6E-10	mg/kg/day	1.5E+01	1/(mg/kg/day)	3.9E-09	3.0E-09	mg/kg/day	NA	NA	NA
				Chromium	1.2E-07	mg/m3	2.0E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	8.4E-08	2.3E-08	mg/kg/day	2.9E-05	mg/kg/day	8.2E-04
				Lead	6.7E-07	mg/m3	1.1E-08	mg/kg/day	NA	NA	NA	1.3E-07	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	3.4E-08	mg/m3	5.6E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	9.1E-10	6.5E-09	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E-08	mg/m3	5.0E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	8.2E-09	5.8E-09	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.7E-08	mg/m3	6.2E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.0E-09	7.2E-09	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.9E-08	mg/m3	3.2E-10	mg/kg/day	3.1E-02	1/(mg/kg/day)	5.2E-11	3.7E-09	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	5.6E-09	mg/m3	9.1E-11	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.5E-09	1.1E-09	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.8E-08	mg/m3	3.0E-10	mg/kg/day	3.1E-01	1/(mg/kg/day)	4.9E-10	3.5E-09	mg/kg/day	NA	NA	NA
				Naphthalene	3.4E-04	mg/m3	5.6E-06	mg/kg/day	NA	NA	NA	6.5E-05	mg/kg/day	8.6E-04	mg/kg/day	7.6E-02
			Exp. Route Total								1.0E-07					7.7E-02
		Exposure Point Total									1.0E-07					7.7E-02
	Exposure Medium Total										1.0E-07					7.7E-02
Soil Total											4.1E-04					5.0E-01
Receptor Total											4.1E-04					5.0E-01

[1]Consistent with the Cancer Guidelines and Supplemental Guidance (EPA, 2005a and 2005b). Benzo(a)pyrene and Dibenz(a,h)anthracene are evaluated based on their mutagenic mode of action.

TABLE 7.15.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	115 River Road Subsurface Soil (0 - 10 ft)	Ingestion	Arsenic	2.95E+01	mg/kg	3.6E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	5.4E-07	2.5E-05	mg/kg/day	3.0E-04	mg/kg/day	8.4E-02
				Chromium	1.01E+02	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	8.7E-05	mg/kg/day	2.0E-02	mg/kg/day	4.3E-03
				Iron	4.68E+04	mg/kg	5.7E-04	mg/kg/day	NA	NA	NA	4.0E-02	mg/kg/day	3.0E-01	mg/kg/day	1.3E-01
				Lead	6.27E+02	mg/kg	7.7E-06	mg/kg/day	NA	NA	NA	5.4E-04	mg/kg/day	NA	NA	NA
				Manganese	2.43E+02	mg/kg	3.0E-06	mg/kg/day	NA	NA	NA	2.1E-04	mg/kg/day	1.4E-01	mg/kg/day	1.5E-03
				Vanadium	2.69E+01	mg/kg	3.3E-07	mg/kg/day	NA	NA	NA	2.3E-05	mg/kg/day	7.0E-03	mg/kg/day	3.3E-03
				Mercury	9.30E-01	mg/kg	1.1E-08	mg/kg/day	NA	NA	NA	8.0E-07	mg/kg/day	3.0E-03	mg/kg/day	2.7E-04
				Benzene	2.90E+01	mg/kg	3.6E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.0E-08	2.5E-05	mg/kg/day	4.0E-03	mg/kg/day	6.2E-03
				Toluene	8.90E+01	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	7.6E-05	mg/kg/day	2.0E+00	mg/kg/day	3.8E-05
				Xylene (Total)	2.40E+02	mg/kg	2.9E-06	mg/kg/day	NA	NA	NA	2.1E-04	mg/kg/day	2.0E-01	mg/kg/day	1.0E-03
				2,4-Dinitrotoluene	2.90E+01	mg/kg	3.6E-07	mg/kg/day	NA	NA	NA	2.5E-05	mg/kg/day	2.0E-03	mg/kg/day	1.2E-02
				2-Methylnaphthalene	2.10E+03	mg/kg	2.6E-05	mg/kg/day	NA	NA	NA	1.8E-03	mg/kg/day	4.0E-03	mg/kg/day	4.5E-01
				Acenaphthene	1.30E+03	mg/kg	1.6E-05	mg/kg/day	NA	NA	NA	1.1E-03	mg/kg/day	6.0E-01	mg/kg/day	1.9E-03
				Benzo(a)anthracene	2.47E+02	mg/kg	3.0E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.2E-06	2.1E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.58E+02	mg/kg	1.9E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.4E-05	1.4E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.68E+02	mg/kg	2.1E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.5E-06	1.4E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	6.12E+01	mg/kg	7.5E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	5.5E-08	5.2E-05	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	3.80E+02	mg/kg	4.7E-06	mg/kg/day	NA	NA	NA	3.3E-04	mg/kg/day	5.0E-02	mg/kg/day	6.5E-03
				Carbazole	1.59E+02	mg/kg	1.9E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	3.9E-08	1.4E-04	mg/kg/day	NA	NA	NA
				Chrysene	5.26E+02	mg/kg	6.4E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	4.7E-08	4.5E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.66E+01	mg/kg	3.3E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.4E-06	2.3E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	8.24E+02	mg/kg	1.0E-05	mg/kg/day	NA	NA	NA	7.1E-04	mg/kg/day	NA	NA	NA
				Fluoranthene	6.48E+02	mg/kg	7.9E-06	mg/kg/day	NA	NA	NA	5.6E-04	mg/kg/day	4.0E-01	mg/kg/day	1.4E-03
				Fluorene	1.14E+03	mg/kg	1.4E-05	mg/kg/day	NA	NA	NA	9.8E-04	mg/kg/day	4.0E-01	mg/kg/day	2.5E-03
				Indeno(1,2,3-c,d)pyrene	7.03E+01	mg/kg	8.6E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.3E-07	6.0E-05	mg/kg/day	NA	NA	NA
				Naphthalene	2.43E+03	mg/kg	3.0E-05	mg/kg/day	NA	NA	NA	2.1E-03	mg/kg/day	2.0E-02	mg/kg/day	1.0E-01
				Phenanthrene	2.34E+03	mg/kg	2.9E-05	mg/kg/day	NA	NA	NA	2.0E-03	mg/kg/day	3.0E+00	mg/kg/day	6.7E-04
				Pyrene	5.66E+02	mg/kg	6.9E-06	mg/kg/day	NA	NA	NA	4.9E-04	mg/kg/day	3.0E-01	mg/kg/day	1.6E-03
			Exp. Route Total								2.2E-05					8.2E-01

TABLE 7.15.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	115 River Road Subsurface Soil (0 - 10 ft)	Dermal	Arsenic	3.0E+01	mg/kg	1.1E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.6E-07	7.5E-06	mg/kg/day	3.0E-04	mg/kg/day	2.5E-02
				Chromium	1.0E+02	mg/kg	1.2E-08	mg/kg/day	NA	NA	NA	8.6E-07	mg/kg/day	5.0E-04	mg/kg/day	1.7E-03
				Iron	4.7E+04	mg/kg	5.7E-06	mg/kg/day	NA	NA	NA	4.0E-04	mg/kg/day	3.0E-01	mg/kg/day	1.3E-03
				Lead	6.3E+02	mg/kg	7.6E-08	mg/kg/day	NA	NA	NA	5.3E-06	mg/kg/day	NA	NA	NA
				Manganese	2.4E+02	mg/kg	2.9E-08	mg/kg/day	NA	NA	NA	2.1E-06	mg/kg/day	5.6E-03	mg/kg/day	3.7E-04
				Vanadium	2.7E+01	mg/kg	3.3E-09	mg/kg/day	NA	NA	NA	2.3E-07	mg/kg/day	1.8E-04	mg/kg/day	1.3E-03
				Mercury	9.3E-01	mg/kg	1.1E-10	mg/kg/day	NA	NA	NA	7.9E-09	mg/kg/day	2.1E-04	mg/kg/day	3.8E-05
				Benzene	2.9E+01	mg/kg	3.5E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.9E-09	2.5E-06	mg/kg/day	4.0E-03	mg/kg/day	6.2E-04
				Toluene	8.9E+01	mg/kg	1.1E-07	mg/kg/day	NA	NA	NA	7.6E-06	mg/kg/day	2.0E+00	mg/kg/day	3.8E-06
				Xylene (Total)	2.4E+02	mg/kg	2.9E-07	mg/kg/day	NA	NA	NA	2.0E-05	mg/kg/day	2.0E-01	mg/kg/day	1.0E-04
				2,4-Dinitrotoluene	2.9E+01	mg/kg	3.6E-07	mg/kg/day	NA	NA	NA	2.5E-05	mg/kg/day	2.0E-03	mg/kg/day	1.3E-02
				2-Methylnaphthalene	2.1E+03	mg/kg	2.5E-06	mg/kg/day	NA	NA	NA	1.8E-04	mg/kg/day	4.0E-03	mg/kg/day	4.5E-02
				Acenaphthene	1.3E+03	mg/kg	2.0E-05	mg/kg/day	NA	NA	NA	1.4E-03	mg/kg/day	6.0E-01	mg/kg/day	2.4E-03
				Benzo(a)anthracene	2.5E+02	mg/kg	3.9E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.8E-06	2.7E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.6E+02	mg/kg	2.5E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.8E-05	1.7E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.7E+02	mg/kg	2.6E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.9E-06	1.9E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	6.1E+01	mg/kg	9.6E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	7.0E-08	6.7E-05	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	3.8E+02	mg/kg	4.6E-07	mg/kg/day	NA	NA	NA	3.2E-05	mg/kg/day	5.0E-02	mg/kg/day	6.4E-04
				Carbazole	1.6E+02	mg/kg	1.9E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	3.9E-09	1.3E-05	mg/kg/day	NA	NA	NA
				Chrysene	5.3E+02	mg/kg	8.3E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	6.0E-08	5.8E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.7E+01	mg/kg	4.2E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.1E-06	2.9E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	8.2E+02	mg/kg	1.0E-06	mg/kg/day	NA	NA	NA	7.0E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	6.5E+02	mg/kg	1.0E-05	mg/kg/day	NA	NA	NA	7.2E-04	mg/kg/day	4.0E-01	mg/kg/day	1.8E-03
				Fluorene	1.1E+03	mg/kg	1.8E-05	mg/kg/day	NA	NA	NA	1.3E-03	mg/kg/day	4.0E-01	mg/kg/day	3.2E-03
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	1.1E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.1E-07	7.8E-05	mg/kg/day	NA	NA	NA
				Naphthalene	2.4E+03	mg/kg	3.8E-05	mg/kg/day	NA	NA	NA	2.7E-03	mg/kg/day	2.0E-02	mg/kg/day	1.3E-01
				Phenanthrene	2.3E+03	mg/kg	2.8E-06	mg/kg/day	NA	NA	NA	2.0E-04	mg/kg/day	3.0E+00	mg/kg/day	6.6E-05
				Pyrene	5.7E+02	mg/kg	8.9E-06	mg/kg/day	NA	NA	NA	6.2E-04	mg/kg/day	3.0E-01	mg/kg/day	2.1E-03
			Exp. Route Total								2.7E-05					2.3E-01
		Exposure Point Total									4.9E-05					1.0E+00
	Exposure Medium Total										4.9E-05					1.0E+00

TABLE 7.15.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	115 River Road Emissions from Subsurface Soil (0 - 10 ft)	Inhalation	Arsenic	1.6E-06	mg/m3	2.0E-09	mg/kg/day	1.5E+01	1/(mg/kg/day)	3.0E-08	1.4E-07	mg/kg/day	NA	NA	NA
				Chromium	5.6E-06	mg/m3	6.8E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	2.9E-07	4.8E-07	mg/kg/day	2.9E-05	mg/kg/day	1.7E-02
				Iron	2.6E-03	mg/m3	3.2E-06	mg/kg/day	NA	NA	NA	2.2E-04	mg/kg/day	NA	NA	NA
				Lead	3.5E-05	mg/m3	4.2E-08	mg/kg/day	NA	NA	NA	3.0E-06	mg/kg/day	NA	NA	NA
				Manganese	1.3E-05	mg/m3	1.6E-08	mg/kg/day	NA	NA	NA	1.2E-06	mg/kg/day	1.4E-05	mg/kg/day	8.1E-02
				Vanadium	1.5E-06	mg/m3	1.8E-09	mg/kg/day	NA	NA	NA	1.3E-07	mg/kg/day	NA	NA	NA
				Mercury	5.1E-08	mg/m3	6.3E-11	mg/kg/day	NA	NA	NA	4.4E-09	mg/kg/day	8.6E-05	mg/kg/day	5.1E-05
				Benzene	1.3E-02	mg/m3	1.6E-05	mg/kg/day	2.7E-02	1/(mg/kg/day)	4.3E-07	1.1E-03	mg/kg/day	8.6E-03	mg/kg/day	1.3E-01
				Toluene	3.1E-02	mg/m3	3.7E-05	mg/kg/day	NA	NA	NA	2.6E-03	mg/kg/day	1.4E+00	mg/kg/day	1.8E-03
				Xylene (Total)	5.8E-02	mg/m3	7.1E-05	mg/kg/day	NA	NA	NA	4.9E-03	mg/kg/day	2.9E-02	mg/kg/day	1.7E-01
				2,4-Dinitrotoluene	1.6E-06	mg/m3	2.0E-09	mg/kg/day	NA	NA	NA	1.4E-07	mg/kg/day	NA	NA	NA
				2-Methylnaphthalene	6.1E-03	mg/m3	7.5E-06	mg/kg/day	NA	NA	NA	5.2E-04	mg/kg/day	NA	NA	NA
				Acenaphthene	7.2E-05	mg/m3	8.8E-08	mg/kg/day	NA	NA	NA	6.2E-06	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	1.4E-05	mg/m3	1.7E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	5.1E-09	1.2E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	8.8E-06	mg/m3	1.1E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	3.3E-08	7.5E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	9.3E-06	mg/m3	1.1E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	3.5E-09	8.0E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	3.4E-06	mg/m3	4.1E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	1.3E-10	2.9E-07	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	2.8E-03	mg/m3	3.4E-06	mg/kg/day	NA	NA	NA	2.4E-04	mg/kg/day	NA	NA	NA
				Carbazole	8.8E-06	mg/m3	1.1E-08	mg/kg/day	NA	NA	NA	7.5E-07	mg/kg/day	NA	NA	NA
				Chrysene	2.9E-05	mg/m3	3.6E-08	mg/kg/day	NA	NA	NA	2.5E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	1.5E-06	mg/m3	1.8E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	5.6E-09	1.3E-07	mg/kg/day	NA	NA	NA
				Dibenzofuran	4.6E-05	mg/m3	5.6E-08	mg/kg/day	NA	NA	NA	3.9E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	3.6E-05	mg/m3	4.4E-08	mg/kg/day	NA	NA	NA	3.1E-06	mg/kg/day	NA	NA	NA
				Fluorene	5.2E-03	mg/m3	6.4E-06	mg/kg/day	NA	NA	NA	4.5E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	3.9E-06	mg/m3	4.8E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.5E-09	3.3E-07	mg/kg/day	NA	NA	NA
				Naphthalene	6.9E-02	mg/m3	8.4E-05	mg/kg/day	NA	NA	NA	5.9E-03	mg/kg/day	8.6E-04	mg/kg/day	6.9E+00
				Phenanthrene	2.0E-01	mg/m3	2.4E-04	mg/kg/day	NA	NA	NA	1.7E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.6E-04	mg/m3	3.2E-07	mg/kg/day	NA	NA	NA	2.2E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								7.9E-07					7.3E+00
		Exposure Point Total									7.9E-07					7.3E+00
	Exposure Medium Total										7.9E-07					7.3E+00
Soil Total											5.0E-05					8.3E+00

TABLE 7.15.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater (Excavation)	115 River Road (Excavation)	Dermal	Arsenic	8.9E+00	ug/L	6.9E-10	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.0E-09	4.8E-08	mg/kg/day	3.0E-04	mg/kg/day	1.6E-04
				Lead	6.0E+00	ug/L	4.6E-10	mg/kg/day	NA	NA	NA	3.2E-08	mg/kg/day	NA	NA	NA
				Benzene	1.9E+02	ug/L	2.4E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.3E-08	1.7E-05	mg/kg/day	4.0E-03	mg/kg/day	4.2E-03
				o-Xylene	2.3E+01	ug/L	9.0E-08	mg/kg/day	NA	NA	NA	6.3E-06	mg/kg/day	2.0E-01	mg/kg/day	3.2E-05
				Xylene (Total)	8.3E+01	ug/L	3.1E-07	mg/kg/day	NA	NA	NA	2.2E-05	mg/kg/day	2.0E-01	mg/kg/day	1.1E-04
				2-Methylnaphthalene	9.7E+01	ug/L	6.4E-07	mg/kg/day	NA	NA	NA	4.5E-05	mg/kg/day	4.0E-03	mg/kg/day	1.1E-02
				Acenaphthene	9.7E+01	ug/L	1.1E-06	mg/kg/day	NA	NA	NA	7.6E-05	mg/kg/day	6.0E-01	mg/kg/day	1.3E-04
				Benzo(a)anthracene	7.6E-01	ug/L	5.5E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.0E-08	3.8E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	4.8E-01	ug/L	5.9E-08	mg/kg/day	7.3E+00	1/(mg/kg/day)	4.3E-07	4.2E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	4.3E-01	ug/L	5.3E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.9E-08	3.7E-06	mg/kg/day	NA	NA	NA
				Carbazole	3.6E+01	ug/L	1.1E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	2.2E-09	7.8E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.2E+01	ug/L	2.6E-07	mg/kg/day	NA	NA	NA	1.8E-05	mg/kg/day	NA	NA	NA
				Fluorene	2.4E+01	ug/L	2.2E-08	mg/kg/day	NA	NA	NA	1.6E-06	mg/kg/day	4.0E-01	mg/kg/day	3.9E-06
				Naphthalene	1.6E+03	ug/L	6.7E-06	mg/kg/day	NA	NA	NA	4.7E-04	mg/kg/day	2.0E-02	mg/kg/day	2.3E-02
			Exp. Route Total								5.3E-07					3.9E-02
		Exposure Point Total									5.3E-07					3.9E-02
	Exposure Medium Total										5.3E-07					3.9E-02

TABLE 7.15.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Ambient Air (Excavation)	115 River Road (Excavation)	Inhalation	Benzene	7.9E-03	mg/m3	6.7E-07	mg/kg/day	2.7E-02	1/(mg/kg/day)	1.8E-08	4.7E-05	mg/kg/day	8.6E-03	mg/kg/day	5.4E-03
				o-Xylene	9.8E-04	mg/m3	8.2E-08	mg/kg/day	NA	NA	NA	5.8E-06	mg/kg/day	2.9E-02	mg/kg/day	2.0E-04
				Xylene (Total)	3.6E-03	mg/m3	3.0E-07	mg/kg/day	NA	NA	NA	2.1E-05	mg/kg/day	2.9E-02	mg/kg/day	7.3E-04
				2-Methylnaphthalene	9.3E-04	mg/m3	7.8E-08	mg/kg/day	NA	NA	NA	5.5E-06	mg/kg/day	NA	NA	NA
				Acenaphthene	2.8E-03	mg/m3	2.3E-07	mg/kg/day	NA	NA	NA	1.6E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.5E-04	mg/m3	3.0E-08	mg/kg/day	NA	NA	NA	2.1E-06	mg/kg/day	NA	NA	NA
				Fluorene	6.1E-04	mg/m3	5.1E-08	mg/kg/day	NA	NA	NA	3.6E-06	mg/kg/day	NA	NA	NA
				Naphthalene	5.3E-02	mg/m3	4.5E-06	mg/kg/day	NA	NA	NA	3.1E-04	mg/kg/day	8.6E-04	mg/kg/day	3.7E-01
			Exp. Route Total								1.8E-08					3.7E-01
		Exposure Point Total									1.8E-08					3.7E-01
	Exposure Medium Total										1.8E-08					3.7E-01
Groundwater Total											5.5E-07					4.1E-01
Receptor Total											5.0E-05					8.7E+00

NA = Not applicable.

TABLE 7.15.CTE SUPPLEMENT A
CALCULATION OF DAEVENT
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Groundwater Concentration (CW) (ug/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm^2-event)	Eq
Arsenic	8.89E+00	1.0E-03	NA	NA	NA	NA	4.0	3.6E-08	1
Lead	6.00E+00	1.0E-03	NA	NA	NA	NA	4.0	2.4E-08	1
Benzene	1.88E+02	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	4.0	1.2E-05	3
o-Xylene	2.29E+01	4.7E-02	1.9E-01	4.1E-01	9.9E-01	1.0E+00	4.0	4.7E-06	3
Xylene (Total)	8.30E+01	4.4E-02	1.8E-01	4.1E-01	9.9E-01	1.0E+00	4.0	1.6E-05	3
2-Methylnaphthalene	9.70E+01	7.2E-02	3.3E-01	6.6E-01	1.6E+00	1.0E+00	4.0	3.3E-05	3
Acenaphthene	9.74E+01	1.2E-01	5.7E-01	7.7E-01	1.8E+00	1.0E+00	4.0	5.6E-05	3
Benzo(a)anthracene	7.61E-01	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	4.0	2.8E-06	2
Benzo(a)pyrene	4.84E-01	7.0E-01	4.3E+00	2.7E+00	1.2E+01	1.0E+00	4.0	3.1E-06	2
Benzo(b)fluoranthene	4.29E-01	7.0E-01	4.3E+00	2.8E+00	1.2E+01	1.0E+00	4.0	2.8E-06	2
Carbazole	3.61E+01	2.9E-02	1.4E-01	9.1E-01	2.2E+00	1.0E+00	4.0	5.7E-06	3
Dibenzofuran	3.20E+01	7.9E-02	4.0E-01	9.2E-01	2.2E+00	1.0E+00	4.0	1.4E-05	3
Fluorene	2.35E+01	7.8E-03	4.1E-02	1.2E+00	2.8E+00	1.0E+00	4.0	1.2E-06	3
Naphthalene	1.60E+03	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	4.0	3.5E-04	3

Inorganics: DAevent (mg/cm2-event) =

DA_{event} = Kp x CW x tevent x 0.001 mg/ug x 0.001 l/cm^3 (Eq 1)

Organics: DAevent (mg/cm2-event) =

DA_{event} = $t_{event}<t^*$: DA_{event} (mg/cm^2-event) =
2 x FA x Kp x Cw x (sqrt((6 x τ x t_{event}) / (3.1415))) x CF1 x CF2 (Eq 2)

$t_{event}>t^*$: DA_{event} (mg/cm^2-event) =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x ((1 + 3B + $3B^2$)/$(1+B)^2$)) xCF1 x CF2 (Eq 3)

Notes:
NA - Not applicable
Permeability constants from EPA 2004, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final).* EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.
B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).
t* - Time to reach steady-state

TABLE 7.15.CTE S[redacted]EMENT B
CALCULATION OF CONSTITUENT CONCENT[redacted]NS IN AIR FROM STANDING WATER
FUTURE CONSTRUCTION WORKER SCENARIO (QUANTA RESOURCES)
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	Concentration in Water (mg/L)	Concentration in Water (g/m^3) C_L	Dimensionless Henry's Law Constant (H') K_{eq}	Diffusion coefficient in air (cm^2/s) D_a	Diffusion coefficient in water (cm^2/s) D_w	Schmidt Number Sc_g	Effective diameter of source (m) d_e	Liquid-phase mass transfer coef (m/s) k_L	k_G (m/s)	1/K	K (m/s)	E (g/s)	Concentration in Air (mg/m^3) C_{air}
Benzene	1.88E-01	1.88E-01	2.28E-01	8.80E-02	9.80E-06	1.71E+00	1.13E+01	3.06E-06	2.57E-03	3.29E+05	3.04E-06	5.72E-05	7.94E-03
o-Xylene	2.29E-02	2.29E-02	2.13E-01	8.70E-02	1.00E-05	1.73E+00	1.13E+01	3.10E-06	2.55E-03	3.25E+05	3.08E-06	7.05E-06	9.80E-04
Xylene (Total)	8.30E-02	8.30E-02	2.13E-01	8.70E-02	1.00E-05	1.73E+00	1.13E+01	3.10E-06	2.55E-03	3.25E+05	3.08E-06	2.56E-05	3.55E-03
2-Methylnaphthalene	9.70E-02	9.70E-02	5.17E-04	5.22E-02	7.75E-06	2.89E+00	1.13E+01	2.61E-06	1.81E-03	1.45E+06	6.90E-07	6.69E-06	9.30E-04
Acenaphthene	9.74E-02	9.74E-02	6.36E-03	4.21E-02	7.69E-06	3.58E+00	1.13E+01	2.60E-06	1.57E-03	4.85E+05	2.06E-06	2.01E-05	2.79E-03
Dibenzofuran	3.20E-02	3.20E-02	5.33E-04	6.01E-02	1.00E-05	2.51E+00	1.13E+01	3.10E-06	1.99E-03	1.26E+06	7.91E-07	2.53E-06	3.52E-04
Fluorene	2.35E-02	2.35E-02	3.16E-03	6.08E-02	7.88E-06	2.48E+00	1.13E+01	2.64E-06	2.01E-03	5.36E+05	1.87E-06	4.39E-06	6.09E-04
Naphthalene	1.60E+00	1.60E+00	1.98E-02	5.90E-02	7.50E-06	2.56E+00	1.13E+01	2.56E-06	1.97E-03	4.17E+05	2.40E-06	3.84E-04	5.33E-02

Concentration in Air (C_{air}) = (mg/m^3)	$1000^* E/H * V_{wind} * L$
Emissions from Liquid surface (E) = (g/s)	$K * A * C_L$
Overall Mas Transfer Coefficient (K) = (m/s)	$1/K = 1/k_L + 1/k_G * K_{eq}$
Liquid-phase Mass Transfer Coefficient (k_L) = (m/s)	$2.78E\text{-}06 * (D_w/D_{ether})^{2/3}$
Gas-phase Mass Transfer Coefficient (k_G) = (m/g)	$4.82E\text{-}03 * U^{0.78} * Sc_G^{-0.67} * d_e^{-0.11}$
Effective Diameter of Source (d_e) = (m)	$(4 * A / \pi)^{0.5}$
Schmidt Number Calculation (Sc_G) =	$u_G/p_G * D_a$

Parameters		Values
C_L	Concentration in liquid phase (g/m^3)	chemical specific
K	overall mass transfer coefficient (m/s)	calculated
k_L	liquid-phase mass transfer coefficient (m/s)	calculated
k_G	gas-phase mass transfer coefficient (m/s)	calculated
K_{eq}	Equilibrium constant (Henry's Law constant)	chemical specific
D_{ether}	Diffusion coefficient of ether in water (cm^2/s)	8.50E-06
D_w	Diffusion coefficient in water (cm^2/s)	chemical specific
U	Windspeed (m/s)	1
A	Area of the source (m^2)	100
u_G	viscosity of air (g/cm-s)	1.81E-04
p_G	density of air (g/cm^3)	1.20E-03
D_a	Diffusion coefficient in air (cm^2/s)	chemical specific
H	Height of breathing zone (m)	2
Vwind	Average wind speed in breathing zone (m/s)	2.25
L	Length of breathing zone perpendicular to wind (m)	1.6

Chemical and physical properties from EPA Region 9 PRG Table (EPA, 10/2004).

TABLE 7.17.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Ingestion	Arsenic	1.3E+01	mg/kg	NA	NA	NA	NA	NA	8.3E-05	mg/kg/day	3.0E-04	mg/kg/day	2.8E-01
				Chromium	1.0E+02	mg/kg	NA	NA	NA	NA	NA	6.5E-04	mg/kg/day	3.0E-03	mg/kg/day	2.2E-01
				Lead	5.6E+02	mg/kg	NA	NA	NA	NA	NA	3.6E-03	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	NA	NA	NA	NA	NA	1.8E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	NA	NA	NA	NA	NA	1.6E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	NA	NA	NA	NA	NA	2.0E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	NA	NA	NA	NA	NA	1.0E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	NA	NA	NA	NA	NA	2.9E-05	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	NA	NA	NA	NA	NA	9.6E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	NA	NA	NA	NA	NA	7.7E-05	mg/kg/day	2.0E-02	mg/kg/day	3.8E-03
			Exp. Route Total								0.0E+00					5.0E-01

TABLE 7.17.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Dermal	Arsenic	1.3E+01	mg/kg	NA	NA	NA	NA	NA	2.8E-06	mg/kg/day	3.0E-04	mg/kg/day	9.3E-03
				Chromium	1.0E+02	mg/kg	NA	NA	NA	NA	NA	7.2E-07	mg/kg/day	7.5E-05	mg/kg/day	9.6E-03
				Lead	5.6E+02	mg/kg	NA	NA	NA	NA	NA	4.0E-06	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	NA	NA	NA	NA	NA	2.6E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	NA	NA	NA	NA	NA	2.3E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	NA	NA	NA	NA	NA	2.9E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	NA	NA	NA	NA	NA	1.5E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	NA	NA	NA	NA	NA	4.3E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	NA	NA	NA	NA	NA	1.4E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	NA	NA	NA	NA	NA	1.1E-05	mg/kg/day	2.0E-02	mg/kg/day	5.6E-04
			Exp. Route Total								0.0E+00					2.0E-02
		Exposure Point Total									0.0E+00					5.2E-01
	Exposure Medium Total										0.0E+00					5.2E-01

TABLE 7.17.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Inhalation	Arsenic	1.6E-08	mg/m3	NA	NA	NA	NA	NA	1.0E-08	mg/kg/day	NA	NA	NA
				Chromium	1.2E-07	mg/m3	NA	NA	NA	NA	NA	7.9E-08	mg/kg/day	2.9E-05	mg/kg/day	2.8E-03
				Lead	6.7E-07	mg/m3	NA	NA	NA	NA	NA	4.3E-07	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	3.4E-08	mg/m3	NA	NA	NA	NA	NA	2.2E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.0E-08	mg/m3	NA	NA	NA	NA	NA	1.9E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.7E-08	mg/m3	NA	NA	NA	NA	NA	2.4E-08	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.9E-08	mg/m3	NA	NA	NA	NA	NA	1.2E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	5.6E-09	mg/m3	NA	NA	NA	NA	NA	3.6E-09	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.8E-08	mg/m3	NA	NA	NA	NA	NA	1.2E-08	mg/kg/day	NA	NA	NA
				Naphthalene	3.4E-04	mg/m3	NA	NA	NA	NA	NA	2.2E-04	mg/kg/day	8.6E-04	mg/kg/day	2.6E-01
			Exp. Route Total								0.0E+00					2.6E-01
		Exposure Point Total									0.0E+00					2.6E-01
	Exposure Medium Total										0.0E+00					2.6E-01
Soil Total											0.0E+00					7.7E-01
Receptor Total											0.0E+00					7.7E-01

NA = Not applicable.

TABLE 7.18.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Ingestion	Arsenic	1.3E+01	mg/kg	8.3E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.2E-05	NA	NA	NA	NA	NA
				Chromium	1.0E+02	mg/kg	6.4E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	5.6E+02	mg/kg	3.5E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	1.8E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.7E-05	NA	NA	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	1.6E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	5.1E-04	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	2.0E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.3E-05	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	1.0E-05	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.3E-06	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	2.9E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	9.4E-05	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	9.5E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.1E-05	NA	NA	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	7.6E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								7.7E-04					0.0E+00

TABLE 7.18.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Dermal	Arsenic	1.3E+01	mg/kg	2.8E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	4.2E-07	NA	NA	NA	NA	NA
				Chromium	1.0E+02	mg/kg	7.2E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	5.6E+02	mg/kg	4.0E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.8E+01	mg/kg	2.6E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.8E-06	NA	NA	NA	NA	NA
				Benzo(a)pyrene	2.5E+01	mg/kg	2.3E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.9E-05	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	3.1E+01	mg/kg	2.9E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.6E-06	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.6E+01	mg/kg	1.5E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	4.4E-07	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	4.6E+00	mg/kg	4.3E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.3E-05	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E+01	mg/kg	1.4E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.2E-06	NA	NA	NA	NA	NA
				Naphthalene	1.2E+01	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								1.0E-04					0.0E+00
		Exposure Point Total									8.8E-04					0.0E+00
	Exposure Medium Total										8.8E-04					0.0E+00

TABLE 7.18.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Inhalation	Arsenic	1.6E-08	mg/m3	1.4E-09	mg/kg/day	1.5E+01	1/(mg/kg/day)	2.1E-08	NA	NA	NA	NA	NA
				Chromium	1.2E-07	mg/m3	1.1E-08	mg/kg/day	4.2E+01	1/(mg/kg/day)	4.6E-07	NA	NA	NA	NA	NA
				Lead	6.7E-07	mg/m3	6.1E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	3.4E-08	mg/m3	3.1E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.1E-09	NA	NA	NA	NA	NA
				Benzo(a)pyrene	3.0E-08	mg/m3	2.7E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	9.8E-09	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	3.7E-08	mg/m3	3.4E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.2E-09	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.9E-08	mg/m3	1.7E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	6.3E-11	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	5.6E-09	mg/m3	5.0E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.8E-09	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.8E-08	mg/m3	1.6E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	5.9E-10	NA	NA	NA	NA	NA
				Naphthalene	3.4E-04	mg/m3	3.1E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								5.0E-07					0.0E+00
		Exposure Point Total									5.0E-07					0.0E+00
	Exposure Medium Total										5.0E-07					0.0E+00
Soil Total											8.8E-04					0.0E+00
Receptor Total											8.8E-04					0.0E+00

[1]Consistent with the Cancer Guidelines and Supplemental Guidance (EPA, 2005a and 2005b). Benzo(a)pyrene and Dibenz(a,h)anthracene are evaluated based on their mutagenic mode of action.

TABLE 7.20.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Ingestion	Arsenic	4.5E+01	mg/kg	1.3E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.0E-06	9.4E-06	mg/kg/day	3.0E-04	mg/kg/day	3.1E-02
				Chromium	2.9E+01	mg/kg	8.6E-07	mg/kg/day	NA	NA	NA	6.0E-06	mg/kg/day	3.0E-03	mg/kg/day	2.0E-03
				Benzo(a)anthracene	2.0E+01	mg/kg	5.9E-07	mg/kg/day	2.2E+00	1/(mg/kg/day)	1.4E-06	4.1E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.0E+01	mg/kg	5.9E-07	mg/kg/day	2.2E+01	1/(mg/kg/day)	1.4E-05	4.1E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.6E+01	mg/kg	7.7E-07	mg/kg/day	2.2E+00	1/(mg/kg/day)	1.8E-06	5.4E-06	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+01	mg/kg	3.3E-07	mg/kg/day	2.2E-01	1/(mg/kg/day)	7.8E-08	2.3E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.3E+00	mg/kg	9.8E-08	mg/kg/day	2.2E+01	1/(mg/kg/day)	2.3E-06	6.8E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.2E+01	mg/kg	3.6E-07	mg/kg/day	2.2E+00	1/(mg/kg/day)	8.5E-07	2.5E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								2.3E-05					3.3E-02

TABLE 7.20.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Dermal	Arsenic	4.5E+01	mg/kg	3.3E-08	mg/kg/day	1.5E+00	1/(mg/kg/day)	4.9E-08	2.3E-07	mg/kg/day	3.0E-04	mg/kg/day	7.7E-04
				Chromium	2.9E+01	mg/kg	7.0E-10	mg/kg/day	NA	NA	NA	4.9E-09	mg/kg/day	7.5E-05	mg/kg/day	6.5E-05
				Benzo(a)anthracene	2.0E+01	mg/kg	6.3E-08	mg/kg/day	2.2E+00	1/(mg/kg/day)	9.6E-08	4.4E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.0E+01	mg/kg	6.3E-08	mg/kg/day	2.2E+01	1/(mg/kg/day)	9.6E-07	4.4E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.6E+01	mg/kg	8.2E-08	mg/kg/day	2.2E+00	1/(mg/kg/day)	1.3E-07	5.7E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+01	mg/kg	3.5E-08	mg/kg/day	2.2E-01	1/(mg/kg/day)	5.3E-09	2.4E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.3E+00	mg/kg	1.0E-08	mg/kg/day	2.2E+01	1/(mg/kg/day)	1.6E-07	7.3E-08	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.2E+01	mg/kg	3.8E-08	mg/kg/day	2.2E+00	1/(mg/kg/day)	5.8E-08	2.7E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								1.5E-06					8.4E-04
		Exposure Point Total									2.4E-05					3.4E-02
	Exposure Medium Total										2.4E-05					3.4E-02

TABLE 7.20.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Former Lever Brothers Property Emissions from Surface Soil (0 - 2 ft)	Inhalation	Arsenic	5.5E-08	mg/m3	5.4E-11	mg/kg/day	1.5E+01	1/(mg/kg/day)	8.1E-10	3.8E-10	mg/kg/day	NA	NA	NA
				Chromium	3.5E-08	mg/m3	3.4E-11	mg/kg/day	4.2E+01	1/(mg/kg/day)	1.4E-09	2.4E-10	mg/kg/day	2.9E-05	mg/kg/day	8.4E-06
				Benzo(a)anthracene	2.4E-08	mg/m3	2.4E-11	mg/kg/day	9.2E-01	1/(mg/kg/day)	1.1E-10	1.7E-10	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.4E-08	mg/m3	2.4E-11	mg/kg/day	9.2E+00	1/(mg/kg/day)	1.1E-09	1.7E-10	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E-08	mg/m3	3.1E-11	mg/kg/day	9.2E-01	1/(mg/kg/day)	1.4E-10	2.2E-10	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-08	mg/m3	1.3E-11	mg/kg/day	9.2E-02	1/(mg/kg/day)	5.8E-12	9.1E-11	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.0E-09	mg/m3	3.9E-12	mg/kg/day	9.2E+00	1/(mg/kg/day)	1.8E-10	2.7E-11	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E-08	mg/m3	1.4E-11	mg/kg/day	9.2E-01	1/(mg/kg/day)	6.4E-11	1.0E-10	mg/kg/day	NA	NA	NA
			Exp. Route Total								3.8E-09					8.4E-06
		Exposure Point Total									3.8E-09					8.4E-06
	Exposure Medium Total										3.8E-09					8.4E-06
Soil Total											2.4E-05					3.4E-02
Receptor Total											2.4E-05					3.4E-02

[1]Consistent with the Cancer Guidelines and Supplemental Guidance (EPA, 2005a and 2005b), carginocenic PAHs are evaluated based on their mutagenic mode of action.

TABLE 7.22.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	Former Lever Brothers Property Subsurface Soil (0 - 10 ft)	Ingestion	Antimony	4.16E+01	mg/kg	5.1E-07	mg/kg/day	NA	NA	NA	3.6E-05	mg/kg/day	4.0E-04	mg/kg/day	8.9E-02
				Arsenic	1.16E+02	mg/kg	1.4E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.1E-06	1.0E-04	mg/kg/day	3.0E-04	mg/kg/day	3.3E-01
				Cadmium	2.58E+00	mg/kg	3.2E-08	mg/kg/day	NA	NA	NA	2.2E-06	mg/kg/day	1.0E-03	mg/kg/day	2.2E-03
				Chromium	3.08E+01	mg/kg	3.8E-07	mg/kg/day	NA	NA	NA	2.6E-05	mg/kg/day	2.0E-02	mg/kg/day	1.3E-03
				Copper	2.21E+02	mg/kg	2.7E-06	mg/kg/day	NA	NA	NA	1.9E-04	mg/kg/day	4.0E-02	mg/kg/day	4.7E-03
				Iron	1.37E+04	mg/kg	1.7E-04	mg/kg/day	NA	NA	NA	1.2E-02	mg/kg/day	3.0E-01	mg/kg/day	3.9E-02
				Lead	6.58E+02	mg/kg	8.1E-06	mg/kg/day	NA	NA	NA	5.6E-04	mg/kg/day	NA	NA	NA
				Manganese	1.83E+02	mg/kg	2.2E-06	mg/kg/day	NA	NA	NA	1.6E-04	mg/kg/day	1.4E-01	mg/kg/day	1.1E-03
				Nickel	5.97E+01	mg/kg	7.3E-07	mg/kg/day	NA	NA	NA	5.1E-05	mg/kg/day	2.0E-02	mg/kg/day	2.6E-03
				Thallium	4.47E-01	mg/kg	5.5E-09	mg/kg/day	NA	NA	NA	3.8E-07	mg/kg/day	6.6E-05	mg/kg/day	5.8E-03
				Vanadium	7.59E+01	mg/kg	9.3E-07	mg/kg/day	NA	NA	NA	6.5E-05	mg/kg/day	7.0E-03	mg/kg/day	9.3E-03
				Mercury	1.93E+00	mg/kg	2.4E-08	mg/kg/day	NA	NA	NA	1.7E-06	mg/kg/day	3.0E-03	mg/kg/day	5.5E-04
				Benzene	8.70E-01	mg/kg	1.1E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	5.9E-10	7.5E-07	mg/kg/day	4.0E-03	mg/kg/day	1.9E-04
				Tetrachloroethene	5.01E-01	mg/kg	6.1E-09	mg/kg/day	5.4E-01	1/(mg/kg/day)	3.3E-09	4.3E-07	mg/kg/day	1.0E-01	mg/kg/day	4.3E-06
				Trichloroethene	4.80E-01	mg/kg	5.9E-09	mg/kg/day	4.0E-01	1/(mg/kg/day)	2.4E-09	4.1E-07	mg/kg/day	3.0E-04	mg/kg/day	1.4E-03
				2-Methylnaphthalene	2.79E+01	mg/kg	3.4E-07	mg/kg/day	NA	NA	NA	2.4E-05	mg/kg/day	4.0E-03	mg/kg/day	6.0E-03
				Benzo(a)anthracene	5.43E+01	mg/kg	6.6E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.9E-07	4.7E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	6.61E+01	mg/kg	8.1E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	5.9E-06	5.7E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	6.24E+01	mg/kg	7.6E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.6E-07	5.4E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	3.31E+01	mg/kg	4.0E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.0E-08	2.8E-05	mg/kg/day	NA	NA	NA
				Carbazole	6.01E+01	mg/kg	7.4E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	1.5E-08	5.1E-05	mg/kg/day	NA	NA	NA
				Chrysene	6.49E+01	mg/kg	7.9E-07	mg/kg/day	7.3E-03	1/(mg/kg/day)	5.8E-09	5.6E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	1.40E+01	mg/kg	1.7E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.3E-06	1.2E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.03E+01	mg/kg	3.7E-07	mg/kg/day	NA	NA	NA	2.6E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	9.57E+01	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	8.2E-05	mg/kg/day	4.0E-01	mg/kg/day	2.1E-04
				Indeno(1,2,3-c,d)pyrene	4.42E+01	mg/kg	5.4E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.9E-07	3.8E-05	mg/kg/day	NA	NA	NA
				Naphthalene	4.44E+01	mg/kg	5.4E-07	mg/kg/day	NA	NA	NA	3.8E-05	mg/kg/day	2.0E-02	mg/kg/day	1.9E-03
				Pyrene	9.05E+01	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	7.8E-05	mg/kg/day	3.0E-01	mg/kg/day	2.6E-04
			Exp. Route Total								1.1E-05					5.0E-01

TABLE 7.22.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	Former Lever Brothers Property Subsurface Soil (0 - 10 ft)	Dermal	Antimony	4.2E+01	mg/kg	5.0E-09	mg/kg/day	NA	NA	NA	3.5E-07	mg/kg/day	6.0E-05	mg/kg/day	5.9E-03
				Arsenic	1.2E+02	mg/kg	4.2E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	6.4E-07	3.0E-05	mg/kg/day	3.0E-04	mg/kg/day	9.9E-02
				Cadmium	2.6E+00	mg/kg	3.1E-10	mg/kg/day	NA	NA	NA	2.2E-08	mg/kg/day	2.5E-05	mg/kg/day	8.7E-04
				Chromium	3.1E+01	mg/kg	3.7E-09	mg/kg/day	NA	NA	NA	2.6E-07	mg/kg/day	5.0E-04	mg/kg/day	5.2E-04
				Copper	2.2E+02	mg/kg	2.7E-08	mg/kg/day	NA	NA	NA	1.9E-06	mg/kg/day	4.0E-02	mg/kg/day	4.7E-05
				Iron	1.4E+04	mg/kg	1.7E-06	mg/kg/day	NA	NA	NA	1.2E-04	mg/kg/day	3.0E-01	mg/kg/day	3.9E-04
				Lead	6.6E+02	mg/kg	8.0E-08	mg/kg/day	NA	NA	NA	5.6E-06	mg/kg/day	NA	NA	NA
				Manganese	1.8E+02	mg/kg	2.2E-08	mg/kg/day	NA	NA	NA	1.6E-06	mg/kg/day	5.6E-03	mg/kg/day	2.8E-04
				Nickel	6.0E+01	mg/kg	7.2E-09	mg/kg/day	NA	NA	NA	5.1E-07	mg/kg/day	8.0E-04	mg/kg/day	6.3E-04
				Thallium	4.5E-01	mg/kg	5.4E-11	mg/kg/day	NA	NA	NA	3.8E-09	mg/kg/day	6.6E-05	mg/kg/day	5.7E-05
				Vanadium	7.6E+01	mg/kg	9.2E-09	mg/kg/day	NA	NA	NA	6.4E-07	mg/kg/day	1.8E-04	mg/kg/day	3.5E-03
				Mercury	1.9E+00	mg/kg	2.3E-10	mg/kg/day	NA	NA	NA	1.6E-08	mg/kg/day	2.1E-04	mg/kg/day	7.8E-05
				Benzene	8.7E-01	mg/kg	1.1E-09	mg/kg/day	5.5E-02	1/(mg/kg/day)	5.8E-11	7.4E-08	mg/kg/day	4.0E-03	mg/kg/day	1.8E-05
				Tetrachloroethene	5.0E-01	mg/kg	6.1E-10	mg/kg/day	5.4E-01	1/(mg/kg/day)	3.3E-10	4.2E-08	mg/kg/day	1.0E-01	mg/kg/day	4.2E-07
				Trichloroethene	4.8E-01	mg/kg	5.8E-10	mg/kg/day	4.0E-01	1/(mg/kg/day)	2.3E-10	4.1E-08	mg/kg/day	3.0E-04	mg/kg/day	1.4E-04
				2-Methylnaphthalene	2.8E+01	mg/kg	3.4E-08	mg/kg/day	NA	NA	NA	2.4E-06	mg/kg/day	4.0E-03	mg/kg/day	5.9E-04
				Benzo(a)anthracene	5.4E+01	mg/kg	6.6E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.2E-07	6.0E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	6.6E+01	mg/kg	1.0E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	7.6E-06	7.3E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	6.2E+01	mg/kg	9.8E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.2E-07	6.9E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	3.3E+01	mg/kg	5.2E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.8E-08	3.6E-05	mg/kg/day	NA	NA	NA
				Carbazole	6.0E+01	mg/kg	7.3E-08	mg/kg/day	2.0E-02	1/(mg/kg/day)	1.5E-09	5.1E-06	mg/kg/day	NA	NA	NA
				Chrysene	6.5E+01	mg/kg	1.0E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	7.5E-09	7.2E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	1.4E+01	mg/kg	2.2E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.6E-06	1.5E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	3.0E+01	mg/kg	3.7E-08	mg/kg/day	NA	NA	NA	2.6E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	9.6E+01	mg/kg	1.5E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	4.0E-01	mg/kg/day	2.6E-04
				Indeno(1,2,3-c,d)pyrene	4.4E+01	mg/kg	7.0E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.1E-07	4.9E-05	mg/kg/day	NA	NA	NA
				Naphthalene	4.4E+01	mg/kg	7.0E-07	mg/kg/day	NA	NA	NA	4.9E-05	mg/kg/day	2.0E-02	mg/kg/day	2.4E-03
				Pyrene	9.1E+01	mg/kg	1.4E-06	mg/kg/day	NA	NA	NA	1.0E-04	mg/kg/day	3.0E-01	mg/kg/day	3.3E-04
			Exp. Route Total								1.2E-05					1.1E-01
		Exposure Point Total									2.3E-05					6.1E-01
	Exposure Medium Total										2.3E-05					6.1E-01

TABLE 7.22.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Former Lever Brothers Property Emissions from Subsurface Soil (0 - 10 ft)	Inhalation	Antimony	2.3E-06	mg/m3	2.8E-09	mg/kg/day	NA	NA	NA	2.0E-07	mg/kg/day	NA	NA	NA
				Arsenic	6.4E-06	mg/m3	7.9E-09	mg/kg/day	1.5E+01	1/(mg/kg/day)	1.2E-07	5.5E-07	mg/kg/day	NA	NA	NA
				Cadmium	1.4E-07	mg/m3	1.7E-10	mg/kg/day	6.3E+00	1/(mg/kg/day)	1.1E-09	1.2E-08	mg/kg/day	NA	NA	NA
				Chromium	1.7E-06	mg/m3	2.1E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	8.8E-08	1.5E-07	mg/kg/day	2.9E-05	mg/kg/day	5.1E-03
				Copper	1.2E-05	mg/m3	1.5E-08	mg/kg/day	NA	NA	NA	1.0E-06	mg/kg/day	NA	NA	NA
				Iron	7.6E-04	mg/m3	9.3E-07	mg/kg/day	NA	NA	NA	6.5E-05	mg/kg/day	NA	NA	NA
				Lead	3.6E-05	mg/m3	4.5E-08	mg/kg/day	NA	NA	NA	3.1E-06	mg/kg/day	NA	NA	NA
				Manganese	1.0E-05	mg/m3	1.2E-08	mg/kg/day	NA	NA	NA	8.7E-07	mg/kg/day	1.4E-05	mg/kg/day	6.1E-02
				Nickel	3.3E-06	mg/m3	4.0E-09	mg/kg/day	NA	NA	NA	2.8E-07	mg/kg/day	NA	NA	NA
				Thallium	2.5E-08	mg/m3	3.0E-11	mg/kg/day	NA	NA	NA	2.1E-09	mg/kg/day	NA	NA	NA
				Vanadium	4.2E-06	mg/m3	5.1E-09	mg/kg/day	NA	NA	NA	3.6E-07	mg/kg/day	NA	NA	NA
				Mercury	1.1E-07	mg/m3	1.3E-10	mg/kg/day	NA	NA	NA	9.2E-09	mg/kg/day	8.6E-05	mg/kg/day	1.1E-04
				Benzene	3.8E-04	mg/m3	4.7E-07	mg/kg/day	2.7E-02	1/(mg/kg/day)	1.3E-08	3.3E-05	mg/kg/day	8.6E-03	mg/kg/day	3.8E-03
				Tetrachloroethene	1.9E-04	mg/m3	2.3E-07	mg/kg/day	2.1E-02	1/(mg/kg/day)	4.9E-09	1.6E-05	mg/kg/day	1.0E-02	mg/kg/day	1.6E-03
				Trichloroethene	2.3E-04	mg/m3	2.8E-07	mg/kg/day	4.0E-01	1/(mg/kg/day)	1.1E-07	1.9E-05	mg/kg/day	1.1E-02	mg/kg/day	1.7E-03
				2-Methylnaphthalene	8.1E-05	mg/m3	9.9E-08	mg/kg/day	NA	NA	NA	7.0E-06	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	3.0E-06	mg/m3	3.7E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.1E-09	2.6E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	3.7E-06	mg/m3	4.5E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.4E-08	3.1E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.5E-06	mg/m3	4.2E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.3E-09	3.0E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.8E-06	mg/m3	2.2E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	6.9E-11	1.6E-07	mg/kg/day	NA	NA	NA
				Carbazole	3.3E-06	mg/m3	4.1E-09	mg/kg/day	NA	NA	NA	2.8E-07	mg/kg/day	NA	NA	NA
				Chrysene	3.6E-06	mg/m3	4.4E-09	mg/kg/day	NA	NA	NA	3.1E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	7.7E-07	mg/m3	9.5E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	2.9E-09	6.6E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	1.7E-06	mg/m3	2.1E-09	mg/kg/day	NA	NA	NA	1.4E-07	mg/kg/day	NA	NA	NA
				Fluoranthene	5.3E-06	mg/m3	6.5E-09	mg/kg/day	NA	NA	NA	4.5E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	2.4E-06	mg/m3	3.0E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	9.2E-10	2.1E-07	mg/kg/day	NA	NA	NA
				Naphthalene	1.3E-03	mg/m3	1.5E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	8.6E-04	mg/kg/day	1.3E-01
				Pyrene	4.1E-05	mg/m3	5.0E-08	mg/kg/day	NA	NA	NA	3.5E-06	mg/kg/day	NA	NA	NA
			Exp. Route Total								3.6E-07					2.0E-01
		Exposure Point Total									3.6E-07					2.0E-01
	Exposure Medium Total										3.6E-07					2.0E-01
Soil Total											2.3E-05					8.1E-01

TABLE 7.22.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater (Excavation)	Former Lever Brothers Property (Excavation)	Dermal	Arsenic	8.3E+03	ug/L	6.4E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	9.6E-07	4.5E-05	mg/kg/day	3.0E-04	mg/kg/day	1.5E-01
				Iron	4.0E+05	ug/L	3.1E-05	mg/kg/day	NA	NA	NA	2.2E-03	mg/kg/day	3.0E-01	mg/kg/day	7.2E-03
				Benzene	6.1E+02	ug/L	7.8E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	4.3E-08	5.4E-05	mg/kg/day	4.0E-03	mg/kg/day	1.4E-02
				Chloroethane	5.5E+00	ug/L	2.9E-09	mg/kg/day	2.9E-03	1/(mg/kg/day)	8.3E-12	2.0E-07	mg/kg/day	4.0E-01	mg/kg/day	5.0E-07
				Ethylbenzene	1.8E+02	ug/L	7.5E-07	mg/kg/day	NA	NA	NA	5.2E-05	mg/kg/day	1.0E-01	mg/kg/day	5.2E-04
				Toluene	4.9E+02	ug/L	1.3E-06	mg/kg/day	NA	NA	NA	9.0E-05	mg/kg/day	2.0E+00	mg/kg/day	4.5E-05
				Trichloroethene	1.4E+00	ug/L	1.6E-09	mg/kg/day	4.0E-01	1/(mg/kg/day)	6.3E-10	1.1E-07	mg/kg/day	3.0E-04	mg/kg/day	3.7E-04
				m,p-Xylene	1.0E+03	ug/L	4.4E-06	mg/kg/day	NA	NA	NA	3.1E-04	mg/kg/day	2.0E-01	mg/kg/day	1.5E-03
				o-Xylene	4.5E+02	ug/L	1.8E-06	mg/kg/day	NA	NA	NA	1.2E-04	mg/kg/day	2.0E-01	mg/kg/day	6.2E-04
				Xylene (Total)	4.5E+02	ug/L	1.7E-06	mg/kg/day	NA	NA	NA	1.2E-04	mg/kg/day	2.0E-01	mg/kg/day	5.9E-04
				2,4-Dimethylphenol	3.7E+02	ug/L	6.0E-07	mg/kg/day	NA	NA	NA	4.2E-05	mg/kg/day	2.0E-01	mg/kg/day	2.1E-04
				2-Methylnaphthalene	1.1E+03	ug/L	7.0E-06	mg/kg/day	NA	NA	NA	4.9E-04	mg/kg/day	4.0E-03	mg/kg/day	1.2E-01
				3&4-Methylphenol	6.9E+01	ug/L	5.6E-08	mg/kg/day	NA	NA	NA	4.0E-06	mg/kg/day	5.0E-03	mg/kg/day	7.9E-04
				4-Methylphenol	1.1E+02	ug/L	9.2E-08	mg/kg/day	NA	NA	NA	6.5E-06	mg/kg/day	5.0E-03	mg/kg/day	1.3E-03
				Acenaphthene	2.5E+02	ug/L	2.7E-06	mg/kg/day	NA	NA	NA	1.9E-04	mg/kg/day	6.0E-01	mg/kg/day	3.2E-04
				Benzo(a)anthracene	2.5E-01	ug/L	1.8E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.3E-08	1.2E-06	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	1.2E+02	ug/L	7.7E-07	mg/kg/day	NA	NA	NA	5.4E-05	mg/kg/day	5.0E-02	mg/kg/day	1.1E-03
				Carbazole	1.6E+02	ug/L	4.8E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	9.5E-09	3.3E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	1.1E+02	ug/L	9.4E-07	mg/kg/day	NA	NA	NA	6.6E-05	mg/kg/day	NA	NA	NA
				Fluorene	9.7E+01	ug/L	9.2E-08	mg/kg/day	NA	NA	NA	6.4E-06	mg/kg/day	4.0E-01	mg/kg/day	1.6E-05
				Naphthalene	3.3E+03	ug/L	1.4E-05	mg/kg/day	NA	NA	NA	9.7E-04	mg/kg/day	2.0E-02	mg/kg/day	4.8E-02
			Exp. Route Total								1.0E-06					3.5E-01
		Exposure Point Total									1.0E-06					3.5E-01
	Exposure Medium Total										1.0E-06					3.5E-01

TABLE 7.22.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Ambient Air (Excavation)	Former Lever Brothers Property (Excavation)	Inhalation	Benzene	2.6E-02	mg/m3	2.2E-06	mg/kg/day	2.7E-02	1/(mg/kg/day)	5.9E-08	1.5E-04	mg/kg/day	8.6E-03	mg/kg/day	1.8E-02
				Chloroethane	2.6E-04	mg/m3	2.2E-08	mg/kg/day	NA	NA	NA	1.5E-06	mg/kg/day	2.9E+00	mg/kg/day	5.3E-07
				Ethylbenzene	6.6E-03	mg/m3	5.5E-07	mg/kg/day	NA	NA	NA	3.9E-05	mg/kg/day	2.9E-01	mg/kg/day	1.4E-04
				Toluene	1.9E-02	mg/m3	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	1.4E+00	mg/kg/day	7.9E-05
				Trichloroethene	5.6E-05	mg/m3	4.7E-09	mg/kg/day	4.0E-01	1/(mg/kg/day)	1.9E-09	3.3E-07	mg/kg/day	1.1E-02	mg/kg/day	2.9E-05
				m,p-Xylene	3.7E-02	mg/m3	3.1E-06	mg/kg/day	NA	NA	NA	2.2E-04	mg/kg/day	2.9E-02	mg/kg/day	7.5E-03
				o-Xylene	1.9E-02	mg/m3	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	2.9E-02	mg/kg/day	4.0E-03
				Xylene (Total)	1.9E-02	mg/m3	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	2.9E-02	mg/kg/day	4.0E-03
				2-Methylnaphthalene	1.0E-02	mg/m3	8.6E-07	mg/kg/day	NA	NA	NA	6.0E-05	mg/kg/day	NA	NA	NA
				Acenaphthene	7.0E-03	mg/m3	5.9E-07	mg/kg/day	NA	NA	NA	4.1E-05	mg/kg/day	NA	NA	NA
				1,1'-Biphenyl	4.0E-03	mg/m3	3.3E-07	mg/kg/day	NA	NA	NA	2.3E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	1.3E-03	mg/m3	1.1E-07	mg/kg/day	NA	NA	NA	7.4E-06	mg/kg/day	NA	NA	NA
				Fluorene	2.5E-03	mg/m3	2.1E-07	mg/kg/day	NA	NA	NA	1.5E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.1E-01	mg/m3	9.2E-06	mg/kg/day	NA	NA	NA	6.4E-04	mg/kg/day	8.6E-04	mg/kg/day	7.5E-01
			Exp. Route Total								6.1E-08					7.9E-01
		Exposure Point Total									6.1E-08					7.9E-01
	Exposure Medium Total										6.1E-08					7.9E-01
Groundwater Total											1.1E-06					1.1E+00
Receptor Total											2.4E-05					1.9E+00

NA = Not applicable.

TABLE 7.22.CTE SUPPLEMENT A
CALCULATION OF DAEVENT
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Groundwater Concentration (CW) (ug/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm^2-event)	Eq
Arsenic	8.26E+03	1.0E-03	NA	NA	NA	NA	4.0	3.3E-05	1
Iron	4.01E+05	1.0E-03	NA	NA	NA	NA	4.0	1.6E-03	1
Benzene	6.13E+02	1.5E-02	5.1E-02	2.9E-01	7.0E-01	1.0E+00	4.0	4.0E-05	3
Chloroethane	5.50E+00	6.1E-03	1.9E-02	2.4E-01	5.9E-01	1.0E+00	4.0	1.5E-07	3
Ethylbenzene	1.81E+02	4.9E-02	2.0E-01	4.2E-01	1.0E+00	1.0E+00	4.0	3.9E-05	3
Toluene	4.94E+02	3.1E-02	1.1E-01	3.5E-01	8.4E-01	1.0E+00	4.0	6.7E-05	3
Trichloroethene	1.40E+00	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	4.0	8.2E-08	3
m,p-Xylene	1.01E+03	5.2E-02	2.1E-01	4.1E-01	9.9E-01	1.0E+00	4.0	2.3E-04	3
o-Xylene	4.52E+02	4.7E-02	1.9E-01	4.1E-01	9.9E-01	1.0E+00	4.0	9.2E-05	3
Xylene (Total)	4.50E+02	4.4E-02	1.8E-01	4.1E-01	9.9E-01	1.0E+00	4.0	8.7E-05	3
2,4-Dimethylphenol	3.70E+02	1.7E-02	7.4E-02	5.1E-01	1.2E+00	1.0E+00	4.0	3.1E-05	3
2-Methylnaphthalene	1.06E+03	7.2E-02	3.3E-01	6.6E-01	1.6E+00	1.0E+00	4.0	3.6E-04	3
3&4-Methylphenol	6.86E+01	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	4.0	2.9E-06	3
4-Methylphenol	1.12E+02	9.0E-03	3.6E-02	4.2E-01	1.0E+00	1.0E+00	4.0	4.8E-06	3
Acenaphthene	2.46E+02	1.2E-01	5.7E-01	7.7E-01	1.8E+00	1.0E+00	4.0	1.4E-04	3
Benzo(a)anthracene	2.45E-01	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	4.0	9.1E-07	2
1,1'-Biphenyl	1.20E+02	6.6E-02	3.1E-01	7.7E-01	1.8E+00	1.0E+00	4.0	4.0E-05	3
Carbazole	1.56E+02	2.9E-02	1.4E-01	9.1E-01	2.2E+00	1.0E+00	4.0	2.5E-05	3
Dibenzofuran	1.14E+02	7.9E-02	4.0E-01	9.2E-01	2.2E+00	1.0E+00	4.0	4.9E-05	3
Fluorene	9.71E+01	7.8E-03	4.1E-02	1.2E+00	2.8E+00	1.0E+00	4.0	4.8E-06	3
Naphthalene	3.29E+03	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	4.0	7.2E-04	3

Inorganics: DAevent (mg/cm2-event) =

DA_{event} = $Kp \times CW \times tevent \times 0.001\ mg/ug \times 0.001\ l/cm^3$ (Eq 1)

Organics: DAevent (mg/cm2-event) =

DA_{event} = $t_{event} < t^*$: DA_{event} (mg/cm^2-event) =
$2 \times FA \times Kp \times Cw \times (\sqrt{(6 \times \tau \times t_{event}) / (3.1415)}) \times CF1 \times CF2$ (Eq 2)

$t_{event} > t^*$: DA_{event} (mg/cm^2-event) =
$FA \times Kp \times CW \times (t_{event}/(1+B) + 2 \times \tau \times ((1 + 3B + 3B^2)/(1+B)^2)) \times CF1 \times CF2$ (Eq 3)

Notes:

NA - Not applicable

Permeability constants from EPA 2004, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final).* EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).

t* - Time to reach steady-state

TABLE 7.22.CTE SUPPLEMENT B
CALCULATION OF CONSTITUENT CONCENTRATIONS IN AIR FROM STANDING WATER
FUTURE CONSTRUCTION WORKER SCENARIO (QUANTA RESOURCES)
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	Concentration in Water (mg/L)	Concentration in Water (g/m^3) C_L	Dimensionless Henry's Law Constant (H') K_{eq}	Diffusion coefficient in air (cm^2/s) D_a	Diffusion coefficient in water (cm^2/s) D_w	Schmidt Number Sc_g	Effective diameter of source (m) d_e	Liquid-phase mass transfer coef (m/s) k_L	k_G (m/s)	1/K	K (m/s)	E (g/s)	Concentration in Air (mg/m^3) C_{air}
Benzene	6.13E-01	6.13E-01	2.28E-01	8.80E-02	9.80E-06	1.71E+00	1.13E+01	3.06E-06	2.57E-03	3.29E+05	3.04E-06	1.87E-04	2.59E-02
Chloroethane	5.50E-03	5.50E-03	4.51E-01	1.04E-01	1.15E-05	1.45E+00	1.13E+01	3.40E-06	2.88E-03	2.95E+05	3.39E-06	1.87E-06	2.59E-04
Ethylbenzene	1.81E-01	1.81E-01	3.23E-01	7.50E-02	7.80E-06	2.01E+00	1.13E+01	2.63E-06	2.31E-03	3.82E+05	2.62E-06	4.73E-05	6.57E-03
Toluene	4.94E-01	4.94E-01	2.72E-01	8.70E-02	8.60E-06	1.73E+00	1.13E+01	2.80E-06	2.55E-03	3.58E+05	2.79E-06	1.38E-04	1.91E-02
Trichloroethene	1.40E-03	1.40E-03	4.22E-01	7.90E-02	9.10E-06	1.91E+00	1.13E+01	2.91E-06	2.39E-03	3.45E+05	2.90E-06	4.06E-07	5.64E-05
m,p-Xylene	1.01E+00	1.01E+00	3.01E-01	7.00E-02	7.80E-06	2.15E+00	1.13E+01	2.63E-06	2.21E-03	3.82E+05	2.61E-06	2.64E-04	3.67E-02
o-Xylene	4.52E-01	4.52E-01	2.13E-01	8.70E-02	1.00E-05	1.73E+00	1.13E+01	3.10E-06	2.55E-03	3.25E+05	3.08E-06	1.39E-04	1.93E-02
Xylene (Total)	4.50E-01	4.50E-01	2.13E-01	8.70E-02	1.00E-05	1.73E+00	1.13E+01	3.10E-06	2.55E-03	3.25E+05	3.08E-06	1.39E-04	1.92E-02
2-Methylnaphthalene	1.06E+00	1.06E+00	5.17E-04	5.22E-02	7.75E-06	2.89E+00	1.13E+01	2.61E-06	1.81E-03	1.45E+06	6.90E-07	7.34E-05	1.02E-02
Acenaphthene	2.46E-01	2.46E-01	6.36E-03	4.21E-02	7.69E-06	3.58E+00	1.13E+01	2.60E-06	1.57E-03	4.85E+05	2.06E-06	5.07E-05	7.05E-03
1,1'-Biphenyl	1.20E-01	1.20E-01	1.23E-02	4.04E-02	8.20E-06	3.73E+00	1.13E+01	2.71E-06	1.53E-03	4.22E+05	2.37E-06	2.85E-05	3.96E-03
Dibenzofuran	1.14E-01	1.14E-01	5.33E-04	6.01E-02	1.00E-05	2.51E+00	1.13E+01	3.10E-06	1.99E-03	1.26E+06	7.91E-07	9.05E-06	1.26E-03
Fluorene	9.71E-02	9.71E-02	3.16E-03	6.08E-02	7.88E-06	2.48E+00	1.13E+01	2.64E-06	2.01E-03	5.36E+05	1.87E-06	1.81E-05	2.52E-03
Naphthalene	3.29E+00	3.29E+00	1.98E-02	5.90E-02	7.50E-06	2.56E+00	1.13E+01	2.56E-06	1.97E-03	4.17E+05	2.40E-06	7.91E-04	1.10E-01

Concentration in Air (C_{air}) = (mg/m^3)	$1000 * E/H * V_{wind} * L$
Emissions from Liquid surface (E) = (g/s)	$K * A * C_L$
Overall Mas Transfer Coefficient (K) = (m/s)	$1/K = 1/k_L + 1/k_G * K_{eq}$
Liquid-phase Mass Transfer Coefficient (k_L) = (m/s)	$2.78E\text{-}06 * (D_w/D_{ether})^{2/3}$
Gas-phase Mass Transfer Coefficient (k_G) = (m/g)	$4.82E\text{-}03 * U^{0.78} * Sc_G^{-0.67} * d_e^{-0.11}$
Effective Diameter of Source (d_e) = (m)	$(4 * A / \pi)^{0.5}$
Schmidt Number Calculation (Sc_G) =	$u_G/p_G * D_a$

TABLE 7.22.CTE SUPPLEMENT B
CALCULATION OF CONSTITUENT CONCENTRATIONS IN AIR FROM STANDING WATER
FUTURE CONSTRUCTION WORKER SCENARIO (QUANTA RESOURCES)
Quanta Resources Site, OU1, Edgewater, New Jersey

Parameters		Values
C_L	Concentration in liquid phase (g/m^3)	chemical specific
K	overall mass transfer coefficient (m/s)	calculated
k_L	liquid-phase mass transfer coefficient (m/s)	calculated
k_G	gas-phase mass transfer coefficient (m/s)	calculated
K_{eq}	Equilibrium constant (Henry's Law constant)	chemical specific
D_{ether}	Diffusion coefficient of ether in water (cm^2/s)	8.50E-06
D_w	Diffusion coefficient in water (cm^2/s)	chemical specific
U	Windspeed (m/s)	1
A	Area of the source (m^2)	100
u_G	viscosity of air (g/cm-s)	1.81E-04
p_G	density of air (g/cm^3)	1.20E-03
D_a	Diffusion coefficient in air (cm^2/s)	chemical specific
H	Height of breathing zone (m)	2
Vwind	Average wind speed in breathing zone (m/s)	2.25
L	Length of breathing zone perpendicular to wind (m)	1.6

Chemical and physical properties from EPA Region 9 PRG Table (EPA, 10/2004).

TABLE 7.24.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Ingestion	Arsenic	4.5E+01	mg/kg	NA	NA	NA	NA	NA	2.9E-04	mg/kg/day	3.0E-04	mg/kg/day	9.7E-01
				Chromium	2.9E+01	mg/kg	NA	NA	NA	NA	NA	1.8E-04	mg/kg/day	3.0E-03	mg/kg/day	6.2E-02
				Benzo(a)anthracene	2.0E+01	mg/kg	NA	NA	NA	NA	NA	1.3E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.0E+01	mg/kg	NA	NA	NA	NA	NA	1.3E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.6E+01	mg/kg	NA	NA	NA	NA	NA	1.7E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+01	mg/kg	NA	NA	NA	NA	NA	7.0E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.3E+00	mg/kg	NA	NA	NA	NA	NA	2.1E-05	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.2E+01	mg/kg	NA	NA	NA	NA	NA	7.7E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								0.0E+00					1.0E+00

TABLE 7.24.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Dermal	Arsenic	4.5E+01	mg/kg	NA	NA	NA	NA	NA	9.7E-06	mg/kg/day	3.0E-04	mg/kg/day	3.2E-02
				Chromium	2.9E+01	mg/kg	NA	NA	NA	NA	NA	2.1E-07	mg/kg/day	7.5E-05	mg/kg/day	2.8E-03
				Benzo(a)anthracene	2.0E+01	mg/kg	NA	NA	NA	NA	NA	1.9E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.0E+01	mg/kg	NA	NA	NA	NA	NA	1.9E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.6E+01	mg/kg	NA	NA	NA	NA	NA	2.4E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+01	mg/kg	NA	NA	NA	NA	NA	1.0E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.3E+00	mg/kg	NA	NA	NA	NA	NA	3.1E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.2E+01	mg/kg	NA	NA	NA	NA	NA	1.1E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								0.0E+00					3.5E-02
		Exposure Point Total									0.0E+00					1.1E+00
	Exposure Medium Total										0.0E+00					1.1E+00

TABLE 7.24.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Former Lever Brothers Property Emissions from Surface Soil (0-2 ft)	Inhalation	Arsenic	5.5E-08	mg/m3	NA	NA	NA	NA	NA	3.5E-08	mg/kg/day	NA	NA	NA
				Chromium	3.5E-08	mg/m3	NA	NA	NA	NA	NA	2.3E-08	mg/kg/day	2.9E-05	mg/kg/day	7.9E-04
				Benzo(a)anthracene	2.4E-08	mg/m3	NA	NA	NA	NA	NA	1.6E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.4E-08	mg/m3	NA	NA	NA	NA	NA	1.6E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.1E-08	mg/m3	NA	NA	NA	NA	NA	2.0E-08	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-08	mg/m3	NA	NA	NA	NA	NA	8.6E-09	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	4.0E-09	mg/m3	NA	NA	NA	NA	NA	2.6E-09	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E-08	mg/m3	NA	NA	NA	NA	NA	9.3E-09	mg/kg/day	NA	NA	NA
			Exp. Route Total								0.0E+00					7.9E-04
		Exposure Point Total									0.0E+00					7.9E-04
	Exposure Medium Total										0.0E+00					7.9E-04
Soil Total											0.0E+00					1.1E+00
Receptor Total											0.0E+00					1.1E+00

NA = Not applicable.

TABLE 7.25.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Ingestion	Arsenic	4.5E+01	mg/kg	2.9E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	4.3E-05	NA	NA	NA	NA	NA
				Chromium	2.9E+01	mg/kg	1.8E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.0E+01	mg/kg	1.3E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.1E-05	NA	NA	NA	NA	NA
				Benzo(a)pyrene	2.0E+01	mg/kg	1.3E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	4.1E-04	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	2.6E+01	mg/kg	1.7E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.3E-05	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+01	mg/kg	7.0E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	2.3E-06	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	3.3E+00	mg/kg	2.1E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.8E-05	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.2E+01	mg/kg	7.6E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.5E-05	NA	NA	NA	NA	NA
			Exp. Route Total								6.4E-04					0.0E+00

TABLE 7.25.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Dermal	Arsenic	4.5E+01	mg/kg	9.7E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.5E-06	NA	NA	NA	NA	NA
				Chromium	2.9E+01	mg/kg	2.1E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.0E+01	mg/kg	1.9E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.6E-06	NA	NA	NA	NA	NA
				Benzo(a)pyrene	2.0E+01	mg/kg	1.9E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	5.6E-05	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	2.6E+01	mg/kg	2.4E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.2E-06	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+01	mg/kg	1.0E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.1E-07	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	3.3E+00	mg/kg	3.1E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	9.2E-06	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.2E+01	mg/kg	1.1E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.3E-06	NA	NA	NA	NA	NA
			Exp. Route Total								8.3E-05					0.0E+00
		Exposure Point Total									7.2E-04					0.0E+00
	Exposure Medium Total										7.2E-04					0.0E+00

TABLE 7.25.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Former Lever Brothers Property Emissions from Surface Soil (0-2 ft)	Inhalation	Arsenic	5.5E-08	mg/m3	4.9E-09	mg/kg/day	1.5E+01	1/(mg/kg/day)	7.4E-08	NA	NA	NA	NA	NA
				Chromium	3.5E-08	mg/m3	3.2E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	1.3E-07	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.4E-08	mg/m3	2.2E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	7.9E-10	NA	NA	NA	NA	NA
				Benzo(a)pyrene	2.4E-08	mg/m3	2.2E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	7.9E-09	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	3.1E-08	mg/m3	2.8E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.0E-09	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-08	mg/m3	1.2E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	4.3E-11	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	4.0E-09	mg/m3	3.6E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.3E-09	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	1.5E-08	mg/m3	1.3E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	4.7E-10	NA	NA	NA	NA	NA
			Exp. Route Total								2.2E-07					0.0E+00
		Exposure Point Total									2.2E-07					0.0E+00
	Exposure Medium Total										2.2E-07					0.0E+00
Soil Total											7.2E-04					0.0E+00
Receptor Total											7.2E-04					0.0E+00

[1]Consistent with the Cancer Guidelines and Supplemental Guidance (EPA, 2005a and 2005b), carcinogenic PAHs are evaluated based on their mutagenic mode of action.

TABLE 7.26.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.1E+04	mg/kg	1.7E-05	mg/kg/day	NA	NA	NA	1.3E-04	mg/kg/day	1.0E+00	mg/kg/day	1.3E-04
				Antimony	1.7E+01	mg/kg	2.6E-08	mg/kg/day	NA	NA	NA	2.0E-07	mg/kg/day	4.0E-04	mg/kg/day	5.0E-04
				Arsenic	2.4E+02	mg/kg	3.7E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	5.5E-07	2.8E-06	mg/kg/day	3.0E-04	mg/kg/day	9.5E-03
				Chromium	4.3E+01	mg/kg	6.5E-08	mg/kg/day	NA	NA	NA	5.1E-07	mg/kg/day	3.0E-03	mg/kg/day	1.7E-04
				Copper	2.4E+02	mg/kg	3.6E-07	mg/kg/day	NA	NA	NA	2.8E-06	mg/kg/day	4.0E-02	mg/kg/day	7.1E-05
				Iron	2.9E+04	mg/kg	4.4E-05	mg/kg/day	NA	NA	NA	3.4E-04	mg/kg/day	3.0E-01	mg/kg/day	1.1E-03
				Lead	7.1E+02	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	8.4E-06	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	5.6E-07	mg/kg/day	NA	NA	NA	4.3E-06	mg/kg/day	1.4E-01	mg/kg/day	3.1E-05
				Nickel	9.8E+01	mg/kg	1.5E-07	mg/kg/day	NA	NA	NA	1.2E-06	mg/kg/day	2.0E-02	mg/kg/day	5.8E-05
				Thallium	4.3E+00	mg/kg	6.5E-09	mg/kg/day	NA	NA	NA	5.0E-08	mg/kg/day	6.6E-05	mg/kg/day	7.6E-04
				Vanadium	5.1E+01	mg/kg	7.6E-08	mg/kg/day	NA	NA	NA	5.9E-07	mg/kg/day	1.0E-03	mg/kg/day	5.9E-04
				Mercury	3.9E+00	mg/kg	5.9E-09	mg/kg/day	NA	NA	NA	4.6E-08	mg/kg/day	3.0E-04	mg/kg/day	1.5E-04
				Aroclor-1254	6.1E-01	mg/kg	9.2E-10	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.8E-09	7.2E-09	mg/kg/day	2.0E-05	mg/kg/day	3.6E-04
				Aroclor-1260	1.7E+00	mg/kg	2.6E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	5.1E-09	2.0E-08	mg/kg/day	2.0E-05	mg/kg/day	9.9E-04
				Benzene	1.0E+01	mg/kg	1.5E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	8.4E-10	1.2E-07	mg/kg/day	4.0E-03	mg/kg/day	3.0E-05
				m,p-Xylene	1.8E+02	mg/kg	2.7E-07	mg/kg/day	NA	NA	NA	2.1E-06	mg/kg/day	2.0E-01	mg/kg/day	1.1E-05
				o-Xylene	9.0E+01	mg/kg	1.4E-07	mg/kg/day	NA	NA	NA	1.1E-06	mg/kg/day	2.0E-01	mg/kg/day	5.3E-06
				Xylene (Total)	2.0E+02	mg/kg	3.0E-07	mg/kg/day	NA	NA	NA	2.3E-06	mg/kg/day	2.0E-01	mg/kg/day	1.2E-05
				2-Methylnaphthalene	5.4E+02	mg/kg	8.1E-07	mg/kg/day	NA	NA	NA	6.3E-06	mg/kg/day	4.0E-03	mg/kg/day	1.6E-03
				Acenaphthene	2.8E+02	mg/kg	4.2E-07	mg/kg/day	NA	NA	NA	3.2E-06	mg/kg/day	6.0E-02	mg/kg/day	5.4E-05
				Benzo(a)anthracene	2.0E+02	mg/kg	3.1E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.2E-07	2.4E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	1.9E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.4E-06	1.5E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	2.0E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.5E-07	1.6E-06	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	1.7E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	1.2E-08	1.3E-06	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	1.5E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	3.0E-09	1.2E-06	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	3.0E-07	mg/kg/day	7.3E-03	1/(mg/kg/day)	2.2E-09	2.3E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	3.5E-08	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.6E-07	2.8E-07	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	3.4E-07	mg/kg/day	NA	NA	NA	2.6E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	1.3E-06	mg/kg/day	NA	NA	NA	9.8E-06	mg/kg/day	4.0E-02	mg/kg/day	2.4E-04
				Fluorene	3.3E+02	mg/kg	5.0E-07	mg/kg/day	NA	NA	NA	3.9E-06	mg/kg/day	4.0E-02	mg/kg/day	9.8E-05
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	1.1E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	7.7E-08	8.2E-07	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	2.4E-06	mg/kg/day	NA	NA	NA	1.9E-05	mg/kg/day	2.0E-02	mg/kg/day	9.4E-04
				Phenanthrene	1.2E+03	mg/kg	1.8E-06	mg/kg/day	NA	NA	NA	1.4E-05	mg/kg/day	3.0E-01	mg/kg/day	4.6E-05
				Pyrene	5.8E+02	mg/kg	8.8E-07	mg/kg/day	NA	NA	NA	6.8E-06	mg/kg/day	3.0E-02	mg/kg/day	2.3E-04
			Exp. Route Total								2.7E-06					1.8E-02

TABLE 7.26.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.1E+04	mg/kg	1.9E-08	mg/kg/day	NA	NA	NA	1.5E-07	mg/kg/day	1.0E+00	mg/kg/day	1.5E-07
				Antimony	1.7E+01	mg/kg	3.0E-11	mg/kg/day	NA	NA	NA	2.3E-10	mg/kg/day	6.0E-05	mg/kg/day	3.8E-06
				Arsenic	2.4E+02	mg/kg	1.3E-08	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.9E-08	9.7E-08	mg/kg/day	3.0E-04	mg/kg/day	3.2E-04
				Chromium	4.3E+01	mg/kg	7.5E-11	mg/kg/day	NA	NA	NA	5.8E-10	mg/kg/day	7.5E-05	mg/kg/day	7.7E-06
				Copper	2.4E+02	mg/kg	4.1E-10	mg/kg/day	NA	NA	NA	3.2E-09	mg/kg/day	4.0E-02	mg/kg/day	8.1E-08
				Iron	2.9E+04	mg/kg	5.0E-08	mg/kg/day	NA	NA	NA	3.9E-07	mg/kg/day	3.0E-01	mg/kg/day	1.3E-06
				Lead	7.1E+02	mg/kg	1.2E-09	mg/kg/day	NA	NA	NA	9.6E-09	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	6.4E-10	mg/kg/day	NA	NA	NA	5.0E-09	mg/kg/day	5.6E-03	mg/kg/day	8.8E-07
				Nickel	9.8E+01	mg/kg	1.7E-10	mg/kg/day	NA	NA	NA	1.3E-09	mg/kg/day	8.0E-04	mg/kg/day	1.6E-06
				Thallium	4.3E+00	mg/kg	7.4E-12	mg/kg/day	NA	NA	NA	5.8E-11	mg/kg/day	6.6E-05	mg/kg/day	8.7E-07
				Vanadium	5.1E+01	mg/kg	8.7E-11	mg/kg/day	NA	NA	NA	6.8E-10	mg/kg/day	2.6E-05	mg/kg/day	2.6E-05
				Mercury	3.9E+00	mg/kg	6.7E-12	mg/kg/day	NA	NA	NA	5.2E-11	mg/kg/day	2.1E-05	mg/kg/day	2.5E-06
				Aroclor-1254	6.1E-01	mg/kg	1.5E-10	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.9E-10	1.1E-09	mg/kg/day	2.0E-05	mg/kg/day	5.7E-05
				Aroclor-1260	1.7E+00	mg/kg	4.1E-10	mg/kg/day	2.0E+00	1/(mg/kg/day)	8.2E-10	3.2E-09	mg/kg/day	2.0E-05	mg/kg/day	1.6E-04
				Benzene	1.0E+01	mg/kg	1.7E-10	mg/kg/day	5.5E-02	1/(mg/kg/day)	9.6E-12	1.4E-09	mg/kg/day	4.0E-03	mg/kg/day	3.4E-07
				m,p-Xylene	1.8E+02	mg/kg	3.1E-09	mg/kg/day	NA	NA	NA	2.4E-08	mg/kg/day	2.0E-01	mg/kg/day	1.2E-07
				o-Xylene	9.0E+01	mg/kg	1.6E-09	mg/kg/day	NA	NA	NA	1.2E-08	mg/kg/day	2.0E-01	mg/kg/day	6.1E-08
				Xylene (Total)	2.0E+02	mg/kg	3.4E-09	mg/kg/day	NA	NA	NA	2.6E-08	mg/kg/day	2.0E-01	mg/kg/day	1.3E-07
				2-Methylnaphthalene	5.4E+02	mg/kg	9.3E-09	mg/kg/day	NA	NA	NA	7.2E-08	mg/kg/day	4.0E-03	mg/kg/day	1.8E-05
				Acenaphthene	2.8E+02	mg/kg	6.2E-08	mg/kg/day	NA	NA	NA	4.8E-07	mg/kg/day	6.0E-02	mg/kg/day	8.0E-06
				Benzo(a)anthracene	2.0E+02	mg/kg	4.6E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.3E-08	3.6E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	2.8E-08	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.1E-07	2.2E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	3.0E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.2E-08	2.3E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	2.5E-08	mg/kg/day	7.3E-02	1/(mg/kg/day)	1.8E-09	1.9E-07	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	1.7E-09	mg/kg/day	2.0E-02	1/(mg/kg/day)	3.4E-11	1.3E-08	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	4.5E-08	mg/kg/day	7.3E-03	1/(mg/kg/day)	3.3E-10	3.5E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	5.3E-09	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.8E-08	4.1E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	3.9E-09	mg/kg/day	NA	NA	NA	3.0E-08	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	1.9E-07	mg/kg/day	NA	NA	NA	1.5E-06	mg/kg/day	4.0E-02	mg/kg/day	3.6E-05
				Fluorene	3.3E+02	mg/kg	7.5E-08	mg/kg/day	NA	NA	NA	5.8E-07	mg/kg/day	4.0E-02	mg/kg/day	1.5E-05
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	1.6E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.1E-08	1.2E-07	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	3.6E-07	mg/kg/day	NA	NA	NA	2.8E-06	mg/kg/day	2.0E-02	mg/kg/day	1.4E-04
				Phenanthrene	1.2E+03	mg/kg	2.0E-08	mg/kg/day	NA	NA	NA	1.6E-07	mg/kg/day	3.0E-01	mg/kg/day	5.2E-07
				Pyrene	5.8E+02	mg/kg	1.3E-07	mg/kg/day	NA	NA	NA	1.0E-06	mg/kg/day	3.0E-02	mg/kg/day	3.4E-05
			Exp. Route Total								3.3E-07					8.4E-04
		Exposure Point Total									3.0E-06					1.9E-02
	Exposure Medium Total										3.0E-06					1.9E-02

TABLE 7.26.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air (Upland Area)	Block 93 Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	1.3E-05	mg/m3	6.7E-10	mg/kg/day	NA	NA	NA	5.2E-09	mg/kg/day	1.4E-03	mg/kg/day	3.6E-06
				Antimony	2.1E-08	mg/m3	1.0E-12	mg/kg/day	NA	NA	NA	8.1E-12	mg/kg/day	NA	NA	NA
				Arsenic	2.9E-07	mg/m3	1.5E-11	mg/kg/day	1.5E+01	1/(mg/kg/day)	2.2E-10	1.1E-10	mg/kg/day	NA	NA	NA
				Chromium	5.2E-08	mg/m3	2.6E-12	mg/kg/day	4.2E+01	1/(mg/kg/day)	1.1E-10	2.0E-11	mg/kg/day	2.9E-05	mg/kg/day	7.1E-07
				Copper	2.9E-07	mg/m3	1.5E-11	mg/kg/day	NA	NA	NA	1.1E-10	mg/kg/day	NA	NA	NA
				Iron	3.5E-05	mg/m3	1.8E-09	mg/kg/day	NA	NA	NA	1.4E-08	mg/kg/day	NA	NA	NA
				Lead	8.6E-07	mg/m3	4.3E-11	mg/kg/day	NA	NA	NA	3.4E-10	mg/kg/day	NA	NA	NA
				Manganese	4.5E-07	mg/m3	2.2E-11	mg/kg/day	NA	NA	NA	1.7E-10	mg/kg/day	1.4E-05	mg/kg/day	1.2E-05
				Nickel	1.2E-07	mg/m3	5.9E-12	mg/kg/day	NA	NA	NA	4.6E-11	mg/kg/day	NA	NA	NA
				Thallium	5.2E-09	mg/m3	2.6E-13	mg/kg/day	NA	NA	NA	2.0E-12	mg/kg/day	NA	NA	NA
				Vanadium	6.1E-08	mg/m3	3.1E-12	mg/kg/day	NA	NA	NA	2.4E-11	mg/kg/day	NA	NA	NA
				Mercury	4.7E-09	mg/m3	2.4E-13	mg/kg/day	NA	NA	NA	1.8E-12	mg/kg/day	NA	NA	NA
				Aroclor-1254	7.4E-10	mg/m3	3.7E-14	mg/kg/day	3.5E-01	1/(mg/kg/day)	1.3E-14	2.9E-13	mg/kg/day	NA	NA	NA
				Aroclor-1260	2.0E-09	mg/m3	1.0E-13	mg/kg/day	3.5E-01	1/(mg/kg/day)	3.6E-14	8.0E-13	mg/kg/day	NA	NA	NA
				Benzene	4.5E-03	mg/m3	2.2E-07	mg/kg/day	2.7E-02	1/(mg/kg/day)	6.1E-09	1.7E-06	mg/kg/day	8.6E-03	mg/kg/day	2.0E-04
				m,p-Xylene	5.0E-02	mg/m3	2.5E-06	mg/kg/day	NA	NA	NA	2.0E-05	mg/kg/day	2.9E-02	mg/kg/day	6.9E-04
				o-Xylene	2.2E-02	mg/m3	1.1E-06	mg/kg/day	NA	NA	NA	8.5E-06	mg/kg/day	2.9E-02	mg/kg/day	3.0E-04
				Xylene (Total)	4.7E-02	mg/m3	2.4E-06	mg/kg/day	NA	NA	NA	1.8E-05	mg/kg/day	2.9E-02	mg/kg/day	6.5E-04
				2-Methylnaphthalene	1.5E-03	mg/m3	7.7E-08	mg/kg/day	NA	NA	NA	6.0E-07	mg/kg/day	NA	NA	NA
				Acenaphthene	3.3E-07	mg/m3	1.7E-11	mg/kg/day	NA	NA	NA	1.3E-10	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.5E-07	mg/m3	1.2E-11	mg/kg/day	3.1E-01	1/(mg/kg/day)	3.8E-12	9.6E-11	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.5E-07	mg/m3	7.7E-12	mg/kg/day	3.1E+00	1/(mg/kg/day)	2.4E-11	6.0E-11	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.6E-07	mg/m3	8.0E-12	mg/kg/day	3.1E-01	1/(mg/kg/day)	2.5E-12	6.2E-11	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-07	mg/m3	6.7E-12	mg/kg/day	3.1E-02	1/(mg/kg/day)	2.1E-13	5.2E-11	mg/kg/day	NA	NA	NA
				Carbazole	1.2E-07	mg/m3	6.0E-12	mg/kg/day	NA	NA	NA	4.7E-11	mg/kg/day	NA	NA	NA
				Chrysene	2.4E-07	mg/m3	1.2E-11	mg/kg/day	NA	NA	NA	9.4E-11	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.8E-08	mg/m3	1.4E-12	mg/kg/day	3.1E+00	1/(mg/kg/day)	4.4E-12	1.1E-11	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.7E-07	mg/m3	1.4E-11	mg/kg/day	NA	NA	NA	1.1E-10	mg/kg/day	NA	NA	NA
				Fluoranthene	1.0E-06	mg/m3	5.1E-11	mg/kg/day	NA	NA	NA	3.9E-10	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	7.5E-08	mg/kg/day	NA	NA	NA	5.8E-07	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	8.4E-08	mg/m3	4.2E-12	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.3E-12	3.3E-11	mg/kg/day	NA	NA	NA
				Naphthalene	4.5E-02	mg/m3	2.3E-06	mg/kg/day	NA	NA	NA	1.8E-05	mg/kg/day	8.6E-04	mg/kg/day	2.1E-02
				Phenanthrene	9.9E-02	mg/m3	4.9E-06	mg/kg/day	NA	NA	NA	3.8E-05	mg/kg/day	NA	NA	NA
				Pyrene	2.3E-04	mg/m3	1.2E-08	mg/kg/day	NA	NA	NA	9.1E-08	mg/kg/day	NA	NA	NA
			Exp. Route Total								6.5E-09					2.2E-02
		Exposure Point Total									6.5E-09					2.2E-02
	Exposure Medium Total										6.5E-09					2.2E-02
Soil Total											3.0E-06					4.1E-02
Receptor Total											3.0E-06					4.1E-02

NA = Not applicable.

TABLE 7.27.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.1E+04	mg/kg	3.3E-05	mg/kg/day	NA	NA	NA	2.3E-04	mg/kg/day	1.0E+00	mg/kg/day	2.3E-04
				Antimony	1.7E+01	mg/kg	5.2E-08	mg/kg/day	NA	NA	NA	3.6E-07	mg/kg/day	4.0E-04	mg/kg/day	9.1E-04
				Arsenic	2.4E+02	mg/kg	7.3E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.1E-06	5.1E-06	mg/kg/day	3.0E-04	mg/kg/day	1.7E-02
				Chromium	4.3E+01	mg/kg	1.3E-07	mg/kg/day	NA	NA	NA	9.1E-07	mg/kg/day	3.0E-03	mg/kg/day	3.0E-04
				Copper	2.4E+02	mg/kg	7.3E-07	mg/kg/day	NA	NA	NA	5.1E-06	mg/kg/day	4.0E-02	mg/kg/day	1.3E-04
				Iron	2.9E+04	mg/kg	8.8E-05	mg/kg/day	NA	NA	NA	6.2E-04	mg/kg/day	3.0E-01	mg/kg/day	2.1E-03
				Lead	7.1E+02	mg/kg	2.2E-06	mg/kg/day	NA	NA	NA	1.5E-05	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	7.8E-06	mg/kg/day	1.4E-01	mg/kg/day	5.6E-05
				Nickel	9.8E+01	mg/kg	3.0E-07	mg/kg/day	NA	NA	NA	2.1E-06	mg/kg/day	2.0E-02	mg/kg/day	1.0E-04
				Thallium	4.3E+00	mg/kg	1.3E-08	mg/kg/day	NA	NA	NA	9.1E-08	mg/kg/day	6.6E-05	mg/kg/day	1.4E-03
				Vanadium	5.1E+01	mg/kg	1.5E-07	mg/kg/day	NA	NA	NA	1.1E-06	mg/kg/day	1.0E-03	mg/kg/day	1.1E-03
				Mercury	3.9E+00	mg/kg	1.2E-08	mg/kg/day	NA	NA	NA	8.2E-08	mg/kg/day	3.0E-04	mg/kg/day	2.7E-04
				Aroclor-1254	6.1E-01	mg/kg	1.8E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	3.7E-09	1.3E-08	mg/kg/day	2.0E-05	mg/kg/day	6.4E-04
				Aroclor-1260	1.7E+00	mg/kg	5.1E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.0E-08	3.6E-08	mg/kg/day	2.0E-05	mg/kg/day	1.8E-03
				Benzene	1.0E+01	mg/kg	3.1E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.7E-09	2.1E-07	mg/kg/day	4.0E-03	mg/kg/day	5.4E-05
				m,p-Xylene	1.8E+02	mg/kg	5.4E-07	mg/kg/day	NA	NA	NA	3.8E-06	mg/kg/day	2.0E-01	mg/kg/day	1.9E-05
				o-Xylene	9.0E+01	mg/kg	2.7E-07	mg/kg/day	NA	NA	NA	1.9E-06	mg/kg/day	2.0E-01	mg/kg/day	9.5E-06
				Xylene (Total)	2.0E+02	mg/kg	5.9E-07	mg/kg/day	NA	NA	NA	4.2E-06	mg/kg/day	2.0E-01	mg/kg/day	2.1E-05
				2-Methylnaphthalene	5.4E+02	mg/kg	1.6E-06	mg/kg/day	NA	NA	NA	1.1E-05	mg/kg/day	4.0E-03	mg/kg/day	2.8E-03
				Acenaphthene	2.8E+02	mg/kg	8.3E-07	mg/kg/day	NA	NA	NA	5.8E-06	mg/kg/day	6.0E-02	mg/kg/day	9.7E-05
				Benzo(a)anthracene	2.0E+02	mg/kg	6.1E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.4E-05	4.3E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	3.8E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	9.0E-05	2.7E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	4.0E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	9.4E-06	2.8E-06	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	3.3E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	7.8E-07	2.3E-06	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	3.0E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	6.0E-09	2.1E-06	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	6.0E-07	mg/kg/day	7.3E-03	1/(mg/kg/day)	1.4E-07	4.2E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	7.1E-08	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.7E-05	4.9E-07	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	6.8E-07	mg/kg/day	NA	NA	NA	4.7E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	2.5E-06	mg/kg/day	NA	NA	NA	1.8E-05	mg/kg/day	4.0E-02	mg/kg/day	4.4E-04
				Fluorene	3.3E+02	mg/kg	1.0E-06	mg/kg/day	NA	NA	NA	7.0E-06	mg/kg/day	4.0E-02	mg/kg/day	1.8E-04
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	2.1E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.0E-06	1.5E-06	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	4.8E-06	mg/kg/day	NA	NA	NA	3.4E-05	mg/kg/day	2.0E-02	mg/kg/day	1.7E-03
				Phenanthrene	1.2E+03	mg/kg	3.5E-06	mg/kg/day	NA	NA	NA	2.5E-05	mg/kg/day	3.0E-01	mg/kg/day	8.2E-05
				Pyrene	5.8E+02	mg/kg	1.7E-06	mg/kg/day	NA	NA	NA	1.2E-05	mg/kg/day	3.0E-02	mg/kg/day	4.1E-04
			Exp. Route Total								1.4E-04					3.2E-02

TABLE 7.27.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.1E+04	mg/kg	2.7E-08	mg/kg/day	NA	NA	NA	1.9E-07	mg/kg/day	1.0E+00	mg/kg/day	1.9E-07
				Antimony	1.7E+01	mg/kg	4.2E-11	mg/kg/day	NA	NA	NA	3.0E-10	mg/kg/day	6.0E-05	mg/kg/day	5.0E-06
				Arsenic	2.4E+02	mg/kg	1.8E-08	mg/kg/day	1.5E+00	1/(mg/kg/day)	2.7E-08	1.3E-07	mg/kg/day	3.0E-04	mg/kg/day	4.2E-04
				Chromium	4.3E+01	mg/kg	1.1E-10	mg/kg/day	NA	NA	NA	7.5E-10	mg/kg/day	7.5E-05	mg/kg/day	1.0E-05
				Copper	2.4E+02	mg/kg	5.9E-10	mg/kg/day	NA	NA	NA	4.2E-09	mg/kg/day	4.0E-02	mg/kg/day	1.0E-07
				Iron	2.9E+04	mg/kg	7.2E-08	mg/kg/day	NA	NA	NA	5.1E-07	mg/kg/day	3.0E-01	mg/kg/day	1.7E-06
				Lead	7.1E+02	mg/kg	1.8E-09	mg/kg/day	NA	NA	NA	1.2E-08	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	9.1E-10	mg/kg/day	NA	NA	NA	6.4E-09	mg/kg/day	5.6E-03	mg/kg/day	1.1E-06
				Nickel	9.8E+01	mg/kg	2.4E-10	mg/kg/day	NA	NA	NA	1.7E-09	mg/kg/day	8.0E-04	mg/kg/day	2.1E-06
				Thallium	4.3E+00	mg/kg	1.1E-11	mg/kg/day	NA	NA	NA	7.4E-11	mg/kg/day	6.6E-05	mg/kg/day	1.1E-06
				Vanadium	5.1E+01	mg/kg	1.3E-10	mg/kg/day	NA	NA	NA	8.8E-10	mg/kg/day	2.6E-05	mg/kg/day	3.4E-05
				Mercury	3.9E+00	mg/kg	9.6E-12	mg/kg/day	NA	NA	NA	6.7E-11	mg/kg/day	2.1E-05	mg/kg/day	3.2E-06
				Aroclor-1254	6.1E-01	mg/kg	2.1E-10	mg/kg/day	2.0E+00	1/(mg/kg/day)	4.2E-10	1.5E-09	mg/kg/day	2.0E-05	mg/kg/day	7.4E-05
				Aroclor-1260	1.7E+00	mg/kg	5.8E-10	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.2E-09	4.1E-09	mg/kg/day	2.0E-05	mg/kg/day	2.0E-04
				Benzene	1.0E+01	mg/kg	2.5E-10	mg/kg/day	5.5E-02	1/(mg/kg/day)	1.4E-11	1.8E-09	mg/kg/day	4.0E-03	mg/kg/day	4.4E-07
				m,p-Xylene	1.8E+02	mg/kg	4.4E-09	mg/kg/day	NA	NA	NA	3.1E-08	mg/kg/day	2.0E-01	mg/kg/day	1.6E-07
				o-Xylene	9.0E+01	mg/kg	2.2E-09	mg/kg/day	NA	NA	NA	1.6E-08	mg/kg/day	2.0E-01	mg/kg/day	7.8E-08
				Xylene (Total)	2.0E+02	mg/kg	4.9E-09	mg/kg/day	NA	NA	NA	3.4E-08	mg/kg/day	2.0E-01	mg/kg/day	1.7E-07
				2-Methylnaphthalene	5.4E+02	mg/kg	1.3E-08	mg/kg/day	NA	NA	NA	9.3E-08	mg/kg/day	4.0E-03	mg/kg/day	2.3E-05
				Acenaphthene	2.8E+02	mg/kg	6.9E-08	mg/kg/day	NA	NA	NA	6.2E-07	mg/kg/day	6.0E-02	mg/kg/day	1.0E-05
				Benzo(a)anthracene	2.0E+02	mg/kg	6.5E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	9.8E-07	4.6E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	4.1E-08	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.1E-06	2.9E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	4.2E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.4E-07	3.0E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	3.5E-08	mg/kg/day	7.3E-02	1/(mg/kg/day)	5.3E-08	2.5E-07	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	2.5E-09	mg/kg/day	2.0E-02	1/(mg/kg/day)	4.9E-11	1.7E-08	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	6.4E-08	mg/kg/day	7.3E-03	1/(mg/kg/day)	9.6E-09	4.5E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	7.5E-09	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.1E-06	5.3E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	5.5E-09	mg/kg/day	NA	NA	NA	3.9E-08	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	2.7E-07	mg/kg/day	NA	NA	NA	1.9E-06	mg/kg/day	4.0E-02	mg/kg/day	4.7E-05
				Fluorene	3.3E+02	mg/kg	1.1E-07	mg/kg/day	NA	NA	NA	7.5E-07	mg/kg/day	4.0E-02	mg/kg/day	1.9E-05
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	2.2E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.4E-07	1.6E-07	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	5.1E-07	mg/kg/day	NA	NA	NA	3.6E-06	mg/kg/day	2.0E-02	mg/kg/day	1.8E-04
				Phenanthrene	1.2E+03	mg/kg	2.9E-08	mg/kg/day	NA	NA	NA	2.0E-07	mg/kg/day	3.0E-01	mg/kg/day	6.7E-07
				Pyrene	5.8E+02	mg/kg	1.9E-07	mg/kg/day	NA	NA	NA	1.3E-06	mg/kg/day	3.0E-02	mg/kg/day	4.4E-05
			Exp. Route Total								9.3E-06					1.1E-03
		Exposure Point Total									1.5E-04					3.3E-02
	Exposure Medium Total										1.5E-04					3.3E-02

TABLE 7.27.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Block 93 Emissions from Surface Soil (0 - 2 ft)	Inhalation	Aluminum	1.3E-05	mg/m3	1.3E-09	mg/kg/day	NA	NA	NA	9.3E-09	mg/kg/day	1.4E-03	mg/kg/day	6.5E-06
				Antimony	2.1E-08	mg/m3	2.1E-12	mg/kg/day	NA	NA	NA	1.5E-11	mg/kg/day	NA	NA	NA
				Arsenic	2.9E-07	mg/m3	2.9E-11	mg/kg/day	1.5E+01	1/(mg/kg/day)	4.4E-10	2.0E-10	mg/kg/day	NA	NA	NA
				Chromium	5.2E-08	mg/m3	5.2E-12	mg/kg/day	4.2E+01	1/(mg/kg/day)	2.2E-10	3.7E-11	mg/kg/day	2.9E-05	mg/kg/day	1.3E-06
				Copper	2.9E-07	mg/m3	2.9E-11	mg/kg/day	NA	NA	NA	2.0E-10	mg/kg/day	NA	NA	NA
				Iron	3.5E-05	mg/m3	3.5E-09	mg/kg/day	NA	NA	NA	2.5E-08	mg/kg/day	NA	NA	NA
				Lead	8.6E-07	mg/m3	8.6E-11	mg/kg/day	NA	NA	NA	6.0E-10	mg/kg/day	NA	NA	NA
				Manganese	4.5E-07	mg/m3	4.5E-11	mg/kg/day	NA	NA	NA	3.1E-10	mg/kg/day	1.4E-05	mg/kg/day	2.2E-05
				Nickel	1.2E-07	mg/m3	1.2E-11	mg/kg/day	NA	NA	NA	8.3E-11	mg/kg/day	NA	NA	NA
				Thallium	5.2E-09	mg/m3	5.2E-13	mg/kg/day	NA	NA	NA	3.6E-12	mg/kg/day	NA	NA	NA
				Vanadium	6.1E-08	mg/m3	6.1E-12	mg/kg/day	NA	NA	NA	4.3E-11	mg/kg/day	NA	NA	NA
				Mercury	4.7E-09	mg/m3	4.7E-13	mg/kg/day	NA	NA	NA	3.3E-12	mg/kg/day	NA	NA	NA
				Aroclor-1254	7.4E-10	mg/m3	7.4E-14	mg/kg/day	3.5E-01	1/(mg/kg/day)	2.6E-14	5.2E-13	mg/kg/day	NA	NA	NA
				Aroclor-1260	2.0E-09	mg/m3	2.0E-13	mg/kg/day	3.5E-01	1/(mg/kg/day)	7.2E-14	1.4E-12	mg/kg/day	NA	NA	NA
				Benzene	4.5E-03	mg/m3	4.5E-07	mg/kg/day	2.7E-02	1/(mg/kg/day)	1.2E-08	3.1E-06	mg/kg/day	8.6E-03	mg/kg/day	3.6E-04
				m,p-Xylene	5.0E-02	mg/m3	5.0E-06	mg/kg/day	NA	NA	NA	3.5E-05	mg/kg/day	2.9E-02	mg/kg/day	1.2E-03
				o-Xylene	2.2E-02	mg/m3	2.2E-06	mg/kg/day	NA	NA	NA	1.5E-05	mg/kg/day	2.9E-02	mg/kg/day	5.3E-04
				Xylene (Total)	4.7E-02	mg/m3	4.7E-06	mg/kg/day	NA	NA	NA	3.3E-05	mg/kg/day	2.9E-02	mg/kg/day	1.2E-03
				2-Methylnaphthalene	1.5E-03	mg/m3	1.5E-07	mg/kg/day	NA	NA	NA	1.1E-06	mg/kg/day	NA	NA	NA
				Acenaphthene	3.3E-07	mg/m3	3.3E-11	mg/kg/day	NA	NA	NA	2.3E-10	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.5E-07	mg/m3	2.5E-11	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.1E-09	1.7E-10	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.5E-07	mg/m3	1.5E-11	mg/kg/day	3.1E+00	1/(mg/kg/day)	6.7E-09	1.1E-10	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.6E-07	mg/m3	1.6E-11	mg/kg/day	3.1E-01	1/(mg/kg/day)	7.0E-10	1.1E-10	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-07	mg/m3	1.3E-11	mg/kg/day	3.1E-02	1/(mg/kg/day)	5.9E-11	9.4E-11	mg/kg/day	NA	NA	NA
				Carbazole	1.2E-07	mg/m3	1.2E-11	mg/kg/day	NA	NA	NA	8.4E-11	mg/kg/day	NA	NA	NA
				Chrysene	2.4E-07	mg/m3	2.4E-11	mg/kg/day	NA	NA	NA	1.7E-10	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.8E-08	mg/m3	2.8E-12	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.2E-09	2.0E-11	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.7E-07	mg/m3	2.7E-11	mg/kg/day	NA	NA	NA	1.9E-10	mg/kg/day	NA	NA	NA
				Fluoranthene	1.0E-06	mg/m3	1.0E-10	mg/kg/day	NA	NA	NA	7.1E-10	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	1.5E-07	mg/kg/day	NA	NA	NA	1.0E-06	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	8.4E-08	mg/m3	8.4E-12	mg/kg/day	3.1E-01	1/(mg/kg/day)	3.7E-10	5.9E-11	mg/kg/day	NA	NA	NA
				Naphthalene	4.5E-02	mg/m3	4.5E-06	mg/kg/day	NA	NA	NA	3.2E-05	mg/kg/day	8.6E-04	mg/kg/day	3.7E-02
				Phenanthrene	9.9E-02	mg/m3	9.9E-06	mg/kg/day	NA	NA	NA	6.9E-05	mg/kg/day	NA	NA	NA
				Pyrene	2.3E-04	mg/m3	2.3E-08	mg/kg/day	NA	NA	NA	1.6E-07	mg/kg/day	NA	NA	NA
			Exp. Route Total								2.3E-08					4.0E-02
		Exposure Point Total									2.3E-08					4.0E-02
	Exposure Medium Total										2.3E-08					4.0E-02
Soil Total											1.5E-04					7.3E-02
Receptor Total											1.5E-04					7.3E-02

[1]Consistent with the Cancer Guidelines and Supplemental Guidance (EPA, 2005a and 2005b). Benzo(a)pyrene and Dibenz(a,h)anthracene are evaluated based on their mutagenic mode of action.

TABLE 7.28.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.1E+04	mg/kg	4.4E-04	mg/kg/day	NA	NA	NA	4.7E-03	mg/kg/day	1.0E+00	mg/kg/day	4.7E-03
				Antimony	1.7E+01	mg/kg	6.9E-07	mg/kg/day	NA	NA	NA	7.4E-06	mg/kg/day	4.0E-04	mg/kg/day	1.8E-02
				Arsenic	2.4E+02	mg/kg	9.8E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.5E-05	1.0E-04	mg/kg/day	3.0E-04	mg/kg/day	3.5E-01
				Chromium	4.3E+01	mg/kg	1.7E-06	mg/kg/day	NA	NA	NA	1.9E-05	mg/kg/day	3.0E-03	mg/kg/day	6.2E-03
				Copper	2.4E+02	mg/kg	9.7E-06	mg/kg/day	NA	NA	NA	1.0E-04	mg/kg/day	4.0E-02	mg/kg/day	2.6E-03
				Iron	2.9E+04	mg/kg	1.2E-03	mg/kg/day	NA	NA	NA	1.3E-02	mg/kg/day	3.0E-01	mg/kg/day	4.2E-02
				Lead	7.1E+02	mg/kg	2.9E-05	mg/kg/day	NA	NA	NA	3.1E-04	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	1.5E-05	mg/kg/day	NA	NA	NA	1.6E-04	mg/kg/day	1.4E-01	mg/kg/day	1.1E-03
				Nickel	9.8E+01	mg/kg	4.0E-06	mg/kg/day	NA	NA	NA	4.2E-05	mg/kg/day	2.0E-02	mg/kg/day	2.1E-03
				Thallium	4.3E+00	mg/kg	1.7E-07	mg/kg/day	NA	NA	NA	1.8E-06	mg/kg/day	6.6E-05	mg/kg/day	2.8E-02
				Vanadium	5.1E+01	mg/kg	2.0E-06	mg/kg/day	NA	NA	NA	2.2E-05	mg/kg/day	1.0E-03	mg/kg/day	2.2E-02
				Mercury	3.9E+00	mg/kg	1.6E-07	mg/kg/day	NA	NA	NA	1.7E-06	mg/kg/day	3.0E-04	mg/kg/day	5.6E-03
				Aroclor-1254	6.1E-01	mg/kg	2.5E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	4.9E-08	2.6E-07	mg/kg/day	2.0E-05	mg/kg/day	1.3E-02
				Aroclor-1260	1.7E+00	mg/kg	6.8E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.4E-07	7.3E-07	mg/kg/day	2.0E-05	mg/kg/day	3.6E-02
				Benzene	1.0E+01	mg/kg	4.1E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.3E-08	4.4E-06	mg/kg/day	4.0E-03	mg/kg/day	1.1E-03
				m,p-Xylene	1.8E+02	mg/kg	7.3E-06	mg/kg/day	NA	NA	NA	7.7E-05	mg/kg/day	2.0E-01	mg/kg/day	3.9E-04
				o-Xylene	9.0E+01	mg/kg	3.7E-06	mg/kg/day	NA	NA	NA	3.9E-05	mg/kg/day	2.0E-01	mg/kg/day	1.9E-04
				Xylene (Total)	2.0E+02	mg/kg	8.0E-06	mg/kg/day	NA	NA	NA	8.4E-05	mg/kg/day	2.0E-01	mg/kg/day	4.2E-04
				2-Methylnaphthalene	5.4E+02	mg/kg	2.2E-05	mg/kg/day	NA	NA	NA	2.3E-04	mg/kg/day	4.0E-03	mg/kg/day	5.8E-02
				Acenaphthene	2.8E+02	mg/kg	1.1E-05	mg/kg/day	NA	NA	NA	1.2E-04	mg/kg/day	6.0E-02	mg/kg/day	2.0E-03
				Benzo(a)anthracene	2.0E+02	mg/kg	8.2E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.0E-06	8.7E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	5.1E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.7E-05	5.4E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	5.4E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.9E-06	5.7E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	4.5E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.3E-07	4.7E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	4.0E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	8.1E-08	4.3E-05	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	8.1E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	5.9E-08	8.6E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	9.5E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.9E-06	1.0E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	9.1E-06	mg/kg/day	NA	NA	NA	9.6E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	3.4E-05	mg/kg/day	NA	NA	NA	3.6E-04	mg/kg/day	4.0E-02	mg/kg/day	8.9E-03
				Fluorene	3.3E+02	mg/kg	1.4E-05	mg/kg/day	NA	NA	NA	1.4E-04	mg/kg/day	4.0E-02	mg/kg/day	3.6E-03
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	2.8E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.1E-06	3.0E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	6.5E-05	mg/kg/day	NA	NA	NA	6.9E-04	mg/kg/day	2.0E-02	mg/kg/day	3.4E-02
				Phenanthrene	1.2E+03	mg/kg	4.7E-05	mg/kg/day	NA	NA	NA	5.0E-04	mg/kg/day	3.0E-01	mg/kg/day	1.7E-03
				Pyrene	5.8E+02	mg/kg	2.3E-05	mg/kg/day	NA	NA	NA	2.5E-04	mg/kg/day	3.0E-02	mg/kg/day	8.3E-03
			Exp. Route Total								7.2E-05					6.5E-01

TABLE 7.28.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.1E+04	mg/kg	5.9E-07	mg/kg/day	NA	NA	NA	6.2E-06	mg/kg/day	1.0E+00	mg/kg/day	6.2E-06
				Antimony	1.7E+01	mg/kg	9.2E-10	mg/kg/day	NA	NA	NA	9.7E-09	mg/kg/day	6.0E-05	mg/kg/day	1.6E-04
				Arsenic	2.4E+02	mg/kg	3.9E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	5.8E-07	4.1E-06	mg/kg/day	3.0E-04	mg/kg/day	1.4E-02
				Chromium	4.3E+01	mg/kg	2.3E-09	mg/kg/day	NA	NA	NA	2.4E-08	mg/kg/day	7.5E-05	mg/kg/day	3.3E-04
				Copper	2.4E+02	mg/kg	1.3E-08	mg/kg/day	NA	NA	NA	1.4E-07	mg/kg/day	4.0E-02	mg/kg/day	3.4E-06
				Iron	2.9E+04	mg/kg	1.6E-06	mg/kg/day	NA	NA	NA	1.7E-05	mg/kg/day	3.0E-01	mg/kg/day	5.5E-05
				Lead	7.1E+02	mg/kg	3.8E-08	mg/kg/day	NA	NA	NA	4.0E-07	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	2.0E-08	mg/kg/day	NA	NA	NA	2.1E-07	mg/kg/day	5.6E-03	mg/kg/day	3.7E-05
				Nickel	9.8E+01	mg/kg	5.2E-09	mg/kg/day	NA	NA	NA	5.6E-08	mg/kg/day	8.0E-04	mg/kg/day	6.9E-05
				Thallium	4.3E+00	mg/kg	2.3E-10	mg/kg/day	NA	NA	NA	2.4E-09	mg/kg/day	6.6E-05	mg/kg/day	3.7E-05
				Vanadium	5.1E+01	mg/kg	2.7E-09	mg/kg/day	NA	NA	NA	2.9E-08	mg/kg/day	2.6E-05	mg/kg/day	1.1E-03
				Mercury	3.9E+00	mg/kg	2.1E-10	mg/kg/day	NA	NA	NA	2.2E-09	mg/kg/day	2.1E-05	mg/kg/day	1.0E-04
				Aroclor-1254	6.1E-01	mg/kg	4.6E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	9.1E-09	4.8E-08	mg/kg/day	2.0E-05	mg/kg/day	2.4E-03
				Aroclor-1260	1.7E+00	mg/kg	1.3E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.5E-08	1.3E-07	mg/kg/day	2.0E-05	mg/kg/day	6.7E-03
				Benzene	1.0E+01	mg/kg	5.4E-09	mg/kg/day	5.5E-02	1/(mg/kg/day)	3.0E-10	5.6E-08	mg/kg/day	4.0E-03	mg/kg/day	1.4E-05
				m,p-Xylene	1.8E+02	mg/kg	9.6E-08	mg/kg/day	NA	NA	NA	1.0E-06	mg/kg/day	2.0E-01	mg/kg/day	5.1E-06
				o-Xylene	9.0E+01	mg/kg	4.8E-08	mg/kg/day	NA	NA	NA	5.1E-07	mg/kg/day	2.0E-01	mg/kg/day	2.6E-06
				Xylene (Total)	2.0E+02	mg/kg	1.1E-07	mg/kg/day	NA	NA	NA	1.1E-06	mg/kg/day	2.0E-01	mg/kg/day	5.6E-06
				2-Methylnaphthalene	5.4E+02	mg/kg	2.9E-07	mg/kg/day	NA	NA	NA	3.1E-06	mg/kg/day	4.0E-03	mg/kg/day	7.6E-04
				Acenaphthene	2.8E+02	mg/kg	1.9E-06	mg/kg/day	NA	NA	NA	2.0E-05	mg/kg/day	6.0E-02	mg/kg/day	3.4E-04
				Benzo(a)anthracene	2.0E+02	mg/kg	1.4E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.0E-06	1.5E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	8.8E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.4E-06	9.3E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	9.2E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	6.7E-07	9.7E-06	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	7.7E-07	mg/kg/day	7.3E-02	1/(mg/kg/day)	5.6E-08	8.1E-06	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	5.3E-08	mg/kg/day	2.0E-02	1/(mg/kg/day)	1.1E-09	5.6E-07	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	1.4E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	1.0E-08	1.5E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	1.6E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.2E-06	1.7E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	1.2E-07	mg/kg/day	NA	NA	NA	1.3E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	5.8E-06	mg/kg/day	NA	NA	NA	6.1E-05	mg/kg/day	4.0E-02	mg/kg/day	1.5E-03
				Fluorene	3.3E+02	mg/kg	2.3E-06	mg/kg/day	NA	NA	NA	2.5E-05	mg/kg/day	4.0E-02	mg/kg/day	6.1E-04
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	4.8E-07	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.5E-07	5.1E-06	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	1.1E-05	mg/kg/day	NA	NA	NA	1.2E-04	mg/kg/day	2.0E-02	mg/kg/day	5.9E-03
				Phenanthrene	1.2E+03	mg/kg	6.2E-07	mg/kg/day	NA	NA	NA	6.6E-06	mg/kg/day	3.0E-01	mg/kg/day	2.2E-05
				Pyrene	5.8E+02	mg/kg	4.0E-06	mg/kg/day	NA	NA	NA	4.3E-05	mg/kg/day	3.0E-02	mg/kg/day	1.4E-03
			Exp. Route Total								1.0E-05					3.5E-02
		Exposure Point Total									8.2E-05					6.8E-01
	Exposure Medium Total										8.2E-05					6.8E-01

TABLE 7.28.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	1.3E-05	mg/m3	2.1E-07	mg/kg/day	NA	NA	NA	2.3E-06	mg/kg/day	1.4E-03	mg/kg/day	1.6E-03
				Antimony	2.1E-08	mg/m3	3.4E-10	mg/kg/day	NA	NA	NA	3.6E-09	mg/kg/day	NA	NA	NA
				Arsenic	2.9E-07	mg/m3	4.7E-09	mg/kg/day	1.5E+01	1/(mg/kg/day)	7.1E-08	5.0E-08	mg/kg/day	NA	NA	NA
				Chromium	5.2E-08	mg/m3	8.5E-10	mg/kg/day	4.2E+01	1/(mg/kg/day)	3.6E-08	9.0E-09	mg/kg/day	2.9E-05	mg/kg/day	3.1E-04
				Copper	2.9E-07	mg/m3	4.7E-09	mg/kg/day	NA	NA	NA	5.0E-08	mg/kg/day	NA	NA	NA
				Iron	3.5E-05	mg/m3	5.7E-07	mg/kg/day	NA	NA	NA	6.1E-06	mg/kg/day	NA	NA	NA
				Lead	8.6E-07	mg/m3	1.4E-08	mg/kg/day	NA	NA	NA	1.5E-07	mg/kg/day	NA	NA	NA
				Manganese	4.5E-07	mg/m3	7.2E-09	mg/kg/day	NA	NA	NA	7.7E-08	mg/kg/day	1.4E-05	mg/kg/day	5.4E-03
				Nickel	1.2E-07	mg/m3	1.9E-09	mg/kg/day	NA	NA	NA	2.0E-08	mg/kg/day	NA	NA	NA
				Thallium	5.2E-09	mg/m3	8.4E-11	mg/kg/day	NA	NA	NA	8.9E-10	mg/kg/day	NA	NA	NA
				Vanadium	6.1E-08	mg/m3	9.9E-10	mg/kg/day	NA	NA	NA	1.0E-08	mg/kg/day	NA	NA	NA
				Mercury	4.7E-09	mg/m3	7.6E-11	mg/kg/day	NA	NA	NA	8.1E-10	mg/kg/day	NA	NA	NA
				Aroclor-1254	7.4E-10	mg/m3	1.2E-11	mg/kg/day	3.5E-01	1/(mg/kg/day)	4.2E-12	1.3E-10	mg/kg/day	NA	NA	NA
				Aroclor-1260	2.0E-09	mg/m3	3.3E-11	mg/kg/day	3.5E-01	1/(mg/kg/day)	1.2E-11	3.5E-10	mg/kg/day	NA	NA	NA
				Benzene	4.5E-03	mg/m3	7.2E-05	mg/kg/day	2.7E-02	1/(mg/kg/day)	2.0E-06	7.6E-04	mg/kg/day	8.6E-03	mg/kg/day	8.9E-02
				m,p-Xylene	5.0E-02	mg/m3	8.1E-04	mg/kg/day	NA	NA	NA	8.6E-03	mg/kg/day	2.9E-02	mg/kg/day	3.0E-01
				o-Xylene	2.2E-02	mg/m3	3.5E-04	mg/kg/day	NA	NA	NA	3.7E-03	mg/kg/day	2.9E-02	mg/kg/day	1.3E-01
				Xylene (Total)	4.7E-02	mg/m3	7.7E-04	mg/kg/day	NA	NA	NA	8.1E-03	mg/kg/day	2.9E-02	mg/kg/day	2.8E-01
				2-Methylnaphthalene	1.5E-03	mg/m3	2.5E-05	mg/kg/day	NA	NA	NA	2.6E-04	mg/kg/day	NA	NA	NA
				Acenaphthene	3.3E-07	mg/m3	5.4E-09	mg/kg/day	NA	NA	NA	5.7E-08	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.5E-07	mg/m3	4.0E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.2E-09	4.2E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.5E-07	mg/m3	2.5E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	7.6E-09	2.6E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.6E-07	mg/m3	2.6E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	8.0E-10	2.7E-08	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-07	mg/m3	2.2E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	6.7E-11	2.3E-08	mg/kg/day	NA	NA	NA
				Carbazole	1.2E-07	mg/m3	2.0E-09	mg/kg/day	NA	NA	NA	2.1E-08	mg/kg/day	NA	NA	NA
				Chrysene	2.4E-07	mg/m3	3.9E-09	mg/kg/day	NA	NA	NA	4.1E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.8E-08	mg/m3	4.6E-10	mg/kg/day	3.1E+00	1/(mg/kg/day)	1.4E-09	4.9E-09	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.7E-07	mg/m3	4.4E-09	mg/kg/day	NA	NA	NA	4.6E-08	mg/kg/day	NA	NA	NA
				Fluoranthene	1.0E-06	mg/m3	1.6E-08	mg/kg/day	NA	NA	NA	1.7E-07	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	2.4E-05	mg/kg/day	NA	NA	NA	2.6E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	8.4E-08	mg/m3	1.4E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	4.2E-10	1.4E-08	mg/kg/day	NA	NA	NA
				Naphthalene	4.5E-02	mg/m3	7.3E-04	mg/kg/day	NA	NA	NA	7.8E-03	mg/kg/day	8.6E-04	mg/kg/day	9.0E+00
				Phenanthrene	9.9E-02	mg/m3	1.6E-03	mg/kg/day	NA	NA	NA	1.7E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.3E-04	mg/m3	3.8E-06	mg/kg/day	NA	NA	NA	4.0E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								2.1E-06					9.9E+00
		Exposure Point Total									2.1E-06					9.9E+00
	Exposure Medium Total										2.1E-06					9.9E+00
Soil Total											8.4E-05					1.1E+01
Receptor Total											8.4E-05					1.1E+01

NA = Not applicable.

TABLE 7.29.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	Block 93 Subsurface Soil (0 - 10 ft)	Ingestion	Aluminum	8.89E+03	mg/kg	1.1E-04	mg/kg/day	NA	NA	NA	7.6E-03	mg/kg/day	1.0E+00	mg/kg/day	7.6E-03
				Antimony	1.90E+01	mg/kg	2.3E-07	mg/kg/day	NA	NA	NA	1.6E-05	mg/kg/day	4.0E-04	mg/kg/day	4.1E-02
				Arsenic	7.26E+01	mg/kg	8.9E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	1.3E-06	6.2E-05	mg/kg/day	3.0E-04	mg/kg/day	2.1E-01
				Chromium	3.10E+01	mg/kg	3.8E-07	mg/kg/day	NA	NA	NA	2.7E-05	mg/kg/day	2.0E-02	mg/kg/day	1.3E-03
				Copper	1.60E+02	mg/kg	2.0E-06	mg/kg/day	NA	NA	NA	1.4E-04	mg/kg/day	4.0E-02	mg/kg/day	3.4E-03
				Iron	3.18E+04	mg/kg	3.9E-04	mg/kg/day	NA	NA	NA	2.7E-02	mg/kg/day	3.0E-01	mg/kg/day	9.1E-02
				Lead	3.98E+02	mg/kg	4.9E-06	mg/kg/day	NA	NA	NA	3.4E-04	mg/kg/day	NA	NA	NA
				Manganese	3.48E+02	mg/kg	4.3E-06	mg/kg/day	NA	NA	NA	3.0E-04	mg/kg/day	1.4E-01	mg/kg/day	2.1E-03
				Nickel	4.38E+01	mg/kg	5.4E-07	mg/kg/day	NA	NA	NA	3.8E-05	mg/kg/day	2.0E-02	mg/kg/day	1.9E-03
				Thallium	1.71E+00	mg/kg	2.1E-08	mg/kg/day	NA	NA	NA	1.5E-06	mg/kg/day	6.6E-05	mg/kg/day	2.2E-02
				Vanadium	3.76E+01	mg/kg	4.6E-07	mg/kg/day	NA	NA	NA	3.2E-05	mg/kg/day	7.0E-03	mg/kg/day	4.6E-03
				Mercury	1.52E+00	mg/kg	1.9E-08	mg/kg/day	NA	NA	NA	1.3E-06	mg/kg/day	3.0E-03	mg/kg/day	4.3E-04
				Aroclor-1254	7.23E-01	mg/kg	8.8E-09	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.8E-08	6.2E-07	mg/kg/day	5.0E-05	mg/kg/day	1.2E-02
				Aroclor-1260	1.53E+00	mg/kg	1.9E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	3.8E-08	1.3E-06	mg/kg/day	5.0E-05	mg/kg/day	2.6E-02
				Benzene	1.18E+01	mg/kg	1.4E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	8.0E-09	1.0E-05	mg/kg/day	4.0E-03	mg/kg/day	2.5E-03
				m,p-Xylene	1.80E+02	mg/kg	2.2E-06	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	2.0E-01	mg/kg/day	7.7E-04
				o-Xylene	8.53E+01	mg/kg	1.0E-06	mg/kg/day	NA	NA	NA	7.3E-05	mg/kg/day	2.0E-01	mg/kg/day	3.7E-04
				Xylene (Total)	5.67E+01	mg/kg	6.9E-07	mg/kg/day	NA	NA	NA	4.9E-05	mg/kg/day	2.0E-01	mg/kg/day	2.4E-04
				2-Methylnaphthalene	7.87E+02	mg/kg	9.6E-06	mg/kg/day	NA	NA	NA	6.7E-04	mg/kg/day	4.0E-03	mg/kg/day	1.7E-01
				Acenaphthene	2.03E+02	mg/kg	2.5E-06	mg/kg/day	NA	NA	NA	1.7E-04	mg/kg/day	6.0E-01	mg/kg/day	2.9E-04
				Benzo(a)anthracene	2.32E+02	mg/kg	2.8E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.1E-06	2.0E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.99E+02	mg/kg	2.4E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	1.8E-05	1.7E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.96E+02	mg/kg	2.4E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.8E-06	1.7E-04	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	9.69E+01	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	8.3E-05	mg/kg/day	3.0E-01	mg/kg/day	2.8E-04
				Benzo(k)fluoranthene	1.24E+02	mg/kg	1.5E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	1.1E-07	1.1E-04	mg/kg/day	NA	NA	NA
				Carbazole	8.74E+01	mg/kg	1.1E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	2.1E-08	7.5E-05	mg/kg/day	NA	NA	NA
				Chrysene	2.21E+02	mg/kg	2.7E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	2.0E-08	1.9E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.97E+01	mg/kg	3.6E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.7E-06	2.5E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	8.70E+02	mg/kg	1.1E-05	mg/kg/day	NA	NA	NA	7.5E-04	mg/kg/day	NA	NA	NA
				Fluoranthene	6.92E+02	mg/kg	8.5E-06	mg/kg/day	NA	NA	NA	5.9E-04	mg/kg/day	4.0E-01	mg/kg/day	1.5E-03
				Fluorene	2.33E+02	mg/kg	2.9E-06	mg/kg/day	NA	NA	NA	2.0E-04	mg/kg/day	4.0E-01	mg/kg/day	5.0E-04
				Indeno(1,2,3-c,d)pyrene	9.26E+01	mg/kg	1.1E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	8.3E-07	7.9E-05	mg/kg/day	NA	NA	NA
				Naphthalene	3.31E+03	mg/kg	4.1E-05	mg/kg/day	NA	NA	NA	2.8E-03	mg/kg/day	2.0E-02	mg/kg/day	1.4E-01
				Phenanthrene	9.29E+02	mg/kg	1.1E-05	mg/kg/day	NA	NA	NA	8.0E-04	mg/kg/day	3.0E+00	mg/kg/day	2.7E-04
				Pyrene	5.45E+02	mg/kg	6.7E-06	mg/kg/day	NA	NA	NA	4.7E-04	mg/kg/day	3.0E-01	mg/kg/day	1.6E-03
			Exp. Route Total								2.7E-05					7.4E-01

TABLE 7.29.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Subsurface Soil	Block 93 Subsurface Soil (0 - 10 ft)	Dermal	Aluminum	8.9E+03	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	7.5E-05	mg/kg/day	1.0E+00	mg/kg/day	7.5E-05
				Antimony	1.9E+01	mg/kg	2.3E-09	mg/kg/day	NA	NA	NA	1.6E-07	mg/kg/day	6.0E-05	mg/kg/day	2.7E-03
				Arsenic	7.3E+01	mg/kg	2.6E-07	mg/kg/day	1.5E+00	1/(mg/kg/day)	4.0E-07	1.8E-05	mg/kg/day	3.0E-04	mg/kg/day	6.2E-02
				Chromium	3.1E+01	mg/kg	3.8E-09	mg/kg/day	NA	NA	NA	2.6E-07	mg/kg/day	5.0E-04	mg/kg/day	5.3E-04
				Copper	1.6E+02	mg/kg	1.9E-08	mg/kg/day	NA	NA	NA	1.4E-06	mg/kg/day	4.0E-02	mg/kg/day	3.4E-05
				Iron	3.2E+04	mg/kg	3.9E-06	mg/kg/day	NA	NA	NA	2.7E-04	mg/kg/day	3.0E-01	mg/kg/day	9.0E-04
				Lead	4.0E+02	mg/kg	4.8E-08	mg/kg/day	NA	NA	NA	3.4E-06	mg/kg/day	NA	NA	NA
				Manganese	3.5E+02	mg/kg	4.2E-08	mg/kg/day	NA	NA	NA	3.0E-06	mg/kg/day	5.6E-03	mg/kg/dey	5.3E-04
				Nickel	4.4E+01	mg/kg	5.3E-09	mg/kg/day	NA	NA	NA	3.7E-07	mg/kg/day	8.0E-04	mg/kg/day	4.7E-04
				Thallium	1.7E+00	mg/kg	2.1E-10	mg/kg/day	NA	NA	NA	1.4E-08	mg/kg/day	6.6E-05	mg/kg/day	2.2E-04
				Vanadium	3.8E+01	mg/kg	4.6E-09	mg/kg/day	NA	NA	NA	3.2E-07	mg/kg/day	1.8E-04	mg/kg/day	1.8E-03
				Mercury	1.5E+00	mg/kg	1.8E-10	mg/kg/day	NA	NA	NA	1.3E-08	mg/kg/day	2.1E-04	mg/kg/day	6.1E-05
				Aroclor-1254	7.2E-01	mg/kg	1.2E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.5E-08	8.6E-07	mg/kg/day	5.0E-05	mg/kg/day	1.7E-02
				Aroclor-1260	1.5E+00	mg/kg	2.6E-08	mg/kg/day	2.0E+00	1/(mg/kg/day)	5.2E-08	1.8E-06	mg/kg/day	5.0E-05	mg/kg/day	3.6E-02
				Benzene	1.2E+01	mg/kg	1.4E-08	mg/kg/day	5.5E-02	1/(mg/kg/day)	7.9E-10	1.0E-06	mg/kg/day	4.0E-03	mg/kg/day	2.5E-04
				m,p-Xylene	1.8E+02	mg/kg	2.2E-07	mg/kg/day	NA	NA	NA	1.5E-05	mg/kg/day	2.0E-01	mg/kg/day	7.6E-05
				o-Xylene	8.5E+01	mg/kg	1.0E-07	mg/kg/day	NA	NA	NA	7.2E-06	mg/kg/day	2.0E-01	mg/kg/day	3.6E-05
				Xylene (Total)	5.7E+01	mg/kg	6.9E-08	mg/kg/day	NA	NA	NA	4.8E-06	mg/kg/day	2.0E-01	mg/kg/day	2.4E-05
				2-Methylnaphthalene	7.9E+02	mg/kg	9.5E-07	mg/kg/day	NA	NA	NA	6.7E-05	mg/kg/day	4.0E-03	mg/kg/day	1.7E-02
				Acenaphthene	2.0E+02	mg/kg	3.2E-06	mg/kg/day	NA	NA	NA	2.2E-04	mg/kg/day	6.0E-01	mg/kg/day	3.7E-04
				Benzo(a)anthracene	2.3E+02	mg/kg	3.7E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.7E-06	2.6E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.0E+02	mg/kg	3.1E-06	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.3E-05	2.2E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	2.0E+02	mg/kg	3.1E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.3E-06	2.2E-04	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	9.7E+01	mg/kg	1.5E-06	mg/kg/day	NA	NA	NA	1.1E-04	mg/kg/day	3.0E-01	mg/kg/day	3.6E-04
				Benzo(k)fluoranthene	1.2E+02	mg/kg	2.0E-06	mg/kg/day	7.3E-02	1/(mg/kg/day)	1.4E-07	1.4E-04	mg/kg/day	NA	NA	NA
				Carbazole	8.7E+01	mg/kg	1.1E-07	mg/kg/day	2.0E-02	1/(mg/kg/day)	2.1E-09	7.4E-06	mg/kg/day	NA	NA	NA
				Chrysene	2.2E+02	mg/kg	3.5E-06	mg/kg/day	7.3E-03	1/(mg/kg/day)	2.5E-08	2.4E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	3.0E+01	mg/kg	4.7E-07	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.4E-06	3.3E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	8.7E+02	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	7.4E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	6.9E+02	mg/kg	1.1E-05	mg/kg/day	NA	NA	NA	7.6E-04	mg/kg/day	4.0E-01	mg/kg/day	1.9E-03
				Fluorene	2.3E+02	mg/kg	3.7E-06	mg/kg/day	NA	NA	NA	2.6E-04	mg/kg/day	4.0E-01	mg/kg/day	6.4E-04
				Indeno(1,2,3-c,d)pyrene	9.3E+01	mg/kg	1.5E-06	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.1E-06	1.0E-04	mg/kg/day	NA	NA	NA
				Naphthalene	3.3E+03	mg/kg	5.2E-05	mg/kg/day	NA	NA	NA	3.7E-03	mg/kg/day	2.0E-02	mg/kg/day	1.8E-01
				Phenanthrene	9.3E+02	mg/kg	1.1E-06	mg/kg/day	NA	NA	NA	7.9E-05	mg/kg/day	3.0E+00	mg/kg/day	2.6E-05
				Pyrene	5.5E+02	mg/kg	8.6E-06	mg/kg/day	NA	NA	NA	6.0E-04	mg/kg/day	3.0E-01	mg/kg/day	2.0E-03
			Exp. Route Total								3.3E-05					3.3E-01
		Exposure Point Total									6.0E-05					1.1E+00
	Exposure Medium Total										6.0E-05					1.1E+00

TABLE 7.29.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Block 93 Emissions from Subsurface Soil (0 - 10 ft)	Inhalation	Aluminum	4.9E-04	mg/m3	6.0E-07	mg/kg/day	NA	NA	NA	4.2E-05	mg/kg/day	1.4E-03	mg/kg/day	3.0E-02
				Antimony	1.0E-06	mg/m3	1.3E-09	mg/kg/day	NA	NA	NA	9.0E-08	mg/kg/day	NA	NA	NA
				Arsenic	4.0E-06	mg/m3	4.9E-09	mg/kg/day	1.5E+01	1/(mg/kg/day)	7.4E-08	3.4E-07	mg/kg/day	NA	NA	NA
				Chromium	1.7E-06	mg/m3	2.1E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	8.8E-08	1.5E-07	mg/kg/day	2.9E-05	mg/kg/day	5.1E-03
				Copper	8.8E-06	mg/m3	1.1E-08	mg/kg/day	NA	NA	NA	7.6E-07	mg/kg/day	NA	NA	NA
				Iron	1.8E-03	mg/m3	2.2E-06	mg/kg/day	NA	NA	NA	1.5E-04	mg/kg/day	NA	NA	NA
				Lead	2.2E-05	mg/m3	2.7E-08	mg/kg/day	NA	NA	NA	1.9E-06	mg/kg/day	NA	NA	NA
				Manganese	1.9E-05	mg/m3	2.4E-08	mg/kg/day	NA	NA	NA	1.7E-06	mg/kg/day	1.4E-05	mg/kg/day	1.2E-01
				Nickel	2.4E-06	mg/m3	3.0E-09	mg/kg/day	NA	NA	NA	2.1E-07	mg/kg/day	NA	NA	NA
				Thallium	9.5E-08	mg/m3	1.2E-10	mg/kg/day	NA	NA	NA	8.1E-09	mg/kg/day	NA	NA	NA
				Vanadium	2.1E-06	mg/m3	2.5E-09	mg/kg/day	NA	NA	NA	1.8E-07	mg/kg/day	NA	NA	NA
				Mercury	8.4E-08	mg/m3	1.0E-10	mg/kg/day	NA	NA	NA	7.2E-09	mg/kg/day	8.6E-05	mg/kg/day	8.4E-05
				Aroclor-1254	4.0E-08	mg/m3	4.9E-11	mg/kg/day	3.5E-01	1/(mg/kg/day)	1.7E-11	3.4E-09	mg/kg/day	NA	NA	NA
				Aroclor-1260	8.5E-08	mg/m3	1.0E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	3.6E-11	7.3E-09	mg/kg/day	NA	NA	NA
				Benzene	5.2E-03	mg/m3	6.4E-06	mg/kg/day	2.7E-02	1/(mg/kg/day)	1.7E-07	4.5E-04	mg/kg/day	8.6E-03	mg/kg/day	5.2E-02
				m,p-Xylene	5.0E-02	mg/m3	6.2E-05	mg/kg/day	NA	NA	NA	4.3E-03	mg/kg/day	2.9E-02	mg/kg/day	1.5E-01
				o-Xylene	2.1E-02	mg/m3	2.5E-05	mg/kg/day	NA	NA	NA	1.8E-03	mg/kg/day	2.9E-02	mg/kg/day	6.2E-02
				Xylene (Total)	1.4E-02	mg/m3	1.7E-05	mg/kg/day	NA	NA	NA	1.2E-03	mg/kg/day	2.9E-02	mg/kg/day	4.1E-02
				2-Methylnaphthalene	2.3E-03	mg/m3	2.8E-06	mg/kg/day	NA	NA	NA	2.0E-04	mg/kg/day	NA	NA	NA
				Acenaphthene	1.1E-05	mg/m3	1.4E-08	mg/kg/day	NA	NA	NA	9.7E-07	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	1.3E-05	mg/m3	1.6E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	4.8E-09	1.1E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.1E-05	mg/m3	1.3E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	4.2E-08	9.4E-07	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.1E-05	mg/m3	1.3E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	4.1E-09	9.3E-07	mg/kg/day	NA	NA	NA
				Benzo(g,h,i)perylene	5.4E-06	mg/m3	6.6E-09	mg/kg/day	NA	NA	NA	4.6E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	6.9E-06	mg/m3	8.4E-09	mg/kg/day	3.1E-02	1/(mg/kg/day)	2.6E-10	5.9E-07	mg/kg/day	NA	NA	NA
				Carbazole	4.8E-06	mg/m3	5.9E-09	mg/kg/day	NA	NA	NA	4.1E-07	mg/kg/day	NA	NA	NA
				Chrysene	1.2E-05	mg/m3	1.5E-08	mg/kg/day	NA	NA	NA	1.0E-06	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	1.6E-06	mg/m3	2.0E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	6.2E-09	1.4E-07	mg/kg/day	NA	NA	NA
				Dibenzofuran	4.8E-05	mg/m3	5.9E-08	mg/kg/day	NA	NA	NA	4.1E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	3.8E-05	mg/m3	4.7E-08	mg/kg/day	NA	NA	NA	3.3E-06	mg/kg/day	NA	NA	NA
				Fluorene	1.1E-03	mg/m3	1.3E-06	mg/kg/day	NA	NA	NA	9.1E-05	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	5.1E-06	mg/m3	6.3E-09	mg/kg/day	3.1E-01	1/(mg/kg/day)	1.9E-09	4.4E-07	mg/kg/day	NA	NA	NA
				Naphthalene	9.4E-02	mg/m3	1.1E-04	mg/kg/day	NA	NA	NA	8.0E-03	mg/kg/day	8.6E-04	mg/kg/day	9.4E+00
				Phenanthrene	7.8E-02	mg/m3	9.6E-05	mg/kg/day	NA	NA	NA	6.7E-03	mg/kg/day	NA	NA	NA
				Pyrene	2.5E-04	mg/m3	3.0E-07	mg/kg/day	NA	NA	NA	2.1E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								3.9E-07					9.8E+00
		Exposure Point Total									3.9E-07					9.8E+00
	Exposure Medium Total										3.9E-07					9.8E+00
Soil Total											6.0E-05					1.1E+01

TABLE 7.29.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Groundwater (Excavation)	Block 93 (Excavation)	Dermal	Arsenic	4.0E+04	ug/L	3.1E-06	mg/kg/day	1.5E+00	1/(mg/kg/day)	4.6E-06	2.2E-04	mg/kg/day	3.0E-04	mg/kg/day	7.2E-01
				Iron	1.4E+05	ug/L	1.1E-05	mg/kg/day	NA	NA	NA	7.4E-04	mg/kg/day	3.0E-01	mg/kg/day	2.5E-03
				Lead	9.0E+00	ug/L	6.9E-10	mg/kg/day	NA	NA	NA	4.8E-08	mg/kg/day	NA	NA	NA
				delta-BHC	2.2E-02	ug/L	8.2E-11	mg/kg/day	1.8E+00	1/(mg/kg/day)	1.5E-10	5.7E-09	mg/kg/day	NA	NA	NA
				Trichloroethene	2.0E-01	ug/L	2.3E-10	mg/kg/day	4.0E-01	1/(mg/kg/day)	9.0E-11	1.6E-08	mg/kg/day	3.0E-04	mg/kg/day	5.3E-05
				2-Methylnaphthalene	4.0E+00	ug/L	2.6E-08	mg/kg/day	NA	NA	NA	1.8E-06	mg/kg/day	4.0E-03	mg/kg/day	4.6E-04
				Benzo(a)anthracene	6.5E-01	ug/L	4.7E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.4E-08	3.3E-06	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	2.6E-01	ug/L	3.1E-08	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.3E-07	2.2E-06	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	3.0E-01	ug/L	3.8E-08	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.7E-08	2.6E-06	mg/kg/day	NA	NA	NA
				Carbazole	3.4E+00	ug/L	1.0E-08	mg/kg/day	2.0E-02	1/(mg/kg/day)	2.1E-10	7.3E-07	mg/kg/day	NA	NA	NA
				Dibenzofuran	6.0E+00	ug/L	4.9E-08	mg/kg/day	NA	NA	NA	3.5E-06	mg/kg/day	NA	NA	NA
				Naphthalene	1.3E+02	ug/L	5.6E-07	mg/kg/day	NA	NA	NA	3.9E-05	mg/kg/day	2.0E-02	mg/kg/day	1.9E-03
			Exp. Route Total								4.9E-06					7.3E-01
		Exposure Point Total									4.9E-06					7.3E-01
	Exposure Medium Total										4.9E-06					7.3E-01

TABLE 7.29.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Ambient Air (Excavation)	Block 93 (Excavation)	Inhalation	Trichloroethene	8.1E-06	mg/m3	6.8E-10	mg/kg/day	4.0E-01	1/(mg/kg/day)	2.7E-10	4.7E-08	mg/kg/day	1.1E-02	mg/kg/day	4.1E-06
				2-Methylnaphthalene	3.8E-05	mg/m3	3.2E-09	mg/kg/day	NA	NA	NA	2.2E-07	mg/kg/day	NA	NA	NA
				Dibenzofuran	6.6E-05	mg/m3	5.5E-09	mg/kg/day	NA	NA	NA	3.9E-07	mg/kg/day	NA	NA	NA
				Naphthalene	4.4E-03	mg/m3	3.7E-07	mg/kg/day	NA	NA	NA	2.6E-05	mg/kg/day	8.6E-04	mg/kg/day	3.0E-02
			Exp. Route Total								2.7E-10					3.0E-02
		Exposure Point Total									2.7E-10					3.0E-02
	Exposure Medium Total										2.7E-10					3.0E-02
Groundwater Total											4.9E-06					7.6E-01
Receptor Total											6.5E-05					1.2E+01

NA = Not applicable.

TABLE 7.29.CTE SUPPLEMENT A
CALCULATION OF DAEVENT
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical of Potential Concern	Groundwater Concentration (CW) (ug/L)	Permeability Coefficient (Kp) (cm/hr)	B (dimensionless)	Lag Time (τ_{event}) (hr)	t* (hr)	Fraction Absorbed Water (FA) (dimensionless)	Duration of Event (tevent) (hr)	DAevent (mg/cm^2-event)	Eq
Arsenic	4.01E+04	1.0E-03	NA	NA	NA	NA	4.0	1.6E-04	1
Iron	1.37E+05	1.0E-03	NA	NA	NA	NA	4.0	5.5E-04	1
Lead	8.96E+00	1.0E-03	NA	NA	NA	NA	4.0	3.6E-08	1
delta-BHC	2.23E-02	1.6E-02	1.1E-01	4.5E+00	1.1E+01	1.0E+00	4.0	4.2E-09	2
Trichloroethene	2.00E-01	1.2E-02	5.1E-02	5.8E-01	1.4E+00	1.0E+00	4.0	1.2E-08	3
2-Methylnaphthalene	3.98E+00	7.2E-02	3.3E-01	6.6E-01	1.6E+00	1.0E+00	4.0	1.4E-06	3
Benzo(a)anthracene	6.46E-01	4.7E-01	2.8E+00	2.0E+00	8.5E+00	1.0E+00	4.0	2.4E-06	2
Benzo(a)pyrene	2.56E-01	7.0E-01	4.3E+00	2.7E+00	1.2E+01	1.0E+00	4.0	1.6E-06	2
Benzo(b)fluoranthene	3.01E-01	7.0E-01	4.3E+00	2.8E+00	1.2E+01	1.0E+00	4.0	1.9E-06	2
Carbazole	3.38E+00	2.9E-02	1.4E-01	9.1E-01	2.2E+00	1.0E+00	4.0	5.4E-07	3
Dibenzofuran	6.00E+00	7.9E-02	4.0E-01	9.2E-01	2.2E+00	1.0E+00	4.0	2.6E-06	3
Naphthalene	1.32E+02	4.7E-02	2.0E-01	5.6E-01	1.3E+00	1.0E+00	4.0	2.9E-05	3

Inorganics: DAevent (mg/cm2-event) =

DA_{event} = Kp x CW x tevent x 0.001 mg/ug x 0.001 l/cm^3 (Eq 1)

Organics: DAevent (mg/cm2-event) =

DA_{event} = $t_{event} < t^*$: DA_{event} (mg/cm^2-event) =
2 x FA x Kp x Cw x (sqrt((6 x τ x t_{event}) / (3.1415))) x CF1 x CF2 (Eq 2)

$t_{event} > t^*$: DA_{event} (mg/cm^2-event) =
FA x Kp x CW x (t_{event}/(1+B) + 2 x τ x ((1 + 3B + 3B^2)/(1+B)^2)) xCF1 x CF2 (Eq 3)

Notes:

NA - Not applicable

Permeability constants from EPA 2004, *Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment - Final).* EPA/540/R/99/005. The default value of 0.001 was assigned to inorganics not listed in this document.

B - Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to its permeability coefficient across the viable epidermis (dimensionless).

t* - Time to reach steady-state

TABLE 7.29.CTE SUPPLEMENT B
CALCULATION OF CONSTITUENT CONCENTRATIONS IN AIR FROM STANDING WATER
FUTURE CONSTRUCTION WORKER SCENARIO (QUANTA RESOURCES)
Quanta Resources Site, OU1, Edgewater, New Jersey

Chemical	Concentration in Water (mg/L)	Concentration in Water (g/m^3) C_L	Dimensionless Henry's Law Constant (H') K_{eq}	Diffusion coefficient in air (cm^2/s) D_a	Diffusion coefficient in water (cm^2/s) D_w	Schmidt Number Sc_g	Effective diameter of source (m) d_e	Liquid-phase mass transfer coef (m/s) k_L	k_G (m/s)	1/K	K (m/s)	E (g/s)	Concentration in Air (mg/m^3) C_{air}
Trichloroethene	2.00E-04	2.00E-04	4.22E-01	7.90E-02	9.10E-06	1.91E+00	1.13E+01	2.91E-06	2.39E-03	3.45E+05	2.90E-06	5.80E-08	8.06E-06
2-Methylnaphthalene	3.98E-03	3.98E-03	5.17E-04	5.22E-02	7.75E-06	2.89E+00	1.13E+01	2.61E-06	1.81E-03	1.45E+06	6.90E-07	2.74E-07	3.81E-05
Dibenzofuran	6.00E-03	6.00E-03	5.33E-04	6.01E-02	1.00E-05	2.51E+00	1.13E+01	3.10E-06	1.99E-03	1.26E+06	7.91E-07	4.75E-07	6.60E-05
Naphthalene	1.32E-01	1.32E-01	1.98E-02	5.90E-02	7.50E-06	2.56E+00	1.13E+01	2.56E-06	1.97E-03	4.17E+05	2.40E-06	3.18E-05	4.41E-03

Concentration in Air (C_{air}) = (mg/m^3)	**$1000^* E/H * V_{wind} * L$**
Emissions from Liquid surface (E) = (g/s)	**$K * A * C_L$**
Overall Mas Transfer Coefficient (K) = (m/s)	**$1/K = 1/k_L + 1/k_G * K_{eq}$**
Liquid-phase Mass Transfer Coefficient (k_L) = (m/s)	**$2.78E\text{-}06 * (D_w/D_{ether})^{2/3}$**
Gas-phase Mass Transfer Coefficient (k_G) = (m/g)	**$4.82E\text{-}03 * U^{0.78} * Sc_G^{-0.67} * d_e^{-0.11}$**
Effective Diameter of Source (d_e) = (m)	**$(4 * A / \pi)^{0.5}$**
Schmidt Number Calculation (Sc_G) =	**$u_G/p_G * D_a$**

Parameters		Values
C_L	Concentration in liquid phase (g/m^3)	chemical specific
K	overall mass transfer coefficient (m/s)	calculated
k_L	liquid-phase mass transfer coefficient (m/s)	calculated
k_G	gas-phase mass transfer coefficient (m/s)	calculated
K_{eq}	Equilibrium constant (Henry's Law constant)	chemical specific
D_{ether}	Diffusion coefficient of ether in water (cm^2/s)	8.50E-06
D_w	Diffusion coefficient in water (cm^2/s)	chemical specific
U	Windspeed (m/s)	1
A	Area of the source (m^2)	100
u_G	viscosity of air (g/cm-s)	1.81E-04
p_G	density of air (g/cm^3)	1.20E-03
D_a	Diffusion coefficient in air (cm^2/s)	chemical specific
H	Height of breathing zone (m)	2
Vwind	Average wind speed in breathing zone (m/s)	2.25
L	Length of breathing zone perpendicular to wind (m)	1.6

Chemical and physical properties from EPA Region 9 PRG Table (EPA, 10/2004).

TABLE 7.30.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.1E+04	mg/kg	NA	NA	NA	NA	NA	7.5E-03	mg/kg/day	1.0E+00	mg/kg/day	7.5E-03
				Antimony	1.7E+01	mg/kg	NA	NA	NA	NA	NA	1.2E-05	mg/kg/day	4.0E-04	mg/kg/day	2.9E-02
				Arsenic	2.4E+02	mg/kg	NA	NA	NA	NA	NA	1.7E-04	mg/kg/day	3.0E-04	mg/kg/day	5.5E-01
				Chromium	4.3E+01	mg/kg	NA	NA	NA	NA	NA	3.0E-05	mg/kg/day	3.0E-03	mg/kg/day	9.9E-03
				Copper	2.4E+02	mg/kg	NA	NA	NA	NA	NA	1.6E-04	mg/kg/day	4.0E-02	mg/kg/day	4.1E-03
				Iron	2.9E+04	mg/kg	NA	NA	NA	NA	NA	2.0E-02	mg/kg/day	3.0E-01	mg/kg/day	6.7E-02
				Lead	7.1E+02	mg/kg	NA	NA	NA	NA	NA	4.9E-04	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	NA	NA	NA	NA	NA	2.5E-04	mg/kg/day	1.4E-01	mg/kg/day	1.8E-03
				Nickel	9.8E+01	mg/kg	NA	NA	NA	NA	NA	6.7E-05	mg/kg/day	2.0E-02	mg/kg/day	3.4E-03
				Thallium	4.3E+00	mg/kg	NA	NA	NA	NA	NA	2.9E-06	mg/kg/day	6.6E-05	mg/kg/day	4.5E-02
				Vanadium	5.1E+01	mg/kg	NA	NA	NA	NA	NA	3.5E-05	mg/kg/day	1.0E-03	mg/kg/day	3.5E-02
				Mercury	3.9E+00	mg/kg	NA	NA	NA	NA	NA	2.7E-06	mg/kg/day	3.0E-04	mg/kg/day	8.9E-03
				Aroclor-1254	6.1E-01	mg/kg	NA	NA	NA	NA	NA	4.2E-07	mg/kg/day	2.0E-05	mg/kg/day	2.1E-02
				Aroclor-1260	1.7E+00	mg/kg	NA	NA	NA	NA	NA	1.2E-06	mg/kg/day	2.0E-05	mg/kg/day	5.8E-02
				Benzene	1.0E+01	mg/kg	NA	NA	NA	NA	NA	7.0E-06	mg/kg/day	4.0E-03	mg/kg/day	1.7E-03
				m,p-Xylene	1.8E+02	mg/kg	NA	NA	NA	NA	NA	1.2E-04	mg/kg/day	2.0E-01	mg/kg/day	6.2E-04
				o-Xylene	9.0E+01	mg/kg	NA	NA	NA	NA	NA	6.2E-05	mg/kg/day	2.0E-01	mg/kg/day	3.1E-04
				Xylene (Total)	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-04	mg/kg/day	2.0E-01	mg/kg/day	6.8E-04
				2-Methylnaphthalene	5.4E+02	mg/kg	NA	NA	NA	NA	NA	3.7E-04	mg/kg/day	4.0E-03	mg/kg/day	9.2E-02
				Acenaphthene	2.8E+02	mg/kg	NA	NA	NA	NA	NA	1.9E-04	mg/kg/day	6.0E-02	mg/kg/day	3.2E-03
				Benzo(a)anthracene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	8.7E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	9.1E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	NA	NA	NA	NA	NA	7.6E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	NA	NA	NA	NA	NA	6.8E-05	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	NA	NA	NA	NA	NA	1.6E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	NA	NA	NA	NA	NA	1.5E-04	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	NA	NA	NA	NA	NA	5.7E-04	mg/kg/day	4.0E-02	mg/kg/day	1.4E-02
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	2.3E-04	mg/kg/day	4.0E-02	mg/kg/day	5.7E-03
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	NA	NA	NA	NA	NA	4.8E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	NA	NA	NA	NA	NA	1.1E-03	mg/kg/day	2.0E-02	mg/kg/day	5.5E-02
				Phenanthrene	1.2E+03	mg/kg	NA	NA	NA	NA	NA	8.0E-04	mg/kg/day	3.0E-01	mg/kg/day	2.7E-03
				Pyrene	5.8E+02	mg/kg	NA	NA	NA	NA	NA	4.0E-04	mg/kg/day	3.0E-02	mg/kg/day	1.3E-02
			Exp. Route Total								0.0E+00					1.0E+00

TABLE 7.30.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.1E+04	mg/kg	NA	NA	NA	NA	NA	8.6E-06	mg/kg/day	1.0E+00	mg/kg/day	8.6E-06
				Antimony	1.7E+01	mg/kg	NA	NA	NA	NA	NA	1.3E-08	mg/kg/day	6.0E-05	mg/kg/day	2.2E-04
				Arsenic	2.4E+02	mg/kg	NA	NA	NA	NA	NA	5.7E-06	mg/kg/day	3.0E-04	mg/kg/day	1.9E-02
				Chromium	4.3E+01	mg/kg	NA	NA	NA	NA	NA	3.4E-08	mg/kg/day	7.5E-05	mg/kg/day	4.5E-04
				Copper	2.4E+02	mg/kg	NA	NA	NA	NA	NA	1.9E-07	mg/kg/day	4.0E-02	mg/kg/day	4.7E-06
				Iron	2.9E+04	mg/kg	NA	NA	NA	NA	NA	2.3E-05	mg/kg/day	3.0E-01	mg/kg/day	7.6E-05
				Lead	7.1E+02	mg/kg	NA	NA	NA	NA	NA	5.6E-07	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	NA	NA	NA	NA	NA	2.9E-07	mg/kg/day	5.6E-03	mg/kg/day	5.2E-05
				Nickel	9.8E+01	mg/kg	NA	NA	NA	NA	NA	7.7E-08	mg/kg/day	8.0E-04	mg/kg/day	9.6E-05
				Thallium	4.3E+00	mg/kg	NA	NA	NA	NA	NA	3.4E-09	mg/kg/day	6.6E-05	mg/kg/day	5.1E-05
				Vanadium	5.1E+01	mg/kg	NA	NA	NA	NA	NA	4.0E-08	mg/kg/day	2.6E-05	mg/kg/day	1.5E-03
				Mercury	3.9E+00	mg/kg	NA	NA	NA	NA	NA	3.0E-09	mg/kg/day	2.1E-05	mg/kg/day	1.4E-04
				Aroclor-1254	6.1E-01	mg/kg	NA	NA	NA	NA	NA	6.7E-08	mg/kg/day	2.0E-05	mg/kg/day	3.3E-03
				Aroclor-1260	1.7E+00	mg/kg	NA	NA	NA	NA	NA	1.8E-07	mg/kg/day	2.0E-05	mg/kg/day	9.2E-03
				Benzene	1.0E+01	mg/kg	NA	NA	NA	NA	NA	7.9E-08	mg/kg/day	4.0E-03	mg/kg/day	2.0E-05
				m,p-Xylene	1.8E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-06	mg/kg/day	2.0E-01	mg/kg/day	7.0E-06
				o-Xylene	9.0E+01	mg/kg	NA	NA	NA	NA	NA	7.1E-07	mg/kg/day	2.0E-01	mg/kg/day	3.5E-06
				Xylene (Total)	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.5E-06	mg/kg/day	2.0E-01	mg/kg/day	7.7E-06
				2-Methylnaphthalene	5.4E+02	mg/kg	NA	NA	NA	NA	NA	4.2E-06	mg/kg/day	4.0E-03	mg/kg/day	1.1E-03
				Acenaphthene	2.8E+02	mg/kg	NA	NA	NA	NA	NA	2.8E-05	mg/kg/day	6.0E-02	mg/kg/day	4.7E-04
				Benzo(a)anthracene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	2.1E-05	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-05	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-05	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	NA	NA	NA	NA	NA	1.1E-05	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	NA	NA	NA	NA	NA	7.8E-07	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	2.0E-05	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	NA	NA	NA	NA	NA	2.4E-06	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	NA	NA	NA	NA	NA	1.8E-06	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	NA	NA	NA	NA	NA	8.5E-05	mg/kg/day	4.0E-02	mg/kg/day	2.1E-03
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	3.4E-05	mg/kg/day	4.0E-02	mg/kg/day	8.5E-04
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	NA	NA	NA	NA	NA	7.1E-06	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	NA	NA	NA	NA	NA	1.6E-04	mg/kg/day	2.0E-02	mg/kg/day	8.1E-03
				Phenanthrene	1.2E+03	mg/kg	NA	NA	NA	NA	NA	9.1E-06	mg/kg/day	3.0E-01	mg/kg/day	3.0E-05
				Pyrene	5.8E+02	mg/kg	NA	NA	NA	NA	NA	5.9E-05	mg/kg/day	3.0E-02	mg/kg/day	2.0E-03
			Exp. Route Total								0.0E+00					4.9E-02
		Exposure Point Total									0.0E+00					1.1E+00
	Exposure Medium Total										0.0E+00					1.1E+00

TABLE 7.30.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	1.3E-05	mg/m3	NA	NA	NA	NA	NA	3.6E-06	mg/kg/day	1.4E-03	mg/kg/day	2.5E-03
				Antimony	2.1E-08	mg/m3	NA	NA	NA	NA	NA	5.7E-09	mg/kg/day	NA	NA	NA
				Arsenic	2.9E-07	mg/m3	NA	NA	NA	NA	NA	8.0E-08	mg/kg/day	NA	NA	NA
				Chromium	5.2E-08	mg/m3	NA	NA	NA	NA	NA	1.4E-08	mg/kg/day	2.9E-05	mg/kg/day	5.0E-04
				Copper	2.9E-07	mg/m3	NA	NA	NA	NA	NA	7.9E-08	mg/kg/day	NA	NA	NA
				Iron	3.5E-05	mg/m3	NA	NA	NA	NA	NA	9.7E-06	mg/kg/day	NA	NA	NA
				Lead	8.6E-07	mg/m3	NA	NA	NA	NA	NA	2.4E-07	mg/kg/day	NA	NA	NA
				Manganese	4.5E-07	mg/m3	NA	NA	NA	NA	NA	1.2E-07	mg/kg/day	1.4E-05	mg/kg/day	8.5E-03
				Nickel	1.2E-07	mg/m3	NA	NA	NA	NA	NA	3.2E-08	mg/kg/day	NA	NA	NA
				Thallium	5.2E-09	mg/m3	NA	NA	NA	NA	NA	1.4E-09	mg/kg/day	NA	NA	NA
				Vanadium	6.1E-08	mg/m3	NA	NA	NA	NA	NA	1.7E-08	mg/kg/day	NA	NA	NA
				Mercury	4.7E-09	mg/m3	NA	NA	NA	NA	NA	1.3E-09	mg/kg/day	NA	NA	NA
				Aroclor-1254	7.4E-10	mg/m3	NA	NA	NA	NA	NA	2.0E-10	mg/kg/day	NA	NA	NA
				Aroclor-1260	2.0E-09	mg/m3	NA	NA	NA	NA	NA	5.6E-10	mg/kg/day	NA	NA	NA
				Benzene	4.5E-03	mg/m3	NA	NA	NA	NA	NA	1.2E-03	mg/kg/day	8.6E-03	mg/kg/day	1.4E-01
				m,p-Xylene	5.0E-02	mg/m3	NA	NA	NA	NA	NA	1.4E-02	mg/kg/day	2.9E-02	mg/kg/day	4.8E-01
				o-Xylene	2.2E-02	mg/m3	NA	NA	NA	NA	NA	5.9E-03	mg/kg/day	2.9E-02	mg/kg/day	2.1E-01
				Xylene (Total)	4.7E-02	mg/m3	NA	NA	NA	NA	NA	1.3E-02	mg/kg/day	2.9E-02	mg/kg/day	4.5E-01
				2-Methylnaphthalene	1.5E-03	mg/m3	NA	NA	NA	NA	NA	4.2E-04	mg/kg/day	NA	NA	NA
				Acenaphthene	3.3E-07	mg/m3	NA	NA	NA	NA	NA	9.1E-08	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.5E-07	mg/m3	NA	NA	NA	NA	NA	6.7E-08	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.5E-07	mg/m3	NA	NA	NA	NA	NA	4.2E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.6E-07	mg/m3	NA	NA	NA	NA	NA	4.4E-08	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-07	mg/m3	NA	NA	NA	NA	NA	3.6E-08	mg/kg/day	NA	NA	NA
				Carbazole	1.2E-07	mg/m3	NA	NA	NA	NA	NA	3.3E-08	mg/kg/day	NA	NA	NA
				Chrysene	2.4E-07	mg/m3	NA	NA	NA	NA	NA	6.6E-08	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.8E-08	mg/m3	NA	NA	NA	NA	NA	7.7E-09	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.7E-07	mg/m3	NA	NA	NA	NA	NA	7.4E-08	mg/kg/day	NA	NA	NA
				Fluoranthene	1.0E-06	mg/m3	NA	NA	NA	NA	NA	2.8E-07	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	NA	NA	NA	NA	NA	4.1E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	8.4E-08	mg/m3	NA	NA	NA	NA	NA	2.3E-08	mg/kg/day	NA	NA	NA
				Naphthalene	4.5E-02	mg/m3	NA	NA	NA	NA	NA	1.2E-02	mg/kg/day	8.6E-04	mg/kg/day	1.4E+01
				Phenanthrene	9.9E-02	mg/m3	NA	NA	NA	NA	NA	2.7E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.3E-04	mg/m3	NA	NA	NA	NA	NA	6.4E-05	mg/kg/day	NA	NA	NA
			Exp. Route Total								0.0E+00					1.6E+01
		Exposure Point Total									0.0E+00					1.6E+01
	Exposure Medium Total										0.0E+00					1.6E+01
Soil Total											0.0E+00					1.7E+01
Receptor Total											0.0E+00					1.7E+01

NA = Not applicable.

TABLE 7.31.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		– Value	Units	Value	Units	
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.1E+04	mg/kg	NA	NA	NA	NA	NA	7.0E-02	mg/kg/day	1.0E+00	mg/kg/day	7.0E-02
				Antimony	1.7E+01	mg/kg	NA	NA	NA	NA	NA	1.1E-04	mg/kg/day	4.0E-04	mg/kg/day	2.7E-01
				Arsenic	2.4E+02	mg/kg	NA	NA	NA	NA	NA	1.5E-03	mg/kg/day	3.0E-04	mg/kg/day	5.2E+00
				Chromium	4.3E+01	mg/kg	NA	NA	NA	NA	NA	2.8E-04	mg/kg/day	3.0E-03	mg/kg/day	9.2E-02
				Copper	2.4E+02	mg/kg	NA	NA	NA	NA	NA	1.5E-03	mg/kg/day	4.0E-02	mg/kg/day	3.8E-02
				Iron	2.9E+04	mg/kg	NA	NA	NA	NA	NA	1.9E-01	mg/kg/day	3.0E-01	mg/kg/day	6.2E-01
				Lead	7.1E+02	mg/kg	NA	NA	NA	NA	NA	4.6E-03	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	NA	NA	NA	NA	NA	2.4E-03	mg/kg/day	1.4E-01	mg/kg/day	1.7E-02
				Nickel	9.8E+01	mg/kg	NA	NA	NA	NA	NA	6.3E-04	mg/kg/day	2.0E-02	mg/kg/day	3.1E-02
				Thallium	4.3E+00	mg/kg	NA	NA	NA	NA	NA	2.7E-05	mg/kg/day	6.6E-05	mg/kg/day	4.2E-01
				Vanadium	5.1E+01	mg/kg	NA	NA	NA	NA	NA	3.2E-04	mg/kg/day	1.0E-03	mg/kg/day	3.2E-01
				Mercury	3.9E+00	mg/kg	NA	NA	NA	NA	NA	2.5E-05	mg/kg/day	3.0E-04	mg/kg/day	8.3E-02
				Aroclor-1254	6.1E-01	mg/kg	NA	NA	NA	NA	NA	3.9E-06	mg/kg/day	2.0E-05	mg/kg/day	2.0E-01
				Aroclor-1260	1.7E+00	mg/kg	NA	NA	NA	NA	NA	1.1E-05	mg/kg/day	2.0E-05	mg/kg/day	5.4E-01
				Benzene	1.0E+01	mg/kg	NA	NA	NA	NA	NA	6.5E-05	mg/kg/day	4.0E-03	mg/kg/day	1.6E-02
				m,p-Xylene	1.8E+02	mg/kg	NA	NA	NA	NA	NA	1.2E-03	mg/kg/day	2.0E-01	mg/kg/day	5.8E-03
				o-Xylene	9.0E+01	mg/kg	NA	NA	NA	NA	NA	5.8E-04	mg/kg/day	2.0E-01	mg/kg/day	2.9E-03
				Xylene (Total)	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-03	mg/kg/day	2.0E-01	mg/kg/day	6.3E-03
				2-Methylnaphthalene	5.4E+02	mg/kg	NA	NA	NA	NA	NA	3.4E-03	mg/kg/day	4.0E-03	mg/kg/day	8.6E-01
				Acenaphthene	2.8E+02	mg/kg	NA	NA	NA	NA	NA	1.8E-03	mg/kg/day	6.0E-02	mg/kg/day	2.9E-02
				Benzo(a)anthracene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-03	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	8.1E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	8.5E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	NA	NA	NA	NA	NA	7.1E-04	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	NA	NA	NA	NA	NA	6.4E-04	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-03	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	NA	NA	NA	NA	NA	1.5E-04	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-03	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	NA	NA	NA	NA	NA	5.3E-03	mg/kg/day	4.0E-02	mg/kg/day	1.3E-01
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	2.1E-03	mg/kg/day	4.0E-02	mg/kg/day	5.3E-02
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	NA	NA	NA	NA	NA	4.5E-04	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	NA	NA	NA	NA	NA	1.0E-02	mg/kg/day	2.0E-02	mg/kg/day	5.1E-01
				Phenanthrene	1.2E+03	mg/kg	NA	NA	NA	NA	NA	7.5E-03	mg/kg/day	3.0E-01	mg/kg/day	2.5E-02
				Pyrene	5.8E+02	mg/kg	NA	NA	NA	NA	NA	3.7E-03	mg/kg/day	3.0E-02	mg/kg/day	1.2E-01
			Exp. Route Total								0.0E+00					9.6E+00

TABLE 7.31.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.1E+04	mg/kg	NA	NA	NA	NA	NA	7.9E-05	mg/kg/day	1.0E+00	mg/kg/day	7.9E-05
				Antimony	1.7E+01	mg/kg	NA	NA	NA	NA	NA	1.2E-07	mg/kg/day	6.0E-05	mg/kg/day	2.1E-03
				Arsenic	2.4E+02	mg/kg	NA	NA	NA	NA	NA	5.2E-05	mg/kg/day	3.0E-04	mg/kg/day	1.7E-01
				Chromium	4.3E+01	mg/kg	NA	NA	NA	NA	NA	3.1E-07	mg/kg/day	7.5E-05	mg/kg/day	4.1E-03
				Copper	2.4E+02	mg/kg	NA	NA	NA	NA	NA	1.7E-06	mg/kg/day	4.0E-02	mg/kg/day	4.3E-05
				Iron	2.9E+04	mg/kg	NA	NA	NA	NA	NA	2.1E-04	mg/kg/day	3.0E-01	mg/kg/day	7.0E-04
				Lead	7.1E+02	mg/kg	NA	NA	NA	NA	NA	5.1E-06	mg/kg/day	NA	NA	NA
				Manganese	3.7E+02	mg/kg	NA	NA	NA	NA	NA	2.6E-06	mg/kg/day	5.6E-03	mg/kg/day	4.7E-04
				Nickel	9.8E+01	mg/kg	NA	NA	NA	NA	NA	7.0E-07	mg/kg/day	8.0E-04	mg/kg/day	8.8E-04
				Thallium	4.3E+00	mg/kg	NA	NA	NA	NA	NA	3.1E-08	mg/kg/day	6.6E-05	mg/kg/day	4.7E-04
				Vanadium	5.1E+01	mg/kg	NA	NA	NA	NA	NA	3.6E-07	mg/kg/day	2.6E-05	mg/kg/day	1.4E-02
				Mercury	3.9E+00	mg/kg	NA	NA	NA	NA	NA	2.8E-08	mg/kg/day	2.1E-05	mg/kg/day	1.3E-03
				Aroclor-1254	6.1E-01	mg/kg	NA	NA	NA	NA	NA	6.1E-07	mg/kg/day	2.0E-05	mg/kg/day	3.1E-02
				Aroclor-1260	1.7E+00	mg/kg	NA	NA	NA	NA	NA	1.7E-06	mg/kg/day	2.0E-05	mg/kg/day	8.5E-02
				Benzene	1.0E+01	mg/kg	NA	NA	NA	NA	NA	7.3E-07	mg/kg/day	4.0E-03	mg/kg/day	1.8E-04
				m,p-Xylene	1.8E+02	mg/kg	NA	NA	NA	NA	NA	1.3E-05	mg/kg/day	2.0E-01	mg/kg/day	6.4E-05
				o-Xylene	9.0E+01	mg/kg	NA	NA	NA	NA	NA	6.5E-06	mg/kg/day	2.0E-01	mg/kg/day	3.2E-05
				Xylene (Total)	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.4E-05	mg/kg/day	2.0E-01	mg/kg/day	7.1E-05
				2-Methylnaphthalene	5.4E+02	mg/kg	NA	NA	NA	NA	NA	3.9E-05	mg/kg/day	4.0E-03	mg/kg/day	9.7E-03
				Acenaphthene	2.8E+02	mg/kg	NA	NA	NA	NA	NA	2.6E-04	mg/kg/day	6.0E-02	mg/kg/day	4.3E-03
				Benzo(a)anthracene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.9E-04	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	1.2E-04	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	NA	NA	NA	NA	NA	1.2E-04	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	NA	NA	NA	NA	NA	1.0E-04	mg/kg/day	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	NA	NA	NA	NA	NA	7.1E-06	mg/kg/day	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	NA	NA	NA	NA	NA	1.9E-04	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	NA	NA	NA	NA	NA	2.2E-05	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	NA	NA	NA	NA	NA	1.6E-05	mg/kg/day	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	NA	NA	NA	NA	NA	7.8E-04	mg/kg/day	4.0E-02	mg/kg/day	1.9E-02
				Fluorene	3.3E+02	mg/kg	NA	NA	NA	NA	NA	3.1E-04	mg/kg/day	4.0E-02	mg/kg/day	7.8E-03
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	NA	NA	NA	NA	NA	6.5E-05	mg/kg/day	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	NA	NA	NA	NA	NA	1.5E-03	mg/kg/day	2.0E-02	mg/kg/day	7.4E-02
				Phenanthrene	1.2E+03	mg/kg	NA	NA	NA	NA	NA	8.4E-05	mg/kg/day	3.0E-01	mg/kg/day	2.8E-04
				Pyrene	5.8E+02	mg/kg	NA	NA	NA	NA	NA	5.4E-04	mg/kg/day	3.0E-02	mg/kg/day	1.8E-02
			Exp. Route Total								0.0E+00					4.5E-01
		Exposure Point Total									0.0E+00					1.0E+01
	Exposure Medium Total										0.0E+00					1.0E+01

TABLE 7.31.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	1.3E-05	mg/m3	NA	NA	NA	NA	NA	8.6E-06	mg/kg/day	1.4E-03	mg/kg/day	6.0E-03
				Antimony	2.1E-08	mg/m3	NA	NA	NA	NA	NA	1.3E-08	mg/kg/day	NA	NA	NA
				Arsenic	2.9E-07	mg/m3	NA	NA	NA	NA	NA	1.9E-07	mg/kg/day	NA	NA	NA
				Chromium	5.2E-08	mg/m3	NA	NA	NA	NA	NA	3.4E-08	mg/kg/day	2.9E-05	mg/kg/day	1.2E-03
				Copper	2.9E-07	mg/m3	NA	NA	NA	NA	NA	1.9E-07	mg/kg/day	NA	NA	NA
				Iron	3.5E-05	mg/m3	NA	NA	NA	NA	NA	2.3E-05	mg/kg/day	NA	NA	NA
				Lead	8.6E-07	mg/m3	NA	NA	NA	NA	NA	5.6E-07	mg/kg/day	NA	NA	NA
				Manganese	4.5E-07	mg/m3	NA	NA	NA	NA	NA	2.9E-07	mg/kg/day	1.4E-05	mg/kg/day	2.0E-02
				Nickel	1.2E-07	mg/m3	NA	NA	NA	NA	NA	7.6E-08	mg/kg/day	NA	NA	NA
				Thallium	5.2E-09	mg/m3	NA	NA	NA	NA	NA	3.3E-09	mg/kg/day	NA	NA	NA
				Vanadium	6.1E-08	mg/m3	NA	NA	NA	NA	NA	3.9E-08	mg/kg/day	NA	NA	NA
				Mercury	4.7E-09	mg/m3	NA	NA	NA	NA	NA	3.0E-09	mg/kg/day	NA	NA	NA
				Aroclor-1254	7.4E-10	mg/m3	NA	NA	NA	NA	NA	4.8E-10	mg/kg/day	NA	NA	NA
				Aroclor-1260	2.0E-09	mg/m3	NA	NA	NA	NA	NA	1.3E-09	mg/kg/day	NA	NA	NA
				Benzene	4.5E-03	mg/m3	NA	NA	NA	NA	NA	2.9E-03	mg/kg/day	8.6E-03	mg/kg/day	3.4E-01
				m,p-Xylene	5.0E-02	mg/m3	NA	NA	NA	NA	NA	3.2E-02	mg/kg/day	2.9E-02	mg/kg/day	1.1E+00
				o-Xylene	2.2E-02	mg/m3	NA	NA	NA	NA	NA	1.4E-02	mg/kg/day	2.9E-02	mg/kg/day	4.9E-01
				Xylene (Total)	4.7E-02	mg/m3	NA	NA	NA	NA	NA	3.1E-02	mg/kg/day	2.9E-02	mg/kg/day	1.1E+00
				2-Methylnaphthalene	1.5E-03	mg/m3	NA	NA	NA	NA	NA	9.9E-04	mg/kg/day	NA	NA	NA
				Acenaphthene	3.3E-07	mg/m3	NA	NA	NA	NA	NA	2.2E-07	mg/kg/day	NA	NA	NA
				Benzo(a)anthracene	2.5E-07	mg/m3	NA	NA	NA	NA	NA	1.6E-07	mg/kg/day	NA	NA	NA
				Benzo(a)pyrene	1.5E-07	mg/m3	NA	NA	NA	NA	NA	9.9E-08	mg/kg/day	NA	NA	NA
				Benzo(b)fluoranthene	1.6E-07	mg/m3	NA	NA	NA	NA	NA	1.0E-07	mg/kg/day	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-07	mg/m3	NA	NA	NA	NA	NA	8.6E-08	mg/kg/day	NA	NA	NA
				Carbazole	1.2E-07	mg/m3	NA	NA	NA	NA	NA	7.8E-08	mg/kg/day	NA	NA	NA
				Chrysene	2.4E-07	mg/m3	NA	NA	NA	NA	NA	1.6E-07	mg/kg/day	NA	NA	NA
				Dibenz(a,h)anthracene	2.8E-08	mg/m3	NA	NA	NA	NA	NA	1.8E-08	mg/kg/day	NA	NA	NA
				Dibenzofuran	2.7E-07	mg/m3	NA	NA	NA	NA	NA	1.7E-07	mg/kg/day	NA	NA	NA
				Fluoranthene	1.0E-06	mg/m3	NA	NA	NA	NA	NA	6.5E-07	mg/kg/day	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	NA	NA	NA	NA	NA	9.7E-04	mg/kg/day	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	8.4E-08	mg/m3	NA	NA	NA	NA	NA	5.4E-08	mg/kg/day	NA	NA	NA
				Naphthalene	4.5E-02	mg/m3	NA	NA	NA	NA	NA	2.9E-02	mg/kg/day	8.6E-04	mg/kg/day	3.4E+01
				Phenanthrene	9.9E-02	mg/m3	NA	NA	NA	NA	NA	6.4E-02	mg/kg/day	NA	NA	NA
				Pyrene	2.3E-04	mg/m3	NA	NA	NA	NA	NA	1.5E-04	mg/kg/day	NA	NA	NA
			Exp. Route Total								0.0E+00					3.7E+01
		Exposure Point Total									0.0E+00					3.7E+01
	Exposure Medium Total										0.0E+00					3.7E+01
Soil Total											0.0E+00					4.7E+01
Receptor Total											0.0E+00					4.7E+01

NA = Not applicable.

TABLE 7.32.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Ingestion	Aluminum	1.1E+04	mg/kg	1.7E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Antimony	1.7E+01	mg/kg	2.7E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	2.4E+02	mg/kg	3.8E-04	mg/kg/day	1.5E+00	1/(mg/kg/day)	5.7E-04	NA	NA	NA	NA	NA
				Chromium	4.3E+01	mg/kg	6.8E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Copper	2.4E+02	mg/kg	3.8E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	2.9E+04	mg/kg	4.6E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	7.1E+02	mg/kg	1.1E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	3.7E+02	mg/kg	5.8E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Nickel	9.8E+01	mg/kg	1.5E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	4.3E+00	mg/kg	6.7E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	5.1E+01	mg/kg	7.9E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	3.9E+00	mg/kg	6.1E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Aroclor-1254	6.1E-01	mg/kg	9.6E-07	mg/kg/day	2.0E+00	1/(mg/kg/day)	1.9E-06	NA	NA	NA	NA	NA
				Aroclor-1260	1.7E+00	mg/kg	2.6E-06	mg/kg/day	2.0E+00	1/(mg/kg/day)	5.3E-06	NA	NA	NA	NA	NA
				Benzene	1.0E+01	mg/kg	1.6E-05	mg/kg/day	5.5E-02	1/(mg/kg/day)	8.8E-07	NA	NA	NA	NA	NA
				m,p-Xylene	1.8E+02	mg/kg	2.8E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				o-Xylene	9.0E+01	mg/kg	1.4E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Xylene (Total)	2.0E+02	mg/kg	3.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	5.4E+02	mg/kg	8.4E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Acenaphthene	2.8E+02	mg/kg	4.3E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.0E+02	mg/kg	3.2E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	4.2E-04	NA	NA	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	2.0E-04	mg/kg/day	7.3E+00	1/(mg/kg/day)	2.6E-03	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	2.1E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	2.7E-04	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	1.7E-04	mg/kg/day	7.3E-02	1/(mg/kg/day)	2.3E-05	NA	NA	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	1.6E-04	mg/kg/day	2.0E-02	1/(mg/kg/day)	3.1E-06	NA	NA	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	3.1E-04	mg/kg/day	7.3E-03	1/(mg/kg/day)	4.1E-06	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	3.7E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	4.8E-04	NA	NA	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	3.5E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	1.3E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	3.3E+02	mg/kg	5.2E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	1.1E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.4E-04	NA	NA	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	2.5E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	1.2E+03	mg/kg	1.8E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	5.8E+02	mg/kg	9.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								4.5E-03					0.0E+00

TABLE 7.32.CTE
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Dermal	Aluminum	1.1E+04	mg/kg	5.4E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Antimony	1.7E+01	mg/kg	8.5E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	2.4E+02	mg/kg	3.6E-05	mg/kg/day	1.5E+00	1/(mg/kg/day)	5.4E-05	NA	NA	NA	NA	NA
				Chromium	4.3E+01	mg/kg	2.1E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Copper	2.4E+02	mg/kg	1.2E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	2.9E+04	mg/kg	1.4E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	7.1E+02	mg/kg	3.5E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	3.7E+02	mg/kg	1.8E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Nickel	9.8E+01	mg/kg	4.9E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	4.3E+00	mg/kg	2.1E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	5.1E+01	mg/kg	2.5E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	3.9E+00	mg/kg	1.9E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Aroclor-1254	6.1E-01	mg/kg	4.2E-07	mg/kg/day	2.0E+00	1/(mg/kg/day)	8.5E-07	NA	NA	NA	NA	NA
				Aroclor-1260	1.7E+00	mg/kg	1.2E-06	mg/kg/day	2.0E+00	1/(mg/kg/day)	2.3E-06	NA	NA	NA	NA	NA
				Benzene	1.0E+01	mg/kg	5.0E-07	mg/kg/day	5.5E-02	1/(mg/kg/day)	2.8E-08	NA	NA	NA	NA	NA
				m,p-Xylene	1.8E+02	mg/kg	8.9E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				o-Xylene	9.0E+01	mg/kg	4.5E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Xylene (Total)	2.0E+02	mg/kg	9.7E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	5.4E+02	mg/kg	2.7E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Acenaphthene	2.8E+02	mg/kg	1.8E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.0E+02	mg/kg	1.3E-04	mg/kg/day	7.3E-01	1/(mg/kg/day)	5.7E-05	NA	NA	NA	NA	NA
				Benzo(a)pyrene	1.3E+02	mg/kg	8.2E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	3.5E-04	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	1.3E+02	mg/kg	8.5E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	3.7E-05	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.1E+02	mg/kg	7.1E-05	mg/kg/day	7.3E-02	1/(mg/kg/day)	3.1E-06	NA	NA	NA	NA	NA
				Carbazole	1.0E+02	mg/kg	4.9E-06	mg/kg/day	2.0E-02	1/(mg/kg/day)	9.9E-08	NA	NA	NA	NA	NA
				Chrysene	2.0E+02	mg/kg	1.3E-04	mg/kg/day	7.3E-03	1/(mg/kg/day)	5.6E-07	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	2.3E+01	mg/kg	1.5E-05	mg/kg/day	7.3E+00	1/(mg/kg/day)	6.5E-05	NA	NA	NA	NA	NA
				Dibenzofuran	2.2E+02	mg/kg	1.1E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	8.3E+02	mg/kg	5.4E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	3.3E+02	mg/kg	2.1E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	7.0E+01	mg/kg	4.5E-05	mg/kg/day	7.3E-01	1/(mg/kg/day)	1.9E-05	NA	NA	NA	NA	NA
				Naphthalene	1.6E+03	mg/kg	1.0E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	1.2E+03	mg/kg	5.8E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	5.8E+02	mg/kg	3.7E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								5.9E-04					0.0E+00
		Exposure Point Total									5.1E-03					0.0E+00
	Exposure Medium Total										5.1E-03					0.0E+00

TABLE 7.32.CTE

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern[1]	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Ambient Air	Block 93. Emissions from Surface Soil (0-2 ft)	Inhalation	Aluminum	1.3E-05	mg/m3	2.0E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Antimony	2.1E-08	mg/m3	3.1E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Arsenic	2.9E-07	mg/m3	4.4E-08	mg/kg/day	1.5E+01	1/(mg/kg/day)	6.6E-07	NA	NA	NA	NA	NA
				Chromium	5.2E-08	mg/m3	7.8E-09	mg/kg/day	4.2E+01	1/(mg/kg/day)	3.3E-07	NA	NA	NA	NA	NA
				Copper	2.9E-07	mg/m3	4.3E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Iron	3.5E-05	mg/m3	5.3E-06	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Lead	8.6E-07	mg/m3	1.3E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Manganese	4.5E-07	mg/m3	6.7E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Nickel	1.2E-07	mg/m3	1.8E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Thallium	5.2E-09	mg/m3	7.7E-10	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Vanadium	6.1E-08	mg/m3	9.1E-09	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Mercury	4.7E-09	mg/m3	7.0E-10	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Aroclor-1254	7.4E-10	mg/m3	1.1E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	3.9E-11	NA	NA	NA	NA	NA
				Aroclor-1260	2.0E-09	mg/m3	3.0E-10	mg/kg/day	3.5E-01	1/(mg/kg/day)	1.1E-10	NA	NA	NA	NA	NA
				Benzene	4.5E-03	mg/m3	6.6E-04	mg/kg/day	2.7E-02	1/(mg/kg/day)	1.8E-05	NA	NA	NA	NA	NA
				m,p-Xylene	5.0E-02	mg/m3	7.5E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				o-Xylene	2.2E-02	mg/m3	3.2E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Xylene (Total)	4.7E-02	mg/m3	7.1E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				2-Methylnaphthalene	1.5E-03	mg/m3	2.3E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Acenaphthene	3.3E-07	mg/m3	5.0E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Benzo(a)anthracene	2.5E-07	mg/m3	3.7E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	8.0E-09	NA	NA	NA	NA	NA
				Benzo(a)pyrene	1.5E-07	mg/m3	2.3E-08	mg/kg/day	3.1E+00	1/(mg/kg/day)	5.0E-08	NA	NA	NA	NA	NA
				Benzo(b)fluoranthene	1.6E-07	mg/m3	2.4E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	5.2E-09	NA	NA	NA	NA	NA
				Benzo(k)fluoranthene	1.3E-07	mg/m3	2.0E-08	mg/kg/day	3.1E-02	1/(mg/kg/day)	4.3E-10	NA	NA	NA	NA	NA
				Carbazole	1.2E-07	mg/m3	1.8E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Chrysene	2.4E-07	mg/m3	3.6E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Dibenz(a,h)anthracene	2.8E-08	mg/m3	4.2E-09	mg/kg/day	3.1E+00	1/(mg/kg/day)	9.2E-09	NA	NA	NA	NA	NA
				Dibenzofuran	2.7E-07	mg/m3	4.0E-08	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluoranthene	1.0E-06	mg/m3	1.5E-07	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Fluorene	1.5E-03	mg/m3	2.2E-04	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Indeno(1,2,3-c,d)pyrene	8.4E-08	mg/m3	1.3E-08	mg/kg/day	3.1E-01	1/(mg/kg/day)	2.7E-09	NA	NA	NA	NA	NA
				Naphthalene	4.5E-02	mg/m3	6.7E-03	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Phenanthrene	9.9E-02	mg/m3	1.5E-02	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
				Pyrene	2.3E-04	mg/m3	3.5E-05	mg/kg/day	NA	NA	NA	NA	NA	NA	NA	NA
			Exp. Route Total								1.9E-05					0.0E+00
		Exposure Point Total									1.9E-05					0.0E+00
	Exposure Medium Total										1.9E-05					0.0E+00
Soil Total											5.1E-03					0.0E+00
Receptor Total											5.1E-03					0.0E+00

[1]Consistent with the Cancer Guidelines and Supplemental Guidance (EPA, 2005a and 2005b), Benzo(a)pyrene and Dibenz(a,h)anthracene are evaluated based on their mutagenic mode of action.

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	4E-04	NA	1E-06	4E-04
			Antimony	NA	NA	NA	NA	blood	2E-02	NA	5E-04	2E-02
			Arsenic	5E-05	NA	5E-06	5E-05	skin	2E-01	NA	3E-02	3E-01
			Cadmium	NA	NA	NA	NA	kidney	5E-04	NA	8E-05	6E-04
			Chromium	NA	NA	NA	NA	NOE	3E-04	NA	5E-05	3E-04
			Copper	NA	NA	NA	NA	GI system	7E-03	NA	3E-05	7E-03
			Iron	NA	NA	NA	NA	NA	4E-02	NA	2E-04	4E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1E-04	NA	1E-05	1E-04
			Thallium	NA	NA	NA	NA	blood	6E-03	NA	2E-05	6E-03
			Vanadium	NA	NA	NA	NA	NA	4E-03	NA	6E-04	4E-03
			Zinc	NA	NA	NA	NA	blood	6E-04	NA	2E-06	6E-04
			Mercury	NA	NA	NA	NA	immune system	5E-03	NA	3E-04	5E-03
			Heptachlor	3E-08	NA	1E-09	3E-08	liver	3E-05	NA	1E-06	3E-05
			Aroclor-1242	1E-07	NA	7E-08	2E-07	immune system	8E-03	NA	4E-03	1E-02
			Aroclor-1260	6E-08	NA	4E-08	1E-07	immune system	4E-03	NA	2E-03	6E-03
			Benzene	2E-08	NA	8E-10	2E-08	blood	2E-04	NA	9E-06	2E-04
			Tetrachloroethene	6E-09	NA	2E-10	6E-09	liver	2E-06	NA	1E-07	3E-06
			Trichloroethene	4E-09	NA	2E-10	5E-09	liver, kidney, fetus	8E-05	NA	3E-06	9E-05
			m-Xylene	NA	NA	NA	NA	whole body	1E-05	NA	4E-07	1E-05
			p,o-Xylene	NA	NA	NA	NA	whole body	1E-05	NA	5E-07	1E-05
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	4E-03	NA	1E-04	4E-03
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	1E-03	NA	5E-05	1E-03
			4-Nitroaniline	5E-09	NA	2E-10	5E-09	NA	2E-04	NA	7E-06	2E-04
			Acenaphthene	NA	NA	NA	NA	liver	2E-04	NA	1E-04	3E-04
			Benzo(a)anthracene	5E-06	NA	3E-06	7E-06	NA	NA	NA	NA	NA
			Benzo(a)pyrene	4E-05	NA	2E-05	7E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	5E-06	NA	3E-06	8E-06	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	3E-04	NA	1E-04	4E-04
			Benzo(k)fluoranthene	2E-07	NA	1E-07	4E-07	NA	NA	NA	NA	NA
			Carbazole	6E-08	NA	2E-09	6E-08	NA	NA	NA	NA	NA
			Chrysene	5E-08	NA	2E-08	7E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	9E-06	NA	5E-06	1E-05	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	1E-03	NA	5E-04	1E-03
			Fluorene	NA	NA	NA	NA	blood	4E-04	NA	2E-04	6E-04
			Indeno(1,2,3-c,d)pyrene	2E-06	NA	1E-06	4E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	2E-03	NA	1E-03	3E-03
			Phenanthrene	NA	NA	NA	NA	NOE	2E-04	NA	7E-06	2E-04
			Pyrene	NA	NA	NA	NA	kidney	1E-03	NA	5E-04	2E-03
		Exposure Point Total		1E-04	NA	4E-05	2E-04		3E-01	NA	4E-02	4E-01
	Exposure Medium Total			1E-04	NA	4E-05	2E-04		3E-01	NA	4E-02	4E-01

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	5E-06	NA	5E-06
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	9E-09	NA	9E-09	NA	NA	NA	NA	NA
			Cadmium	NA	3E-11	NA	3E-11	NA	NA	NA	NA	NA
			Chromium	NA	3E-10	NA	3E-10	respiratory	NA	6E-07	NA	6E-07
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-05	NA	2E-05
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	6E-13	NA	6E-13	NA	NA	NA	NA	NA
			Aroclor-1242	NA	5E-13	NA	5E-13	NA	NA	NA	NA	NA
			Aroclor-1260	NA	2E-13	NA	2E-13	NA	NA	NA	NA	NA
			Benzene	NA	8E-08	NA	8E-08	blood	NA	8E-04	NA	8E-04
			Tetrachloroethene	NA	1E-09	NA	1E-09	NA	NA	2E-05	NA	2E-05
			Trichloroethene	NA	3E-08	NA	3E-08	nervous system, eyes	NA	2E-05	NA	2E-05
			m-Xylene	NA	NA	NA	NA	nervous system	NA	3E-04	NA	3E-04
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	3E-04	NA	3E-04
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	1E-08	NA	1E-08
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	4E-10	NA	4E-10	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	2E-12	NA	2E-12	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	7E-11	NA	7E-11	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	2E-11	NA	2E-11	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	2E-02	NA	2E-02
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	1E-07	NA	1E-07		NA	2E-02	NA	2E-02
	Exposure Medium Total			NA	1E-07	NA	1E-07		NA	2E-02	NA	2E-02
Medium Total				1E-04	1E-07	4E-05	2E-04		3E-01	2E-02	4E-02	4E-01
Receptor Total				1E-04	1E-07	4E-05	2E-04		3E-01	2E-02	4E-02	4E-01

NA = Not applicable or not available

Total Blood HI Across Media =	3E-02
Total CNS HI Across Media =	1E-03
Total GI System HI Across Media =	7E-03
Total Immune System HI Across Media =	2E-02
Total Kidney HI Across Media =	3E-03
Total Liver HI Across Media =	2E-03
Total Nervous System HI Across Media =	7E-04
Total Respiratory HI Across Media =	3E-02
Total Skin HI Across Media =	3E-01
Total Whole Body HI Across Media =	5E-03
Total Eyes HI Across Media =	2E-05
Total Fetus HI Across Media =	9E-05

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	6E-04	NA	2E-06	6E-04
			Antimony	NA	NA	NA	NA	blood	4E-02	NA	7E-04	4E-02
			Arsenic	3E-05	NA	2E-06	3E-05	skin	4E-01	NA	4E-02	5E-01
			Cadmium	NA	NA	NA	NA	kidney	9E-04	NA	1E-04	9E-04
			Chromium	NA	NA	NA	NA	NOE	5E-04	NA	6E-05	6E-04
			Copper	NA	NA	NA	NA	GI system	1E-02	NA	4E-05	1E-02
			Iron	NA	NA	NA	NA	NA	7E-02	NA	2E-04	7E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2E-04	NA	1E-05	2E-04
			Thallium	NA	NA	NA	NA	blood	1E-02	NA	3E-05	1E-02
			Vanadium	NA	NA	NA	NA	NA	7E-03	NA	8E-04	8E-03
			Zinc	NA	NA	NA	NA	blood	1E-03	NA	3E-06	1E-03
			Mercury	NA	NA	NA	NA	immune system	8E-03	NA	3E-04	9E-03
			Heptachlor	2E-08	NA	5E-10	2E-08	liver	6E-05	NA	2E-06	6E-05
			Aroclor-1242	8E-08	NA	3E-08	1E-07	immune system	1E-02	NA	5E-03	2E-02
			Aroclor-1260	4E-08	NA	2E-08	5E-08	immune system	7E-03	NA	3E-03	9E-03
			Benzene	1E-08	NA	4E-10	1E-08	blood	4E-04	NA	1E-05	4E-04
			Tetrachloroethene	3E-09	NA	1E-10	3E-09	liver	4E-06	NA	1E-07	5E-06
			Trichloroethene	3E-09	NA	7E-11	3E-09	liver, kidney, fetus	2E-04	NA	4E-06	2E-04
			m-Xylene	NA	NA	NA	NA	whole body	2E-05	NA	5E-07	2E-05
			p,o-Xylene	NA	NA	NA	NA	whole body	2E-05	NA	6E-07	2E-05
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	6E-03	NA	2E-04	7E-03
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	2E-03	NA	6E-05	2E-03
			4-Nitroaniline	3E-09	NA	9E-11	3E-09	NA	3E-04	NA	9E-06	3E-04
			Acenaphthene	NA	NA	NA	NA	liver	3E-04	NA	1E-04	5E-04
			Benzo(a)anthracene	9E-06	NA	8E-06	2E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	9E-05	NA	7E-05	2E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	1E-05	NA	8E-06	2E-05	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	5E-04	NA	2E-04	6E-04
			Benzo(k)fluoranthene	5E-07	NA	4E-07	9E-07	NA	NA	NA	NA	NA
			Carbazole	3E-08	NA	1E-09	3E-08	NA	NA	NA	NA	NA
			Chrysene	9E-08	NA	8E-08	2E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2E-05	NA	1E-05	3E-05	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	2E-03	NA	6E-04	2E-03
			Fluorene	NA	NA	NA	NA	blood	7E-04	NA	3E-04	1E-03
			Indeno(1,2,3-c,d)pyrene	5E-06	NA	4E-06	9E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	4E-03	NA	1E-03	5E-03
			Phenanthrene	NA	NA	NA	NA	NOE	3E-04	NA	9E-06	3E-04
			Pyrene	NA	NA	NA	NA	kidney	2E-03	NA	7E-04	2E-03
		Exposure Point Total		2E-04	NA	1E-04	3E-04		6E-01	NA	5E-02	7E-01
	Exposure Medium Total			2E-04	NA	1E-04	3E-04		6E-01	NA	5E-02	7E-01

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	9E-06	NA	9E-06
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	5E-09	NA	5E-09	NA	NA	NA	NA	NA
			Cadmium	NA	2E-11	NA	2E-11	NA	NA	NA	NA	NA
			Chromium	NA	2E-10	NA	2E-10	respiratory	NA	1E-06	NA	1E-06
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	4E-05	NA	4E-05
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	4E-13	NA	4E-13	NA	NA	NA	NA	NA
			Aroclor-1242	NA	3E-13	NA	3E-13	NA	NA	NA	NA	NA
			Aroclor-1260	NA	1E-13	NA	1E-13	NA	NA	NA	NA	NA
			Benzene	NA	5E-08	NA	5E-08	blood	NA	1E-03	NA	1E-03
			Tetrachloroethene	NA	8E-10	NA	8E-10	NA	NA	3E-05	NA	3E-05
			Trichloroethene	NA	2E-08	NA	2E-08	nervous system, eyes	NA	3E-05	NA	3E-05
			m-Xylene	NA	NA	NA	NA	nervous system	NA	6E-04	NA	6E-04
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	6E-04	NA	6E-04
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	2E-08	NA	2E-08
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	4E-10	NA	4E-10	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	3E-09	NA	3E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	4E-10	NA	4E-10	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	2E-11	NA	2E-11	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	6E-10	NA	6E-10	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	4E-02	NA	4E-02

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	8E-08	NA	8E-08		NA	4E-02	NA	4E-02
	Exposure Medium Total			NA	8E-08	NA	8E-08		NA	4E-02	NA	4E-02
Medium Total				2E-04	8E-08	1E-04	3E-04		6E-01	4E-02	5E-02	7E-01
Receptor Total				2E-04	8E-08	1E-04	3E-04		6E-01	4E-02	5E-02	7E-01

NA = Not applicable or not available

Total Blood HI Across Media =	5E-02
Total CNS HI Across Media =	3E-03
Total GI System HI Across Media =	1E-02
Total Immune System HI Across Media =	4E-02
Total Kidney HI Across Media =	4E-03
Total Liver HI Across Media =	3E-03
Total Nervous System HI Across Media =	1E-03
Total Respiratory HI Across Media =	5E-02
Total Skin HI Across Media =	5E-01
Total Whole Body HI Across Media =	8E-03
Total Eyes HI Across Media =	3E-05
Total Fetus HI Across Media =	2E-04

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	4E-03	NA	5E-05	4E-03
			Antimony	NA	NA	NA	NA	blood	2E-01	NA	2E-02	2E-01
			Arsenic	4E-04	NA	2E-04	6E-04	skin	2E+00	NA	1E+00	3E+00
			Cadmium	NA	NA	NA	NA	kidney	5E-03	NA	3E-03	8E-03
			Chromium	NA	NA	NA	NA	NOE	3E-03	NA	2E-03	5E-03
			Copper	NA	NA	NA	NA	GI system	8E-02	NA	1E-03	8E-02
			Iron	NA	NA	NA	NA	NA	4E-01	NA	6E-03	4E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1E-03	NA	4E-04	1E-03
			Thallium	NA	NA	NA	NA	blood	6E-02	NA	8E-04	6E-02
			Vanadium	NA	NA	NA	NA	NA	4E-02	NA	2E-02	6E-02
			Zinc	NA	NA	NA	NA	blood	6E-03	NA	8E-05	6E-03
			Mercury	NA	NA	NA	NA	immune system	5E-02	NA	9E-03	6E-02
			Heptachlor	3E-07	NA	4E-08	3E-07	liver	3E-04	NA	5E-05	4E-04
			Aroclor-1242	1E-06	NA	2E-06	3E-06	immune system	8E-02	NA	1E-01	2E-01
			Aroclor-1260	6E-07	NA	1E-06	2E-06	immune system	4E-02	NA	7E-02	1E-01
			Benzene	2E-07	NA	2E-08	2E-07	blood	2E-03	NA	3E-04	3E-03
			Tetrachloroethene	5E-08	NA	6E-09	6E-08	liver	3E-05	NA	3E-06	3E-05
			Trichloroethene	4E-08	NA	5E-09	4E-08	liver, kidney, fetus	9E-04	NA	1E-04	1E-03
			m-Xylene	NA	NA	NA	NA	whole body	1E-04	NA	1E-05	1E-04
			p,o-Xylene	NA	NA	NA	NA	whole body	1E-04	NA	2E-05	1E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	4E-02	NA	5E-03	4E-02
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	1E-02	NA	2E-03	1E-02
			4-Nitroaniline	4E-08	NA	6E-09	5E-08	NA	2E-03	NA	3E-04	2E-03
			Acenaphthene	NA	NA	NA	NA	liver	2E-03	NA	3E-03	5E-03
			Benzo(a)anthracene	4E-05	NA	7E-05	1E-04	NA	NA	NA	NA	NA
			Benzo(a)pyrene	4E-04	NA	7E-04	1E-03	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	4E-05	NA	8E-05	1E-04	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	3E-03	NA	5E-03	7E-03
			Benzo(k)fluoranthene	2E-06	NA	4E-06	6E-06	NA	NA	NA	NA	NA
			Carbazole	5E-07	NA	6E-08	5E-07	NA	NA	NA	NA	NA
			Chrysene	4E-07	NA	7E-07	1E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	8E-05	NA	1E-04	2E-04	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	1E-02	NA	2E-02	3E-02
			Fluorene	NA	NA	NA	NA	blood	4E-03	NA	7E-03	1E-02
			Indeno(1,2,3-c,d)pyrene	2E-05	NA	4E-05	6E-05	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	2E-02	NA	4E-02	6E-02
			Phenanthrene	NA	NA	NA	NA	NOE	2E-03	NA	2E-04	2E-03
			Pyrene	NA	NA	NA	NA	kidney	1E-02	NA	2E-02	3E-02
		Exposure Point Total		1E-03	NA	1E-03	2E-03		4E+00	NA	1E+00	5E+00
	Exposure Medium Total			1E-03	NA	1E-03	2E-03		4E+00	NA	1E+00	5E+00

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	1E-03	NA	1E-03
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	2E-06	NA	2E-06	NA	NA	NA	NA	NA
			Cadmium	NA	5E-09	NA	5E-09	NA	NA	NA	NA	NA
			Chromium	NA	7E-08	NA	7E-08	respiratory	NA	2E-04	NA	2E-04
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	5E-03	NA	5E-03
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			Aroclor-1242	NA	9E-11	NA	9E-11	NA	NA	NA	NA	NA
			Aroclor-1260	NA	5E-11	NA	5E-11	NA	NA	NA	NA	NA
			Benzene	NA	2E-05	NA	2E-05	blood	NA	2E-01	NA	2E-01
			Tetrachloroethene	NA	3E-07	NA	3E-07	NA	NA	4E-03	NA	4E-03
			Trichloroethene	NA	7E-06	NA	7E-06	nervous system, eyes	NA	4E-03	NA	4E-03
			m-Xylene	NA	NA	NA	NA	nervous system	NA	9E-02	NA	9E-02
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	8E-02	NA	8E-02
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	2E-06	NA	2E-06
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	9E-09	NA	9E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	8E-08	NA	8E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	9E-09	NA	9E-09	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	4E-10	NA	4E-10	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Indeno(1,2,3-c,d)pyrene	NA	4E-09	NA	4E-09	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	6E+00	NA	6E+00
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	3E-05	NA	3E-05		NA	6E+00	NA	6E+00
	Exposure Medium Total			NA	3E-05	NA	3E-05		NA	6E+00	NA	6E+00
Medium Total				1E-03	3E-05	1E-03	2E-03		4E+00	6E+00	1E+00	1E+01
Receptor Total				1E-03	3E-05	1E-03	2E-03		4E+00	6E+00	1E+00	1E+01

NA = Not applicable or not available

Total Blood HI Across Media =	5E-01
Total CNS HI Across Media =	2E-02
Total GI System HI Across Media =	8E-02
Total Immune System HI Across Media =	4E-01
Total Kidney HI Across Media =	4E-02
Total Liver HI Across Media =	3E-02
Total Nervous System HI Across Media =	2E-01
Total Respiratory HI Across Media =	6E+00
Total Skin HI Across Media =	3E+00
Total Whole Body HI Across Media =	8E-02
Total Eyes HI Across Media =	4E-03
Total Fetus HI Across Media =	1E-03

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Quanta Resources Subsurface Soil (0 - 10 ft)	Aluminum	NA	NA	NA	NA	NA	2E-02	NA	6E-05	2E-02
			Antimony	NA	NA	NA	NA	blood	2E+00	NA	3E-02	2E+00
			Arsenic	4E-04	NA	4E-05	5E-04	skin	7E+01	NA	6E+00	7E+01
			Cadmium	NA	NA	NA	NA	kidney	2E-02	NA	2E-03	2E-02
			Chromium	NA	NA	NA	NA	NOE	7E-03	NA	8E-04	7E-03
			Copper	NA	NA	NA	NA	GI system	6E-01	NA	2E-03	6E-01
			Iron	NA	NA	NA	NA	NA	1E+00	NA	3E-03	1.1E+00
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	4E-03	NA	3E-04	4E-03
			Selenium	NA	NA	NA	NA	whole body	3E-02	NA	8E-05	3E-02
			Thallium	NA	NA	NA	NA	blood	7E-01	NA	2E-03	7E-01
			Vanadium	NA	NA	NA	NA	NA	2E-02	NA	2E-03	2E-02
			Zinc	NA	NA	NA	NA	blood	5E-02	NA	2E-04	5E-02
			Mercury	NA	NA	NA	NA	immune system	2E-02	NA	9E-04	2E-02
			Dieldrin	2E-07	NA	5E-09	2E-07	liver	1E-02	NA	4E-04	1E-02
			Heptachlor	5E-08	NA	2E-09	5E-08	liver	2E-03	NA	5E-05	2E-03
			Aroclor-1242	2E-07	NA	9E-08	3E-07	immune system	2E-01	NA	6E-02	2E-01
			Aroclor-1260	1E-07	NA	6E-08	2E-07	immune system	1E-01	NA	4E-02	1E-01
			Benzene	8E-08	NA	3E-09	9E-08	blood	3E-02	NA	8E-04	3E-02
			Tetrachloroethene	1E-08	NA	4E-10	1E-08	liver	2E-05	NA	5E-07	2E-05
			Toluene	NA	NA	NA	NA	kidney	2E-04	NA	5E-06	2E-04
			Trichloroethene	1E-08	NA	3E-10	1E-08	liver, kidney, fetus	6E-03	NA	2E-04	6E-03
			m,p-Xylene	NA	NA	NA	NA	whole body	2E-03	NA	6E-05	2E-03
			m-Xylene	NA	NA	NA	NA	whole body	7E-04	NA	2E-05	7E-04
			o-Xylene	NA	NA	NA	NA	whole body	9E-04	NA	3E-05	9E-04
			p,o-Xylene	NA	NA	NA	NA	whole body	8E-04	NA	2E-05	8E-04
			Xylene (Total)	NA	NA	NA	NA	whole body	6E-04	NA	2E-05	6E-04
			2,4-Dimethylphenol	NA	NA	NA	NA	blood	2E-03	NA	5E-05	2E-03
			2,4-Dinitrotoluene	NA	NA	NA	NA	GI system, nervous system	1E-02	NA	4E-03	2E-02
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	1E+00	NA	4E-02	1E+00
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	1E-01	NA	4E-03	1E-01
			4-Nitroaniline	5E-08	NA	1E-09	5E-08	NA	5E-02	NA	2E-03	6E-02
			Acenaphthene	NA	NA	NA	NA	liver	3E-03	NA	1E-03	4E-03
			Benzo(a)anthracene	2E-05	NA	8E-06	3E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-04	NA	7E-05	3E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2E-05	NA	8E-06	3E-05	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	3E-03	NA	1E-03	4E-03
			Benzo(k)fluoranthene	9E-07	NA	4E-07	1E-06	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	kidney	9E-03	NA	3E-04	9E-03
			Carbazole	2E-07	NA	6E-09	2E-07	NA	NA	NA	NA	NA

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chrysene	2E-07	NA	8E-08	3E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	3E-05	NA	1E-05	4E-05	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	1E-02	NA	4E-03	2E-02
			Fluorene	NA	NA	NA	NA	blood	4E-03	NA	2E-03	5E-03
			Indeno(1,2,3-c,d)pyrene	1E-05	NA	4E-06	1E-05	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	2E+00	NA	6E-01	2E+00
			Phenanthrene	NA	NA	NA	NA	NOE	2E-03	NA	6E-05	2E-03
		Exposure Point Total		7E-04	NA	1E-04	8E-04		7E+01	NA	7E+00	8E+01
	Exposure Medium Total			7E-04	NA	1E-04	8E-04		7E+01	NA	7E+00	8E+01

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Subsurface Soil (0 - 10 ft)	Aluminum	NA	NA	NA	NA	NA	NA	4E-02	NA	4E-02
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	1E-05	NA	1E-05	NA	NA	NA	NA	NA
			Cadmium	NA	4E-09	NA	4E-09	NA	NA	NA	NA	NA
			Chromium	NA	2E-07	NA	2E-07	respiratory	NA	1E-02	NA	1E-02
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1E-01
			Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	2E-03	NA	2E-03
			Dieldrin	NA	5E-10	NA	5E-10	NA	NA	NA	NA	NA
			Heptachlor	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Aroclor-1242	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			Aroclor-1260	NA	8E-11	NA	8E-11	NA	NA	NA	NA	NA
			Benzene	NA	1E-06	NA	1E-06	blood	NA	3E-01	NA	3E-01
			Tetrachloroethene	NA	1E-08	NA	1E-08	NA	NA	4E-03	NA	4E-03
			Toluene	NA	NA	NA	NA	nervous system	NA	4E-03	NA	4E-03
			Trichloroethene	NA	3E-07	NA	3E-07	nervous system, eyes	NA	4E-03	NA	4E-03
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	2E-01	NA	2E-01
			m-Xylene	NA	NA	NA	NA	nervous system	NA	9E-02	NA	9E-02
			o-Xylene	NA	NA	NA	NA	nervous system	NA	9E-02	NA	9E-02
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	8E-02	NA	8E-02
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	6E-02	NA	6E-02
			2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	4E-04	NA	4E-04
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	2E-07	NA	2E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	3E-08	NA	3E-08	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	4E-08	NA	4E-08	NA	NA	NA	NA	NA

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	6E+01	NA	6E+01
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	1E-05	NA	1E-05		NA	7E+01	NA	7E+01
	Exposure Medium Total			NA	1E-05	NA	1E-05		NA	7E+01	NA	7E+01
Medium Total				7E-04	1E-05	1E-04	8E-04		7E+01	7E+01	7E+00	1E+02

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater (Excavation)	Quanta Resources (Excavation)	Arsenic	NA	NA	3E-09	3E-09	skin	NA	NA	4E-04	4E-04
			Iron	NA	NA	NA	NA	NA	NA	NA	7E-03	7E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			alpha-BHC	NA	NA	NA	NA	NA	NA	NA	7E-05	7E-05
			delta-BHC	NA	NA	1E-09	1E-09	NA	NA	NA	NA	NA
			Heptachlor	NA	NA	4E-10	4E-10	liver	NA	NA	1E-05	1E-05
			Benzene	NA	NA	3E-07	3E-07	blood	NA	NA	9E-02	9E-02
			Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Ethylbenzene	NA	NA	NA	NA	liver, kidney	NA	NA	6E-03	6E-03
			Isopropylbenzene (Cumene)	NA	NA	NA	NA	kidney	NA	NA	1E-04	1E-04
			Toluene	NA	NA	NA	NA	kidney	NA	NA	2E-04	2E-04
			m,p-Xylene	NA	NA	NA	NA	whole body	NA	NA	4E-03	4E-03
			o-Xylene	NA	NA	NA	NA	whole body	NA	NA	2E-03	2E-03
			Xylene (Total)	NA	NA	NA	NA	whole body	NA	NA	7E-03	7E-03
			1,4-Dichlorobenzene	NA	NA	3E-10	3E-10	liver, developmental	NA	NA	3E-05	3E-05
			2,4-Dimethylphenol	NA	NA	NA	NA	blood	NA	NA	4E-03	4E-03
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	7E-01	7E-01
			2-Methylphenol	NA	NA	NA	NA	body weight, CNS	NA	NA	5E-04	5E-04
			3&4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	NA	NA	1E-03	1E-03
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	NA	NA	6E-02	6E-02
			Acenaphthene	NA	NA	NA	NA	liver	NA	NA	3E-03	3E-03
			Acenaphthylene	NA	NA	NA	NA	liver	NA	NA	5E-04	5E-04
			Anthracene	NA	NA	NA	NA	NOE	NA	NA	3E-05	3E-05
			Benzo(a)anthracene	NA	NA	3E-05	3E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	4E-04	4E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	5E-05	5E-05	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	NA	NA	1E-02	1E-02
			Benzo(k)fluoranthene	NA	NA	2E-06	2E-06	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	kidney	NA	NA	2E-03	2E-03
			Carbazole	NA	NA	5E-08	5E-08	NA	NA	NA	NA	NA
			Chrysene	NA	NA	3E-07	3E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	6E-05	6E-05	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	NA	NA	1E-02	1E-02
			Fluorene	NA	NA	NA	NA	blood	NA	NA	3E-04	3E-04
			Indeno(1,2,3-c,d)pyrene	NA	NA	2E-05	2E-05	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	5E-01	5E-01
			Phenanthrene	NA	NA	NA	NA	NOE	NA	NA	2E-03	2E-03
			Phenol	NA	NA	NA	NA	body weight	NA	NA	1E-04	1E-04
			Pyrene	NA	NA	NA	NA	kidney	NA	NA	1E-02	1E-02
		Exposure Point Total		NA	NA	6E-04	6E-04		NA	NA	1E+00	1E+00
	Exposure Medium Total			NA	NA	6E-04	6E-04		NA	NA	1E+00	1E+00

TABLE 9.4.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air (Excavation)	Quanta Resources (Excavation)	Benzene	NA	7E-07	NA	7E-07	blood	NA	2E-01	NA	2E-01
			Chloromethane	NA	NA	NA	NA	CNS	NA	6E-04	NA	6E-04
			Ethylbenzene	NA	NA	NA	NA	developmental	NA	3E-03	NA	3E-03
			Isopropylbenzene (Cumene)	NA	NA	NA	NA	kidney	NA	2E-03	NA	2E-03
			Toluene	NA	NA	NA	NA	nervous system	NA	8E-04	NA	8E-04
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	4E-02	NA	4E-02
			o-Xylene	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	9E-02	NA	9E-02
			1,4-Dichlorobenzene	NA	4E-10	NA	4E-10	liver	NA	2E-06	NA	2E-06
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	2E+01	NA	2E+01
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	7E-07	NA	7E-07		NA	2E+01	NA	2E+01
	Exposure Medium Total			NA	7E-07	NA	7E-07		NA	2E+01	NA	2E+01
Medium Total				NA	7E-07	6E-04	6E-04		NA	2E+01	1E+00	2E+01
Receptor Total				7E-04	2E-05	7E-04	1E-03		7E+01	8E+01	8E+00	2E+02

NA = Not applicable or not available

Total Blood HI Across Media =	3E+00
Total CNS HI Across Media =	2E-01
Total GI System HI Across Media =	6E-01
Total Immune System HI Across Media =	4E-01
Total Kidney HI Across Media =	7E-02
Total Liver HI Across Media =	6E-02
Total Nervous System HI Across Media =	8E-01
Total Respiratory HI Across Media =	8E+01
Total Skin HI Across Media =	7E+01
Total Whole Body HI Across Media =	3E+00
Total Eyes HI Across Media =	4E-03
Total Developmental HI Across Media =	3E-03
Total Fetus HI Across Media =	6E-03
Total Body Weight HI Across Media =	6E-04

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	1E-02	NA	4E-05	1E-02
			Antimony	NA	NA	NA	NA	blood	6E-01	NA	2E-02	6E-01
			Arsenic	NA	NA	NA	NA	skin	7E+00	NA	8E-01	8E+00
			Cadmium	NA	NA	NA	NA	kidney	1E-02	NA	2E-03	2E-02
			Chromium	NA	NA	NA	NA	NOE	9E-03	NA	1E-03	1E-02
			Copper	NA	NA	NA	NA	GI system	2E-01	NA	8E-04	2E-01
			Iron	NA	NA	NA	NA	NA	1E+00	NA	5E-03	1.2E+00
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	3E-03	NA	3E-04	3E-03
			Thallium	NA	NA	NA	NA	blood	2E-01	NA	7E-04	2E-01
			Vanadium	NA	NA	NA	NA	NA	1E-01	NA	2E-02	1E-01
			Zinc	NA	NA	NA	NA	blood	2E-02	NA	7E-05	2E-02
			Mercury	NA	NA	NA	NA	immune system	1E-01	NA	8E-03	1E-01
			Heptachlor	NA	NA	NA	NA	liver	1E-03	NA	4E-05	1E-03
			Aroclor-1242	NA	NA	NA	NA	immune system	2E-01	NA	1E-01	3E-01
			Aroclor-1260	NA	NA	NA	NA	immune system	1E-01	NA	6E-02	2E-01
			Benzene	NA	NA	NA	NA	blood	7E-03	NA	3E-04	7E-03
			Tetrachloroethene	NA	NA	NA	NA	liver	7E-05	NA	3E-06	7E-05
			Trichloroethene	NA	NA	NA	NA	liver, kidney, fetus	2E-03	NA	1E-04	3E-03
			m-Xylene	NA	NA	NA	NA	whole body	3E-04	NA	1E-05	3E-04
			p,o-Xylene	NA	NA	NA	NA	whole body	3E-04	NA	1E-05	3E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	1E-01	NA	4E-03	1E-01
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	4E-02	NA	1E-03	4E-02
			4-Nitroaniline	NA	NA	NA	NA	NA	5E-03	NA	2E-04	6E-03
			Acenaphthene	NA	NA	NA	NA	liver	6E-03	NA	3E-03	8E-03
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	7E-03	NA	4E-03	1E-02
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	3E-02	NA	1E-02	4E-02
			Fluorene	NA	NA	NA	NA	blood	1E-02	NA	6E-03	2E-02
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	6E-02	NA	3E-02	1E-01
			Phenanthrene	NA	NA	NA	NA	NOE	5E-03	NA	2E-04	5E-03
			Pyrene	NA	NA	NA	NA	kidney	3E-02	NA	2E-02	4E-02
		Exposure Point Total		0E+00	NA	0E+00	0E+00		1E+01	NA	1E+00	1E+01
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		1E+01	NA	1E+00	1E+01

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	2E-03	NA	2E-03
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	2E-04	NA	2E-04
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	7E-03	NA	7E-03
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1242	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	NA	NA	NA	blood	NA	3E-01	NA	3E-01
			Tetrachloroethene	NA	NA	NA	NA	NA	NA	5E-03	NA	5E-03
			Trichloroethene	NA	NA	NA	NA	nervous system, eyes	NA	6E-03	NA	6E-03
			m-Xylene	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1E-01
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1E-01
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	3E-06	NA	3E-06
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.5.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	8E+00	NA	8E+00
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	9E+00	NA	9E+00
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	9E+00	NA	9E+00
Medium Total				0E+00	0E+00	0E+00	0E+00		1E+01	9E+00	1E+00	2E+01
Receptor Total				0E+00	0E+00	0E+00	0E+00		1E+01	9E+00	1E+00	2E+01

NA = Not applicable or not available

Total Blood HI Across Media =	1.1E+00
Total CNS HI Across Media =	4E-02
Total GI System HI Across Media =	2E-01
Total Immune System HI Across Media =	7E-01
Total Kidney HI Across Media =	7E-02
Total Liver HI Across Media =	5E-02
Total Nervous System HI Across Media =	2E-01
Total Respiratory HI Across Media =	8E+00
Total Skin HI Across Media =	8E+00
Total Whole Body HI Across Media =	1E-01
Total Eyes HI Across Media =	6E-03
Total Fetus HI Across Media =	3E-03

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	1E-01	NA	3E-04	1E-01
			Antimony	NA	NA	NA	NA	blood	6E+00	NA	1E-01	6E+00
			Arsenic	NA	NA	NA	NA	skin	6E+01	NA	5E+00	7E+01
			Cadmium	NA	NA	NA	NA	kidney	1E-01	NA	1E-02	1E-01
			Chromium	NA	NA	NA	NA	NOE	8E-02	NA	9E-03	9E-02
			Copper	NA	NA	NA	NA	GI system	2E+00	NA	6E-03	2E+00
			Iron	NA	NA	NA	NA	NA	1E+01	NA	3E-02	1E+01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	3E-02	NA	2E-03	3E-02
			Thallium	NA	NA	NA	NA	blood	2E+00	NA	4E-03	2E+00
			Vanadium	NA	NA	NA	NA	NA	1E+00	NA	1E-01	1.2E+00
			Zinc	NA	NA	NA	NA	blood	2E-01	NA	5E-04	2E-01
			Mercury	NA	NA	NA	NA	immune system	1E+00	NA	5E-02	1E+00
			Heptachlor	NA	NA	NA	NA	liver	9E-03	NA	3E-04	9E-03
			Aroclor-1242	NA	NA	NA	NA	immune system	2E+00	NA	8E-01	3E+00
			Aroclor-1260	NA	NA	NA	NA	immune system	1E+00	NA	4E-01	1E+00
			Benzene	NA	NA	NA	NA	blood	6E-02	NA	2E-03	6E-02
			Tetrachloroethene	NA	NA	NA	NA	liver	7E-04	NA	2E-05	7E-04
			Trichloroethene	NA	NA	NA	NA	liver, kidney, fetus	2E-02	NA	6E-04	2E-02
			m-Xylene	NA	NA	NA	NA	whole body	3E-03	NA	8E-05	3E-03
			p,o-Xylene	NA	NA	NA	NA	whole body	3E-03	NA	9E-05	3E-03
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	1E+00	NA	3E-02	1E+00
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	3E-01	NA	1E-02	4E-01
			4-Nitroaniline	NA	NA	NA	NA	NA	5E-02	NA	1E-03	5E-02
			Acenaphthene	NA	NA	NA	NA	liver	5E-02	NA	2E-02	7E-02
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	7E-02	NA	3E-02	1E-01
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	3E-01	NA	1E-01	4E-01
			Fluorene	NA	NA	NA	NA	blood	1E-01	NA	4E-02	1E-01
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	6E-01	NA	2E-01	8E-01
			Phenanthrene	NA	NA	NA	NA	NOE	5E-02	NA	1E-03	5E-02
			Pyrene	NA	NA	NA	NA	kidney	3E-01	NA	1E-01	4E-01
		Exposure Point Total		0E+00	NA	0E+00	0E+00		9E+01	NA	7E+00	1E+02
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		9E+01	NA	7E+00	1E+02

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	4E-03	NA	4E-03
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	5E-04	NA	5E-04
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1242	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	NA	NA	NA	blood	NA	6E-01	NA	6E-01
			Tetrachloroethene	NA	NA	NA	NA	NA	NA	1E-02	NA	1E-02
			Trichloroethene	NA	NA	NA	NA	nervous system, eyes	NA	1E-02	NA	1E-02
			m-Xylene	NA	NA	NA	NA	nervous system	NA	3E-01	NA	3E-01
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	3E-01	NA	3E-01
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	8E-06	NA	8E-06
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.6.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	2E+01	NA	2E+01
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
Medium Total				0E+00	0E+00	0E+00	0E+00		9E+01	2E+01	7E+00	1E+02
Receptor Total				0E+00	0E+00	0E+00	0E+00		9E+01	2E+01	7E+00	1E+02

NA = Not applicable or not available

Total Blood HI Across Media =	8E+00
Total CNS HI Across Media =	4E-01
Total GI System HI Across Media =	2E+00
Total Immune System HI Across Media =	6E+00
Total Kidney HI Across Media =	6E-01
Total Liver HI Across Media =	5E-01
Total Nervous System HI Across Media =	6E-01
Total Respiratory HI Across Media =	2E+01
Total Skin HI Across Media =	7E+01
Total Whole Body HI Across Media =	1.2E+00
Total Eyes HI Across Media =	1E-02
Total Fetus HI Across Media =	2E-02

TABLE [redacted]E
SUMMARY OF RECEPTOR RISK[redacted]ND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Arsenic	4E-03	NA	3E-04	4E-03	skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Copper	NA	NA	NA	NA	GI system	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	immune system	NA	NA	NA	NA
			Heptachlor	2E-06	NA	8E-08	3E-06	liver	NA	NA	NA	NA
			Aroclor-1242	1E-05	NA	4E-06	1E-05	immune system	NA	NA	NA	NA
			Aroclor-1260	5E-06	NA	2E-06	7E-06	immune system	NA	NA	NA	NA
			Benzene	2E-06	NA	5E-08	2E-06	blood	NA	NA	NA	NA
			Tetrachloroethene	4E-07	NA	1E-08	5E-07	liver	NA	NA	NA	NA
			Trichloroethene	3E-07	NA	1E-08	3E-07	liver, kidney, fetus	NA	NA	NA	NA
			m-Xylene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			p,o-Xylene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	NA	NA	NA	NA
			4-Nitroaniline	4E-07	NA	1E-08	4E-07	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	liver	NA	NA	NA	NA
			Benzo(a)anthracene	2E-03	NA	9E-04	3E-03	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-02	NA	8E-03	3E-02	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2E-03	NA	1E-03	3E-03	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	NA	NA	NA	NA
			Benzo(k)fluoranthene	1E-04	NA	4E-05	2E-04	NA	NA	NA	NA	NA
			Carbazole	4E-06	NA	1E-07	4E-06	NA	NA	NA	NA	NA
			Chrysene	2E-05	NA	9E-06	3E-05	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	4E-03	NA	2E-03	6E-03	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	1E-03	NA	5E-04	2E-03	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			Phenanthrene	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	kidney	NA	NA	NA	NA
		Exposure Point Total		3E-02	NA	1E-02	4E-02		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			3E-02	NA	1E-02	4E-02		0E+00	NA	0E+00	0E+00

TABLE 9.7.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	4E-06	NA	4E-06	NA	NA	NA	NA	NA
			Cadmium	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Chromium	NA	1E-07	NA	1E-07	respiratory	NA	NA	NA	NA
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	3E-10	NA	3E-10	NA	NA	NA	NA	NA
			Aroclor-1242	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Aroclor-1260	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			Benzene	NA	3E-05	NA	3E-05	blood	NA	NA	NA	NA
			Tetrachloroethene	NA	6E-07	NA	6E-07	NA	NA	NA	NA	NA
			Trichloroethene	NA	2E-05	NA	2E-05	nervous system, eyes	NA	NA	NA	NA
			m-Xylene	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	3E-08	NA	3E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	3E-07	NA	3E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	3E-08	NA	3E-08	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	6E-08	NA	6E-08	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	NA	NA	NA
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	5E-05	NA	5E-05		NA	0E+00	NA	0E+00
	Exposure Medium Total			NA	5E-05	NA	5E-05		NA	0E+00	NA	0E+00
Medium Total				3E-02	5E-05	1E-02	5E-02		0E+00	0E+00	0E+00	0E+00
Receptor Total				3E-02	5E-05	1E-02	5E-02		0E+00	0E+00	0E+00	0E+00

NA = Not applicable or not available

Table 9.7.RME Supplement
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Receptor Total	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient (Adult Resident)				Non-Carcinogenic Hazard Quotient (Child Resident)			
	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total
Quanta Resources												
Surface Soil	3.3E-02	5.4E-05	1.2E-02	4.5E-02	1.0E+01	8.7E+00	1.1E+00	2.0E+01	9.3E+01	2.1E+01	7.5E+00	1.2E+02
Above Clay	9.7E-01	1.2E-03	9.0E-01	1.0E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	NA	2.2E+02	2.7E+04
Below Clay	2.5E-03	3.4E-03	5.4E-04	6.4E-03	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.3E+01	NA	1.4E+01	9.6E+01
Surface Soil + Above Clay	1.0E+00	1.2E-03	9.1E-01	1.9E+00	1.1E+04	6.4E+02	8.2E+01	1.2E+04	2.6E+04	2.1E+01	2.3E+02	2.7E+04
Surface Soil + Below Clay	3.5E-02	3.5E-03	1.3E-02	5.1E-02	4.5E+01	2.4E+01	7.2E+00	7.6E+01	1.8E+02	2.1E+01	2.1E+01	2.2E+02

	Adult Resident					Child Resident				
	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay
Total Blood HI Across Media =	1E+00	3E+01	1E-01	3E+01	1E+00	8E+00	4E+01	1E-01	5E+01	8E+00
Total CNS HI Across Media =	4E-02	7E+00	4E-04	7E+00	4E-02	4E-01	2E+01	1E-03	2E+01	4E-01
Total GI System HI Across Media =	2E-01	NA	1E-02	2E-01	2E-01	2E+00	NA	1E-03	2E+00	2E+00
Total Kidney HI Across Media =	7E-02	3E+00	4E+01	4E+00	4E+01	6E-01	8E+00	9E+01	8E+00	9E+01
Total Liver HI Across Media =	5E-02	2E+00	4E+01	2E+00	4E+01	5E-01	5E+00	9E+01	5E+00	9E+01
Total Nervous System HI Across Media =	2E-01	5E+00	2E+00	5E+00	2E+00	6E-01	NA	NA	6E-01	6E-01
Total Respiratory HI Across Media =	8E+00	6E+02	1E+01	6E+02	2E+01	2E+01	5E+01	3E-01	7E+01	2E+01
Total Skin HI Across Media =	8E+00	1E+04	5E-01	1E+04	8E+00	7E+01	3E+04	1E+00	3E+04	7E+01
Total Whole Body HI Across Media =	1E-01	3E+01	4E-01	3E+01	5E-01	1E+00	6E+01	9E-01	6E+01	2E+00
Total Eyes HI Across Media =	6E-03	3E-02	2E+00	3E-02	2E+00	1E-02	NA	NA	1E-02	1E-02
Total Heart HI Across Media =	NA	NA	4E-04	NA	4E-04	NA	NA	1E-03	NA	1E-03
Total Developmental HI Across Media =	NA	1E-01	NA	1E-01	NA	NA	NA	NA	NA	NA
Total Fetus HI Across Media =	3E-03	5E-01	4E+01	5E-01	4E+01	2E-02	1E+00	9E+01	1E+00	9E+01
Total Body Weight HI Across Media =	NA	3E-01	NA	3E-01	NA	NA	7E-01	NA	7E-01	NA

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	6E-03	NA	8E-05	6E-03
			Arsenic	5E-06	NA	2E-06	7E-06	skin	3E-02	NA	1E-02	4E-02
			Chromium	NA	NA	NA	NA	NOE	8E-03	NA	4E-03	1E-02
			Iron	NA	NA	NA	NA	NA	4E-02	NA	5E-04	4E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1E-03	NA	4E-04	2E-03
			Thallium	NA	NA	NA	NA	blood	4E-03	NA	5E-05	4E-03
			Vanadium	NA	NA	NA	NA	NA	2E-02	NA	1E-02	3E-02
			Mercury	NA	NA	NA	NA	immune system	1E-03	NA	2E-04	1E-03
			Benzo(a)anthracene	4E-07	NA	7E-07	1E-06	NA	NA	NA	NA	NA
			Benzo(a)pyrene	4E-06	NA	7E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	4E-07	NA	6E-07	1E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	9E-07	NA	2E-06	2E-06	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	2E-07	NA	4E-07	6E-07	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	2E-04	NA	3E-04	5E-04
		Exposure Point Total		1E-05	NA	1E-05	2E-05		1E-01	NA	3E-02	1E-01
	Exposure Medium Total			1E-05	NA	1E-05	2E-05		1E-01	NA	3E-02	1E-01

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Edgewater Enterprises Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	2E-03	NA	2E-03
			Arsenic	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Chromium	NA	2E-07	NA	2E-07	respiratory	NA	4E-04	NA	4E-04
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	6E-03	NA	6E-03
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	8E-11	NA	8E-11	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	8E-10	NA	8E-10	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	7E-11	NA	7E-11	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	4E-02	NA	4E-02
		Exposure Point Total		NA	2E-07	NA	2E-07		NA	5E-02	NA	5E-02
	Exposure Medium Total			NA	2E-07	NA	2E-07		NA	5E-02	NA	5E-02
Medium Total				1E-05	2E-07	1E-05	2E-05		1E-01	5E-02	3E-02	2E-01
Receptor Total				1E-05	2E-07	1E-05	2E-05		1E-01	5E-02	3E-02	2E-01

TABLE 9.8.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

NA = Not applicable or not available

Total Blood HI Across Media =	4E-03
Total CNS HI Across Media =	2E-03
Total GI System HI Across Media =	NA
Total Immune System HI Across Media =	1E-03
Total Kidney HI Across Media =	NA
Total Liver HI Across Media =	NA
Total Nervous System HI Across Media =	6E-03
Total Neurological HI Across Media =	NA
Total Respiratory HI Across Media =	4E-02
Total Skin HI Across Media =	4E-02
Total Whole Body HI Across Media =	5E-04
Total Eyes HI Across Media =	NA
Total Heart HI Across Media =	NA
Total Developmental HI Across Media =	NA
Total Fetus HI Across Media =	NA
Total Body Weight HI Across Media =	NA
Total Circulatory HI Across Media =	NA

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Edgewater Enterprises Subsurface Soil (0 - 10 ft)	Aluminum	NA	NA	NA	NA	NA	4E-02	NA	1E-04	4E-02
			Antimony	NA	NA	NA	NA	blood	2E-01	NA	4E-03	2E-01
			Arsenic	3E-05	NA	2E-06	3E-05	skin	4E+00	NA	4E-01	5E+00
			Barium	NA	NA	NA	NA	kidney	1E-02	NA	4E-04	1E-02
			Cadmium	NA	NA	NA	NA	kidney	6E-03	NA	7E-04	7E-03
			Chromium	NA	NA	NA	NA	NOE	6E-03	NA	7E-04	6E-03
			Copper	NA	NA	NA	NA	GI system	6E-02	NA	2E-04	6E-02
			Iron	NA	NA	NA	NA	NA	6E-01	NA	2E-03	6E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	6E-03	NA	5E-04	7E-03
			Selenium	NA	NA	NA	NA	whole body	1E-02	NA	4E-05	1E-02
			Silver	NA	NA	NA	NA	skin	4E-03	NA	3E-04	4E-03
			Thallium	NA	NA	NA	NA	blood	3E-01	NA	1E-03	3E-01
			Vanadium	NA	NA	NA	NA	NA	2E-02	NA	2E-03	2E-02
			Zinc	NA	NA	NA	NA	blood	6E-03	NA	2E-05	6E-03
			Mercury	NA	NA	NA	NA	immune system	5E-02	NA	2E-03	5E-02
			Aroclor-1254	2E-08	NA	9E-09	3E-08	immune system	1E-02	NA	6E-03	2E-02
			1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	2E-03	NA	6E-05	2E-03
			2-Chlorotoluene	NA	NA	NA	NA	body weight	4E-04	NA	1E-05	4E-04
			Benzene	5E-09	NA	1E-10	5E-09	blood	1E-03	NA	4E-05	1E-03
			Tetrachloroethene	1E-08	NA	3E-10	1E-08	liver	1E-05	NA	4E-07	1E-05
			Xylene (Total)	NA	NA	NA	NA	whole body	5E-04	NA	2E-05	6E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	2E-01	NA	5E-03	2E-01
			Acenaphthene	NA	NA	NA	NA	liver	7E-04	NA	3E-04	9E-04
			Benzo(a)anthracene	1E-06	NA	5E-07	2E-06	NA	NA	NA	NA	NA
			Benzo(a)pyrene	9E-06	NA	4E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	9E-07	NA	4E-07	1E-06	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	6E-08	NA	2E-08	8E-08	NA	NA	NA	NA	NA
			Carbazole	1E-08	NA	3E-10	1E-08	NA	NA	NA	NA	NA
			Chrysene	1E-08	NA	5E-09	2E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	1E-06	NA	5E-07	2E-06	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	9E-04	NA	4E-04	1E-03
			Fluorene	NA	NA	NA	NA	blood	9E-04	NA	4E-04	1E-03
			Indeno(1,2,3-c,d)pyrene	4E-07	NA	2E-07	6E-07	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	7E-02	NA	3E-02	1.E-01
			Pyrene	NA	NA	NA	NA	kidney	1E-03	NA	4E-04	1E-03
		Exposure Point Total		4E-05	NA	8E-06	5E-05		6E+00	NA	4E-01	6E+00
	Exposure Medium Total			4E-05	NA	8E-06	5E-05		6E+00	NA	4E-01	6E+00

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Edgewater Enterprises Emissions from Subsurface Soil (0 - 10 ft)	Aluminum	NA	NA	NA	NA	NA	NA	8E-02	NA	8E-02
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	8E-07	NA	8E-07	NA	NA	NA	NA	NA
			Barium	NA	NA	NA	NA	fetus	NA	1E-03	NA	1E-03
			Cadmium	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Chromium	NA	2E-07	NA	2E-07	respiratory	NA	1E-02	NA	1E-02
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-01	NA	2E-01
			Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Silver	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	5E-03	NA	5E-03
			Aroclor-1254	NA	1E-11	NA	1E-11	NA	NA	NA	NA	NA
			1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	NA	2E-01	NA	2E-01
			2-Chlorotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	6E-08	NA	6E-08	blood	NA	2E-02	NA	2E-02
			Tetrachloroethene	NA	9E-09	NA	9E-09	NA	NA	3E-03	NA	3E-03
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	6E-02	NA	6E-02
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	7E-11	NA	7E-11	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	5E-10	NA	5E-10	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	3E+00	NA	3E+00
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	1E-06	NA	1E-06		NA	4E+00	NA	4E+00
	Exposure Medium Total			NA	1E-06	NA	1E-06		NA	4E+00	NA	4E+00
Medium Total				4E-05	1E-06	8E-06	5E-05		6E+00	4E+00	4E-01	1E+01

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater (Excavation)	Edgewater Enterprises (Excavation)	Arsenic	NA	NA	3E-05	3E-05	skin	NA	NA	5E+00	5E+00
			Iron	NA	NA	NA	NA	NA	NA	NA	1E-02	1E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,1-Dichloroethane	NA	NA	NA	NA	None	NA	NA	1E-05	1E-05
			1,2-Dichloroethane	NA	NA	2E-10	2E-10	heart, respiratory, CNS, kidney, liver, GI system	NA	NA	8E-06	8E-06
			1,2-Dichloropropane	NA	NA	3E-11	3E-11	NA	NA	NA	NA	NA
			Benzene	NA	NA	4E-09	4E-09	blood	NA	NA	1E-03	1E-03
			Chloroethane	NA	NA	2E-11	2E-11	fetus	NA	NA	1E-06	1E-06
			Chloroform	NA	NA	NA	NA	liver	NA	NA	2E-05	2E-05
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	6E-06	6E-06
			Tetrachloroethene	NA	NA	3E-09	3E-09	liver	NA	NA	4E-06	4E-06
			Trichloroethene	NA	NA	6E-10	6E-10	liver, kidney, fetus	NA	NA	3E-04	3E-04
			Vinyl chloride	NA	NA	3E-09	3E-09	liver	NA	NA	1E-04	1E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	2E-02	2E-02
			Acenaphthene	NA	NA	NA	NA	liver	NA	NA	2E-04	2E-04
			Benzo(a)anthracene	NA	NA	2E-08	2E-08	NA	NA	NA	NA	NA
			Carbazole	NA	NA	2E-09	2E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	blood	NA	NA	1E-05	1E-05
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	4E-02	4E-02
		Exposure Point Total		NA	NA	3E-05	3E-05		NA	NA	5E+00	5E+00
	Exposure Medium Total			NA	NA	3E-05	3E-05		NA	NA	5E+00	5E+00

TABLE 9.9.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Ambient Air (Excavation)	Edgewater Enterprises (Excavation)	1,1-Dichloroethane	NA	NA	NA	NA	kidney	NA	9E-05	NA	9E-05
			1,2-Dichloroethane	NA	4E-09	NA	4E-09	GI system, liver, kidney	NA	2E-03	NA	2E-03
			1,2-Dichloropropane	NA	NA	NA	NA	respiratory	NA	7E-05	NA	7E-05
			Benzene	NA	1E-08	NA	1E-08	blood	NA	4E-03	NA	4E-03
			Chloroethane	NA	NA	NA	NA	developmental	NA	3E-06	NA	3E-06
			Chloroform	NA	2E-09	NA	2E-09	NA	NA	1E-04	NA	1E-04
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Tetrachloroethene	NA	2E-10	NA	2E-10	NA	NA	7E-05	NA	7E-05
			Trichloroethene	NA	3E-09	NA	3E-09	nervous system, eyes	NA	5E-05	NA	5E-05
			Vinyl chloride	NA	2E-10	NA	2E-10	liver	NA	4E-05	NA	4E-05
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E+00	NA	1E+00
		Exposure Point Total		NA	2E-08	NA	2E-08		NA	1E+00	NA	1E+00
	Exposure Medium Total			NA	2E-08	NA	2E-08		NA	1E+00	NA	1E+00
Medium Total				NA	2E-08	3E-05	3E-05		NA	1E+00	5E+00	6E+00
Receptor Total				4E-05	1E-06	4E-05	8E-05		6E+00	5E+00	5E+00	2E+01

NA = Not applicable or not available

Total Blood HI Across Media =	6E-01
Total CNS HI Across Media =	7E-03
Total GI System HI Across Media =	6E-02
Total Immune System HI Across Media =	7E-02
Total Kidney HI Across Media =	2E-02
Total Liver HI Across Media =	5E-03
Total Nervous System HI Across Media =	2E-01
Total Respiratory HI Across Media =	4E+00
Total Skin HI Across Media =	9E+00
Total Whole Body HI Across Media =	2E-01
Total Eyes HI Across Media =	5E-05
Total Heart HI Across Media =	8E-06
Total Developmental HI Across Media =	3E-06
Total Fetus HI Across Media =	2E-03
Total Body Weight HI Across Media =	4E-04

TABLE 9.10.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	2E-02	NA	7E-05	2E-02
			Arsenic	NA	NA	NA	NA	skin	8E-02	NA	1E-02	9E-02
			Chromium	NA	NA	NA	NA	NOE	2E-02	NA	3E-03	2E-02
			Iron	NA	NA	NA	NA	NA	1E-01	NA	4E-04	1E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	4E-03	NA	3E-04	4E-03
			Thallium	NA	NA	NA	NA	blood	1E-02	NA	4E-05	1E-02
			Vanadium	NA	NA	NA	NA	NA	6E-02	NA	9E-03	7E-02
			Mercury	NA	NA	NA	NA	immune system	3E-03	NA	2E-04	3E-03
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	5E-04	NA	2E-04	7E-04
		Exposure Point Total		0E+00	NA	0E+00	0E+00		3E-01	NA	2E-02	3E-01
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		3E-01	NA	2E-02	3E-01

TABLE 9.10.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Edgewater Enterprises Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	3E-03	NA	3E-03
			Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	5E-04	NA	5E-04
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	8E-03	NA	8E-03
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	6E-02	NA	6E-02
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	7E-02	NA	7E-02
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	7E-02	NA	7E-02
Medium Total				0E+00	0E+00	0E+00	0E+00		3E-01	7E-02	2E-02	4E-01
Receptor Total				0E+00	0E+00	0E+00	0E+00		3E-01	7E-02	2E-02	4E-01

NA = Not applicable or not available

Total Blood HI Across Media =	1E-02
Total CNS HI Across Media =	4E-03
Total Immune System HI Across Media =	3E-03
Total Nervous System HI Across Media =	8E-03
Total Respiratory HI Across Media =	6E-02
Total Skin HI Across Media =	9E-02
Total Whole Body HI Across Media =	7E-04

TABLE 9.11.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	2E-01	NA	5E-04	2E-01
			Arsenic	NA	NA	NA	NA	skin	8E-01	NA	7E-02	9E-01
			Chromium	NA	NA	NA	NA	NOE	2E-01	NA	2E-02	2E-01
			Iron	NA	NA	NA	NA	NA	1E+00	NA	3E-03	1.0E+00
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	3E-02	NA	2E-03	3E-02
			Thallium	NA	NA	NA	NA	blood	9E-02	NA	3E-04	9E-02
			Vanadium	NA	NA	NA	NA	NA	5E-01	NA	6E-02	6E-01
			Mercury	NA	NA	NA	NA	immune system	3E-02	NA	1E-03	3E-02
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	4E-03	NA	2E-03	6E-03
		Exposure Point Total		0E+00	NA	0E+00	0E+00		3E+00	NA	2E-01	3E+00
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		3E+00	NA	2E-01	3E+00

TABLE 9.11.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Edgewater Enterprises Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	7E-03	NA	7E-03
			Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	1E-03	NA	1E-03
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E-01	NA	1E-01
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	2E-01	NA	2E-01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	2E-01	NA	2E-01
Medium Total				0E+00	0E+00	0E+00	0E+00		3E+00	2E-01	2E-01	3E+00
Receptor Total				0E+00	0E+00	0E+00	0E+00		3E+00	2E-01	2E-01	3E+00

NA = Not applicable or not available

Total Blood HI Across Media =	9E-02
Total CNS HI Across Media =	3E-02
Total Immune System HI Across Media =	3E-02
Total Nervous System HI Across Media =	2E-02
Total Respiratory HI Across Media =	1E-01
Total Skin HI Across Media =	9E-01
Total Whole Body HI Across Media =	6E-03

TABLE 9.12.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	4E-05	NA	4E-06	5E-05	skin	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	immune system	NA	NA	NA	NA
			Benzo(a)anthracene	2E-05	NA	9E-06	3E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-04	NA	8E-05	3E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2E-05	NA	8E-06	3E-05	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	5E-05	NA	2E-05	6E-05	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	1E-05	NA	5E-06	2E-05	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
		Exposure Point Total		3E-04	NA	1E-04	5E-04		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			3E-04	NA	1E-04	5E-04		0E+00	NA	0E+00	0E+00

TABLE 9.12.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Edgewater Enterprises Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	5E-08	NA	5E-08	NA	NA	NA	NA	NA
			Chromium	NA	4E-07	NA	4E-07	respiratory	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	3E-10	NA	3E-10	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	3E-09	NA	3E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	3E-10	NA	3E-10	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	6E-10	NA	6E-10	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	NA	NA	NA
		Exposure Point Total		NA	4E-07	NA	4E-07		NA	0E+00	NA	0E+00
	Exposure Medium Total			NA	4E-07	NA	4E-07		NA	0E+00	NA	0E+00
Medium Total				3E-04	4E-07	1E-04	5E-04		0E+00	0E+00	0E+00	0E+00
Receptor Total				3E-04	4E-07	1E-04	5E-04		0E+00	0E+00	0E+00	0E+00

Table 9.12.RME Supplement
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Receptor Total	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient (Adult Resident)				Non-Carcinogenic Hazard Quotient (Child Resident)			
	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total
Edgewater												
Surface Soil	3.3E-04	4.1E-07	1.2E-04	4.6E-04	3.1E-01	7.3E-02	2.4E-02	4.0E-01	2.9E+00	1.7E-01	1.6E-01	3.2E+00
Above Clay	9.7E-01	1.2E-03	9.0E-01	1.0E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	NA	2.2E+02	2.7E+04
Below Clay	2.5E-03	3.4E-03	5.4E-04	6.4E-03	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.3E+01	NA	1.4E+01	9.6E+01
Surface Soil + Above Clay	9.7E-01	1.2E-03	9.0E-01	1.9E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	1.7E-01	2.2E+02	2.7E+04
Surface Soil + Below Clay	2.8E-03	3.4E-03	6.7E-04	6.9E-03	3.6E+01	1.5E+01	6.1E+00	5.7E+01	8.5E+01	1.7E-01	1.4E+01	9.9E+01

	Adult Resident					Child Resident				
	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay
Total Blood HI Across Media =	1E-02	3E+01	1E-01	3E+01	1E-01	9E-02	4E+01	1E-01	4E+01	2E-01
Total CNS HI Across Media =	4E-03	7E+00	4E-04	7E+00	4E-03	3E-02	2E+01	1E-03	2E+01	4E-02
Total GI System HI Across Media =	NA	NA	1E-02	NA	1E-02	NA	NA	1E-03	NA	1E-03
Total Kidney HI Across Media =	NA	3E+00	4E+01	3E+00	4E+01	NA	8E+00	9E+01	8E+00	9E+01
Total Liver HI Across Media =	NA	2E+00	4E+01	2E+00	4E+01	NA	5E+00	9E+01	5E+00	9E+01
Total Nervous System HI Across Media =	8E-03	5E+00	2E+00	5E+00	2E+00	2E-02	NA	NA	2E-02	2E-02
Total Respiratory HI Across Media =	6E-02	6E+02	1E+01	6E+02	1E+01	1E-01	5E+01	3E-01	5E+01	4E-01
Total Skin HI Across Media =	9E-02	1E+04	5E-01	1E+04	6E-01	9E-01	3E+04	1E+00	3E+04	2E+00
Total Whole Body HI Across Media =	7E-04	3E+01	4E-01	3E+01	4E-01	6E-03	6E+01	9E-01	6E+01	9E-01
Total Eyes HI Across Media =	NA	3E-02	2E+00	3E-02	2E+00	NA	NA	NA	NA	NA
Total Heart HI Across Media =	NA	NA	4E-04	NA	4E-04	NA	NA	1E-03	NA	1E-03
Total Developmental HI Across Media =	NA	1E-01	NA	1E-01	NA	NA	NA	NA	NA	NA
Total Fetus HI Across Media =	NA	5E-01	4E+01	5E-01	4E+01	NA	1E+00	9E+01	1E+00	9E+01
Total Body Weight HI Across Media =	NA	3E-01	NA	3E-01	NA	NA	7E-01	NA	7E-01	NA

TABLE 9.13.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Arsenic	3E-06	NA	1E-06	5E-06	skin	2E-02	NA	8E-03	3E-02
			Chromium	NA	NA	NA	NA	NOE	2E-02	NA	9E-03	3E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	4E-06	NA	6E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	3E-05	NA	5E-05	9E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	4E-06	NA	7E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	2E-07	NA	4E-07	6E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	6E-06	NA	1E-05	2E-05	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	2E-06	NA	3E-06	5E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	3E-04	NA	5E-04	8E-04
		Exposure Point Total		5E-05	NA	8E-05	1E-04		4E-02	NA	2E-02	6E-02
	Exposure Medium Total			5E-05	NA	8E-05	1E-04		4E-02	NA	2E-02	6E-02
	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Arsenic	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Chromium	NA	4E-07	NA	4E-07	respiratory	NA	8E-04	NA	8E-04
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	7E-10	NA	7E-10	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	7E-09	NA	7E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	8E-10	NA	8E-10	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	4E-10	NA	4E-10	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	8E-02	NA	8E-02
		Exposure Point Total		NA	4E-07	NA	4E-07		NA	8E-02	NA	8E-02
	Exposure Medium Total			NA	4E-07	NA	4E-07		NA	8E-02	NA	8E-02
Medium Total				5E-05	4E-07	8E-05	1E-04		4E-02	8E-02	2E-02	1E-01
Receptor Total				5E-05	4E-07	8E-05	1E-04		4E-02	8E-02	2E-02	1E-01

NA = Not applicable or not available

Total Respiratory HI Across Media =	8E-02
Total Skin HI Across Media =	3E-02
Total Whole Body HI Across Media =	8E-04

TABLE 9.14.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Daycare Child
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Arsenic	8E-06	NA	1E-06	9E-06	skin	2E-01	NA	3E-02	2E-01
			Chromium	NA	NA	NA	NA	NOE	2E-01	NA	3E-02	2E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	5E-05	NA	4E-05	9E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	5E-04	NA	3E-04	8E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	6E-05	NA	4E-05	1E-04	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	3E-06	NA	2E-06	5E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	9E-05	NA	6E-05	2E-04	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	3E-05	NA	2E-05	5E-05	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	3E-03	NA	2E-03	5E-03
		Exposure Point Total		7E-04	NA	5E-04	1E-03		4E-01	NA	7E-02	4E-01
	Exposure Medium Total			7E-04	NA	5E-04	1E-03		4E-01	NA	7E-02	4E-01
	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Arsenic	NA	1E-07	NA	1E-07	NA	NA	NA	NA	NA
			Chromium	NA	2E-06	NA	2E-06	respiratory	NA	2E-02	NA	2E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	9E-09	NA	9E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	6E-11	NA	6E-11	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	6E-10	NA	6E-10	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	2E+00	NA	2E+00
		Exposure Point Total		NA	3E-06	NA	3E-06		NA	2E+00	NA	2E+00
	Exposure Medium Total			NA	3E-06	NA	3E-06		NA	2E+00	NA	2E+00
Medium Total				7E-04	3E-06	5E-04	1E-03		4E-01	2E+00	7E-02	3E+00
Receptor Total				7E-04	3E-06	5E-04	1E-03		4E-01	2E+00	7E-02	3E+00

Total Respiratory HI Across Media =	2E+00
Total Skin HI Across Media =	2E-01
Total Whole Body HI Across Media =	5E-03

NA = Not applicable or not available

TABLE 9.14.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	115 River Road Subsurface Soil (0 - 10 ft)	Arsenic	2E-06	NA	2E-07	2E-06	skin	3E-01	NA	3E-02	3E-01
			Chromium	NA	NA	NA	NA	NOE	2E-02	NA	2E-03	2E-02
			Iron	NA	NA	NA	NA	NA	5E-01	NA	2E-03	5E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	6E-03	NA	4E-04	6E-03
			Vanadium	NA	NA	NA	NA	NA	1E-02	NA	1E-03	1E-02
			Mercury	NA	NA	NA	NA	immune system	1E-03	NA	4E-05	1E-03
			Benzene	7E-08	NA	2E-09	8E-08	blood	2E-02	NA	7E-04	2E-02
			Toluene	NA	NA	NA	NA	kidney	1E-04	NA	4E-06	1E-04
			Xylene (Total)	NA	NA	NA	NA	whole body	4E-03	NA	1E-04	4E-03
			2,4-Dinitrotoluene	NA	NA	NA	NA	GI system, nervous system	5E-02	NA	1E-02	6E-02
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	2E+00	NA	5E-02	2E+00
			Acenaphthene	NA	NA	NA	NA	liver	7E-03	NA	3E-03	1E-02
			Benzo(a)anthracene	8E-06	NA	3E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	5E-05	NA	2E-05	7E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	6E-06	NA	2E-06	8E-06	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	2E-07	NA	8E-08	3E-07	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	kidney	2E-02	NA	7E-04	3E-02
			Carbazole	1E-07	NA	4E-09	2E-07	NA	NA	NA	NA	NA
			Chrysene	2E-07	NA	7E-08	2E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	9E-06	NA	3E-06	1E-05	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	5E-03	NA	2E-03	7E-03
			Fluorene	NA	NA	NA	NA	blood	9E-03	NA	4E-03	1E-02
			Indeno(1,2,3-c,d)pyrene	2E-06	NA	9E-07	3E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	4E-01	NA	2E-01	5E-01
			Phenanthrene	NA	NA	NA	NA	NOE	3E-03	NA	8E-05	3E-03
			Pyrene	NA	NA	NA	NA	kidney	6E-03	NA	2E-03	8E-03
		Exposure Point Total		8E-05	NA	3E-05	1E-04		3E+00	NA	3E-01	3E+00
	Exposure Medium Total			8E-05	NA	3E-05	1E-04		3E+00	NA	3E-01	3E+00

TABLE 9.14.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	115 River Road Emissions from Subsurface Soil (0 - 10 ft)	Arsenic	NA	6E-08	NA	6E-08	NA	NA	NA	NA	NA
			Chromium	NA	6E-07	NA	6E-07	respiratory	NA	3E-02	NA	3E-02
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-01	NA	2E-01
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	1E-04	NA	1E-04
			Benzene	NA	1E-06	NA	1E-06	blood	NA	3E-01	NA	3E-01
			Toluene	NA	NA	NA	NA	nervous system	NA	4E-03	NA	4E-03
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	4E-01	NA	4E-01
			2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	7E-08	NA	7E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	7E-09	NA	7E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	3E-10	NA	3E-10	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	3E-09	NA	3E-09	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	2E+01	NA	2E+01
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	2E-06	NA	2E-06		NA	2E+01	NA	2E+01
	Exposure Medium Total			NA	2E-06	NA	2E-06		NA	2E+01	NA	2E+01
Medium Total				8E-05	2E-06	3E-05	1E-04		3E+00	2E+01	3E-01	2E+01

TABLE 9.14.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater (Excavation)	115 River Road (Excavation)	Arsenic	NA	NA	2E-09	2E-09	skin	NA	NA	3E-04	3E-04
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	NA	3E-08	3E-08	blood	NA	NA	8E-03	8E-03
			o-Xylene	NA	NA	NA	NA	whole body	NA	NA	6E-05	6E-05
			Xylene (Total)	NA	NA	NA	NA	whole body	NA	NA	2E-04	2E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	2E-02	2E-02
			Acenaphthene	NA	NA	NA	NA	liver	NA	NA	3E-04	3E-04
			Benzo(a)anthracene	NA	NA	8E-08	8E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	9E-07	9E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	8E-08	8E-08	NA	NA	NA	NA	NA
			Carbazole	NA	NA	4E-09	4E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	blood	NA	NA	8E-06	8E-06
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	5E-02	5E-02
		Exposure Point Total		NA	NA	1E-06	1E-06		NA	NA	8E-02	8E-02
	Exposure Medium Total			NA	NA	1E-06	1E-06		NA	NA	8E-02	8E-02

TABLE 9.14.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air (Excavation)	115 River Road (Excavation)	Benzene	NA	7E-08	NA	7E-08	blood	NA	2E-02	NA	2E-02
			o-Xylene	NA	NA	NA	NA	nervous system	NA	8E-04	NA	8E-04
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	3E-03	NA	3E-03
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E+00	NA	1E+00
		Exposure Point Total		NA	7E-08	NA	7E-08		NA	1E+00	NA	1E+00
	Exposure Medium Total			NA	7E-08	NA	7E-08		NA	1E+00	NA	1E+00
Medium Total				NA	7E-08	1E-06	1E-06		NA	1E+00	8E-02	2E+00
Receptor Total				8E-05	2E-06	3E-05	1E-04		3E+00	2E+01	3E-01	2E+01

NA = Not applicable or not available

Total Blood HI Across Media =	4E-01
Total CNS HI Across Media =	6E-03
Total GI System HI Across Media =	6E-02
Total Immune System HI Across Media =	1E-03
Total Kidney HI Across Media =	3E-02
Total Liver HI Across Media =	2E-02
Total Nervous System HI Across Media =	6E-01
Total Neurological HI Across Media =	NA
Total Respiratory HI Across Media =	2E+01
Total Skin HI Across Media =	3E-01
Total Whole Body HI Across Media =	6E-01

TABLE 9.16.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Arsenic	NA	NA	NA	NA	skin	6E-02	NA	7E-03	7E-02
			Chromium	NA	NA	NA	NA	NOE	5E-02	NA	7E-03	5E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	8E-04	NA	4E-04	1E-03
		Exposure Point Total		0E+00	NA	0E+00	0E+00		1E-01	NA	1E-02	1E-01
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		1E-01	NA	1E-02	1E-01
	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	1E-03	NA	1E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E-01	NA	1E-01
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	1E-01	NA	1E-01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	1E-01	NA	1E-01
Medium Total				0E+00	0E+00	0E+00	0E+00		1E-01	1E-01	1E-02	2E-01
Receptor Total				0E+00	0E+00	0E+00	0E+00		1E-01	1E-01	1E-02	2E-01

NA = Not applicable or not available

Total Respiratory HI Across Media =	1E-01
Total Skin HI Across Media =	7E-02
Total Whole Body HI Across Media =	1E-03

TABLE 9.17.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Arsenic	NA	NA	NA	NA	skin	6E-01	NA	5E-02	6E-01
			Chromium	NA	NA	NA	NA	NOE	4E-01	NA	5E-02	5E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	8E-03	NA	3E-03	1E-02
		Exposure Point Total		0E+00	NA	0E+00	0E+00		1E+00	NA	1E-01	1E+00
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		1E+00	NA	1E-01	1E+00
	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	3E-03	NA	3E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	3E-01	NA	3E-01
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	3E-01	NA	3E-01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	3E-01	NA	3E-01
Medium Total				0E+00	0E+00	0E+00	0E+00		1E+00	3E-01	1E-01	1E+00
Receptor Total				0E+00	0E+00	0E+00	0E+00		1E+00	3E-01	1E-01	1E+00

NA = Not applicable or not available

Total Respiratory HI Across Media =	3E-01
Total Skin HI Across Media =	6E-01
Total Whole Body HI Across Media =	1E-02

TABLE 9.18.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Arsenic	3E-05	NA	3E-06	3E-05	skin	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	3E-05	NA	1E-05	5E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-03	NA	7E-04	2E-03	NA	NA	NA	NA	
			Benzo(b)fluoranthene	4E-05	NA	1E-05	5E-05	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	2E-06	NA	8E-07	3E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	3E-04	NA	1E-04	4E-04	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	2E-05	NA	7E-06	2E-05	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
		Exposure Point Total		2E-03	NA	8E-04	3E-03		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			2E-03	NA	8E-04	3E-03		0E+00	NA	0E+00	0E+00
	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Arsenic	NA	4E-08	NA	4E-08	NA	NA	NA	NA	NA
			Chromium	NA	8E-07	NA	8E-07	respiratory	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	9E-11	NA	9E-11	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	4E-09	NA	4E-09	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	8E-10	NA	8E-10	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	NA	NA	NA
		Exposure Point Total		NA	8E-07	NA	8E-07		NA	0E+00	NA	0E+00
	Exposure Medium Total			NA	8E-07	NA	8E-07		NA	0E+00	NA	0E+00
Medium Total				2E-03	8E-07	8E-04	3E-03		0E+00	0E+00	0E+00	0E+00
Receptor Total				2E-03	8E-07	8E-04	3E-03		0E+00	0E+00	0E+00	0E+00

NA = Not applicable or not available

Table 9.18.RME Supplement
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Receptor Total	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient (Adult Resident)				Non-Carcinogenic Hazard Quotient (Child Resident)			
	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total
115 River Road												
Surface Soil	**2.0E-03**	8.3E-07	**8.4E-04**	**2.9E-03**	1.1E-01	1.1E-01	1.5E-02	**2.3E-01**	9.9E-01	2.6E-01	9.8E-02	**1.3E+00**
Above Clay	**9.7E-01**	**1.2E-03**	**9.0E-01**	**1.0E+00**	**1.1E+04**	**6.3E+02**	**8.1E+01**	**1.2E+04**	**2.6E+04**	**NA**	**2.2E+02**	**2.7E+04**
Below Clay	**2.5E-03**	**3.4E-03**	**5.4E-04**	**6.4E-03**	**3.5E+01**	**1.5E+01**	**6.0E+00**	**5.6E+01**	**8.3E+01**	**NA**	**1.4E+01**	**9.6E+01**
Surface Soil + Above Clay	**9.7E-01**	**1.2E-03**	**9.0E-01**	**1.9E+00**	**1.1E+04**	**6.3E+02**	**8.1E+01**	**1.2E+04**	**2.6E+04**	2.6E-01	**2.2E+02**	**2.7E+04**
Surface Soil + Below Clay	**4.5E-03**	**3.4E-03**	**1.4E-03**	**9.3E-03**	**3.5E+01**	**1.5E+01**	**6.1E+00**	**5.7E+01**	**8.4E+01**	2.6E-01	**1.4E+01**	**9.7E+01**

	Adult Resident				
	Surface soil	Above Clay	Below Clay	**Surface Soil + Above Clay**	**Surface Soil + Below Clay**
Total Blood HI Across Media =	NA	**3E+01**	1E-01	**3E+01**	1E-01
Total CNS HI Across Media =	NA	**7E+00**	4E-04	**7E+00**	4E-04
Total GI System HI Across Media =	NA	NA	1E-02	NA	1E-02
Total Kidney HI Across Media =	NA	**3E+00**	**4E+01**	**3E+00**	**4E+01**
Total Liver HI Across Media =	NA	**2E+00**	**4E+01**	**2E+00**	**4E+01**
Total Nervous System HI Across Media =	NA	**5E+00**	**2E+00**	**5E+00**	**2E+00**
Total Respiratory HI Across Media =	1E-01	**6E+02**	**1E+01**	**6E+02**	**1E+01**
Total Skin HI Across Media =	7E-02	**1E+04**	5E-01	**1E+04**	6E-01
Total Whole Body HI Across Media =	1E-03	**3E+01**	4E-01	**3E+01**	4E-01
Total Eyes HI Across Media =	NA	3E-02	**2E+00**	3E-02	**2E+00**
Total Heart HI Across Media =	NA	NA	4E-04	NA	4E-04
Total Developmental HI Across Media =	NA	1E-01	NA	1E-01	NA
Total Fetus HI Across Media =	NA	5E-01	**4E+01**	5E-01	**4E+01**
Total Body Weight HI Across Media =	NA	3E-01	NA	3E-01	NA

Child Resident				
Surface soil	Above Clay	Below Clay	**Surface Soil + Above Clay**	**Surface Soil + Below Clay**
NA	**4E+01**	1E-01	**4E+01**	1E-01
NA	**2E+01**	1E-03	**2E+01**	1E-03
NA	NA	1E-03	NA	1E-03
NA	**8E+00**	**9E+01**	**8E+00**	**9E+01**
NA	**5E+00**	**9E+01**	**5E+00**	**9E+01**
NA	NA	NA	NA	NA
3E-01	**5E+01**	3E-01	**5E+01**	6E-01
6E-01	**3E+04**	1E+00	**3E+04**	**2E+00**
1E-02	**6E+01**	9E-01	**6E+01**	9E-01
NA	NA	NA	NA	NA
NA	NA	1E-03	NA	1E-03
NA	NA	NA	NA	NA
NA	1E+00	**9E+01**	1E+00	**9E+01**
NA	7E-01	NA	7E-01	NA

TABLE 9.19.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Arsenic	1E-05	NA	2E-06	1E-05	skin	7E-02	NA	8E-03	8E-02
			Chromium	NA	NA	NA	NA	NOE	4E-03	NA	7E-04	5E-03
			Benzo(a)anthracene	3E-06	NA	1E-06	4E-06	NA	NA	NA	NA	NA
			Benzo(a)pyrene	3E-05	NA	1E-05	4E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	4E-06	NA	2E-06	6E-06	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	2E-07	NA	8E-08	2E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	5E-06	NA	2E-06	7E-06	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	2E-06	NA	9E-07	3E-06	NA	NA	NA	NA	NA
		Exposure Point Total		6E-05	NA	2E-05	8E-05		7E-02	NA	9E-03	8E-02
	Exposure Medium Total			6E-05	NA	2E-05	8E-05		7E-02	NA	9E-03	8E-02
	Ambient Air	Former Lever Brothers Property Emissions from Surface Soil (0-2 ft)	Arsenic	NA	3E-09	NA	3E-09	NA	NA	NA	NA	NA
			Chromium	NA	5E-09	NA	5E-09	respiratory	NA	9E-06	NA	9E-06
			Benzo(a)anthracene	NA	2E-11	NA	2E-11	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	3E-11	NA	3E-11	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	1E-12	NA	1E-12	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	1E-11	NA	1E-11	NA	NA	NA	NA	NA
		Exposure Point Total		NA	8E-09	NA	8E-09		NA	9E-06	NA	9E-06
	Exposure Medium Total			NA	8E-09	NA	8E-09		NA	9E-06	NA	9E-06
Medium Total				6E-05	8E-09	2E-05	8E-05		7E-02	9E-06	9E-03	8E-02
Receptor Total				6E-05	8E-09	2E-05	8E-05		7E-02	9E-06	9E-03	8E-02

NA = Not applicable or not available

Total Respiratory HI Across Media =	9E-06
Total Skin HI Across Media =	8E-02

TABLE 9.20.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Arsenic	8E-06	NA	7E-07	9E-06	skin	1E-01	NA	1E-02	1E-01
			Chromium	NA	NA	NA	NA	NOE	8E-03	NA	9E-04	9E-03
			Benzo(a)anthracene	6E-06	NA	5E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	6E-05	NA	5E-05	1E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	7E-06	NA	6E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	3E-07	NA	3E-07	6E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	9E-06	NA	8E-06	2E-05	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	3E-06	NA	3E-06	6E-06	NA	NA	NA	NA	NA
		Exposure Point Total		9E-05	NA	7E-05	2E-04		1E-01	NA	1E-02	1E-01
	Exposure Medium Total			9E-05	NA	7E-05	2E-04		1E-01	NA	1E-02	1E-01
	Ambient Air	Former Lever Brothers Property Emissions from Surface Soil (0 - 2 ft)	Arsenic	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Chromium	NA	3E-09	NA	3E-09	respiratory	NA	2E-05	NA	2E-05
			Benzo(a)anthracene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	3E-10	NA	3E-10	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	1E-11	NA	1E-11	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	3E-10	NA	3E-10	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
		Exposure Point Total		NA	8E-09	NA	8E-09		NA	2E-05	NA	2E-05
	Exposure Medium Total			NA	8E-09	NA	8E-09		NA	2E-05	NA	2E-05
Medium Total				9E-05	8E-09	7E-05	2E-04		1E-01	2E-05	1E-02	1E-01
Receptor Total				9E-05	8E-09	7E-05	2E-04		1E-01	2E-05	1E-02	1E-01

NA = Not applicable or not available

Total Respiratory HI Across Media =	2E-05
Total Skin HI Across Media =	1E-01

TABLE 9.21.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property	Arsenic	1E-05	NA	5E-06	2E-05	skin	7E-02	NA	3E-02	1E-01
		Surface Soil (0 - 2 ft)	Chromium	NA	NA	NA	NA	NOE	5E-03	NA	2E-03	7E-03
			Benzo(a)anthracene	3E-06	NA	4E-06	7E-06	NA	NA	NA	NA	NA
			Benzo(a)pyrene	3E-05	NA	4E-05	7E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	3E-06	NA	6E-06	9E-06	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	1E-07	NA	2E-07	4E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	4E-06	NA	7E-06	1E-05	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	2E-06	NA	3E-06	4E-06	NA	NA	NA	NA	NA
		Exposure Point Total		5E-05	NA	7E-05	1E-04		8E-02	NA	3E-02	1E-01
	Exposure Medium Total			5E-05	NA	7E-05	1E-04		8E-02	NA	3E-02	1E-01
	Ambient Air	Former Lever Brothers Property	Arsenic	NA	6E-08	NA	6E-08	NA	NA	NA	NA	NA
		Emissions from	Chromium	NA	1E-07	NA	1E-07	respiratory	NA	2E-04	NA	2E-04
		Surface Soil (0-2 ft)	Benzo(a)anthracene	NA	5E-10	NA	5E-10	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	5E-09	NA	5E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	7E-10	NA	7E-10	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	3E-11	NA	3E-11	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	9E-10	NA	9E-10	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	3E-10	NA	3E-10	NA	NA	NA	NA	NA
		Exposure Point Total		NA	2E-07	NA	2E-07		NA	2E-04	NA	2E-04
	Exposure Medium Total			NA	2E-07	NA	2E-07		NA	2E-04	NA	2E-04
Medium Total				5E-05	2E-07	7E-05	1E-04		8E-02	2E-04	3E-02	1E-01
Receptor Total				5E-05	2E-07	7E-05	1E-04		8E-02	2E-04	3E-02	1E-01

NA = Not applicable or not available

Total Respiratory HI Across Media =	2E-04
Total Skin HI Across Media =	1E-01

TABLE 9.22.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Former Lever Brothers Property Subsurface Soil (0 - 10 ft)	Antimony	NA	NA	NA	NA	blood	3E-01	NA	7E-03	3E-01
			Arsenic	8E-06	NA	7E-07	9E-06	skin	1E+00	NA	1E-01	1E+00
			Cadmium	NA	NA	NA	NA	kidney	8E-03	NA	1E-03	9E-03
			Chromium	NA	NA	NA	NA	NOE	5E-03	NA	6E-04	6E-03
			Copper	NA	NA	NA	NA	GI system	2E-02	NA	5E-05	2E-02
			Iron	NA	NA	NA	NA	NA	1E-01	NA	4E-04	1E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	4E-03	NA	3E-04	5E-03
			Nickel	NA	NA	NA	NA	body weight	1E-02	NA	7E-04	1E-02
			Thallium	NA	NA	NA	NA	blood	2E-02	NA	7E-05	2E-02
			Vanadium	NA	NA	NA	NA	NA	4E-02	NA	4E-03	4E-02
			Mercury	NA	NA	NA	NA	Immune system	2E-03	NA	9E-05	2E-03
			Benzene	2E-09	NA	7E-11	2E-09	blood	7E-04	NA	2E-05	7E-04
			Tetrachloroethene	1E-08	NA	4E-10	1E-08	liver	2E-05	NA	5E-07	2E-05
			Trichloroethene	9E-09	NA	3E-10	9E-09	liver, kidney, fetus	5E-03	NA	2E-04	5E-03
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	2E-02	NA	7E-04	2E-02
			Benzo(a)anthracene	2E-06	NA	7E-07	3E-06	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-05	NA	9E-06	3E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2E-06	NA	8E-07	3E-06	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	1E-07	NA	4E-08	2E-07	NA	NA	NA	NA	NA
			Carbazole	6E-08	NA	2E-09	6E-08	NA	NA	NA	NA	NA
			Chrysene	2E-08	NA	9E-09	3E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	5E-06	NA	2E-06	7E-06	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	8E-04	NA	3E-04	1E-03
			Indeno(1,2,3-c,d)pyrene	1E-06	NA	6E-07	2E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	7E-03	NA	3E-03	1E-02
			Pyrene	NA	NA	NA	NA	kidney	1E-03	NA	4E-04	1E-03
		Exposure Point Total		4E-05	NA	1E-05	5E-05		2E+00	NA	1E-01	2E+00
	Exposure Medium Total			4E-05	NA	1E-05	5E-05		2E+00	NA	1E-01	2E+00

TABLE 9.22.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Former Lever Brothers Property	Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Emissions from	Arsenic	NA	2E-07	NA	2E-07	NA	NA	NA	NA	NA
		Subsurface Soil (0 - 10 ft)	Cadmium	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Chromium	NA	2E-07	NA	2E-07	respiratory	NA	1E-02	NA	1E-02
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1E-01
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	2E-04	NA	2E-04
			Benzene	NA	3E-08	NA	3E-08	blood	NA	9E-03	NA	9E-03
			Tetrachloroethene	NA	1E-08	NA	1E-08	NA	NA	4E-03	NA	4E-03
			Trichloroethene	NA	3E-07	NA	3E-07	nervous system, eyes	NA	4E-03	NA	4E-03
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	3E-08	NA	3E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	3E-09	NA	3E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	6E-09	NA	6E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	3E-01	NA	3E-01
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	7E-07	NA	7E-07		NA	4E-01	NA	4E-01
	Exposure Medium Total			NA	7E-07	NA	7E-07		NA	4E-01	NA	4E-01
Medium Total				4E-05	7E-07	1E-05	5E-05		2E+00	4E-01	1E-01	2E+00

TABLE 9.22.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater (Excavation)	Former Lever Brothers Property (Excavation)	Arsenic	NA	NA	2E-06	2E-06	skin	NA	NA	3E-01	3E-01
			Iron	NA	NA	NA	NA	NA	NA	NA	1E-02	1E-02
			Benzene	NA	NA	9E-08	9E-08	blood	NA	NA	3E-02	3E-02
			Chloroethane	NA	NA	2E-11	2E-11	fetus	NA	NA	1E-06	1E-06
			Ethylbenzene	NA	NA	NA	NA	liver, kidney	NA	NA	1E-03	1E-03
			Toluene	NA	NA	NA	NA	kidney	NA	NA	9E-05	9E-05
			Trichloroethene	NA	NA	1E-09	1E-09	liver, kidney, fetus	NA	NA	7E-04	7E-04
			m,p-Xylene	NA	NA	NA	NA	whole body	NA	NA	3E-03	3E-03
			o-Xylene	NA	NA	NA	NA	whole body	NA	NA	1E-03	1E-03
			Xylene (Total)	NA	NA	NA	NA	whole body	NA	NA	1E-03	1E-03
			2,4-Dimethylphenol	NA	NA	NA	NA	blood	NA	NA	4E-04	4E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	2E-01	2E-01
			3&4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	NA	NA	2E-03	2E-03
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	NA	NA	3E-03	3E-03
			Acenaphthene	NA	NA	NA	NA	liver	NA	NA	6E-04	6E-04
			Benzo(a)anthracene	NA	NA	3E-08	3E-08	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	kidney	NA	NA	2E-03	2E-03
			Carbazole	NA	NA	2E-08	2E-08	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	blood	NA	NA	3E-05	3E-05
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	1E-01	1E-01
		Exposure Point Total		NA	NA	2E-06	2E-06		NA	NA	7E-01	7E-01
	Exposure Medium Total			NA	NA	2E-06	2E-06		NA	NA	7E-01	7E-01

TABLE 9.22.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air (Excavation)	Former Lever Brothers Property (Excavation)	Benzene	NA	2E-07	NA	2E-07	blood	NA	7E-02	NA	7E-02
			Chloroethane	NA	NA	NA	NA	developmental	NA	2E-06	NA	2E-06
			Ethylbenzene	NA	NA	NA	NA	developmental	NA	5E-04	NA	5E-04
			Toluene	NA	NA	NA	NA	nervous system	NA	3E-04	NA	3E-04
			Trichloroethene	NA	8E-09	NA	8E-09	nervous system, eyes	NA	1E-04	NA	1E-04
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	3E-02	NA	3E-02
			o-Xylene	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	3E+00	NA	3E+00
		Exposure Point Total		NA	2E-07	NA	2E-07		NA	3E+00	NA	3E+00
	Exposure Medium Total			NA	2E-07	NA	2E-07		NA	3E+00	NA	3E+00
Medium Total				NA	2E-07	2E-06	2E-06		NA	3E+00	7E-01	4E+00
Receptor Total				4E-05	1E-06	2E-05	6E-05		2E+00	4E+00	8E-01	6E+00

NA = Not applicable or not available

Total Blood HI Across Media =	5E-01
Total CNS HI Across Media =	9E-03
Total GI System HI Across Media =	2E-02
Total Immune System HI Across Media =	2E-03
Total Kidney HI Across Media =	2E-02
Total Liver HI Across Media =	9E-03
Total Nervous System HI Across Media =	2E-01
Total Respiratory HI Across Media =	4E+00
Total Skin HI Across Media =	2E+00
Total Whole Body HI Across Media =	1E-01
Total Eyes HI Across Media =	4E-03
Total Heart HI Across Media =	NA
Total Developmental HI Across Media =	5E-04
Total Fetus HI Across Media =	6E-03
Total Body Weight HI Across Media =	1E-02

TABLE 9.23.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Arsenic	NA	NA	NA	NA	skin	2E-01	NA	2E-02	2E-01
			Chromium	NA	NA	NA	NA	NOE	1E-02	NA	2E-03	2E-02
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		0E+00	NA	0E+00	0E+00		2E-01	NA	3E-02	2E-01
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		2E-01	NA	3E-02	2E-01
	Ambient Air	Former Lever Brothers Property Emissions from Surface Soil (0-2 ft)	Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	3E-04	NA	3E-04
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	3E-04	NA	3E-04
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	3E-04	NA	3E-04
Medium Total				0E+00	0E+00	0E+00	0E+00		2E-01	3E-04	3E-02	2E-01
Receptor Total				0E+00	0E+00	0E+00	0E+00		2E-01	3E-04	3E-02	2E-01

NA = Not applicable or not available

Total Respiratory HI Across Media =	3E-04
Total Skin HI Across Media =	2E-01

TABLE 9.24.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property	Arsenic	NA	NA	NA	NA	skin	2E+00	NA	2E-01	2E+00
		Surface Soil (0 - 2 ft)	Chromium	NA	NA	NA	NA	NOE	1E-01	NA	1E-02	1E-01
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		0E+00	NA	0E+00	0E+00		2E+00	NA	2E-01	2E+00
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		2E+00	NA	2E-01	2E+00
	Ambient Air	Former Lever Brothers Property	Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Emissions from	Chromium	NA	NA	NA	NA	respiratory	NA	8E-04	NA	8E-04
		Surface Soil (0-2 ft)	Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	8E-04	NA	8E-04
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	8E-04	NA	8E-04
Medium Total				0E+00	0E+00	0E+00	0E+00		2E+00	8E-04	2E-01	2E+00
Receptor Total				0E+00	0E+00	0E+00	0E+00		2E+00	8E-04	2E-01	2E+00

NA = Not applicable or not available

Total Respiratory HI Across Media =	8E-04
Total Skin HI Across Media =	2E+00

TABLE 9.25.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Arsenic	1E-04	NA	1E-05	1E-04	skin	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Benzo(a)anthracene	1E-04	NA	5E-05	2E-04	NA	NA	NA	NA	NA
			Benzo(a)pyrene	1E-03	NA	5E-04	2E-03	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2E-04	NA	7E-05	2E-04	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	7E-06	NA	3E-06	1E-05	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2E-04	NA	9E-05	3E-04	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	8E-05	NA	3E-05	1E-04	NA	NA	NA	NA	NA
		Exposure Point Total		2E-03	NA	8E-04	3E-03		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			2E-03	NA	8E-04	3E-03		0E+00	NA	0E+00	0E+00
	Ambient Air	Former Lever Brothers Property Emissions from Surface Soil (0-2 ft)	Arsenic	NA	1E-07	NA	1E-07	NA	NA	NA	NA	NA
			Chromium	NA	2E-07	NA	2E-07	respiratory	NA	NA	NA	NA
			Benzo(a)anthracene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	3E-09	NA	3E-09	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
		Exposure Point Total		NA	4E-07	NA	4E-07		NA	0E+00	NA	0E+00
	Exposure Medium Total			NA	4E-07	NA	4E-07		NA	0E+00	NA	0E+00
Medium Total				2E-03	4E-07	8E-04	3E-03		0E+00	0E+00	0E+00	0E+00
Receptor Total				2E-03	4E-07	8E-04	3E-03		0E+00	0E+00	0E+00	0E+00

NA = Not applicable or not available

Table 9.25.RME Supplement
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Receptor Total	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient (Adult Resident)				Non-Carcinogenic Hazard Quotient (Child Resident)			
	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total
Former Lever Brothers Property												
Surface Soil	2.0E-03	3.7E-07	8.0E-04	2.8E-03	2.2E-01	3.3E-04	2.7E-02	2.5E-01	2.1E+00	7.9E-04	1.8E-01	2.2E+00
Above Clay	9.7E-01	1.2E-03	9.0E-01	1.0E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	NA	2.2E+02	2.7E+04
Below Clay	2.5E-03	3.4E-03	5.4E-04	6.4E-03	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.3E+01	NA	1.4E+01	9.6E+01
Surface Soil + Above Clay	9.7E-01	1.2E-03	9.0E-01	1.9E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	7.9E-04	2.2E+02	2.7E+04
Surface Soil + Below Clay	4.5E-03	3.4E-03	1.3E-03	9.2E-03	3.6E+01	1.5E+01	6.1E+00	5.7E+01	8.5E+01	7.9E-04	1.4E+01	9.8E+01

	Adult Resident					Child Resident				
	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay
Total Blood HI Across Media =	NA	3E+01	1E-01	3E+01	1E-01	NA	4E+01	1E-01	4E+01	1E-01
Total CNS HI Across Media =	NA	7E+00	4E-04	7E+00	4E-04	NA	2E+01	1E-03	2E+01	1E-03
Total GI System HI Across Media =	NA	NA	1E-02	NA	1E-02	NA	NA	1E-03	NA	1E-03
Total Kidney HI Across Media =	NA	3E+00	4E+01	3E+00	4E+01	NA	8E+00	9E+01	8E+00	9E+01
Total Liver HI Across Media =	NA	2E+00	4E+01	2E+00	4E+01	NA	5E+00	9E+01	5E+00	9E+01
Total Nervous System HI Across Media =	NA	5E+00	2E+00	5E+00	2E+00	NA	NA	NA	NA	NA
Total Respiratory HI Across Media =	3E-04	6E+02	1E+01	6E+02	1E+01	8E-04	5E+01	3E-01	5E+01	3E-01
Total Skin HI Across Media =	2E-01	1E+04	5E-01	1E+04	7E-01	2E+00	3E+04	1E+00	3E+04	3E+00
Total Whole Body HI Across Media =	NA	3E+01	4E-01	3E+01	4E-01	NA	6E+01	9E-01	6E+01	9E-01
Total Eyes HI Across Media =	NA	3E-02	2E+00	3E-02	2E+00	NA	NA	NA	NA	NA
Total Heart HI Across Media =	NA	NA	4E-04	NA	4E-04	NA	NA	1E-03	NA	1E-03
Total Developmental HI Across Media =	NA	1E-01	NA	1E-01	NA	NA	NA	NA	NA	NA
Total Fetus HI Across Media =	NA	5E-01	4E+01	5E-01	4E+01	NA	1E+00	9E+01	1E+00	9E+01
Total Body Weight HI Across Media =	NA	3E-01	NA	3E-01	NA	NA	7E-01	NA	7E-01	NA

TABLE 9.26.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	5E-03	NA	2E-05	5E-03
			Antimony	NA	NA	NA	NA	blood	2E-02	NA	5E-04	2E-02
			Arsenic	7E-05	NA	9E-06	8E-05	skin	4E-01	NA	4E-02	4E-01
			Chromium	NA	NA	NA	NA	NOE	7E-03	NA	1E-03	8E-03
			Copper	NA	NA	NA	NA	GI system	3E-03	NA	1E-05	3E-03
			Iron	NA	NA	NA	NA	NA	4E-02	NA	2E-04	4E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1E-03	NA	1E-04	1E-03
			Nickel	NA	NA	NA	NA	body weight	2E-03	NA	2E-04	2E-03
			Thallium	NA	NA	NA	NA	blood	3E-02	NA	1E-04	3E-02
			Vanadium	NA	NA	NA	NA	NA	2E-02	NA	4E-03	3E-02
			Mercury	NA	NA	NA	NA	immune system	6E-03	NA	3E-04	6E-03
			Aroclor-1254	2E-07	NA	1E-07	4E-07	immune system	1E-02	NA	8E-03	2E-02
			Aroclor-1260	7E-07	NA	4E-07	1E-06	immune system	4E-02	NA	2E-02	6E-02
			Benzene	1E-07	NA	4E-09	1E-07	blood	1E-03	NA	5E-05	1E-03
			m,p-Xylene	NA	NA	NA	NA	whole body	4E-04	NA	2E-05	4E-04
			o-Xylene	NA	NA	NA	NA	whole body	2E-04	NA	8E-06	2E-04
			Xylene (Total)	NA	NA	NA	NA	whole body	5E-04	NA	2E-05	5E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	6E-02	NA	2E-03	6E-02
			Acenaphthene	NA	NA	NA	NA	liver	2E-03	NA	1E-03	3E-03
			Benzo(a)anthracene	3E-05	NA	2E-05	4E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-04	NA	9E-05	3E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2E-05	NA	1E-05	3E-05	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	2E-06	NA	8E-07	2E-06	NA	NA	NA	NA	NA
			Carbazole	4E-07	NA	2E-08	4E-07	NA	NA	NA	NA	NA
			Chrysene	3E-07	NA	1E-07	4E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	3E-05	NA	2E-05	5E-05	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	1E-02	NA	5E-03	1E-02
			Fluorene	NA	NA	NA	NA	blood	4E-03	NA	2E-03	6E-03
			Indeno(1,2,3-c,d)pyrene	1E-05	NA	5E-06	2E-05	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	4E-02	NA	2E-02	6E-02
			Phenanthrene	NA	NA	NA	NA	NOE	2E-03	NA	7E-05	2E-03
			Pyrene	NA	NA	NA	NA	kidney	9E-03	NA	5E-03	1E-02
		Exposure Point Total		3E-04	NA	2E-04	5E-04		7E-01	NA	1E-01	8E-01
	Exposure Medium Total			3E-04	NA	2E-04	5E-04		7E-01	NA	1E-01	8E-01

TABLE 9.26.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 North Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	7E-05	NA	7E-05
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Chromium	NA	7E-09	NA	7E-09	respiratory	NA	1E-05	NA	1E-05
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-04	NA	2E-04
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1254	NA	8E-13	NA	8E-13	NA	NA	NA	NA	NA
			Aroclor-1260	NA	2E-12	NA	2E-12	NA	NA	NA	NA	NA
			Benzene	NA	4E-07	NA	4E-07	blood	NA	4E-03	NA	4E-03
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	1E-02	NA	1E-02
			o-Xylene	NA	NA	NA	NA	nervous system	NA	6E-03	NA	6E-03
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	1E-02	NA	1E-02
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	1E-11	NA	1E-11	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	3E-10	NA	3E-10	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.26.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Indeno(1,2,3-c,d)pyrene	NA	8E-11	NA	8E-11	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	4E-01	NA	4E-01
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	4E-07	NA	4E-07		NA	4E-01	NA	4E-01
	Exposure Medium Total			NA	4E-07	NA	4E-07		NA	4E-01	NA	4E-01
Medium Total				3E-04	4E-07	2E-04	5E-04		7E-01	4E-01	1E-01	1E+00
Receptor Total				3E-04	4E-07	2E-04	5E-04		7E-01	4E-01	1E-01	1E+00

NA = Not applicable or not available

Total Blood HI Across Media =	6E-02
Total CNS HI Across Media =	1E-03
Total GI System HI Across Media =	3E-03
Total Immune System HI Across Media =	9E-02
Total Kidney HI Across Media =	1E-02
Total Liver HI Across Media =	2E-02
Total Nervous System HI Across Media =	3E-02
Total Respiratory HI Across Media =	5E-01
Total Skin HI Across Media =	4E-01
Total Whole Body HI Across Media =	6E-02
Total Body Weight HI Across Media =	2E-03

TABLE 9.27.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	9E-03	NA	3E-05	9E-03
			Antimony	NA	NA	NA	NA	blood	4E-02	NA	7E-04	4E-02
			Arsenic	4E-05	NA	4E-06	5E-05	skin	7E-01	NA	6E-02	7E-01
			Chromium	NA	NA	NA	NA	NOE	1E-02	NA	1E-03	1E-02
			Copper	NA	NA	NA	NA	GI system	5E-03	NA	1E-05	5E-03
			Iron	NA	NA	NA	NA	NA	8E-02	NA	2E-04	8E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2E-03	NA	2E-04	2E-03
			Nickel	NA	NA	NA	NA	body weight	4E-03	NA	3E-04	4E-03
			Thallium	NA	NA	NA	NA	blood	5E-02	NA	2E-04	5E-02
			Vanadium	NA	NA	NA	NA	NA	4E-02	NA	5E-03	5E-02
			Mercury	NA	NA	NA	NA	immune system	1E-02	NA	4E-04	1E-02
			Aroclor-1254	1E-07	NA	6E-08	2E-07	immune system	3E-02	NA	1E-02	4E-02
			Aroclor-1260	4E-07	NA	2E-07	6E-07	immune system	7E-02	NA	3E-02	1E-01
			Benzene	7E-08	NA	2E-09	7E-08	blood	2E-03	NA	6E-05	2E-03
			m,p-Xylene	NA	NA	NA	NA	whole body	7E-04	NA	2E-05	8E-04
			o-Xylene	NA	NA	NA	NA	whole body	4E-04	NA	1E-05	4E-04
			Xylene (Total)	NA	NA	NA	NA	whole body	8E-04	NA	2E-05	8E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	1E-01	NA	3E-03	1E-01
			Acenaphthene	NA	NA	NA	NA	liver	4E-03	NA	1E-03	5E-03
			Benzo(a)anthracene	6E-05	NA	5E-05	1E-04	NA	NA	NA	NA	NA
			Benzo(a)pyrene	4E-04	NA	3E-04	7E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	4E-05	NA	3E-05	7E-05	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	3E-06	NA	3E-06	6E-06	NA	NA	NA	NA	NA
			Carbazole	2E-07	NA	7E-09	2E-07	NA	NA	NA	NA	NA
			Chrysene	6E-07	NA	5E-07	1E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	7E-05	NA	6E-05	1E-04	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	2E-02	NA	6E-03	2E-02
			Fluorene	NA	NA	NA	NA	blood	7E-03	NA	3E-03	9E-03
			Indeno(1,2,3-c,d)pyrene	2E-05	NA	2E-05	4E-05	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	7E-02	NA	2E-02	9E-02
			Phenanthrene	NA	NA	NA	NA	NOE	3E-03	NA	9E-05	3E-03
			Pyrene	NA	NA	NA	NA	kidney	2E-02	NA	6E-03	2E-02
		Exposure Point Total		6E-04	NA	5E-04	1E-03		1E+00	NA	1E-01	1E+00
	Exposure Medium Total			6E-04	NA	5E-04	1E-03		1E+00	NA	1E-01	1E+00

TABLE 9.27.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 North Emissions from Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	1E-04	NA	1E-04
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	9E-09	NA	9E-09	NA	NA	NA	NA	NA
			Chromium	NA	4E-09	NA	4E-09	respiratory	NA	2E-05	NA	2E-05
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	4E-04	NA	4E-04
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1254	NA	5E-13	NA	5E-13	NA	NA	NA	NA	NA
			Aroclor-1260	NA	1E-12	NA	1E-12	NA	NA	NA	NA	NA
			Benzene	NA	2E-07	NA	2E-07	blood	NA	7E-03	NA	7E-03
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			o-Xylene	NA	NA	NA	NA	nervous system	NA	1E-02	NA	1E-02
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	7E-10	NA	7E-10	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	7E-01	NA	7E-01

TABLE 9.27.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	3E-07	NA	3E-07		NA	8E-01	NA	8E-01
	Exposure Medium Total			NA	3E-07	NA	3E-07		NA	8E-01	NA	8E-01
Medium Total				6E-04	3E-07	5E-04	1E-03		1E+00	8E-01	1E-01	2E+00
Receptor Total				6E-04	3E-07	5E-04	1E-03		1E+00	8E-01	1E-01	2E+00

NA = Not applicable or not available

Total Blood HI Across Media =	1E-01
Total CNS HI Across Media =	2E-03
Total GI System HI Across Media =	5E-03
Total Immune System HI Across Media =	1E-01
Total Kidney HI Across Media =	2E-02
Total Liver HI Across Media =	3E-02
Total Nervous System HI Across Media =	6E-02
Total Respiratory HI Across Media =	8E-01
Total Skin HI Across Media =	7E-01
Total Whole Body HI Across Media =	9E-02
Total Body Weight HI Across Media =	4E-03

TABLE 9.28.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	5E-03	NA	7E-05	5E-03
			Antimony	NA	NA	NA	NA	blood	2E-02	NA	2E-03	2E-02
			Arsenic	6E-05	NA	3E-05	9E-05	skin	4E-01	NA	2E-01	6E-01
			Chromium	NA	NA	NA	NA	NOE	7E-03	NA	4E-03	1E-02
			Copper	NA	NA	NA	NA	GI system	3E-03	NA	4E-05	3E-03
			Iron	NA	NA	NA	NA	NA	5E-02	NA	6E-04	5E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1E-03	NA	4E-04	2E-03
			Nickel	NA	NA	NA	NA	body weight	2E-03	NA	8E-04	3E-03
			Thallium	NA	NA	NA	NA	blood	3E-02	NA	4E-04	3E-02
			Vanadium	NA	NA	NA	NA	NA	2E-02	NA	1E-02	4E-02
			Mercury	NA	NA	NA	NA	immune system	6E-03	NA	1E-03	8E-03
			Aroclor-1254	2E-07	NA	4E-07	6E-07	immune system	1E-02	NA	3E-02	4E-02
			Aroclor-1260	6E-07	NA	1E-06	2E-06	immune system	4E-02	NA	8E-02	1E-01
			Benzene	1E-07	NA	1E-08	1E-07	blood	1E-03	NA	2E-04	1E-03
			m,p-Xylene	NA	NA	NA	NA	whole body	4E-04	NA	6E-05	5E-04
			o-Xylene	NA	NA	NA	NA	whole body	2E-04	NA	3E-05	3E-04
			Xylene (Total)	NA	NA	NA	NA	whole body	5E-04	NA	6E-05	5E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	7E-02	NA	9E-03	7E-02
			Acenaphthene	NA	NA	NA	NA	liver	2E-03	NA	4E-03	6E-03
			Benzo(a)anthracene	3E-05	NA	4E-05	7E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-04	NA	3E-04	4E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2E-05	NA	3E-05	5E-05	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	1E-06	NA	2E-06	4E-06	NA	NA	NA	NA	NA
			Carbazole	3E-07	NA	5E-08	4E-07	NA	NA	NA	NA	NA
			Chrysene	3E-07	NA	4E-07	7E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	3E-05	NA	5E-05	8E-05	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	1E-02	NA	2E-02	3E-02
			Fluorene	NA	NA	NA	NA	blood	4E-03	NA	7E-03	1E-02
			Indeno(1,2,3-c,d)pyrene	9E-06	NA	2E-05	2E-05	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	4E-02	NA	7E-02	1E-01
			Phenanthrene	NA	NA	NA	NA	NOE	2E-03	NA	3E-04	2E-03
			Pyrene	NA	NA	NA	NA	kidney	9E-03	NA	2E-02	3E-02
		Exposure Point Total		3E-04	NA	4E-04	8E-04		7E-01	NA	4E-01	1E+00
	Exposure Medium Total			3E-04	NA	4E-04	8E-04		7E-01	NA	4E-01	1E+00

TABLE 9.28.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 North Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	2E-03	NA	2E-03
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	3E-07	NA	3E-07	NA	NA	NA	NA	NA
			Chromium	NA	2E-07	NA	2E-07	respiratory	NA	4E-04	NA	4E-04
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	6E-03	NA	6E-03
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1254	NA	2E-11	NA	2E-11	NA	NA	NA	NA	NA
			Aroclor-1260	NA	5E-11	NA	5E-11	NA	NA	NA	NA	NA
			Benzene	NA	9E-06	NA	9E-06	blood	NA	1E-01	NA	1E-01
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	3E-01	NA	3E-01
			o-Xylene	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1E-01
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	3E-01	NA	3E-01
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	5E-09	NA	5E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	3E-08	NA	3E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	3E-09	NA	3E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	3E-10	NA	3E-10	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	6E-09	NA	6E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E+01	NA	1E+01

TABLE 9.28.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	9E-06	NA	9E-06		NA	1E+01	NA	1E+01
	Exposure Medium Total			NA	9E-06	NA	9E-06		NA	1E+01	NA	1E+01
Medium Total				3E-04	9E-06	4E-04	8E-04		7E-01	1E+01	4E-01	1E+01
Receptor Total				3E-04	9E-06	4E-04	8E-04		7E-01	1E+01	4E-01	1E+01

NA = Not applicable or not available

Total Blood HI Across Media =	2E-01
Total CNS HI Across Media =	2E-03
Total GI System HI Across Media =	3E-03
Total Immune System HI Across Media =	2E-01
Total Kidney HI Across Media =	3E-02
Total Liver HI Across Media =	3E-02
Total Nervous System HI Across Media =	8E-01
Total Respiratory HI Across Media =	1E+01
Total Skin HI Across Media =	6E-01
Total Whole Body HI Across Media =	1E-01
Total Body Weight HI Across Media =	3E-03

TABLE 9.29.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Block 93 North Subsurface Soil (0 - 10 ft)	Aluminum	NA	NA	NA	NA	NA	3E-02	NA	9E-05	3E-02
			Antimony	NA	NA	NA	NA	blood	2E-01	NA	3E-03	2E-01
			Arsenic	5E-06	NA	5E-07	5E-06	skin	8E-01	NA	7E-02	9E-01
			Chromium	NA	NA	NA	NA	NOE	5E-03	NA	6E-04	6E-03
			Copper	NA	NA	NA	NA	GI system	1E-02	NA	4E-05	1E-02
			Iron	NA	NA	NA	NA	NA	3E-01	NA	1E-03	3E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	8E-03	NA	6E-04	9E-03
			Nickel	NA	NA	NA	NA	body weight	7E-03	NA	5E-04	8E-03
			Thallium	NA	NA	NA	NA	blood	8E-02	NA	3E-04	8E-02
			Vanadium	NA	NA	NA	NA	NA	2E-02	NA	2E-03	2E-02
			Mercury	NA	NA	NA	NA	Immune system	2E-03	NA	7E-05	2E-03
			Aroclor-1254	7E-08	NA	3E-08	9E-08	Immune system	5E-02	NA	2E-02	7E-02
			Aroclor-1260	1E-07	NA	6E-08	2E-07	Immune system	1E-01	NA	4E-02	1E-01
			Benzene	3E-08	NA	9E-10	3E-08	blood	1E-02	NA	3E-04	1E-02
			m,p-Xylene	NA	NA	NA	NA	whole body	3E-03	NA	9E-05	3E-03
			o-Xylene	NA	NA	NA	NA	whole body	1E-03	NA	4E-05	1E-03
			Xylene (Total)	NA	NA	NA	NA	whole body	9E-04	NA	3E-05	9E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	6E-01	NA	2E-02	7E-01
			Acenaphthene	NA	NA	NA	NA	liver	1E-03	NA	4E-04	2E-03
			Benzo(a)anthracene	8E-06	NA	3E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	7E-05	NA	3E-05	9E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	7E-06	NA	3E-06	9E-06	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	1E-03	NA	4E-04	1E-03
			Benzo(k)fluoranthene	4E-07	NA	2E-07	6E-07	NA	NA	NA	NA	NA
			Carbazole	8E-08	NA	2E-09	8E-08	NA	NA	NA	NA	NA
			Chrysene	7E-08	NA	3E-08	1E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	1E-05	NA	4E-06	1E-05	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	6E-03	NA	2E-03	8E-03
			Fluorene	NA	NA	NA	NA	blood	2E-03	NA	7E-04	3E-03
			Indeno(1,2,3-c,d)pyrene	3E-06	NA	1E-06	4E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	5E-01	NA	2E-01	7E-01
			Phenanthrene	NA	NA	NA	NA	NOE	1E-03	NA	3E-05	1E-03
			Pyrene	NA	NA	NA	NA	kidney	6E-03	NA	2E-03	8E-03
		Exposure Point Total		1E-04	NA	4E-05	1E-04		3E+00	NA	4E-01	3E+00
	Exposure Medium Total			1E-04	NA	4E-05	1E-04		3E+00	NA	4E-01	3E+00

TABLE 9.29.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 North Emissions from Subsurface Soil (0 - 10 ft)	Aluminum	NA	NA	NA	NA	NA	NA	6E-02	NA	6E-02
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	1E-07	NA	1E-07	NA	NA	NA	NA	NA
			Chromium	NA	2E-07	NA	2E-07	respiratory	NA	1E-02	NA	1E-02
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-01	NA	2E-01
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	2E-04	NA	2E-04
			Aroclor-1254	NA	3E-11	NA	3E-11	NA	NA	NA	NA	NA
			Aroclor-1260	NA	7E-11	NA	7E-11	NA	NA	NA	NA	NA
			Benzene	NA	4E-07	NA	4E-07	blood	NA	1E-01	NA	1E-01
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	3E-01	NA	3E-01
			o-Xylene	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1E-01
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	9E-02	NA	9E-02
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	8E-08	NA	8E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	8E-09	NA	8E-09	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	5E-10	NA	5E-10	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	4E-09	NA	4E-09	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	2E+01	NA	2E+01
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	8E-07	NA	8E-07		NA	2E+01	NA	2E+01
	Exposure Medium Total			NA	8E-07	NA	8E-07		NA	2E+01	NA	2E+01
Medium Total				1E-04	8E-07	4E-05	1E-04		3E+00	2E+01	4E-01	3E+01

TABLE 9.29.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater (Excavation)	Block 93 North (Excavation)	Arsenic	NA	NA	9E-06	9E-06	skin	NA	NA	1E+00	1E+00
			Iron	NA	NA	NA	NA	NA	NA	NA	5E-03	5E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			delta-BHC	NA	NA	3E-10	3E-10	NA	NA	NA	NA	NA
			Trichloroethene	NA	NA	2E-10	2E-10	liver, kidney, fetus	NA	NA	1E-04	1E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	9E-04	9E-04
			Benzo(a)anthracene	NA	NA	7E-08	7E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	5E-07	5E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	5E-08	5E-08	NA	NA	NA	NA	NA
			Carbazole	NA	NA	4E-10	4E-10	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	4E-03	4E-03
		Exposure Point Total		NA	NA	1E-05	1E-05		NA	NA	1E+00	1E+00
	Exposure Medium Total			NA	NA	1E-05	1E-05		NA	NA	1E+00	1E+00
	Ambient Air (Excavation)	Block 93 North (Excavation)	Trichloroethene	NA	1E-09	NA	1E-09	nervous system, eyes	NA	2E-05	NA	2E-05
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E-01	NA	1E-01
		Exposure Point Total		NA	1E-09	NA	1E-09		NA	1E-01	NA	1E-01
	Exposure Medium Total			NA	1E-09	NA	1E-09		NA	1E-01	NA	1E-01
Medium Total				NA	1E-09	1E-05	1E-05		NA	1E-01	1E+00	2E+00
Receptor Total				1E-04	8E-07	5E-05	1E-04		3E+00	2E+01	2E+00	3E+01

NA = Not applicable or not available

Total Blood HI Across Media =	4E-01
Total CNS HI Across Media =	9E-03
Total GI System HI Across Media =	1E-02
Total Immune System HI Across Media =	2E-01
Total Kidney HI Across Media =	1E-02
Total Liver HI Across Media =	9E-03
Total Nervous System HI Across Media =	8E-01
Total Respiratory HI Across Media =	2E+01
Total Skin HI Across Media =	2E+00
Total Whole Body HI Across Media =	8E-01
Total Eyes HI Across Media =	2E-05
Total Fetus HI Across Media =	1E-04
Total Body Weight HI Across Media =	8E-03

TABLE 9.30.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	2E-02	NA	6E-05	2E-02
			Antimony	NA	NA	NA	NA	blood	6E-02	NA	2E-03	6E-02
			Arsenic	NA	NA	NA	NA	skin	1E+00	NA	1E-01	1E+00
			Chromium	NA	NA	NA	NA	NOE	2E-02	NA	3E-03	2E-02
			Copper	NA	NA	NA	NA	GI system	8E-03	NA	3E-05	8E-03
			Iron	NA	NA	NA	NA	NA	1E-01	NA	5E-04	1E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	4E-03	NA	4E-04	4E-03
			Nickel	NA	NA	NA	NA	body weight	7E-03	NA	7E-04	7E-03
			Thallium	NA	NA	NA	NA	blood	9E-02	NA	4E-04	9E-02
			Vanadium	NA	NA	NA	NA	NA	7E-02	NA	1E-02	8E-02
			Mercury	NA	NA	NA	NA	immune system	2E-02	NA	1E-03	2E-02
			Aroclor-1254	NA	NA	NA	NA	immune system	4E-02	NA	2E-02	7E-02
			Aroclor-1260	NA	NA	NA	NA	immune system	1E-01	NA	6E-02	2E-01
			Benzene	NA	NA	NA	NA	blood	3E-03	NA	1E-04	4E-03
			m,p-Xylene	NA	NA	NA	NA	whole body	1E-03	NA	5E-05	1E-03
			o-Xylene	NA	NA	NA	NA	whole body	6E-04	NA	2E-05	6E-04
			Xylene (Total)	NA	NA	NA	NA	whole body	1E-03	NA	5E-05	1E-03
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	2E-01	NA	7E-03	2E-01
			Acenaphthene	NA	NA	NA	NA	liver	6E-03	NA	3E-03	1E-02
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	3E-02	NA	1E-02	4E-02
			Fluorene	NA	NA	NA	NA	blood	1E-02	NA	6E-03	2E-02
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	1E-01	NA	6E-02	2E-01
			Phenanthrene	NA	NA	NA	NA	NOE	5E-03	NA	2E-04	6E-03
			Pyrene	NA	NA	NA	NA	kidney	3E-02	NA	1E-02	4E-02
		Exposure Point Total		0E+00	NA	0E+00	0E+00		2E+00	NA	3E-01	2E+00
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		2E+00	NA	3E-01	2E+00

TABLE 9.30.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 North Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	3E-03	NA	3E-03
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	5E-04	NA	5E-04
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	9E-03	NA	9E-03
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1254	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	NA	NA	NA	blood	NA	1E-01	NA	1E-01
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	5E-01	NA	5E-01
			o-Xylene	NA	NA	NA	NA	nervous system	NA	2E-01	NA	2E-01
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	5E-01	NA	5E-01
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.30.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E+01	NA	1E+01
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
Medium Total				0E+00	0E+00	0E+00	0E+00		2E+00	2E+01	3E-01	2E+01
Receptor Total				0E+00	0E+00	0E+00	0E+00		2E+00	2E+01	3E-01	2E+01

NA = Not applicable or not available

Total Blood HI Across Media =	3E-01
Total CNS HI Across Media =	4E-03
Total GI System HI Across Media =	8E-03
Total Immune System HI Across Media =	3E-01
Total Kidney HI Across Media =	4E-02
Total Liver HI Across Media =	5E-02
Total Nervous System HI Across Media =	1.1E+00
Total Respiratory HI Across Media =	1E+01
Total Skin HI Across Media =	1.2E+00
Total Whole Body HI Across Media =	2E-01
Total Body Weight HI Across Media =	7E-03

TABLE 9.31.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	1E-01	NA	4E-04	1E-01
			Antimony	NA	NA	NA	NA	blood	5E-01	NA	1E-02	6E-01
			Arsenic	NA	NA	NA	NA	skin	1E+01	NA	9E-01	1E+01
			Chromium	NA	NA	NA	NA	NOE	2E-01	NA	2E-02	2E-01
			Copper	NA	NA	NA	NA	GI system	8E-02	NA	2E-04	8E-02
			Iron	NA	NA	NA	NA	NA	1E+00	NA	3E-03	1.3E+00
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	3E-02	NA	2E-03	4E-02
			Nickel	NA	NA	NA	NA	body weight	6E-02	NA	4E-03	7E-02
			Thallium	NA	NA	NA	NA	blood	8E-01	NA	2E-03	8E-01
			Vanadium	NA	NA	NA	NA	NA	6E-01	NA	7E-02	7E-01
			Mercury	NA	NA	NA	NA	immune system	2E-01	NA	7E-03	2E-01
			Aroclor-1254	NA	NA	NA	NA	immune system	4E-01	NA	2E-01	5E-01
			Aroclor-1260	NA	NA	NA	NA	immune system	1E+00	NA	4E-01	2E+00
			Benzene	NA	NA	NA	NA	blood	3E-02	NA	9E-04	3E-02
			m,p-Xylene	NA	NA	NA	NA	whole body	1E-02	NA	3E-04	1E-02
			o-Xylene	NA	NA	NA	NA	whole body	6E-03	NA	2E-04	6E-03
			Xylene (Total)	NA	NA	NA	NA	whole body	1E-02	NA	4E-04	1E-02
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	2E+00	NA	5E-02	2E+00
			Acenaphthene	NA	NA	NA	NA	liver	6E-02	NA	2E-02	8E-02
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	3E-01	NA	1E-01	4E-01
			Fluorene	NA	NA	NA	NA	blood	1E-01	NA	4E-02	1E-01
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	1E+00	NA	4E-01	1E+00
			Phenanthrene	NA	NA	NA	NA	NOE	5E-02	NA	1E-03	5E-02
			Pyrene	NA	NA	NA	NA	kidney	2E-01	NA	9E-02	3E-01
		Exposure Point Total		0E+00	NA	0E+00	0E+00		2E+01	NA	2E+00	2E+01
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		2E+01	NA	2E+00	2E+01

TABLE 9.31.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 North Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	6E-03	NA	6E-03
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	1E-03	NA	1E-03
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1254	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	NA	NA	NA	blood	NA	3E-01	NA	3E-01
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	1E+00	NA	1E+00
			o-Xylene	NA	NA	NA	NA	nervous system	NA	5E-01	NA	5E-01
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	1E+00	NA	1E+00
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.31.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	3E+01	NA	3E+01
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	4E+01	NA	4E+01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	4E+01	NA	4E+01
Medium Total				0E+00	0E+00	0E+00	0E+00		2E+01	4E+01	2E+00	6E+01
Receptor Total				0E+00	0E+00	0E+00	0E+00		2E+01	4E+01	2E+00	6E+01

NA = Not applicable or not available

Total Blood HI Across Media =	2E+00
Total CNS HI Across Media =	4E-02
Total GI System HI Across Media =	8E-02
Total Immune System HI Across Media =	2E+00
Total Kidney HI Across Media =	3E-01
Total Liver HI Across Media =	4E-01
Total Nervous System HI Across Media =	3E+00
Total Respiratory HI Across Media =	4E+01
Total Skin HI Across Media =	1E+01
Total Whole Body HI Across Media =	1.4E+00
Total Body Weight HI Across Media =	7E-02

TABLE 9.32.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Arsenic	6E-04	NA	5E-05	6E-04	skin	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Copper	NA	NA	NA	NA	GI system	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Nickel	NA	NA	NA	NA	body weight	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	immune system	NA	NA	NA	NA
			Aroclor-1254	2E-06	NA	8E-07	3E-06	immune system	NA	NA	NA	NA
			Aroclor-1260	5E-06	NA	2E-06	8E-06	immune system	NA	NA	NA	NA
			Benzene	9E-07	NA	3E-08	9E-07	blood	NA	NA	NA	NA
			m,p-Xylene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			o-Xylene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			Xylene (Total)	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	liver	NA	NA	NA	NA
			Benzo(a)anthracene	1E-03	NA	6E-04	2E-03	NA	NA	NA	NA	NA
			Benzo(a)pyrene	8E-03	NA	3E-03	1E-02	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	9E-04	NA	4E-04	1E-03	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	7E-05	NA	3E-05	1E-04	NA	NA	NA	NA	NA
			Carbazole	3E-06	NA	1E-07	3E-06	NA	NA	NA	NA	NA
			Chrysene	1E-05	NA	5E-06	2E-05	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2E-03	NA	6E-04	2E-03	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	5E-04	NA	2E-04	6E-04	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			Phenanthrene	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	kidney	NA	NA	NA	NA
		Exposure Point Total		1E-02	NA	5E-03	2E-02		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			1E-02	NA	5E-03	2E-02		0E+00	NA	0E+00	0E+00

TABLE 9.32.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 North Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	7E-07	NA	7E-07	NA	NA	NA	NA	NA
			Chromium	NA	3E-07	NA	3E-07	respiratory	NA	NA	NA	NA
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1254	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Aroclor-1260	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			Benzene	NA	2E-05	NA	2E-05	blood	NA	NA	NA	NA
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			o-Xylene	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	1E-07	NA	1E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	6E-09	NA	6E-09	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	NA	NA	NA
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	2E-05	NA	2E-05		NA	0E+00	NA	0E+00
	Exposure Medium Total			NA	2E-05	NA	2E-05		NA	0E+00	NA	0E+00
Medium Total				1E-02	2E-05	5E-03	2E-02		0E+00	0E+00	0E+00	0E+00
Receptor Total				1E-02	2E-05	5E-03	2E-02		0E+00	0E+00	0E+00	0E+00

NA = Not applicable or not available

Table 9.32.RME Supplement
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Receptor Total	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient (Adult Resident)				Non-Carcinogenic Hazard Quotient (Child Resident)			
	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total
Block 93												
Surface Soil	1.3E-02	1.9E-05	5.3E-03	1.8E-02	2.1E+00	1.6E+01	3.4E-01	1.8E+01	1.9E+01	3.7E+01	2.2E+00	5.9E+01
Above Clay	9.7E-01	1.2E-03	9.0E-01	1.0E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	NA	2.2E+02	2.7E+04
Below Clay	2.5E-03	3.4E-03	5.4E-04	6.4E-03	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.3E+01	NA	1.4E+01	9.6E+01
Surface Soil + Above Clay	9.9E-01	1.2E-03	9.1E-01	1.9E+00	1.1E+04	6.5E+02	8.1E+01	1.2E+04	2.6E+04	3.7E+01	2.3E+02	2.7E+04
Surface Soil + Below Clay	1.6E-02	3.4E-03	5.8E-03	2.5E-02	3.7E+01	3.1E+01	6.4E+00	7.4E+01	1.0E+02	3.7E+01	1.6E+01	1.5E+02

	Adult Resident					Child Resident				
	Surface soil	Above Clay	Below Clay	**Surface Soil + Above Clay**	**Surface Soil + Below Clay**	Surface soil	Above Clay	Below Clay	**Surface Soil + Above Clay**	**Surface Soil + Below Clay**
Total Blood HI Across Media =	3E-01	3E+01	1E-01	3E+01	4E-01	2E+00	4E+01	1E-01	4E+01	2E+00
Total CNS HI Across Media =	4E-03	7E+00	4E-04	7E+00	4E-03	4E-02	2E+01	1E-03	2E+01	4E-02
Total GI System HI Across Media =	8E-03	NA	1E-02	8E-03	2E-02	8E-02	NA	1E-03	8E-02	8E-02
Total Kidney HI Across Media =	4E-02	3E+00	4E+01	3E+00	4E+01	3E-01	8E+00	9E+01	8E+00	9E+01
Total Liver HI Across Media =	5E-02	2E+00	4E+01	2E+00	4E+01	4E-01	5E+00	9E+01	5E+00	9E+01
Total Nervous System HI Across Media =	1E+00	5E+00	2E+00	6E+00	3E+00	3E+00	NA	NA	3E+00	3E+00
Total Respiratory HI Across Media =	1E+01	6E+02	1E+01	6E+02	3E+01	4E+01	5E+01	3E-01	9E+01	4E+01
Total Skin HI Across Media =	1E+00	1E+04	5E-01	1E+04	2E+00	1E+01	3E+04	1E+00	3E+04	1E+01
Total Whole Body HI Across Media =	2E-01	3E+01	4E-01	3E+01	5E-01	1E+00	6E+01	9E-01	6E+01	2E+00
Total Eyes HI Across Media =	NA	3E-02	2E+00	3E-02	2E+00	NA	NA	NA	NA	NA
Total Heart HI Across Media =	NA	NA	4E-04	NA	4E-04	NA	NA	1E-03	NA	1E-03
Total Developmental HI Across Media =	NA	1E-01	NA	1E-01	NA	NA	NA	NA	NA	NA
Total Fetus HI Across Media =	NA	5E-01	4E+01	5E-01	4E+01	NA	1E+00	9E+01	1E+00	9E+01
Total Body Weight HI Across Media =	7E-03	3E-01	NA	3E-01	7E-03	7E-02	7E-01	NA	8E-01	7E-02

GLE 9.33.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	OU1 Above Clay - Tap Water	Arsenic	NA	NA	NA	NA	skin	1E+04	NA	6E+01	1E+04
			Iron	NA	NA	NA	NA	NA	2E+01	NA	1E-01	2E+01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			alpha-BHC	NA	NA	NA	NA	NA	3E-03	NA	3E-03	5E-03
			delta-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	NA	NA	NA	liver	9E-04	NA	4E-04	1E-03
			1,1-Dichloroethane	NA	NA	NA	NA	None	5E-03	NA	4E-04	5E-03
			Benzene	NA	NA	NA	NA	blood	1E+01	NA	2E+00	1E+01
			Chloroethane	NA	NA	NA	NA	fetus	5E-04	NA	3E-05	6E-04
			Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	2E-02	NA	1E-03	2E-02
			Ethylbenzene	NA	NA	NA	NA	liver, kidney	1E-01	NA	8E-02	2E-01
			Isopropylbenzene (Cumene)	NA	NA	NA	NA	kidney	1E-02	NA	1E-02	2E-02
			Toluene	NA	NA	NA	NA	kidney	4E-01	NA	1E-01	5E-01
			Trichloroethene	NA	NA	NA	NA	liver, kidney, fetus	4E-01	NA	7E-02	5E-01
			m,p-Xylene	NA	NA	NA	NA	whole body	8E-02	NA	5E-02	1E-01
			o-Xylene	NA	NA	NA	NA	whole body	5E-02	NA	3E-02	7E-02
			Xylene (Total)	NA	NA	NA	NA	whole body	2E-01	NA	9E-02	3E-01
			2,4-Dimethylphenol	NA	NA	NA	NA	blood	2E+00	NA	4E-01	2E+00
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	7E+00	NA	6E+00	2E+01
			2-Methylphenol	NA	NA	NA	NA	body weight, CNS	2E-01	NA	3E-02	3E-01
			3&4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	3E-01	NA	3E-02	3E-01
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	6E+00	NA	6E-01	6E+00
			Acenaphthene	NA	NA	NA	NA	liver	2E-01	NA	3E-01	5E-01
			Acenaphthylene	NA	NA	NA	NA	liver	3E-02	NA	4E-02	7E-02
			Anthracene	NA	NA	NA	NA	NOE	9E-03	NA	2E-02	3E-02
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	3E-02	NA	1E+00	1.1E+00
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	kidney	5E-02	NA	6E-02	1E-01
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	1E-01	NA	7E-01	9E-01
			Fluorene	NA	NA	NA	NA	blood	2E-01	NA	3E-02	2E-01
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	1E+01	NA	7E+00	2E+01
			Phenanthrene	NA	NA	NA	NA	NOE	7E-02	NA	2E-01	3E-01
			Phenol	NA	NA	NA	NA	body weight	3E-02	NA	1E-03	3E-02
			Pyrene	NA	NA	NA	NA	kidney	2E-01	NA	7E-01	9E-01
		Exposure Point Total		NA	NA	NA	0.0E+00		1E+04	0E+00	6E+01	1E+04
	Exposure Medium Total			NA	NA	NA	0.0E+00		1E+04	0E+00	6E+01	1E+04

TABLE 9.33.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Air	OU1 Above Clay Shallow Aquifer Water Vapors at Showerhead	1,1-Dichloroethane	NA	NA	NA	NA	kidney	NA	6E-03	NA	6E-03
			Benzene	NA	NA	NA	NA	blood	NA	1E+01	NA	1E+01
			Chloroethane	NA	NA	NA	NA	developmental	NA	2E-04	NA	2E-04
			Chloromethane	NA	NA	NA	NA	CNS	NA	3E-02	NA	3E-02
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Ethylbenzene	NA	NA	NA	NA	developmental	NA	1E-01	NA	1E-01
			Isopropylbenzene (Cumene)	NA	NA	NA	NA	kidney	NA	3E-02	NA	3E-02
			Toluene	NA	NA	NA	NA	nervous system	NA	5E-02	NA	5E-02
			Trichloroethene	NA	NA	NA	NA	nervous system, eyes	NA	3E-02	NA	3E-02
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	1E+00	NA	1.3E+00
			o-Xylene	NA	NA	NA	NA	nervous system	NA	8E-01	NA	8E-01
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	3E+00	NA	3E+00
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	6E+02	NA	6E+02
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	NA	NA	0.0E+00		NA	6E+02	NA	6E+02
	Exposure Medium Total			NA	NA	NA	NA		NA	6E+02	NA	6E+02
Medium Total				NA	NA	NA	NA		1E+04	6E+02	8E+01	1E+04
Receptor Total				NA	NA	NA	NA		1E+04	6E+02	8E+01	1E+04

Total Blood HI Across Media =	3E+01
Total CNS HI Across Media =	7E+00
Total Kidney HI Across Media =	3E+00
Total Liver HI Across Media =	2E+00
Total Nervous System HI Across Media =	6E+00
Total Respiratory HI Across Media =	6E+02
Total Skin HI Across Media =	1E+04
Total Whole Body HI Across Media =	3E+01
Total Eyes HI Across Media =	3E-02
Total Developmental HI Across Media =	1E-01
Total Fetus HI Across Media =	5E-01
Total Body Weight HI Across Media =	3E-01

TABLE 9.34.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	OU1 Above Clay - Tap Water	Arsenic	NA	NA	NA	NA	skin	3E+04	NA	2E+02	3E+04
			Iron	NA	NA	NA	NA	NA	5E+01	NA	4E-01	5E+01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			alpha-BHC	NA	NA	NA	NA	NA	6E-03	NA	6E-03	1E-02
			delta-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	NA	NA	NA	liver	2E-03	NA	9E-04	3E-03
			1,1-Dichloroethane	NA	NA	NA	NA	None	1E-02	NA	8E-04	1E-02
			Benzene	NA	NA	NA	NA	blood	3E+01	NA	4E+00	3E+01
			Chloroethane	NA	NA	NA	NA	fetus	1E-03	NA	8E-05	1E-03
			Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	4E-02	NA	3E-03	4E-02
			Ethylbenzene	NA	NA	NA	NA	liver, kidney	3E-01	NA	2E-01	5E-01
			Isopropylbenzene (Cumene)	NA	NA	NA	NA	kidney	3E-02	NA	2E-02	6E-02
			Toluene	NA	NA	NA	NA	kidney	9E-01	NA	3E-01	1.2E+00
			Trichloroethene	NA	NA	NA	NA	liver, kidney, fetus	1E+00	NA	2E-01	1.2E+00
			m,p-Xylene	NA	NA	NA	NA	whole body	2E-01	NA	1E-01	3E-01
			o-Xylene	NA	NA	NA	NA	whole body	1E-01	NA	6E-02	2E-01
			Xylene (Total)	NA	NA	NA	NA	whole body	4E-01	NA	2E-01	6E-01
			2,4-Dimethylphenol	NA	NA	NA	NA	blood	4E+00	NA	9E-01	5E+00
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	2E+01	NA	2E+01	4E+01
			2-Methylphenol	NA	NA	NA	NA	body weight, CNS	6E-01	NA	6E-02	6E-01
			3&4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	6E-01	NA	6E-02	7E-01
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	1E+01	NA	1E+00	1E+01
			Acenaphthene	NA	NA	NA	NA	liver	4E-01	NA	7E-01	1.1E+00
			Acenaphthylene	NA	NA	NA	NA	liver	6E-02	NA	9E-02	2E-01
			Anthracene	NA	NA	NA	NA	NOE	2E-02	NA	5E-02	7E-02
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	6E-02	NA	3E+00	3E+00
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	kidney	1E-01	NA	1E-01	3E-01
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.34.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Fluoranthene	NA	NA	NA	NA	liver	3E-01	NA	2E+00	2E+00
			Fluorene	NA	NA	NA	NA	blood	5E-01	NA	7E-02	5E-01
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	3E+01	NA	2E+01	4E+01
			Phenanthrene	NA	NA	NA	NA	NOE	2E-01	NA	4E-01	6E-01
			Phenol	NA	NA	NA	NA	body weight	6E-02	NA	3E-03	6E-02
			Pyrene	NA	NA	NA	NA	kidney	4E-01	NA	2E+00	2E+00
		Exposure Point Total		NA	NA	NA	NA		3E+04	0E+00	2E+02	3E+04
	Exposure Medium Total			NA	NA	NA	NA		3E+04	0E+00	2E+02	3E+04
Medium Total				NA	NA	NA	NA		3E+04	0E+00	2E+02	3E+04
Receptor Total				NA	NA	NA	NA		3E+04	0E+00	2E+02	3E+04

Total Blood HI Across Media =	4E+01
Total CNS HI Across Media =	2E+01
Total Kidney HI Across Media =	8E+00
Total Liver HI Across Media =	5E+00
Total Respiratory HI Across Media =	5E+01
Total Skin HI Across Media =	3E+04
Total Whole Body HI Across Media =	6E+01
Total Fetus HI Across Media =	1.2E+00
Total Body Weight HI Across Media =	7E-01

TABLE 9.35.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	OU1 Above Clay - Tap Water	Arsenic	9E-01	NA	2E-02	1E+00	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			alpha-BHC	5E-06	NA	NA	5E-06	NA	NA	NA	NA	NA
			delta-BHC	3E-06	NA	2E-06	4E-06	NA	NA	NA	NA	NA
			Heptachlor	1E-06	NA	5E-07	2E-06	NA	NA	NA	NA	NA
			1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	1E-03	NA	2E-04	2E-03	NA	NA	NA	NA	NA
			Chloroethane	3E-07	NA	2E-08	4E-07	NA	NA	NA	NA	NA
			Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Ethylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Isopropylbenzene (Cumene)	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Toluene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Trichloroethene	3E-05	NA	5E-06	3E-05	NA	NA	NA	NA	NA
			m,p-Xylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			o-Xylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Xylene (Total)	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			3&4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	4E-03	NA	3E-02	4E-02	NA	NA	NA	NA	NA
			Benzo(a)pyrene	3E-02	NA	8E-01	8E-01	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	3E-03	NA	5E-02	5E-02	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	2E-04	NA	2E-03	3E-03	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.35.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Carbazole	4E-05	NA	2E-05	6E-05	NA	NA	NA	NA	NA
			Chrysene	3E-05	NA	3E-04	4E-04	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	1E-03	NA	2E-02	3E-02	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Phenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		1E+00	NA	9E-01	1E+00	NA	NA	NA	NA	NA
	Exposure Medium Total			1E+00	NA	9E-01	1E+00	NA	NA	NA	NA	NA

TABLE 9.35.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Air	OU1 Above Clay Shallow Aquifer Water Vapors at Showerhead	1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	1E-03	NA	1E-03	NA	NA	NA	NA	NA
			Chloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Ethylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Isopropylbenzene (Cumene)	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Toluene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Trichloroethene	NA	4E-05	NA	4E-05	NA	NA	NA	NA	NA
			m,p-Xylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			o-Xylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Xylene (Total)	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	1E-03	NA	1E-03		NA	NA	NA	NA
	Exposure Medium Total			NA	1E-03	NA	1E-03		NA	NA	NA	NA
Medium Total				1E+00	1E-03	9E-01	1E+00		NA	NA	NA	NA
Receptor Total				1E+00	1E-03	9E-01	1E+00		NA	NA	NA	NA

TABLE 9.36.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	OU1 Below Clay - Tap Water	Arsenic	NA	NA	NA	NA	skin	5E-01	NA	3E-03	5E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,2-Dichloroethane	NA	NA	NA	NA	heart, respiratory, CNS, kidney, liver, GI system	4E-04	NA	2E-05	4E-04
			Benzene	NA	NA	NA	NA	blood	5E-02	NA	8E-03	6E-02
			Chloroform	NA	NA	NA	NA	liver	2E-03	NA	2E-04	2E-03
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	2E-02	NA	2E-03	3E-02
			Tetrachloroethene	NA	NA	NA	NA	liver	3E-02	NA	2E-02	4E-02
			Trichloroethene	NA	NA	NA	NA	liver, kidney, fetus	3E+01	NA	6E+00	4E+01
			Vinyl chloride	NA	NA	NA	NA	liver	2E-03	NA	1E-04	2E-03
			Xylene (Total)	NA	NA	NA	NA	whole body	2E-03	NA	1E-03	4E-03
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	6E-02	NA	7E-02	1E-01
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	2E-01	NA	1E-01	4E-01
		Exposure Point Total		NA	NA	NA	NA		4E+01	0E+00	6E+00	4E+01
	Exposure Medium Total			NA	NA	NA	NA		4E+01	0E+00	6E+00	4E+01

TABLE 9.36.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Air	OU1 Below Clay Shallow Aquifer	1,2-Dichloroethane	NA	NA	NA	NA	GI system, liver, kidney	NA	1E-02	NA	1E-02
		Water Vapors at Showerhead	Benzene	NA	NA	NA	NA	blood	NA	6E-02	NA	6E-02
			Chloroform	NA	NA	NA	NA	NA	NA	4E-03	NA	4E-03
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Tetrachloroethene	NA	NA	NA	NA	NA	NA	6E-02	NA	6E-02
			Trichloroethene	NA	NA	NA	NA	nervous system, eyes	NA	2E+00	NA	2E+00
			Vinyl chloride	NA	NA	NA	NA	liver	NA	5E-04	NA	5E-04
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	4E-02	NA	4E-02
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E+01	NA	1E+01
		Exposure Point Total		NA	NA	NA	NA		0E+00	1E+01	0E+00	1E+01
	Exposure Medium Total			NA	NA	NA	NA		0E+00	1E+01	0E+00	1E+01
Medium Total				NA	NA	NA	NA		4E+01	1E+01	6E+00	6E+01
Receptor Total				NA	NA	NA	NA		4E+01	1E+01	6E+00	6E+01

Total Blood HI Across Media =	1E-01
Total CNS HI Across Media =	4E-04
Total GI System HI Across Media =	1E-02
Total Kidney HI Across Media =	4E+01
Total Liver HI Across Media =	4E+01
Total Nervous System HI Across Media =	2E+00
Total Respiratory HI Across Media =	1E+01
Total Skin HI Across Media =	5E-01
Total Whole Body HI Across Media =	4E-01
Total Eyes HI Across Media =	2E+00
Total Heart HI Across Media =	4E-04
Total Fetus HI Across Media =	4E+01

TABLE 9.37.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	OU1 Below Clay - Tap Water	Arsenic	NA	NA	NA	NA	skin	1E+00	NA	8E-03	1.2E+00
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,2-Dichloroethane	NA	NA	NA	NA	heart, respiratory, CNS, kidney, liver, GI system	1E-03	NA	5E-05	1E-03
			Benzene	NA	NA	NA	NA	blood	1E-01	NA	2E-02	1E-01
			Chloroform	NA	NA	NA	NA	liver	5E-03	NA	4E-04	5E-03
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	5E-02	NA	5E-03	6E-02
			Tetrachloroethene	NA	NA	NA	NA	liver	6E-02	NA	4E-02	1E-01
			Trichloroethene	NA	NA	NA	NA	liver, kidney, fetus	8E+01	NA	1E+01	9E+01
			Vinyl chloride	NA	NA	NA	NA	liver	4E-03	NA	2E-04	4E-03
			Xylene (Total)	NA	NA	NA	NA	whole body	6E-03	NA	3E-03	9E-03
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	1E-01	NA	2E-01	3E-01
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	5E-01	NA	3E-01	9E-01
		Exposure Point Total		NA	NA	NA	NA		8E+01	0E+00	1E+01	1E+02
	Exposure Medium Total			NA	NA	NA	NA		8E+01	0E+00	1E+01	1E+02
Medium Total				NA	NA	NA	NA		8E+01	0E+00	1E+01	1E+02
Receptor Total				NA	NA	NA	NA		8E+01	0E+00	1E+01	1E+02

Total Blood HI Across Media =	1E-01
Total CNS HI Across Media =	1E-03
Total GI System HI Across Media =	1E-03
Total Kidney HI Across Media =	9E+01
Total Liver HI Across Media =	9E+01
Total Respiratory HI Across Media =	3E-01
Total Skin HI Across Media =	1.2E+00
Total Whole Body HI Across Media =	9E-01
Total Heart HI Across Media =	1E-03
Total Fetus HI Across Media =	9E+01

TABLE 9.38.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	OU1 Below Clay - Tap Water	Arsenic	1E-04	NA	7E-07	1E-04	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,2-Dichloroethane	4E-07	NA	2E-08	4E-07	NA	NA	NA	NA	NA
			Benzene	6E-06	NA	1E-06	7E-06	NA	NA	NA	NA	NA
			Chloroform	NA	NA	NA	NA	NA	NA	NA	NA	NA
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Tetrachloroethene	8E-05	NA	5E-05	1E-04	NA	NA	NA	NA	NA
			Trichloroethene	2E-03	NA	4E-04	3E-03	NA	NA	NA	NA	NA
			Vinyl chloride	2E-06	NA	1E-07	2E-06	NA	NA	NA	NA	NA
			Xylene (Total)	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	1E-05	NA	1E-04	1E-04	NA	NA	NA	NA	NA
			Carbazole	1E-06	NA	5E-07	2E-06	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		2E-03	0E+00	5E-04	3E-03		NA	NA	NA	NA
	Exposure Medium Total			2E-03	0E+00	5E-04	3E-03		NA	NA	NA	NA

TABLE 9.38.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Air	OU1 Below Clay Shallow Aquifer	1,2-Dichloroethane	NA	6E-07	NA	6E-07	NA	NA	NA	NA	NA
		Water Vapors at Showerhead	Benzene	NA	5E-06	NA	5E-06	NA	NA	NA	NA	NA
			Chloroform	NA	1E-06	NA	1E-06	NA	NA	NA	NA	NA
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Tetrachloroethene	NA	4E-06	NA	4E-06	NA	NA	NA	NA	NA
			Trichloroethene	NA	3E-03	NA	3E-03	NA	NA	NA	NA	NA
			Vinyl chloride	NA	7E-08	NA	7E-08	NA	NA	NA	NA	NA
			Xylene (Total)	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Chemical Total		0E+00	3E-03	0E+00	3E-03		NA	NA	NA	NA
	Exposure Medium Total			0E+00	3E-03	0E+00	3E-03		NA	NA	NA	NA
Medium Total				2E-03	3E-03	5E-04	6E-03		NA	NA	NA	NA
Receptor Total				2E-03	3E-03	5E-04	6E-03		NA	NA	NA	NA

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	9E-05	NA	1E-07	9E-05
			Antimony	NA	NA	NA	NA	blood	5E-03	NA	4E-05	5E-03
			Arsenic	3E-06	NA	1E-07	4E-06	skin	6E-02	NA	2E-03	6E-02
			Cadmium	NA	NA	NA	NA	kidney	1E-04	NA	5E-06	1E-04
			Chromium	NA	NA	NA	NA	NOE	7E-05	NA	3E-06	8E-05
			Copper	NA	NA	NA	NA	GI system	2E-03	NA	2E-06	2E-03
			Iron	NA	NA	NA	NA	NA	1E-02	NA	1E-05	1E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	3E-05	NA	7E-07	3E-05
			Thallium	NA	NA	NA	NA	blood	1E-03	NA	2E-06	1E-03
			Vanadium	NA	NA	NA	NA	NA	1E-03	NA	4E-05	1E-03
			Zinc	NA	NA	NA	NA	blood	1E-04	NA	2E-07	1E-04
			Mercury	NA	NA	NA	NA	immune system	1E-03	NA	2E-05	1E-03
			Heptachlor	2E-09	NA	3E-11	2E-09	liver	8E-06	NA	9E-08	8E-06
			Aroclor-1242	1E-08	NA	2E-09	1E-08	immune system	2E-03	NA	3E-04	2E-03
			Aroclor-1260	5E-09	NA	8E-10	6E-09	immune system	9E-04	NA	1E-04	1E-03
			Benzene	2E-09	NA	2E-11	2E-09	blood	6E-05	NA	6E-07	6E-05
			Tetrachloroethene	4E-10	NA	5E-12	4E-10	liver	6E-07	NA	7E-09	6E-07
			Trichloroethene	3E-10	NA	4E-12	3E-10	liver, kidney, fetus	2E-05	NA	2E-07	2E-05
			m-Xylene	NA	NA	NA	NA	whole body	3E-06	NA	3E-08	3E-06
			p,o-Xylene	NA	NA	NA	NA	whole body	3E-06	NA	3E-08	3E-06
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	9E-04	NA	1E-05	9E-04
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	3E-04	NA	4E-06	3E-04
			4-Nitroaniline	4E-10	NA	4E-12	4E-10	NA	5E-05	NA	5E-07	5E-05
			Acenaphthene	NA	NA	NA	NA	liver	5E-05	NA	7E-06	6E-05
			Benzo(a)anthracene	2E-06	NA	2E-07	3E-06	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-05	NA	1E-06	2E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	3E-06	NA	2E-07	3E-06	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	6E-05	NA	9E-06	7E-05
			Benzo(k)fluoranthene	1E-07	NA	8E-09	1E-07	NA	NA	NA	NA	NA
			Carbazole	4E-09	NA	5E-11	4E-09	NA	NA	NA	NA	NA
			Chrysene	1E-14	NA	2E-09	2E-09	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	4E-13	NA	3E-07	3E-07	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	2E-04	NA	4E-05	3E-04
			Fluorene	NA	NA	NA	NA	blood	1E-04	NA	1E-05	1E-04
			Indeno(1,2,3-c,d)pyrene	3E-13	NA	8E-08	8E-08	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	5E-04	NA	8E-05	6E-04
			Phenanthrene	NA	NA	NA	NA	NOE	4E-05	NA	5E-07	4E-05
			Pyrene	NA	NA	NA	NA	kidney	2E-04	NA	4E-05	3E-04
		Exposure Point Total		3E-05	NA	2E-06	3E-05		9E-02	NA	3E-03	9E-02
	Exposure Medium Total			3E-05	NA	2E-06	3E-05		9E-02	NA	3E-03	9E-02

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	3E-06	NA	3E-06
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Cadmium	NA	4E-12	NA	4E-12	NA	NA	NA	NA	NA
			Chromium	NA	5E-11	NA	5E-11	respiratory	NA	3E-07	NA	3E-07
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	1E-05	NA	1E-05
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	1E-13	NA	1E-13	NA	NA	NA	NA	NA
			Aroclor-1242	NA	7E-14	NA	7E-14	NA	NA	NA	NA	NA
			Aroclor-1260	NA	3E-14	NA	3E-14	NA	NA	NA	NA	NA
			Benzene	NA	1E-08	NA	1E-08	blood	NA	4E-04	NA	4E-04
			Tetrachloroethene	NA	2E-10	NA	2E-10	NA	NA	8E-06	NA	8E-06
			Trichloroethene	NA	5E-09	NA	5E-09	nervous system, eyes	NA	9E-06	NA	9E-06
			m-Xylene	NA	NA	NA	NA	nervous system	NA	2E-04	NA	2E-04
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	2E-04	NA	2E-04
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	5E-09	NA	5E-09
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	9E-12	NA	9E-12	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	3E-10	NA	3E-10	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	9E-11	NA	9E-11	NA	NA	NA	NA	NA

TABLE 9.1.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E-02	NA	1E-02
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	2E-08	NA	2E-08		NA	1E-02	NA	1E-02
	Exposure Medium Total			NA	2E-08	NA	2E-08		NA	1E-02	NA	1E-02
Medium Total				3E-05	2E-08	2E-06	3E-05		9E-02	1E-02	3E-03	1E-01
Receptor Total				3E-05	2E-08	2E-06	3E-05		9E-02	1E-02	3E-03	1E-01

NA = Not applicable or not available

Total Blood HI Across Media =	7E-03
Total CNS HI Across Media =	3E-04
Total GI System HI Across Media =	2E-03
Total Immune System HI Across Media =	4E-03
Total Kidney HI Across Media =	5E-04
Total Liver HI Across Media =	4E-04
Total Nervous System HI Across Media =	4E-04
Total Respiratory HI Across Media =	1E-02
Total Skin HI Across Media =	6E-02
Total Whole Body HI Across Media =	9E-04
Total Eyes HI Across Media =	9E-06
Total Fetus HI Across Media =	2E-05

TABLE 9.2.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	2E-04	NA	1E-07	2E-04
			Antimony	NA	NA	NA	NA	blood	9E-03	NA	5E-05	9E-03
			Arsenic	7E-06	NA	2E-07	7E-06	skin	1E-01	NA	3E-03	1E-01
			Cadmium	NA	NA	NA	NA	kidney	2E-04	NA	7E-06	2E-04
			Chromium	NA	NA	NA	NA	NOE	1E-04	NA	4E-06	1E-04
			Copper	NA	NA	NA	NA	GI system	3E-03	NA	3E-06	3E-03
			Iron	NA	NA	NA	NA	NA	2E-02	NA	1E-05	2E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	5E-05	NA	9E-07	5E-05
			Thallium	NA	NA	NA	NA	blood	3E-03	NA	2E-06	3E-03
			Vanadium	NA	NA	NA	NA	NA	2E-03	NA	5E-05	2E-03
			Zinc	NA	NA	NA	NA	blood	3E-04	NA	2E-07	3E-04
			Mercury	NA	NA	NA	NA	immune system	2E-03	NA	2E-05	2E-03
			Heptachlor	5E-09	NA	4E-11	5E-09	liver	1E-05	NA	1E-07	1E-05
			Aroclor-1242	2E-08	NA	2E-09	2E-08	immune system	3E-03	NA	4E-04	4E-03
			Aroclor-1260	1E-08	NA	1E-09	1E-08	immune system	2E-03	NA	2E-04	2E-03
			Benzene	3E-09	NA	3E-11	3E-09	blood	1E-04	NA	8E-07	1E-04
			Tetrachloroethene	8E-10	NA	7E-12	9E-10	liver	1E-06	NA	9E-09	1E-06
			Trichloroethene	7E-10	NA	5E-12	7E-10	liver, kidney, fetus	4E-05	NA	3E-07	4E-05
			m-Xylene	NA	NA	NA	NA	whole body	5E-06	NA	4E-08	5E-06
			p,o-Xylene	NA	NA	NA	NA	whole body	5E-06	NA	4E-08	5E-06
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	2E-03	NA	1E-05	2E-03
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	6E-04	NA	5E-06	6E-04
			4-Nitroaniline	7E-10	NA	6E-12	7E-10	NA	8E-05	NA	7E-07	8E-05
			Acenaphthene	NA	NA	NA	NA	liver	9E-05	NA	9E-06	1E-04
			Benzo(a)anthracene	7E-07	NA	8E-08	8E-07	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-05	NA	1E-06	2E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	8E-07	NA	8E-08	9E-07	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	1E-04	NA	1E-05	1E-04
			Benzo(k)fluoranthene	4E-08	NA	4E-09	4E-08	NA	NA	NA	NA	NA
			Carbazole	8E-09	NA	7E-11	8E-09	NA	NA	NA	NA	NA
			Chrysene	7E-09	NA	7E-10	8E-09	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	4E-06	NA	3E-07	5E-06	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	4E-04	NA	5E-05	5E-04
			Fluorene	NA	NA	NA	NA	blood	2E-04	NA	2E-05	2E-04
			Indeno(1,2,3-c,d)pyrene	4E-07	NA	4E-08	4E-07	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	1E-03	NA	1E-04	1E-03
			Phenanthrene	NA	NA	NA	NA	NOE	7E-05	NA	6E-07	8E-05
			Pyrene	NA	NA	NA	NA	kidney	4E-04	NA	5E-05	5E-04
		Exposure Point Total		3E-05	NA	2E-06	4E-05		2E-01	NA	4E-03	2E-01
	Exposure Medium Total			3E-05	NA	2E-06	4E-05		2E-01	NA	4E-03	2E-01

TABLE 9.2.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	5E-06	NA	5E-06
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	3E-09	NA	3E-09	NA	NA	NA	NA	NA
			Cadmium	NA	8E-12	NA	8E-12	NA	NA	NA	NA	NA
			Chromium	NA	1E-10	NA	1E-10	respiratory	NA	6E-07	NA	6E-07
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-05	NA	2E-05
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	2E-13	NA	2E-13	NA	NA	NA	NA	NA
			Aroclor-1242	NA	1E-13	NA	1E-13	NA	NA	NA	NA	NA
			Aroclor-1260	NA	7E-14	NA	7E-14	NA	NA	NA	NA	NA
			Benzene	NA	2E-08	NA	2E-08	blood	NA	7E-04	NA	7E-04
			Tetrachloroethene	NA	4E-10	NA	4E-10	NA	NA	1E-05	NA	1E-05
			Trichloroethene	NA	1E-08	NA	1E-08	nervous system, eyes	NA	2E-05	NA	2E-05
			m-Xylene	NA	NA	NA	NA	nervous system	NA	3E-04	NA	3E-04
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	3E-04	NA	3E-04
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	9E-09	NA	9E-09
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	1E-11	NA	1E-11	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	1E-11	NA	1E-11	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	6E-13	NA	6E-13	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	3E-10	NA	3E-10	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	6E-12	NA	6E-12	NA	NA	NA	NA	NA

TABLE 9.2.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	2E-02	NA	2E-02
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	4E-08	NA	4E-08		NA	2E-02	NA	2E-02
	Exposure Medium Total			NA	4E-08	NA	4E-08		NA	2E-02	NA	2E-02
Medium Total				3E-05	4E-08	2E-06	4E-05		2E-01	2E-02	4E-03	2E-01
Receptor Total				3E-05	4E-08	2E-06	4E-05		2E-01	2E-02	4E-03	2E-01

NA = Not applicable or not available

Total Blood HI Across Media =	1E-02
Total CNS HI Across Media =	6E-04
Total GI System HI Across Media =	3E-03
Total Immune System HI Across Media =	8E-03
Total Kidney HI Across Media =	9E-04
Total Liver HI Across Media =	6E-04
Total Nervous System HI Across Media =	6E-04
Total Respiratory HI Across Media =	2E-02
Total Skin HI Across Media =	1E-01
Total Whole Body HI Across Media =	2E-03
Total Eyes HI Across Media =	2E-05
Total Fetus HI Across Media =	4E-05

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	3E-03	NA	4E-06	3E-03
			Antimony	NA	NA	NA	NA	blood	2E-01	NA	2E-03	2E-01
			Arsenic	9E-05	NA	4E-06	9E-05	skin	2E+00	NA	9E-02	2E+00
			Cadmium	NA	NA	NA	NA	kidney	4E-03	NA	2E-04	5E-03
			Chromium	NA	NA	NA	NA	NOE	3E-03	NA	1E-04	3E-03
			Copper	NA	NA	NA	NA	GI system	7E-02	NA	9E-05	7E-02
			Iron	NA	NA	NA	NA	NA	4E-01	NA	5E-04	4E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	9E-04	NA	3E-05	1E-03
			Thallium	NA	NA	NA	NA	blood	5E-02	NA	7E-05	5E-02
			Vanadium	NA	NA	NA	NA	NA	4E-02	NA	2E-03	4E-02
			Zinc	NA	NA	NA	NA	blood	5E-03	NA	7E-06	5E-03
			Mercury	NA	NA	NA	NA	immune system	4E-02	NA	8E-04	4E-02
			Heptachlor	6E-08	NA	8E-10	6E-08	liver	3E-04	NA	4E-06	3E-04
			Aroclor-1242	3E-07	NA	5E-08	3E-07	immune system	7E-02	NA	1E-02	8E-02
			Aroclor-1260	1E-07	NA	2E-08	2E-07	immune system	3E-02	NA	6E-03	4E-02
			Benzene	4E-08	NA	6E-10	4E-08	blood	2E-03	NA	3E-05	2E-03
			Tetrachloroethene	1E-08	NA	1E-10	1E-08	liver	2E-05	NA	3E-07	2E-05
			Trichloroethene	9E-09	NA	1E-10	9E-09	liver, kidney, fetus	8E-04	NA	1E-05	8E-04
			m-Xylene	NA	NA	NA	NA	whole body	1E-04	NA	1E-06	1E-04
			p,o-Xylene	NA	NA	NA	NA	whole body	1E-04	NA	1E-06	1E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	3E-02	NA	4E-04	3E-02
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	1E-02	NA	2E-04	1E-02
			4-Nitroaniline	1E-08	NA	1E-10	1E-08	NA	2E-03	NA	2E-05	2E-03
			Acenaphthene	NA	NA	NA	NA	liver	2E-03	NA	3E-04	2E-03
			Benzo(a)anthracene	1E-05	NA	2E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	9E-05	NA	2E-05	1E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	1E-05	NA	2E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	2E-03	NA	4E-04	3E-03
			Benzo(k)fluoranthene	5E-07	NA	8E-08	6E-07	NA	NA	NA	NA	NA
			Carbazole	1E-07	NA	1E-09	1E-07	NA	NA	NA	NA	NA
			Chrysene	9E-08	NA	2E-08	1E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2E-05	NA	3E-06	2E-05	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	9E-03	NA	2E-03	1E-02
			Fluorene	NA	NA	NA	NA	blood	4E-03	NA	6E-04	4E-03
			Indeno(1,2,3-c,d)pyrene	5E-06	NA	8E-07	6E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	2E-02	NA	3E-03	2E-02
			Phenanthrene	NA	NA	NA	NA	NOE	2E-03	NA	2E-05	2E-03
			Pyrene	NA	NA	NA	NA	kidney	9E-03	NA	2E-03	1E-02
		Exposure Point Total		2E-04	NA	3E-05	2E-04		3E+00	NA	1E-01	3E+00
	Exposure Medium Total			2E-04	NA	3E-05	2E-04		3E+00	NA	1E-01	3E+00

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	1E-03	NA	1E-03
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	4E-07	NA	4E-07	NA	NA	NA	NA	NA
			Cadmium	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Chromium	NA	2E-08	NA	2E-08	respiratory	NA	1E-04	NA	1E-04
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	4E-03	NA	4E-03
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	3E-11	NA	3E-11	NA	NA	NA	NA	NA
			Aroclor-1242	NA	2E-11	NA	2E-11	NA	NA	NA	NA	NA
			Aroclor-1260	NA	1E-11	NA	1E-11	NA	NA	NA	NA	NA
			Benzene	NA	4E-06	NA	4E-06	blood	NA	2E-01	NA	2E-01
			Tetrachloroethene	NA	7E-08	NA	7E-08	NA	NA	3E-03	NA	3E-03
			Trichloroethene	NA	2E-06	NA	2E-06	nervous system, eyes	NA	4E-03	NA	4E-03
			m-Xylene	NA	NA	NA	NA	nervous system	NA	8E-02	NA	8E-02
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	7E-02	NA	7E-02
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	2E-06	NA	2E-06
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	4E-09	NA	4E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA

TABLE 9.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	5E+00	NA	5E+00
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	6E-06	NA	6E-06		NA	5E+00	NA	5E+00
	Exposure Medium Total			NA	6E-06	NA	6E-06		NA	5E+00	NA	5E+00
Medium Total				2E-04	6E-06	3E-05	3E-04		3E+00	5E+00	1E-01	9E+00
Receptor Total				2E-04	6E-06	3E-05	3E-04		3E+00	5E+00	1E-01	9E+00

NA = Not applicable or not available

Total Blood HI Across Media =	4E-01
Total CNS HI Across Media =	1E-02
Total GI System HI Across Media =	7E-02
Total Immune System HI Across Media =	2E-01
Total Kidney HI Across Media =	2E-02
Total Liver HI Across Media =	1E-02
Total Nervous System HI Across Media =	2E-01
Total Respiratory HI Across Media =	5E+00
Total Skin HI Across Media =	2E+00
Total Whole Body HI Across Media =	3E-02
Total Eyes HI Across Media =	4E-03
Total Fetus HI Across Media =	8E-04

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Quanta Resources Subsurface Soil (0 - 10 ft)	Aluminum	NA	NA	NA	NA	NA	5E-03	NA	5E-05	5E-03
			Antimony	NA	NA	NA	NA	blood	4E-01	NA	3E-02	5E-01
			Arsenic	1E-04	NA	3E-05	1E-04	skin	2E+01	NA	5E+00	2E+01
			Cadmium	NA	NA	NA	NA	kidney	4E-03	NA	2E-03	6E-03
			Chromium	NA	NA	NA	NA	NOE	2E-03	NA	7E-04	2E-03
			Copper	NA	NA	NA	NA	GI system	2E-01	NA	2E-03	2E-01
			Iron	NA	NA	NA	NA	NA	3E-01	NA	3E-03	3E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1E-03	NA	3E-04	1E-03
			Selenium	NA	NA	NA	NA	whole body	7E-03	NA	7E-05	7E-03
			Thallium	NA	NA	NA	NA	blood	2E-01	NA	2E-03	2E-01
			Vanadium	NA	NA	NA	NA	NA	6E-03	NA	2E-03	8E-03
			Zinc	NA	NA	NA	NA	blood	1E-02	NA	1E-04	1E-02
			Mercury	NA	NA	NA	NA	immune system	6E-03	NA	8E-04	6E-03
			Dieldrin	4E-08	NA	4E-09	5E-08	liver	4E-03	NA	4E-04	4E-03
			Heptachlor	1E-08	NA	1E-09	2E-08	liver	4E-04	NA	4E-05	5E-04
			Aroclor-1242	6E-08	NA	8E-08	1E-07	immune system	4E-02	NA	6E-02	1E-01
			Aroclor-1260	4E-08	NA	5E-08	9E-08	immune system	3E-02	NA	4E-02	7E-02
			Benzene	2E-08	NA	2E-09	2E-08	blood	7E-03	NA	7E-04	8E-03
			Tetrachloroethene	3E-09	NA	3E-10	4E-09	liver	4E-06	NA	4E-07	5E-06
			Toluene	NA	NA	NA	NA	kidney	4E-05	NA	4E-06	4E-05
			Trichloroethene	3E-09	NA	3E-10	3E-09	liver, kidney, fetus	2E-03	NA	2E-04	2E-03
			m,p-Xylene	NA	NA	NA	NA	whole body	5E-04	NA	5E-05	6E-04
			m-Xylene	NA	NA	NA	NA	whole body	2E-04	NA	2E-05	2E-04
			o-Xylene	NA	NA	NA	NA	whole body	2E-04	NA	2E-05	3E-04
			p,o-Xylene	NA	NA	NA	NA	whole body	2E-04	NA	2E-05	2E-04
			Xylene (Total)	NA	NA	NA	NA	whole body	2E-04	NA	2E-05	2E-04
			2,4-Dimethylphenol	NA	NA	NA	NA	blood	5E-04	NA	5E-05	5E-04
			2,4-Dinitrotoluene	NA	NA	NA	NA	GI system, nervous system	3E-03	NA	3E-03	7E-03
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	3E-01	NA	3E-02	3E-01
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	3E-02	NA	3E-03	4E-02
			4-Nitroaniline	1E-08	NA	1E-09	1E-08	NA	1E-02	NA	1E-03	2E-02
			Acenaphthene	NA	NA	NA	NA	liver	7E-04	NA	9E-04	2E-03
			Benzo(a)anthracene	5E-06	NA	7E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	5E-05	NA	6E-05	1E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	6E-06	NA	7E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	8E-04	NA	1E-03	2E-03
			Benzo(k)fluoranthene	2E-07	NA	3E-07	6E-07	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	kidney	2E-03	NA	2E-04	3E-03
			Carbazole	5E-08	NA	5E-09	6E-08	NA	NA	NA	NA	NA
			Chrysene	5E-08	NA	7E-08	1E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	8E-06	NA	1E-05	2E-05	NA	NA	NA	NA	NA

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	3E-03	NA	4E-03	7E-03
			Fluorene	NA	NA	NA	NA	blood	1E-03	NA	1E-03	2E-03
			Indeno(1,2,3-c,d)pyrene	3E-06	NA	3E-06	6E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	4E-01	NA	6E-01	1E+00
			Phenanthrene	NA	NA	NA	NA	NOE	5E-04	NA	5E-05	6E-04
		Exposure Point Total		2E-04	NA	1E-04	3E-04		2E+01	NA	6E+00	3E+01
	Exposure Medium Total			2E-04	NA	1E-04	3E-04		2E+01	NA	6E+00	3E+01

4.CTE

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Subsurface Soil (0 - 10 ft)	Aluminum	NA	NA	NA	NA	NA	NA	2E-02	NA	2E-02
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	6E-06	NA	6E-06	NA	NA	NA	NA	NA
			Cadmium	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Chromium	NA	1E-07	NA	1E-07	respiratory	NA	7E-03	NA	7E-03
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	6E-02	NA	6E-02
			Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	1E-03	NA	1E-03
			Dieldrin	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Heptachlor	NA	8E-11	NA	8E-11	NA	NA	NA	NA	NA
			Aroclor-1242	NA	6E-11	NA	6E-11	NA	NA	NA	NA	NA
			Aroclor-1260	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Benzene	NA	5E-07	NA	5E-07	blood	NA	1E-01	NA	1E-01
			Tetrachloroethene	NA	5E-09	NA	5E-09	NA	NA	2E-03	NA	2E-03
			Toluene	NA	NA	NA	NA	nervous system	NA	2E-03	NA	2E-03
			Trichloroethene	NA	1E-07	NA	1E-07	nervous system, eyes	NA	2E-03	NA	2E-03
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1E-01
			m-Xylene	NA	NA	NA	NA	nervous system	NA	4E-02	NA	4E-02
			o-Xylene	NA	NA	NA	NA	nervous system	NA	4E-02	NA	4E-02
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	4E-02	NA	4E-02
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	3E-02	NA	3E-02
			2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	2E-04	NA	2E-04
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	1E-07	NA	1E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	6E-10	NA	6E-10	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	6E-09	NA	6E-09	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	3E+01	NA	3E+01
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	7E-06	NA	7E-06		NA	3E+01	NA	3E+01
	Exposure Medium Total			NA	7E-06	NA	7E-06		NA	3E+01	NA	3E+01
Medium Total				2E-04	7E-06	1E-04	3E-04		2E+01	3E+01	6E+00	5E+01

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater (Excavation)	Quanta Resources (Excavation)	Arsenic	NA	NA	1E-09	1E-09	skin	NA	NA	2E-04	2E-04
			Iron	NA	NA	NA	NA	NA	NA	NA	3E-03	3E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			alpha-BHC	NA	NA	NA	NA	NA	NA	NA	4E-05	4E-05
			delta-BHC	NA	NA	7E-10	7E-10	NA	NA	NA	NA	NA
			Heptachlor	NA	NA	2E-10	2E-10	liver	NA	NA	6E-06	6E-06
			Benzene	NA	NA	1E-07	1E-07	blood	NA	NA	4E-02	4E-02
			Chloromethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Ethylbenzene	NA	NA	NA	NA	liver, kidney	NA	NA	3E-03	3E-03
			Isopropylbenzene (Cumene)	NA	NA	NA	NA	kidney	NA	NA	5E-05	5E-05
			Toluene	NA	NA	NA	NA	kidney	NA	NA	1E-04	1E-04
			m,p-Xylene	NA	NA	NA	NA	whole body	NA	NA	2E-03	2E-03
			o-Xylene	NA	NA	NA	NA	whole body	NA	NA	1E-03	1E-03
			Xylene (Total)	NA	NA	NA	NA	whole body	NA	NA	3E-03	3E-03
			1,4-Dichlorobenzene	NA	NA	1E-10	1E-10	liver, developmental	NA	NA	1E-05	1E-05
			2,4-Dimethylphenol	NA	NA	NA	NA	blood	NA	NA	2E-03	2E-03
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	3E-01	3E-01
			2-Methylphenol	NA	NA	NA	NA	body weight, CNS	NA	NA	2E-04	2E-04
			3&4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	NA	NA	7E-04	7E-04
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	NA	NA	3E-02	3E-02
			Acenaphthene	NA	NA	NA	NA	liver	NA	NA	1E-03	1E-03
			Acenaphthylene	NA	NA	NA	NA	liver	NA	NA	2E-04	2E-04
			Anthracene	NA	NA	NA	NA	NOE	NA	NA	2E-05	2E-05
			Benzo(a)anthracene	NA	NA	2E-05	2E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	2E-04	2E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	2E-05	2E-05	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	NA	NA	7E-03	7E-03
			Benzo(k)fluoranthene	NA	NA	1E-06	1E-06	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	kidney	NA	NA	1E-03	1E-03
			Carbazole	NA	NA	3E-08	3E-08	NA	NA	NA	NA	NA
			Chrysene	NA	NA	2E-07	2E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	3E-05	3E-05	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Fluoranthene	NA	NA	NA	NA	liver	NA	NA	5E-03	5E-03
			Fluorene	NA	NA	NA	NA	blood	NA	NA	1E-04	1E-04
			Indeno(1,2,3-c,d)pyrene	NA	NA	1E-05	1E-05	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	3E-01	3E-01
			Phenanthrene	NA	NA	NA	NA	NOE	NA	NA	9E-04	9E-04
			Phenol	NA	NA	NA	NA	body weight	NA	NA	6E-05	6E-05
			Pyrene	NA	NA	NA	NA	kidney	NA	NA	5E-03	5E-03
		Exposure Point Total		NA	NA	3E-04	3E-04		NA	NA	7E-01	7E-01
	Exposure Medium Total			NA	NA	3E-04	3E-04		NA	NA	7E-01	7E-01

T[illegible]4.CTE

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air (Excavation)	Quanta Resources (Excavation)	Benzene	NA	2E-07	NA	2E-07	blood	NA	6E-02	NA	6E-02
			Chloromethane	NA	NA	NA	NA	CNS	NA	2E-04	NA	2E-04
			Ethylbenzene	NA	NA	NA	NA	developmental	NA	8E-04	NA	8E-04
			Isopropylbenzene (Cumene)	NA	NA	NA	NA	kidney	NA	4E-04	NA	4E-04
			Toluene	NA	NA	NA	NA	nervous system	NA	2E-04	NA	2E-04
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	9E-03	NA	9E-03
			o-Xylene	NA	NA	NA	NA	nervous system	NA	6E-03	NA	6E-03
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			1,4-Dichlorobenzene	NA	9E-11	NA	9E-11	liver	NA	4E-07	NA	4E-07
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	4E+00	NA	4E+00
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	2E-07	NA	2E-07		NA	4E+00	NA	4E+00
	Exposure Medium Total			NA	2E-07	NA	2E-07		NA	4E+00	NA	4E+00
Medium Total				NA	2E-07	3E-04	3E-04		NA	4E+00	7E-01	5E+00
Receptor Total				2E-04	7E-06	4E-04	6E-04		2E+01	3E+01	7E+00	6E+01

NA = Not applicable or not available

Total Blood HI Across Media =	9E-01
Total CNS HI Across Media =	7E-02
Total GI System HI Across Media =	2E-01
Total Immune System HI Across Media =	2E-01
Total Kidney HI Across Media =	3E-02
Total Liver HI Across Media =	2E-02
Total Nervous System HI Across Media =	3E-01
Total Respiratory HI Across Media =	3E+01
Total Skin HI Across Media =	2E+01
Total Whole Body HI Across Media =	1.3E+00
Total Eyes HI Across Media =	2E-03
Total Developmental HI Across Media =	8E-04
Total Fetus HI Across Media =	2E-03
Total Body Weight HI Across Media =	3E-04

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	5E-03	NA	6E-06	5E-03
			Antimony	NA	NA	NA	NA	blood	3E-01	NA	2E-03	3E-01
			Arsenic	NA	NA	NA	NA	skin	3E+00	NA	1E-01	4E+00
			Cadmium	NA	NA	NA	NA	kidney	7E-03	NA	3E-04	7E-03
			Chromium	NA	NA	NA	NA	NOE	4E-03	NA	2E-04	4E-03
			Copper	NA	NA	NA	NA	GI system	1E-01	NA	1E-04	1E-01
			Iron	NA	NA	NA	NA	NA	6E-01	NA	7E-04	6E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1E-03	NA	4E-05	2E-03
			Thallium	NA	NA	NA	NA	blood	9E-02	NA	1E-04	9E-02
			Vanadium	NA	NA	NA	NA	NA	6E-02	NA	2E-03	6E-02
			Zinc	NA	NA	NA	NA	blood	9E-03	NA	1E-05	9E-03
			Mercury	NA	NA	NA	NA	immune system	7E-02	NA	1E-03	7E-02
			Heptachlor	NA	NA	NA	NA	liver	5E-04	NA	5E-06	5E-04
			Aroclor-1242	NA	NA	NA	NA	immune system	1E-01	NA	2E-02	1E-01
			Aroclor-1260	NA	NA	NA	NA	immune system	5E-02	NA	9E-03	6E-02
			Benzene	NA	NA	NA	NA	blood	3E-03	NA	4E-05	3E-03
			Tetrachloroethene	NA	NA	NA	NA	liver	4E-05	NA	4E-07	4E-05
			Trichloroethene	NA	NA	NA	NA	liver, kidney, fetus	1E-03	NA	1E-05	1E-03
			m-Xylene	NA	NA	NA	NA	whole body	2E-04	NA	2E-06	2E-04
			p,o-Xylene	NA	NA	NA	NA	whole body	2E-04	NA	2E-06	2E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	5E-02	NA	6E-04	5E-02
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	2E-02	NA	2E-04	2E-02
			4-Nitroaniline	NA	NA	NA	NA	NA	3E-03	NA	3E-05	3E-03
			Acenaphthene	NA	NA	NA	NA	liver	3E-03	NA	4E-04	3E-03
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	4E-03	NA	6E-04	4E-03
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	1E-02	NA	2E-03	2E-02
			Fluorene	NA	NA	NA	NA	blood	6E-03	NA	8E-04	7E-03
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	3E-02	NA	5E-03	4E-02
			Phenanthrene	NA	NA	NA	NA	NOE	2E-03	NA	3E-05	2E-03
			Pyrene	NA	NA	NA	NA	kidney	1E-02	NA	2E-03	2E-02
		Exposure Point Total		0E+00	NA	0E+00	0E+00		5E+00	NA	2E-01	5E+00
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		5E+00	NA	2E-01	5E+00

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	2E-03	NA	2E-03
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	2E-04	NA	2E-04
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	7E-03	NA	7E-03
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1242	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	NA	NA	NA	blood	NA	3E-01	NA	3E-01
			Tetrachloroethene	NA	NA	NA	NA	NA	NA	5E-03	NA	5E-03
			Trichloroethene	NA	NA	NA	NA	nervous system, eyes	NA	6E-03	NA	6E-03
			m-Xylene	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1E-01
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1E-01
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	3E-06	NA	3E-06
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	8E+00	NA	8E+00
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	9E+00	NA	9E+00
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	9E+00	NA	9E+00
Medium Total				0E+00	0E+00	0E+00	0E+00		5E+00	9E+00	2E-01	1E+01
Receptor Total				0E+00	0E+00	0E+00	0E+00		5E+00	9E+00	2E-01	1E+01

NA = Not applicable or not available

Total Blood HI Across Media =	7E-01
Total CNS HI Across Media =	2E-02
Total GI System HI Across Media =	1E-01
Total Immune System HI Across Media =	3E-01
Total Kidney HI Across Media =	3E-02
Total Liver HI Across Media =	2E-02
Total Nervous System HI Across Media =	2E-01
Total Respiratory HI Across Media =	8E+00
Total Skin HI Across Media =	4E+00
Total Whole Body HI Across Media =	5E-02
Total Eyes HI Across Media =	6E-03
Total Fetus HI Across Media =	1E-03

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	5E-02	NA	5E-05	5E-02
			Antimony	NA	NA	NA	NA	blood	3E+00	NA	2E-02	3E+00
			Arsenic	NA	NA	NA	NA	skin	3E+01	NA	1E+00	3E+01
			Cadmium	NA	NA	NA	NA	kidney	6E-02	NA	3E-03	7E-02
			Chromium	NA	NA	NA	NA	NOE	4E-02	NA	2E-03	4E-02
			Copper	NA	NA	NA	NA	GI system	1E+00	NA	1E-03	1E+00
			Iron	NA	NA	NA	NA	NA	5E+00	NA	6E-03	5E+00
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1E-02	NA	4E-04	1E-02
			Thallium	NA	NA	NA	NA	blood	8E-01	NA	9E-04	8E-01
			Vanadium	NA	NA	NA	NA	NA	5E-01	NA	2E-02	5E-01
			Zinc	NA	NA	NA	NA	blood	8E-02	NA	9E-05	8E-02
			Mercury	NA	NA	NA	NA	immune system	6E-01	NA	1E-02	6E-01
			Heptachlor	NA	NA	NA	NA	liver	4E-03	NA	5E-05	5E-03
			Aroclor-1242	NA	NA	NA	NA	immune system	1E+00	NA	2E-01	1E+00
			Aroclor-1260	NA	NA	NA	NA	immune system	5E-01	NA	8E-02	6E-01
			Benzene	NA	NA	NA	NA	blood	3E-02	NA	3E-04	3E-02
			Tetrachloroethene	NA	NA	NA	NA	liver	3E-04	NA	4E-06	3E-04
			Trichloroethene	NA	NA	NA	NA	liver, kidney, fetus	1E-02	NA	1E-04	1E-02
			m-Xylene	NA	NA	NA	NA	whole body	1E-03	NA	2E-05	1E-03
			p,o-Xylene	NA	NA	NA	NA	whole body	2E-03	NA	2E-05	2E-03
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	5E-01	NA	5E-03	5E-01
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	2E-01	NA	2E-03	2E-01
			4-Nitroaniline	NA	NA	NA	NA	NA	3E-02	NA	3E-04	3E-02
			Acenaphthene	NA	NA	NA	NA	liver	3E-02	NA	4E-03	3E-02
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	3E-02	NA	5E-03	4E-02
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	1E-01	NA	2E-02	2E-01
			Fluorene	NA	NA	NA	NA	blood	5E-02	NA	8E-03	6E-02
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	3E-01	NA	4E-02	3E-01
			Phenanthrene	NA	NA	NA	NA	NOE	2E-02	NA	3E-04	2E-02
			Pyrene	NA	NA	NA	NA	kidney	1E-01	NA	2E-02	2E-01
		Exposure Point Total		0E+00	NA	0E+00	0E+00		5E+01	NA	1E+00	5E+01
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		5E+01	NA	1E+00	5E+01

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	4E-03	NA	4E-03
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	5E-04	NA	5E-04
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1242	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	NA	NA	NA	blood	NA	6E-01	NA	6E-01
			Tetrachloroethene	NA	NA	NA	NA	NA	NA	1E-02	NA	1E-02
			Trichloroethene	NA	NA	NA	NA	nervous system, eyes	NA	1E-02	NA	1E-02
			m-Xylene	NA	NA	NA	NA	nervous system	NA	3E-01	NA	3E-01
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	3E-01	NA	3E-01
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	8E-06	NA	8E-06
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	2E+01	NA	2E+01
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
Medium Total				0E+00	0E+00	0E+00	0E+00		5E+01	2E+01	1E+00	7E+01
Receptor Total				0E+00	0E+00	0E+00	0E+00		5E+01	2E+01	1E+00	7E+01

NA = Not applicable or not available

Total Blood HI Across Media =	4E+00
Total CNS HI Across Media =	2E-01
Total GI System HI Across Media =	9.9E-01
Total Immune System HI Across Media =	2E+00
Total Kidney HI Across Media =	3E-01
Total Liver HI Across Media =	2E-01
Total Nervous System HI Across Media =	6E-01
Total Respiratory HI Across Media =	2E+01
Total Skin HI Across Media =	3E+01
Total Whole Body HI Across Media =	5E-01
Total Eyes HI Across Media =	1E-02
Total Fetus HI Across Media =	1E-02

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Arsenic	1E-03	NA	5E-05	1E-03	skin	NA	NA	NA	NA
			Cadmium	NA	NA	NA	NA	kidney	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Copper	NA	NA	NA	NA	GI system	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	immune system	NA	NA	NA	NA
			Heptachlor	1E-06	NA	1E-08	1E-06	liver	NA	NA	NA	NA
			Aroclor-1242	4E-06	NA	6E-07	5E-06	immune system	NA	NA	NA	NA
			Aroclor-1260	2E-06	NA	3E-07	2E-06	immune system	NA	NA	NA	NA
			Benzene	7E-07	NA	7E-09	7E-07	blood	NA	NA	NA	NA
			Tetrachloroethene	2E-07	NA	2E-09	2E-07	liver	NA	NA	NA	NA
			Trichloroethene	1E-07	NA	2E-09	1E-07	liver, kidney, fetus	NA	NA	NA	NA
			m-Xylene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			p,o-Xylene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	NA	NA	NA	NA
			4-Nitroaniline	2E-07	NA	2E-09	2E-07	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	liver	NA	NA	NA	NA
			Benzo(a)anthracene	7E-04	NA	9E-05	8E-04	NA	NA	NA	NA	NA
			Benzo(a)pyrene	6E-03	NA	8E-04	7E-03	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	7E-04	NA	1E-04	8E-04	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	NA	NA	NA	NA
			Benzo(k)fluoranthene	3E-05	NA	5E-06	4E-05	NA	NA	NA	NA	NA
			Carbazole	2E-06	NA	2E-08	2E-06	NA	NA	NA	NA	NA
			Chrysene	7E-06	NA	9E-07	7E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	1E-03	NA	2E-04	1E-03	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	3E-04	NA	5E-05	4E-04	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			Phenanthrene	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	kidney	NA	NA	NA	NA
		Exposure Point Total		1E-02	NA	1E-03	1E-02		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			1E-02	NA	1E-03	1E-02		0E+00	NA	0E+00	0E+00

TABLE 9.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	2E-06	NA	2E-06	NA	NA	NA	NA	NA
			Cadmium	NA	7E-09	NA	7E-09	NA	NA	NA	NA	NA
			Chromium	NA	9E-08	NA	9E-08	respiratory	NA	NA	NA	NA
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Heptachlor	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Aroclor-1242	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			Aroclor-1260	NA	6E-11	NA	6E-11	NA	NA	NA	NA	NA
			Benzene	NA	2E-05	NA	2E-05	blood	NA	NA	NA	NA
			Tetrachloroethene	NA	4E-07	NA	4E-07	NA	NA	NA	NA	NA
			Trichloroethene	NA	9E-06	NA	9E-06	nervous system, eyes	NA	NA	NA	NA
			m-Xylene	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			p,o-Xylene	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Methylphenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
			4-Nitroaniline	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	1E-07	NA	1E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	6E-10	NA	6E-10	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	7E-09	NA	7E-09	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	NA	NA	NA
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	3E-05	NA	3E-05		NA	0E+00	NA	0E+00
	Exposure Medium Total			NA	3E-05	NA	3E-05		NA	0E+00	NA	0E+00
Medium Total				1E-02	3E-05	1E-03	1E-02		0E+00	0E+00	0E+00	0E+00
Receptor Total				1E-02	3E-05	1E-03	1E-02		0E+00	0E+00	0E+00	0E+00

Table 9.7.CTE Supplement
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Receptor Total	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient (Adult Resident)				Non-Carcinogenic Hazard Quotient (Child Resident)			
	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total
Quanta Resources												
Surface Soil	1.1E-02	3.3E-05	1.3E-03	1.2E-02	5.0E+00	8.7E+00	1.6E-01	1.4E+01	4.6E+01	2.1E+01	1.5E+00	6.9E+01
Above Clay	9.7E-01	1.2E-03	9.0E-01	1.0E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	NA	2.2E+02	2.7E+04
Below Clay	2.5E-03	3.4E-03	5.4E-04	6.4E-03	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.3E+01	NA	1.4E+01	9.6E+01
Surface Soil + Above Clay	9.8E-01	1.2E-03	9.0E-01	1.9E+00	1.1E+04	6.4E+02	8.1E+01	1.2E+04	2.6E+04	2.1E+01	2.2E+02	2.7E+04
Surface Soil + Below Clay	1.3E-02	3.4E-03	1.8E-03	1.8E-02	4.0E+01	2.4E+01	6.2E+00	7.0E+01	1.3E+02	2.1E+01	1.5E+01	1.6E+02

	Adult Resident				
	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay
Total Blood HI Across Media =	7E-01	3E+01	1E-01	3E+01	8E-01
Total CNS HI Across Media =	2E-02	7E+00	4E-04	7E+00	2E-02
Total GI System HI Across Media =	1E-01	NA	1E-02	1E-01	1E-01
Total Kidney HI Across Media =	3E-02	3E+00	4E+01	3E+00	4E+01
Total Liver HI Across Media =	2E-02	2E+00	4E+01	2E+00	4E+01
Total Nervous System HI Across Media =	2E-01	5E+00	2E+00	5E+00	2E+00
Total Respiratory HI Across Media =	8E+00	6E+02	1E+01	6E+02	2E+01
Total Skin HI Across Media =	4E+00	1E+04	5E-01	1E+04	4E+00
Total Whole Body HI Across Media =	5E-02	3E+01	4E-01	3E+01	4E-01
Total Eyes HI Across Media =	6E-03	3E-02	2E+00	3E-02	2E+00
Total Heart HI Across Media =	NA	NA	4E-04	NA	4E-04
Total Developmental HI Across Media =	NA	1E-01	NA	1E-01	NA
Total Fetus HI Across Media =	1E-03	5E-01	4E+01	5E-01	4E+01
Total Body Weight HI Across Media =	NA	3E-01	NA	3E-01	NA

	Child Resident				
	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay
Total Blood HI Across Media =	4E+00	4E+01	1E-01	4E+01	5E+00
Total CNS HI Across Media =	2E-01	2E+01	1E-03	2E+01	2E-01
Total GI System HI Across Media =	1E+00	NA	1E-03	1E+00	1E+00
Total Kidney HI Across Media =	3E-01	8E+00	9E+01	8E+00	9E+01
Total Liver HI Across Media =	2E-01	5E+00	9E+01	5E+00	9E+01
Total Nervous System HI Across Media =	6E-01	NA	NA	6E-01	6E-01
Total Respiratory HI Across Media =	2E+01	5E+01	3E-01	7E+01	2E+01
Total Skin HI Across Media =	3E+01	3E+04	1E+00	3E+04	3E+01
Total Whole Body HI Across Media =	5E-01	6E+01	9E-01	6E+01	1E+00
Total Eyes HI Across Media =	1E-02	NA	NA	1E-02	1E-02
Total Heart HI Across Media =	NA	NA	1E-03	NA	1E-03
Total Developmental HI Across Media =	NA	NA	NA	NA	NA
Total Fetus HI Across Media =	1E-02	1E+00	9E+01	1E+00	9E+01
Total Body Weight HI Across Media =	NA	7E-01	NA	7E-01	NA

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Edgewater Enterprises Subsurface Soil (0 - 10 ft)	Aluminum	NA	NA	NA	NA	NA	1E-02	NA	1E-04	1E-02
			Antimony	NA	NA	NA	NA	blood	5E-02	NA	4E-03	6E-02
			Arsenic	7E-06	NA	2E-06	1E-05	skin	1E+00	NA	3E-01	1E+00
			Barium	NA	NA	NA	NA	kidney	3E-03	NA	4E-04	3E-03
			Cadmium	NA	NA	NA	NA	kidney	2E-03	NA	6E-04	2E-03
			Chromium	NA	NA	NA	NA	NOE	1E-03	NA	6E-04	2E-03
			Copper	NA	NA	NA	NA	GI system	2E-02	NA	2E-04	2E-02
			Iron	NA	NA	NA	NA	NA	2E-01	NA	2E-03	2E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2E-03	NA	4E-04	2E-03
			Selenium	NA	NA	NA	NA	whole body	4E-03	NA	3E-05	4E-03
			Silver	NA	NA	NA	NA	skin	1E-03	NA	3E-04	1E-03
			Thallium	NA	NA	NA	NA	blood	9E-02	NA	9E-04	9E-02
			Vanadium	NA	NA	NA	NA	NA	5E-03	NA	2E-03	7E-03
			Zinc	NA	NA	NA	NA	blood	2E-03	NA	2E-05	2E-03
			Mercury	NA	NA	NA	NA	immune system	1E-02	NA	2E-03	2E-02
			Aroclor-1254	6E-09	NA	8E-09	1E-08	immune system	4E-03	NA	5E-03	9E-03
			1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	5E-04	NA	5E-05	6E-04
			2-Chlorotoluene	NA	NA	NA	NA	body weight	1E-04	NA	1E-05	1E-04
			Benzene	1E-09	NA	1E-10	1E-09	blood	4E-04	NA	4E-05	4E-04
			Tetrachloroethene	3E-09	NA	3E-10	3E-09	liver	4E-06	NA	4E-07	4E-06
			Xylene (Total)	NA	NA	NA	NA	whole body	1E-04	NA	1E-05	2E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	4E-02	NA	4E-03	4E-02
			Acenaphthene	NA	NA	NA	NA	liver	2E-04	NA	2E-04	4E-04
			Benzo(a)anthracene	3E-07	NA	4E-07	7E-07	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-06	NA	3E-06	6E-06	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2E-07	NA	3E-07	6E-07	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	2E-08	NA	2E-08	4E-08	NA	NA	NA	NA	NA
			Carbazole	3E-09	NA	3E-10	3E-09	NA	NA	NA	NA	NA
			Chrysene	3E-09	NA	4E-09	8E-09	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	3E-07	NA	4E-07	8E-07	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	3E-04	NA	3E-04	6E-04
			Fluorene	NA	NA	NA	NA	blood	2E-04	NA	3E-04	6E-04
			Indeno(1,2,3-c,d)pyrene	1E-07	NA	1E-07	2E-07	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	2E-02	NA	3E-02	4.E-02
			Pyrene	NA	NA	NA	NA	kidney	3E-04	NA	3E-04	6E-04
		Exposure Point Total		1E-05	NA	7E-06	2E-05		2E+00	NA	4E-01	2E+00
	Exposure Medium Total			1E-05	NA	7E-06	2E-05		2E+00	NA	4E-01	2E+00

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Edgewater Enterprises Emissions from Subsurface Soil (0 - 10 ft)	Aluminum	NA	NA	NA	NA	NA	NA	4E-02	NA	4E-02
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	4E-07	NA	4E-07	NA	NA	NA	NA	NA
			Barium	NA	NA	NA	NA	fetus	NA	7E-04	NA	7E-04
			Cadmium	NA	8E-10	NA	8E-10	NA	NA	NA	NA	NA
			Chromium	NA	1E-07	NA	1E-07	respiratory	NA	6E-03	NA	6E-03
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	9E-02	NA	9E-02
			Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Silver	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	3E-03	NA	3E-03
			Aroclor-1254	NA	5E-12	NA	5E-12	NA	NA	NA	NA	NA
			1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	NA	9E-02	NA	9E-02
			2-Chlorotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	3E-08	NA	3E-08	blood	NA	8E-03	NA	8E-03
			Tetrachloroethene	NA	4E-09	NA	4E-09	NA	NA	1E-03	NA	1E-03
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	8E-10	NA	8E-10	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	6E-09	NA	6E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	6E-10	NA	6E-10	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	8E-10	NA	8E-10	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E+00	NA	1E+00
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	5E-07	NA	5E-07		NA	2E+00	NA	2E+00
	Exposure Medium Total			NA	5E-07	NA	5E-07		NA	2E+00	NA	2E+00
Medium Total				1E-05	5E-07	7E-06	2E-05		2E+00	2E+00	4E-01	4E+00

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater (Excavation)	Edgewater Enterprises (Excavation)	Arsenic	NA	NA	1E-05	1E-05	skin	NA	NA	2E+00	2E+00
			Iron	NA	NA	NA	NA	NA	NA	NA	7E-03	7E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,1-Dichloroethane	NA	NA	NA	NA	None	NA	NA	5E-06	5E-06
			1,2-Dichloroethane	NA	NA	1E-10	1E-10	heart, respiratory, CNS, kidney, liver, GI system	NA	NA	4E-06	4E-06
			1,2-Dichloropropane	NA	NA	1E-11	1E-11	NA	NA	NA	NA	NA
			Benzene	NA	NA	2E-09	2E-09	blood	NA	NA	7E-04	7E-04
			Chloroethane	NA	NA	1E-11	1E-11	fetus	NA	NA	7E-07	7E-07
			Chloroform	NA	NA	NA	NA	liver	NA	NA	8E-06	8E-06
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	3E-06	3E-06
			Tetrachloroethene	NA	NA	2E-09	2E-09	liver	NA	NA	2E-06	2E-06
			Trichloroethene	NA	NA	3E-10	3E-10	liver, kidney, fetus	NA	NA	2E-04	2E-04
			Vinyl chloride	NA	NA	2E-09	2E-09	liver	NA	NA	5E-05	5E-05
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	1E-02	1E-02
			Acenaphthene	NA	NA	NA	NA	liver	NA	NA	1E-04	1E-04
			Benzo(a)anthracene	NA	NA	1E-08	1E-08	NA	NA	NA	NA	NA
			Carbazole	NA	NA	1E-09	1E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	blood	NA	NA	6E-06	6E-06
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	2E-02	2E-02
		Exposure Point Total		NA	NA	1E-05	1E-05		NA	NA	2E+00	2E+00
	Exposure Medium Total			NA	NA	1E-05	1E-05		NA	NA	2E+00	2E+00

TABLE 9.9.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Ambient Air (Excavation)	Edgewater Enterprises (Excavation)	1,1-Dichloroethane	NA	NA	NA	NA	kidney	NA	2E-05	NA	2E-05
			1,2-Dichloroethane	NA	9E-10	NA	9E-10	GI system, liver, kidney	NA	5E-04	NA	5E-04
			1,2-Dichloropropane	NA	NA	NA	NA	respiratory	NA	2E-05	NA	2E-05
			Benzene	NA	3E-09	NA	3E-09	blood	NA	9E-04	NA	9E-04
			Chloroethane	NA	NA	NA	NA	developmental	NA	8E-07	NA	8E-07
			Chloroform	NA	5E-10	NA	5E-10	NA	NA	3E-05	NA	3E-05
			cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Tetrachloroethene	NA	5E-11	NA	5E-11	NA	NA	2E-05	NA	2E-05
			Trichloroethene	NA	9E-10	NA	9E-10	nervous system, eyes	NA	1E-05	NA	1E-05
			Vinyl chloride	NA	6E-11	NA	6E-11	liver	NA	1E-05	NA	1E-05
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	3E-01	NA	3E-01
		Exposure Point Total		NA	5E-09	NA	5E-09		NA	3E-01	NA	3E-01
	Exposure Medium Total			NA	5E-09	NA	5E-09		NA	3E-01	NA	3E-01
Medium Total				NA	5E-09	1E-05	1E-05		NA	3E-01	2E+00	3E+00
Receptor Total				1E-05	6E-07	2E-05	3E-05		2E+00	2E+00	3E+00	6E+00

NA = Not applicable or not available

Total Blood HI Across Media =	2E-01
Total CNS HI Across Media =	2E-03
Total GI System HI Across Media =	2E-02
Total Immune System HI Across Media =	2E-02
Total Kidney HI Across Media =	6E-03
Total Liver HI Across Media =	2E-03
Total Nervous System HI Across Media =	1E-01
Total Neurological HI Across Media =	NA
Total Respiratory HI Across Media =	**2E+00**
Total Skin HI Across Media =	**4E+00**
Total Whole Body HI Across Media =	7E-02
Total Eyes HI Across Media =	1E-05
Total Heart HI Across Media =	4E-06
Total Developmental HI Across Media =	8E-07
Total Fetus HI Across Media =	9E-04
Total Body Weight HI Across Media =	1E-04

TABLE 9.11.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	8E-02	NA	9E-05	8E-02
			Arsenic	NA	NA	NA	NA	skin	4E-01	NA	1E-02	4E-01
			Chromium	NA	NA	NA	NA	NOE	1E-01	NA	5E-03	1E-01
			Iron	NA	NA	NA	NA	NA	5E-01	NA	6E-04	5E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2E-02	NA	5E-04	2E-02
			Thallium	NA	NA	NA	NA	blood	5E-02	NA	5E-05	5E-02
			Vanadium	NA	NA	NA	NA	NA	3E-01	NA	1E-02	3E-01
			Mercury	NA	NA	NA	NA	immune system	2E-02	NA	2E-04	2E-02
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	2E-03	NA	3E-04	2E-03
		Exposure Point Total		0E+00	NA	0E+00	0E+00		1E+00	NA	3E-02	1E+00
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		1E+00	NA	3E-02	1E+00

TABLE 9.11.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Edgewater Enterprises Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	7E-03	NA	7E-03
			Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	1E-03	NA	1E-03
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E-01	NA	1E-01
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	2E-01	NA	2E-01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	2E-01	NA	2E-01
Medium Total				0E+00	0E+00	0E+00	0E+00		1E+00	2E-01	3E-02	2E+00
Receptor Total				0E+00	0E+00	0E+00	0E+00		1E+00	2E-01	3E-02	2E+00

NA = Not applicable or not available

Total Blood HI Across Media =	5E-02
Total CNS HI Across Media =	2E-02
Total GI System HI Across Media =	NA
Total Immune System HI Across Media =	2E-02
Total Kidney HI Across Media =	NA
Total Liver HI Across Media =	NA
Total Nervous System HI Across Media =	2E-02
Total Respiratory HI Across Media =	1E-01
Total Skin HI Across Media =	4E-01
Total Whole Body HI Across Media =	2E-03

TABLE 9.12.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	2E-05	NA	6E-07	2E-05	skin	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	immune system	NA	NA	NA	NA
			Benzo(a)anthracene	2E-07	NA	2E-08	2E-07	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-06	NA	1E-07	2E-06	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2E-07	NA	1E-08	2E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	5E-07	NA	3E-08	5E-07	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	1E-07	NA	8E-09	1E-07	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
		Exposure Point Total		2E-05	NA	8E-07	2E-05		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			2E-05	NA	8E-07	2E-05		0E+00	NA	0E+00	0E+00

TABLE 9.12.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Edgewater Enterprises Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	3E-08	NA	3E-08	NA	NA	NA	NA	NA
			Chromium	NA	2E-07	NA	2E-07	respiratory	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	2E-11	NA	2E-11	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	2E-11	NA	2E-11	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	9E-12	NA	9E-12	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	NA	NA	NA
		Exposure Point Total		NA	2E-07	NA	2E-07		NA	0E+00	NA	0E+00
	Exposure Medium Total			NA	2E-07	NA	2E-07		NA	0E+00	NA	0E+00
Medium Total				2E-05	2E-07	8E-07	2E-05		0E+00	0E+00	0E+00	0E+00
Receptor Total				2E-05	2E-07	8E-07	2E-05		0E+00	0E+00	0E+00	0E+00

Table 9.12.CTE Supplement
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Receptor Total	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient (Adult Resident)				Non-Carcinogenic Hazard Quotient (Child Resident)			
	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total
Edgewater												
Surface Soil	2.1E-05	2.5E-07	8.1E-07	2.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E+00	1.7E-01	3.1E-02	1.6E+00
Above Clay	9.7E-01	1.2E-03	9.0E-01	1.0E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	NA	2.2E+02	2.7E+04
Below Clay	2.5E-03	3.4E-03	5.4E-04	6.4E-03	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.3E+01	NA	1.4E+01	9.6E+01
Surface Soil + Above Clay	9.7E-01	1.2E-03	9.0E-01	1.9E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	1.7E-01	2.2E+02	2.7E+04
Surface Soil + Below Clay	2.5E-03	3.4E-03	5.4E-04	6.5E-03	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.4E+01	1.7E-01	1.4E+01	9.8E+01

	Adult Resident				
	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay
Total Blood HI Across Media =	NA	3E+01	1E-01	3E+01	1E-01
Total CNS HI Across Media =	NA	7E+00	4E-04	7E+00	4E-04
Total GI System HI Across Media =	NA	NA	1E-02	NA	1E-02
Total Kidney HI Across Media =	NA	3E+00	4E+01	3E+00	4E+01
Total Liver HI Across Media =	NA	2E+00	4E+01	2E+00	4E+01
Total Nervous System HI Across Media =	NA	5E+00	2E+00	5E+00	2E+00
Total Respiratory HI Across Media =	NA	6E+02	1E+01	6E+02	1E+01
Total Skin HI Across Media =	NA	1E+04	5E-01	1E+04	5E-01
Total Whole Body HI Across Media =	NA	3E+01	4E-01	3E+01	4E-01
Total Eyes HI Across Media =	NA	3E-02	2E+00	3E-02	2E+00
Total Heart HI Across Media =	NA	NA	4E-04	NA	4E-04
Total Developmental HI Across Media =	NA	1E-01	NA	1E-01	NA
Total Fetus HI Across Media =	NA	5E-01	4E+01	5E-01	4E+01
Total Body Weight HI Across Media =	NA	3E-01	NA	3E-01	NA

Child Resident				
Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay
5E-02	4E+01	1E-01	4E+01	2E-01
2E-02	2E+01	1E-03	2E+01	2E-02
NA	NA	1E-03	NA	1E-03
NA	8E+00	9E+01	8E+00	9E+01
NA	5E+00	9E+01	5E+00	9E+01
2E-02	NA	NA	2E-02	2E-02
1E-01	5E+01	3E-01	5E+01	4E-01
4E-01	3E+04	1E+00	3E+04	2E+00
2E-03	6E+01	9E-01	6E+01	9E-01
NA	NA	NA	NA	NA
NA	NA	1E-03	NA	1E-03
NA	NA	NA	NA	NA
NA	1E+00	9E+01	1E+00	9E+01
NA	7E-01	NA	7E-01	NA

TABLE 9.14.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Daycare Child
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Arsenic	8E-06	NA	1E-06	9E-06	skin	2E-01	NA	3E-02	2E-01
			Chromium	NA	NA	NA	NA	NOE	2E-01	NA	3E-02	2E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	2E-05	NA	7E-06	3E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-04	NA	6E-05	3E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	3E-05	NA	7E-06	3E-05	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	1E-06	NA	4E-07	2E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	4E-05	NA	1E-05	5E-05	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	1E-05	NA	4E-06	2E-05	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	3E-03	NA	2E-03	5E-03
		Exposure Point Total		3E-04	NA	9E-05	4E-04		4E-01	NA	7E-02	4E-01
	Exposure Medium Total			3E-04	NA	9E-05	4E-04		4E-01	NA	7E-02	4E-01

TABLE 9.14.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Daycare Child
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Arsenic	NA	4E-09	NA	4E-09	NA	NA	NA	NA	NA
			Chromium	NA	8E-08	NA	8E-08	respiratory	NA	8E-04	NA	8E-04
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	9E-10	NA	9E-10	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	8E-09	NA	8E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	5E-11	NA	5E-11	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	5E-10	NA	5E-10	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	8E-02	NA	8E-02
		Exposure Point Total		NA	1E-07	NA	1E-07		NA	8E-02	NA	8E-02
	Exposure Medium Total			NA	1E-07	NA	1E-07		NA	8E-02	NA	8E-02
Medium Total				3E-04	1E-07	9E-05	4E-04		4E-01	8E-02	7E-02	5E-01
Receptor Total				3E-04	1E-07	9E-05	4E-04		4E-01	8E-02	7E-02	5E-01

NA = Not applicable or not available

Total Respiratory HI Across Media =	8E-02
Total Skin HI Across Media =	2E-01
Total Whole Body HI Across Media =	5E-03

TABLE 9.15.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	115 River Road Subsurface Soil (0 - 10 ft)	Arsenic	5E-07	NA	2E-07	7E-07	skin	8E-02	NA	3E-02	1E-01
			Chromium	NA	NA	NA	NA	NOE	4E-03	NA	2E-03	6E-03
			Iron	NA	NA	NA	NA	NA	1E-01	NA	1E-03	1E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1E-03	NA	4E-04	2E-03
			Vanadium	NA	NA	NA	NA	NA	3E-03	NA	1E-03	5E-03
			Mercury	NA	NA	NA	NA	immune system	3E-04	NA	4E-05	3E-04
			Benzene	2E-08	NA	2E-09	2E-08	blood	6E-03	NA	6E-04	7E-03
			Toluene	NA	NA	NA	NA	kidney	4E-05	NA	4E-06	4E-05
			Xylene (Total)	NA	NA	NA	NA	whole body	1E-03	NA	1E-04	1E-03
			2,4-Dinitrotoluene	NA	NA	NA	NA	GI system, nervous system	1E-02	NA	1E-02	2E-02
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	5E-01	NA	4E-02	5E-01
			Acenaphthene	NA	NA	NA	NA	liver	2E-03	NA	2E-03	4E-03
			Benzo(a)anthracene	2E-06	NA	3E-06	5E-06	NA	NA	NA	NA	NA
			Benzo(a)pyrene	1E-05	NA	2E-05	3E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	1E-06	NA	2E-06	3E-06	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	5E-08	NA	7E-08	1E-07	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	kidney	7E-03	NA	6E-04	7E-03
			Carbazole	4E-08	NA	4E-09	4E-08	NA	NA	NA	NA	NA
			Chrysene	5E-08	NA	6E-08	1E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2E-06	NA	3E-06	5E-06	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	1E-03	NA	2E-03	3E-03
			Fluorene	NA	NA	NA	NA	blood	2E-03	NA	3E-03	6E-03
			Indeno(1,2,3-c,d)pyrene	6E-07	NA	8E-07	1E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	1E-01	NA	1E-01	2E-01
			Phenanthrene	NA	NA	NA	NA	NOE	7E-04	NA	7E-05	7E-04
			Pyrene	NA	NA	NA	NA	kidney	2E-03	NA	2E-03	4E-03
		Exposure Point Total		2E-05	NA	3E-05	5E-05		8E-01	NA	2E-01	1E+00
	Exposure Medium Total			2E-05	NA	3E-05	5E-05		8E-01	NA	2E-01	1E+00

TABLE 9.15.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	115 River Road Emissions from Subsurface Soil (0 - 10 ft)	Arsenic	NA	3E-08	NA	3E-08	NA	NA	NA	NA	NA
			Chromium	NA	3E-07	NA	3E-07	respiratory	NA	2E-02	NA	2E-02
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	8E-02	NA	8E-02
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	5E-05	NA	5E-05
			Benzene	NA	4E-07	NA	4E-07	blood	NA	1E-01	NA	1E-01
			Toluene	NA	NA	NA	NA	nervous system	NA	2E-03	NA	2E-03
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	2E-01	NA	2E-01
			2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	5E-09	NA	5E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	3E-08	NA	3E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	4E-09	NA	4E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	6E-09	NA	6E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	7E+00	NA	7E+00
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	8E-07	NA	8E-07		NA	7E+00	NA	7E+00
	Exposure Medium Total			NA	8E-07	NA	8E-07		NA	7E+00	NA	7E+00
Medium Total				2E-05	8E-07	3E-05	5E-05		8E-01	7E+00	2E-01	8E+00

TABLE 9.15.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater (Excavation)	115 River Road (Excavation)	Arsenic	NA	NA	1E-09	1E-09	skin	NA	NA	2E-04	2E-04
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	NA	1E-08	1E-08	blood	NA	NA	4E-03	4E-03
			o-Xylene	NA	NA	NA	NA	whole body	NA	NA	3E-05	3E-05
			Xylene (Total)	NA	NA	NA	NA	whole body	NA	NA	1E-04	1E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	1E-02	1E-02
			Acenaphthene	NA	NA	NA	NA	liver	NA	NA	1E-04	1E-04
			Benzo(a)anthracene	NA	NA	4E-08	4E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	4E-07	4E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	4E-08	4E-08	NA	NA	NA	NA	NA
			Carbazole	NA	NA	2E-09	2E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	blood	NA	NA	4E-06	4E-06
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	2E-02	2E-02
		Exposure Point Total		NA	NA	5E-07	5E-07		NA	NA	4E-02	4E-02
	Exposure Medium Total			NA	NA	5E-07	5E-07		NA	NA	4E-02	4E-02

TABLE 9.15.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air (Excavation)	115 River Road (Excavation)	Benzene	NA	2E-08	NA	2E-08	blood	NA	5E-03	NA	5E-03
			o-Xylene	NA	NA	NA	NA	nervous system	NA	2E-04	NA	2E-04
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	7E-04	NA	7E-04
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	4E-01	NA	4E-01
		Exposure Point Total		NA	2E-08	NA	2E-08		NA	4E-01	NA	4E-01
	Exposure Medium Total			NA	2E-08	NA	2E-08		NA	4E-01	NA	4E-01
Medium Total				NA	2E-08	5E-07	5E-07		NA	4E-01	4E-02	4E-01
Receptor Total				2E-05	8E-07	3E-05	5E-05		8E-01	8E+00	3E-01	9E+00

NA = Not applicable or not available

Total Blood HI Across Media =	1E-01
Total CNS HI Across Media =	2E-03
Total GI System HI Across Media =	2E-02
Total Immune System HI Across Media =	3E-04
Total Kidney HI Across Media =	1E-02
Total Liver HI Across Media =	8E-03
Total Nervous System HI Across Media =	3E-01
Total Respiratory HI Across Media =	8E+00
Total Skin HI Across Media =	1E-01
Total Whole Body HI Across Media =	3E-01

TABLE 9.17.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Arsenic	NA	NA	NA	NA	skin	3E-01	NA	9E-03	3E-01
			Chromium	NA	NA	NA	NA	NOE	2E-01	NA	1E-02	2E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	4E-03	NA	6E-04	4E-03
		Exposure Point Total		0E+00	NA	0E+00	0E+00		5E-01	NA	2E-02	5E-01
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		5E-01	NA	2E-02	5E-01

TABLE 9.17.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	3E-03	NA	3E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	3E-01	NA	3E-01
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	3E-01	NA	3E-01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	3E-01	NA	3E-01
Medium Total				0E+00	0E+00	0E+00	0E+00		5E-01	3E-01	2E-02	8E-01
Receptor Total				0E+00	0E+00	0E+00	0E+00		5E-01	3E-01	2E-02	8E-01

NA = Not applicable or not available

Total Respiratory HI Across Media =	3E-01
Total Skin HI Across Media =	3E-01
Total Whole Body HI Across Media =	4E-03

TABLE 9.18.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Arsenic	1E-05	NA	4E-07	1E-05	skin	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	6E-05	NA	8E-06	7E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	5E-04	NA	7E-05	6E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	6E-05	NA	9E-06	7E-05	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	3E-06	NA	4E-07	4E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	9E-05	NA	1E-05	1E-04	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	3E-05	NA	4E-06	3E-05	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
		Exposure Point Total		8E-04	NA	1E-04	9E-04		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			8E-04	NA	1E-04	9E-04		0E+00	NA	0E+00	0E+00

TABLE 9.18.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Arsenic	NA	2E-08	NA	2E-08	NA	NA	NA	NA	NA
			Chromium	NA	5E-07	NA	5E-07	respiratory	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	6E-11	NA	6E-11	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	6E-10	NA	6E-10	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	NA	NA	NA
		Exposure Point Total		NA	5E-07	NA	5E-07		NA	0E+00	NA	0E+00
	Exposure Medium Total			NA	5E-07	NA	5E-07		NA	0E+00	NA	0E+00
Medium Total				8E-04	5E-07	1E-04	9E-04		0E+00	0E+00	0E+00	0E+00
Receptor Total				8E-04	5E-07	1E-04	9E-04		0E+00	0E+00	0E+00	0E+00

Table 9.18.CTE Supplement
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Receptor Total	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient (Adult Resident)				Non-Carcinogenic Hazard Quotient (Child Resident)			
	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total
115 River Road												
Surface Soil	7.7E-04	5.0E-07	1.0E-04	8.8E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-01	2.6E-01	2.0E-02	7.7E-01
Above Clay	9.7E-01	1.2E-03	9.0E-01	1.0E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	NA	2.2E+02	2.7E+04
Below Clay	2.5E-03	3.4E-03	5.4E-04	6.4E-03	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.3E+01	NA	1.4E+01	9.6E+01
Surface Soil + Above Clay	9.7E-01	1.2E-03	9.0E-01	1.9E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	2.6E-01	2.2E+02	2.7E+04
Surface Soil + Below Clay	3.3E-03	3.4E-03	6.5E-04	7.3E-03	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.3E+01	2.6E-01	1.4E+01	9.7E+01

	Adult Resident					Child Resident				
	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay
Total Blood HI Across Media =	NA	3E+01	1E-01	3E+01	1E-01	NA	4E+01	1E-01	4E+01	1E-01
Total CNS HI Across Media =	NA	7E+00	4E-04	7E+00	4E-04	NA	2E+01	1E-03	2E+01	1E-03
Total GI System HI Across Media =	NA	NA	1E-02	NA	1E-02	NA	NA	1E-03	NA	1E-03
Total Kidney HI Across Media =	NA	3E+00	4E+01	3E+00	4E+01	NA	8E+00	9E+01	8E+00	9E+01
Total Liver HI Across Media =	NA	2E+00	4E+01	2E+00	4E+01	NA	5E+00	9E+01	5E+00	9E+01
Total Nervous System HI Across Media =	NA	5E+00	2E+00	5E+00	2E+00	NA	NA	NA	NA	NA
Total Respiratory HI Across Media =	NA	6E+02	1E+01	6E+02	1E+01	3E-01	5E+01	3E-01	5E+01	6E-01
Total Skin HI Across Media =	NA	1E+04	5E-01	1E+04	5E-01	3E-01	3E+04	1E+00	3E+04	1E+00
Total Whole Body HI Across Media =	NA	3E+01	4E-01	3E+01	4E-01	4E-03	6E+01	9E-01	6E+01	9E-01
Total Eyes HI Across Media =	NA	3E-02	2E+00	3E-02	2E+00	NA	NA	NA	NA	NA
Total Heart HI Across Media =	NA	NA	4E-04	NA	4E-04	NA	NA	1E-03	NA	1E-03
Total Developmental HI Across Media =	NA	1E-01	NA	1E-01	NA	NA	NA	NA	NA	NA
Total Fetus HI Across Media =	NA	5E-01	4E+01	5E-01	4E+01	NA	1E+00	9E+01	1E+00	9E+01
Total Body Weight HI Across Media =	NA	3E-01	NA	3E-01	NA	NA	7E-01	NA	7E-01	NA

TABLE 9.20.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Arsenic	2E-06	NA	5E-08	2E-06	skin	3E-02	NA	8E-04	3E-02
			Chromium	NA	NA	NA	NA	NOE	2E-03	NA	7E-05	2E-03
			Benzo(a)anthracene	1E-06	NA	1E-07	2E-06	NA	NA	NA	NA	NA
			Benzo(a)pyrene	1E-05	NA	1E-06	2E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2E-06	NA	1E-07	2E-06	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	8E-08	NA	5E-09	8E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2E-06	NA	2E-07	3E-06	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	9E-07	NA	6E-08	9E-07	NA	NA	NA	NA	NA
		Exposure Point Total		2E-05	NA	1E-06	2E-05		3E-02	NA	8E-04	3E-02
	Exposure Medium Total			2E-05	NA	1E-06	2E-05		3E-02	NA	8E-04	3E-02

TABLE 9.20.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Former Lever Brothers Property Emissions from Surface Soil (0 - 2 ft)	Arsenic	NA	8E-10	NA	8E-10	NA	NA	NA	NA	NA
			Chromium	NA	1E-09	NA	1E-09	respiratory	NA	8E-06	NA	8E-06
			Benzo(a)anthracene	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	6E-12	NA	6E-12	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	6E-11	NA	6E-11	NA	NA	NA	NA	NA
		Exposure Point Total		NA	4E-09	NA	4E-09		NA	8E-06	NA	8E-06
	Exposure Medium Total			NA	4E-09	NA	4E-09		NA	8E-06	NA	8E-06
Medium Total				2E-05	4E-09	1E-06	2E-05		3E-02	8E-06	8E-04	3E-02
Receptor Total				2E-05	4E-09	1E-06	2E-05		3E-02	8E-06	8E-04	3E-02

NA = Not applicable or not available

Total Respiratory HI Across Media =	8E-06
Total Skin HI Across Media =	3E-02

TABLE 9.22.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Former Lever Brothers Property Subsurface Soil (0 - 10 ft)	Antimony	NA	NA	NA	NA	blood	9E-02	NA	6E-03	1E-01
			Arsenic	2E-06	NA	6E-07	3E-06	skin	3E-01	NA	1E-01	4E-01
			Cadmium	NA	NA	NA	NA	kidney	2E-03	NA	9E-04	3E-03
			Chromium	NA	NA	NA	NA	NOE	1E-03	NA	5E-04	2E-03
			Copper	NA	NA	NA	NA	GI system	5E-03	NA	5E-05	5E-03
			Iron	NA	NA	NA	NA	NA	4E-02	NA	4E-04	4E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1E-03	NA	3E-04	1E-03
			Nickel	NA	NA	NA	NA	body weight	3E-03	NA	6E-04	3E-03
			Thallium	NA	NA	NA	NA	blood	6E-03	NA	6E-05	6E-03
			Vanadium	NA	NA	NA	NA	NA	9E-03	NA	4E-03	1E-02
			Mercury	NA	NA	NA	NA	immune system	6E-04	NA	8E-05	6E-04
			Benzene	6E-10	NA	6E-11	6E-10	blood	2E-04	NA	2E-05	2E-04
			Tetrachloroethene	3E-09	NA	3E-10	4E-09	liver	4E-06	NA	4E-07	5E-06
			Trichloroethene	2E-09	NA	2E-10	3E-09	liver, kidney, fetus	1E-03	NA	1E-04	2E-03
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	6E-03	NA	6E-04	7E-03
			Benzo(a)anthracene	5E-07	NA	6E-07	1E-06	NA	NA	NA	NA	NA
			Benzo(a)pyrene	6E-06	NA	8E-06	1E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	6E-07	NA	7E-07	1E-06	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	3E-08	NA	4E-08	7E-08	NA	NA	NA	NA	NA
			Carbazole	1E-08	NA	1E-09	2E-08	NA	NA	NA	NA	NA
			Chrysene	6E-09	NA	7E-09	1E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	1E-06	NA	2E-06	3E-06	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	2E-04	NA	3E-04	5E-04
			Indeno(1,2,3-c,d)pyrene	4E-07	NA	5E-07	9E-07	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	2E-03	NA	2E-03	4E-03
			Pyrene	NA	NA	NA	NA	kidney	3E-04	NA	3E-04	6E-04
		Exposure Point Total		1E-05	NA	1E-05	2E-05		5E-01	NA	1E-01	6E-01
	Exposure Medium Total			1E-05	NA	1E-05	2E-05		5E-01	NA	1E-01	6E-01

TABLE 9.22.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Former Lever Brothers Property	Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Emissions from	Arsenic	NA	1E-07	NA	1E-07	NA	NA	NA	NA	NA
		Subsurface Soil (0 - 10 ft)	Cadmium	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Chromium	NA	9E-08	NA	9E-08	respiratory	NA	5E-03	NA	5E-03
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	6E-02	NA	6E-02
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	1E-04	NA	1E-04
			Benzene	NA	1E-08	NA	1E-08	blood	NA	4E-03	NA	4E-03
			Tetrachloroethene	NA	5E-09	NA	5E-09	NA	NA	2E-03	NA	2E-03
			Trichloroethene	NA	1E-07	NA	1E-07	nervous system, eyes	NA	2E-03	NA	2E-03
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	1E-08	NA	1E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	7E-11	NA	7E-11	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	3E-09	NA	3E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	9E-10	NA	9E-10	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E-01	NA	1E-01
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	4E-07	NA	4E-07		NA	2E-01	NA	2E-01
	Exposure Medium Total			NA	4E-07	NA	4E-07		NA	2E-01	NA	2E-01
Medium Total				1E-05	4E-07	1E-05	2E-05		5E-01	2E-01	1E-01	8E-01

TABLE 9.22.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater (Excavation)	Former Lever Brothers Property (Excavation)	Arsenic	NA	NA	1E-06	1E-06	skin	NA	NA	1E-01	1E-01
			Iron	NA	NA	NA	NA	NA	NA	NA	7E-03	7E-03
			Benzene	NA	NA	4E-08	4E-08	blood	NA	NA	1E-02	1E-02
			Chloroethane	NA	NA	8E-12	8E-12	fetus	NA	NA	5E-07	5E-07
			Ethylbenzene	NA	NA	NA	NA	liver, kidney	NA	NA	5E-04	5E-04
			Toluene	NA	NA	NA	NA	kidney	NA	NA	5E-05	5E-05
			Trichloroethene	NA	NA	6E-10	6E-10	liver, kidney, fetus	NA	NA	4E-04	4E-04
			m,p-Xylene	NA	NA	NA	NA	whole body	NA	NA	2E-03	2E-03
			o-Xylene	NA	NA	NA	NA	whole body	NA	NA	6E-04	6E-04
			Xylene (Total)	NA	NA	NA	NA	whole body	NA	NA	6E-04	6E-04
			2,4-Dimethylphenol	NA	NA	NA	NA	blood	NA	NA	2E-04	2E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	1E-01	1E-01
			3&4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	NA	NA	8E-04	8E-04
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	NA	NA	1E-03	1E-03
			Acenaphthene	NA	NA	NA	NA	liver	NA	NA	3E-04	3E-04
			Benzo(a)anthracene	NA	NA	1E-08	1E-08	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	kidney	NA	NA	1E-03	1E-03
			Carbazole	NA	NA	1E-08	1E-08	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	blood	NA	NA	2E-05	2E-05
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	5E-02	5E-02
		Exposure Point Total		NA	NA	1E-06	1E-06		NA	NA	3E-01	3E-01
	Exposure Medium Total			NA	NA	1E-06	1E-06		NA	NA	3E-01	3E-01

TABLE 9.22.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air (Excavation)	Former Lever Brothers Property (Excavation)	Benzene	NA	6E-08	NA	6E-08	blood	NA	2E-02	NA	2E-02
			Chloroethane	NA	NA	NA	NA	developmental	NA	5E-07	NA	5E-07
			Ethylbenzene	NA	NA	NA	NA	developmental	NA	1E-04	NA	1E-04
			Toluene	NA	NA	NA	NA	nervous system	NA	8E-05	NA	8E-05
			Trichloroethene	NA	2E-09	NA	2E-09	nervous system, eyes	NA	3E-05	NA	3E-05
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	8E-03	NA	8E-03
			o-Xylene	NA	NA	NA	NA	nervous system	NA	4E-03	NA	4E-03
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	4E-03	NA	4E-03
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			1,1'-Biphenyl	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	8E-01	NA	8E-01
		Exposure Point Total		NA	6E-08	NA	6E-08		NA	8E-01	NA	8E-01
	Exposure Medium Total			NA	6E-08	NA	6E-08		NA	8E-01	NA	8E-01
Medium Total				NA	6E-08	1E-06	1E-06		NA	8E-01	3E-01	1E+00
Receptor Total				1E-05	4E-07	1E-05	2E-05		5E-01	1E+00	5E-01	2E+00

NA = Not applicable or not available

Total Blood HI Across Media =	1E-01
Total CNS HI Across Media =	3E-03
Total GI System HI Across Media =	5E-03
Total Immune System HI Across Media =	6E-04
Total Kidney HI Across Media =	7E-03
Total Liver HI Across Media =	3E-03
Total Nervous System HI Across Media =	8E-02
Total Respiratory HI Across Media =	1.0E+00
Total Skin HI Across Media =	6E-01
Total Whole Body HI Across Media =	6E-02
Total Eyes HI Across Media =	2E-03
Total Developmental HI Across Media =	1E-04
Total Fetus HI Across Media =	2E-03
Total Body Weight HI Across Media =	3E-03

TABLE 9.24.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Arsenic	NA	NA	NA	NA	skin	1E+00	NA	3E-02	1E+00
			Chromium	NA	NA	NA	NA	NOE	6E-02	NA	3E-03	6E-02
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		0E+00	NA	0E+00	0E+00		1E+00	NA	4E-02	1E+00
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		1E+00	NA	4E-02	1E+00

TABLE 9.24.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Former Lever Brothers Property Emissions from Surface Soil (0-2 ft)	Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	8E-04	NA	8E-04
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	8E-04	NA	8E-04
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	8E-04	NA	8E-04
Medium Total				0E+00	0E+00	0E+00	0E+00		1E+00	8E-04	4E-02	1E+00
Receptor Total				0E+00	0E+00	0E+00	0E+00		1E+00	8E-04	4E-02	1E+00

NA = Not applicable or not available

Total Respiratory HI Across Media =	8E-04
Total Skin HI Across Media =	1.0E+00

TABLE 9.25.CTE

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Arsenic	4E-05	NA	1E-06	4E-05	skin	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Benzo(a)anthracene	4E-05	NA	6E-06	5E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	4E-04	NA	6E-05	5E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	5E-05	NA	7E-06	6E-05	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	2E-06	NA	3E-07	3E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	7E-05	NA	9E-06	8E-05	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	2E-05	NA	3E-06	3E-05	NA	NA	NA	NA	NA
		Exposure Point Total		6E-04	NA	8E-05	7E-04		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			6E-04	NA	8E-05	7E-04		0E+00	NA	0E+00	0E+00

TABLE 9.25.CTE

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Former Lever Brothers Property Emissions from Surface Soil (0-2 ft)	Arsenic	NA	7E-08	NA	7E-08	NA	NA	NA	NA	NA
			Chromium	NA	1E-07	NA	1E-07	respiratory	NA	NA	NA	NA
			Benzo(a)anthracene	NA	8E-10	NA	8E-10	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	8E-09	NA	8E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	5E-10	NA	5E-10	NA	NA	NA	NA	NA
		Exposure Point Total		NA	2E-07	NA	2E-07		NA	0E+00	NA	0E+00
	Exposure Medium Total			NA	2E-07	NA	2E-07		NA	0E+00	NA	0E+00
Medium Total				6E-04	2E-07	8E-05	7E-04		0E+00	0E+00	0E+00	0E+00
Receptor Total				6E-04	2E-07	8E-05	7E-04		0E+00	0E+00	0E+00	0E+00

Table 9.25.CTE Supplement
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Receptor Total	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient (Adult Resident)				Non-Carcinogenic Hazard Quotient (Child Resident)			
	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total
Former Lever Brothers Property												
Surface Soil	6.4E-04	2.2E-07	8.3E-05	7.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E+00	7.9E-04	3.5E-02	1.1E+00
Above Clay	9.7E-01	1.2E-03	9.0E-01	1.0E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	NA	2.2E+02	2.7E+04
Below Clay	2.5E-03	3.4E-03	5.4E-04	6.4E-03	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.3E+01	NA	1.4E+01	9.6E+01
Surface Soil + Above Clay	9.7E-01	1.2E-03	9.0E-01	1.9E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	7.9E-04	2.2E+02	2.7E+04
Surface Soil + Below Clay	3.1E-03	3.4E-03	6.3E-04	7.2E-03	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.4E+01	7.9E-04	1.4E+01	9.7E+01

	Adult Resident					Child Resident				
	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay
Total Blood HI Across Media =	NA	3E+01	1E-01	3E+01	1E-01	NA	4E+01	1E-01	4E+01	1E-01
Total CNS HI Across Media =	NA	7E+00	4E-04	7E+00	4E-04	NA	2E+01	1E-03	2E+01	1E-03
Total GI System HI Across Media =	NA	NA	1E-02	NA	1E-02	NA	NA	1E-03	NA	1E-03
Total Kidney HI Across Media =	NA	3E+00	4E+01	3E+00	4E+01	NA	8E+00	9E+01	8E+00	9E+01
Total Liver HI Across Media =	NA	2E+00	4E+01	2E+00	4E+01	NA	5E+00	9E+01	5E+00	9E+01
Total Nervous System HI Across Media =	NA	5E+00	2E+00	5E+00	2E+00	NA	NA	NA	NA	NA
Total Respiratory HI Across Media =	NA	6E+02	1E+01	6E+02	1E+01	8E-04	5E+01	3E-01	5E+01	3E-01
Total Skin HI Across Media =	NA	1E+04	5E-01	1E+04	5E-01	1E+00	3E+04	1E+00	3E+04	2E+00
Total Whole Body HI Across Media =	NA	3E+01	4E-01	3E+01	4E-01	NA	6E+01	9E-01	6E+01	9E-01
Total Eyes HI Across Media =	NA	3E-02	2E+00	3E-02	2E+00	NA	NA	NA	NA	NA
Total Heart HI Across Media =	NA	NA	4E-04	NA	4E-04	NA	NA	1E-03	NA	1E-03
Total Developmental HI Across Media =	NA	1E-01	NA	1E-01	NA	NA	NA	NA	NA	NA
Total Fetus HI Across Media =	NA	5E-01	4E+01	5E-01	4E+01	NA	1E+00	9E+01	1E+00	9E+01
Total Body Weight HI Across Media =	NA	3E-01	NA	3E-01	NA	NA	7E-01	NA	7E-01	NA

TABLE 9.27.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	1E-04	NA	1E-07	1E-04
			Antimony	NA	NA	NA	NA	blood	5E-04	NA	4E-06	5E-04
			Arsenic	5E-07	NA	2E-08	6E-07	skin	9E-03	NA	3E-04	1E-02
			Chromium	NA	NA	NA	NA	NOE	2E-04	NA	8E-06	2E-04
			Copper	NA	NA	NA	NA	GI system	7E-05	NA	8E-08	7E-05
			Iron	NA	NA	NA	NA	NA	1E-03	NA	1E-06	1E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	3E-05	NA	9E-07	3E-05
			Nickel	NA	NA	NA	NA	body weight	6E-05	NA	2E-06	6E-05
			Thallium	NA	NA	NA	NA	blood	8E-04	NA	9E-07	8E-04
			Vanadium	NA	NA	NA	NA	NA	6E-04	NA	3E-05	6E-04
			Mercury	NA	NA	NA	NA	immune system	2E-04	NA	2E-06	2E-04
			Aroclor-1254	2E-09	NA	3E-10	2E-09	immune system	4E-04	NA	6E-05	4E-04
			Aroclor-1260	5E-09	NA	8E-10	6E-09	immune system	1E-03	NA	2E-04	1E-03
			Benzene	8E-10	NA	1E-11	9E-10	blood	3E-05	NA	3E-07	3E-05
			m,p-Xylene	NA	NA	NA	NA	whole body	1E-05	NA	1E-07	1E-05
			o-Xylene	NA	NA	NA	NA	whole body	5E-06	NA	6E-08	5E-06
			Xylene (Total)	NA	NA	NA	NA	whole body	1E-05	NA	1E-07	1E-05
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	2E-03	NA	2E-05	2E-03
			Acenaphthene	NA	NA	NA	NA	liver	5E-05	NA	8E-06	6E-05
			Benzo(a)anthracene	2E-07	NA	3E-08	3E-07	NA	NA	NA	NA	NA
			Benzo(a)pyrene	1E-06	NA	2E-07	2E-06	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	1E-07	NA	2E-08	2E-07	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	1E-08	NA	2E-09	1E-08	NA	NA	NA	NA	NA
			Carbazole	3E-09	NA	3E-11	3E-09	NA	NA	NA	NA	NA
			Chrysene	2E-09	NA	3E-10	3E-09	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	3E-07	NA	4E-08	3E-07	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	2E-04	NA	4E-05	3E-04
			Fluorene	NA	NA	NA	NA	blood	1E-04	NA	1E-05	1E-04
			Indeno(1,2,3-c,d)pyrene	8E-08	NA	1E-08	9E-08	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	9E-04	NA	1E-04	1E-03
			Phenanthrene	NA	NA	NA	NA	NOE	5E-05	NA	5E-07	5E-05
			Pyrene	NA	NA	NA	NA	kidney	2E-04	NA	3E-05	3E-04
		Exposure Point Total		3E-06	NA	3E-07	3E-06		2E-02	NA	8E-04	2E-02
	Exposure Medium Total			3E-06	NA	3E-07	3E-06		2E-02	NA	8E-04	2E-02

TABLE 9.27.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	4E-06	NA	4E-06
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Chromium	NA	1E-10	NA	1E-10	respiratory	NA	7E-07	NA	7E-07
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	1E-05	NA	1E-05
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1254	NA	1E-14	NA	1E-14	NA	NA	NA	NA	NA
			Aroclor-1260	NA	4E-14	NA	4E-14	NA	NA	NA	NA	NA
			Benzene	NA	6E-09	NA	6E-09	blood	NA	2E-04	NA	2E-04
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	7E-04	NA	7E-04
			o-Xylene	NA	NA	NA	NA	nervous system	NA	3E-04	NA	3E-04
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	6E-04	NA	6E-04
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	4E-12	NA	4E-12	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	2E-11	NA	2E-11	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	2E-12	NA	2E-12	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	2E-13	NA	2E-13	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	4E-12	NA	4E-12	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	1E-12	NA	1E-12	NA	NA	NA	NA	NA

TABLE 9.27.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	2E-02	NA	2E-02
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	6E-09	NA	6E-09		NA	2E-02	NA	2E-02
	Exposure Medium Total			NA	6E-09	NA	6E-09		NA	2E-02	NA	2E-02
Medium Total				3E-06	6E-09	3E-07	3E-06		2E-02	2E-02	8E-04	4E-02
Receptor Total				3E-06	6E-09	3E-07	3E-06		2E-02	2E-02	8E-04	4E-02

NA = Not applicable or not available

Total Blood HI Across Media =	3E-03
Total CNS HI Across Media =	6E-05
Total GI System HI Across Media =	1E-04
Total Immune System HI Across Media =	3E-03
Total Kidney HI Across Media =	5E-04
Total Liver HI Across Media =	6E-04
Total Nervous System HI Across Media =	3E-03
Total Respiratory HI Across Media =	4E-02
Total Skin HI Across Media =	2E-02
Total Whole Body HI Across Media =	2E-03
Total Body Weight HI Across Media =	1E-04

TABLE 9.26.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	2E-04	NA	2E-07	2E-04
			Antimony	NA	NA	NA	NA	blood	9E-04	NA	5E-06	9E-04
			Arsenic	1E-06	NA	3E-08	1E-06	skin	2E-02	NA	4E-04	2E-02
			Chromium	NA	NA	NA	NA	NOE	3E-04	NA	1E-05	3E-04
			Copper	NA	NA	NA	NA	GI system	1E-04	NA	1E-07	1E-04
			Iron	NA	NA	NA	NA	NA	2E-03	NA	2E-06	2E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	6E-05	NA	1E-06	6E-05
			Nickel	NA	NA	NA	NA	body weight	1E-04	NA	2E-06	1E-04
			Thallium	NA	NA	NA	NA	blood	1E-03	NA	1E-06	1E-03
			Vanadium	NA	NA	NA	NA	NA	1E-03	NA	3E-05	1E-03
			Mercury	NA	NA	NA	NA	immune system	3E-04	NA	3E-06	3E-04
			Aroclor-1254	4E-09	NA	4E-10	4E-09	immune system	6E-04	NA	7E-05	7E-04
			Aroclor-1260	1E-08	NA	1E-09	1E-08	immune system	2E-03	NA	2E-04	2E-03
			Benzene	2E-09	NA	1E-11	2E-09	blood	5E-05	NA	4E-07	5E-05
			m,p-Xylene	NA	NA	NA	NA	whole body	2E-05	NA	2E-07	2E-05
			o-Xylene	NA	NA	NA	NA	whole body	1E-05	NA	8E-08	1E-05
			Xylene (Total)	NA	NA	NA	NA	whole body	2E-05	NA	2E-07	2E-05
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	3E-03	NA	2E-05	3E-03
			Acenaphthene	NA	NA	NA	NA	liver	1E-04	NA	1E-05	1E-04
			Benzo(a)anthracene	1E-05	NA	1E-06	2E-05	NA	NA	NA	NA	NA
			Benzo(a)pyrene	9E-05	NA	6E-06	1E-04	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	9E-06	NA	6E-07	1E-05	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	8E-07	NA	5E-08	8E-07	NA	NA	NA	NA	NA
			Carbazole	6E-09	NA	5E-11	6E-09	NA	NA	NA	NA	NA
			Chrysene	1E-07	NA	1E-08	2E-07	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2E-05	NA	1E-06	2E-05	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	4E-04	NA	5E-05	5E-04
			Fluorene	NA	NA	NA	NA	blood	2E-04	NA	2E-05	2E-04
			Indeno(1,2,3-c,d)pyrene	5E-06	NA	3E-07	5E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	2E-03	NA	2E-04	2E-03
			Phenanthrene	NA	NA	NA	NA	NOE	8E-05	NA	7E-07	8E-05
			Pyrene	NA	NA	NA	NA	kidney	4E-04	NA	4E-05	5E-04
		Exposure Point Total		1E-04	NA	9E-06	1E-04		3E-02	NA	1E-03	3E-02
	Exposure Medium Total			1E-04	NA	9E-06	1E-04		3E-02	NA	1E-03	3E-02

TABLE 9.26.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 Emissions from Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	7E-06	NA	7E-06
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	4E-10	NA	4E-10	NA	NA	NA	NA	NA
			Chromium	NA	2E-10	NA	2E-10	respiratory	NA	1E-06	NA	1E-06
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-05	NA	2E-05
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1254	NA	3E-14	NA	3E-14	NA	NA	NA	NA	NA
			Aroclor-1260	NA	7E-14	NA	7E-14	NA	NA	NA	NA	NA
			Benzene	NA	1E-08	NA	1E-08	blood	NA	4E-04	NA	4E-04
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	1E-03	NA	1E-03
			o-Xylene	NA	NA	NA	NA	nervous system	NA	5E-04	NA	5E-04
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	1E-03	NA	1E-03
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	7E-09	NA	7E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	7E-10	NA	7E-10	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	6E-11	NA	6E-11	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	4E-10	NA	4E-10	NA	NA	NA	NA	NA

TABLE 9.26.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	4E-02	NA	4E-02
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	2E-08	NA	2E-08		NA	4E-02	NA	4E-02
	Exposure Medium Total			NA	2E-08	NA	2E-08		NA	4E-02	NA	4E-02
Medium Total				1E-04	2E-08	9E-06	1E-04		3E-02	4E-02	1E-03	7E-02
Receptor Total				1E-04	2E-08	9E-06	1E-04		3E-02	4E-02	1E-03	7E-02

NA = Not applicable or not available

Total Blood HI Across Media =	3E-03
Total CNS HI Across Media =	6E-05
Total GI System HI Across Media =	1E-04
Total Immune System HI Across Media =	3E-03
Total Kidney HI Across Media =	5E-04
Total Liver HI Across Media =	6E-04
Total Nervous System HI Across Media =	3E-03
Total Respiratory HI Across Media =	4E-02
Total Skin HI Across Media =	2E-02
Total Whole Body HI Across Media =	2E-03
Total Body Weight HI Across Media =	1E-04

TABLE 9.27.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	5E-03	NA	6E-06	5E-03
			Antimony	NA	NA	NA	NA	blood	2E-02	NA	2E-04	2E-02
			Arsenic	1E-05	NA	6E-07	2E-05	skin	3E-01	NA	1E-02	4E-01
			Chromium	NA	NA	NA	NA	NOE	6E-03	NA	3E-04	7E-03
			Copper	NA	NA	NA	NA	GI system	3E-03	NA	3E-06	3E-03
			Iron	NA	NA	NA	NA	NA	4E-02	NA	6E-05	4E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	1E-03	NA	4E-05	1E-03
			Nickel	NA	NA	NA	NA	body weight	2E-03	NA	7E-05	2E-03
			Thallium	NA	NA	NA	NA	blood	3E-02	NA	4E-05	3E-02
			Vanadium	NA	NA	NA	NA	NA	2E-02	NA	1E-03	2E-02
			Mercury	NA	NA	NA	NA	immune system	6E-03	NA	1E-04	6E-03
			Aroclor-1254	5E-08	NA	9E-09	6E-08	immune system	1E-02	NA	2E-03	2E-02
			Aroclor-1260	1E-07	NA	3E-08	2E-07	immune system	4E-02	NA	7E-03	4E-02
			Benzene	2E-08	NA	3E-10	2E-08	blood	1E-03	NA	1E-05	1E-03
			m,p-Xylene	NA	NA	NA	NA	whole body	4E-04	NA	5E-06	4E-04
			o-Xylene	NA	NA	NA	NA	whole body	2E-04	NA	3E-06	2E-04
			Xylene (Total)	NA	NA	NA	NA	whole body	4E-04	NA	6E-06	4E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	6E-02	NA	8E-04	6E-02
			Acenaphthene	NA	NA	NA	NA	liver	2E-03	NA	3E-04	2E-03
			Benzo(a)anthracene	6E-06	NA	1E-06	7E-06	NA	NA	NA	NA	NA
			Benzo(a)pyrene	4E-05	NA	6E-06	4E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	4E-06	NA	7E-07	5E-06	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	3E-07	NA	6E-08	4E-07	NA	NA	NA	NA	NA
			Carbazole	8E-08	NA	1E-09	8E-08	NA	NA	NA	NA	NA
			Chrysene	6E-08	NA	1E-08	7E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	7E-06	NA	1E-06	8E-06	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	9E-03	NA	2E-03	1E-02
			Fluorene	NA	NA	NA	NA	blood	4E-03	NA	6E-04	4E-03
			Indeno(1,2,3-c,d)pyrene	2E-06	NA	4E-07	2E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	3E-02	NA	6E-03	4E-02
			Phenanthrene	NA	NA	NA	NA	NOE	2E-03	NA	2E-05	2E-03
			Pyrene	NA	NA	NA	NA	kidney	8E-03	NA	1E-03	1E-02
		Exposure Point Total		7E-05	NA	1E-05	8E-05		6E-01	NA	4E-02	7E-01
	Exposure Medium Total			7E-05	NA	1E-05	8E-05		6E-01	NA	4E-02	7E-01

TABLE 9.27.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	2E-03	NA	2E-03
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	7E-08	NA	7E-08	NA	NA	NA	NA	NA
			Chromium	NA	4E-08	NA	4E-08	respiratory	NA	3E-04	NA	3E-04
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	5E-03	NA	5E-03
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1254	NA	4E-12	NA	4E-12	NA	NA	NA	NA	NA
			Aroclor-1260	NA	1E-11	NA	1E-11	NA	NA	NA	NA	NA
			Benzene	NA	2E-06	NA	2E-06	blood	NA	9E-02	NA	9E-02
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	3E-01	NA	3E-01
			o-Xylene	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1E-01
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	3E-01	NA	3E-01
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	8E-09	NA	8E-09	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	8E-10	NA	8E-10	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	7E-11	NA	7E-11	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	4E-10	NA	4E-10	NA	NA	NA	NA	NA

TABLE 9.27.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	9E+00	NA	9E+00
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	2E-06	NA	2E-06		NA	1E+01	NA	1E+01
	Exposure Medium Total			NA	2E-06	NA	2E-06		NA	1E+01	NA	1E+01
Medium Total				7E-05	2E-06	1E-05	8E-05		6E-01	1E+01	4E-02	1E+01
Receptor Total				7E-05	2E-06	1E-05	8E-05		6E-01	1E+01	4E-02	1E+01

NA = Not applicable or not available

Total Blood HI Across Media =	1E-01
Total CNS HI Across Media =	1E-03
Total GI System HI Across Media =	3E-03
Total Immune System HI Across Media =	6E-02
Total Kidney HI Across Media =	1E-02
Total Liver HI Across Media =	1E-02
Total Nervous System HI Across Media =	7E-01
Total Respiratory HI Across Media =	9E+00
Total Skin HI Across Media =	4E-01
Total Whole Body HI Across Media =	4E-02
Total Body Weight HI Across Media =	2E-03

TABLE 9.28.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	9E-03	NA	9E-05	1E-02
			Antimony	NA	NA	NA	NA	blood	4E-02	NA	4E-04	4E-02
			Arsenic	4E-06	NA	1E-06	6E-06	skin	7E-01	NA	2E-01	9E-01
			Chromium	NA	NA	NA	NA	NOE	2E-03	NA	2E-05	2E-03
			Copper	NA	NA	NA	NA	GI system	5E-03	NA	5E-05	5E-03
			Iron	NA	NA	NA	NA	NA	8E-02	NA	8E-04	8.4E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2E-03	NA	2E-05	2E-03
			Nickel	NA	NA	NA	NA	body weight	4E-03	NA	4E-05	4E-03
			Thallium	NA	NA	NA	NA	blood	6E-02	NA	6E-04	6E-02
			Vanadium	NA	NA	NA	NA	NA	6E-03	NA	6E-05	6E-03
			Mercury	NA	NA	NA	NA	immune system	1E-03	NA	1E-05	1E-03
			Aroclor-1254	1E-08	NA	2E-08	4E-08	immune system	1E-02	NA	1E-02	3E-02
			Aroclor-1260	4E-08	NA	6E-08	1E-07	immune system	3E-02	NA	4E-02	7E-02
			Benzene	7E-09	NA	7E-10	8E-09	blood	2E-03	NA	2E-04	2E-03
			m,p-Xylene	NA	NA	NA	NA	whole body	8E-04	NA	8E-05	8E-04
			o-Xylene	NA	NA	NA	NA	whole body	4E-04	NA	4E-05	4E-04
			Xylene (Total)	NA	NA	NA	NA	whole body	8E-04	NA	8E-05	9E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	1E-01	NA	1E-02	1E-01
			Acenaphthene	NA	NA	NA	NA	liver	1E-03	NA	2E-03	3E-03
			Benzo(a)anthracene	NA	NA	NA	NA	NA	9E-04	NA	1E-03	2E-03
			Benzo(a)pyrene	1E-05	NA	1E-05	3E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	1E-06	NA	2E-06	3E-06	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	1E-07	NA	1E-07	2E-07	NA	NA	NA	NA	NA
			Carbazole	2E-08	NA	2E-09	3E-08	NA	NA	NA	NA	NA
			Chrysene	2E-08	NA	2E-08	4E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	2E-06	NA	3E-06	5E-06	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	2E-03	NA	2E-03	4E-03
			Fluorene	NA	NA	NA	NA	blood	7E-04	NA	9E-04	2E-03
			Indeno(1,2,3-c,d)pyrene	6E-07	NA	8E-07	1E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	7E-02	NA	9E-02	2E-01
			Phenanthrene	NA	NA	NA	NA	NOE	3E-04	NA	3E-05	4E-04
			Pyrene	NA	NA	NA	NA	kidney	2E-03	NA	2E-03	4E-03
		Exposure Point Total		2E-05	NA	2E-05	4E-05		1E+00	NA	4E-01	2E+00
	Exposure Medium Total			2E-05	NA	2E-05	4E-05		1E+00	NA	4E-01	2E+00

TABLE 9.28.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 Emissions from Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	4E-02	NA	4E-02
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	2E-07	NA	2E-07	NA	NA	NA	NA	NA
			Chromium	NA	1E-07	NA	1E-07	respiratory	NA	7E-03	NA	7E-03
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1E-01
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	2E-04	NA	2E-04
			Aroclor-1254	NA	1E-11	NA	1E-11	NA	NA	NA	NA	NA
			Aroclor-1260	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Benzene	NA	1E-07	NA	1E-07	blood	NA	4E-02	NA	4E-02
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	2E-01	NA	2E-01
			o-Xylene	NA	NA	NA	NA	nervous system	NA	7E-02	NA	7E-02
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1.4E-01
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	4E-09	NA	4E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	3E-08	NA	3E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	3E-09	NA	3E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	2E-10	NA	2E-10	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	5E-09	NA	5E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.28.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Indeno(1,2,3-c,d)pyrene	NA	1E-09	NA	1E-09	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	5E+00	NA	5E+00
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	6E-07	NA	6E-07		NA	5E+00	NA	5E+00
	Exposure Medium Total			NA	6E-07	NA	6E-07		NA	5E+00	NA	5E+00
Medium Total				2E-05	6E-07	2E-05	4E-05		1E+00	5E+00	4E-01	7E+00
Receptor Total				2E-05	6E-07	2E-05	4E-05		1E+00	5E+00	4E-01	7E+00

NA = Not applicable or not available

Total Blood HI Across Media =	1E-01
Total CNS HI Across Media =	2E-03
Total GI System HI Across Media =	5E-03
Total Immune System HI Across Media =	1E-01
Total Kidney HI Across Media =	4E-03
Total Liver HI Across Media =	7E-03
Total Nervous System HI Across Media =	5E-01
Total Respiratory HI Across Media =	5E+00
Total Skin HI Across Media =	9E-01
Total Whole Body HI Across Media =	2E-01
Total Body Weight HI Across Media =	4E-03

TABLE 9.29.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Block 93 Subsurface Soil (0 - 10 ft)	Aluminum	NA	NA	NA	NA	NA	8E-03	NA	8E-05	8E-03
			Antimony	NA	NA	NA	NA	blood	4E-02	NA	3E-03	4E-02
			Arsenic	1E-06	NA	4E-07	2E-06	skin	2E-01	NA	6E-02	3E-01
			Chromium	NA	NA	NA	NA	NOE	1E-03	NA	5E-04	2E-03
			Copper	NA	NA	NA	NA	GI system	3E-03	NA	3E-05	3E-03
			Iron	NA	NA	NA	NA	NA	9E-02	NA	9E-04	9E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2E-03	NA	5E-04	3E-03
			Nickel	NA	NA	NA	NA	body weight	2E-03	NA	5E-04	2E-03
			Thallium	NA	NA	NA	NA	blood	2E-02	NA	2E-04	2E-02
			Vanadium	NA	NA	NA	NA	NA	5E-03	NA	2E-03	6E-03
			Mercury	NA	NA	NA	NA	immune system	4E-04	NA	6E-05	5E-04
			Aroclor-1254	2E-08	NA	2E-08	4E-08	immune system	1E-02	NA	2E-02	3E-02
			Aroclor-1260	4E-08	NA	5E-08	9E-08	immune system	3E-02	NA	4E-02	6E-02
			Benzene	8E-09	NA	8E-10	9E-09	blood	3E-03	NA	3E-04	3E-03
			m,p-Xylene	NA	NA	NA	NA	whole body	8E-04	NA	8E-05	8E-04
			o-Xylene	NA	NA	NA	NA	whole body	4E-04	NA	4E-05	4E-04
			Xylene (Total)	NA	NA	NA	NA	whole body	2E-04	NA	2E-05	3E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	2E-01	NA	2E-02	2E-01
			Acenaphthene	NA	NA	NA	NA	liver	3E-04	NA	4E-04	7E-04
			Benzo(a)anthracene	2E-06	NA	3E-06	5E-06	NA	NA	NA	NA	NA
			Benzo(a)pyrene	2E-05	NA	2E-05	4E-05	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	2E-06	NA	2E-06	4E-06	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	3E-04	NA	4E-04	6E-04
			Benzo(k)fluoranthene	1E-07	NA	1E-07	3E-07	NA	NA	NA	NA	NA
			Carbazole	2E-08	NA	2E-09	2E-08	NA	NA	NA	NA	NA
			Chrysene	2E-08	NA	3E-08	5E-08	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	3E-06	NA	3E-06	6E-06	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	1E-03	NA	2E-03	3E-03
			Fluorene	NA	NA	NA	NA	blood	5E-04	NA	6E-04	1E-03
			Indeno(1,2,3-c,d)pyrene	8E-07	NA	1E-06	2E-06	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	1E-01	NA	2E-01	3E-01
			Phenanthrene	NA	NA	NA	NA	NOE	3E-04	NA	3E-05	3E-04
			Pyrene	NA	NA	NA	NA	kidney	2E-03	NA	2E-03	4E-03
		Exposure Point Total		3E-05	NA	3E-05	6E-05		7E-01	NA	3E-01	1E+00
	Exposure Medium Total			3E-05	NA	3E-05	6E-05		7E-01	NA	3E-01	1E+00

TABLE 9.29.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 Emissions from Subsurface Soil (0 - 10 ft)	Aluminum	NA	NA	NA	NA	NA	NA	3E-02	NA	3E-02
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	7E-08	NA	7E-08	NA	NA	NA	NA	NA
			Chromium	NA	9E-08	NA	9E-08	respiratory	NA	5E-03	NA	5E-03
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	1E-01	NA	1E-01
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	8E-05	NA	8E-05
			Aroclor-1254	NA	2E-11	NA	2E-11	NA	NA	NA	NA	NA
			Aroclor-1260	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Benzene	NA	2E-07	NA	2E-07	blood	NA	5E-02	NA	5E-02
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	2E-01	NA	2E-01
			o-Xylene	NA	NA	NA	NA	nervous system	NA	6E-02	NA	6E-02
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	4E-02	NA	4E-02
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	5E-09	NA	5E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	4E-08	NA	4E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	4E-09	NA	4E-09	NA	NA	NA	NA	NA
			Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	3E-10	NA	3E-10	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	6E-09	NA	6E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	2E-09	NA	2E-09	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	9E+00	NA	9E+00
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	4E-07	NA	4E-07		NA	1E+01	NA	1E+01
	Exposure Medium Total			NA	4E-07	NA	4E-07		NA	1E+01	NA	1E+01
Medium Total				3E-05	4E-07	3E-05	6E-05		7E-01	1E+01	3E-01	1E+01

TABLE 9.29.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater (Excavation)	Block 93 (Excavation)	Arsenic	NA	NA	5E-06	5E-06	skin	NA	NA	7E-01	7E-01
			Iron	NA	NA	NA	NA	NA	NA	NA	2E-03	2E-03
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			delta-BHC	NA	NA	1E-10	1E-10	NA	NA	NA	NA	NA
			Trichloroethene	NA	NA	9E-11	9E-11	liver, kidney, fetus	NA	NA	5E-05	5E-05
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	5E-04	5E-04
			Benzo(a)anthracene	NA	NA	3E-08	3E-08	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	2E-07	2E-07	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	3E-08	3E-08	NA	NA	NA	NA	NA
			Carbazole	NA	NA	2E-10	2E-10	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	2E-03	2E-03
		Exposure Point Total		NA	NA	5E-06	5E-06		NA	NA	7E-01	7E-01
	Exposure Medium Total			NA	NA	5E-06	5E-06		NA	NA	7E-01	7E-01
	Ambient Air (Excavation)	Block 93 (Excavation)	Trichloroethene	NA	3E-10	NA	3E-10	nervous system, eyes	NA	4E-06	NA	4E-06
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	3E-02	NA	3E-02
		Exposure Point Total		NA	3E-10	NA	3E-10		NA	3E-02	NA	3E-02
	Exposure Medium Total			NA	3E-10	NA	3E-10		NA	3E-02	NA	3E-02
Medium Total				NA	3E-10	5E-06	5E-06		NA	3E-02	7E-01	8E-01
Receptor Total				3E-05	4E-07	4E-05	6E-05		7E-01	1E+01	1E+00	1E+01

NA = Not applicable or not available

Total Blood HI Across Media =	1E-01
Total CNS HI Across Media =	3E-03
Total GI System HI Across Media =	3E-03
Total Immune System HI Across Media =	9E-02
Total Kidney HI Across Media =	4E-03
Total Liver HI Across Media =	4E-03
Total Nervous System HI Across Media =	4E-01
Total Respiratory HI Across Media =	1E+01
Total Skin HI Across Media =	9.9E-01
Total Whole Body HI Across Media =	3E-01
Total Eyes HI Across Media =	4E-06
Total Fetus HI Across Media =	5E-05
Total Body Weight HI Across Media =	2E-03

TABLE 9.30.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	8E-03	NA	9E-06	8E-03
			Antimony	NA	NA	NA	NA	blood	3E-02	NA	2E-04	3E-02
			Arsenic	NA	NA	NA	NA	skin	6E-01	NA	2E-02	6E-01
			Chromium	NA	NA	NA	NA	NOE	1E-02	NA	5E-04	1E-02
			Copper	NA	NA	NA	NA	GI system	4E-03	NA	5E-06	4E-03
			Iron	NA	NA	NA	NA	NA	7E-02	NA	8E-05	7E-02
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2E-03	NA	5E-05	2E-03
			Nickel	NA	NA	NA	NA	body weight	3E-03	NA	1E-04	3E-03
			Thallium	NA	NA	NA	NA	blood	4E-02	NA	5E-05	4E-02
			Vanadium	NA	NA	NA	NA	NA	3E-02	NA	2E-03	4E-02
			Mercury	NA	NA	NA	NA	immune system	9E-03	NA	1E-04	9E-03
			Aroclor-1254	NA	NA	NA	NA	immune system	2E-02	NA	3E-03	2E-02
			Aroclor-1260	NA	NA	NA	NA	immune system	6E-02	NA	9E-03	7E-02
			Benzene	NA	NA	NA	NA	blood	2E-03	NA	2E-05	2E-03
			m,p-Xylene	NA	NA	NA	NA	whole body	6E-04	NA	7E-06	6E-04
			o-Xylene	NA	NA	NA	NA	whole body	3E-04	NA	4E-06	3E-04
			Xylene (Total)	NA	NA	NA	NA	whole body	7E-04	NA	8E-06	7E-04
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	9E-02	NA	1E-03	9E-02
			Acenaphthene	NA	NA	NA	NA	liver	3E-03	NA	5E-04	4E-03
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	1E-02	NA	2E-03	2E-02
			Fluorene	NA	NA	NA	NA	blood	6E-03	NA	8E-04	7E-03
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	5E-02	NA	8E-03	6E-02
			Phenanthrene	NA	NA	NA	NA	NOE	3E-03	NA	3E-05	3E-03
			Pyrene	NA	NA	NA	NA	kidney	1E-02	NA	2E-03	2E-02
		Exposure Point Total		0E+00	NA	0E+00	0E+00		1E+00	NA	5E-02	1E+00
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		1E+00	NA	5E-02	1E+00

TABLE 9.30.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	3E-03	NA	3E-03
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	5E-04	NA	5E-04
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	9E-03	NA	9E-03
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1254	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	NA	NA	NA	blood	NA	1E-01	NA	1E-01
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	5E-01	NA	5E-01
			o-Xylene	NA	NA	NA	NA	nervous system	NA	2E-01	NA	2E-01
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	5E-01	NA	5E-01
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.30.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E+01	NA	1E+01
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
Medium Total				0E+00	0E+00	0E+00	0E+00		1E+00	2E+01	5E-02	2E+01
Receptor Total				0E+00	0E+00	0E+00	0E+00		1E+00	2E+01	5E-02	2E+01

NA = Not applicable or not available

Total Blood HI Across Media =	2E-01
Total CNS HI Across Media =	2E-03
Total GI System HI Across Media =	4E-03
Total Immune System HI Across Media =	1E-01
Total Kidney HI Across Media =	2E-02
Total Liver HI Across Media =	2E-02
Total Nervous System HI Across Media =	1.1E+00
Total Respiratory HI Across Media =	1E+01
Total Skin HI Across Media =	6E-01
Total Whole Body HI Across Media =	6E-02
Total Body Weight HI Across Media =	3E-03

TABLE 9.31.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	7E-02	NA	8E-05	7E-02
			Antimony	NA	NA	NA	NA	blood	3E-01	NA	2E-03	3E-01
			Arsenic	NA	NA	NA	NA	skin	5E+00	NA	2E-01	5E+00
			Chromium	NA	NA	NA	NA	NOE	9E-02	NA	4E-03	1E-01
			Copper	NA	NA	NA	NA	GI system	4E-02	NA	4E-05	4E-02
			Iron	NA	NA	NA	NA	NA	6E-01	NA	7E-04	6E-01
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	2E-02	NA	5E-04	2E-02
			Nickel	NA	NA	NA	NA	body weight	3E-02	NA	9E-04	3E-02
			Thallium	NA	NA	NA	NA	blood	4E-01	NA	5E-04	4E-01
			Vanadium	NA	NA	NA	NA	NA	3E-01	NA	1E-02	3E-01
			Mercury	NA	NA	NA	NA	immune system	8E-02	NA	1E-03	8E-02
			Aroclor-1254	NA	NA	NA	NA	immune system	2E-01	NA	3E-02	2E-01
			Aroclor-1260	NA	NA	NA	NA	immune system	5E-01	NA	8E-02	6E-01
			Benzene	NA	NA	NA	NA	blood	2E-02	NA	2E-04	2E-02
			m,p-Xylene	NA	NA	NA	NA	whole body	6E-03	NA	6E-05	6E-03
			o-Xylene	NA	NA	NA	NA	whole body	3E-03	NA	3E-05	3E-03
			Xylene (Total)	NA	NA	NA	NA	whole body	6E-03	NA	7E-05	6E-03
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	9E-01	NA	1E-02	9E-01
			Acenaphthene	NA	NA	NA	NA	liver	3E-02	NA	4E-03	3E-02
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	1E-01	NA	2E-02	2E-01
			Fluorene	NA	NA	NA	NA	blood	5E-02	NA	8E-03	6E-02
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	5E-01	NA	7E-02	6E-01
			Phenanthrene	NA	NA	NA	NA	NOE	2E-02	NA	3E-04	3E-02
			Pyrene	NA	NA	NA	NA	kidney	1E-01	NA	2E-02	1E-01
		Exposure Point Total		0E+00	NA	0E+00	0E+00		1E+01	NA	4E-01	1E+01
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		1E+01	NA	4E-01	1E+01

TABLE 9.31.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	6E-03	NA	6E-03
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	respiratory	NA	1E-03	NA	1E-03
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	2E-02	NA	2E-02
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1254	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzene	NA	NA	NA	NA	blood	NA	3E-01	NA	3E-01
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	1E+00	NA	1E+00
			o-Xylene	NA	NA	NA	NA	nervous system	NA	5E-01	NA	5E-01
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	1E+00	NA	1E+00
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.31.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Naphthalene	NA	NA	NA	NA	respiratory	NA	3E+01	NA	3E+01
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	4E+01	NA	4E+01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	4E+01	NA	4E+01
Medium Total				0E+00	0E+00	0E+00	0E+00		1E+01	4E+01	4E-01	5E+01
Receptor Total				0E+00	0E+00	0E+00	0E+00		1E+01	4E+01	4E-01	5E+01

NA = Not applicable or not available

Total Blood HI Across Media =	1.1E+00
Total CNS HI Across Media =	2E-02
Total GI System HI Across Media =	4E-02
Total Immune System HI Across Media =	9E-01
Total Kidney HI Across Media =	1E-01
Total Liver HI Across Media =	2E-01
Total Nervous System HI Across Media =	3E+00
Total Respiratory HI Across Media =	3E+01
Total Skin HI Across Media =	5E+00
Total Whole Body HI Across Media =	6E-01
Total Body Weight HI Across Media =	3E-02

TABLE 9.32.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Arsenic	6E-04	NA	5E-05	6E-04	skin	NA	NA	NA	NA
			Chromium	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Copper	NA	NA	NA	NA	GI system	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	CNS	NA	NA	NA	NA
			Nickel	NA	NA	NA	NA	body weight	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	immune system	NA	NA	NA	NA
			Aroclor-1254	2E-06	NA	8E-07	3E-06	immune system	NA	NA	NA	NA
			Aroclor-1260	5E-06	NA	2E-06	8E-06	immune system	NA	NA	NA	NA
			Benzene	9E-07	NA	3E-08	9E-07	blood	NA	NA	NA	NA
			m,p-Xylene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			o-Xylene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			Xylene (Total)	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	liver	NA	NA	NA	NA
			Benzo(a)anthracene	4E-04	NA	6E-05	5E-04	NA	NA	NA	NA	NA
			Benzo(a)pyrene	3E-03	NA	4E-04	3E-03	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	3E-04	NA	4E-05	3E-04	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	2E-05	NA	3E-06	3E-05	NA	NA	NA	NA	NA
			Carbazole	3E-06	NA	1E-07	3E-06	NA	NA	NA	NA	NA
			Chrysene	4E-06	NA	6E-07	5E-06	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	5E-04	NA	7E-05	5E-04	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	liver	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	blood	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	1E-04	NA	2E-05	2E-04	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	whole body	NA	NA	NA	NA
			Phenanthrene	NA	NA	NA	NA	NOE	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	kidney	NA	NA	NA	NA
		Exposure Point Total		5E-03	NA	6E-04	5E-03		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			5E-03	NA	6E-04	5E-03		0E+00	NA	0E+00	0E+00

TABLE 9.32.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Arsenic	NA	7E-07	NA	7E-07	NA	NA	NA	NA	NA
			Chromium	NA	3E-07	NA	3E-07	respiratory	NA	NA	NA	NA
			Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Manganese	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Aroclor-1254	NA	4E-11	NA	4E-11	NA	NA	NA	NA	NA
			Aroclor-1260	NA	1E-10	NA	1E-10	NA	NA	NA	NA	NA
			Benzene	NA	2E-05	NA	2E-05	blood	NA	NA	NA	NA
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			o-Xylene	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	NA	NA	NA
			2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Benzo(a)anthracene	NA	8E-09	NA	8E-09	NA	NA	NA	NA	NA
			Benzo(a)pyrene	NA	5E-08	NA	5E-08	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	NA	5E-09	NA	5E-09	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	NA	4E-10	NA	4E-10	NA	NA	NA	NA	NA
			Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Dibenz(a,h)anthracene	NA	9E-09	NA	9E-09	NA	NA	NA	NA	NA
			Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	NA	3E-09	NA	3E-09	NA	NA	NA	NA	NA
			Naphthalene	NA	NA	NA	NA	respiratory	NA	NA	NA	NA
			Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
		Exposure Point Total		NA	2E-05	NA	2E-05		NA	0E+00	NA	0E+00
	Exposure Medium Total			NA	2E-05	NA	2E-05		NA	0E+00	NA	0E+00
Medium Total				5E-03	2E-05	6E-04	5E-03		0E+00	0E+00	0E+00	0E+00
Receptor Total				5E-03	2E-05	6E-04	5E-03		0E+00	0E+00	0E+00	0E+00

Table 9.32.CTE Supplement
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Receptor Total	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient (Adult Resident)				Non-Carcinogenic Hazard Quotient (Child Resident)			
	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total	Ingestion	Inhalation	Dermal	Exposure Routes Total
Block 93												
Surface Soil	4.5E-03	1.9E-05	5.9E-04	5.1E-03	3.2E-02	4.0E-02	1.1E-03	7.3E-02	1.1E+00	5.1E+00	3.7E-01	6.6E+00
Above Clay	9.7E-01	1.2E-03	9.0E-01	1.0E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	NA	2.2E+02	2.7E+04
Below Clay	2.5E-03	3.4E-03	5.4E-04	6.4E-03	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.3E+01	NA	1.4E+01	9.6E+01
Surface Soil + Above Clay	9.8E-01	1.2E-03	9.0E-01	1.9E+00	1.1E+04	6.3E+02	8.1E+01	1.2E+04	2.6E+04	5.1E+00	2.2E+02	2.7E+04
Surface Soil + Below Clay	7.0E-03	3.4E-03	1.1E-03	1.2E-02	3.5E+01	1.5E+01	6.0E+00	5.6E+01	8.4E+01	5.1E+00	1.4E+01	1.0E+02

	Adult Resident					Child Resident				
	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay	Surface soil	Above Clay	Below Clay	Surface Soil + Above Clay	Surface Soil + Below Clay
Total Blood HI Across Media =	3E-03	3E+01	1E-01	3E+01	1E-01	1E-01	4E+01	1E-01	4E+01	3E-01
Total CNS HI Across Media =	6E-05	7E+00	4E-04	7E+00	5E-04	2E-03	2E+01	1E-03	2E+01	3E-03
Total GI System HI Across Media =	1E-04	NA	1E-02	1E-04	1E-02	5E-03	NA	1E-03	5E-03	6E-03
Total Immune System HI Across Media =	3E-03	NA	NA	3E-03	3E-03	1E-01	NA	NA	1E-01	1E-01
Total Kidney HI Across Media =	5E-04	3E+00	4E+01	3E+00	4E+01	4E-03	8E+00	9E+01	8E+00	9E+01
Total Liver HI Across Media =	6E-04	2E+00	4E+01	2E+00	4E+01	7E-03	5E+00	9E+01	5E+00	9E+01
Total Nervous System HI Across Media =	3E-03	5E+00	2E+00	5E+00	2E+00	5E-01	NA	NA	5E-01	5E-01
Total Respiratory HI Across Media =	4E-02	6E+02	1E+01	6E+02	1E+01	5E+00	5E+01	3E-01	6E+01	5E+00
Total Skin HI Across Media =	2E-02	1E+04	5E-01	1E+04	5E-01	9E-01	3E+04	1E+00	3E+04	2E+00
Total Whole Body HI Across Media =	2E-03	3E+01	4E-01	3E+01	4E-01	2E-01	6E+01	9E-01	6E+01	1E+00
Total Eyes HI Across Media =	NA	3E-02	2E+00	3E-02	2E+00	NA	NA	NA	NA	NA
Total Heart HI Across Media =	NA	NA	4E-04	NA	4E-04	NA	NA	1E-03	NA	1E-03
Total Developmental HI Across Media =	NA	1E-01	NA	1E-01	NA	NA	NA	NA	NA	NA
Total Fetus HI Across Media =	NA	5E-01	4E+01	5E-01	4E+01	NA	1E+00	9E+01	1E+00	9E+01
Total Body Weight HI Across Media =	1E-04	3E-01	NA	3E-01	1E-04	4E-03	7E-01	NA	7E-01	4E-03

TABLE 10.1.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Arsenic	5E-05	NA	5E-06	5E-05					
			Benzo(a)anthracene	5E-06	NA	3E-06	7E-06					
			Benzo(a)pyrene	4E-05	NA	2E-05	7E-05					
			Benzo(b)fluoranthene	5E-06	NA	3E-06	8E-06					
			Dibenz(a,h)anthracene	9E-06	NA	5E-06	1E-05					
			Indeno(1,2,3-c,d)pyrene	2E-06	NA	1E-06	4E-06					
		Exposure Point Total		1E-04	NA	4E-05	1E-04					<1
	Exposure Medium Total			1E-04	NA	4E-05	1E-04					<1
Medium Total				1E-04	NA	4E-05	1E-04					<1
Receptor Total				1E-04	NA	4E-05	1E-04					<1

NA = Not applicable or not available

TABLE 10.2.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Arsenic	3E-05	NA	2E-06	3E-05					
			Benzo(a)anthracene	9E-06	NA	8E-06	2E-05					
			Benzo(a)pyrene	9E-05	NA	7E-05	2E-04					
			Benzo(b)fluoranthene	1E-05	NA	8E-06	2E-05					
			Dibenz(a,h)anthracene	2E-05	NA	1E-05	3E-05					
			Indeno(1,2,3-c,d)pyrene	5E-06	NA	4E-06	9E-06					
		Exposure Point Total		2E-04	NA	1E-04	3E-04					<1
	Exposure Medium Total			2E-04	NA	1E-04	3E-04					<1
Medium Total				2E-04	NA	1E-04	3E-04					<1
Receptor Total				2E-04	NA	1E-04	3E-04					<1

NA = Not applicable or not available

TABLE 10.3.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Arsenic	4E-04	NA	2E-04	6E-04	skin	2E+00	NA	1E+00	3E+00
			Aroclor-1242	1E-06	NA	2E-06	3E-06					
			Aroclor-1260	6E-07	NA	1E-06	2E-06					
			Benzo(a)anthracene	4E-05	NA	7E-05	1E-04					
			Benzo(a)pyrene	4E-04	NA	7E-04	1E-03					
			Benzo(b)fluoranthene	4E-05	NA	8E-05	1E-04					
			Benzo(k)fluoranthene	2E-06	NA	4E-06	6E-06					
			Dibenz(a,h)anthracene	8E-05	NA	1E-04	2E-04					
			Indeno(1,2,3-c,d)pyrene	2E-05	NA	4E-05	6E-05					
		Exposure Point Total		1E-03	NA	1E-03	2E-03		2E+00	NA	1E+00	3E+00
	Exposure Medium Total			1E-03	NA	1E-03	2E-03		2E+00	NA	1E+00	3E+00
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Arsenic	NA	2E-06	NA	2E-06	respiratory	NA	6E+00	NA	6E+00
			Benzene	NA	2E-05	NA	2E-05					
			Naphthalene									
			Trichloroethene	NA	7E-06	NA	7E-06					
		Exposure Point Total		NA	2E-05	NA	2E-05		NA	6E+00	NA	6E+00
	Exposure Medium Total			NA	2E-05	NA	2E-05		NA	6E+00	NA	6E+00
Medium Total				1E-03	2E-05	1E-03	2E-03		2E+00	6E+00	1E+00	9E+00
Receptor Total				1E-03	2E-05	1E-03	2E-03		2E+00	6E+00	1E+00	9E+00

NA = Not applicable or not available

Total Respiratory HI Across Media =	6E+00
Total Skin HI Across Media =	3E+00

TABLE 10.4.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Quanta Resources Subsurface Soil (0 - 10 ft)	Antimony					blood	2E+00	NA	3E-02	2E+00
			Arsenic	4E-04	NA	4E-05	5E-04	skin	7E+01	NA	6E+00	7E+01
			Iron					NA	1E+00	NA	3E-03	1E+00
			Thallium					blood	7E-01	NA	2E-03	7E-01
			2-Methylnaphthalene					respiratory	1E+00	NA	4E-02	1E+00
			Benzo(a)anthracene	2E-05	NA	8E-06	3E-05					
			Benzo(a)pyrene	2E-04	NA	7E-05	3E-04					
			Benzo(b)fluoranthene	2E-05	NA	8E-06	3E-05					
			Dibenz(a,h)anthracene	3E-05	NA	1E-05	4E-05					
			Indeno(1,2,3-c,d)pyrene	1E-05	NA	4E-06	1E-05					
			Naphthalene					whole body	2E+00	NA	6E-01	2E+00
		Exposure Point Total		7E-04	NA	1E-04	8E-04		7E+01	NA	7E+00	8E+01
	Exposure Medium Total			7E-04	NA	1E-04	8E-04		7E+01	NA	7E+00	8E+01
	Ambient Air	Quanta Resources Emissions from Subsurface Soil (0 - 10 ft)	Arsenic	NA	1E-05	NA	1E-05					
			Benzene					blood	NA	3E-01	NA	3E-01
			Naphthalene					respiratory	NA	6E+01	NA	6E+01
		Exposure Point Total		NA	1E-05	NA	1E-05		NA	6E+01	NA	6E+01
	Exposure Medium Total			NA	1E-05	NA	1E-05		NA	6E+01	NA	6E+01
Medium Total				7E-04	1E-05	1E-04	8E-04		7E+01	6E+01	7E+00	1E+02

TABLE 10.4.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater (Excavation)	Quanta Resources (Excavation)	2-Methylnaphthalene					respiratory	NA	NA	7E-01	7E-01
			Benzo(a)anthracene	NA	NA	3E-05	3E-05					
			Benzo(a)pyrene	NA	NA	4E-04	4E-04					
			Benzo(b)fluoranthene	NA	NA	5E-05	5E-05					
			Benzo(k)fluoranthene	NA	NA	2E-06	2E-06					
			Dibenz(a,h)anthracene	NA	NA	6E-05	6E-05					
			Indeno(1,2,3-c,d)pyrene	NA	NA	2E-05	2E-05					
			Naphthalene					whole body	NA	NA	5E-01	5E-01
		Exposure Point Total		NA	NA	6E-04	6E-04		NA	NA	1E+00	1E+00
	Exposure Medium Total			NA	NA	6E-04	6E-04		NA	NA	1E+00	1E+00
	Ambient Air (Excavation)	Quanta Resources (Excavation)	Benzene					blood	NA	2E-01	NA	2E-01
			Naphthalene					respiratory	NA	2E+01	NA	2E+01
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
Medium Total				NA	0E+00	6E-04	6E-04		NA	2E+01	1E+00	2E+01
Receptor Total				7E-04	1E-05	7E-04	1E-03		7E+01	8E+01	8E+00	2E+02

NA = Not applicable or not available

Total Blood HI Across Media =	3E+00
Total Respiratory HI Across Media =	8E+01
Total Skin HI Across Media =	7E+01
Total Whole Body HI Across Media =	3E+00

TABLE 10.5.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Antimony					blood	6E-01	NA	2E-02	6E-01
			Arsenic					skin	7E+00	NA	8E-01	8E+00
			Iron					NA	1E+00	NA	5E-03	1E+00
			Thallium					blood	2E-01	NA	7E-04	2E-01
			2-Methylnaphthalene					respiratory	1E-01	NA	4E-03	1E-01
		Exposure Point Total							8E+00	NA	8E-01	9E+00
	Exposure Medium Total								8E+00	NA	8E-01	9E+00
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Benzene					blood	NA	3E-01	NA	3E-01
			Naphthalene					respiratory	NA	8E+00	NA	8E+00
		Exposure Point Total							NA	8E+00	NA	8E+00
	Exposure Medium Total								NA	8E+00	NA	8E+00
Medium Total									8E+00	8E+00	8E-01	2E+01
Receptor Total									8E+00	8E+00	8E-01	2E+01

NA = Not applicable or not available

Total Blood HI Across Media =	1E+00
Total Respiratory HI Across Media =	8E+00
Total Skin HI Across Media =	8E+00

TABLE 10.6.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Antimony					blood	6E+00	NA	1E-01	6E+00
			Arsenic					skin	6E+01	NA	5E+00	7E+01
			Copper					GI system	2E+00	NA	6E-03	2E+00
			Iron					NA	1E+01	NA	3E-02	1E+01
			Thallium					blood	2E+00	NA	4E-03	2E+00
			Vanadium					NA	1E+00	NA	1E-01	1E+00
			Zinc					blood	2E-01	NA	5E-04	2E-01
			Mercury					Immune system	1E+00	NA	5E-02	1E+00
			Aroclor-1242					Immune system	2E+00	NA	8E-01	3E+00
			Aroclor-1260					Immune system	1E+00	NA	4E-01	1E+00
			2-Methylnaphthalene					respiratory	1E+00	NA	3E-02	1E+00
			4-Methylphenol					CNS, respiratory, whole body	3E-01	NA	1E-02	4E-01
			Fluorene					blood	1E-01	NA	4E-02	1E-01
			Naphthalene					whole body	6E-01	NA	2E-01	8E-01
		Exposure Point Total							9E+01	NA	7E+00	1E+02
	Exposure Medium Total								9E+01	NA	7E+00	1E+02
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Benzene					blood	NA	6E-01	NA	6E-01
			Naphthalene					respiratory	NA	2E+01	NA	2E+01
		Exposure Point Total							NA	2E+01	NA	2E+01
	Exposure Medium Total								NA	2E+01	NA	2E+01
Medium Total									9E+01	2E+01	7E+00	1E+02
Receptor Total									9E+01	2E+01	7E+00	1E+02

NA = Not applicable or not available

Total Blood HI Across Media =	8E+00
Total GI System HI Across Media =	2E+00
Total Immune System HI Across Media =	6E+00
Total Respiratory HI Across Media =	2E+01
Total Skin HI Across Media =	7E+01
Total Whole Body HI Across Media =	1E+00

TABLE 10.7.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Arsenic	4E-03	NA	3E-04	4E-03					
			Heptachlor	2E-06	NA	8E-08	3E-06					
			Aroclor-1242	1E-05	NA	4E-06	1E-05					
			Aroclor-1260	5E-06	NA	2E-06	7E-06					
			Benzene	2E-06	NA	5E-08	2E-06					
			Benzo(a)anthracene	2E-03	NA	9E-04	3E-03					
			Benzo(a)pyrene	2E-02	NA	8E-03	3E-02					
			Benzo(b)fluoranthene	2E-03	NA	1E-03	3E-03					
			Benzo(k)fluoranthene	1E-04	NA	4E-05	2E-04					
			Carbazole	4E-06	NA	1E-07	4E-06					
			Chrysene	2E-05	NA	9E-06	3E-05					
			Dibenz(a,h)anthracene	4E-03	NA	2E-03	6E-03					
			Indeno(1,2,3-c,d)pyrene	1E-03	NA	5E-04	2E-03					
		Exposure Point Total		3E-02	NA	1E-02	4E-02					
	Exposure Medium Total			3E-02	NA	1E-02	4E-02					
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Arsenic	NA	4E-06	NA	4E-06					
			Benzene	NA	3E-05	NA	3E-05					
			Trichloroethene	NA	2E-05	NA	2E-05					
		Exposure Point Total		NA	5E-05	NA	5E-05					
	Exposure Medium Total			NA	5E-05	NA	5E-05					
Medium Total				3E-02	5E-05	1E-02	5E-02					
Receptor Total				3E-02	5E-05	1E-02	5E-02					

NA = Not applicable or not available

TABLE 10.9.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Edgewater Enterprises Subsurface Soil (0 - 10 ft)	Arsenic					skin	4E+00	NA	4E-01	5E+00
			2-Methylnaphthalene					respiratory	2E-01	NA	5E-03	2E-01
		Exposure Point Total		0E+00	NA	0E+00	0E+00		4E+00	NA	4E-01	5E+00
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		4E+00	NA	4E-01	5E+00
	Ambient Air	Edgewater Enterprises Emissions from Subsurface Soil (0 - 10 ft)	Naphthalene					respiratory	NA	3E+00	NA	3E+00
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	3E+00	NA	3E+00
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	3E+00	NA	3E+00
Medium Total				0E+00	0E+00	0E+00	0E+00		4E+00	3E+00	4E-01	8E+00
Groundwater	Groundwater (Excavation)	Edgewater Enterprises (Excavation)	Arsenic					skin	NA	NA	5E+00	5E+00
		Exposure Point Total		NA	NA	0E+00	0E+00		NA	NA	5E+00	5E+00
	Exposure Medium Total			NA	NA	0E+00	0E+00		NA	NA	5E+00	5E+00
Groundwater	Ambient Air (Excavation)	Edgewater Enterprises (Excavation)	Naphthalene					respiratory	NA	1E+00	NA	1E+00
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	1E+00	NA	1E+00
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	1E+00	NA	1E+00
Medium Total				NA	0E+00	0E+00	0E+00		NA	1E+00	5E+00	6E+00
Receptor Total				0E+00	0E+00	0E+00	0E+00		4E+00	4E+00	5E+00	1E+01

NA = Not applicable or not available

Total Respiratory HI Across Media =	4E+00
Total Skin HI Across Media =	9E+00

TABLE 10.12.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Edgewater Enterprises Surface Soil (0 - 2 ft)	Arsenic	4E-05	NA	4E-06	5E-05					
			Benzo(a)anthracene	2E-05	NA	9E-06	3E-05					
			Benzo(a)pyrene	2E-04	NA	8E-05	3E-04					
			Benzo(b)fluoranthene	2E-05	NA	8E-06	3E-05					
			Dibenz(a,h)anthracene	5E-05	NA	2E-05	6E-05					
			Indeno(1,2,3-c,d)pyrene	1E-05	NA	5E-06	2E-05					
		Exposure Point Total		3E-04	NA	1E-04	5E-04					
	Exposure Medium Total			3E-04	NA	1E-04	5E-04					
Medium Total				3E-04	0E+00	1E-04	5E-04					
Receptor Total				3E-04	0E+00	1E-04	5E-04					

TABLE 10.14.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Daycare Child
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Arsenic	8E-06	NA	1E-06	9E-06					
			Benzo(a)anthracene	5E-05	NA	4E-05	9E-05					
			Benzo(a)pyrene	5E-04	NA	3E-04	8E-04					
			Benzo(b)fluoranthene	6E-05	NA	4E-05	1E-04					
			Benzo(k)fluoranthene	3E-06	NA	2E-06	5E-06					
			Dibenz(a,h)anthracene	9E-05	NA	6E-05	2E-04					
			Indeno(1,2,3-c,d)pyrene	3E-05	NA	2E-05	5E-05					
		Exposure Point Total		7E-04	NA	5E-04	1E-03					<1
	Exposure Medium Total			7E-04	NA	5E-04	1E-03					<1
	Ambient Air	115 River Road Emissions from Surface Soil (0-2 ft)	Chromium	NA	2E-06	NA	2E-06	respiratory	NA	2E+00	NA	2E+00
			Naphthalene									
		Exposure Point Total		NA	2E-06	NA	2E-06		NA	2E+00	NA	2E+00
	Exposure Medium Total			NA	2E-06	NA	2E-06		NA	2E+00	NA	2E+00
Medium Total				7E-04	2E-06	5E-04	1E-03		0E+00	2E+00	0E+00	2E+00
Receptor Total				7E-04	2E-06	5E-04	1E-03		0E+00	2E+00	0E+00	2E+00

NA = Not applicable or not available

Total Respiratory HI Across Media = 2E+00

TABLE 10.15.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	115 River Road Subsurface Soil (0 - 10 ft)	Arsenic	2E-06	NA	2E-07	2E-06	respiratory	2E+00	NA	5E-02	2E+00
			2-Methylnaphthalene									
			Benzo(a)anthracene	8E-06	NA	3E-06	1E-05					
			Benzo(a)pyrene	5E-05	NA	2E-05	7E-05					
			Benzo(b)fluoranthene	6E-06	NA	2E-06	8E-06					
			Dibenz(a,h)anthracene	9E-06	NA	3E-06	1E-05					
			Indeno(1,2,3-c,d)pyrene	2E-06	NA	9E-07	3E-06					
		Exposure Point Total		8E-05	NA	3E-05	1E-04		2E+00	NA	5E-02	2E+00
	Exposure Medium Total			8E-05	NA	3E-05	1E-04		2E+00	NA	5E-02	2E+00
	Ambient Air	115 River Road Emissions from Subsurface Soil (0 - 10 ft)	Naphthalene					respiratory	NA	2E+01	NA	2E+01
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
Medium Total				8E-05	0E+00	3E-05	1E-04		2E+00	2E+01	5E-02	2E+01
Groundwater	Ambient Air (Excavation)	115 River Road (Excavation)	Naphthalene					respiratory	NA	1E+00	NA	1E+00
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	1E+00	NA	1E+00
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	1E+00	NA	1E+00
Medium Total				NA	0E+00	0E+00	0E+00		NA	1E+00	0E+00	1E+00
Receptor Total				8E-05	0E+00	3E-05	1E-04		2E+00	2E+01	5E-02	2E+01

NA = Not applicable or not available

Total Respiratory HI Across Media = 2E+01

TABLE 10.18.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Arsenic	3E-05	NA	3E-06	3E-05					
			Benzo(a)anthracene	3E-05	NA	1E-05	5E-05					
			Benzo(a)pyrene	2E-03	NA	7E-04	2E-03					
			Benzo(b)fluoranthene	4E-05	NA	1E-05	5E-05					
			Benzo(k)fluoranthene	2E-06	NA	8E-07	3E-06					
			Dibenz(a,h)anthracene	3E-04	NA	1E-04	4E-04					
			Indeno(1,2,3-c,d)pyrene	2E-05	NA	7E-06	2E-05					
		Exposure Point Total		2E-03	NA	8E-04	3E-03					
	Exposure Medium Total			2E-03	NA	8E-04	3E-03					
Medium Total				2E-03	0E+00	8E-04	3E-03					
Receptor Total				2E-03	0E+00	8E-04	3E-03					

NA = Not applicable or not available

TABLE 10.20.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Arsenic	8E-06	NA	7E-07	9E-06					
			Benzo(a)anthracene	6E-06	NA	5E-06	1E-05					
			Benzo(a)pyrene	6E-05	NA	5E-05	1E-04					
			Benzo(b)fluoranthene	7E-06	NA	6E-06	1E-05					
			Dibenz(a,h)anthracene	9E-06	NA	8E-06	2E-05					
			Indeno(1,2,3-c,d)pyrene	3E-06	NA	3E-06	6E-06					
		Exposure Point Total		9E-05	NA	7E-05	2E-04					<1
	Exposure Medium Total			9E-05	NA	7E-05	2E-04					<1
Medium Total				9E-05	0E+00	7E-05	2E-04					<1
Receptor Total				9E-05	0E+00	7E-05	2E-04					<1

NA = Not applicable or not available

TABLE 10.22.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Former Lever Brothers Property Subsurface Soil (0 - 10 ft)	Arsenic					skin	1E+00	NA	1E-01	1E+00
		Exposure Point Total							1.3E+00	NA	1E-01	1.4E+00
	Exposure Medium Total								1.3E+00	NA	1E-01	1.4E+00
	Ambient Air	Former Lever Brothers Property Emissions from Subsurface Soil (0 - 10 ft)	Naphthalene					respiratory	NA	3E-01	NA	3E-01
		Exposure Point Total							NA	3E-01	NA	3E-01
	Exposure Medium Total								NA	3E-01	NA	3E-01
Medium Total									1E+00	3E-01	1E-01	2E+00
Groundwater	Groundwater (Excavation)	Former Lever Brothers Property (Excavation)	Arsenic 2-Methylnaphthalene					skin respiratory	NA NA	NA NA	3E-01 2E-01	3E-01 2E-01
		Exposure Point Total							NA	NA	5E-01	5E-01
	Exposure Medium Total								NA	NA	5E-01	5E-01
	Ambient Air (Excavation)	Former Lever Brothers Property (Excavation)	Naphthalene					respiratory	NA	3E+00	NA	3E+00
		Exposure Point Total							NA	3E+00	NA	3E+00
	Exposure Medium Total								NA	3E+00	NA	3E+00
Medium Total									NA	3E+00	5E-01	4E+00
Receptor Total									1E+00	3E+00	7E-01	5E+00

NA = Not applicable or not available

Total Respiratory HI Across Media =	4E+00
Total Skin HI Across Media =	2E+00

TABLE 10.24.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Arsenic					skin	2E+00	NA	2E-01	2E+00
		Exposure Point Total							2E+00	NA	2E-01	2E+00
	Exposure Medium Total								2E+00	NA	2E-01	2E+00
Medium Total									2E+00	0E+00	2E-01	2E+00
Receptor Total									2E+00	0E+00	2E-01	2E+00

NA = Not applicable or not available

Total Skin HI Across Media = 2E+00

TABLE 10.25.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Arsenic	1E-04	NA	1E-05	1E-04					
			Benzo(a)anthracene	1E-04	NA	5E-05	2E-04					
			Benzo(a)pyrene	1E-03	NA	5E-04	2E-03					
			Benzo(b)fluoranthene	2E-04	NA	7E-05	2E-04					
			Benzo(k)fluoranthene	7E-06	NA	3E-06	1E-05					
			Dibenz(a,h)anthracene	2E-04	NA	9E-05	3E-04					
			Indeno(1,2,3-c,d)pyrene	8E-05	NA	3E-05	1E-04					
		Exposure Point Total		2E-03	NA	8E-04	3E-03					
	Exposure Medium Total			2E-03	NA	8E-04	3E-03					
Medium Total				2E-03	0E+00	8E-04	3E-03					
Receptor Total				2E-03	0E+00	8E-04	3E-03					

NA = Not applicable or not available

TABLE 10.26.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Arsenic	7E-05	NA	9E-06	8E-05					
			Benzo(a)anthracene	3E-05	NA	2E-05	4E-05					
			Benzo(a)pyrene	2E-04	NA	9E-05	3E-04					
			Benzo(b)fluoranthene	2E-05	NA	1E-05	3E-05					
			Benzo(k)fluoranthene	2E-06	NA	8E-07	2E-06					
			Dibenz(a,h)anthracene	3E-05	NA	2E-05	5E-05					
			Indeno(1,2,3-c,d)pyrene	1E-05	NA	5E-06	2E-05					
		Exposure Point Total		3E-04	NA	2E-04	5E-04		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			3E-04	NA	2E-04	5E-04		0E+00	NA	0E+00	0E+00
Medium Total				3E-04	0E+00	2E-04	5E-04		0E+00	0E+00	0E+00	0E+00
Receptor Total				3E-04	0E+00	2E-04	5E-04		0E+00	0E+00	0E+00	0E+00

NA = Not applicable or not available

TABLE 10.27.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Arsenic	4E-05	NA	4E-06	5E-05					
			Benzo(a)anthracene	6E-05	NA	5E-05	1E-04					
			Benzo(a)pyrene	4E-04	NA	3E-04	7E-04					
			Benzo(b)fluoranthene	4E-05	NA	3E-05	7E-05					
			Benzo(k)fluoranthene	3E-06	NA	3E-06	6E-06					
			Dibenz(a,h)anthracene	7E-05	NA	6E-05	1E-04					
			Indeno(1,2,3-c,d)pyrene	2E-05	NA	2E-05	4E-05					
		Exposure Point Total		6E-04	NA	5E-04	1E-03		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			6E-04	NA	5E-04	1E-03		0E+00	NA	0E+00	0E+00
Medium Total				6E-04	0E+00	5E-04	1E-03		0E+00	0E+00	0E+00	0E+00
Receptor Total				6E-04	0E+00	5E-04	1E-03		0E+00	0E+00	0E+00	0E+00

NA = Not applicable or not available

TABLE 10.28.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Arsenic	6E-05	NA	3E-05	9E-05					
			Aroclor-1260	6E-07	NA	1E-06	2E-06					
			Benzo(a)anthracene	3E-05	NA	4E-05	7E-05					
			Benzo(a)pyrene	2E-04	NA	3E-04	4E-04					
			Benzo(b)fluoranthene	2E-05	NA	3E-05	5E-05					
			Benzo(k)fluoranthene	1E-06	NA	2E-06	4E-06					
			Dibenz(a,h)anthracene	3E-05	NA	5E-05	8E-05					
			Indeno(1,2,3-c,d)pyrene	9E-06	NA	2E-05	2E-05					
		Exposure Point Total		3E-04	NA	4E-04	8E-04		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			3E-04	NA	4E-04	8E-04		0E+00	NA	0E+00	0E+00
	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Benzene	NA	9E-06	NA	9E-06	respiratory	NA	1E+01	NA	1E+01
			Naphthalene	NA	NA	NA	NA					
		Exposure Point Total		NA	9E-06	NA	9E-06		NA	1E+01	NA	1E+01
	Exposure Medium Total			NA	9E-06	NA	9E-06		NA	1E+01	NA	1E+01
Medium Total				3E-04	9E-06	4E-04	8E-04		0E+00	1E+01	0E+00	1E+01
Receptor Total				3E-04	9E-06	4E-04	8E-04		0E+00	1E+01	0E+00	1E+01

NA = Not applicable or not available

Total Respiratory HI Across Media = **1E+01**

TABLE 10.29.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Block 93 Subsurface Soil (0 - 10 ft)	Arsenic					skin	8E-01	NA	7E-02	9E-01
			2-Methylnaphthalene					respiratory	6E-01	NA	2E-02	7E-01
		Exposure Point Total		0E+00	NA	0E+00	0E+00		1E+00	NA	9E-02	2E+00
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		1E+00	NA	9E-02	2E+00
Soil	Ambient Air	Block 93 Emissions from Subsurface Soil (0 - 10 ft)	Naphthalene					respiratory	NA	2E+01	NA	2E+01
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
Medium Total				NA	0E+00	NA	0E+00		1E+00	2E+01	9E-02	2E+01
Groundwater	Groundwater (Excavation)	Block 93 North (Excavation)	Arsenic					skin	NA	NA	1E+00	1E+00
		Exposure Point Total		NA	NA	0E+00	0E+00		NA	NA	1E+00	1.4E+00
	Exposure Medium Total			NA	NA	0E+00	0E+00		NA	NA	1E+00	1.4E+00
	Ambient Air (Excavation)	Block 93 (Excavation)	Naphthalene					respiratory	NA	1E-01	NA	1E-01
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	1E-01	NA	1E-01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	1E-01	NA	1E-01
Medium Total				NA	0E+00	0E+00	0E+00		NA	1E-01	1E+00	2E+00
Receptor Total				0E+00	0E+00	0E+00	0E+00		1E+00	2E+01	2E+00	2E+01

NA = Not applicable or not available

Total Respiratory HI Across Media =	2E+01
Total Skin HI Across Media =	2E+00

TABLE 10.30.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 North Surface Soil (0 - 2 ft)	Arsenic					skin	1E+00	NA	1E-01	1E+00
			2-Methylnaphthalene					respiratory	2E-01	NA	7E-03	2E-01
		Exposure Point Total		0E+00	NA	0E+00	0E+00		1E+00	NA	1E-01	1E+00
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		1E+00	NA	1E-01	1E+00
	Ambient Air	Block 93 North Emissions from Surface Soil (0-2 ft)	m,p-Xylene					nervous system	NA	5E-01	NA	5E-01
			o-Xylene					nervous system	NA	2E-01	NA	2E-01
			Xylene (Total)					nervous system	NA	5E-01	NA	5E-01
			Naphthalene					respiratory	NA	1E+01	NA	1E+01
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	2E+01	NA	2E+01
Medium Total				0E+00	0E+00	0E+00	0E+00		1E+00	2E+01	1E-01	2E+01
Receptor Total				0E+00	0E+00	0E+00	0E+00		1E+00	2E+01	1E-01	2E+01

NA = Not applicable or not available

Total Nervous System HI Across Media =	1E+00
Total Respiratory HI Across Media =	1E+01
Total Skin HI Across Media =	1E+00

TABLE 10.31.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Antimony					blood	5E-01	NA	1E-02	6E-01
			Arsenic					skin	1E+01	NA	9E-01	1E+01
			Iron					NA	1E+00	NA	3E-03	1E+00
			Thallium					blood	8E-01	NA	2E-03	8E-01
			Mercury					immune system	2E-01	NA	7E-03	2E-01
			Aroclor-1254					immune system	4E-01	NA	2E-01	5E-01
			Aroclor-1260					immune system	1E+00	NA	4E-01	2E+00
			2-Methylnaphthalene					respiratory	2E+00	NA	5E-02	2E+00
			Fluorene					blood	1E-01	NA	4E-02	1E-01
			Naphthalene					whole body	1.0E+00	NA	4.E-01	1E+00
		Exposure Point Total		0E+00	NA	0E+00	0E+00		2E+01	NA	2E+00	2E+01
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		2E+01	NA	2E+00	2E+01
	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Benzene					blood	NA	3E-01	NA	3E-01
			m,p-Xylene					nervous system	NA	1E+00	NA	1E+00
			o-Xylene					nervous system	NA	5E-01	NA	5E-01
			Xylene (Total)					nervous system	NA	1E+00	NA	1E+00
			Naphthalene					respiratory	NA	3E+01	NA	3E+01
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	4E+01	NA	4E+01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	4E+01	NA	4E+01
Medium Total				0E+00	0E+00	0E+00	0E+00		2E+01	4E+01	2E+00	6E+01
Receptor Total				0E+00	0E+00	0E+00	0E+00		2E+01	4E+01	2E+00	6E+01

NA = Not applicable or not available

Total Blood HI Across Media =	2E+00
Total Immune System HI Across Media =	2E+00
Total Nervous System HI Across Media =	3E+00
Total Respiratory HI Across Media =	4E+01
Total Skin HI Across Media =	1E+01
Total Whole Body HI Across Media =	1E+00

TABLE 10.32.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Arsenic	6E-04	NA	5E-05	6E-04					
			Aroclor-1254	2E-06	NA	8E-07	3E-06					
			Aroclor-1260	5E-06	NA	2E-06	8E-06					
			Benzo(a)anthracene	1E-03	NA	6E-04	2E-03					
			Benzo(a)pyrene	8E-03	NA	3E-03	1E-02					
			Benzo(b)fluoranthene	9E-04	NA	4E-04	1E-03					
			Benzo(k)fluoranthene	7E-05	NA	3E-05	1E-04					
			Carbazole	3E-06	NA	1E-07	3E-06					
			Chrysene	1E-05	NA	5E-06	2E-05					
			Dibenz(a,h)anthracene	2E-03	NA	6E-04	2E-03					
			Indeno(1,2,3-c,d)pyrene	5E-04	NA	2E-04	6E-04					
		Exposure Point Total		1E-02	NA	5E-03	2E-02		0E+00	NA	0E+00	0E+00
	Exposure Medium Total			1E-02	NA	5E-03	2E-02		0E+00	NA	0E+00	0E+00
	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Benzene	NA	2E-05	NA	2E-05					
		Exposure Point Total		NA	2E-05	NA	2E-05		NA	0E+00	NA	0E+00
	Exposure Medium Total			NA	2E-05	NA	2E-05		NA	0E+00	NA	0E+00
Medium Total				1E-02	2E-05	5E-03	2E-02		0E+00	0E+00	0E+00	0E+00
Receptor Total				1E-02	2E-05	5E-03	2E-02		0E+00	0E+00	0E+00	0E+00

NA = Not applicable or not available

TABLE 10.33.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	OU1 Above Clay - Tap Water	Arsenic	NA	NA	NA	NA	skin	1E+04	NA	6E+01	1E+04
			Iron	NA	NA	NA	NA	NA	2E+01	NA	1E-01	2E+01
			Benzene	NA	NA	NA	NA	blood	1E+01	NA	2E+00	1E+01
			Ethylbenzene	NA	NA	NA	NA	liver, kidney	1E-01	NA	8E-02	2E-01
			Toluene	NA	NA	NA	NA	kidney	4E-01	NA	1E-01	5E-01
			Trichloroethene	NA	NA	NA	NA	liver, kidney, fetus	4E-01	NA	7E-02	5E-01
			m,p-Xylene	NA	NA	NA	NA	whole body	8E-02	NA	5E-02	1E-01
			Xylene (Total)	NA	NA	NA	NA	whole body	2E-01	NA	9E-02	3E-01
			2,4-Dimethylphenol	NA	NA	NA	NA	blood	2E+00	NA	4E-01	2E+00
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	7E+00	NA	8E+00	2E+01
			2-Methylphenol	NA	NA	NA	NA	body weight, CNS	2E-01	NA	3E-02	3E-01
			3&4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	3E-01	NA	3E-02	3E-01
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	6E+00	NA	6E-01	6E+00
			Acenaphthene	NA	NA	NA	NA	liver	2E-01	NA	3E-01	5E-01
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	3E-02	NA	1E+00	1.1E+00
			1,1'-Biphenyl	NA	NA	NA	NA	kidney	5E-02	NA	6E-02	1E-01
			Fluoranthene	NA	NA	NA	NA	liver	1E-01	NA	7E-01	9E-01
			Naphthalene	NA	NA	NA	NA	whole body	1E+01	NA	7E+00	2E+01
			Pyrene	NA	NA	NA	NA	kidney	2E-01	NA	7E-01	9E-01
		Exposure Point Total		NA	NA	NA	0.0E+00		1E+04	0E+00	8E+01	1E+04
	Exposure Medium Total			NA	NA	NA	0.0E+00		1E+04	0E+00	8E+01	1E+04

TABLE 10.33.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Air	OU1 Above Clay Shallow Aquifer Water Vapors at Showerhead	Benzene	NA	NA	NA	NA	blood	NA	1E+01	NA	1E+01
			m,p-Xylene	NA	NA	NA	NA	nervous system	NA	1E+00	NA	1.3E+00
			o-Xylene	NA	NA	NA	NA	nervous system	NA	8E-01	NA	8E-01
			Xylene (Total)	NA	NA	NA	NA	nervous system	NA	3E+00	NA	3E+00
			Naphthalene	NA	NA	NA	NA	respiratory	NA	6E+02	NA	6E+02
		Exposure Point Total		NA	NA	NA	0.0E+00		NA	6E+02	NA	6E+02
	Exposure Medium Total			NA	NA	NA	NA		NA	6E+02	NA	6E+02
Medium Total				NA	NA	NA	NA		1E+04	6E+02	8E+01	1E+04
Receptor Total				NA	NA	NA	NA		1E+04	6E+02	8E+01	1E+04

Total Blood HI Across Media =	3E+01
Total CNS HI Across Media =	7E+00
Total Kidney HI Across Media =	3E+00
Total Liver HI Across Media =	2E+00
Total Nervous System HI Across Media =	5E+00
Total Respiratory HI Across Media =	6E+02
Total Skin HI Across Media =	1E+04
Total Whole Body HI Across Media =	3E+01
Total Fetus HI Across Media =	5E-01
Total Body Weight HI Across Media =	3E-01

TABLE 10.34.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	OU1 Above Clay - Tap Water	Arsenic	NA	NA	NA	NA	skin	3E+04	NA	2E+02	3E+04
			Iron	NA	NA	NA	NA	NA	5E+01	NA	4E-01	5E+01
			Benzene	NA	NA	NA	NA	blood	3E+01	NA	4E+00	3E+01
			Ethylbenzene	NA	NA	NA	NA	liver, kidney	3E-01	NA	2E-01	5E-01
			Toluene	NA	NA	NA	NA	kidney	9E-01	NA	3E-01	1.2E+00
			Trichloroethene	NA	NA	NA	NA	liver, kidney, fetus	1E+00	NA	2E-01	1.2E+00
			m,p-Xylene	NA	NA	NA	NA	whole body	2E-01	NA	1E-01	3E-01
			o-Xylene	NA	NA	NA	NA	whole body	1E-01	NA	6E-02	2E-01
			Xylene (Total)	NA	NA	NA	NA	whole body	4E-01	NA	2E-01	6E-01
			2,4-Dimethylphenol	NA	NA	NA	NA	blood	4E+00	NA	9E-01	5E+00
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	2E+01	NA	2E+01	4E+01
			2-Methylphenol	NA	NA	NA	NA	body weight, CNS	6E-01	NA	6E-02	6E-01
			3&4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	6E-01	NA	6E-02	7E-01
			4-Methylphenol	NA	NA	NA	NA	CNS, respiratory, whole body	1E+01	NA	1E+00	1E+01
			Acenaphthene	NA	NA	NA	NA	liver	4E-01	NA	7E-01	1.1E+00
			Acenaphthylene	NA	NA	NA	NA	liver	6E-02	NA	9E-02	2E-01
			Benzo(g,h,i)perylene	NA	NA	NA	NA	kidney	6E-02	NA	3E+00	3E+00
			1,1'-Biphenyl	NA	NA	NA	NA	kidney	1E-01	NA	1E-01	3E-01
			Fluoranthene	NA	NA	NA	NA	liver	3E-01	NA	2E+00	2E+00
			Fluorene	NA	NA	NA	NA	blood	5E-01	NA	7E-02	5E-01
			Naphthalene	NA	NA	NA	NA	whole body	3E+01	NA	2E+01	4E+01
			Pyrene	NA	NA	NA	NA	kidney	4E-01	NA	2E+00	2E+00
		Exposure Point Total		NA	NA	NA	NA		3E+04	0E+00	2E+02	3E+04
	Exposure Medium Total			NA	NA	NA	NA		3E+04	0E+00	2E+02	3E+04
Medium Total				NA	NA	NA	NA		3E+04	0E+00	2E+02	3E+04
Receptor Total				NA	NA	NA	NA		3E+04	0E+00	2E+02	3E+04

Total Blood HI Across Media =	4E+01
Total CNS HI Across Media =	2E+01
Total Kidney HI Across Media =	8E+00
Total Liver HI Across Media =	5E+00
Total Respiratory HI Across Media =	5E+01
Total Skin HI Across Media =	3E+04
Total Whole Body HI Across Media =	6E+01
Total Fetus HI Across Media =	1.2E+00
Total Body Weight HI Across Media =	6E-01

TABLE 10.35.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	OU1 Above Clay - Tap Water	Arsenic	9E-01	NA	2E-02	1E+00	NA	NA	NA	NA	NA
			alpha-BHC	5E-06	NA	NA	5E-06	NA	NA	NA	NA	NA
			delta-BHC	3E-06	NA	2E-06	4E-06	NA	NA	NA	NA	NA
			Heptachlor	1E-06	NA	5E-07	2E-06	NA	NA	NA	NA	NA
			Benzene	1E-03	NA	2E-04	2E-03	NA	NA	NA	NA	NA
			Trichloroethene	3E-05	NA	5E-06	3E-05	NA	NA	NA	NA	NA
			Benzo(a)anthracene	4E-03	NA	3E-02	4E-02	NA	NA	NA	NA	NA
			Benzo(a)pyrene	3E-02	NA	8E-01	8E-01	NA	NA	NA	NA	NA
			Benzo(b)fluoranthene	3E-03	NA	5E-02	5E-02	NA	NA	NA	NA	NA
			Benzo(k)fluoranthene	2E-04	NA	2E-03	3E-03	NA	NA	NA	NA	NA
			Carbazole	4E-05	NA	2E-05	6E-05	NA	NA	NA	NA	NA
			Chrysene	3E-05	NA	3E-04	4E-04	NA	NA	NA	NA	NA
			Indeno(1,2,3-c,d)pyrene	1E-03	NA	2E-02	3E-02	NA	NA	NA	NA	NA
		Exposure Point Total		1E+00	NA	9E-01	1E+00	NA	NA	NA	NA	NA
	Exposure Medium Total			1E+00	NA	9E-01	1E+00	NA	NA	NA	NA	NA
	Air	OU1 Above Clay Shallow Aquifer Water Vapors at Showerhead	Benzene	NA	1E-03	NA	1E-03	NA	NA	NA	NA	NA
			Trichloroethene	NA	4E-05	NA	4E-05	NA	NA	NA	NA	NA
		Exposure Point Total		NA	1E-03	NA	1E-03		NA	NA	NA	NA
	Exposure Medium Total			NA	1E-03	NA	1E-03		NA	NA	NA	NA
Medium Total				1E+00	1E-03	9E-01	1E+00		NA	NA	NA	NA
Receptor Total				1E+00	1E-03	9E-01	1E+00		NA	NA	NA	NA

TABLE 10.36.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	OU1 Below Clay - Tap Water	Trichloroethene	NA	NA	NA	NA	liver, kidney, fetus	3E+01	NA	6E+00	4E+01
			2-Methylnaphthalene	NA	NA	NA	NA	respiratory	6E-02	NA	7E-02	1E-01
		Exposure Point Total		NA	NA	NA	NA		3E+01	0E+00	6E+00	4E+01
	Exposure Medium Total			NA	NA	NA	NA		3E+01	0E+00	6E+00	4E+01
	Air	OU1 Below Clay Shallow Aquifer Water Vapors at Showerhead	Trichloroethene	NA	NA	NA	NA	nervous system, eyes	NA	2E+00	NA	2E+00
			Naphthalene	NA	NA	NA	NA	respiratory	NA	1E+01	NA	1E+01
		Exposure Point Total		NA	NA	NA	NA		0E+00	1E+01	0E+00	1E+01
	Exposure Medium Total			NA	NA	NA	NA		0E+00	1E+01	0E+00	1E+01
Medium Total				NA	NA	NA	NA		3E+01	1E+01	6E+00	6E+01
Receptor Total				NA	NA	NA	NA		3E+01	1E+01	6E+00	6E+01

Total Kidney HI Across Media =	4E+01
Total Liver HI Across Media =	4E+01
Total Nervous System HI Across Media =	2E+00
Total Respiratory HI Across Media =	1E+01
Total Eyes HI Across Media =	2E+00
Total Fetus HI Across Media =	4E+01

TABLE 10.37.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	OU1 Below Clay - Tap Water	Arsenic	NA	NA	NA	NA	skin	1E+00	NA	8E-03	1.2E+00
			Trichloroethene	NA	NA	NA	NA	liver, kidney, fetus	8E+01	NA	1E+01	9E+01
		Exposure Point Total		NA	NA	NA	NA		8E+01	0E+00	1E+01	9E+01
	Exposure Medium Total			NA	NA	NA	NA		8E+01	0E+00	1E+01	9E+01
Medium Total				NA	NA	NA	NA		8E+01	0E+00	1E+01	9E+01
Receptor Total				NA	NA	NA	NA		8E+01	0E+00	1E+01	9E+01

Total Kidney HI Across Media =	9E+01
Total Liver HI Across Media =	9E+01
Total Skin HI Across Media =	1.2E+00
Total Fetus HI Across Media =	9E+01

TABLE 10.38.RME
RISK SUMMARY
REASONABLE MAXIMUM EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	OU1 Below Clay - Tap Water	Arsenic	1E-04	NA	7E-07	1E-04	NA	NA	NA	NA	NA
			Benzene	6E-06	NA	1E-06	7E-06	NA	NA	NA	NA	NA
			Tetrachloroethene	8E-05	NA	5E-05	1E-04	NA	NA	NA	NA	NA
			Trichloroethene	2E-03	NA	4E-04	3E-03	NA	NA	NA	NA	NA
			Vinyl chloride	2E-06	NA	1E-07	2E-06	NA	NA	NA	NA	NA
			Benzo(a)anthracene	1E-05	NA	1E-04	1E-04	NA	NA	NA	NA	NA
			Carbazole	1E-06	NA	5E-07	2E-06	NA	NA	NA	NA	NA
		Exposure Point Total		2E-03	0E+00	5E-04	3E-03		NA	NA	NA	NA
	Exposure Medium Total			2E-03	0E+00	5E-04	3E-03		NA	NA	NA	NA
	Air	OU1 Below Clay Shallow Aquifer Water Vapors at Showerhead	Benzene	NA	5E-06	NA	5E-06	NA	NA	NA	NA	NA
			Tetrachloroethene	NA	4E-06	NA	4E-06	NA	NA	NA	NA	NA
			Trichloroethene	NA	3E-03	NA	3E-03	NA	NA	NA	NA	NA
		Chemical Total		0E+00	3E-03	0E+00	3E-03		NA	NA	NA	NA
	Exposure Medium Total			0E+00	3E-03	0E+00	3E-03		NA	NA	NA	NA
Medium Total				2E-03	3E-03	5E-04	6E-03		NA	NA	NA	NA
Receptor Total				2E-03	3E-03	5E-04	6E-03		NA	NA	NA	NA

TABLE 10.3.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Arsenic	9E-05	NA	4E-06	9E-05	skin	2E+00	NA	9E-02	2E+00
			Benzo(a)anthracene	1E-05	NA	2E-06	1E-05					
			Benzo(a)pyrene	9E-05	NA	2E-05	1E-04					
			Benzo(b)fluoranthene	1E-05	NA	2E-06	1E-05					
			Dibenz(a,h)anthracene	2E-05	NA	3E-06	2E-05					
			Indeno(1,2,3-c,d)pyrene	5E-06	NA	8E-07	6E-06					
		Exposure Point Total		2E-04	NA	3E-05	2E-04		2E+00	NA	9E-02	2E+00
	Exposure Medium Total			2E-04	NA	3E-05	2E-04		2E+00	NA	9E-02	2E+00
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Benzene	NA	4E-06	NA	4E-06	respiratory	NA	5E+00	NA	5E+00
			Naphthalene									
		Exposure Point Total		NA	4E-06	NA	4E-06		NA	5E+00	NA	5E+00
	Exposure Medium Total			NA	4E-06	NA	4E-06		NA	5E+00	NA	5E+00
Medium Total				2E-04	4E-06	3E-05	3E-04		2E+00	5E+00	9E-02	7E+00
Receptor Total				2E-04	4E-06	3E-05	3E-04		2E+00	5E+00	9E-02	7E+00

NA = Not applicable or not available

Total Respiratory HI Across Media =	5E+00
Total Skin HI Across Media =	2E+00

TABLE CTE

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Quanta Resources Subsurface Soil (0 - 10 ft)	Arsenic	1E-04	NA	3E-05	1E-04	skin	2E+01	NA	5E+00	2E+01
			2-Methylnaphthalene					respiratory	3E-01	NA	3E-02	3E-01
			Benzo(a)anthracene	5E-06	NA	7E-06	1E-05					
			Benzo(a)pyrene	5E-05	NA	6E-05	1E-04					
			Benzo(b)fluoranthene	6E-06	NA	7E-06	1E-05					
			Dibenz(a,h)anthracene	8E-06	NA	1E-05	2E-05					
			Indeno(1,2,3-c,d)pyrene	3E-06	NA	3E-06	6E-06					
			Naphthalene					whole body	4E-01	NA	6E-01	1E+00
		Exposure Point Total		2E-04	NA	1E-04	3E-04		2E+01	NA	6E+00	2E+01
	Exposure Medium Total			2E-04	NA	1E-04	3E-04		2E+01	NA	6E+00	2E+01
	Ambient Air	Quanta Resources Emissions from Subsurface Soil (0 - 10 ft)	Arsenic	NA	6E-06	NA	6E-06	respiratory	NA	3E+01	NA	3E+01
			Naphthalene									
		Exposure Point Total		NA	6E-06	NA	6E-06		NA	3E+01	NA	3E+01
	Exposure Medium Total			NA	6E-06	NA	6E-06		NA	3E+01	NA	3E+01
Medium Total				2E-04	6E-06	1E-04	3E-04		2E+01	3E+01	6E+00	5E+01
Groundwater	Groundwater (Excavation)	Quanta Resources (Excavation)	2-Methylnaphthalene					respiratory	NA	NA	3E-01	3E-01
			Benzo(a)anthracene	NA	NA	2E-05	2E-05					
			Benzo(a)pyrene	NA	NA	2E-04	2E-04					
			Benzo(b)fluoranthene	NA	NA	2E-05	2E-05					
			Benzo(k)fluoranthene	NA	NA	1E-06	1E-06					
			Dibenz(a,h)anthracene	NA	NA	3E-05	3E-05					
			Indeno(1,2,3-c,d)pyrene	NA	NA	1E-05	1E-05					
			Naphthalene					whole body	NA	NA	3E-01	3E-01
		Exposure Point Total		NA	NA	3E-04	3E-04		NA	NA	6E-01	6E-01
	Exposure Medium Total			NA	NA	3E-04	3E-04		NA	NA	6E-01	6E-01

TABLE 10.4.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air (Excavation)	Quanta Resources (Excavation)	Naphthalene					respiratory	NA	4E+00	NA	4E+00
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	4E+00	NA	4E+00
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	4E+00	NA	4E+00
Medium Total				NA	0E+00	3E-04	3E-04		NA	4E+00	6E-01	5E+00
Receptor Total				2E-04	6E-06	4E-04	6E-04		2E+01	3E+01	6E+00	6E+01

NA = Not applicable or not available

Total Respiratory HI Across Media =	3E+01
Total Skin HI Across Media =	2E+01
Total Whole Body HI Across Media =	1E+00

TABLE 10.5.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Arsenic					skin	3E+00	NA	1E-01	4E+00
		Exposure Point Total							3E+00	NA	1E-01	4E+00
	Exposure Medium Total								3E+00	NA	1E-01	4E+00
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Naphthalene					respiratory	NA	8E+00	NA	8E+00
		Exposure Point Total							NA	8E+00	NA	8E+00
	Exposure Medium Total								NA	8E+00	NA	8E+00
Medium Total									3E+00	8E+00	1E-01	1E+01
Receptor Total									3E+00	8E+00	1E-01	1E+01

NA = Not applicable or not available

Total Respiratory HI Across Media =	8E+00
Total Skin HI Across Media =	4E+00

TABLE 10.6.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Antimony					blood	3E+00	NA	2E-02	3E+00
			Arsenic					skin	3E+01	NA	1E+00	3E+01
			Copper					GI system	1E+00	NA	1E-03	1E+00
			Iron					NA	5E+00	NA	6E-03	5E+00
			Thallium					blood	8E-01	NA	9E-04	8E-01
			Mercury					immune system	6E-01	NA	1E-02	6E-01
			Aroclor-1242					immune system	1E+00	NA	2E-01	1E+00
			Aroclor-1260					immune system	5E-01	NA	8E-02	6E-01
			2-Methylnaphthalene					respiratory	5E-01	NA	5E-03	5E-01
			4-Methylphenol					CNS, respiratory, whole body	2E-01	NA	2E-03	2E-01
		Exposure Point Total							4E+01	NA	1E+00	5E+01
	Exposure Medium Total								4E+01	NA	1E+00	5E+01
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Benzene					blood	NA	6E-01	NA	6E-01
			Naphthalene					respiratory	NA	2E+01	NA	2E+01
		Exposure Point Total							NA	2E+01	NA	2E+01
	Exposure Medium Total								NA	2E+01	NA	2E+01
Medium Total									4E+01	2E+01	1E+00	7E+01
Receptor Total									4E+01	2E+01	1E+00	7E+01

NA = Not applicable or not available

Total Blood HI Across Media =	4E+00
Total Immune System HI Across Media =	2E+00
Total Respiratory HI Across Media =	2E+01
Total Skin HI Across Media =	3E+01

TABLE 10.7.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Quanta Resources Surface Soil (0 - 2 ft)	Arsenic	1E-03	NA	5E-05	1E-03					
			Aroclor-1242	4E-06	NA	6E-07	5E-06					
			Aroclor-1260	2E-06	NA	3E-07	2E-06					
			Benzo(a)anthracene	7E-04	NA	9E-05	8E-04					
			Benzo(a)pyrene	6E-03	NA	8E-04	7E-03					
			Benzo(b)fluoranthene	7E-04	NA	1E-04	8E-04					
			Benzo(k)fluoranthene	3E-05	NA	5E-06	4E-05					
			Carbazole	2E-06	NA	2E-08	2E-06					
			Chrysene	7E-06	NA	9E-07	7E-06					
			Dibenz(a,h)anthracene	1E-03	NA	2E-04	1E-03					
			Indeno(1,2,3-c,d)pyrene	3E-04	NA	5E-05	4E-04					
		Exposure Point Total		1E-02	NA	1E-03	1E-02					
	Exposure Medium Total			1E-02	NA	1E-03	1E-02					
	Ambient Air	Quanta Resources Emissions from Surface Soil (0-2 ft)	Arsenic	NA	2E-06	NA	2E-06					
			Benzene	NA	2E-05	NA	2E-05					
		Exposure Point Total		NA	2E-05	NA	2E-05					
	Exposure Medium Total			NA	2E-05	NA	2E-05					
Medium Total				1E-02	2E-05	1E-03	1E-02					
Receptor Total				1E-02	2E-05	1E-03	1E-02					

NA = Not applicable or not available

TABLE 10.9.CTE
RISK SUMMARY
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Edgewater Enterprises Subsurface Soil (0 - 10 ft)	Arsenic					skin	1E+00	NA	3E-01	1E+00
		Exposure Point Total		0E+00	NA	0E+00	0E+00		1E+00	NA	3E-01	1E+00
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		1E+00	NA	3E-01	1E+00
	Ambient Air	Edgewater Enterprises Emissions from Subsurface Soil (0 - 10 ft)	Naphthalene					respiratory	NA	1E+00	NA	1E+00
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	1E+00	NA	1E+00
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	1E+00	NA	1E+00
Medium Total				0E+00	0E+00	0E+00	0E+00		1E+00	1E+00	3E-01	3E+00
Groundwater	Groundwater (Excavation)	Edgewater Enterprises (Excavation)	Arsenic					skin	NA	NA	2E+00	2E+00
		Exposure Point Total		NA	NA	0E+00	0E+00		NA	NA	2E+00	2E+00
	Exposure Medium Total			NA	NA	0E+00	0E+00		NA	NA	2E+00	2E+00
	Ambient Air (Excavation)	Edgewater Enterprises (Excavation)	Naphthalene					respiratory	NA	3E-01	NA	3E-01
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	3E-01	NA	3E-01
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	3E-01	NA	3E-01
Medium Total				NA	0E+00	0E+00	0E+00		NA	3E-01	2E+00	3E+00
Receptor Total				0E+00	0E+00	0E+00	0E+00		1E+00	2E+00	3E+00	5E+00

NA = Not applicable or not available

Total Respiratory HI Across Media =	2E+00
Total Skin HI Across Media =	4E+00

TABLE 10.14.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Daycare Child
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Arsenic	8E-06	NA	1E-06	9E-06					
			Benzo(a)anthracene	2E-05	NA	7E-06	3E-05					
			Benzo(a)pyrene	2E-04	NA	6E-05	3E-04					
			Benzo(b)fluoranthene	3E-05	NA	7E-06	3E-05					
			Benzo(k)fluoranthene	1E-06	NA	4E-07	2E-06					
			Dibenz(a,h)anthracene	4E-05	NA	1E-05	5E-05					
			Indeno(1,2,3-c,d)pyrene	1E-05	NA	4E-06	2E-05					
		Exposure Point Total		3E-04	NA	9E-05	4E-04					<1
	Exposure Medium Total			3E-04	NA	9E-05	4E-04					<1
Medium Total				3E-04	0E+00	9E-05	4E-04					<1
Receptor Total				3E-04	0E+00	9E-05	4E-04					<1

NA = Not applicable or not available

TABLE 10.15.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	115 River Road Subsurface Soil (0 - 10 ft)	2-Methylnaphthalene					respiratory	5E-01	NA	4E-02	5E-01
		Exposure Point Total							5E-01	NA	4E-02	5E-01
	Exposure Medium Total								5E-01	NA	4E-02	5E-01
	Ambient Air	115 River Road Emissions from Subsurface Soil (0 - 10 ft)	Naphthalene					respiratory	NA	7E+00	NA	7E+00
		Exposure Point Total							NA	7E+00	NA	7E+00
	Exposure Medium Total								NA	7E+00	NA	7E+00
Medium Total									5E-01	7E+00	4E-02	7E+00
	Ambient Air (Excavation)	115 River Road (Excavation)	Naphthalene					respiratory	NA	4E-01	NA	4E-01
		Exposure Point Total							NA	4E-01	NA	4E-01
	Exposure Medium Total								NA	4E-01	NA	4E-01
Medium Total									NA	4E-01	0E+00	4E-01
Receptor Total									5E-01	7E+00	4E-02	8E+00

Total Respiratory HI Across Media = **8E+00**

TABLE 10.18.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	115 River Road Surface Soil (0 - 2 ft)	Arsenic	1E-05	NA	4E-07	1E-05					
			Benzo(a)anthracene	6E-05	NA	8E-06	7E-05					
			Benzo(a)pyrene	5E-04	NA	7E-05	6E-04					
			Benzo(b)fluoranthene	6E-05	NA	9E-06	7E-05					
			Benzo(k)fluoranthene	3E-06	NA	4E-07	4E-06					
			Dibenz(a,h)anthracene	9E-05	NA	1E-05	1E-04					
			Indeno(1,2,3-c,d)pyrene	3E-05	NA	4E-06	3E-05					
		Exposure Point Total		8E-04	NA	1E-04	9E-04					
	Exposure Medium Total			8E-04	NA	1E-04	9E-04					
Medium Total				8E-04	0E+00	1E-04	9E-04					
Receptor Total				8E-04	0E+00	1E-04	9E-04					

NA = Not applicable or not available

TABLE 10.25.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Former Lever Brothers Property Surface Soil (0 - 2 ft)	Arsenic	4E-05	NA	1E-06	4E-05					
			Benzo(a)anthracene	4E-05	NA	6E-06	5E-05					
			Benzo(a)pyrene	4E-04	NA	6E-05	5E-04					
			Benzo(b)fluoranthene	5E-05	NA	7E-06	6E-05					
			Benzo(k)fluoranthene	2E-06	NA	3E-07	3E-06					
			Dibenz(a,h)anthracene	7E-05	NA	9E-06	8E-05					
			Indeno(1,2,3-c,d)pyrene	2E-05	NA	3E-06	3E-05					
		Exposure Point Total		6E-04	NA	8E-05	7E-04					
	Exposure Medium Total			6E-04	NA	8E-05	7E-04					
Medium Total				6E-04	0E+00	8E-05	7E-04					
Receptor Total				6E-04	0E+00	8E-05	7E-04					

NA = Not applicable or not available

TABLE 10.28.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)										
		Exposure Point Total										<1
	Exposure Medium Total											<1
	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Naphthalene					respiratory	NA	9E+00	NA	9E+00
		Exposure Point Total							NA	9E+00	NA	9E+00
	Exposure Medium Total								NA	9E+00	NA	9E+00
Medium Total									0E+00	9E+00	0E+00	9E+00
Receptor Total									0E+00	9E+00	0E+00	9E+00

Total Respiratory HI Across Media = 9E+00

TABLE 10.29.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Subsurface Soil	Block 93 Subsurface Soil (0 - 10 ft)	2-Methylnaphthalene					respiratory	2E-01	NA	2E-02	2E-01
		Exposure Point Total		0E+00	NA	0E+00	0E+00		2E-01	NA	2E-02	2E-01
	Exposure Medium Total			0E+00	NA	0E+00	0E+00		2E-01	NA	2E-02	2E-01
	Ambient Air	Block 93 Emissions from Subsurface Soil (0 - 10 ft)	Naphthalene					respiratory	NA	9E+00	NA	9E+00
		Exposure Point Total		NA	0E+00	NA	0E+00		NA	9E+00	NA	9E+00
	Exposure Medium Total			NA	0E+00	NA	0E+00		NA	9E+00	NA	9E+00
Medium Total				0E+00	0E+00	0E+00	0E+00		2E-01	9E+00	2E-02	1E+01
Receptor Total				0E+00	0E+00	0E+00	0E+00		2E-01	9E+00	2E-02	1E+01

NA = Not applicable or not available

Total Respiratory HI Across Media = 1E+01

TABLE 10.30.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	m,p-Xylene					nervous system	NA	5E-01	NA	5E-01
			o-Xylene					nervous system	NA	2E-01	NA	2E-01
			Xylene (Total)					nervous system	NA	5E-01	NA	5E-01
			Naphthalene					respiratory	NA	1E+01	NA	1E+01
		Exposure Point Total							NA	2E+01	NA	2E+01
	Exposure Medium Total								NA	2E+01	NA	2E+01
Medium Total									0E+00	2E+01	0E+00	2E+01
Receptor Total									0E+00	2E+01	0E+00	2E+01

Total Nervous System HI Across Media =	1E+00
Total Respiratory HI Across Media =	1E+01

TABLE 10.31.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Antimony					blood	3E-01	NA	2E-03	3E-01
			Arsenic					skin	5E+00	NA	2E-01	5E+00
			Thallium					blood	4E-01	NA	5E-04	4E-01
			2-Methylnaphthalene					respiratory	9E-01	NA	1E-02	9E-01
		Exposure Point Total							7E+00	NA	2E-01	7E+00
	Exposure Medium Total								7E+00	NA	2E-01	7E+00
	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Benzene					blood	NA	3E-01	NA	3E-01
			m,p-Xylene					nervous system	NA	1E+00	NA	1E+00
			o-Xylene					nervous system	NA	5E-01	NA	5E-01
			Xylene (Total)					nervous system	NA	1E+00	NA	1E+00
			Naphthalene					respiratory	NA	3E+01	NA	3E+01
		Exposure Point Total							NA	4E+01	NA	4E+01
	Exposure Medium Total								NA	4E+01	NA	4E+01
Medium Total									7E+00	4E+01	2E-01	4E+01
Receptor Total									7E+00	4E+01	2E-01	4E+01

NA = Not applicable or not available

Total Blood HI Across Media =	1E+00
Total Nervous System HI Across Media =	3E+00
Total Respiratory HI Across Media =	3E+01
Total Skin HI Across Media =	5E+00

TABLE 10.32.CTE
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Child Aggregate

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Block 93 Surface Soil (0 - 2 ft)	Arsenic	6E-04	NA	5E-05	6E-04					
			Aroclor-1254	2E-06	NA	8E-07	3E-06					
			Aroclor-1260	5E-06	NA	2E-06	8E-06					
			Benzo(a)anthracene	4E-04	NA	6E-05	5E-04					
			Benzo(a)pyrene	3E-03	NA	4E-04	3E-03					
			Benzo(b)fluoranthene	3E-04	NA	4E-05	3E-04					
			Benzo(k)fluoranthene	2E-05	NA	3E-06	3E-05					
			Carbazole	3E-06	NA	1E-07	3E-06					
			Chrysene	4E-06	NA	6E-07	5E-06					
			Dibenz(a,h)anthracene	5E-04	NA	7E-05	5E-04					
			Indeno(1,2,3-c,d)pyrene	1E-04	NA	2E-05	2E-04					
		Exposure Point Total		5E-03	NA	6E-04	5E-03					
	Exposure Medium Total			5E-03	NA	6E-04	5E-03					
	Ambient Air	Block 93 Emissions from Surface Soil (0-2 ft)	Benzene	NA	2E-05	NA	2E-05					
		Exposure Point Total		NA	2E-05	NA	2E-05					
	Exposure Medium Total			NA	2E-05	NA	2E-05					
Medium Total				5E-03	2E-05	6E-04	5E-03					
Receptor Total				5E-03	2E-05	6E-04	5E-03					

Table 11.1a - RAGS D Adult Lead Worksheet
Site Name: Honeywell Quanta - Quanta Resources (Surface Soil)
Receptor: Commercial Worker, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration - used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	682.11	mg/kg	Avg Measured	750	mg/kg	Recommended Soil Screening Level

2. Lead Model Questions

Question	Response for Residential Lead Model
What lead model was used? Provide reference and version	EPA Adult Lead Model, Version date 05/19/03
If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected.	--
Where are the input values located in the risk assessment report?	Appendix T
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean value of exposure area; data presented in RAGS D Table 2.
What was the point of exposure and location?	Quanta Resources (Surface Soil)
Where are the output values located in the risk assessment report?	Appendix T
What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale.	Default GSDs of 2.1 and 2.3 for homogeneous and heterogeneous population, respectively (EPA, 2002).
What baseline blood lead concentration (PbB0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale.	Default PbB0 of 1.7 for heterogeneous population (EPA, 2002).
Was the default exposure frequency (EF; 219 days/year) used?	Yes
Was the default BKSF used (0.4 ug/dL per ug/day) used?	Yes
Was the default absorption fraction (AF; 0.12) used?	Yes
Was the default soil ingestion rate (IR; 50 mg/day) used?	Yes
If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report?	Appendix T

Table 11.1a - RAGS D Adult Lead Worksheet
Site Name: Honeywell Quanta - Quanta Resources (Surface Soil)
Receptor: Commercial Worker, Exposure to Media as Described

Medium	Result	Comment/PRG 1
Soil	Input value of 682.11 mg/kg in soil results in 4.4 % of general public residents above a blood lead level of 10 ug/dL. The geometric mean blood lead level = 2.7 ug/dL. This meets the blood lead goal as described in the 1994 OSWER Directive of no more than 5% of children (fetuses of exposed women) exceeding 10 ug/dL blood lead.	

Reference

(1) EPA. 2002. Blood Lead Concentrations of U.S> Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III).

Table 11.1b Calculations of Blood Lead Concentrations (PbBs)
Commercial Worker - Quanta Resources Property (Surface Soil)
U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 05/19/03

Exposure Variable	PbB Equation 1*	PbB Equation 2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario: Using Equation 1: GSDi = Hom	Using Equation 1: GSDi = Het	Using Equation 2: GSDi = Hom	Using Equation 2: GSDi = Het
PbS	X	X	Soil lead concentration	ug/g or ppm	682	682	682	682
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	2.1	2.3	2.1	2.3
PbB_0	X	X	Baseline PbB	ug/dL	1.5	1.7	1.5	1.7
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.050	0.050
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	219	219	219	219
$AT_{S,D}$	X	X	Averaging time (same for soil and dust)	days/yr	365	365	365	365
PbB_{adult}	**PbB of adult worker, geometric mean**			ug/dL	**2.5**	**2.7**	**2.5**	**2.7**
$PbB_{fetal,0.95}$	**95th percentile PbB among fetuses of adult workers**			ug/dL	7.6	9.5	7.6	9.5
PbB_t	**Target PbB level of concern (e.g., 10 ug/dL)**			ug/dL	**10.0**	**10.0**	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**			%	**2.2%**	**4.4%**	**2.2%**	**4.4%**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbB_{fetal,0.95}$.

*Equation 1, based on Eq. 1, 2 in USEPA (1996).

PbB_{adult} =	$(PbS*BKSF*IR_{S+D}*AF_{S,D}*EF_S/AT_{S,D}) + PbB_0$
$PbB_{fetal,0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

**Equation 2, alternate approach based on Eq. 1, 2, and A-19 in USEPA (1996).

PbB_{adult} =	$PbS*BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])/365+PbB_0$
$PbB_{fetal,0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table 11.2a - RAGS D Adult Lead Worksheet
Site Name: Honeywell Quanta - Quanta Resources (Subsurface Soil)
Receptor: Construction Worker, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	1318.86	mg/kg	Avg Measured	750	mg/kg	Recommended Soil Screening Level

2. Lead Model Questions

Question	Response for Residential Lead Model
What lead model was used? Provide reference and version	EPA Adult Lead Model, Version date 05/19/03
If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected.	--
Where are the input values located in the risk assessment report?	Appendix T
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean value of exposure area; data presented in RAGS D Table 2.
What was the point of exposure and location?	Quanta Resources (Subsurface Soil)
Where are the output values located in the risk assessment report?	Appendix T
What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale.	Default GSDs of 2.1 and 2.3 for homogeneous and heterogeneous population, respectively (EPA, 2002).
What baseline blood lead concentration (PbB0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale.	Default PbB0 of 1.7 for heterogeneous population (EPA, 2002).
Was the default exposure frequency (EF; 219 days/year) used?	Yes
Was the default BKSF used (0.4 ug/dL per ug/day) used?	Yes
Was the default absorption fraction (AF; 0.12) used?	Yes
Was the default soil ingestion rate (IR; 50 mg/day) used?	No, soil ingestion rate of 100 mg/day (CTE construction worker scenario) was used for the model.
If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report?	Appendix T

Table 11.2a - RAGS D Adult Lead Worksheet
Site Name: Honeywell Quanta - Quanta Resources (Subsurface Soil)
Receptor: Construction Worker, Exposure to Media as Described

Medium	Result	Comment/PRG 1
Soil	Input value of 1318.86 mg/kg in soil results in 19.9 % of general public residents above a blood lead level of 10 ug/dL. The geometric mean blood lead level = 5.5 ug/dL. This exceeds the blood lead goal as described in the 1994 OSWER Directive of no more than 5% of children (fetuses of exposed women) exceeding 10 ug/dL blood lead.	

Reference

(1) EPA. 2002. Blood Lead Concentrations of U.S> Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III).

Table 11.2b Calculations of Blood Lead Concentrations (PbBs)
Construction Worker - Quanta Resources Property (Subsurface Soil)
U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 05/19/03

Exposure Variable	PbB Equation 1*	PbB Equation 2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario: Using Equation 1 GSDi = Hom	Using Equation 1 GSDi = Het	Using Equation 2 GSDi = Hom	Using Equation 2 GSDi = Het
PbS	X	X	Soil lead concentration	ug/g or ppm	1319	1319	1319	1319
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	2.1	2.3	2.1	2.3
PbB_0	X	X	Baseline PbB	ug/dL	1.5	1.7	1.5	1.7
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.100	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.100	0.100
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	219	219	219	219
$AT_{S,D}$	X	X	Averaging time (same for soil and dust)	days/yr	365	365	365	365
PbB_{adult}	**PbB of adult worker, geometric mean**			**ug/dL**	**5.3**	**5.5**	**5.3**	**5.5**
$PbB_{fetal, 0.95}$	**95th percentile PbB among fetuses of adult workers**			**ug/dL**	**16.2**	**19.5**	**16.2**	**19.5**
PbB_t	**Target PbB level of concern (e.g., 10 ug/dL)**			**ug/dL**	**10.0**	**10.0**	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**			**%**	**15.9%**	**19.9%**	**15.9%**	**19.9%**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbB_{fetal,0.95}$.

*Equation 1, based on Eq. 1, 2 in USEPA (1996).

$PbB_{adult} =$	$(PbS*BKSF*IR_{S+D}*AF_{S,D}*EF_S/AT_{S,D}) + PbB_0$
$PbB_{fetal, 0.95} =$	$PbB_{adult} * (GSD_i^{1.645} * R)$

**Equation 2, alternate approach based on Eq. 1, 2, and A-19 in USEPA (1996).

$PbB_{adult} =$	$PbS*BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])/365+PbB_0$
$PbB_{fetal, 0.95} =$	$PbB_{adult} * (GSD_i^{1.645} * R)$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table 11.3 RAGS D IEUBK Lead Worksheet
Site Name: Honeywell Quanta - Quanta Resources (Surface Soil)
Receptor: Current Residential Child (Age 0 to 84 Months) Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration Used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	682.11	mg/kg	Avg Measured	400	mg/kg	Recommended Soil Screening Level
Water	4	ug/L	Default	15	ug/L	Recommended Drinking Water Action Level

2. Lead Model Questions

Question	Response for Residential Lead Model
What lead model (version and date) was used?	IEUBKwin v1.0 build 263 (December, 2005) 32-bit version
Where are the input values located in the risk assessment report?	Appendix T
What range of media concentrations were used for the model?	Refer to RAGS D Table 2.
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean value of exposure area; data presented in RAGS D Table 2.
Was soil sample taken from top 2 cm? If not, why?	Soil samples were collected from 0 to 2 feet interval.
Was soil sample sieved? What size screen was used? If not sieved, provide rationale.	No.
What was the point of exposure/location?	Quanta Resources (Surface Soil)
Where are the output values located in the risk assessment report?	Appendix T.
Was the model run using default values only?	Yes, except for soil data.
Was the default soil bioavailability used?	Yes.
Was the default soil ingestion rate used?	Yes.
If non-default values were used, where are the rationale for the values located in the risk assessment report?	Appendix T.

3. Final Result

Medium	Result	Comment/PRG 1
Soil	Input value of 682.11 mg/kg in soil results in 20.793 % of children above a blood lead level of 10 ug/dL. The geometric mean blood lead level = 6.822 ug/dL. This exceeds the blood lead goal as described in the 1994 OSWER Directive of no more than 5% of children exceeding 10 ug/dL blood lead.	Based on site conditions, a PRG of 400 mg/kg is indicated for soil.

Table 11.8b RAGS D IEUBK Lead Model Output
Site Name: Honeywell Quanta - Block 93 North (Surface Soil)
Receptor: Current Residential Child (Age 0 to 84 Months) Exposure to Media as Described

LEAD MODEL FOR WINDOWS Version 1.0

==========

Model Version: 1.0 Build 263
User Name: CH2M HILL
Date: 05/17/2007
Site Name: Honeywell Quanta
Operable Unit: Quanta Surface
Run Mode: Site Risk Assessment

==========

The time step used in this model run: 1 - Every 4 Hours (6 times a day).

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (ug Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(ug/day)
.5-1	3.160
1-2	2.600
2-3	2.870
3-4	2.740
4-5	2.610
5-6	2.740
6-7	2.990

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 ug Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used

Table 11.8b RAGS D IEUBK Lead Model Output
Site Name: Honeywell Quanta - Block 93 North (Surface Soil)
Receptor: Current Residential Child (Age 0 to 84 Months) Exposure to Media as Described

Average multiple source concentration: 487.477 ug/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
.5-1	682.110	487.477
1-2	682.110	487.477
2-3	682.110	487.477
3-4	682.110	487.477
4-5	682.110	487.477
5-6	682.110	487.477
6-7	682.110	487.477

****** Alternate Intake ******

Age	Alternate (ug Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 2.500 ug Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (ug/day)	Diet (ug/day)	Alternate (ug/day)	Water (ug/day)
.5-1	0.021	1.341	0.000	0.339
1-2	0.034	1.075	0.000	0.827
2-3	0.062	1.216	0.000	0.881
3-4	0.067	1.186	0.000	0.918
4-5	0.067	1.182	0.000	0.997
5-6	0.093	1.263	0.000	1.069
6-7	0.093	1.391	0.000	1.098

Year	Soil+Dust (ug/day)	Total (ug/day)	Blood (ug/dL)
.5-1	12.446	14.147	7.5
1-2	19.259	21.195	8.7
2-3	19.728	21.887	8.1
3-4	20.163	22.334	7.7
4-5	15.631	17.876	6.4
5-6	14.311	16.736	5.3
6-7	13.640	16.222	4.7

Table 11.4a - RAGS D Adult Lead Worksheet
Site Name: Honeywell Quanta - Edgewater (Subsurface Soil)
Receptor: Construction Worker, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	908.44	mg/kg	Avg Measured	750	mg/kg	Recommended Soil Screening Level

2. Lead Model Questions

Question	Response for Residential Lead Model
What lead model was used? Provide reference and version	EPA Adult Lead Model, Version date 05/19/03
If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected.	--
Where are the input values located in the risk assessment report?	Appendix T
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean value of exposure area; data presented in RAGS D Table 2.
What was the point of exposure and location?	Edgewater (Subsurface Soil)
Where are the output values located in the risk assessment report?	Appendix T
What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale.	Default GSDs of 2.1 and 2.3 for homogeneous and heterogeneous population, respectively (EPA, 2002).
What baseline blood lead concentration (PbB0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale.	Default PbB0 of 1.7 for heterogeneous population (EPA, 2002).
Was the default exposure frequency (EF; 219 days/year) used?	Yes
Was the default BKSF used (0.4 ug/dL per ug/day) used?	Yes
Was the default absorption fraction (AF; 0.12) used?	Yes
Was the default soil ingestion rate (IR; 50 mg/day) used?	No, soil ingestion rate of 100 mg/day (CTE construction worker scenario) was used for the model.
If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report?	Appendix T

Table 11.4a - RAGS D Adult Lead Worksheet
Site Name: Honeywell Quanta - Edgewater (Subsurface Soil)
Receptor: Construction Worker, Exposure to Media as Described

Medium	Result	Comment/PRG 1
Soil	Input value of 908.44 mg/kg in soil results in 12.8 % of general public residents above a blood lead level of 10 ug/dL. The geometric mean blood lead level = 4.3 ug/dL. This exceeds the blood lead goal as described in the 1994 OSWER Directive of no more than 5% of children (fetuses of exposed women) exceeding 10 ug/dL blood lead.	

Reference

(1) EPA. 2002. Blood Lead Concentrations of U.S> Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III).

Table 11.4b Calculations of Blood Lead Concentrations (PbBs)
Construction Worker - Edgewater Enterprised Property (Subsurface Soil)
U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 05/19/03

Exposure Variable	PbB Equation 1*	PbB Equation 2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario: Using Equation 1: GSDi = Hom	Using Equation 1: GSDi = Het	Using Equation 2: GSDi = Hom	Using Equation 2: GSDi = Het
PbS	X	X	Soil lead concentration	ug/g or ppm	908	908	908	908
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	2.1	2.3	2.1	2.3
PbB_0	X	X	Baseline PbB	ug/dL	1.5	1.7	1.5	1.7
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.100	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.100	0.100
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	219	219	219	219
$AT_{S,D}$	X	X	Averaging time (same for soil and dust)	days/yr	365	365	365	365
PbB_{adult}	**PbB of adult worker, geometric mean**			**ug/dL**	**4.1**	**4.3**	**4.1**	**4.3**
$PbB_{fetal, 0.95}$	**95th percentile PbB among fetuses of adult workers**			**ug/dL**	**12.6**	**15.3**	**12.6**	**15.3**
PbB_t	**Target PbB level of concern (e.g., 10 ug/dL)**			**ug/dL**	**10.0**	**10.0**	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distribution**			**%**	**9.0%**	**12.8%**	**9.0%**	**12.8%**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbB_{fetal,0.95}$.

*Equation 1, based on Eq. 1, 2 in USEPA (1996).

PbB_{adult} =	$(PbS*BKSF*IR_{S+D}*AF_{S,D}*EF_S/AT_{S,D}) + PbB_0$
$PbB_{fetal, 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

**Equation 2, alternate approach based on Eq. 1, 2, and A-19 in USEPA (1996).

PbB_{adult} =	$PbS*BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])/365+PbB_0$
$PbB_{fetal, 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table 11.5a - RAGS D Adult Lead Worksheet
Site Name: Honeywell Quanta - Former Lever Brothers Propety (Subsurface Soil)
Receptor: Construction Worker, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	441.03	mg/kg	Avg Measured	750	mg/kg	Recommended Soil Screening Level

2. Lead Model Questions

Question	Response for Residential Lead Model
What lead model was used? Provide reference and version	EPA Adult Lead Model, Version date 05/19/03
If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected.	--
Where are the input values located in the risk assessment report?	Appendix T
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean value of exposure area; data presented in RAGS D Table 2.
What was the point of exposure and location?	Former Lever Brothers Propety (Subsurface Soil)
Where are the output values located in the risk assessment report?	Appendix T
What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale.	Default GSDs of 2.1 and 2.3 for homogeneous and heterogeneous population, respectively (EPA, 2002).
What baseline blood lead concentration (PbB0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale.	Default PbB0 of 1.7 for heterogeneous population (EPA, 2002).
Was the default exposure frequency (EF; 219 days/year) used?	Yes
Was the default BKSF used (0.4 ug/dL per ug/day) used?	Yes
Was the default absorption fraction (AF; 0.12) used?	Yes
Was the default soil ingestion rate (IR; 50 mg/day) used?	No, soil ingestion rate of 100 mg/day (CTE construction worker scenario) was used for the model.
If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report?	Appendix T

Table 11.5a - RAGS D Adult Lead Worksheet
Site Name: Honeywell Quanta - Former Lever Brothers Propety (Subsurface Soil)
Receptor: Construction Worker, Exposure to Media as Described

Medium	Result	Comment/PRG 1
Soil	Input value of 441.03 mg/kg in soil results in 5.7 % of general public residents above a blood lead level of 10 ug/dL. The geometric mean blood lead level = 3 ug/dL. This exceeds the blood lead goal as described in the 1994 OSWER Directive of no more than 5% of children (fetuses of exposed women) exceeding 10 ug/dL blood lead.	

Reference

(1) EPA. 2002. Blood Lead Concentrations of U.S> Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III).

Table 11.5b Calculations of Blood Lead Concentrations (PbBs)
Construction Worker - Former Lever Brothers Property (Subsurface Soil)
U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 05/19/03

Exposure Variable	PbB Equation: 1*	2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario: Using Equation 1: GSDi = Hom	GSDi = Het	Using Equation 2: GSDi = Hom	GSDi = Het
PbS	X	X	Soil lead concentration	ug/g or ppm	441	441	441	441
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	2.1	2.3	2.1	2.3
PbB_0	X	X	Baseline PbB	ug/dL	1.5	1.7	1.5	1.7
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.100	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.100	0.100
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	219	219	219	219
$AT_{S,D}$	X	X	Averaging time (same for soil and dust)	days/yr	365	365	365	365
PbB_{adult}			**PbB of adult worker, geometric mean**	ug/dL	**2.8**	**3.0**	**2.8**	**3.0**
$PbB_{fetal, 0.95}$			**95th percentile PbB among fetuses of adult workers**	ug/dL	**8.4**	**10.5**	**8.4**	10.5
PbB_t			**Target PbB level of concern (e.g., 10 ug/dL)**	ug/dL	**10.0**	**10.0**	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$			**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	%	**3.1%**	**5.7%**	**3.1%**	**5.7%**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbB_{fetal,0.95}$.

*Equation 1, based on Eq. 1, 2 in USEPA (1996).

PbB_{adult} =	$(PbS*BKSF*IR_{S+D}*AF_{S,D}*EF_S/AT_{S,D}) + PbB_0$
$PbB_{fetal, 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

**Equation 2, alternate approach based on Eq. 1, 2, and A-19 in USEPA (1996).

PbB_{adult} =	$PbS*BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])/365+PbB_0$
$PbB_{fetal, 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table 11.6a - RAGS D Adult Lead Worksheet
Site Name: Honeywell Quanta - Block 93 North (Surface Soil)
Receptor: Commercial Worker, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	440.66	mg/kg	Avg Measured	750	mg/kg	Recommended Soil Screening Level

2. Lead Model Questions

Question	Response for Residential Lead Model
What lead model was used? Provide reference and version	EPA Adult Lead Model, Version date 05/19/03
If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected.	--
Where are the input values located in the risk assessment report?	Appendix T
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean value of exposure area; data presented in RAGS D Table 2.
What was the point of exposure and location?	Block 93 North (Surface Soil)
Where are the output values located in the risk assessment report?	Appendix T
What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale.	Default GSDs of 2.1 and 2.3 for homogeneous and heterogeneous population, respectively (EPA, 2002).
What baseline blood lead concentration (PbB0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale.	Default PbB0 of 1.7 for heterogeneous population (EPA, 2002).
Was the default exposure frequency (EF; 219 days/year) used?	Yes
Was the default BKSF used (0.4 ug/dL per ug/day) used?	Yes
Was the default absorption fraction (AF; 0.12) used?	Yes
Was the default soil ingestion rate (IR; 50 mg/day) used?	Yes
If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report?	Appendix T

Table 11.6a - RAGS D Adult Lead Worksheet
Site Name: Honeywell Quanta - Block 93 North (Surface Soil)
Receptor: Commercial Worker, Exposure to Media as Described

Medium	Result	Comment/PRG 1
Soil	Input value of 440.66 mg/kg in soil results in 3.1 % of general public residents above a blood lead level of 10 ug/dL. The geometric mean blood lead level = 2.3 ug/dL. This meets the blood lead goal as described in the 1994 OSWER Directive of no more than 5% of children (fetuses of exposed women) exceeding 10 ug/dL blood lead.	

Reference

(1) EPA. 2002. Blood Lead Concentrations of U.S> Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III).

Table 11.6b Calculations of Blood Lead Concentrations (PbBs)
Commercial Worker - Block 93 North Property (Surface Soil)
U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 05/19/03

Exposure Variable	PbB Equation 1*	PbB Equation 2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario: Using Equation 1: GSDi = Hom	Using Equation 1: GSDi = Het	Using Equation 2: GSDi = Hom	Using Equation 2: GSDi = Het
PbS	X	X	Soil lead concentration	ug/g or ppm	441	441	441	441
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	2.1	2.3	2.1	2.3
PbB_0	X	X	Baseline PbB	ug/dL	1.5	1.7	1.5	1.7
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.050	0.050
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	219	219	219	219
$AT_{S,D}$	X	X	Averaging time (same for soil and dust)	days/yr	365	365	365	365
PbB_{adult}			**PbB of adult worker, geometric mean**	ug/dL	**2.1**	**2.3**	**2.1**	**2.3**
$PbB_{fetal,\ 0.95}$			**95th percentile PbB among fetuses of adult workers**	ug/dL	**6.5**	**8.3**	**6.5**	**8.3**
PbB_t			**Target PbB level of concern (e.g., 10 ug/dL)**	ug/dL	**10.0**	**10.0**	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$			**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	%	**1.3%**	**3.1%**	**1.3%**	**3.1%**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbB_{fetal,0.95}$.

*Equation 1, based on Eq. 1, 2 in USEPA (1996).

PbB_{adult} =	$(PbS*BKSF*IR_{S+D}*AF_{S,D}*EF_S/AT_{S,D}) + PbB_0$
$PbB_{fetal,\ 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

**Equation 2, alternate approach based on Eq. 1, 2, and A-19 in USEPA (1996).

PbB_{adult} =	$PbS*BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])/365+PbB_0$
$PbB_{fetal,\ 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table 11.7a - RAGS D Adult Lead Worksheet
Site Name: Honeywell Quanta - Block 93 North (Subsurface Soil)
Receptor: Construction Worker, Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	908.44	mg/kg	Avg Measured	750	mg/kg	Recommended Soil Screening Level

2. Lead Model Questions

Question	Response for Residential Lead Model
What lead model was used? Provide reference and version	EPA Adult Lead Model, Version date 05/19/03
If the EPA Adult Lead Model (ALM) was not used provide rationale for model selected.	--
Where are the input values located in the risk assessment report?	Appendix T
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean value of exposure area; data presented in RAGS D Table 2.
What was the point of exposure and location?	Block 93 North (Subsurface Soil)
Where are the output values located in the risk assessment report?	Appendix T
What GSD value was used? If this is outside the recommended range of 1.8-2.1), provide rationale.	Default GSDs of 2.1 and 2.3 for homogeneous and heterogeneous population, respectively (EPA, 2002).
What baseline blood lead concentration (PbB0) value was used? If this is outside the default range of 1.7 to 2.2 provide rationale.	Default PbB0 of 1.7 for heterogeneous population (EPA, 2002).
Was the default exposure frequency (EF; 219 days/year) used?	Yes
Was the default BKSF used (0.4 ug/dL per ug/day) used?	Yes
Was the default absorption fraction (AF; 0.12) used?	Yes
Was the default soil ingestion rate (IR; 50 mg/day) used?	No, soil ingestion rate of 100 mg/day (CTE construction worker scenario) was used for the model.
If non-default values were used for any of the parameters listed above, where are the rationale for the values located in the risk assessment report?	Appendix T

Table 11.7a - RAGS D Adult Lead Worksheet
Site Name: Honeywell Quanta - Block 93 North (Subsurface Soil)
Receptor: Construction Worker, Exposure to Media as Described

Medium	Result	Comment/PRG 1
Soil	Input value of 908.44 mg/kg in soil results in 5.7 % of general public residents above a blood lead level of 10 ug/dL. The geometric mean blood lead level = 3 ug/dL. This exceeds the blood lead goal as described in the 1994 OSWER Directive of no more than 5% of children (fetuses of exposed women) exceeding 10 ug/dL blood lead.	

Reference

(1) EPA. 2002. Blood Lead Concentrations of U.S> Adult Females: Summary Statistics from Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III).

Table 11.7b Calculations of Blood Lead Concentrations (PbBs)
Construction Worker - Block 93 North Property (Subsurface Soil)
U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 05/19/03

Exposure Variable	PbB Equation 1*	PbB Equation 2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario: Using Equation 1: GSDi = Hom	Using Equation 1: GSDi = Het	Using Equation 2: GSDi = Hom	Using Equation 2: GSDi = Het
PbS	X	X	Soil lead concentration	ug/g or ppm	441	441	441	441
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	2.1	2.3	2.1	2.3
PbB_0	X	X	Baseline PbB	ug/dL	1.5	1.7	1.5	1.7
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.100	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.100	0.100
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	219	219	219	219
$AT_{S,D}$	X	X	Averaging time (same for soil and dust)	days/yr	365	365	365	365
PbB_{adult}			**PbB of adult worker, geometric mean**	ug/dL	**2.8**	**3.0**	**2.8**	**3.0**
$PbB_{fetal,\ 0.95}$			**95th percentile PbB among fetuses of adult workers**	ug/dL	**8.4**	**10.5**	**8.4**	**10.5**
PbB_t			**Target PbB level of concern (e.g., 10 ug/dL)**	ug/dL	**10.0**	**10.0**	**10.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$			**Probability that fetal PbB > PbB_t, assuming lognormal distribution**	%	**3.1%**	**5.7%**	**3.1%**	**5.7%**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same $PbB_{fetal,0.95}$.

*Equation 1, based on Eq. 1, 2 in USEPA (1996).

PbB_{adult} =	$(PbS*BKSF*IR_{S+D}*AF_{S,D}*EF_S/AT_{S,D}) + PbB_0$
$PbB_{fetal,\ 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

**Equation 2, alternate approach based on Eq. 1, 2, and A-19 in USEPA (1996).

PbB_{adult} =	$PbS*BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])/365+PbB_0$
$PbB_{fetal,\ 0.95}$ =	$PbB_{adult} * (GSD_i^{1.645} * R)$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table 11.8a RAGS D IEUBK Lead Worksheet
Site Name: Honeywell Quanta - Block 93 North (Surface Soil)
Receptor: Current Residential Child (Age 0 to 84 Months) Exposure to Media as Described

1. Lead Screening Questions

Medium	Lead Concentration Used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Soil	440.66	mg/kg	Avg Measured	400	mg/kg	Recommended Soil Screening Level
Water	4	ug/L	Default	15	ug/L	Recommended Drinking Water Action Level

2. Lead Model Questions

Question	Response for Residential Lead Model
What lead model (version and date) was used?	IEUBKwin v1.0 build 263 (December, 2005) 32-bit version
Where are the input values located in the risk assessment report?	Appendix T
What range of media concentrations were used for the model?	Refer to RAGS D Table 2.
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Arithmetic mean value of exposure area; data presented in RAGS D Table 2.
Was soil sample taken from top 2 cm? If not, why?	Soil samples were collected from 0 to 2 feet interval.
Was soil sample sieved? What size screen was used? If not sieved, provide rationale.	No.
What was the point of exposure/location?	Block 93 North (Surface Soil)
Where are the output values located in the risk assessment report?	Appendix T
Was the model run using default values only?	Yes, except for soil data.
Was the default soil bioavailability used?	Yes.
Was the default soil ingestion rate used?	Yes.
If non-default values were used, where are the rationale for the values located in the risk assessment report?	Appendix T

3. Final Result

Medium	Result	Comment/PRG 1
Soil	Input value of 440.66 mg/kg in soil results in 6.703 % of children above a blood lead level of 10 ug/dL. The geometric mean blood lead level = 4.945 ug/dL. This exceeds the blood lead goal as described in the 1994 OSWER Directive of no more than 5% of children exceeding 10 ug/dL blood lead.	Based on site conditions, a PRG of 400 mg/kg is indicated for soil.

Table 11.8b RAGS D IEUBK Lead Model Output
Site Name: Honeywell Quanta - Block 93 North (Surface Soil)
Receptor: Current Residential Child (Age 0 to 84 Months) Exposure to Media as Described

LEAD MODEL FOR WINDOWS Version 1.0

==========

Model Version: 1.0 Build 263
User Name: CH2M HILL
Date: 05/17/2007
Site Name: Honeywell Quanta
Operable Unit: Block 93 Surface
Run Mode: Site Risk Assessment

==========

The time step used in this model run: 1 - Every 4 Hours (6 times a day).

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (ug Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(ug/day)
.5-1	3.160
1-2	2.600
2-3	2.870
3-4	2.740
4-5	2.610
5-6	2.740
6-7	2.990

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 ug Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used

Table 11.8b RAGS D IEUBK Lead Model Output
Site Name: Honeywell Quanta - Block 93 North (Surface Soil)
Receptor: Current Residential Child (Age 0 to 84 Months) Exposure to Media as Described

Average multiple source concentration: 318.462 ug/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
.5-1	440.660	318.462
1-2	440.660	318.462
2-3	440.660	318.462
3-4	440.660	318.462
4-5	440.660	318.462
5-6	440.660	318.462
6-7	440.660	318.462

****** Alternate Intake ******

Age	Alternate (ug Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

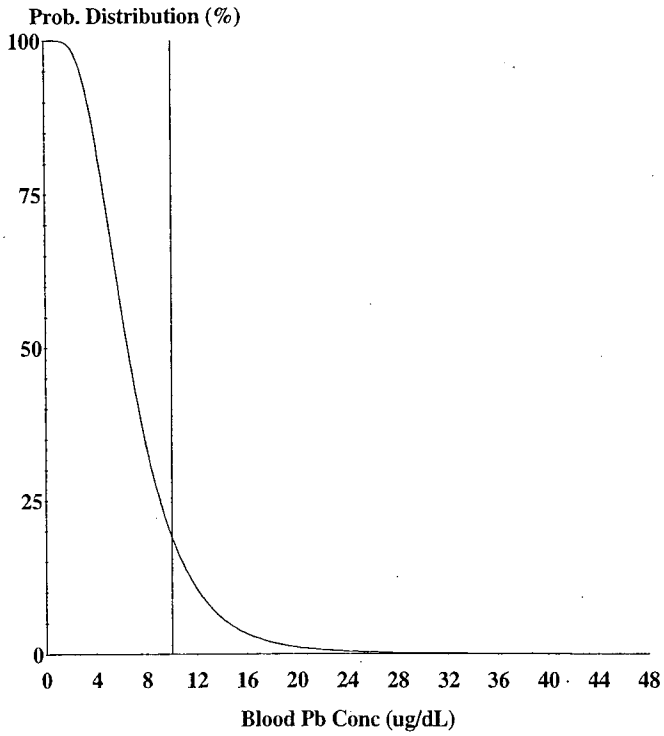
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 2.500 ug Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

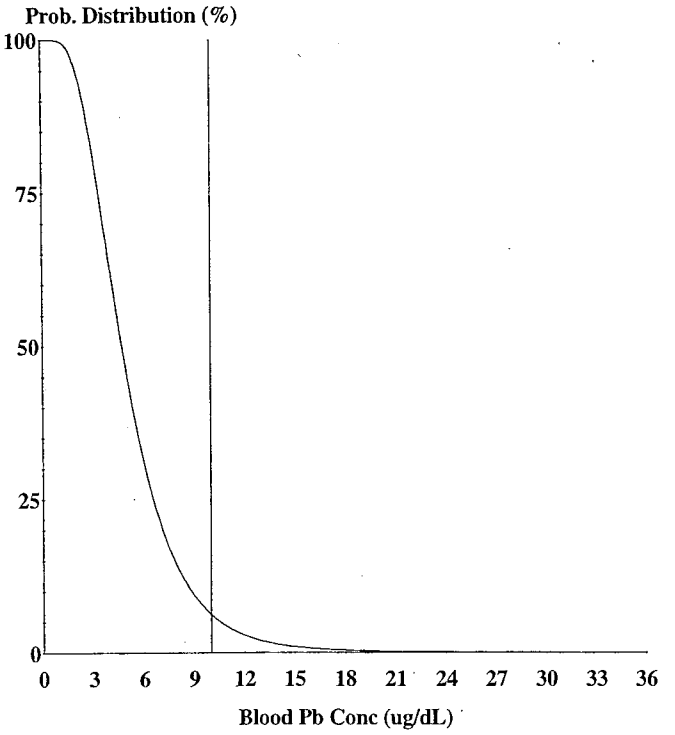
Year	Air (ug/day)	Diet (ug/day)	Alternate (ug/day)	Water (ug/day)
.5-1	0.021	1.404	0.000	0.356
1-2	0.034	1.135	0.000	0.873
2-3	0.062	1.275	0.000	0.924
3-4	0.067	1.237	0.000	0.957
4-5	0.067	1.217	0.000	1.026
5-6	0.093	1.293	0.000	1.095
6-7	0.093	1.420	0.000	1.120

Year	Soil+Dust (ug/day)	Total (ug/day)	Blood (ug/dL)
.5-1	8.465	10.246	5.5
1-2	13.210	15.253	6.3
2-3	13.443	15.704	5.8
3-4	13.661	15.922	5.5
4-5	10.447	12.757	4.6
5-6	9.515	11.996	3.8
6-7	9.043	11.676	3.4



Cutoff = 10.000 ug/dl
Geo Mean = 6.822
GSD = 1.600
% Above = 20.793

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Site Risk Assessment
Comment = SO_Quanta_SURF



Cutoff = 10.000 ug/dl
Geo Mean = 4.945
GSD = 1.600
% Above = 6.703

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Site Risk Assessment
Comment = SO_Block93_SURF

TABLE 12.1

CALCULATION OF RISK-BASED PRELIMINARY REMEDIATION GOALS FOR COCS IN SURFACE SOIL (0-2 FT)

Quanta Resources Site, OU1, Edgewater, New Jersey

	Based on ELCR[1]			Based on HQ[2]
Chemical	1×10^{-6}	1×10^{-5}	1×10^{-4}	HQ = 1.0
2-Methylnaphthalene	NA	NA	NA	304
4-Methylphenol	NA	NA	NA	380
Antimony	NA	NA	NA	31
Aroclor-1242	0.2	2	22	1
Aroclor-1254	0.2	2	22	1
Aroclor-1260	0.2	2	22	1
Arsenic	0.4	4	39	22
Benzene	11	110	1100	304
Benzo(a)anthracene	0.6	6	60	NA
Benzo(a)pyrene	0.06	0.6	6	NA
Benzo(b)fluoranthene	0.6	6	62	NA
Benzo(k)fluoranthene	6	62	620	NA
Carbazole	31	310	3096	NA
Chromium	132	1324	13241	210
Chrysene	62	620	6204	NA
Copper	NA	NA	NA	3120
Dibenz(a,h)anthracene	0.06	1	6	NA
Fluorene	NA	NA	NA	2294
Heptachlor	0.1	1	14	38
Indeno(1,2,3-c,d)pyrene	0.6	6	62	NA
Iron	NA	NA	NA	23399
Lead	NA	NA	NA	400
Mercury	NA	NA	NA	23
Naphthalene	NA	NA	NA	1146
Trichloroethene	1.1	11	113	42
Thallium	NA	NA	NA	5
Vanadium	NA	NA	NA	71
Xylene (total)	NA	NA	NA	15211
Zinc	NA	NA	NA	23399

All concentrations presented in mg/kg

[1]Calculated using exposure factors for an aggregate resident. Remedial goals for chemicals with a mutaganic mode of action (benzo(a)pyrene and dibenz(a,h)anthracene) were calculated using exposure factors for the aggregate age group with the highest

[2]Calculated using exposure factors for a child resident.

NA = Not Applicable or Not Available

TABLE 12.2

CALCULATION OF RISK-BASED PRELIMINARY REMEDIATION GOALS FOR COCs IN SUBSURFACE SOIL (2-10 FT)

Quanta Resources Site, OU1, Edgewater, New Jersey

	Based on ELCR[1]			Based on HQ[1]
Chemical	**1 x 10^{-6}**	**1 x 10^{-5}**	**1 x 10^{-4}**	**HQ = 1.0**
2-Methylnaphthalene	NA	NA	NA	1203
Antimony	NA	NA	NA	121
Arsenic	0.3	3.4	34	13
Benzene	1201	12010	120100	382
Benzo(a)anthracene	21.0	210	2100	NA
Benzo(a)pyrene	2.00	20.0	200	NA
Benzo(b)fluoranthene	21.0	210	2100	NA
Dibenz(a,h)anthracene	2.00	20.0	200	NA
Indeno(1,2,3-c,d)pyrene	21.0	210	2100	NA
Iron	NA	NA	NA	92631
Lead	NA	NA	NA	618 [2]
Naphthalene	NA	NA	NA	4247
Thallium	NA	NA	NA	20

All concentrations presented in mg/kg

[1]Calculated using exposure factors for a construction worker

[2]Calculated using the Adult Lead Methodology

NA = Not Applicable or Not Available

Equations:

Risk-based Remedial Goal for Carcinogens (mg/kg):

$$\frac{T \times BW \times AT}{EF \times ED \times [(CSFo \times IR\text{-}S) + (URF \times BW \times (1/VF+1/PEF) + (CSFd \times kg/1000000\ mg \times 10000\ cm^2/m^2 \times SA \times AF \times ABS)]}$$

where,

T = Target Cancer Risk (unitless)

BW = Body Weight (kg)

AT = Averaging Time (days)

EF = Exposure Frequency (days/year)

TABLE 12.2

CALCULATION OF RISK-BASED PRELIMINARY REMEDIATION GOALS FOR COCs IN SUBSURFACE SOIL (2-10 FT)

Quanta Resources Site, OU1, Edgewater, New Jersey

ED = Exposure Duration (years)
CSFo = Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$
IR-S = Ingestion Rate of Soil (kg/day)
CSFd = Dermal Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$
SA = Surface Area of Skin Exposed (m^2/day)
AF = Soil to Skin Adherence Factor (mg/cm^2)
ABS = Absorption Factor Solids (unitless)
URF = Inhalation Unit Risk Factor $(mg/m^3)^{-1}$
VF = Volatilazation Factor (m^3/kg)
PEF = Particulate Emission Factor (m^3/kg)

Risk-based Remedial Goal for non-carcinogens (mg/kg):

$$\frac{T \times BW \times AT}{EF \times ED \times [(RfDo \times IR\text{-}S) + (RfCi \times BW \times (1/VF+1/PEF) + (RfDad \times kg/1000000\ mg \times 10000\ cm^2/m^2 \times SA \times AF \times ABS)]}$$

where,
T = Target Hazard Index (unitless)
BW = Body Weight (kg)
AT = Averaging Time (days)
EF = Exposure Frequency (days/year)
ED = Exposure Duration (years)
RfDo = Oral Subchronic Reference Dose (mg/kg-day)
IR-S = Ingestion Rate of Soil (kg/day)
RfDad = Absorbed Subchronic Reference Dose (mg/kg-day)
SA = Surface Area of Skin Exposed (m^2/day)
AF = Soil to Skin Adherence Factor (mg/cm^2)
ABS = Absorption Factor Solids (unitless)
RfCi = Inhalation Subchronic Reference Concentration (mg/m^3)
VF = Volatilazation Factor (m^3/kg)
PEF = Particulate Emission Factor (m^3/kg)

TABLE 12.3

CALCULATION OF RISK-BASED PRELIMINARY REMEDIATION GOALS FOR COCs IN GROUNDWATER

Quanta Resources Site, OU1, Edgewater, New Jersey

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Chemical	Target Risk	Target Hazard Quotient	By Pathway - Carcinogenic Effects		Total Carcinogenic	By Pathway - Non-carcinogenic Effects		Total Non-carcinogenic	Lowest PRG
			Inhalation	Dermal		Inhalation	Dermal		
2-Methylnaphthalene	1.0E-06	1	NA	NA	NA	NA	4.3E+03	4.3E+03	4.3E+03
Arsenic	1.0E-06	1	NA	4.3E+03	4.3E+03	NA	2.8E+04	2.8E+04	4.3E+03
Benzene	1.0E-06	1	2.6E+03	7.2E+03	1.9E+03	8.6E+03	2.3E+04	6.2E+03	1.9E+03
Benzo(a)anthracene	1.0E-06	1	NA	9.5E+00	9.5E+00	NA	NA	NA	9.5E+00
Benzo(a)pyrene	1.0E-06	1	NA	5.6E-01	5.6E-01	NA	NA	NA	5.6E-01
Benzo(b)fluoranthene	1.0E-06	1	NA	5.5E+00	5.5E+00	NA	NA	NA	5.5E+00
Benzo(k)fluoranthene	1.0E-06	1	NA	5.9E+01	5.9E+01	NA	NA	NA	5.9E+01
Dibenz(a,h)anthracene	1.0E-06	1	NA	3.6E-01	3.6E-01	NA	NA	NA	3.6E-01
Indeno(1,2,3-c,d)pyren	1.0E-06	1	NA	5.3E+00	5.3E+00	NA	NA	NA	5.3E+00
Naphthalene	1.0E-06	1	NA	NA	NA	1.1E+03	3.4E+04	1.1E+03	1.1E+03

Table 12.4 Calculations of Preliminary Remediation Goals (PRGs)
Commercial Worker - Lead in Surface Soil

U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 05/19/03

Exposure Variable	PRG Equation 1*	PRG Equation 2**	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario: Using Equation 1: GSDi = Hom	Using Equation 1: GSDi = Het	Using Equation 2: GSDi = Hom	Using Equation 2: GSDi = Het
$PbB_{fetal,\ 0.95}$	X	X	95th percentile PbB in fetus	ug/dL	10	10	10	10
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	2.1	2.3	2.1	2.3
PbB_0	X	X	Baseline PbB	ug/dL	1.5	1.7	1.5	1.7
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.050	0.050
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	219	219	219	219
$AT_{S,D}$	X	X	Averaging time (same for soil and dust)	days/yr	365	365	365	365
PRG			**Preliminary Remediation Goal**	**ppm**	**1,235**	**780**	**1,235**	**780**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same PRG.

***Equation 1, based on Eq. 4 in USEPA (1996).**

$$PRG = \frac{([PbB_{95}fetal/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*(IR_{S+D}*AF_{S,D}*EF_{S,D})}$$

****Equation 2, alternate approach based on Eq. 4 and Eq. A-19 in USEPA (1996).**

$$PRG = \frac{([PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])}$$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Table 12.5 Calculations of Preliminary Remediation Goals (PRGs)
Construction Worker - Lead in Subsurface Soil

U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 05/19/03

Exposure Variable	PRG Equation *1	PRG Equation **2	Description of Exposure Variable	Units	Values for Non-Residential Exposure Scenario: Using Equation 1 GSDi = Hom	Using Equation 1 GSDi = Het	Using Equation 2 GSDi = Hom	Using Equation 2 GSDi = Het
$PbB_{fetal, 0.95}$	X	X	95th percentile PbB in fetus	ug/dL	10	10	10	10
$R_{fetal/maternal}$	X	X	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	X	X	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4	0.4	0.4
GSD_i	X	X	Geometric standard deviation PbB	--	2.1	2.3	2.1	2.3
PbB_0	X	X	Baseline PbB	ug/dL	1.5	1.7	1.5	1.7
IR_S	X		Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.100	--	--
IR_{S+D}		X	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	0.100	0.100
W_S		X	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--	1.0	1.0
K_{SD}		X	Mass fraction of soil in dust	--	--	--	0.7	0.7
$AF_{S,D}$	X	X	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12
$EF_{S,D}$	X	X	Exposure frequency (same for soil and dust)	days/yr	219	219	219	219
$AT_{S,D}$	X	X	Averaging time (same for soil and dust)	days/yr	365	365	365	365
PRG			**Preliminary Remediation Goal**	**ppm**	**618**	**390**	**618**	**390**

[1] Equation 1 does not apportion exposure between soil and dust ingestion (excludes W_S, K_{SD}).
When $IR_S = IR_{S+D}$ and $W_S = 1.0$, the equations yield the same PRG.

***Equation 1, based on Eq. 4 in USEPA (1996).**

$$PRG = \frac{([PbB_{95}fetal/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*(IR_{S+D}*AF_{S,D}*EF_{S,D})}$$

****Equation 2, alternate approach based on Eq. 4 and Eq. A-19 in USEPA (1996).**

$$PRG = \frac{([PbB_{fetal,0.95}/(R*(GSD_i^{1.645})])-PbB_0)*AT_{S,D}}{BKSF*([(IR_{S+D})*AF_S*EF_S*W_S]+[K_{SD}*(IR_{S+D})*(1-W_S)*AF_D*EF_D])}$$

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

Attachment 2
Groundwater VI Screening

APPENDIX P, ATTACHMENT 2

Vapor Intrusion Screening

Development and Application of Groundwater Screening Criteria

Development of vapor intrusion screening levels for groundwater and the comparison of those screening levels to detected groundwater concentrations were performed to support the determination of the need, if any, for further investigation and/or action at the Quanta Resources Superfund Site (the Site), as defined in the Draft Remedial Investigation Report for Operable Unit 1 (OU1). The groundwater screening levels (GWSLs) were developed to be protective of human health with respect to potential risks from the intrusion of organic compound vapors into buildings that could be built at the Site in the future. The lowest GWSL (i.e., the most conservative) was selected from those identified in the United States Environmental Protection Agency (EPA) vapor intrusion guidance (EPA, 2002) and the New Jersey Department of Environmental Protection (NJDEP) vapor intrusion guidance (NJDEP, 2005). The screening evaluation was completed by comparing the selected GWSL to the maximum detected concentration of each constituent. The results of this screening evaluation of groundwater for vapor intrusion potential provide a preliminary indication of the constituents of potential concern (COPC) for indoor air vapor intrusion from groundwater. These screening results may be used to assess if further evaluation of potential vapor intrusion at the Site is warranted.

For the vapor intrusion pathway to be complete, there must be a source of contamination, an environmental medium that is impacted (i.e., shallow groundwater), and a potentially impacted receptor that is sufficiently close to the impacted environmental medium. As a result of historic site operations, precipitation, and flooding, groundwater at the Site has been impacted by various chemical constituents migrating from the original spill location to the shallow groundwater. Under potential future conditions, constituents present in shallow groundwater could volatilize and migrate through the vadose zone soil pores into indoor air, potentially resulting in inhalation exposures. There is a potential for buildings to be constructed at various locations on the Site in the future. Therefore, potential human receptors for vapor intrusion exposure include future workers and residents within future buildings that are assumed to be constructed atop the maximum detected groundwater concentrations.

Identification of GWSLs was conducted in three steps. These steps assessed vapor intrusion screening criteria from both the EPA vapor intrusion guidance (EPA, 2002) and the NJDEP vapor intrusion guidance (NJDEP, 2005). The three-step process is described below:

Step 1

Identify constituents detected in shallow groundwater at five properties located at the Site. The five properties are identified as Quanta, 115 River Road, former Celotex, former Lever Brothers, and Block 93 North. Groundwater data collected from onsite monitoring wells

screened in the hydrostratigraphic zone above the clay layer in 2005 and 2006 were used in the evaluation. Organic constituents detected in groundwater at the five properties are presented in Table 1.

Step 2

Determine whether vapor intrusion screening is required for constituents identified in Step 1. If a chemical is volatile, it has the potential to volatilize from groundwater, migrate through the overlying vadose soils and into future indoor air spaces, potentially resulting in a future inhalation exposure.

According to the EPA vapor intrusion guidance (EPA, 2002), a constituent requires screening if it is 1) sufficiently volatile and 2) sufficiently toxic at its maximum air-water equilibrium concentration. EPA evaluates constituent volatility based on the Henry's Law Constant (i.e., the Constant must be 1E-5 atm-m^3/mol or greater). EPA considers a constituent sufficiently toxic if its carcinogenic risk exceeds 1E-6 or if its noncarcinogenic risk exceeds a hazard index of 1. Toxicity is evaluated by EPA using the constituent's maximum vapor phase concentration at air-water equilibrium (limited by constituent water solubility), inhalation of the constituent at a standard frequency and duration, and the constituent's carcinogenic or noncarcinogenic toxicity factors.

According to the NJDEP vapor intrusion guidance, a constituent requires screening if it is volatile. NJDEP evaluates constituent volatility using both the Henry's Law Constant (i.e., the Constant must be 1E-5 atm-m^3/mol or greater) and the vapor pressure (i.e., the constituent vapor pressure must be at or greater than 1 millimeter [mm] mercury [Hg]).

Detected constituents that were identified as requiring GWSLs under the EPA and NJDEP vapor intrusion guidance documents are presented in Table 2.

Step 3

For groundwater constituents requiring GWSLs as identified in Step 2, a corresponding GWSL was identified under the EPA and NJDEP vapor intrusion guidance procedures. The more conservative value was selected as the applicable GWSL. The applicable GWSL for each constituent is presented in Table 3. The NJDEP practical quantitation limit is also presented on Table 3 as an alternative screening level where analytical procedures to detect concentrations at the applicable GWSL are not practicable.

For instances where the EPA GWSL is based on the maximum contaminant level (MCL), a health-based screening concentration was calculated using the methodology presented in the EPA vapor intrusion guidance (EPA, 2002) and the generic attenuation factors. The results of the EPA GWSL calculations are provided in Table 4. For several constituents, the EPA health-based screening concentration exceeded the constituent's water solubility limit. In these cases, the constituent's water solubility limit was selected as the EPA GWSL.

For instances where a NJDEP GWSL is not available in the NJDEP vapor intrusion screening guidance tables, a GWSL was calculated using the methodology presented in NJDEP vapor intrusion guidance (NJDEP, 2005). The NJDEP methodology uses the EPA Johnson and Ettinger Model spreadsheets modified for conditions prevalent in New Jersey (included in Attachment A). The results of the NJDEP GWSL calculations are provided in Table 5.

If a constituent was not evaluated in the EPA vapor intrusion guidance, the constituent GWSL was initially screened using EPA criteria for volatility and toxicity. If a GWSL determination was required, a health-based screening concentration was calculated using the methodology presented in the EPA vapor intrusion guidance (EPA, 2002) and recorded in Table 4 cited above. The evaluation of a constituent's toxicity under EPA screening criteria is presented in Table 6.

An index is presented below for the tables cited above and for additional tables detailing the calculations and reference data in support of the EPA and NJDEP GWSL determination.

Table ID	Table Title
1	Identification of Chemicals Detected at Any Location
2	Identification of Chemicals Requiring Screening for Potential Vapor Intrusion
3	Applicable Site-Specific Groundwater Screening Levels
4	EPA Vapor Intrusion GWSL Calculation
5	NJDEP Vapor Intrusion GWSL Calculation
6	EPA Vapor Intrusion Guidance Determination of Sufficiently Toxic
7	EPA Vapor Intrusion GWSL Calculations Where TCR = 1E-6 & HI = 1.0
8	Chemical, Physical, and Toxicological Data for EPA VI Calculations
9	Risk Assessment Information System Organic Constituent Database
10	Texas Risk Reduction Program Toxicity Factor Database
11	Texas Risk Reduction Program Physical-Chemical Database (for chemicals without readily available toxicity data)
12	Constituents Listed in EPA Vapor Intrusion Guidance Table 1
13	Constituents Listed in NJDEP Vapor Intrusion Guidance Table 1, May 2006
14	NJDEP Practical Quantitation Limits
A-1	NJDEP Johnson and Ettinger Data Entry Sheet
A-2	NJDEP Johnson and Ettinger Chemical Properties Sheet
A-3	NJDEP Johnson and Ettinger Intermediate Calculations Worksheet
A-4	NJDEP Johnson and Ettinger Results Sheet
A-5	NJDEP Johnson and Ettinger VLOOKUP Data

Screening Results

After the GWSLs were identified, the data collected during 2005 and 2006 as part of the Site investigation were grouped and summarized by property location: Quanta, 115 River Road, former Celotex, former Lever Brothers, and Block 93 North. At each property location, groundwater COPCs for the future vapor intrusion pathway were evaluated by comparing the maximum detected concentrations of each COPC to its applicable vapor intrusion GWSL identified in Table 3.

The analytical data summarized below present the results of the comparison of detected concentrations to the applicable GWSLs and are also included in the tables presented in Attachment B. Note that a constituent was assumed to exceed the screening level if it was detected below the GWSL but at least one sample detection limit exceeded the constituent's GWSL. The detected constituents and their maximum concentrations (or maximum detection limit that exceeded the GWSL) are presented below. A data qualifier value of "U" denotes a constituent that was not detected at the "maximum concentration" value. A "U" qualified value is considered to be "not detected". A "J" qualified value was detected at a concentration below the detection limit and the reported concentration is an estimated value. Concentrations are reported in micrograms per liter (µg/L).

Quanta

At the Quanta property, 68 constituents were detected in the groundwater zone above the clay layer. Of these detected constituents, 16 exceeded their applicable GWSL.

COPC Name	Max. Conc.	Data Qualifier	Applicable GWSL	Exceeds GWSL?
Chloroform	100	U	0.7	Y
	0.73	J	0.7	Y
Benzene	11000		1.4	Y
Chloromethane	100	U	6.7	Y
	21	J	6.7	Y
Chloroethane	100	U	4	Y
Heptachlor	0.48	U	0.2	Y
Trichloroethene	142		0.05	Y
Naphthalene	36000		150	Y
2-Methylnaphthalene	8400		3300	Y
Isopropylbenzene	141		8.4	Y
Ethylbenzene	1300		6.9	Y
1,4-Dichlorobenzene	100	U	75	Y
1,2-Dichloroethane	100	U	1.9	Y
Toluene	4400		1500	Y
Tetrachloroethene	100	U	0.6	Y
	1		0.6	Y
Aldrin	0.96	U	0.07	Y
Methyl Tertiary Butyl Ether	100	U	78	Y

115 River Road

At the 115 River Road property, 37 constituents were detected in the groundwater zone above the clay layer. Of these detected constituents, six exceeded their applicable GWSL.

Constituent Name	Max. Conc.	Data Qualifier	Applicable GWSL	Exceeds GWSL?
Benzene	470		1.4	Y
Chloromethane	10	U	6.7	Y
Chloroethane	10	U	4	Y
Naphthalene	1600		150	Y
Isopropylbenzene	41		8.4	Y
Ethylbenzene	120		6.9	Y

Former Celotex

At the former Celotex property, 61 constituents were detected in the groundwater zone above the clay layer. Of these detected constituents, 11 exceeded their applicable GWSL.

Constituent Name	Max. Conc.	Data Qualifier	Applicable GWSL	Exceeds GWSL?
Chloroform	10	U	0.7	Y
	1.7		0.7	Y
Benzene	941		1.4	Y
Chloroethane	10	U	4	Y
	8		4	Y
Vinyl Chloride	10	U	0.2	Y
	4.4		0.2	Y
Bromodichloromethane	10	U	2.1	Y
1,2-Dichloropropane	10	U	1	Y
Trichloroethene	10	U	0.05	Y
	0.64	J	0.05	Y
Naphthalene	1200		150	Y
Isopropylbenzene	10	U	8.4	Y
1,2-Dichloroethane	10	U	1.9	Y
	2.9		1.9	Y
Tetrachloroethene	10	U	0.6	Y
	0.81	J	0.6	Y

Former Lever Brothers

At the former Lever Brothers property, 40 constituents were detected in the groundwater zone above the clay layer. Of these detected constituents, eight exceeded their applicable GWSL.

Constituent Name	Max. Conc.	Data Qualifier	Applicable GWSL	Exceeds GWSL?
Benzene	2800		1.4	Y
Chloromethane	50	U	6.7	Y
Chloroethane	50	U	4	Y
	5.5		4	Y
Trichloroethene	50	U	0.05	Y
	1.4	J	0.05	Y
Naphthalene	12000		150	Y
Isopropylbenzene (cumene)	42.9		8.4	Y
Ethylbenzene	550		6.9	Y
Toluene	2000		1500	Y

Block 93 North

At the Block 93 North property, 38 eight constituents were detected in the groundwater zone above the clay layer. Of these detected constituents, three exceeded their applicable GWSL.

Constituent Name	Max Conc	Data Qual	Applicable GWSL	Exceed GWSL?
Benzene	1.6		1.4	Y
Trichloroethene	1	U	0.05	Y
	0.2	J	0.05	Y
Tetrachloroethene	1	U	0.6	Y

Screening Criteria Uncertainties

Use of assumptions, judgments, and incomplete data contribute to the uncertainty of the determination of the vapor intrusion groundwater screening levels and their applicability. Uncertainties associated with these factors are described below.

The EPA conservatively assumes a constituent is sufficiently volatile based only on the Henry's Law Constant. Henry's Law is related to equilibrium conditions and does not take into account the rate at which a constituent transitions from the solid or liquid phase into the vapor phase. The NJDEP assumes a constituent is sufficiently volatile based on the same

criteria as EPA, but also evaluates a constituent's vapor pressure, the measure of a constituent's rate of transition into the vapor phase. This added criteria excluded several constituents from the NJDEP vapor intrusion evaluation that required evaluation under EPA. The inclusion or exclusion of constituents based on the evaluation of their potential for volatility may overestimate or underestimate the actual risk presented by the constituents evaluated.

Several constituents that required determination of GWSL under EPA did not have toxicological, chemical, or physical data in the EPA or NJDEP vapor intrusion guidance documents. Where possible, this data was identified in the Risk Assessment Information System (RAIS) database available from the Oak Ridge National Laboratory website: http://rais.ornl.gov/. The Oak Ridge RAIS database includes peer-reviewed data from a wide variety of publicly available resources. Where data were not available in the RAIS database, the necessary data were acquired from the Texas Risk Reduction Program available at: http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html. While these sources of data meet the intent of the EPA and NJDEP risk assessment hierarchy of resources for risk evaluation data and are sufficient for this screening evaluation, the potential toxicities presented by the detected constituents are subject to revision if the hierarchy of resources for chemical data is updated.

Surrogates for several constituents were used when peer-reviewed toxicity data were unavailable. The use of surrogates may overestimate or underestimate the actual toxicities posed by these constituents.

In following the EPA and NJDEP vapor intrusion guidance documents, the exposure scenario is assumed to be residential. The GWSLs were not adjusted for potential worker exposure scenarios that may occur at future buildings at the Site. If future property use does not include a residential exposure scenario, this screening evaluation overestimates the potential for future indoor air impacts.

The EPA vapor intrusion guidance recommends not using its generic tables or GWSL calculated using its methodology when groundwater is closer than 5 feet (ft) below a building's foundation. The NJDEP recommends use of its values for groundwater only when the groundwater is deeper than 2 ft below a building's foundation. The depth to groundwater at the Site may at times be less than these cited depths. Use of GWSLs in this screening evaluation may not be applicable when the depth to groundwater is less than the recommended depths.

Conclusions and Recommendations

If future Site conditions qualify as a residential exposure scenario, a potential exists for excess risk from vapor intrusion exposure at the five properties evaluated: Quanta, 115 River Road, former Celotex, former Lever Brothers, and Block 93 North. Volatile and semi-volatile COPCs in groundwater exceed the applicable GWSLs for vapor intrusion at the five properties and should be included in further evaluation of groundwater.

Aldrin was detected at concentrations below its applicable GWSL. However in samples where aldrin was not detected, at least one analytical detection limit exceeded the GWSL.

Since the presence of Aldrin is not expected to be attributable to the Site, it can be excluded from further evaluation for vapor intrusion.

Analytical detection limits exceeded GWSLs for several constituents resulting in a potential overestimation of the risk presented by these COPCs. To reduce this uncertainty and more accurately evaluate the potential risk of future vapor intrusion exposures, future groundwater sampling could consider analytical techniques to detect concentrations at the applicable GWSLs.

Additional vapor intrusion evaluations can be improved by using the New Jersey adaptation of the Johnson and Ettinger model with site-specific geotechnical and hydrologic data and exposure scenarios that more accurately reflect future site conditions. (e.g., residential or industrial, types of buildings to be constructed, locations of buildings).

References

New Jersey Department of Environmental Protection (NJDEP). 2005. *Vapor Intrusion Guidance*. http://www.state.nj.us/dep/srp/guidance/vaporintrusion. October.

Risk Assessment Information System Database (RAIS). 2007. Oak Ridge National Laboratory. http://rais.ornl.gov/. March.

Texas Risk Reduction Program (TRRP). 2007. http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html. March

United States Environmental Protection Agency (EPA). 2002. *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)*. Office of Solid Waste and Emergency Response. November. EPA530-D-02-004

Attachment A
EPA Johnson and Ettinger Model Spreadsheets

Attachment B
Comparison of Detected Concentrations to Applicable GWSLs

Table 1
Identification of Constituents Detected in Shallow Groundwater
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Detected Constituent
50293	4,4'-DDT
50328	Benzo(a)pyrene
53703	Dibenz(a,h)anthracene
56553	Benzo(a)anthracene
58899	gamma-BHC (Lindane)
67641	Acetone
67663	Chloroform
71432	Benzene
71556	1,1,1-Trichloroethane
72208	Endrin
72435	Methoxychlor
72548	4,4'-DDD
72559	4,4'-DDE
74873	Chloromethane
75003	Chloroethane
75014	Vinyl Chloride
75092	Methylene chloride
75150	Carbon Disulfide
75274	Bromodichloromethane
75343	1,1-Dichloroethane
75354	1,1-Dichloroethene
76131	Freon 113
76448	Heptachlor
78591	Isophorone
78875	1,2-Dichloropropane
78933	2-Butanone
79016	Trichloroethene
83329	Acenaphthene
84662	Diethyl phthalate
85018	Phenanthrene
85687	Butylbenzylphthalate
86737	Fluorene
86748	Carbazole
87865	Pentachlorophenol
88062	2,4,6-Trichlorophenol
88744	2-Nitroaniline
88755	2-Nitrophenol
91203	Naphthalene
91576	2-Methylnaphthalene
91587	2-Chloronaphthalene
91941	3,3'-Dichlorobenzidine
92524	1,1'-Biphenyl
95476	o-Xylene
95487	2-Methylphenol
95501	1,2-Dichlorobenzene
95578	2-Chlorophenol
95954	2,4,5-Trichlorophenol

Table 1
Identification of Constituents Detected in Shallow Groundwater
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Detected Constituent
96128	1,2-Dibromo-3-Chloropropane
98828	Isopropylbenzene
98862	Acetophenone
98953	Nitrobenzene
99092	3-Nitroaniline
100016	4-Nitroaniline
100027	4-Nitrophenol
100414	Ethylbenzene
100425	Styrene
100527	Benzaldehyde
101553	4-Bromophenyl-phenylether
105602	Caprolactam
105679	2,4-Dimethylphenol
106445	4-Methylphenol
106467	1,4-Dichlorobenzene
106478	4-Chloroaniline
106934	1,2-Dibromoethane
107062	1,2-Dichloroethane
108101	4-Methyl-2-pentanone
108601	2,2'-oxybis(1-Chloropropane)
108872	Methylcyclohexane
108883	Toluene
108907	Chlorobenzene
108952	Phenol
110827	Cyclohexane
111444	bis(2-Chloroethyl)ether
111911	bis(2-Chloroethoxy)methane
117817	bis(2-Ethylhexyl)phthalate
117840	Di-n-octylphthalate
118741	Hexachlorobenzene
120127	Anthracene
120821	1,2,4-Trichlorobenzene
120832	2,4-Dichlorophenol
121142	2,4-Dinitrotoluene
124481	Dibromochloromethane
127184	Tetrachloroethene
129000	Pyrene
131113	Dimethylphthalate
132649	Dibenzofuran
156592	cis-1,2-Dichloroethene
156605	trans-1,2-Dichloroethene
191242	Benzo(g,h,i)perylene
193395	Indeno(1,2,3-cd)pyrene
205992	Benzo(b)fluoranthene
206440	Fluoranthene
207089	Benzo(k)fluoranthene

Table 1
Identification of Constituents Detected in Shallow Groundwater
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Detected Constituent
208968	Acenaphthylene
218019	Chrysene
309002	Aldrin
319846	alpha-BHC
319868	delta-BHC
534521	4,6-Dinitro-2-methylphenol
541731	1,3-Dichlorobenzene
591786	2-Hexanone
606202	2,6-Dinitrotoluene
621647	N-Nitroso-di-n-propylamine
959988	Endosulfan I
1024573	Heptachlor epoxide
1031078	Endosulfan sulfate
1330207	Xylene (Total)
1634044	Methyl Tert Butyl Ether
1912249	Atrazine
5103719	alpha-Chlordane
7005723	4-Chlorophenyl-phenylether
10061015	cis-1,3-Dichloropropene
10061026	trans-1,3-Dichloropropene
11096825	Aroclor-1260
11097691	Aroclor-1254
11104282	Aroclor-1221
11141165	Aroclor-1232
12672296	Aroclor-1248
12674112	Aroclor-1016
33213659	Endosulfan II
39638329	bis(2-Chloroisopropyl)ether
53469219	Aroclor-1242
34METPH	3&4-Methylphenol
XYLENES1314	m,p-Xylene

Notes:

Includes only constituents detected in shallow groundwater wells at the former Lever Brothers, Quanta, Block 93 North, former Celotex, or 115 River Road properties.

bis(2-Chloroisopropyl)ether CAS number is reported in the analytical data as 3968329. According to USEPA, the correct CAS is 108601.

Table 2
Identification of Chemicals Requiring Screening for Vapor Intrusion Potential
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Detected Chemical	Listed in EPA VI Guidance? [1]	Volatile under EPA VI Guidance? HLC > 1E-5 [2]	Volatility Reference [3,4]	Toxic under EPA VI Guidance? [2]	Toxicity Reference [3,4]	Determine GWSL under EPA VI Guidance? [2]	Listed in NJDEP VI Guidance? [5]	Volatile under NJDEP VI Guidance? HLC > 1E-5, VP > 1 [6]	Volatility Reference [3,4]	Determine GWSL under NJDEP VI Guidance? [6]
50293	4,4'-DDT	Yes					No	No	Non-Volatile	RAIS	No
50328	Benzo(a)pyrene	Yes					No	No	Non-Volatile	RAIS	No
53703	Dibenz(a,h)anthracene	Yes					No	No	Non-Volatile	RAIS	No
56553	Benzo(a)anthracene	Yes					No	No	Non-Volatile	RAIS	No
58899	gamma-BHC (Lindane)	Yes					Yes	No	Non-Volatile	RAIS	No
67641	Acetone	Yes					Yes	Yes			Yes
67663	Chloroform	Yes					Yes	Yes			Yes
71432	Benzene	Yes					Yes	Yes			Yes
71556	1,1,1-Trichloroethane	Yes					Yes	Yes			Yes
72208	Endrin	Yes					No	No	Non-Volatile	RAIS	No
72435	Methoxychlor	Yes					Yes	No	Non-Volatile	RAIS	No
72548	4,4'-DDD	Yes					No	No	Non-Volatile	RAIS	No
72559	4,4'-DDE	Yes					Yes	No	Non-Volatile	RAIS	No
74873	Chloromethane	Yes					Yes	Yes			Yes
75003	Chloroethane	Yes					Yes	Yes			Yes
75014	Vinyl chloride	Yes					Yes	Yes			Yes
75092	Methylene chloride	Yes					Yes	Yes			Yes
75150	Carbon Disulfide	Yes					Yes	Yes			Yes
75274	Bromodichloromethane	Yes					Yes	Yes			Yes
75343	1,1-Dichloroethane	Yes					Yes	Yes			Yes
75354	1,1-Dichloroethene	Yes					Yes	Yes			Yes
76131	Freon 113	Yes					Yes	Yes			Yes
76448	Heptachlor	Yes					Yes	No	Non-Volatile	RAIS	No
78591	Isophorone	Yes					No	No	Non-Volatile	RAIS	No
78875	1,2-Dichloropropane	Yes					Yes	Yes			Yes
78933	2-Butanone	Yes					Yes	Yes			Yes
79016	Trichloroethene	Yes					Yes	Yes			Yes
83329	Acenaphthene	Yes					Yes	No	Non-Volatile	RAIS	No
84662	Diethyl phthalate	Yes					No	No	Non-Volatile	RAIS	No
85018	Phenanthrene	No	Volatile	RAIS	Toxic	TRRP	Yes	No	Non-Volatile	RAIS	No
85687	Butylbenzylpthalate	Yes					No	No	Non-Volatile	RAIS	No
86737	Fluorene	Yes					Yes	No	Non-Volatile	RAIS	No
86748	Carbazole	Yes					No	No	Non-Volatile	RAIS	No
87865	Pentachlorophenol	Yes					No	No	Non-Volatile	RAIS	No
88062	2,4,6-Trichlorophenol	Yes					No	No	Non-Volatile	RAIS	No
88744	2-Nitroaniline	No	Non-Volatile	RAIS			No	No	Non-Volatile	RAIS	No
88755	2-Nitrophenol	No	Non-Volatile	TRRP			No	No	Non-Volatile	TRRP	No
91203	Naphthalene	Yes					Yes	No	Non-Volatile	RAIS	No
91576	2-Methylnaphthalene	Yes					Yes	No	Non-Volatile	RAIS	No
91587	2-Chloronaphthalene	Yes					Yes	No	Non-Volatile	RAIS	No
91941	3,3'-Dichlorobenzidine	Yes					No	No	Non-Volatile	RAIS	No
92524	1,1'-Biphenyl	Yes					Yes	No	Non-Volatile	RAIS	No
95476	o-Xylene	Yes					Yes	No	Volatile	RAIS	Yes
95487	2-Methylphenol	Yes					No	No	Non-Volatile	RAIS	No
95501	1,2-Dichlorobenzene	Yes					Yes	Yes			Yes
95578	2-Chlorophenol	Yes					Yes	No	Volatile	RAIS	Yes
95954	2,4,5-Trichlorophenol	Yes					No	No	Non-Volatile	RAIS	No
96128	1,2-Dibromo-3-Chloropropane	Yes					Yes	No	Non-Volatile	RAIS	No
98828	Isopropylbenzene	Yes					Yes	No	Volatile	RAIS	Yes
98862	Acetophenone	Yes					Yes	No	Non-Volatile	RAIS	No

Table 2
Identification of Chemicals Requiring Screening for Vapor Intrusion Potential
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Detected Chemical	Listed in EPA VI Guidance? [1]	Volatile under EPA VI Guidance? HLC > 1E-5 [2]	Volatility Reference [3,4]	Toxic under EPA VI Guidance? [2]	Toxicity Reference [3,4]	Determine GWSL under EPA VI Guidance? [2]	Listed in NJDEP VI Guidance? [5]	Volatile under NJDEP VI Guidance? HLC > 1E-5, VP > 1 [6]	Volatility Reference [3,4]	Determine GWSL under NJDEP VI Guidance? [6]
98953	Nitrobenzene	Yes					Yes	No	Non-Volatile	RAIS	No
99092	3-Nitroaniline	No	Non-Volatile	RAIS			No	No	Non-Volatile	RAIS	No
100016	4-Nitroaniline	No	Non-Volatile	RAIS			No	No	Non-Volatile	RAIS	No
100027	4-Nitrophenol	Yes					No	No	Non-Volatile	RAIS	No
100414	Ethylbenzene	Yes					Yes	Yes			Yes
100425	Styrene	Yes					Yes	Yes			Yes
100527	Benzaldehyde	Yes					Yes	No	Non-Volatile	RAIS	No
101553	4-Bromophenyl-phenylether	No	Volatile	RAIS	Toxic	RAIS	Yes	No	Non-Volatile	RAIS	No
105602	Caprolactam	No	Non-Volatile	RAIS			No	No	Non-Volatile	RAIS	No
105679	2,4-Dimethylphenol	Yes					No	No	Non-Volatile	RAIS	No
106445	4-Methylphenol	No	Non-Volatile	RAIS			No	No	Non-Volatile	RAIS	No
106467	1,4-Dichlorobenzene	Yes					Yes	Yes			Yes
106478	4-Chloroaniline	Yes					No	No	Non-Volatile	RAIS	No
106934	1,2-Dibromoethane	Yes					Yes	Yes			Yes
107062	1,2-Dichloroethane	Yes					Yes	Yes			Yes
108101	4-Methyl-2-pentanone	Yes					Yes	Yes			Yes
108601	2,2'-oxybis(1-Chloropropane)	Yes					Yes	No	Non-Volatile	RAIS	No
108872	Methylcyclohexane	Yes					Yes	No	Volatile	RAIS	Yes
108883	Toluene	Yes					Yes	Yes			Yes
108907	Chlorobenzene	Yes					Yes	Yes			Yes
108952	Phenol	Yes					No	No	Non-Volatile	RAIS	No
110827	Cyclohexane	No	Volatile	RAIS	Toxic	RAIS	Yes	Yes			Yes
111444	bis(2-Chloroethyl)ether	Yes					Yes	No	Volatile	RAIS	Yes
111911	bis(2-Chloroethoxy)methane	No	Non-Volatile	RAIS			No	No	Non-Volatile	RAIS	No
117817	bis(2-Ethylhexyl)phthalate	Yes					No	No	Non-Volatile	RAIS	No
117840	Di-n-octylphthalate	Yes					No	No	Non-Volatile	RAIS	No
118741	Hexachlorobenzene	Yes					Yes	No	Non-Volatile	RAIS	No
120127	Anthracene	Yes					No	No	Non-Volatile	RAIS	No
120821	1,2,4-Trichlorobenzene	Yes					Yes	Yes			Yes
120832	2,4-Dichlorophenol	Yes					No	No	Non-Volatile	RAIS	No
121142	2,4-Dinitrotoluene	Yes					No	No	Non-Volatile	RAIS	No
124481	Dibromochloromethane	Yes					Yes	Yes			Yes
127184	Tetrachloroethene	Yes					Yes	Yes			Yes
129000	Pyrene	Yes					Yes	No	Non-Volatile	RAIS	No
131113	Dimethylphthalate	Yes					No	No	Non-Volatile	RAIS	No
132649	Dibenzofuran	Yes					Yes	No	Non-Volatile	RAIS	No
156592	cis-1,2-Dichloroethene	Yes					Yes	Yes			Yes
156605	trans-1,2-Dichloroethene	Yes					Yes	Yes			Yes
191242	Benzo(g,h,i)perylene	No	Non-Volatile	RAIS			No	No	Non-Volatile	RAIS	No
193395	Indeno(1,2,3-cd)pyrene	Yes					No	No	Non-Volatile	RAIS	No
205992	Benzo(b)fluoranthene	Yes					Yes	No	Non-Volatile	RAIS	No
206440	Fluoranthene	Yes					No	No	Non-Volatile	RAIS	No
207089	Benzo(k)fluoranthene	Yes					No	No	Non-Volatile	RAIS	No
208968	Acenaphthylene	No	Volatile	RAIS	Toxic	RAIS	Yes	No	Non-Volatile	RAIS	No
218019	Chrysene	Yes					Yes	No	Non-Volatile	RAIS	No
309002	Aldrin	Yes					Yes	No	Non-Volatile	RAIS	No
319846	alpha-BHC	Yes					Yes	No	Non-Volatile	RAIS	No
319868	delta-BHC	No	Non-Volatile	RAIS			No	No	Non-Volatile	RAIS	No
534521	4,6-Dinitro-2-methylphenol	Yes					No	No	Non-Volatile	RAIS	No
540590	1,2-Dichloroethene (total)	No	Volatile	cis-1,2-DCE	Toxic	cis-1,2-DCE	Yes	Yes			Yes

Table 2
Identification of Chemicals Requiring Screening for Vapor Intrusion Potential
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Detected Chemical	Listed in EPA VI Guidance? [1]	Volatile under EPA VI Guidance? HLC > 1E-5 [2]	Volatility Reference [3,4]	Toxic under EPA VI Guidance? [2]	Toxicity Reference [3,4]	Determine GWSL under EPA VI Guidance? [2]	Listed in NJDEP VI Guidance? [5]	Volatile under NJDEP VI Guidance? HLC > 1E-5, VP > 1 [6]	Volatility Reference [3,4]	Determine GWSL under NJDEP VI Guidance? [6]
541731	1,3-Dichlorobenzene	Yes					Yes	Yes			Yes
591786	2-Hexanone	No	Volatile	RAIS	Toxic	RAIS	Yes	No	Volatile	RAIS	Yes
606202	2,6-Dinitrotoluene	Yes					No	No	Non-Volatile	RAIS	No
621647	N-Nitroso-di-n-propylamine	Yes					No	No	Non-Volatile	RAIS	No
959988	Endosulfan I	No	Non-Volatile	TRRP			No	No	Non-Volatile	TRRP	No
1024573	Heptachlor epoxide	Yes					No	No	Non-Volatile	RAIS	No
1031078	Endosulfan sulfate	No	Non-Volatile	TRRP			No	No	Non-Volatile	TRRP	No
1330207	Xylene (Total)	No	Volatile	RAIS	Toxic	RAIS	Yes	Yes			Yes
1634044	Methyl Tert Butyl Ether	Yes					Yes	Yes			Yes
1912249	Atrazine	No	Non-Volatile	RAIS			No	No	Non-Volatile	RAIS	No
5103719	alpha-Chlordane	No	Volatile	TRRP	Toxic	RAIS	Yes	No	Non-Volatile	TRRP	No
7005723	4-Chlorophenyl-phenylether	No	Volatile	TRRP	Toxic	RAIS	Yes	No	Non-Volatile	TRRP	No
10061015	cis-1,3-Dichloropropene	No	Volatile	TRRP	Toxic	TRRP	Yes	No	Volatile	TRRP	Yes
10061026	trans-1,3-Dichloropropene	No	Volatile	TRRP	Toxic	TRRP	Yes	No	Volatile	TRRP	Yes
11096825	Aroclor-1260	No	Volatile	RAIS	Toxic	RAIS	Yes	No	Non-Volatile	RAIS	No
11097691	Aroclor-1254	No	Volatile	RAIS	Toxic	RAIS	Yes	No	Non-Volatile	RAIS	No
11104282	Aroclor-1221	No	Volatile	RAIS	Toxic	RAIS	Yes	No	Non-Volatile	RAIS	No
11141165	Aroclor-1232	No	Volatile	RAIS	Toxic	RAIS	Yes	No	Non-Volatile	RAIS	No
12672296	Aroclor-1248	No	Volatile	RAIS	Toxic	RAIS	Yes	No	Non-Volatile	RAIS	No
12674112	Aroclor-1016	No	Volatile	RAIS	Toxic	RAIS	Yes	No	Non-Volatile	RAIS	No
33213659	Endosulfan II	No	Non-Volatile	TRRP			No	No	Non-Volatile	TRRP	No
39638329	bis(2-Chloroisopropyl)ether	Yes					Yes	No	Non-Volatile	RAIS	No
53469219	Aroclor-1242	No	Volatile	RAIS	Toxic	RAIS	Yes	No	Non-Volatile	RAIS	No
34METPH	3&4-Methylphenol	No	Non-Volatile	2-Methylphenol			No	No	Non-Volatile	2-Methylphenol	No
XYLENES1314	m,p-Xylene	No	Volatile	o-Xylene	Toxic	o-Xylene	Yes	No	Volatile	o-Xylene	Yes

Notes:

EPA VI Guidance - *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)* , United States Environmental Protection Agency (EPA), November 2002

NJDEP VI Guidance - *Vapor Intrusion Guidance* , New Jersey Department of Environmental Protection (NJDEP), October 2005. Tables updated March 2007.

The EPA VI Guidance states that the generic groundwater screening values should not be used when the distance between the water table and the building foundation is less than 5 feet.

The NJDEP VI Guidance states that the generic groundwater screening values may be used when the distance between the water table and the building foundation is at least 2 feet.

bis(2-Chloroisopropyl)ether CAS number is reported in the analytical data as 3968329. The correct CAS is 108601.

1 - Table 1, EPA VI Guidance

2 - Under EPA VI Guidance, a chemical is considered sufficiently volatile if its Henry's Law Constant is 1E-5 atm-m^3/mol or greater. See Tables A-1a and A-1b for HLC data. A chemical is considered sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 1E-6 or results in a non-cancer hazard index greater than 1.0.

3 - Surrogates for constituents without toxicity or volatility data were chosen based on similarity of chemical and likely mode of toxicity.

4 - Volatility and toxicity references include peer-reviewed data compiled at:
RAIS - Risk Assessment Information System available at: http://rais.ornl.gov/
TRRP - Texas Risk Reduction Program available at: http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html

5 - NJDEP VI Guidance Generic Vapor Intrusion Screening Levels, updated May 2006.

6 - Under NJDEP VI Guidance, a chemical is considered for a screening evaluation of vapor intrusion if its Henry's Law Constant is at or greater than 1E-5 atm-m^3/mol and its Vapor Pressure is at or greater than 1 mm Hg.

Table 3
Applicable Site-Specific Groundwater Screening Levels
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Detected Constituents	Selected EPA VI Guidance GWSL	Selected NJDEP VI Guidance GWSL	Applicable GWSL	NJDEP PQL	PQL Notes
		a	*b*	*c = min(a,b)*		
50293	4,4'-DDT	*	*	**	1.0E-01	
50328	Benzo(a)pyrene	*	*	**	1.0E-01	
53703	Dibenz(a,h)anthracene	*	*	**	3.0E-01	
56553	Benzo(a)anthracene	*	*	**	1.0E-01	
58899	gamma-BHC (Lindane)	1.1E+01	*	1.1E+01	2.0E-02	
67641	Acetone	2.2E+05	1.9E+06	2.2E+05	1.0E+01	
67663	Chloroform	7.1E-01	7.0E+01	7.1E-01	1.0E+00	
71432	Benzene	1.4E+00	1.5E+01	1.4E+00	1.0E+00	
71556	1,1,1-Trichloroethane	3.1E+03	2.3E+03	2.3E+03	1.0E+00	
72208	Endrin	*	*	**	3.0E-02	
72435	Methoxychlor	*	*	**	1.0E-01	
72548	4,4'-DDD	*	*	**	2.0E-02	
72559	4,4'-DDE	2.9E+01	*	2.9E+01	1.0E-02	
74873	Chloromethane	6.7E+00	2.4E+02	6.7E+00	NA	
75003	Chloroethane	2.8E+04	4.0E+00	4.0E+00	NA	
75014	Vinyl chloride	2.4E-01	1.0E+00	2.4E-01	1.0E+00	
75092	Methylene chloride	5.8E+01	5.3E+01	5.3E+01	1.0E+00	
75150	Carbon Disulfide	5.6E+02	7.1E+02	5.6E+02	1.0E+00	
75274	Bromodichloromethane	2.1E+00	5.0E+00	2.1E+00	1.0E+00	
75343	1,1-Dichloroethane	2.2E+03	3.6E+03	2.2E+03	1.0E+00	
75354	1,1-Dichloroethene	1.9E+02	2.5E+02	1.9E+02	1.0E+00	
76131	Freon 113	1.5E+03	2.4E+03	1.5E+03	NA	
76448	Heptachlor	1.6E-01	*	1.6E-01	5.0E-02	
78591	Isophorone	*	*	**	1.0E+01	
78875	1,2-Dichloropropane	3.5E+01	1.0E+00	1.0E+00	1.0E+00	
78933	2-Butanone	4.4E+05	2.7E+06	4.4E+05	2.0E+00	
79016	Trichloroethene	5.5E-02	1.0E+00	5.5E-02	1.0E+00	
83329	Acenaphthene	*	*	**	1.0E+01	
84662	Diethyl phthalate	*	*	**	1.0E+00	
85018	Phenanthrene	*	*	**	NA	
85687	Butylbenzylpthalate	*	*	**	1.0E+00	
86737	Fluorene	*	*	**	1.0E+00	
86748	Carbazole	*	*	**	NA	
87865	Pentachlorophenol	*	*	**	1.0E-01	
88062	2,4,6-Trichlorophenol	*	*	**	2.0E+01	
88744	2-Nitroaniline	*	*	**	NA	
88755	2-Nitrophenol	*	*	**	NA	
91203	Naphthalene	1.5E+02	*	1.5E+02	2.0E+00	
91576	2-Methylnaphthalene	3.3E+03	*	3.3E+03	NA	
91587	2-Chloronaphthalene	*	*	**	1.0E+01	

Table 3
Applicable Site-Specific Groundwater Screening Levels
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Detected Constituents	Selected EPA VI Guidance GWSL	Selected NJDEP VI Guidance GWSL	Applicable GWSL	NJDEP PQL	PQL Notes
		a	*b*	*c = min(a,b)*		
91941	3,3'-Dichlorobenzidine	*	*	**	3.0E+01	
92524	1,1'-Biphenyl	*	*	**	1.0E+01	
95476	o-Xylene	3.3E+04	Xylenes	Xylenes	2.0E+00	Xylenes (total)
95487	2-Methylphenol	*	*	**	NA	
95501	1,2-Dichlorobenzene	2.6E+03	5.9E+03	2.6E+03	5.0E+00	
95578	2-Chlorophenol	1.1E+03	4.0E+01	4.0E+01	2.0E+01	
95954	2,4,5-Trichlorophenol	*	*	**	1.0E+01	
96128	1,2-Dibromo-3-Chloropropan	3.3E+01	*	3.3E+01	2.0E-02	
98828	Isopropylbenzene	8.4E+00	2.2E+01	8.4E+00	1.0E+00	
98862	Acetophenone	8.0E+05	*	8.0E+05	1.0E+01	
98953	Nitrobenzene	2.0E+03	*	2.0E+03	6.0E+00	
99092	3-Nitroaniline	*	*	**	NA	
100016	4-Nitroaniline	*	*	**	NA	
100027	4-Nitrophenol	*	*	**	NA	
100414	Ethylbenzene	6.9E+00	6.1E+04	6.9E+00	2.0E+00	
100425	Styrene	8.9E+03	1.8E+04	8.9E+03	2.0E+00	
100527	Benzaldehyde	3.6E+05	*	3.6E+05	NA	
101553	4-Bromophenyl-phenylether	*	*	**	NA	
105602	Caprolactam	*	*	**	NA	
105679	2,4-Dimethylphenol	*	*	**	2.0E+01	
106445	4-Methylphenol	*	*	**	NA	
106467	1,4-Dichlorobenzene	8.2E+03	7.5E+01	7.5E+01	5.0E+00	
106478	4-Chloroaniline	*	*	**	1.0E+01	
106934	1,2-Dibromoethane	3.6E-01	4.0E-01	3.6E-01	3.0E-02	
107062	1,2-Dichloroethane	1.9E+00	2.0E+00	1.9E+00	2.0E+00	
108101	4-Methyl-2-pentanone	1.4E+04	8.8E+05	1.4E+04	NA	
108601	2,2'-oxybis(1-Chloropropane)	5.1E+01	*	5.1E+01	1.0E+01	
108872	Methylcyclohexane	7.1E+02	1.3E+03	7.1E+02	NA	
108883	Toluene	1.5E+03	3.1E+05	1.5E+03	1.0E+00	
108907	Chlorobenzene	3.9E+02	6.4E+02	3.9E+02	1.0E+00	
108952	Phenol	*	*	**	1.0E+01	
110827	Cyclohexane	7.6E+02	1.2E+03	7.6E+02	NA	
111444	bis(2-Chloroethyl)ether	1.0E+01	7.0E+00	7.0E+00	7.0E+00	
111911	bis(2-Chloroethoxy)methane	*	*	**	NA	
117817	bis(2-Ethylhexyl)phthalate	*	*	**	3.0E+00	
117840	Di-n-octylphthalate	*	*	**	1.0E+01	
118741	Hexachlorobenzene	7.6E-02	*	7.6E-02	2.0E-02	
120127	Anthracene	*	*	**	1.0E+01	
120821	1,2,4-Trichlorobenzene	3.4E+03	2.8E+03	2.8E+03	1.0E+00	
120832	2,4-Dichlorophenol	*	*	**	1.0E+01	

Table 3
Applicable Site-Specific Groundwater Screening Levels
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Detected Constituents	Selected EPA VI Guidance GWSL	Selected NJDEP VI Guidance GWSL	Applicable GWSL	NJDEP PQL	PQL Notes
		a	*b*	*c = min(a,b)*		
121142	2,4-Dinitrotoluene	*	*	**	1.0E+01	
124481	Dibromochloromethane	3.2E+00	9.0E+00	3.2E+00	1.0E+00	
127184	Tetrachloroethene	5.7E-01	1.0E+00	5.7E-01	1.0E+00	
129000	Pyrene	*	*	**	1.0E-01	
131113	Dimethylphthalate	*	*	**	NA	
132649	Dibenzofuran	*	*	**	NA	
156592	cis-1,2-Dichloroethene	2.1E+02	3.5E+02	2.1E+02	1.0E+00	
156605	trans-1,2-Dichloroethene	1.8E+02	3.0E+02	1.8E+02	1.0E+00	
191242	Benzo(g,h,i)perylene	*	*	**	NA	
193395	Indeno(1,2,3-cd)pyrene	*	*	**	2.0E-01	
205992	Benzo(b)fluoranthene	*	*	**	2.0E-01	
206440	Fluoranthene	*	*	**	1.0E+01	
207089	Benzo(k)fluoranthene	*	*	**	3.0E-01	
208968	Acenaphthylene	*	*	**	NA	
218019	Chrysene	*	*	**	2.0E-01	
309002	Aldrin	7.1E-02	*	7.1E-02	4.0E-02	
319846	alpha-BHC	3.1E+00	*	3.1E+00	2.0E-02	
319868	delta-BHC	*	*	**	NA	
534521	4,6-Dinitro-2-methylphenol	*	*	**	NA	
540590	1,2-Dichloroethene (total)	1.5E+01	1.9E+02	1.5E+01	1.0E+00	
541731	1,3-Dichlorobenzene	8.3E+02	6.0E+02	6.0E+02	5.0E+00	
591786	2-Hexanone	1.2E+03	2.0E+03	1.2E+03	NA	
606202	2,6-Dinitrotoluene	*	*	**	1.0E+01	
621647	N-Nitroso-di-n-propylamine	*	*	**	1.0E+01	
959988	Endosulfan I	*	*	**	2.0E-02	
1024573	Heptachlor epoxide	*	*	**	2.0E-01	
1031078	Endosulfan sulfate	*	*	**	2.0E-02	
1330207	Xylene (Total)	2.6E+04	7.0E+03	7.0E+03	2.0E+00	
1634044	Methyl Tert Butyl Ether	1.2E+05	7.8E+01	7.8E+01	1.0E+00	
1912249	Atrazine	*	*	**	1.0E-01	
5103719	alpha-Chlordane	5.9E+00	*	5.9E+00	5.0E-01	Clordane
7005723	4-Chlorophenyl-phenylether	5.7E-02	*	5.7E-02	NA	
10061015	cis-1,3-Dichloropropene	8.4E-01	1.0E+00	8.4E-01	1.0E+00	1,3-DCP
10061026	trans-1,3-Dichloropropene	8.4E-01	1.0E+00	8.4E-01	1.0E+00	1,3-DCP
11096825	Aroclor-1260	*	*	**	5.0E-01	PCBs
11097691	Aroclor-1254	2.1E+00	*	2.1E+00	5.0E-01	PCBs
11104282	Aroclor-1221	2.6E+00	*	2.6E+00	5.0E-01	PCBs
11141165	Aroclor-1232	2.6E+00	*	2.6E+00	5.0E-01	PCBs
12672296	Aroclor-1248	1.4E+00	*	1.4E+00	5.0E-01	PCBs
12674112	Aroclor-1016	3.0E+00	*	3.0E+00	5.0E-01	PCBs

Table 3
Applicable Site-Specific Groundwater Screening Levels
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Detected Constituents	Selected EPA VI Guidance GWSL	Selected NJDEP VI Guidance GWSL	Applicable GWSL	NJDEP PQL	PQL Notes
		a	*b*	*c = min(a,b)*		
33213659	Endosulfan II	*	*	**	4.0E-02	
39638329	bis(2-Chloroisopropyl)ether	5.1E+01	*	5.1E+01	1.0E+01	
53469219	Aroclor-1242	3.0E-01	*	3.0E-01	5.0E-01	PCBs
34METPH	3&4-Methylphenol	*	*	**	NA	
XYLENES1314	m,p-Xylene	3.3E+04	Xylenes	3.3E+04	2.0E+00	Xylenes (total)

Notes:

EPA VI Guidance = *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)*, United States Environmental Protection Agency, November 2002

NJDEP VI Guidance - *Vapor Intrusion Guidance*, New Jersey Department of Environmental Protection, October 2005. Tables updated May 2006.

EPA VI Guidance states that the generic screening values should not be used when the distance between the water table and the building foundation is less than five feet.

NJDEP VI Guidance states that the generic groundwater screening values may be used when the distance between the water table and the building foundation is at least 2 feet.

NJDEP VI Guidance applies an attenuation factor of 10 to benzene, toluene, ethylbenzene, and xylenes.

EPA and NJDEP recommend applying GWSL to data collected within 100 feet of a potentially affected structure.

For petroleum constituents, including BTEX, NJDEP recommends applying GWSL to data collected within 30 feet of a potentially affected structure.

bis(2-Chloroisopropyl)ether CAS number is reported in the analytical data as 3968329. The correct CAS is 108601.

1,2-DCE - The NJDEP VI Guidance states that if both isomers are present, total their concentrations and evaluate the sum compared to the NJDEP 1,2-DCE (total) GWSL.

Xylenes - NJDEP VI Guidance evaluates o-, m-, and p-xylenes as the mixture of isomers, Xylenes (total).

* - Excluded from vapor intrusion evaluation under EPA VI Guidance or NJDEP VI Guidance.

** - Insufficiently volatile or insufficiently toxic.

NJDEP PQL - From "Ground Water Quality Standards", New Jersey Administrative Code, Chapter 7:9C, Effective October 2005.

NA - Value is not available

PQL Notes: Consituents listed in notes indicate a mixed-isomer or surrogate PQL representing the PQL for this constituent.

Table 4
EPA Vapor Intrusion GWSL Calculation
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Chemical	EPA VI Guidance Table 1 (µg//L)		Water Solubility (µg//L)	Calculated EPA VI GWSL (µg//L)	Selected EPA VI GWSL (µg//L)
		a'		*b'*	*c'*	*e ' = min (b', c')*
67663	Chloroform	8.0E+01	†	8.0E+06	7.1E-01	7.1E-01
71432	Benzene	5.0E+00	†	1.8E+06	1.4E+00	1.4E+00
75014	Vinyl chloride	2.0E+00	†	8.8E+06	2.4E-01	2.4E-01
76448	Heptachlor	4.0E-01	†	1.8E+02	1.6E-01	1.6E-01
79016	Trichloroethene	5.0E+00	†	1.3E+06	5.5E-02	5.5E-02
100414	Ethylbenzene	7.0E+02	†	1.7E+05	6.9E+00	6.9E+00
107062	1,2-Dichloroethane	5.0E+00	†	5.1E+06	1.9E+00	1.9E+00
118741	Hexachlorobenzene	1.0E+00	†	6.2E+00	7.6E-02	7.6E-02
127184	Tetrachloroethene	5.0E+00	†	2.1E+05	5.7E-01	5.7E-01
85018	Phenanthrene	NL		9.9E+02	1.9E+04	*
101553	4-Bromophenyl-phenylether	NL		1.4E+03	1.5E+03	*
110827	Cyclohexane	NL		5.5E+04	7.6E+02	7.6E+02
208968	Acenaphthylene	NL		1.6E+04	4.1E+04	*
540590	1,2-Dichloroethene (total)	NL		3.5E+06	1.5E+01	1.5E+01
591786	2-Hexanone	NL		1.8E+07	1.2E+03	1.2E+03
1330207	Xylene (Total)	NL		1.1E+05	2.6E+04	2.6E+04
5103719	alpha-Chlordane	NL		4.6E+01	5.9E+00	5.9E+00
7005723	4-Chlorophenyl-phenylether	NL		1.4E+03	5.7E-02	5.7E-02
11096825	Aroclor-1260	NL		2.8E-01	1.8E+00	*
11097691	Aroclor-1254	NL		3.4E+00	2.1E+00	2.1E+00
11104282	Aroclor-1221	NL		4.8E+03	2.6E+00	2.6E+00
11141165	Aroclor-1232	NL		4.8E+03	2.6E+00	2.6E+00
12672296	Aroclor-1248	NL		5.3E+01	1.4E+00	1.4E+00
12674112	Aroclor-1016	NL		2.7E+02	3.0E+00	3.0E+00
53469219	Aroclor-1242	NL		2.8E+02	3.0E-01	3.0E-01
XYLENES1314	m,p-Xylene	NL		1.1E+05	3.3E+04	3.3E+04

Notes:

EPA VI Guidance - *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)*, United States Environmental Protection Agency, November 2002

GWSL - Groundwater Screening Level in micrograms per liter (µg/L)

The EPA VI Guidance states the generic groundwater screening values should not be used when the distance between the water table and the building foundation is less than 5 feet.

In accordance with Appendix G of the NJDEP VI Guidance, the GWSL have been rounded to 2 significant figures for a value greater than or equal to 10, and to 1 significant figure for a value less than 10, including those less than 1. If the first number beyond the last significant digit is less than 5, the last significant number remains the same; and the remaining numbers are dropped. If the first number beyond the last significant digit is more than 5, the last significant number increases by one and the remaining numbers are dropped.

† - EPA VI Guidance groundwater screening value is the constituent's Maximum Contaminant Level (MCL). In accordance with EPA personnel directive, for this specific vapor intrusion screening evaluation, the GWSL to be used in is the human health-based value.

* - When calculating concentration in groundwater that will not exceed TCR and HI that is adjusted for the generic groundwater to air attenuation factor of 1000, the calculated GWSL exceeds the constituent's water solubility.

Table 5
NJDEP Vapor Intrusion GWSL Calculation
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Detected Constituents	NJDEP GQWS* *a'*	Calculated NJDEP VI GWSL *b'*	Basis of toxicity ** C - Cancer NC - Non-cancer	Selected NJDEP VI GWSL *c' = min(a', b')*
95476	o-Xylene		See Xylenes, below	NA	NA
95578	2-Chlorophenol	4.0E+01	2.8E+03	NC	4.0E+01
98828	Isopropylbenzene	7.0E+02	2.2E+01	NC	2.2E+01
108872	Methylcyclohexane	NL	1.3E+03	NC	1.3E+03
111444	bis(2-Chloroethyl)ether **	7.0E+00	1.1E+01	C	7.0E+00
591786	2-Hexanone	NL	2.0E+03	NC	2.0E+03
XYLENES1314	m,p-Xylene		See Xylenes, below	NA	NA

Notes:

NJDEP VI Guidance - Vapor Intrusion Guidance, New Jersey Department of Environmental Protection (NJDEP), October 2005. Tables updated May 2006.

Values reported in micrograms per liter, µg/L.

GWSL - Groundwater Screening Level

NA - Not Applicable

The NJDEP VI Guidance states that the generic or calculated groundwater screening values may be used when the distance between the water table and the building foundation is at least 2 feet.

* - GWQS from NJDEP Groundwater Quality Standards (GWQS), New Jersey Administrative Code 7:9C, available at: http://www.state.nj.us/dep/wms/bwqsa/docs/njac79C.pdf

** - Constituents with a GWSL based on cancer require an adjustment by a child inhalation adjustment factor of 0.74, or for vinyl chloride, 0.26. The calculated NJDEP VI GWSL for bis(2-chloroethyl)ether, 14.6 µg/L * 0.74 = 10.804 µg/L, rounded to 11 µg/L.

Calculated NJDEP VI GWSL from the New Jersey-specific Johnson and Ettinger Model; presented in worksheets GA-1 through GA-5. The model result is the lesser of the calculated health-based value and the water solubility.

Xylenes - NJDEP VI Guidance evaluates o-, m-, and p-xylenes as the mixture of isomers; Xylenes (Total)

In accordance with Appendix G of the NJDEP VI Guidance, the GWSL have been rounded to 2 significant figures for a value greater than or equal to 10, and to 1 significant figure for a value less than 10, including those less than 1.

If the first number beyond the last significant digit is less than 5, the last significant number remains the same; and the remaining numbers are dropped.

If the first number beyond the last significant digit is more than 5, the last significant number increases by one; and the remaining numbers are dropped.

Table 6
EPA Vapor Intrusion Guidance Determination of Sufficiently Toxic
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Laboratory CAS ID.	Chemical	Pure component water solubility S (mg/L)	Henry's law constant H' (unitless)	Unit Risk Factor URF $(\mu g/m^3)^{-1}$	Reference Concentration RfC (mg/m^3)	Max Pure Air Concentration $\mu g/m^3$	Cancer risk of Max Pure Air Concentration (unitless)	Non-Cancer risk of Max Pure Air Concentration (unitless)	EPA VI Guidance Sufficiently Toxic?	
									Cancer risk at Max Pure Air Conc exceeds TCR of 1E-6?	Non-Cancer risk at Max Pure Air Conc exceeds HI of 1.0?
85018	Phenanthrene	9.94E-01	5.40E-03	0.00E+00	1.1E-01	5.4E+03	0.0E+00	5.1E+01	No	**Yes**
101553	4-Bromophenyl-phenylether	1.45E+00	4.78E-03	0.00E+00	7.0E-03	6.9E+03	0.0E+00	9.9E+02	No	**Yes**
110827	Cyclohexane	5.50E+01	7.94E+00	0.00E+00	6.0E+00	4.4E+08	0.0E+00	7.3E+04	No	**Yes**
208968	Acenaphthylene	1.61E+01	5.11E-03	0.00E+00	2.1E-01	8.2E+04	0.0E+00	3.9E+02	No	**Yes**
591786	2-Hexanone	1.79E+04	3.38E-03	0.00E+00	4.0E-03	6.1E+07	0.0E+00	1.5E+07	No	**Yes**
1330207	Xylene (Mixture)	1.06E+02	2.71E-01	0.00E+00	7.0E+00	2.9E+07	0.0E+00	4.1E+03	No	**Yes**
5103719	alpha-Chlordane	4.64E-02	4.11E-03	1.00E-04	7.0E-04	1.9E+02	7.8E-03	2.7E+02	**Yes**	**Yes**
7005723	4-Chlorophenyl-phenylether	1.43E+00	1.30E-02	3.30E-03	0.0E+00	1.9E+04	2.5E+01	0.0E+00	**Yes**	No
10061015	cis-1,3-Dichloropropene	2.70E+03	9.15E-02	1.54E-04	6.7E-03	2.5E+08	1.6E+04	3.7E+07	**Yes**	**Yes**
10061026	trans-1,3-Dichloropropene	2.80E+03	9.15E-02	4.00E-06	2.0E-02	2.6E+08	4.2E+02	1.3E+07	**Yes**	**Yes**
11096825	Aroclor 1260	2.84E-04	1.37E-02	1.00E-04	0.0E+00	3.9E+00	1.6E-04	0.0E+00	**Yes**	No
11097691	Aroclor-1254	3.40E-03	1.16E-02	1.00E-04	0.0E+00	3.9E+01	1.6E-03	0.0E+00	**Yes**	No
11104282	Aroclor-1221	4.83E+00	9.32E-03	1.00E-04	0.0E+00	4.5E+04	1.8E+00	0.0E+00	**Yes**	No
11141165	Aroclor-1232	4.83E+00	9.32E-03	1.00E-04	0.0E+00	4.5E+04	1.8E+00	0.0E+00	**Yes**	No
12672296	Aroclor-1248	5.32E-02	1.80E-02	1.00E-04	0.0E+00	9.6E+02	3.9E-02	0.0E+00	**Yes**	No
12674112	Aroclor-1016	2.70E-01	8.18E-03	1.00E-04	0.0E+00	2.2E+03	9.1E-02	0.0E+00	**Yes**	No
53469219	Aroclor-1242	2.77E-01	1.40E-02	5.70E-04	0.0E+00	3.9E+03	9.1E-01	0.0E+00	**Yes**	No
XYLENES1314	m,p-Xylene	1.06E+02	2.12E-01	0.00E+00	7.0E+00	2.2E+07	0.0E+00	3.2E+03	No	**Yes**

Notes:

EPA VI Guidance Volatility and Toxicity determination - A chemical is considered sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 1E-6 or results in a non-cancer hazard index greater than 1.0.

Maximum Pure Air Concentration $(\mu g/m^3)$ = S x H' x 1000 µg/mg x 1000 L/m^3

Cancer risk at Maximum Pure Air Concentration = [(Max Pure Air Conc / ATc) x EF x ED x URF]

Non-cancer risk at Maximum Pure Air Concentration = [Maximum Pure Air Conc / (RfC x 1000 µg/mg)]

Where:

URF = unit risk factor $(\mu g/m^3)^{-1}$

RfC = reference concentration (mg/m^3)

ATc = averaging time, carcinogens (25,550 days)

EF = exposure frequency (350 days/year)

ED = exposure duration (30 years)

1000 µg/mg = units conversion factor

Table 7
EPA Vapor Intrusion GWSL Calculations Where TCR = 1E-6, HI = 1.0
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Chemical	Risk basis of Target Indoor Air Concentration NC = non-cancer C = cancer	Target Indoor Air Concentration where TCR = 1E-6 and HI = 1.0	Target Shallow Soil Gas Concentration where TCR = 1E-6 and HI = 1.0 Soil Gas to Indoor Air Attenuation Factor = 0.1	Target Deep Soil Gas Concentration where TCR = 1E-6 and HI = 1.0 Soil Gas to Indoor Air Attenuation Factor = 0.01	Target Groundwater Concentration where TCR = 1E-6 and HI = 1.0 Soil Gas to Indoor Air Attenuation Factor = 0.001 Water/Soil Gas partitioning follows Henry's Law		Calculated Target Groundwater Concentration where TCR = 1E-6 and HI = 1.0 Soil Gas to Indoor Air Attenuation Factor = 0.001 Water/Soil Gas partitioning follows Henry's Law	Water Solubility
			(µg/m^3)	(µg/m^3)	(µg/m^3)	(µg/L)		(µg/L)	(µg/L)
67663	Chloroform	C	1.06E-01	1.06E+00	1.06E+01	8.0E+01	†	7.1E-01	8.0E+06
71432	Benzene	C	3.12E-01	3.12E+00	3.12E+01	5.0E+00	†	1.4E+00	1.8E+06
75014	Vinyl chloride (chloroethene)	C	2.77E-01	2.77E+00	2.77E+01	2.0E+00	†	2.4E-01	8.8E+06
76448	Heptachlor	C	1.87E-03	1.87E-02	1.87E-01	4.0E-01	†	1.6E-01	1.8E+02
79016	Trichloroethylene ††	C	2.21E-02	2.21E-01	2.21E+00	5.0E+00	†	5.5E-02	1.3E+06
100414	Ethylbenzene	C	2.21E+00	2.21E+01	2.21E+02	7.0E+02	†	6.9E+00	1.7E+05
107062	1,2-Dichloroethane	C	9.36E-02	9.36E-01	9.36E+00	5.0E+00	†	1.9E+00	5.1E+06
118741	Hexachlorobenzene	C	5.29E-03	5.29E-02	5.29E-01	1.0E+00	†	7.6E-02	6.2E+00
127184	Tetrachloroethylene	C	4.12E-01	4.12E+00	4.12E+01	5.0E+00	†	5.7E-01	2.1E+05
85018	Phenanthrene	NC	1.05E+02	1.05E+03	1.05E+04			1.9E+04	9.9E+02
101553	4-Bromophenyl-phenylether	NC	7.00E+00	7.00E+01	7.00E+02			1.5E+03	1.4E+03
110827	Cyclohexane	NC	6.00E+03	6.00E+04	6.00E+05			7.6E+02	5.5E+04
208968	Acenaphthylene	NC	2.10E+02	2.10E+03	2.10E+04			4.1E+04	1.6E+04
540590	1,2-Dichloroethene (total)	NC	2.57E+00	2.57E+01	2.57E+02			1.5E+01	3.5E+06
591786	2-Hexanone	NC	4.00E+00	4.00E+01	4.00E+02			1.2E+03	1.8E+07
1330207	Xylenes (total)	NC	7.00E+03	7.00E+04	7.00E+05			2.6E+04	1.1E+05
5103719	alpha-Chlordane	C	2.43E-02	2.43E-01	2.43E+00			5.9E+00	4.6E+01
7005723	4-Chlorophenyl-phenylether	C	7.37E-04	7.37E-03	7.37E-02			5.7E-02	1.4E+03
11096825	Aroclor 1260	C	2.43E-02	2.43E-01	2.43E+00			1.8E+00	2.8E-01
11097691	Aroclor-1254	C	2.43E-02	2.43E-01	2.43E+00			2.1E+00	3.4E+00
11104282	Aroclor-1221	C	2.43E-02	2.43E-01	2.43E+00			2.6E+00	4.8E+03
11141165	Aroclor-1232	C	2.43E-02	2.43E-01	2.43E+00			2.6E+00	4.8E+03
12672296	Aroclor-1248	C	2.43E-02	2.43E-01	2.43E+00			1.4E+00	5.3E+01
12674112	Aroclor-1016	C	2.43E-02	2.43E-01	2.43E+00			3.0E+00	2.7E+02
53469219	Aroclor-1242	C	4.27E-03	4.27E-02	4.27E-01			3.0E-01	2.8E+02
XYLENES1314	m,p-Xylene	NC	7.00E+03	7.00E+04	7.00E+05			3.3E+04	1.1E+05

Notes:
This spreadsheet replicates the calculations of EPA VI Guidance Table 2c where cancer risk does not exceed 1E-6, non-cancer risk does not exceed one, and with a groundwater to indoor air attenuation factor of 0.001.
GWSL = IASL x (1 / 1000 L/m^3) x (1 / H') x (1/alpha)
Where
GWSL = Target groundwater screening level calculated per EPA VI Guidance at an attenuation factor of 0.001
IASL = Target indoor air screening level not to exceed TCR of 1E-6 and HI of 1.0
H' = Henry's Law Constant, unitless
alpha = attentuation factor for groundwater to indoor air, 0.001
† The target groundwater concentration is the MCL. (The MCL for chloroform is the MCL for total Trihalomethanes. The MCL listed for m-Xylene, o-Xylene, and p-Xylene is the MCL for total Xylenes.)
†† The target concentration for trichloroethylene is based on the upper bound cancer slope factor identified in EPA's draft risk assessment for trichloroethylene (EPA, 2001). The slope factor is based on state-of-the-art methodology, however the TCE assessment is still undergoing review. As a result, the slope factor and the target concentration values for TCE may be revised further.
* Health-based target breathing concentration exceeds maximum possible chemical vapor concentration (pathway incomplete)
** Target soil gas concentration exceeds maximum possible vapor concentration (pathway incomplete)

Table 8
Chemical, Physical, and Toxicological Data for EPA VI Calculations
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Enthalpy of vaporization at the normal boiling point, $DH_{v,b}$ (cal/mol)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Air conc not to exceed TCR 10-6	Reference conc., RfC (mg/m^3)	Air conc not to exceed HI = 1	Pure Air Max Conc	Pure Air Component Cancer risk	Pure Air Component NC risk	Air conc not to TCR@1E-6 / HI=1	Risk type
67663	Chloroform	3.50E+01	1.04E-01	1.00E-05	7.95E+03	1.50E-01	3.66E-03	25	3.34E+02			2.30E-05	1.1E-01	0.00E+00	0.0E+00	1.2E+09	1.1E+04	0.0E+00	1.1E-01	C
71432	Benzene	1.66E+02	8.80E-02	9.80E-06	1.79E+03	2.27E-01	5.54E-03	25	3.53E+02			7.80E-06	3.1E-01	3.00E-02	3.0E+01	4.1E+08	1.3E+03	1.4E+07	3.1E-01	C
75014	Vinyl chloride	2.37E+01	1.06E-01	1.23E-06	8.80E+03	1.14E+00	2.78E-02	25	2.60E+02			8.80E-06	2.8E-01	1.00E-01	1.0E+02	1.0E+10	3.6E+04	1.0E+08	2.8E-01	C
76448	Heptachlor	5.24E+04	1.12E-02	5.69E-06	1.80E-01	1.20E-02	2.93E-04	25	5.83E+02			1.30E-03	1.9E-03	0.00E+00	0.0E+00	2.2E+03	1.2E+00	0.0E+00	1.9E-03	C
79016	Trichloroethylene	6.77E+01	7.90E-02	9.10E-06	1.28E+03	4.03E-01	9.83E-03	25	3.60E+02			1.10E-04	2.2E-02	4.00E-02	4.0E+01	5.2E+08	2.3E+04	1.3E+07	2.2E-02	C
85018	Phenanthrene (TRRP)	1.41E+04	3.33E-02	7.47E-06	9.94E-01	5.40E-03	1.32E-04	25	6.13E+02			0.00E+00	0.0E+00	1.05E-01	1.1E+02	5.4E+03	0.0E+00	5.1E+01	1.1E+02	NC
100414	Ethylbenzene	5.18E+02	7.50E-02	7.80E-06	1.69E+02	3.22E-01	7.85E-03	25	4.09E+02			1.10E-06	2.2E+00	1.00E+00	1.0E+03	5.4E+07	2.5E+01	5.4E+04	2.2E+00	C
101553	4-Bromophenyl-phenylether	4.16E+03	4.75E-02	6.28E-06	1.45E+00	4.78E-03	1.17E-04	25	5.83E+02			0.00E+00	0.0E+00	7.00E-03	7.0E+00	6.9E+03	0.0E+00	9.9E+02	7.0E+00	NC
107062	1,2-Dichloroethane	4.38E+01	1.04E-01	9.90E-06	5.10E+03	4.82E-02	1.18E-03	25	3.57E+02			2.60E-05	9.4E-02	0.00E+00	0.0E+00	2.5E+08	2.6E+03	0.0E+00	9.4E-02	C
110827	Cyclohexane	1.65E+02	8.39E-02	9.10E-06	5.50E+01	7.94E+00	1.94E-01	25	3.54E+02			0.00E+00	0.0E+00	6.00E+00	6.0E+03	4.4E+08	0.0E+00	7.3E+04	6.0E+03	NC
118741	Hexachlorobenzene	3.38E+03	5.42E-02	5.91E-06	6.20E-03	6.95E-02	1.70E-03	25	5.98E+02			4.60E-04	5.3E-03	0.00E+00	0.0E+00	4.3E+02	8.1E-02	0.0E+00	5.3E-03	C
127184	Tetrachloroethylene	1.07E+02	7.20E-02	8.20E-06	2.06E+02	7.24E-01	1.77E-02	25	3.94E+02			5.90E-06	4.1E-01	6.00E-01	6.0E+02	1.5E+08	3.6E+02	2.5E+05	4.1E-01	C
208968	Acenaphthylene	6.12E+03	4.39E-02	7.53E-06	1.61E+01	5.11E-03	1.25E-04	25	5.53E+02			0.00E+00	0.0E+00	2.10E-01	2.1E+02	8.2E+04	0.0E+00	3.9E+02	2.1E+02	NC
540590	1,2-Dichloroethene (total)	4.38E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	3.28E+02			0.00E+00	0.0E+00	2.57E-03	2.6E+00	5.8E+08	0.0E+00	2.3E+08	2.6E+00	NC
591786	2-Hexanone	1.79E+01	6.96E-02	7.75E-06	1.79E+04	3.38E-03	8.25E-05	25	4.01E+02			0.00E+00	0.0E+00	4.00E-03	4.0E+00	6.1E+07	0.0E+00	1.5E+07	4.0E+00	NC
1330207	Xylenes (total)	4.43E+02	7.14E-02	9.34E-06	1.06E+02	2.71E-01	6.61E-03	25	4.12E+02			0.00E+00	0.0E+00	7.00E+00	7.0E+03	2.9E+07	0.0E+00	4.1E+03	7.0E+03	NC
5103719	alpha-Chlordane (TRRP)	7.08E+06	3.32E-02	4.66E-06	4.64E-02	4.11E-03	1.00E-04	25	6.24E+02			1.00E-04	2.4E-02	7.00E-04	7.0E-01	1.9E+02	7.8E-03	2.7E+02	2.4E-02	C
7005723	4-Chlorophenyl-phenylether (TRRP)	1.31E+04	4.89E-02	6.19E-06	1.43E+00	1.30E-02	3.17E-04	25	5.68E+02			3.30E-03	7.4E-04	0.00E+00	0.0E+00	1.9E+04	2.5E+01	0.0E+00	7.4E-04	C
10061015	cis-1,3-Dichloropropene (TRRP)	4.47E+01	7.94E-02	8.00E-06	2.70E+03	9.15E-02	2.23E-03	25	3.85E+02			1.54E-04	1.6E-02	6.70E-03	6.7E+00	2.5E+08	1.6E+04	3.7E+07	1.6E-02	C
10061026	trans-1,3-Dichloropropene (TRRP)	4.47E+01	7.94E-02	9.20E-06	2.80E+03	9.15E-02	2.23E-03	25	3.85E+02			4.00E-06	6.1E-01	2.00E-02	2.0E+01	2.6E+08	4.2E+02	1.3E+07	6.1E-01	C
11096825	Aroclor 1260	2.07E+05	1.38E-02	4.32E-06	2.84E-04	1.37E-02	3.34E-04	25	6.58E+02			1.00E-04	2.4E-02	0.00E+00	0.0E+00	3.9E+00	1.6E-04	0.0E+00	2.4E-02	C
11097691	Aroclor-1254	7.56E+04	1.56E-02	5.00E-06	3.40E-03	1.16E-02	2.83E-04	25	6.38E+02			1.00E-04	2.4E-02	0.00E+00	0.0E+00	3.9E+01	1.6E-03	0.0E+00	2.4E-02	C
11104282	Aroclor-1221	1.03E+04	0.00E+00	0.00E+00	4.83E+00	9.32E-03	2.27E-04	25	5.63E+02			1.00E-04	2.4E-02	0.00E+00	0.0E+00	4.5E+04	1.8E+00	0.0E+00	2.4E-02	C
11141165	Aroclor-1232	1.03E+04	0.00E+00	0.00E+00	4.83E+00	9.32E-03	2.27E-04	25	5.63E+02			1.00E-04	2.4E-02	0.00E+00	0.0E+00	4.5E+04	1.8E+00	0.0E+00	2.4E-02	C
12672296	Aroclor-1248	4.39E+04	0.00E+00	0.00E+00	5.32E-02	1.80E-02	4.39E-04	25	6.13E+02			1.00E-04	2.4E-02	0.00E+00	0.0E+00	9.6E+02	3.9E-02	0.0E+00	2.4E-02	C
12674112	Aroclor-1016	2.71E+04	2.22E-02	5.42E-06	2.70E-01	8.18E-03	2.00E-04	25	6.14E+02			1.00E-04	2.4E-02	0.00E+00	0.0E+00	2.2E+03	9.1E-02	0.0E+00	2.4E-02	C
39638329	bis(2-Chloroisopropyl)ether (TRRP)	3.16E+02	6.00E-02	6.40E-06	1.70E+03	4.16E-03	1.01E-04	25	3.98E+02			1.00E-05	2.4E-01	1.40E-01	1.4E+02	7.1E+06	2.9E+01	5.0E+04	2.4E-01	C
53469219	Aroclor-1242	4.48E+04	2.14E-02	5.31E-06	2.77E-01	1.40E-02	3.41E-04	25	6.33E+02			5.70E-04	4.3E-03	0.00E+00	0.0E+00	3.9E+03	9.1E-01	0.0E+00	4.3E-03	C
XYLENES1314	m,p-Xylene (o-Xylene as surrogate)	4.43E+02	8.70E-02	1.00E-05	1.06E+02	2.12E-01	5.17E-03	25	4.12E+02			0.00E+00	0.0E+00	7.00E+00	7.0E+03	2.2E+07	0.0E+00	3.2E+03	7.0E+03	NC

Notes:
TRRP - Physical, chemical, or toxicological data unavaliable in RAIS. Therefore the Texas Risk Reduction Program was referenced.
"... as surrogate" denotes RAIS data was unavailable for the constituent, RAIS data of the surrogate used.
Cancer Risk = (TCR * ATc) / (EF * ED * URF)
Non-Cancer Risk = THQ * RfC * 1000

TCR = Cancer risk not to exceed 1E-6.
THQ (HI) = Non-cancer risk not to exceed one.
ATc (days) = Averaging time for carcinogenic chemicals, 70 years x 365 days/year = 25550 days
EF (days/year) = Frequency of exposure to chemical, residential scenario, 350 days/year
ED (years) = Duration of Exposure to chemical, residential scenario, 30 years
URF $(\mu g/m^3)^{-1}$ = Unit Risk Factor, chemical specific carcinogenic risk in $[\mu g/m^3]^{-1}$
RfC (mg/m^3) = Reference concentration, chemical specific non-carcinogenic risk in mg/m^3
1000 = Conversion factor, µg/mg

Table 9
Risk Assessment Information System Organic Constituent Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS #	Chemical	Boiling Point (Kelvin)	Diffusivity in Air (cm^2/s)	Diffusivity in Water (cm^2/s)	Henry's Law Constant (unitless)	Henry's Law Constant ($atm\text{-}m^3/mol$)	Inhalation Unit Risk [$1/(\mu g/m^3)$]	Inhalation Unit Risk Ref.	Organic Carbon Partition Coef. (L/kg)	Molecular Weight (g/mol)	Inhalation RfC Chronic (mg/m^3)	RfC Ref.	Inhalation RfD Chronic (mg/kg-day)	RfD Ref.	Water Solubility (mg/L)	Inhalation Slope Factor 1/(mg/kg-day)	SF Ref.	Vapor Pressure (mm Hg)
1746016	TCDD, 2,3,7,8-	652.32	1.43E-02	5.83E-06	2.04E-03	4.98E-05	3.30E+01	HEAST	1.460E+05	321.98					2.00E-04	1.16E+05		1.50E-09
36088229	PeCDD, 2,3,7,8-	671.01			8.99E-05	2.19E-06	1.70E+01		2.570E+05	356.42					1.20E-04	5.78E+04		5.60E-10
57117416	PeCDF, 1,2,3,7,8-	674.77			4.66E-04	1.14E-05	1.70E+01		1.370E+05	340.42					2.35E-04	5.78E+04		3.46E-07
34465468	HxCDD, 2,3,7,8-	689.7			2.33E-04	5.68E-06	3.30E+00		4.170E+05	390.87					4.00E-06	1.16E+04		4.40E-11
51207319	TCDF, 2,3,7,8-	656.07			6.30E-04	1.54E-05	3.30E+00		8.100E+04	305.98					6.92E-04	1.16E+04		1.53E-06
55684941	HxCDF, 2,3,7,8-	693.46			3.47E-04	8.46E-06	3.30E+00		2.360E+05	374.87					1.14E-04	1.16E+04		7.70E-08
57117314	PeCDF, 2,3,4,7,8-	674.77			4.66E-04	1.14E-05	1.70E+00		1.370E+05	340.42					2.35E-04	5.78E+03		3.46E-07
19408743	Hexachlorodibenzo-p-dioxin, Mixture	689.7			1.05E-03	2.56E-05	1.30E+00	IRIS	4.170E+05	390.87					2.65E-05	4.55E+03		3.60E-11
37871004	HpCDD, 2,3,7,8-	708.4			7.15E-03	1.74E-04	3.30E-01		7.030E+05	425.31					1.41E-06	1.16E+03		5.63E-10
38998753	HpCDF, 2,3,7,8-	712.16			2.57E-04	6.27E-06	3.30E-01		3.890E+05	409.31					1.35E-06	1.16E+03		2.01E-08
56531	Diethylstilbesterol	680.33			2.37E-10	5.78E-12	1.40E-01		5.690E+05	268.36					1.20E+01	4.90E+02		8.64E-09
92875	Benzidine	674.15	3.40E-02	1.50E-05	2.88E-09	7.02E-11	6.70E-02	IRIS	2.740E+03	184.24					3.22E+02	2.35E+02		8.98E-07
542881	Bis(chloromethyl)ether	379.15	5.73E-02	9.38E-06	8.42E-03	2.05E-04	6.20E-02	IRIS	4.395E+00	114.96					2.20E+04	2.17E+02		2.94E+01
55185	Nitrosodiethylamine, N-	450.05	6.48E-02	9.13E-06	1.48E-04	3.61E-06	4.30E-02	IRIS	1.427E+02	102.14					1.06E+05	1.51E+02		8.60E-01
3268879	OCDD	783.15			2.76E-04	6.73E-06	3.30E-02		1.190E+06	459.76					4.00E-07	1.16E+02		8.25E-13
39001020	OCDF	730.85			7.73E-05	1.89E-06	3.30E-02		6.570E+05	443.76					1.16E-06	1.16E+02		3.75E-12
62759	Nitrosodimethylamine, N-	427.15	1.13E-01	1.24E-05	7.44E-05	1.81E-06	1.40E-02	IRIS	3.821E+01	74.08					1.00E+06	4.90E+01		2.70E+00
96128	Dibromo-3-chloropropane, 1,2-	469.15	2.12E-02	7.02E-06	6.01E-03	1.47E-04	6.00E-03	PROV	1.308E+02	236.33	2.00E-04	IRIS	5.71E-05		1.23E+03	2.10E+01		
57147	Dimethylhydrazine, 1,1-	337.05	1.06E-01	1.09E-05	2.84E-06	6.93E-08	4.90E-03	PROV	1.978E+01	60.1					1.00E+06	1.72E+01		1.57E+02
60344	Methyl Hydrazine	360.65	2.53E-01	1.39E-05	1.29E-06	3.15E-08	4.90E-03	PROV	1.784E+01	46.07					1.00E+06	1.72E+01		5.00E+01
309002	Aldrin	603.01	1.32E-02	4.86E-06	1.80E-03	4.39E-05	4.90E-03	IRIS	1.060E+05	364.92					1.70E-02	1.72E+01		1.20E-04
60571	Dieldrin	603.15	1.25E-02	4.74E-06	4.09E-04	9.98E-06	4.60E-03	IRIS	1.060E+04	380.91					2.50E-01	1.61E+01		3.00E-06
79469	Nitropropane, 2-	393.35	9.23E-02	1.01E-05	4.87E-03	1.19E-04	2.70E-03	HEAST	2.495E+01	89.09	2.00E-02	IRIS	5.71E-03		1.70E+04	9.45E+00		1.72E+01
764410	Dichloro-2-butene, 1,4-	425.65	7.25E-02	8.12E-06	3.48E-01	8.49E-03	2.60E-03	HEAST	1.490E+02	125					5.80E+02	9.10E+00		4.09E+00
1024573	Heptachlor Epoxide	613.96	1.32E-02	4.23E-06	8.59E-04	2.10E-05	2.60E-03	IRIS	5.260E+03	389.32					2.00E-01	9.10E+00		1.95E-05
319846	Hexachlorocyclohexane, Alpha-	561.15	1.42E-02	7.34E-06	4.99E-04	1.22E-05	1.80E-03	IRIS	3.380E+03	290.83					8.00E+00	6.30E+00		3.52E-05
924163	Nitroso-di-N-butylamine, N-	544.15			5.40E-04	1.32E-05	1.60E-03	IRIS	1.651E+03	158.25					1.27E+03	5.60E+00		4.69E-02
76448	Heptachlor	583.15	1.12E-02	5.69E-06	1.20E-02	2.93E-04	1.30E-03	IRIS	5.240E+04	373.32					1.80E-01	4.55E+00		4.00E-04
79061	Acrylamide	465.75	9.70E-02	1.06E-05	4.09E-08	9.98E-10	1.30E-03	IRIS	1.046E+01	71.08					6.40E+05	4.55E+00		
50328	Benzo[a]pyrene	715.9	4.30E-02	9.00E-06	1.87E-05	4.56E-07	8.80E-04		7.870E+05	252.32					1.62E-03	3.08E+00		5.49E-09
53703	Dibenz[a,h]anthracene	797.15	2.02E-02	5.18E-06	5.03E-06	1.23E-07	8.80E-04		2.620E+06	278.36					1.03E-03	3.08E+00		1.39E-11
8007452	Coke Oven Emissions		-7.19E-03	5.81E-06	2.81E-06	6.86E-08	6.20E-04	IRIS	1.600E+06	276					5.30E-04	2.17E+00		
930552	Nitrosopyrrolidine, N-	487.15			2.00E-06	4.88E-08	6.10E-04	IRIS	1.585E+02	100.12					1.00E+06	2.14E+00		6.00E-02
106934	Dibromoethane, 1,2-	404.75	2.17E-02	1.19E-05	2.73E-02	6.66E-04	6.00E-04	IRIS	4.379E+01	187.86	9.00E-03	IRIS	2.57E-03		3.91E+03	2.10E+00		1.12E+01
x1336363	Polychlorinated Biphenyls (high risk)	632.66	1.75E-02	8.00E-06	1.40E-02	3.41E-04	5.70E-04		4.480E+04	291.99					2.77E-01	2.00E+00		8.63E-05
x11096825	Aroclor 1260 (exposure to soil or food)	658.15	1.38E-02	4.32E-06	1.37E-02	3.34E-04	5.70E-04		2.070E+05	395.33					2.84E-04	2.00E+00		4.05E-05
x11097691	Aroclor 1254 (exposure to soil or food)	638.15	1.56E-02	5.00E-06	1.16E-02	2.83E-04	5.70E-04		7.560E+04	326.44					3.40E-03	2.00E+00		6.53E-06
x11104282	Aroclor 1221 (exposure to soil or food)	563.15			9.32E-03	2.27E-04	5.70E-04		1.030E+04	188.66					4.83E+00	2.00E+00		4.06E-03
x11141165	Aroclor 1232 (exposure to soil or food)	563.15			9.32E-03	2.27E-04	5.70E-04		1.030E+04	188.66					4.83E+00	2.00E+00		4.06E-03
x12672296	Aroclor 1248 (exposure to soil or food)	613.15			1.80E-02	4.39E-04	5.70E-04		4.390E+04	291.99					5.32E-02	2.00E+00		4.94E-04
x12674112	Aroclor 1016 (exposure to soil or food)	613.85	2.22E-02	5.42E-06	8.18E-03	2.00E-04	5.70E-04		2.710E+04	257.55					2.70E-01	2.00E+00		4.00E-04
53469219	Aroclor 1242 (exposure to soil or food)	632.66	2.14E-02	5.31E-06	1.40E-02	3.41E-04	5.70E-04		4.480E+04	291.99					2.77E-01	2.00E+00		8.63E-05
319857	Hexachlorocyclohexane, Beta-	561.15	1.42E-02	7.34E-06	1.80E-05	4.39E-07	5.30E-04	IRIS	3.380E+03	290.83					8.00E+00	1.86E+00		3.52E-05
608731	Hexachlorocyclohexane, Technical	561.15			1.75E-05	4.27E-07	5.10E-04	IRIS	3.380E+03	290.83					8.00E+00	1.79E+00		3.52E-05
118741	Hexachlorobenzene	598.15	5.42E-02	5.91E-06	6.95E-02	1.70E-03	4.60E-04	IRIS	3.380E+03	284.78					6.20E-03	1.61E+00		1.80E-05
111444	Bis(2-chloroethyl)ether	451.65	6.92E-02	7.53E-06	6.95E-04	1.70E-05	3.30E-04	IRIS	1.495E+01	143.01					1.72E+04	1.16E+00		1.55E+00
8001352	Toxaphene	655.73	1.16E-02	4.34E-06	2.45E-04	5.98E-06	3.20E-04	IRIS	9.930E+04	413.82					5.50E-01	1.12E+00		6.69E-06
122667	Diphenylhydrazine, 1,2-	582.15	3.17E-02	7.36E-06	1.79E-07	4.37E-09	2.20E-04	IRIS	3.481E+03	184.24					2.21E+02	7.70E-01		4.36E-04
79016	Trichloroethylene	360.35	7.90E-02	9.10E-06	4.03E-01	9.83E-03	1.10E-04	CALC	6.770E+01	131.39	4.00E-02	PROV	1.14E-02		1.28E+03	4.00E-01		6.90E+01
57749	Chlordane	624.24	1.18E-02	4.37E-06	1.99E-03	4.85E-05	1.00E-04	IRIS	8.670E+04	409.78	7.00E-04	IRIS	2.00E-04		5.60E-02	3.50E-01		9.98E-06
75218	Ethylene Oxide	283.75	1.04E-01	1.45E-05	6.05E-03	1.48E-04	1.00E-04	HEAST	1.435E+00	44.05					1.00E+06	3.50E-01		1.31E+03
1336363	Polychlorinated Biphenyls (low risk)	632.66	1.75E-02	8.00E-06	1.40E-02	3.41E-04	1.00E-04	IRIS	4.480E+04	291.99					2.77E-01	3.50E-01		8.63E-05
11096825	Aroclor 1260 (exposure to water)	658.15	1.38E-02	4.32E-06	1.37E-02	3.34E-04	1.00E-04		2.070E+05	395.33					2.84E-04	3.50E-01		4.05E-05
11097691	Aroclor 1254 (exposure to water)	638.15	1.56E-02	5.00E-06	1.16E-02	2.83E-04	1.00E-04		7.560E+04	326.44					3.40E-03	3.50E-01		6.53E-06

Table 9
Risk Assessment Information System Organic Constituent Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS #	Chemical	Boiling Point (Kelvin)	Diffusivity in Air (cm^2/s)	Diffusivity in Water (cm^2/s)	Henry's Law Constant (unitless)	Henry's Law Constant ($atm\text{-}m^3/mol$)	Inhalation Unit Risk [$1/(\mu g/m^3)$]	Inhalation Unit Risk Ref.	Organic Carbon Partition Coef. (L/kg)	Molecular Weight (g/mol)	Inhalation RfC Chronic (mg/m^3)	RfC Ref.	Inhalation RfD Chronic (mg/kg-day)	RfD Ref.	Water Solubility (mg/L)	Inhalation Slope Factor 1/(mg/kg-day)	SF Ref.	Vapor Pressure (mm Hg)
11104282	Aroclor 1221 (exposure to water)	563.15			9.32E-03	2.27E-04	1.00E-04		1.030E+04	188.66					4.83E+00	3.50E-01		4.06E-03
11141165	Aroclor 1232 (exposure to water)	563.15			9.32E-03	2.27E-04	1.00E-04		1.030E+04	188.66					4.83E+00	3.50E-01		4.06E-03
12672296	Aroclor 1248 (exposure to water)	613.15			1.80E-02	4.39E-04	1.00E-04		4.390E+04	291.99					5.32E-02	3.50E-01		4.94E-04
12674112	Aroclor 1016 (exposure to water)	613.85	2.22E-02	5.42E-06	8.18E-03	2.00E-04	1.00E-04		2.710E+04	257.55					2.70E-01	3.50E-01		4.00E-04
53469219	Aroclor 1242 (exposure to water)	632.66	2.14E-02	5.31E-06	1.40E-02	3.41E-04	1.00E-04		4.480E+04	291.99					2.77E-01	3.50E-01		8.63E-05
50293	DDT	641.1	1.37E-02	4.95E-06	3.40E-04	8.29E-06	9.70E-05	IRIS	2.200E+05	354.49					5.50E-03	3.40E-01		1.60E-07
56553	Benz[a]anthracene	710.75	5.10E-02	9.00E-06	4.91E-04	1.20E-05	8.80E-05		2.310E+05	228.3					9.40E-03	3.08E-01		1.90E-06
193395	Indeno[1,2,3-cd]pyrene	809.15	1.90E-02	5.66E-06	1.42E-05	3.46E-07	8.80E-05		2.680E+06	276.34					1.90E-04	3.08E-01		1.25E-10
205992	Benzo[b]fluoranthene	715.9	2.26E-02	5.56E-06	2.69E-05	6.56E-07	8.80E-05		8.030E+05	252.32					1.50E-03	3.08E-01		5.00E-07
510156	Chlorobenzilate	676.47	1.41E-02	5.80E-06	2.96E-06	7.22E-08	7.80E-05	HEAST	1.263E+03	325.19					1.30E+01	2.73E-01		2.20E-06
107131	Acrylonitrile	350.45	1.22E-01	1.34E-05	5.64E-03	1.38E-04	6.80E-05	IRIS	8.300E+00	53.06	2.00E-03	IRIS	5.71E-04		7.45E+04	2.38E-01		
79345	Tetrachloroethane, 1,1,2,2-	419.65	7.10E-02	7.90E-06	1.50E-02	3.66E-04	5.80E-05	IRIS	1.068E+02	167.85					2.87E+03	2.03E-01		1.33E+01
75354	Dichloroethylene, 1,1-	304.75	9.00E-02	1.04E-05	1.07E+00	2.61E-02	5.00E-05		3.504E+01	96.94	2.00E-01	IRIS	5.71E-02		2.42E+03	1.75E-01		6.34E+02
101144	Methylene-bis(2-chloroaniline), 4,4'-	652.05	1.99E-02	5.77E-06	4.66E-10	1.14E-11	3.70E-05	HEAST	1.350E+04	267.16					1.39E+01	1.30E-01		
593602	Vinyl Bromide	288.95	5.98E-02	1.18E-05	5.03E-01	1.23E-02	3.20E-05		2.374E+01	106.95	3.00E-03	IRIS	8.57E-04		5.08E+03	1.12E-01		1.03E+03
103333	Azobenzene	566.15	3.15E-02	7.45E-06	5.52E-04	1.35E-05	3.10E-05	IRIS	1.954E+03	182.23					6.40E+00	1.09E-01		3.61E-04
106990	Butadiene, 1,3-	268.75	2.49E-01	1.08E-05	3.01E+00	7.34E-02	3.00E-05	IRIS	4.379E+01	54.09	2.00E-03		5.71E-04		7.35E+02	1.05E-01		2.11E+03
107062	Dichloroethane, 1,2-	356.65	1.04E-01	9.90E-06	4.82E-02	1.18E-03	2.60E-05	IRIS	4.379E+01	98.96					5.10E+03	9.10E-02		7.89E+01
67663	Chloroform	334.25	1.04E-01	1.00E-05	1.50E-01	3.66E-03	2.30E-05	IRIS	3.504E+01	119.38					7.95E+03	8.05E-02		1.97E+02
87683	Hexachlorobutadiene	488.15	5.61E-02	6.16E-06	4.21E-01	1.03E-02	2.20E-05	IRIS	9.935E+02	260.76					3.20E+00	7.70E-02		2.20E-01
79005	Trichloroethane, 1,1,2-	386.95	7.80E-02	8.80E-06	3.37E-02	8.22E-04	1.60E-05	IRIS	6.770E+01	133.41					1.10E+03	5.60E-02		2.30E+01
56235	Carbon Tetrachloride	349.95	7.80E-02	8.80E-06	1.13E+00	2.76E-02	1.50E-05	IRIS	4.864E+01	153.82					7.93E+02	5.25E-02		1.15E+02
50000	Formaldehyde	254.05	1.78E-01	1.98E-05	1.38E-05	3.37E-07	1.30E-05	IRIS	1.000E+00	30.03					4.00E+05	4.55E-02		3.89E+03
108601	Bis(2-chloro-1-methylethyl)ether	460.15	3.50E-02	7.36E-06	4.62E-03	1.13E-04	1.00E-05	HEAST	3.922E+01	171.07					1.70E+03	3.50E-02		5.60E-01
75525	Nitromethane	374.25			1.17E-03	2.85E-05	9.00E-06	PROV	8.181E+00	61.04	2.00E-02	PROV	5.71E-03		1.11E+05	3.15E-02		3.58E+01
75014	Vinyl Chloride	259.85	1.06E-01	1.23E-06	1.14E+00	2.78E-02	8.80E-06	IRIS	2.374E+01	62.5	1.00E-01	IRIS	2.86E-02		8.80E+03	3.08E-02		2.98E+03
207089	Benzo[k]fluoranthene	753.15	2.26E-02	5.56E-06	2.39E-05	5.83E-07	8.80E-06		7.870E+05	252.32					8.00E-04	3.08E-02		9.65E-10
71432	Benzene	353.15	8.80E-02	9.80E-06	2.27E-01	5.54E-03	7.80E-06	IRIS	1.655E+02	78.11	3.00E-02	IRIS	8.57E-03		1.79E+03	2.73E-02		9.48E+01
630206	Tetrachloroethane, 1,1,1,2-	403.65	4.23E-02	9.14E-06	9.89E-02	2.41E-03	7.40E-06	IRIS	9.663E+01	167.85					1.07E+03	2.59E-02		1.20E+01
140578	Aramite	686.75	-3.04E-02	5.03E-06	7.77E-06	1.90E-07	7.10E-06	IRIS	2.020E+04	334.86					5.90E-01	2.49E-02		3.88E-06
127184	Tetrachloroethylene	394.45	7.20E-02	8.20E-06	7.24E-01	1.77E-02	5.90E-06	R9/CA	1.068E+02	165.83	6.00E-01		1.71E-01		2.06E+02	2.07E-02		1.85E+01
67721	Hexachloroethane	427.6	2.50E-03	6.80E-06	1.59E-01	3.88E-03	4.00E-06	IRIS	2.247E+02	236.74					5.00E+01	1.40E-02		2.10E-01
542756	Dichloropropene, 1,3-	385.15	6.26E-02	1.00E-05	1.45E-01	3.54E-03	4.00E-06	IRIS	8.077E+01	110.97	2.00E-02	IRIS	5.71E-03		2.80E+03	1.40E-02		3.40E+01
75569	Propylene Oxide	308.15	1.04E-01	1.00E-05	2.85E-03	6.95E-05	3.70E-06	IRIS	2.324E+00	58.08	3.00E-02	IRIS	8.57E-03		5.90E+05	1.30E-02		5.38E+02
88062	Trichlorophenol, 2,4,6-	519.15	3.18E-02	6.25E-06	1.06E-04	2.59E-06	3.10E-06	IRIS	1.186E+03	197.45					8.00E+02	1.09E-02		8.00E-03
75070	Acetaldehyde	293.25	1.24E-01	1.41E-05	2.73E-03	6.66E-05	2.20E-06	IRIS	1.498E+00	44.05	9.00E-03	IRIS	2.57E-03		1.00E+06	7.70E-03		9.02E+02
74873	Chloromethane	249.15	1.26E-01	6.50E-06	3.61E-01	8.80E-03	1.80E-06	HEAST	1.430E+01	50.49	9.00E-02	IRIS	2.57E-02		5.32E+03	6.30E-03		4.30E+03
106898	Epichlorohydrin	390.15	8.60E-02	9.80E-06	1.24E-03	3.02E-05	1.20E-06	IRIS	4.491E+00	92.53	1.00E-03	IRIS	2.86E-04		6.59E+04	4.20E-03		
75252	Bromoform	422.25	1.49E-02	1.03E-05	2.19E-02	5.34E-04	1.10E-06	IRIS	3.504E+01	252.73					3.10E+03	3.85E-03		5.40E+00
100414	Ethylbenzene	409.25	7.50E-02	7.80E-06	3.22E-01	7.85E-03	1.10E-06	PROV	5.178E+02	106.17	1.00E+00	IRIS	2.86E-01		1.69E+02	3.85E-03		9.60E+00
218019	Chrysene	721.15	2.48E-02	6.21E-06	2.14E-04	5.22E-06	8.80E-07		2.360E+05	228.3					2.00E-03	3.08E-03		6.23E-09
75092	Methylene Chloride	313.15	1.01E-01	1.17E-05	1.33E-01	3.24E-03	4.70E-07	IRIS	2.374E+01	84.93	3.00E+00	HEAST	8.57E-01		1.30E+04	1.65E-03		4.35E+02
85018	Phenanthrene	613.15			1.73E-03	4.22E-05	0.00E+00		2.080E+04	178.24	1.05E-01	Pyrene	0.00E+00		1.15E+00	0.00E+00		1.12E-04
208968	Acenaphthylene	553.15	4.39E-02	7.53E-06	5.11E-03	1.25E-04	0.00E+00		6.123E+03	152.2	2.10E-01	Acenaphthene	0.00E+00		1.61E+01	0.00E+00		9.12E-04
540590	Dichloroethylene, 1,2- (as cis-1,2-DCE)	328.15	7.36E-02	1.13E-05	1.67E-01	4.07E-03	0.00E+00		4.379E+01	96.94	2.57E-03	surr cis-1,2-DCE	0.00E+00		3.50E+03	0.00E+00		2.01E+02
51285	Dinitrophenol, 2,4-	605.28	2.73E-02	9.06E-06	3.52E-06	8.59E-08			3.638E+02	184.11					2.79E+03			3.90E-04
55630	Nitroglycerin	523.15			1.04E-07	2.54E-09			1.308E+02	227.09					1.38E+03			4.00E-02
56359	Tributyltin Oxide	690.49			3.86E+03	9.41E+01			3.750E+07	596.12					1.00E+02			7.80E-06
56382	Parathion	648.15	1.70E-02	5.79E-06	1.22E-05	2.98E-07			1.779E+03	291.26					1.10E+01			6.68E-06
57249	Strychnine	739.78			2.44E-12	5.95E-14			6.422E+03	334.42					1.60E+02			2.35E-10
57556	Propylene Glycol	460.75	9.30E-02	1.02E-05	5.36E-09	1.31E-10			1.000E+00	76.1	3.00E-03	PROV	8.57E-04		1.00E+06			1.29E-01
58899	Hexachlorocyclohexane, Gamma-	561.15	1.42E-02	7.34E-06	2.10E-04	5.12E-06			3.380E+03	290.83					8.00E+00			3.52E-05
58902	Tetrachlorophenol, 2,3,4,6-	561.22	2.17E-02	7.10E-06	3.61E-04	8.80E-06			2.002E+03	231.89					2.30E+01			6.66E-04
59507	Cresol, p-chloro-m-	508.15			1.00E-04	2.44E-06			7.180E+02	142.59					3.83E+03			5.00E-02

Table 9
Risk Assessment Information System Organic Constituent Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS #	Chemical	Boiling Point (Kelvin)	Diffusivity in Air (cm^2/s)	Diffusivity in Water (cm^2/s)	Henry's Law Constant (unitless)	Henry's Law Constant ($atm\text{-}m^3/mol$)	Inhalation Unit Risk [$1/(\mu g/m^3)$]	Inhalation Unit Risk Ref.	Organic Carbon Partition Coef. (L/kg)	Molecular Weight (g/mol)	Inhalation RfC Chronic (mg/m^3)	RfC Ref.	Inhalation RfD Chronic (mg/kg-day)	RfD Ref.	Water Solubility (mg/L)	Inhalation Slope Factor 1/(mg/kg-day)	SF Ref.	Vapor Pressure (mm Hg)
59870	Nitrofurazone	635.02			1.27E-11	3.10E-13			3.757E+02	198.14					2.10E+02			3.45E-07
60297	Ethyl Ether	307.65	7.40E-02	9.30E-06	5.03E-02	1.23E-03			4.395E+00	74.12					6.04E+04			5.38E+02
60515	Dimethoate	633.95			4.29E-09	1.05E-10			2.452E+01	229.25					2.50E+04			8.25E-06
62384	Phenylmercuric Acetate	563.92			2.31E-08	5.63E-10			1.718E+02	336.74					4.37E+03			6.00E-06
62533	Aniline	457.25	7.00E-02	8.30E-06	8.26E-05	2.01E-06			4.478E+01	93.13	1.00E-03	IRIS	2.86E-04		3.60E+04			4.90E-01
62737	Dichlorvos	507.25	2.32E-02	7.33E-06	2.35E-05	5.73E-07			4.020E+01	220.98	5.00E-04	IRIS	1.43E-04		8.00E+03			1.58E-02
62748	Sodium Fluoroacetate	666.63			4.46E-05	1.09E-06			1.201E+00	100.03					1.11E+06			6.54E-07
63252	Carbaryl	588.15	2.78E-02	7.13E-06	1.78E-07	4.34E-09			2.417E+02	201.23					1.10E+02			1.36E-06
64186	Formic Acid	374.15	7.90E-02	1.37E-06	6.83E-06	1.67E-07			1.000E+00	46.03	3.00E-03	PROV	8.57E-04		1.00E+06			4.26E+01
65850	Benzoic Acid	522.35	5.36E-02	7.97E-06	1.56E-06	3.80E-08			1.449E+01	122.12					3.40E+03			7.00E-04
67209	Nitrofurantoin	773.15			5.44E-11	1.33E-12			2.624E+02	238.16					7.95E+01			6.79E-11
67458	Furazolidone	648.32			1.33E-09	3.24E-11			8.282E+02	225.16					4.00E+01			1.03E-07
67561	Methanol	337.75	1.50E-01	1.64E-05	1.86E-04	4.54E-06			1.000E+00	32.04					1.00E+06			1.27E+02
67630	Isopropanol	355.45	9.80E-02	1.04E-05	3.31E-04	8.07E-06			1.060E+00	60.1					1.00E+06			4.54E+01
67641	Acetone	328.65	1.24E-01	1.14E-05	1.62E-03	3.95E-05			1.981E+00	58.08					1.00E+06			2.31E+02
68122	Dimethylformamide	426.15	9.39E-02	1.03E-05	3.02E-06	7.37E-08			2.411E+00	73.1	3.00E-02	IRIS	8.57E-03		1.00E+06			3.87E+00
70304	Hexachlorophene	752.15			2.24E-11	5.46E-13			6.310E+05	406.91					1.40E+02			8.31E-11
71363	Butanol, N-	391.15	8.00E-02	9.30E-06	3.60E-04	8.78E-06			2.443E+00	74.12					6.32E+04			6.70E+00
71410	Pentyl Alcohol, N-	411.05			5.31E-04	1.30E-05			4.506E+00	88.15					2.20E+04			2.20E+00
71556	Trichloroethane, 1,1,1-	347.15	7.80E-02	8.80E-06	7.03E-01	1.71E-02			4.864E+01	133.41	2.20E+00	PROV	6.29E-01		1.29E+03			1.24E+02
72208	Endrin	603.15	1.25E-02	4.74E-06	2.60E-04	6.34E-06			1.060E+04	380.91					2.50E-01			3.00E-06
72435	Methoxychlor	619.15	1.56E-02	4.46E-06	8.30E-06	2.02E-07			4.260E+04	345.66					1.00E-01			4.17E-05
72548	DDD	623.15	1.69E-02	4.76E-06	2.70E-04	6.59E-06			1.530E+05	320.05					9.00E-02			1.35E-06
72559	DDE	609.15	1.44E-02	5.87E-06	1.70E-03	4.15E-05			1.530E+05	318.03					4.00E-02			6.00E-06
74113	Chlorobenzoic Acid, p-	549.71			1.59E-06	3.88E-08			2.347E+01	156.57					7.20E+01			2.92E-05
74317	N,N'-Diphenyl-1,4-benzenediamine	493.15			8.37E-09	2.04E-10			1.288E+05	260.34					7.35E+00			6.35E-09
74839	Bromomethane	276.65	7.28E-02	1.21E-05	2.55E-01	6.22E-03			1.430E+01	94.94	5.00E-03	IRIS	1.43E-03		1.52E+04			1.62E+03
74931	Methyl Mercaptan	279.05	2.25E-01	1.48E-05	1.28E-01	3.12E-03			1.430E+01	48.1	2.00E-03	PROV	5.71E-04		1.54E+04			1.51E+03
74953	Dibromomethane (Methylene Bromide)	370.15	3.18E-02	8.44E-06	3.36E-02	8.20E-04			2.374E+01	173.84					1.19E+04			4.44E+01
74975	Bromochloromethane	341.15	4.74E-02	1.00E-05	5.97E-02	1.46E-03			2.374E+01	129.38					1.67E+04			1.42E+02
75003	Ethyl Chloride	285.45	2.71E-01	1.15E-05	4.54E-01	1.11E-02			2.374E+01	64.52	1.00E+01	IRIS	2.86E+00		6.71E+03			1.01E+03
75058	Acetonitrile	332.75	1.28E-01	1.66E-05	1.41E-03	3.44E-05			4.500E+00	41.05	6.00E-02	IRIS	1.71E-02		1.00E+06			
75150	Carbon Disulfide	319.15	1.04E-01	1.00E-05	5.89E-01	1.44E-02			1.000E+00	76.13	7.00E-01	IRIS	2.00E-01		1.18E+03			3.59E+02
75274	Bromodichloromethane	363.15	2.98E-02	1.06E-05	8.67E-02	2.11E-03			3.504E+01	163.83					3.03E+03			5.74E+01
75296	Chloropropane, 2-	308.85	1.16E-01	1.01E-05	7.15E-01	1.74E-02			3.504E+01	78.54	1.00E-01	HEAST	2.86E-02		3.10E+03			5.15E+02
75343	Dichloroethane, 1,1-	330.55	7.42E-02	1.05E-05	2.30E-01	5.61E-03			3.504E+01	98.96	5.00E-01	HEAST	1.43E-01		5.04E+03			2.27E+02
75376	Difluoroethane, 1,1-	248.25			8.30E-01	2.02E-02			3.504E+01	66.05	4.00E+01	IRIS	1.14E+01		3.20E+03			4.55E+03
75456	Chlorodifluoromethane	232.45	8.30E-02	1.28E-05	1.66E+00	4.05E-02			3.504E+01	86.47	5.00E+01	IRIS	1.43E+01		2.77E+03			7.25E+03
75605	Cacodylic Acid	448.71				0.00E+00			4.864E+01	138					2.00E+06			4.56E-03
75627	Bromotrichloromethane	378.15			1.52E-02	3.71E-04			4.864E+01	198.27					3.08E+02			3.90E+01
75683	Chloro-1,1-difluoroethane, 1-	263.45			2.40E+00	5.85E-02			4.864E+01	100.5	5.00E+01	IRIS	1.43E+01		1.40E+03			2.54E+03
75694	Trichlorofluoromethane	296.85	8.70E-02	9.70E-06	3.97E+00	9.68E-02			4.864E+01	137.37	7.00E-01	HEAST	2.00E-01		1.10E+03			8.03E+02
75718	Dichlorodifluoromethane	243.35	5.20E-02	1.05E-05	1.40E+01	3.41E-01			4.864E+01	120.91	2.00E-01	HEAST	5.71E-02		2.80E+02			4.85E+03
75741	Tetramethyl Lead	383.15			2.49E+01	6.07E-01			4.864E+01	267.34					1.50E+01			2.60E+01
75865	Acetone Cyanohydrin	444.15	7.54E-02	1.01E-05	5.31E-04	1.30E-05			1.000E+00	85.11	6.00E-02	PROV	1.71E-02		1.00E+06			
75876	Chloral	370.95			1.21E-04	2.95E-06			6.097E+00	147.39					3.00E+04			5.00E+01
75990	Dalapon	460.65			3.69E-06	9.00E-08			2.738E+00	142.97					5.02E+05			6.70E-01
76039	Trichloroacetic Acid	469.65			5.52E-07	1.35E-08			2.738E+00	163.39					4.40E+04			6.00E-02
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	320.85	2.88E-02	8.07E-06	2.15E+01	5.24E-01			2.247E+02	187.38	3.00E+01	HEAST	8.57E+00		1.70E+02			3.63E+02
77474	Hexachlorocyclopentadiene	512.15	1.61E-02	7.21E-06	1.10E+00	2.68E-02			1.667E+03	272.77	2.00E-04	IRIS	5.71E-05		1.80E+00			6.00E-02
77736	Dicyclopentadiene	443.15	4.89E-02	7.76E-06	2.56E+00	6.24E-02			1.800E+03	132.21	7.00E-03	PROV	2.00E-03		5.19E+01			2.29E+00
77781	Dimethyl Sulfate	462.07	5.14E-02	9.57E-06	1.64E-04	4.00E-06			2.417E+01	126.13					2.80E+04			6.77E-01
78002	Tetraethyl Lead	475.15	1.32E-02	6.40E-06	2.32E+01	5.66E-01			7.576E+02	323.45					2.90E-01			2.60E-01
78422	Tris(2-ethylhexyl)phosphate	719.46			3.20E-06	7.80E-08			2.277E+06	434.65					6.00E-01			6.07E-07

Table 9
Risk Assessment Information System Organic Constituent Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS #	Chemical	Boiling Point (Kelvin)	Diffusivity in Air (cm^2/s)	Diffusivity in Water (cm^2/s)	Henry's Law Constant (unitless)	Henry's Law Constant ($atm\text{-}m^3/mol$)	Inhalation Unit Risk [$1/(\mu g/m^3)$]	Inhalation Unit Risk Ref.	Organic Carbon Partition Coef. (L/kg)	Molecular Weight (g/mol)	Inhalation RfC Chronic (mg/m^3)	RfC Ref.	Inhalation RfD Chronic (mg/kg-day)	RfD Ref.	Water Solubility (mg/L)	Inhalation Slope Factor 1/(mg/kg-day)	SF Ref.	Vapor Pressure (mm Hg)
78488	Merphos Oxide	664.82	1.75E-02	4.72E-06	1.20E-05	2.93E-07			1.888E+03	314.5					2.30E+00			1.38E-05
78591	Isophorone	488.35	6.23E-02	6.76E-06	2.71E-04	6.61E-06			5.832E+01	138.21					1.20E+04			4.38E-01
78831	Isobutyl Alcohol	380.95	8.60E-02	9.30E-06	4.00E-04	9.76E-06			2.048E+00	74.12					8.50E+04			1.04E+01
78864	Chlorobutane, 2-	341.15			9.85E-01	2.40E-02			6.770E+01	92.57					1.00E+03			1.57E+02
78875	Dichloropropane, 1,2-	368.65	7.82E-02	8.73E-06	1.15E-01	2.80E-03			6.770E+01	112.99	4.00E-03	IRIS	1.14E-03		2.80E+03			5.33E+01
78933	Methyl Ethyl Ketone	352.65	8.08E-02	9.80E-06	2.33E-03	5.68E-05			3.827E+00	72.11	5.00E+00	IRIS	1.43E+00		2.23E+05			9.06E+01
79107	Acrylic Acid	414.35	9.80E-02	1.06E-05	1.51E-05	3.68E-07			1.201E+00	72.06	1.00E-03	IRIS	2.86E-04		1.00E+06			
79118	Chloroacetic Acid	462.45	7.33E-02	1.21E-05	3.85E-07	9.39E-09			1.201E+00	94.5					8.58E+05			6.50E-02
79209	Methyl Acetate	365.15	1.04E-01	1.00E-05	4.70E-03	1.15E-04			3.324E+00	74.08					2.43E+05			2.16E+02
79436	Dichloroacetic Acid	467.15			1.44E-05	3.51E-07			1.895E+00	128.94					1.00E+06			1.79E-01
80057	Bisphenol A	636.69	2.64E-02	5.73E-06	3.74E-10	9.12E-12			7.520E+04	228.29					1.20E+02			2.27E-07
80079	Sulfonylbis(4-chlorobenzene), 1,1'-	663.39			5.60E-06	1.37E-07			7.615E+03	287.16					6.86E+00			8.09E-07
80626	Methyl Methacrylate	373.65	7.70E-02	8.60E-06	1.38E-02	3.37E-04			1.014E+01	100.12	7.00E-01	IRIS	2.00E-01		1.50E+04			3.85E+01
81812	Warfarin	767.52	1.63E-02	5.38E-06	1.13E-07	2.76E-09			2.732E+02	308.34					1.70E+01			1.16E-07
82688	Pentachloronitrobenzene	601.15	1.59E-02	6.14E-06	1.81E-03	4.41E-05			2.406E+03	295.34					4.40E-01			5.00E-05
83329	Acenaphthene	552.15	4.21E-02	7.69E-06	7.44E-03	1.81E-04			6.123E+03	154.21					3.90E+00			2.50E-03
83794	Rotenone	774.35			4.58E-12	1.12E-13			3.470E+05	394.43					2.00E-01			6.94E-10
84662	Diethyl Phthalate	568.15	2.56E-02	6.35E-06	2.49E-05	6.07E-07			1.262E+02	222.24					1.08E+03			2.10E-03
84720	Ethylphthalyl Ethyl Glycolate	614.11			3.16E-08	7.71E-10			1.282E+03	280.28					2.17E+02			2.16E-04
84742	Dibutyl Phthalate	613.15	4.38E-02	7.86E-06	7.40E-05	1.80E-06			1.460E+03	278.35					1.12E+01			0.00E+00
85007	Diquat	653.36			5.81E-12	1.42E-13			1.933E+03	344.05					7.08E+05			7.17E-09
85449	Phthalic Anhydride	568.15	7.10E-02	8.60E-06	6.66E-07	1.62E-08			1.084E+01	148.12	1.20E-01	HEAST	3.43E-02		6.20E+03			5.17E-04
85687	Butyl Benzyl Phthlate	643.15	1.74E-02	4.83E-06	5.15E-05	1.26E-06			9.359E+03	312.37					2.69E+00			8.25E-06
85701	Butylphthalyl Butylglycolate	660.64			1.26E-07	3.07E-09			1.480E+04	336.39					2.14E+00			1.67E-05
86306	Nitrosodiphenylamine, N-	632.28	3.12E-02	6.35E-06	4.95E-05	1.21E-06			6.154E+03	198.23					3.50E+01			6.97E-05
86737	Fluorene	568.15	3.63E-02	7.88E-06	3.93E-03	9.59E-05			1.130E+04	166.22					1.89E+00			8.42E-03
86748	Carbazole	627.85	3.90E-02	7.03E-06	2.09E-05	5.10E-07			1.130E+04	167.21					1.80E+00			7.50E-07
87821	Hexabromobenzene	643.85			1.15E-03	2.80E-05			3.380E+03	551.49					1.60E-04			1.68E-08
87843	Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro-	646.3			4.37E-10	1.07E-11			3.380E+03	513.09					5.50E-02			3.46E-06
87865	Pentachlorophenol	582.65	5.60E-02	6.10E-06	1.00E-06	2.44E-08			3.380E+03	266.34					1.40E+01			1.10E-04
88722	Nitrotoluene, o-	495.15	4.75E-02	8.67E-06	5.11E-04	1.25E-05			3.155E+02	137.14					6.50E+02			1.88E-01
88733	Chloronitrobenzene, o-	518.65	3.51E-02	9.37E-06	3.80E-04	9.27E-06			3.155E+02	157.56	7.00E-05	PROV	2.00E-05		4.41E+02			1.82E-02
88744	Nitroaniline, 2-	557.15	4.73E-02	8.58E-06	2.41E-06	5.88E-08			5.272E+01	138.13	1.00E-04	PROV	2.86E-05		1.47E+03			2.77E-03
88857	Dinoseb	605.15			1.86E-05	4.54E-07			3.544E+03	240.22					5.20E+01			7.44E-05
88891	Picric Acid (2,4,6-Trinitrophenol)	661.53			6.95E-10	1.70E-11			1.834E+03	229.11					1.27E+04			7.50E-07
90120	Naphthalene, 1-Methyl	513.15	4.80E-02	7.84E-06	2.10E-02	5.12E-04			3.038E+03	142.2					2.50E+01			6.70E-02
90437	Phenylphenol, 2-	559.15	3.87E-02	6.83E-06	4.29E-05	1.05E-06			1.030E+04	170.21					7.00E+02			2.00E-03
90982	Dichlorobenzophenone, 4,4'-	626.15	2.30E-02	5.51E-06	4.37E-05	1.07E-06			2.826E+03	251.11					3.80E+00			6.39E-06
91203	Naphthalene	491.05	5.90E-02	7.50E-06	1.80E-02	4.39E-04			1.837E+03	128.18	3.00E-03	IRIS	8.57E-04		3.10E+01			8.50E-02
91225	Quinoline	510.25	5.46E-02	8.31E-06	6.83E-05	1.67E-06			1.837E+03	129.16					6.11E+03			6.00E-02
91576	Naphthalene, 2-Methyl	514.25	4.80E-02	7.84E-06	2.12E-02	5.17E-04			2.976E+03	142.2					2.46E+01			5.50E-02
91587	Chloronaphthalene, Beta-	529.15	3.47E-02	8.79E-06	1.31E-02	3.20E-04			2.976E+03	162.62					1.17E+01			9.03E-03
91941	Dichlorobenzidine, 3,3'-	641.15	1.94E-02	6.74E-06	2.09E-09	5.10E-11			7.489E+03	253.13					3.10E+00			4.16E-06
92524	Biphenyl, 1,1'-	529.25	4.04E-02	8.15E-06	1.26E-02	3.07E-04			6.250E+03	154.21					6.94E+00			8.93E-03
93652	MCPP	571.15			4.03E-08	9.83E-10			4.863E+01	214.65					8.60E+02			3.00E-06
93721	Trichlorophenoxy) Propionic Acid, 2(2,4,5-	626.43	1.94E-02	5.83E-06	3.70E-07	9.02E-09			8.040E+01	269.51					2.00E+02			2.58E-06
93765	Trichlorophenoxyacetic Acid, 2,4,5-	621.83	1.92E-02	6.70E-06	1.91E-06	4.66E-08			4.863E+01	255.49					2.78E+02			3.75E-05
94746	MCPA	559.89			5.44E-08	1.33E-09			2.941E+01	200.62					6.30E+02			5.90E-06
94757	Dichlorophenoxy Acetic Acid, 2,4-	602.32	2.31E-02	7.31E-06	1.45E-06	3.54E-08			2.941E+01	221.04					6.77E+02			8.25E-05
94815	MCPB	619.24			1.11E-07	2.71E-09			1.001E+02	228.68					4.80E+01			4.33E-07
94826	Dichlorophenoxy)butyric Acid, 4-(2,4-	597.5			2.40E-07	5.85E-09			1.001E+02	249.1					4.60E+01			6.37E-05
95476	Xylene, o-	411.65	8.70E-02	1.00E-05	2.12E-01	5.17E-03			4.431E+02	106.17	7.00E+00	HEAST			1.06E+02			7.99E+00
95487	Cresol, o-	464.15	7.40E-02	8.30E-06	4.91E-05	1.20E-06			4.431E+02	108.14					2.59E+04			1.70E-01
95498	Chlorotoluene, o-	432.15	5.50E-02	8.65E-06	1.46E-01	3.56E-03			4.431E+02	126.59					3.74E+02			3.43E+00

Table 9
Risk Assessment Information System Organic Constituent Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS #	Chemical	Boiling Point (Kelvin)	Diffusivity in Air (cm^2/s)	Diffusivity in Water (cm^2/s)	Henry's Law Constant (unitless)	Henry's Law Constant ($atm\text{-}m^3/mol$)	Inhalation Unit Risk [$1/(\mu g/m^3)$]	Inhalation Unit Risk Ref.	Organic Carbon Partition Coef. (L/kg)	Molecular Weight (g/mol)	Inhalation RfC Chronic (mg/m^3)	RfC Ref.	Inhalation RfD Chronic (mg/kg-day)	RfD Ref.	Water Solubility (mg/L)	Inhalation Slope Factor 1/(mg/kg-day)	SF Ref.	Vapor Pressure (mm Hg)
95501	Dichlorobenzene, 1,2-	453.15	6.90E-02	7.90E-06	7.85E-02	1.91E-03			4.431E+02	147	2.00E-01	HEAST	5.71E-02		8.00E+01			1.47E+00
95534	Toluidine, o- (Methylaniline, 2-)	473.45	7.14E-02	9.12E-06	8.09E-05	1.97E-06			7.404E+01	107.16					1.66E+04			2.60E-01
95545	Phenylenediamine, o-	530.15	6.62E-02	9.93E-06	2.94E-07	7.17E-09			7.404E+01	108.14					4.04E+04			2.06E-03
95578	Chlorophenol, 2-	448.05	5.01E-02	9.46E-06	4.58E-04	1.12E-05			4.431E+02	128.56					2.85E+04			2.53E+00
95636	Trimethylbenzene, 1,2,4-	442.45	6.44E-02	7.92E-06	2.52E-01	6.15E-03			7.176E+02	120.2	6.00E-03	PROV	1.71E-03		5.70E+01			2.10E+00
95658	Dimethylphenol, 3,4-	500.15	6.02E-02	8.33E-06	1.70E-05	4.15E-07			7.176E+02	122.17					4.76E+03			3.56E-02
95681	Dimethylaniline, 2,4-	487.15			1.02E-04	2.49E-06			1.199E+02	121.18					3.65E+03			1.33E-01
95692	Chloro-2-methylaniline, 4-	517.15			8.14E-05	1.99E-06			1.199E+02	141.6					9.54E+02			3.24E-02
95705	Toluene-2,5-diamine	546.65			3.89E-08	9.49E-10			1.199E+02	122.17					7.25E+04			3.40E-03
95807	Toluene-2,4-diamine	565.15	5.69E-02	9.05E-06	3.89E-08	9.49E-10			1.199E+02	122.17					7.48E+04			1.43E-03
95943	Tetrachlorobenzene, 1,2,4,5-	517.65	2.11E-02	8.75E-06	4.09E-02	9.98E-04			1.186E+03	215.89					5.95E-01			5.40E-03
95954	Trichlorophenol, 2,4,5-	520.15	2.91E-02	7.03E-06	6.62E-05	1.61E-06			1.186E+03	197.45					1.20E+03			7.50E-03
96184	Trichloropropane, 1,2,3-	430.15	7.10E-02	7.90E-06	1.40E-02	3.41E-04			1.308E+02	147.43					1.75E+03			3.69E+00
96195	Trichloropropene, 1,2,3-	415.15			7.20E-01	1.76E-02			1.308E+02	145.42	1.00E-03	PROV	2.86E-04		3.34E+02			4.40E+00
96333	Methyl Acrylate	353.35	9.76E-02	1.02E-05	8.05E-03	1.96E-04			6.423E+00	86.09					4.94E+04			8.66E+01
96377	Methylcyclopentane	344.95			1.48E+01	3.62E-01			1.453E+02	84.16					4.20E+01			1.38E+02
96457	Ethylene Thiourea	620.33	7.15E-02	1.02E-05	1.37E-05	3.34E-07			6.511E+00	102.15					2.00E+04			2.02E-06
96913	Picramic Acid (2-Amino-4,6-dinitrophenol)	648.42			7.59E-13	1.85E-14			1.005E+02	199.12					1.40E+03			2.54E-07
97632	Ethyl Methacrylate	390.15			2.34E-02	5.71E-04			1.870E+01	114.15					5.40E+03			2.06E+01
98011	Furfural	434.85	8.72E-02	1.04E-05	1.38E-04	3.37E-06			1.771E+01	96.09	5.00E-02	HEAST	1.43E-02		7.70E+04			2.21E+00
98077	Benzotrichloride	494.15	2.75E-02	7.77E-06	1.06E-02	2.59E-04			1.181E+03	195.48					2.17E+01			4.14E-01
98566	Chlorobenzotrifluoride, 4-	411.65	6.85E-02	7.26E-06	1.42E+00	3.46E-02			1.912E+03	180.56					4.61E+01			7.63E+00
98828	Cumene	425.55	6.50E-02	7.10E-06	4.70E-01	1.15E-02			8.172E+02	120.2	4.00E-01	IRIS	1.14E-01		6.13E+01			4.50E+00
98839	Methylstyrene, Alpha-	438.55	2.64E-01	1.14E-05	1.04E-01	2.54E-03			8.172E+02	118.18					8.90E+01			1.90E+00
98862	Acetophenone	475.15	6.00E-02	8.73E-06	4.25E-04	1.04E-05			4.620E+01	120.15	2.00E-05		5.71E-06		6.13E+03			
98953	Nitrobenzene	483.95	7.60E-02	8.60E-06	9.81E-04	2.39E-05			1.908E+02	123.11	2.00E-03	HEAST	5.71E-04		2.09E+03			2.45E-01
99081	Nitrotoluene, m-	505.15	4.95E-02	8.22E-06	3.80E-04	9.27E-06			3.090E+02	137.14					5.00E+02			2.05E-01
99092	Nitroaniline, 3-	579.15			3.23E-07	7.88E-09			5.164E+01	138.13	1.00E-03	PROV	2.86E-04		1.20E+03			9.56E-05
99354	Trinitrobenzene, 1,3,5-	588.15			1.26E-07	3.07E-09			1.087E+03	213.11					2.78E+02			6.44E-06
99558	Methyl-5-Nitroaniline, 2-	561.53			7.93E-07	1.93E-08			8.539E+01	152.15					1.88E+03			5.88E-04
99592	Methoxy-5-nitroaniline, 2-	577.03			6.01E-07	1.47E-08			3.753E+01	168.15					1.15E+02			1.91E-04
99650	Dinitrobenzene, 1,3-	564.15	2.79E-01	7.64E-06	2.00E-06	4.88E-08			2.201E+02	168.11					5.33E+02			9.00E-04
99990	Nitrotoluene, p-	511.45	4.78E-02	8.61E-06	2.30E-04	5.61E-06			3.090E+02	137.14					4.42E+02			1.64E-01
100005	Chloronitrobenzene, p-	508.65	3.49E-02	9.42E-06	5.52E-04	1.35E-05			3.090E+02	157.56	6.00E-04	PROV	1.71E-04		2.73E+02			9.70E-02
100016	Nitroaniline, 4-	605.15			5.15E-08	1.26E-09			5.164E+01	138.13	4.00E-03	PROV	1.14E-03		7.28E+02			3.20E-06
100027	Nitrophenol, 4-	552.15	4.30E-02	9.61E-06	1.70E-08	4.15E-10			3.090E+02	139.11					1.16E+04			4.10E-05
100210	Phthalic Acid, P-	624.52	3.90E-02	7.14E-06	1.59E-11	3.88E-13			7.157E+01	166.13					1.50E+01			9.20E-06
100254	Dinitrobenzene, 1,4-	570.15			1.51E-05	3.68E-07			2.201E+02	168.11					6.90E+01			0.00E+00
100425	Styrene	418.15	7.10E-02	8.00E-06	1.12E-01	2.73E-03			5.178E+02	104.15	1.00E+00	IRIS	2.86E-01		3.10E+02			6.40E+00
100447	Benzyl Chloride	452.15	7.50E-02	7.80E-06	1.68E-02	4.10E-04			5.178E+02	126.59					2.00E+01			1.23E+00
100516	Benzyl Alcohol	478.45	7.12E-02	8.97E-06	1.38E-05	3.37E-07			1.566E+01	108.14					4.29E+04			9.40E-02
100527	Benzaldehyde	452.15	7.30E-02	9.07E-06	1.09E-03	2.66E-05			3.267E+01	106.13					6.57E+03			1.27E-01
100618	Methylanaline, N-	469.35			3.63E-04	8.85E-06			6.501E+01	107.16					5.62E+03			4.53E-01
101213	Chlorpropham	556.34			9.81E-07	2.39E-08			2.079E+02	213.67					8.90E+01			3.40E-03
101553	Bromodiphenyl Ether, p-	583.25	4.75E-02	6.28E-06	4.78E-03	1.17E-04			4.160E+03	249.11	7.00E-03	IRIS-Oral			1.45E+00			1.50E-03
101611	Methylene-bis(N,N-dimethyl) Aniline, 4,4'-	663.15			4.95E-06	1.21E-07			1.470E+04	254.38					4.14E+00			3.32E-06
101688	Methylenediphenyl Diisocyanate	611.63	2.33E-02	6.22E-06	3.66E-05	8.93E-07			3.760E+05	250.26	6.00E-04	IRIS	1.71E-04		8.29E-01			5.00E-06
101779	Methylenebisbenzenamine, 4,4'-	671.15	3.56E-02	5.39E-06	6.46E-10	1.58E-11			4.950E+03	198.27					1.00E+03			2.07E-06
103231	Di(2-ethylhexyl)adipate	690.15			1.77E-05	4.32E-07			4.860E+04	370.58					7.80E-01			8.50E-07
105602	Caprolactam	543.15	6.54E-02	8.99E-06	1.03E-06	2.51E-08			5.735E+01	113.16					7.72E+05			1.60E-03
105679	Dimethylphenol, 2,4-	484.05	5.84E-02	8.69E-06	3.89E-05	9.49E-07			7.176E+02	122.17					7.87E+03			1.02E-01
106376	Dibromobenzene, 1,4-	493.15			3.65E-02	8.90E-04			4.340E+02	235.91					2.64E+01			5.75E-02
106423	Xylene, p-	411.45	7.69E-02	8.44E-06	2.82E-01	6.88E-03			4.340E+02	106.17	7.00E+00	HEAST			1.62E+02			8.84E+00
106445	Cresol, p-	475.05	7.40E-02	1.00E-05	4.09E-05	9.98E-07			4.340E+02	108.14					2.15E+04			1.10E-01

Table 9
Risk Assessment Information System Organic Constituent Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS #	Chemical	Boiling Point (Kelvin)	Diffusivity in Air (cm^2/s)	Diffusivity in Water (cm^2/s)	Henry's Law Constant (unitless)	Henry's Law Constant ($atm\text{-}m^3/mol$)	Inhalation Unit Risk [$1/(\mu g/m^3)$]	Inhalation Unit Risk Ref.	Organic Carbon Partition Coef. (L/kg)	Molecular Weight (g/mol)	Inhalation RfC Chronic (mg/m^3)	RfC Ref.	Inhalation RfD Chronic (mg/kg-day)	RfD Ref.	Water Solubility (mg/L)	Inhalation Slope Factor 1/(mg/kg-day)	SF Ref.	Vapor Pressure (mm Hg)
106467	Dichlorobenzene, 1,4-	447.15	6.90E-02	7.90E-06	9.85E-02	2.40E-03			4.340E+02	147	8.00E-01	IRIS	2.29E-01		8.13E+01			1.74E+00
106478	Chloroaniline, p-	505.15	4.83E-02	1.01E-05	4.74E-05	1.16E-06			7.253E+01	127.57					3.90E+03			2.70E-02
106490	Toluidine, p-	473.55	6.98E-02	9.43E-06	8.26E-05	2.01E-06			7.253E+01	107.16					6.50E+03			2.86E-01
106503	Phenylenediamine, p-	540.15	6.62E-02	9.93E-06	3.63E-08	8.85E-10			7.253E+01	108.14					3.70E+04			6.55E-04
106887	Epoxybutane, 1,2-	336.45	1.34E-01	1.03E-05	7.36E-03	1.80E-04			4.491E+00	72.11	2.00E-02	IRIS	5.71E-03		9.50E+04			1.80E+02
107028	Acrolein	325.75	1.05E-01	1.22E-05	4.99E-03	1.22E-04			2.763E+00	56.06	2.00E-05	IRIS	5.71E-06		2.12E+05			
107051	Allyl Chloride	318.25	1.17E-01	1.08E-05	4.50E-01	1.10E-02			4.379E+01	76.53	1.00E-03	IRIS	2.86E-04		3.37E+03			3.68E+02
107153	Ethylene Diamine	390.15	1.53E-01	1.41E-05	7.07E-08	1.72E-09			2.472E+01	60.1					1.00E+06			
107186	Allyl Alcohol	370.15	1.14E-01	1.14E-05	2.04E-04	4.98E-06			1.325E+00	58.08					1.00E+06			2.61E+01
107197	Propargyl Alcohol	386.75	1.81E-01	1.33E-05	4.70E-05	1.15E-06			1.325E+00	56.06					1.00E+06			1.56E+01
107211	Ethylene Glycol	470.45	1.08E-01	1.22E-05	2.45E-06	5.98E-08			1.000E+00	62.07					1.00E+06			9.20E-02
107302	Chloromethyl Methyl Ether	332.65	9.20E-02	1.34E-05	1.24E-02	3.02E-04			2.383E+00	80.51					6.94E+04			3.00E+01
107982	Propylene Glycol Monomethyl Ether	392.15	7.17E-02	9.73E-06	3.76E-05	9.17E-07			1.000E+00	90.12	2.00E+00	IRIS	5.71E-01		1.00E+06			1.25E+01
108054	Vinyl Acetate	345.65	8.50E-02	9.20E-06	2.09E-02	5.10E-04			6.131E+00	86.09	2.00E-01	IRIS	5.71E-02		2.00E+04			9.02E+01
108101	Methyl Isobutyl Ketone	389.65	7.50E-02	7.80E-06	5.64E-03	1.38E-04			1.091E+01	100.16	3.00E+00	IRIS	8.57E-01		1.90E+04			1.99E+01
108203	Diisopropyl Ether	341.65			9.32E-02	2.27E-03			1.050E+01	102.18	4.00E-01	PROV	1.14E-01		8.80E+03			1.49E+02
108316	Maleic Anhydride	475.15	9.50E-02	1.11E-05	1.61E-04	3.93E-06			1.000E+00	98.06					4.91E+03			2.50E-01
108383	Xylene, m-	412.25	7.00E-02	7.80E-06	2.94E-01	7.17E-03			4.340E+02	106.17	7.00E+00	HEAST			1.61E+02			8.29E+00
108394	Cresol, m-	475.35	7.40E-02	1.00E-05	3.50E-05	8.54E-07			4.340E+02	108.14					2.27E+04			1.10E-01
108452	Phenylenediamine, m-	558.15	6.63E-02	9.88E-06	3.90E-09	9.51E-11			7.253E+01	108.14					2.38E+05			2.09E-03
108678	Trimethylbenzene, 1,3,5-	437.85	6.02E-02	8.67E-06	3.59E-01	8.76E-03			7.030E+02	120.2	6.00E-03	PROV	1.71E-03		4.82E+01			2.10E+00
108861	Bromobenzene	429.15			1.10E-01	2.68E-03			2.680E+02	157.01	1.00E-02	PROV	2.86E-03		4.46E+02			4.18E+00
108872	Methylcyclohexane	374.05	9.86E-02	8.52E-06	1.76E+01	4.29E-01			2.680E+02	98.19	3.00E+00	HEAST	8.57E-01		1.40E+01			4.60E+01
108883	Toluene	383.75	8.70E-02	8.60E-06	2.71E-01	6.61E-03			2.680E+02	92.14	5.00E+00	IRIS	1.43E+00		5.26E+02			2.84E+01
108907	Chlorobenzene	404.85	7.30E-02	8.70E-06	1.27E-01	3.10E-03			2.680E+02	112.56	5.00E-02	PROV	1.43E-02		4.98E+02			1.20E+01
108918	Cyclohexylamine	407.15	7.45E-02	1.04E-05	1.70E-04	4.15E-06			4.037E+01	99.18					1.00E+06			1.01E+01
108941	Cyclohexanone	428.55	7.84E-02	8.62E-06	3.68E-04	8.98E-06			1.515E+01	98.15					2.50E+04			4.33E+00
108952	Phenol	454.95	8.20E-02	9.10E-06	1.36E-05	3.32E-07			2.680E+02	94.11					8.28E+04			3.50E-01
108985	Benzenethiol	442.25			1.37E-02	3.34E-04			2.680E+02	110.17					8.35E+02			1.93E+00
109693	Chlorobutane, 1-	351.75			6.83E-01	1.67E-02			8.077E+01	92.57					1.10E+03			1.01E+02
109773	Malononitrile	491.65			5.19E-07	1.27E-08			1.531E+01	66.06					1.33E+05			2.00E-01
109784	Ethylene Cyanohydrin	494.15			1.78E-08	4.34E-10			1.000E+00	71.08					1.00E+06			8.02E-02
109864	Methoxyethanol, 2-	397.25	1.29E-01	9.57E-06	1.35E-05	3.29E-07			1.000E+00	76.1	2.00E-02	IRIS	5.71E-03		1.00E+06			9.50E+00
110009	Furan	304.65	1.04E-01	1.22E-05	2.21E-01	5.39E-03			8.971E+01	68.08					1.00E+04			6.00E+02
110496	Methoxyethanol Acetate, 2-	416.15	5.29E-02	8.03E-06	1.02E-05	2.49E-07			1.135E+00	118.13					1.00E+06			2.00E+00
110543	Hexane, N-	341.85	2.00E-01	7.77E-06	7.36E+01	1.80E+00			1.490E+02	86.18	7.00E-01	IRIS	2.00E-01		9.50E+00			1.51E+02
110805	Ethoxyethanol, 2-	408.15	9.32E-02	9.76E-06	1.92E-05	4.68E-07			1.000E+00	90.12	2.00E-01	IRIS	5.71E-02		1.00E+06			5.31E+00
110827	Cyclohexane	353.85			7.94E+00	1.94E-01			1.650E+02	84.16	6.00E+00	IRIS			5.50E+01			9.69E+01
110861	Pyridine	388.35	9.10E-02	7.60E-06	4.50E-04	1.10E-05			3.301E+01	79.1					1.00E+06			2.08E+01
111159	Ethoxyethanol Acetate, 2-	429.55	4.58E-02	7.56E-06	1.31E-04	3.20E-06			2.093E+00	132.16					2.47E+05			2.34E+00
111693	Adiponitrile	568.15			4.95E-08	1.21E-09			9.605E+01	108.14	6.00E-03	PROV	1.71E-03		8.00E+04			6.79E-04
111762	Ethylene Glycol Monobutyl Ether	441.55	6.51E-02	8.15E-06	6.54E-05	1.60E-06			1.000E+00	118.18	1.30E+01	IRIS	3.71E+00		1.00E+06			8.80E-01
111900	Diethylene Glycol Monoethyl Ether	469.15	5.24E-02	8.02E-06	9.12E-10	2.22E-11			1.000E+00	134.18	3.00E-03	PROV	8.57E-04		1.00E+06			1.26E-01
111911	Bis(2-chloroethoxy)methane	491.15			6.91E-06	1.69E-07			2.767E+00	173.04					7.80E+03			1.32E-01
112345	Diethylene Glycol Monobutyl Ether	504.15	4.12E-02	7.02E-06	1.82E-09	4.44E-11			1.000E+01	162.23	2.00E-02	PROV	5.71E-03		1.00E+06			2.19E-02
114261	Baygon	562.97	2.73E-02	6.68E-06	5.85E-08	1.43E-09			4.418E+01	209.25					1.86E+03			9.68E-06
115297	Endosulfan	674.43	1.15E-02	4.55E-06	2.66E-03	6.49E-05			2.200E+04	406.92					4.50E-01			6.00E-07
115322	Dicofol	670.78			9.89E-06	2.41E-07			1.050E+04	370.49					8.00E-01			3.98E-07
115968	Tris(2-chloroethyl)phosphate	603.15			1.04E-06	2.54E-08			3.009E+02	285.49					7.00E+03			3.91E-04
116063	Aldicarb	524.1	3.05E-02	7.19E-06	5.89E-08	1.44E-09			3.249E+01	190.26					6.03E+03			3.47E-05
117817	Bis(2-ethylhexyl)phthalate	657.15	3.51E-02	3.66E-06	1.10E-05	2.68E-07			1.650E+05	390.57					2.70E-01			1.42E-07
117840	Octyl Phthalate, di-N-	704.09	1.51E-02	3.58E-06	1.05E-04	2.56E-06			1.960E+05	390.57					2.00E-02			1.00E-07
118752	Chloranil	584.63			1.34E-08	3.27E-10			1.080E+01	245.88					2.50E+02			2.28E-06
118967	Trinitrotoluene, 2,4,6-	638.29	2.45E-02	6.36E-06	1.87E-05	4.56E-07			1.834E+03	227.13					1.30E+02			8.02E-06

Table 9
Risk Assessment Information System Organic Constituent Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS #	Chemical	Boiling Point (Kelvin)	Diffusivity in Air (cm^2/s)	Diffusivity in Water (cm^2/s)	Henry's Law Constant (unitless)	Henry's Law Constant ($atm\text{-}m^3/mol$)	Inhalation Unit Risk [$1/(\mu g/m^3)$]	Inhalation Unit Risk Ref.	Organic Carbon Partition Coef. (L/kg)	Molecular Weight (g/mol)	Inhalation RfC Chronic (mg/m^3)	RfC Ref.	Inhalation RfD Chronic (mg/kg-day)	RfD Ref.	Water Solubility (mg/L)	Inhalation Slope Factor 1/(mg/kg-day)	SF Ref.	Vapor Pressure (mm Hg)
119324	Nitrotoluene, 4-Amino-2-	561.53			7.93E-07	1.93E-08			8.539E+01	152.15					1.40E+03			2.35E-03
119904	Dimethoxybenzidine, 3,3'-	629.15	2.42E-02	5.50E-06	1.91E-09	4.66E-11			1.447E+03	244.3					6.00E+01			7.09E-06
119937	Dimethylbenzidine, 3,3'-	612.15	2.83E-02	6.17E-06	3.31E-09	8.07E-11			7.489E+03	212.3					1.30E+03			2.06E-05
120127	Anthracene	613.05	3.24E-02	7.74E-06	2.27E-03	5.54E-05			2.040E+04	178.24					4.34E-02			2.67E-06
120616	Dimethylterephthalate	561.15			5.48E-03	1.34E-04			3.633E+01	194.19					1.90E+01			1.00E-02
120821	Trichlorobenzene, 1,2,4-	486.65	3.00E-02	8.23E-06	5.81E-02	1.42E-03			7.176E+02	181.45	4.00E-03	PROV	1.14E-03		4.90E+01			4.60E-01
120832	Dichlorophenol, 2,4-	483.15	3.46E-02	8.77E-06	8.95E-05	2.18E-06			7.176E+02	163					4.50E+03			1.16E-01
121142	Dinitrotoluene, 2,4-	573.15	2.03E-01	7.06E-06	2.21E-06	5.39E-08			3.638E+02	182.14					2.70E+02			1.47E-04
121448	Triethylamine	362.15	8.81E-02	7.88E-06	6.09E-03	1.49E-04			1.072E+02	101.19	7.00E-03	IRIS	2.00E-03		7.37E+04			5.71E+01
121697	Dimethylaniline, N,N-	466.6	1.53E-01	1.41E-05	2.32E-03	5.66E-05			7.708E+01	121.18					1.45E+03			7.00E-01
121755	Malathion	624.32			2.00E-07	4.88E-09			3.050E+01	330.35					1.43E+02			3.38E-06
121824	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	626.58			2.58E-06	6.29E-08			1.954E+02	222.12					5.97E+01			4.10E-09
122349	Simazine	580.6			3.85E-08	9.39E-10			1.490E+02	201.66					6.20E+00			2.21E-08
122394	Diphenylamine	575.15			1.39E-04	3.39E-06			1.887E+03	169.23					5.30E+01			8.06E-04
122429	Propham	529.9			1.57E-06	3.83E-08			1.284E+02	179.22					1.79E+02			4.74E-03
123091	Chlorophenyl Methyl Sulfide, p-	492.95			8.91E-03	2.17E-04			8.386E+02	158.65					1.19E+02			1.32E-01
123308	Aminophenol, p-	557.15			3.91E-08	9.54E-10			7.253E+01	109.13					6.00E+03			4.00E-05
123319	Hydroquinone	560.15	6.85E-02	9.04E-06	1.93E-09	4.71E-11			4.340E+02	110.11					7.20E+04			2.40E-05
123331	Maleic Hydrazide	640.34			1.08E-09	2.63E-11			1.035E+01	112.09					4.51E+03			3.68E-08
123739	Crotonaldehyde, trans-	377.15	9.03E-02	1.02E-05	7.93E-04	1.93E-05			5.096E+00	70.09					1.81E+05			3.00E+01
123911	Dioxane, 1,4-	374.65	2.29E-01	1.02E-05	1.96E-04	4.78E-06			1.000E+00	88.11					1.00E+06			3.81E+01
124049	Hexanedioic Acid	610.65			1.93E-10	4.70E-12			2.150E+01	146.14					3.08E+04			1.28E-05
124481	Dibromochloromethane	393.15	1.96E-02	1.05E-05	3.20E-02	7.80E-04			3.504E+01	208.28					2.70E+03			1.56E+01
126738	Tributyl Phosphate	562.15			6.13E-06	1.50E-07			1.888E+03	266.32					2.80E+02			3.49E-03
126987	Methacrylonitrile	363.45	8.45E-02	1.06E-05	1.01E-02	2.46E-04			1.283E+01	67.09	7.00E-04	HEAST	2.00E-04		2.54E+04			7.12E+01
126998	Chloro-1,3-butadiene, 2-	332.55	1.04E-01	1.00E-05	2.29E+00	5.59E-02			6.770E+01	88.54	7.00E-03	HEAST	2.00E-03		8.75E+02			2.15E+02
127639	Diphenyl Sulfone	552.15			1.02E-05	2.49E-07			2.903E+03	218.27					3.14E+02			5.46E-04
129000	Pyrene	677.15	2.72E-02	7.24E-06	4.87E-04	1.19E-05			6.940E+04	202.26					1.35E-01			4.50E-06
131113	Dimethylphthalate	556.85	5.68E-02	6.29E-06	4.29E-06	1.05E-07			3.709E+01	194.19					4.00E+03			3.08E-03
131895	Dinitro-o-cyclohexyl Phenol, 4,6-	680.63			1.38E-09	3.37E-11			1.400E+04	266.26					1.50E+01			1.75E-07
132649	Dibenzofuran	560.15			8.71E-03	2.12E-04			1.130E+04	168.2					3.10E+00			2.48E-03
133062	Captan	710.76	1.81E-02	5.00E-06	2.86E-07	6.98E-09			8.622E+02	300.59					5.10E+00			9.00E-08
133073	Folpet	721.96			3.13E-06	7.63E-08			1.439E+02	296.56					1.00E+00			1.39E-08
133904	Chloramben	585.15	3.23E-02	8.51E-06	1.58E-09	3.85E-11			1.072E+01	206.03					7.00E+02			1.47E-05
137268	Thiram	612.58			1.24E-05	3.02E-07			1.000E+01	240.42					3.00E+01			1.72E-05
139402	Propazine	591.61			1.88E-07	4.59E-09			3.562E+02	229.71					8.60E+00			1.31E-07
140885	Ethyl Acrylate	372.55	7.70E-02	8.60E-06	1.39E-02	3.39E-04			1.185E+01	100.12					1.50E+04			3.86E+01
141662	Bidrin	610.68			2.06E-09	5.02E-11			3.662E+02	237.19					1.00E+06			1.60E-04
141786	Ethyl Acetate	350.25	7.32E-02	9.66E-06	5.48E-03	1.34E-04			6.131E+00	88.11					8.00E+04			9.32E+01
142289	Dichloropropane, 1,3-	394.05			3.99E-02	9.73E-04			8.077E+01	112.99					2.75E+03			1.82E+01
142825	Heptane, N-	371.65	9.26E-02	7.59E-06	8.18E+01	2.00E+00			2.747E+02	100.21					3.40E+00			4.60E+01
145500	Chlordecone (Kepone)	644.56			2.20E-06	5.37E-08			1.750E+04	490.64					2.70E+00			2.25E-07
145733	Endothall	623.01			1.57E-14	3.83E-16			1.000E+01	186.17					1.00E+05			1.57E-10
148185	Sodium Diethyldithiocarbamate	757.95				0.00E+00			1.788E+01	171.25					1.00E+06			1.43E-08
150505	Merphos	634.4			9.28E-04	2.26E-05			6.240E+04	298.5					3.52E-03			1.33E-05
152169	Octamethylpyrophosphoramide	626.09			2.58E-15	6.29E-17			7.999E+02	286.25					1.00E+06			1.00E-03
156592	Dichloroethylene, 1,2-cis-	328.15	7.36E-02	1.13E-05	1.67E-01	4.07E-03			4.379E+01	96.94					3.50E+03			2.01E+02
156605	Dichloroethylene, 1,2-trans-	328.15	7.07E-02	1.19E-05	3.83E-01	9.34E-03			4.379E+01	96.94	6.00E-02	PROV	1.71E-02		3.50E+03			2.01E+02
191242	Benzo[g,h,i]perylene	759.46			1.35E-05	3.29E-07			2.680E+06	276.34					2.60E-04			1.00E-10
206440	Fluoranthene	657.15	3.02E-02	6.35E-06	3.62E-04	8.83E-06			7.090E+04	202.26					2.60E-01			9.22E-06
298000	Methyl Parathion	621.53	2.00E-02	5.91E-06	4.09E-06	9.98E-08			5.229E+02	263.21					3.77E+01			3.50E-06
298022	Phorate	592.21			1.79E-04	4.37E-06			4.438E+02	260.37					5.00E+01			6.38E-04
298044	Disulfoton	605.22			8.83E-05	2.15E-06			8.185E+02	274.39					1.63E+01			9.75E-05
299843	Ronnel	621.94			1.31E-03	3.20E-05			2.008E+03	321.54					1.00E+00			7.50E-05

Table 9
Risk Assessment Information System Organic Constituent Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS #	Chemical	Boiling Point (Kelvin)	Diffusivity in Air (cm^2/s)	Diffusivity in Water (cm^2/s)	Henry's Law Constant (unitless)	Henry's Law Constant ($atm\text{-}m^3/mol$)	Inhalation Unit Risk [$1/(\mu g/m^3)$]	Inhalation Unit Risk Ref.	Organic Carbon Partition Coef. (L/kg)	Molecular Weight (g/mol)	Inhalation RfC Chronic (mg/m^3)	RfC Ref.	Inhalation RfD Chronic (mg/kg-day)	RfD Ref.	Water Solubility (mg/L)	Inhalation Slope Factor 1/(mg/kg-day)	SF Ref.	Vapor Pressure (mm Hg)
300765	Naled	600.94			2.66E-03	6.49E-05			9.603E+01	380.79					1.50E+00			2.00E-04
302170	Chloral Hydrate	371.15	3.85E-02	9.71E-06	4.47E-09	1.09E-10			1.000E+00	165.4					3.83E+06			1.50E+01
311455	Diethyl-p-nitrophenylphosphate	648.2			4.46E-09	1.09E-10			4.320E+01	275.2					3.64E+03			1.10E-06
319868	Hexachlorocyclohexane, Delta-	561.15			2.10E-04	5.12E-06			3.380E+03	290.83					8.00E+00			3.52E-05
330541	Diuron	627.01			2.06E-08	5.02E-10			1.360E+02	233.1					4.20E+01			6.90E-08
330552	Linuron	639.06			2.56E-07	6.24E-09			3.498E+02	249.1					7.50E+01			1.43E-06
333415	Diazinon	639.35	2.06E-02	4.16E-06	4.62E-06	1.13E-07			1.337E+03	304.35					4.00E+01			9.01E-05
463569	Thiocyanate	404.06			5.97E-03	1.46E-04			4.500E+00	59.09					4.36E+04			
479458	Trinitrophenylmethylnitramine	705.26			1.11E-07	2.71E-09			2.141E+03	287.15					7.40E+01			1.17E-07
504245	Aminopyridine, 4-	546.15	8.02E-02	1.08E-05	1.00E-07	2.44E-09			4.478E+01	94.12					8.33E+04			3.47E-04
505293	Diathane, 1,4-	472.65			2.40E-05	5.85E-07			1.655E+02	120.23					6.58E+03			4.67E-02
507200	Butylchloride, t-	323.15			5.23E-01	1.28E-02			4.864E+01	92.57					2.88E+03			3.07E+02
512561	Trimethyl Phosphate	470.35			2.94E-07	7.17E-09			7.644E+00	140.08					5.00E+05			8.50E-01
528290	Dinitrobenzene, 1,2-	591.15			1.51E-05	3.68E-07			2.246E+02	168.11					5.00E+02			0.00E+00
531828	Furium	724.01			5.44E-14	1.33E-15			4.880E+02	253.23					2.68E+02			8.82E-09
532274	Chloroacetophenone, 2-	520.15	3.83E-02	8.71E-06	1.41E-04	3.44E-06			8.926E+01	154.6	3.00E-05	IRIS	8.57E-06		1.64E+03			7.60E-03
534521	Dinitro-o-cresol, 4,6-	651.15	2.93E-02	6.91E-06	5.72E-05	1.40E-06			6.015E+02	198.14					1.98E+02			1.06E-04
540738	Dimethylhydrazine, 1,2-	354.15			2.84E-06	6.93E-08			2.472E+01	60.1					1.00E+06			6.99E+01
541731	Dichlorobenzene, 1,3-	446.15			1.08E-01	2.63E-03			4.340E+02	147					1.25E+02			2.15E+00
542927	Cyclopentadiene	314.15	1.53E-01	1.09E-05	3.24E-01	7.90E-03			8.971E+01	66.1					4.71E+02			4.35E+02
556887	Nitroguanidine	504.09			1.84E-10	4.49E-12			2.544E+01	104.07					4.40E+03			3.43E-04
563122	Ethion	688.33			3.90E-05	9.51E-07			1.320E+04	384.46					2.00E+00			1.50E-06
576261	Dimethylphenol, 2,6-	474.15			2.72E-04	6.63E-06			7.325E+02	122.17					6.05E+03			1.71E-01
591275	Aminophenol, m-	514.99			1.10E-08	2.68E-10			7.253E+01	109.13					2.70E+04			0.00E+00
591786	Hexanone, 2-	400.75			3.81E-03	9.29E-05			1.302E+01	100.16	1.40E-01	NCEA (NJDEP)			1.75E+04			1.16E+01
594150	Tribromochloromethane	431.65			1.62E-03	3.95E-05			4.864E+01	287.18					7.06E+01			1.30E+00
594183	Dibromodichloromethane	423.35			4.95E-03	1.21E-04			4.864E+01	242.73					1.50E+02			2.77E+00
598776	Trichloropropane, 1,1,2-	405.15	3.96E-02	9.32E-06	1.30E-02	3.17E-04			1.068E+02	147.43					1.90E+03			3.10E+00
606202	Dinitrotoluene, 2,6-	573.15	3.27E-02	7.26E-06	3.05E-05	7.44E-07			3.714E+02	182.14					3.52E+02			5.67E-04
608935	Pentachlorobenzene	550.15	5.70E-02	6.30E-06	2.87E-02	7.00E-04			2.002E+03	250.34					8.31E-01			1.01E-03
615543	Tribromobenzene, 1,2,4-	548.15			1.59E-02	3.88E-04			7.176E+02	314.8					4.90E+00			4.84E-03
616239	Dichloropropanol, 2,3-	457.15	4.84E-02	9.84E-06	1.48E-07	3.61E-09			3.957E+00	128.99					6.42E+04			1.91E-01
617845	Diethylformamide	450.65			5.33E-06	1.30E-07			9.001E+00	101.15					1.00E+06			1.21E+00
621647	Nitroso-di-N-propylamine, N-	479.15	5.45E-02	8.17E-06	2.20E-04	5.37E-06			4.853E+02	130.19					1.30E+04			3.89E-01
630104	Selenourea	439.41				0.00E+00			1.978E+01	123.02					1.00E+06			1.87E+00
634935	Trichloroaniline, 2,4,6-	535.15			5.48E-05	1.34E-06			1.983E+02	196.46					4.00E+01			4.44E-03
636215	Methylaniline Hydrochloride, 2-	473.45			8.09E-05	1.97E-06			7.404E+01	107.16					1.66E+04			2.60E-01
684935	Nitroso-N-methylurea, N-	476.52	7.06E-02	1.02E-05	4.05E-09	9.88E-11			1.855E+01	103.08					1.44E+04			2.93E-02
693210	Diethylene Glycol Dinitrate (DEGDN)	521.79			1.59E-05	3.88E-07			1.495E+01	196.12					3.90E+03			5.90E-03
709988	Propanil	628.08			6.99E-07	1.70E-08			1.972E+02	218.08					1.52E+02			9.08E-06
732116	Phosmet	753.15			3.43E-07	8.37E-09			4.290E+01	317.32					2.44E+01			4.90E-07
756796	Dimethyl methylphosphonate	454.15			5.11E-05	1.25E-06			3.848E+00	124.08					1.00E+06			9.62E-01
759739	Nitroso-N-ethylurea, N-	495.82			5.40E-09	1.32E-10			3.585E+01	117.11					1.30E+04			2.04E-02
759944	EPTC	560.75			6.50E-04	1.59E-05			2.577E+02	189.32					3.75E+02			2.40E-02
765344	Glycidyl	385.65			3.21E-05	7.83E-07			1.000E+00	72.06	1.00E-03	HEAST	2.86E-04		1.00E+06			2.18E+01
768003	Benzene, Methylpropenyl	467.85			2.78E-01	6.78E-03			1.579E+03	132.21					4.60E+01			4.70E-01
791286	Triphenylphosphine Oxide	678.25			2.15E-08	5.24E-10			9.213E+02	278.29					6.28E+01			2.82E-07
811972	Tetrafluoroethane, 1,1,1,2-	247.15			2.04E+00	4.98E-02			9.663E+01	102.03	8.00E+01	IRIS	2.29E+01		7.68E+02			4.99E+03
822060	Hexamethylene Diisocyanate, 1,6-	528.15	3.80E-02	7.17E-06	1.96E-03	4.78E-05			5.864E+03	168.2	1.00E-05	IRIS	2.86E-06		1.17E+02			2.08E-02
823405	Toluene-2,6-diamine	533.15	5.59E-02	9.23E-06	3.89E-08	9.49E-10			1.224E+02	122.17					7.25E+04			2.46E-03
834128	Ametryn	618.15	2.98E-02	4.96E-06	9.77E-08	2.38E-09			4.451E+02	227.33					2.09E+02			2.74E-06
886500	Terbutryn	622.23			4.70E-07	1.15E-08			6.353E+02	241.36					2.50E+01			2.10E-06
934736	Chlorophenyl Methyl Sulfoxide	554.09			3.00E-07	7.32E-09			1.666E+02	174.65					7.07E+03			2.67E-03
944229	Fonofos	596.83			2.85E-04	6.95E-06			8.363E+02	246.32					1.57E+01			3.38E-04

Table 9
Risk Assessment Information System Organic Constituent Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS #	Chemical	Boiling Point (Kelvin)	Diffusivity in Air (cm^2/s)	Diffusivity in Water (cm^2/s)	Henry's Law Constant (unitless)	Henry's Law Constant ($atm\text{-}m^3/mol$)	Inhalation Unit Risk [$1/(\mu g/m^3)$]	Inhalation Unit Risk Ref.	Organic Carbon Partition Coef. (L/kg)	Molecular Weight (g/mol)	Inhalation RfC Chronic (mg/m^3)	RfC Ref.	Inhalation RfD Chronic (mg/kg-day)	RfD Ref.	Water Solubility (mg/L)	Inhalation Slope Factor 1/(mg/kg-day)	SF Ref.	Vapor Pressure (mm Hg)
950107	Mephosfolan	625.59			4.87E-09	1.19E-10			4.980E+02	269.32					5.70E+01			3.18E-05
950378	Methidathion	691.93			2.93E-07	7.15E-09			1.000E+01	302.32					1.87E+02			3.37E-06
957517	Diphenamid	638.94			1.48E-09	3.61E-11			1.550E+04	239.32					2.60E+02			3.00E-08
961115	Stirofos (Tetrachlorovinphos)	666.42			7.52E-08	1.83E-09			2.872E+02	365.97					1.10E+01			4.20E-08
993135	Methyl Phosphonic Acid	521.58			4.98E-10	1.21E-11			1.000E+00	96.02					2.00E+04			3.27E-04
1071836	Glyphosate	690.64	4.37E-02	5.92E-06	1.67E-17	4.07E-19			1.879E+01	169.07					1.20E+04			4.30E-10
1114712	Pebulate	475.15			9.69E-03	2.36E-04			4.753E+02	203.35					1.00E+02			8.85E-02
1116547	Nitrosodiethanolamine, N-	595.79			9.32E-15	2.27E-16			1.000E+00	134.14					1.00E+06			4.65E-06
1163195	Decabromodiphenyl Ether	698.15			1.82E-06	4.44E-08			4.090E+05	959.17					2.50E-02			2.01E-09
1330207	Xylene, Mixture	411.65	7.14E-02	9.34E-06	2.71E-01	6.61E-03			4.431E+02	106.17	7.00E+00	See Notes			1.06E+02			7.99E+00
1336363	Polychlorinated Biphenyls (lowest risk)	632.66	1.75E-02	8.00E-06	1.40E-02	3.41E-04			4.480E+04	291.99					2.77E-01			8.63E-05
1445756	Diisopropyl Methylphosphonate	482.9			1.79E-03	4.37E-05			3.128E+01	180.19					1.50E+03			2.77E-01
1563662	Carbofuran	584.56			1.26E-07	3.07E-09			7.085E+01	221.26					3.20E+02			4.85E-06
1569024	Propylene Glycol Monoethyl Ether	404.15			1.00E-06	2.44E-08			1.000E+00	104.15					3.66E+05			3.86E+00
1582098	Trifluralin	655.32	1.49E-02	5.04E-06	4.21E-03	1.03E-04			9.682E+03	335.29					1.84E-01			4.58E-05
1596845	ALAR	623.46			1.73E-08	4.22E-10			1.000E+01	160.17					1.00E+05			2.00E-04
1610180	Prometon	597.3			1.30E-07	3.17E-09			1.565E+02	225.3					7.50E+02			2.30E-06
1634044	Methyl tert-Butyl Ether (MTBE)	328.35	1.02E-01	1.05E-05	2.40E-02	5.85E-04			5.258E+00	88.15	3.00E+00	IRIS	8.57E-01		5.10E+04	9.10E-04	R9/Ca	2.50E+02
1646884	Aldicarb Sulfone	589.65			1.38E-07	3.37E-09			1.000E+01	222.26					1.00E+04			9.00E-05
1689845	Bromoxynil	601.82	2.01E-02	5.26E-06	5.40E-09	1.32E-10			4.345E+02	276.92					1.30E+02			4.72E-08
1689992	Bromoxynil Octanoate	686.84			1.30E-03	3.17E-05			4.847E+03	403.12					8.00E-02			4.80E-06
1762261	Trimethylethyl Lead	409.94			1.44E+01	3.51E-01			9.663E+01	281.37					7.65E+00			7.30E+00
1762283	Methyltriethyl Lead	453.33			2.54E+01	6.20E-01			3.813E+02	309.42					1.92E+00			1.31E+00
1832548	Isopropyl Methyl Phosphonic Acid	502.73			2.81E-07	6.85E-09			5.523E+00	138.1					5.04E+04			1.19E-02
1861321	Dacthal	638.15			8.91E-05	2.17E-06			2.829E+02	331.97					5.00E-01			2.50E-06
1861401	Benefin	643.15			1.19E-02	2.90E-04			9.682E+03	335.29					1.00E-01			6.53E-05
1897456	Chlorothalonil	623.15			8.18E-05	2.00E-06			2.392E+03	265.91					6.00E-01			5.70E-07
1910425	Paraquat	625.07			1.32E-11	3.22E-13			1.405E+03	257.16					6.20E+05			1.01E-07
1912249	Atrazine	586.18			9.65E-08	2.35E-09			2.304E+02	215.69					3.47E+01			2.89E-07
1918009	Dicamba	602.32			8.91E-08	2.17E-09			2.878E+01	221.04					8.31E+03			3.38E-05
1918021	Picloram	646.18			2.18E-12	5.32E-14			1.810E+01	241.46					4.30E+02			7.21E-11
1918167	Propachlor	595.99			3.74E-06	9.12E-08			2.847E+02	211.69					7.00E+02			2.30E-04
1920907	Tetrabutyl Lead	603.84			3.25E+02	7.93E+00			1.010E+05	435.67					5.48E-05			2.70E-04
1929777	Vernolate	575.72			1.26E-03	3.07E-05			4.753E+02	203.35					9.00E+01			1.04E-02
1929824	Nitrapyrin	518.09			8.30E-04	2.02E-05			3.815E+02	230.91					7.20E+01			4.80E-03
1937377	Direct Black 38	1402.19			3.36E-38	8.20E-40			7.730E+07	737.77					1.80E-05			3.18E-36
2008415	Butylate	572.72			3.45E-03	8.41E-05			6.160E+02	217.37					4.50E+01			1.30E-02
2014837	Trichlorotoluene, alpha 2,6-	519.07			1.17E-02	2.85E-04			1.415E+03	195.48					1.50E+01			2.76E-02
2050477	Dibromodiphenyl Ether, p,p'-	612.15			2.00E-03	4.88E-05			6.738E+03	328					8.83E-02			1.12E-04
2077465	Trichlorotoluene, 2,3,6-	499.66			6.13E-02	1.50E-03			1.211E+03	195.48					6.97E+00			7.32E-02
2104645	Ethyl-p-nitrophenyl Phosphonate	693.63			1.82E-05	4.44E-07			1.180E+04	323.31					3.11E+00			9.50E-07
2104963	Bromophos	633.94			8.38E-03	2.04E-04			2.008E+03	365.99					3.00E-01			1.28E-04
2164172	Fluometuron	590.87			7.36E-08	1.80E-09			3.625E+02	232.21					1.10E+02			9.38E-07
2212671	Molinate	571.84			1.68E-04	4.10E-06			2.863E+02	187.3					9.70E+02			5.60E-03
2303164	Diallate	600.78			1.55E-04	3.78E-06			1.040E+03	270.22					1.40E+01			1.50E-04
2303175	Triallate	615.89			7.89E-04	1.92E-05			1.641E+03	304.66					4.00E+00			1.81E-04
2312358	Propargite	714.95			1.70E-06	4.15E-08			1.380E+05	350.48					5.00E-01			4.50E-08
2385855	Mirex	639.21			3.32E-02	8.10E-04			4.730E+05	545.55					8.50E-02			8.00E-07
2425061	Captafol	746.43			8.79E-08	2.14E-09			2.736E+03	349.06					1.40E+00			5.33E-09
2429745	Niagara Blue 4B	1519.89			3.50E-42	8.54E-44			1.360E+08	730.75					5.89E-03			5.61E-42
2439103	Dodine	789.7			2.46E-17	6.00E-19			1.550E+04	287.45					6.30E+02			1.50E-07
2602462	Direct Blue 6	1535.88			6.70E-42	1.63E-43			2.220E+08	821.67					3.14E+01			9.50E-36
2610051	Direct Sky Blue	1519.89			3.50E-42	8.54E-44			1.390E+08	730.75					4.00E+04			5.61E-42
2691410	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX	709.56			3.54E-08	8.63E-10			1.853E+03	296.16					2.56E+03			2.41E-08

Table 9
Risk Assessment Information System Organic Constituent Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS #	Chemical	Boiling Point (Kelvin)	Diffusivity in Air (cm^2/s)	Diffusivity in Water (cm^2/s)	Henry's Law Constant (unitless)	Henry's Law Constant ($atm\text{-}m^3/mol$)	Inhalation Unit Risk [$1/(\mu g/m^3)$]	Inhalation Unit Risk Ref.	Organic Carbon Partition Coef. (L/kg)	Molecular Weight (g/mol)	Inhalation RfC Chronic (mg/m^3)	RfC Ref.	Inhalation RfD Chronic (mg/kg-day)	RfD Ref.	Water Solubility (mg/L)	Inhalation Slope Factor 1/(mg/kg-day)	SF Ref.	Vapor Pressure (mm Hg)
2921882	Chlorpyrifos	650.58			1.20E-04	2.93E-06			6.829E+03	350.59					1.12E+00			2.02E-05
3165933	Chloro-2-methylaniline HCl, 4-	517.15			8.14E-05	1.99E-06			1.199E+02	141.6					9.54E+02			3.24E-02
3337711	Asulam	655.5			6.99E-11	1.70E-12			4.158E+01	230.24					5.00E+03			1.39E-06
3380345	Trichloro-2'-hydroxydiphenylether	646.77			8.71E-07	2.12E-08			1.840E+04	289.55					1.00E+01			4.65E-06
3383968	Temephos	753.15			8.01E-08	1.95E-09			1.560E+06	466.46					2.70E-01			7.91E-08
3440753	Tetrapropyl Lead	545.99			1.05E+02	2.56E+00			8.766E+03	379.56					5.82E-03			1.20E-02
3689245	Tetraethyl Dithiopyrophosphate	622.27	1.50E-02	5.45E-06	9.81E-05	2.39E-06			3.864E+03	322.31					3.00E+01			1.05E-04
4549400	Nitrosomethylvinylamine, N-	449.42			1.47E-04	3.59E-06			7.383E+01	86.09					3.00E+04			1.57E+00
5216251	Tetrachlorotoluene, p- alpha, alpha, alpha-	518.15			7.89E-03	1.92E-04			1.912E+03	229.92					4.04E+00			2.49E-02
5224237	Triethyl Lead	434.09			1.40E+01	3.41E-01			2.528E+02	294.39					6.90E+00			3.15E+00
5234684	Carboxin	680.3			1.14E-08	2.78E-10			7.996E+01	235.3					1.99E+02			1.80E-07
5598130	Chlorpyrifos Methyl	627.37			1.53E-04	3.73E-06			2.008E+03	322.53					4.76E+00			4.20E-05
5902512	Terbacil	669.52			4.91E-09	1.20E-10			7.784E+01	216.67					7.10E+02			2.76E-07
6108107	Hexachlorocyclohexane, Epsilon	561.15			1.75E-05	4.27E-07			3.380E+03	290.83					8.00E+00			3.52E-05
6618037	Tripropyl Lead	494.85			3.27E+01	7.98E-01			1.586E+03	336.47					2.15E-01			1.81E-01
7005723	Benzene, 1-chloro-4-phenoxy-	568.14			5.26E-03	1.28E-04			3.619E+00	204.66	1.75E-02	2-Chlorophenol			3.30E+00			2.70E-03
7287196	Prometryn	619.83			5.40E-07	1.32E-08			6.882E+02	241.36					3.30E+01			2.00E-06
7442139	Trimethyl Lead	365.18			5.97E+00	1.46E-01			3.504E+01	252.31					2.17E+02			5.97E+01
8001589	Creosote					0.00E+00									1.00E+03			
8018017	Mancozeb	624.29			2.31E-05	5.63E-07			1.000E+01	212.36					6.20E+00			7.50E-08
8065483	Demeton					0.00E+00												
9016879	Polymeric Methylene Diphenyl Diisocyanate (PMDI)					0.00E+00					6.00E-04	IRIS	1.71E-04					
10265926	Methamidophos	496.02	5.54E-02	6.60E-06	3.55E-08	8.66E-10			3.848E+00	141.13					1.00E+06			3.53E-05
10453868	Resmethrin	678.59			5.44E-06	1.33E-07			4.250E+05	338.45					3.00E-01			1.40E-04
10595956	Nitrosomethylethylamine, N-	443.15			1.74E-05	4.24E-07			7.383E+01	88.11					3.00E+05			2.09E+00
12122677	Zineb	746.74			6.50E-09	1.59E-10			1.000E+01	275.74					1.00E+01			5.66E-09
12427382	Maneb	624.29			2.31E-05	5.63E-07			1.000E+01	212.36					6.20E+00			7.50E-08
13071799	Terbufos	605.23			9.81E-04	2.39E-05			9.792E+02	288.42					5.07E+00			3.20E-04
13593038	Quinalphos	670.83			2.34E-06	5.71E-08			1.857E+03	298.3					2.20E+01			2.60E-06
13684634	Phenmedipham	669.17			3.44E-11	8.39E-13			2.728E+02	300.32					4.70E+00			1.00E-11
15299997	Napropamide	672.55			3.44E-08	8.39E-10			1.150E+04	271.36					7.30E+01			1.72E-07
15972608	Alachlor	651.32			3.40E-07	8.29E-09			1.848E+02	269.77					2.40E+02			2.05E-05
16071866	Direct Brown 95	1636.64				0.00E+00			1.080E+06	760.11					1.00E+06			1.43E-41
16672870	Ethephon	580.11			2.33E-10	5.68E-12			3.572E+00	144.5					1.00E+06			9.80E-08
16752775	Methomyl	501.15	4.61E-02	6.07E-06	8.05E-10	1.96E-11			1.201E+01	162.21					5.80E+04			5.40E-06
17804352	Benomyl	792.73			2.02E-10	4.93E-12			5.199E+02	290.32					3.80E+00			3.70E-09
19044883	Oryzalin	764.88			7.81E-08	1.90E-09			1.219E+03	346.36					2.50E+00			2.99E-09
19406510	Dinitrotoluene, 4-Amino-2,6-	625.18			6.61E-09	1.61E-10			1.005E+02	197.15					1.22E+03			1.07E-05
19666309	Oxadiazon	704.43			2.97E-06	7.24E-08			3.500E+03	345.23					7.00E-01			1.12E-07
21087649	Metribuzin	639.95			4.78E-09	1.17E-10			1.196E+03	214.29					1.05E+03			4.35E-07
21436964	Dimethylaniline HCl, 2,4-	487.15			1.02E-04	2.49E-06			1.199E+02	121.18					3.65E+03			1.33E-01
21564170	TCMTB	677.99			2.65E-10	6.46E-12			3.707E+03	238.34					1.25E+02			3.12E-07
21725462	Cyanazine	642.62			1.21E-10	2.95E-12			1.238E+02	240.7					1.70E+02			1.38E-07
22224926	Fenamiphos	663.23			4.95E-08	1.21E-09			2.251E+02	303.36					3.29E+02			1.00E-06
23135220	Oxamyl	606.73			9.69E-09	2.36E-10			1.000E+01	219.26					2.80E+05			2.30E-04
23564058	Thiophanate, Methyl	730.17			1.20E-11	2.93E-13			1.432E+01	342.39					4.39E+02			7.13E-08
23950585	Kerb	655.37			3.99E-07	9.73E-09			1.587E+03	256.13					1.50E+01			4.35E-07
24307264	Mepiquat Chloride	641.26			1.76E-10	4.29E-12			1.737E+02	149.67					5.00E+05			3.71E-07
25013154	Methyl Styrene (Mixed Isomers)	438.55	5.46E-02	8.08E-06	3.21E-01	7.83E-03			8.172E+02	118.18	4.00E-02	HEAST	1.14E-02		8.90E+01			1.50E+00
25057890	Bentazon	688.46			8.91E-08	2.17E-09			3.751E+01	240.28					5.00E+02			3.45E-06
25154421	Monochlorobutanes					0.00E+00												
25321146	Dinitrotoluene Mixture, 2,4/2,6-	557.15			1.62E-05	3.95E-07			3.714E+02	182.14					2.70E+02			2.15E-03
25329355	Pentachlorocyclopentadiene	505.55			2.45E-01	5.98E-03			1.108E+03	238.33					4.75E+00			4.48E-02
25550145	Benzene, Ethylmethyl	435.15			2.50E-01	6.10E-03			8.386E+02	120.2					7.45E+01			2.88E+00

Table 9
Risk Assessment Information System Organic Constituent Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS #	Chemical	Boiling Point (Kelvin)	Diffusivity in Air (cm^2/s)	Diffusivity in Water (cm^2/s)	Henry's Law Constant (unitless)	Henry's Law Constant ($atm\text{-}m^3/mol$)	Inhalation Unit Risk [$1/(\mu g/m^3)$]	Inhalation Unit Risk Ref.	Organic Carbon Partition Coef. (L/kg)	Molecular Weight (g/mol)	Inhalation RfC Chronic (mg/m^3)	RfC Ref.	Inhalation RfD Chronic (mg/kg-day)	RfD Ref.	Water Solubility (mg/L)	Inhalation Slope Factor 1/(mg/kg-day)	SF Ref.	Vapor Pressure (mm Hg)
25551137	Benzene, Trimethyl	437.85			3.59E-01	8.76E-03			7.030E+02	120.2					4.82E+01			2.10E+00
26399360	Profluralin	668.9			1.29E-02	3.15E-04			1.830E+04	347.3					1.00E-01			6.90E-05
26471625	Toluene diisocyanate mixture (TDI)	524.15	6.10E-02	6.20E-06	4.54E-04	1.11E-05			9.114E+03	174.16	7.00E-05	IRIS	2.00E-05		3.76E+01			2.30E-02
27314132	Norflurazon	660.33			1.40E-08	3.41E-10			5.674E+03	303.67					3.37E+01			2.89E-08
28249776	Thiobencarb	636.95			1.09E-05	2.66E-07			2.676E+03	257.78					2.80E+01			2.20E-05
28729546	Benzene, Methylpropyl					0.00E+00												
29224553	Benzene, Ethyldimethyl	467.15			4.17E-01	1.02E-02			1.415E+03	134.22					1.74E+01			6.22E-01
29232937	Pirimiphos, Methyl	646.02			2.87E-05	7.00E-07			1.384E+02	305.33					8.60E+00			1.50E-05
30560191	Acephate	613.63			2.05E-11	5.00E-13			2.180E+01	183.16					8.18E+05			1.70E-06
32534819	Pentabromodiphenyl Ether	709.36			1.45E-04	3.54E-06			3.050E+04	564.69					7.86E-05			2.44E-08
32536520	Octabromodiphenyl Ether	801.46			1.05E-05	2.56E-07			1.430E+05	801.38					1.11E-08			3.68E-11
33089611	Amitraz	669.87			4.04E-04	9.85E-06			6.440E+05	293.42					1.00E+00			2.00E-06
33663502	Trichloroaniline HCl, 2,4,6-	696.02			2.94E-12	7.17E-14			3.831E+02	232.93					1.10E+05			6.13E-08
33820530	Isopropalin	679.72			4.54E-03	1.11E-04			6.700E+03	309.37					1.10E-01			3.00E-05
34014181	Tebuthiuron	667.38			4.91E-09	1.20E-10			2.278E+01	228.31					2.50E+03			2.00E-06
34256821	Acetochlor	651.32			9.12E-07	2.22E-08			1.764E+02	269.77					2.23E+02			2.80E-05
35367385	Diflubenzuron	772.83			1.88E-07	4.59E-09			1.059E+03	310.69					8.00E-02			9.00E-10
35554440	Imazalil	620.15			1.06E-07	2.59E-09			1.938E+03	297.19					1.80E+02			1.19E-06
35572782	Dinitrotoluene, 2-Amino-4,6-	625.18			6.62E-09	1.61E-10			1.005E+02	197.15					1.22E+03			1.07E-05
36734197	Iprodione	818.05			5.11E-09	1.25E-10			1.407E+02	330.17					1.39E+01			3.75E-09
39148248	Fosetyl-AL	737.56				0.00E+00			5.316E+03	354.11					1.20E+05			5.24E-08
39196184	Thiofanox	552.88			3.84E-07	9.37E-09			9.757E+01	218.32					5.20E+03			1.70E-04
39515418	Fenpropathrin	682.3			2.24E-04	5.46E-06			2.970E+04	349.43					1.41E-02			5.48E-06
39638329	Bis(2-chloroisopropyl)ether	398.06			1.36E-02	3.32E-04			2.140E+01	171.07					3.99E+01			1.26E+01
40487421	Pendimethalin	603.15			3.50E-05	8.54E-07			2.622E+03	281.31					2.75E-01			3.00E-05
41851507	Chlorocyclopentadiene	387.15			9.16E-01	2.23E-02			1.453E+02	100.55					9.70E+02			2.04E+01
42874033	Goal	631.35			3.36E-05	8.20E-07			4.680E+04	361.71					1.16E-01			2.48E-07
43121433	Bayleton	649.82			3.32E-09	8.10E-11			5.224E+03	293.76					7.15E+01			1.50E-08
43222486	Difenzoquat	831.95				0.00E+00			1.180E+05	360.43					5.55E+03			4.09E-12
49690940	Tribromodiphenyl Ether	647.96			8.30E-04	2.02E-05			1.140E+04	406.9					2.64E-02			2.34E-06
50471448	Vinclozolin	719.92			5.44E-07	1.33E-08			2.890E+02	286.12					2.60E+00			1.20E-07
51218452	Metolachlor	555.15			3.68E-07	8.98E-09			2.916E+02	283.8					5.30E+02			3.14E-05
51235042	Hexazinone	681.49			9.24E-11	2.25E-12			6.143E+02	252.32					3.30E+04			2.25E-07
51630581	Pydrin	753.34			1.41E-06	3.44E-08			4.420E+05	419.91					2.00E-03			1.50E-09
52315078	Cypermethrin	723.63			1.72E-05	4.20E-07			1.080E+05	416.31					4.00E-03			3.07E-09
52645531	Permethrin	710.79			7.65E-05	1.87E-06			1.780E+05	391.3					6.00E-03			2.18E-08
55285148	Carbosulfan	714.67			2.09E-05	5.10E-07			1.500E+04	380.55					3.00E-01			3.07E-07
55290647	Dimethipin	615.37			9.40E-10	2.29E-11			2.741E+01	210.26					4.60E+03			3.83E-07
56425913	Flurprimidol	537.15			5.36E-08	1.31E-09			8.641E+02	312.29					1.14E+02			3.64E-07
57837191	Metalaxyl	651.03			1.21E-07	2.95E-09			2.260E+01	279.34					2.60E+04			2.48E-05
58138082	Tridiphane	596.29			1.68E-05	4.10E-07			1.756E+03	320.43					3.52E-01			3.90E-04
59536651	Polybrominated Biphenyls					0.00E+00												
59756604	Fluridone	672.71			3.31E-07	8.07E-09			1.100E+05	329.32					1.20E+01			9.75E-08
60207901	Propiconazole	688.08			1.68E-07	4.10E-09			5.564E+03	342.23					1.10E+02			1.00E-06
60238564	Chlorthiophos	671.31			4.91E-05	1.20E-06			1.320E+04	361.24					5.86E-02			2.40E-06
60568050	Furmecyclox	628.47			2.82E-07	6.88E-09			1.550E+03	251.33					3.00E-01			8.37E-05
62476599	Sodium Acifluorfen	912.04			2.47E-09	6.02E-11			3.125E+03	383.65					2.50E+05			9.75E-09
64902723	Chlorsulfuron	804.1			1.59E-13	3.88E-15			2.392E+02	357.77					2.80E+04			2.30E-11
65195553	Avermectin B1	1214.27			5.40E-26	1.32E-27			1.288E+03	875.12					3.50E-04			1.46E-30
66215278	Cyromazine	619.58			2.31E-12	5.63E-14			2.104E+01	166.19					1.30E+04			3.36E-09
66332965	Flutolanil	694.92			1.30E-07	3.17E-09			5.368E+03	323.32					6.53E+00			4.88E-08
66841256	Tralomethrin	820.31			1.61E-08	3.93E-10			2.630E+05	665.02					8.00E-02			3.60E-11
67485294	Amdro	773.48			8.99E-05	2.19E-06			6.340E+08	494.49					6.00E-03			2.03E-08
67747095	Prochloraz	774.15			6.70E-07	1.63E-08			2.683E+03	376.67					3.40E+01			1.13E-06

Table 9
Risk Assessment Information System Organic Constituent Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS #	Chemical	Boiling Point (Kelvin)	Diffusivity in Air (cm^2/s)	Diffusivity in Water (cm^2/s)	Henry's Law Constant (unitless)	Henry's Law Constant ($atm\text{-}m^3/mol$)	Inhalation Unit Risk [$1/(\mu g/m^3)$]	Inhalation Unit Risk Ref.	Organic Carbon Partition Coef. (L/kg)	Molecular Weight (g/mol)	Inhalation RfC Chronic (mg/m^3)	RfC Ref.	Inhalation RfD Chronic (mg/kg-day)	RfD Ref.	Water Solubility (mg/L)	Inhalation Slope Factor 1/(mg/kg-day)	SF Ref.	Vapor Pressure (mm Hg)
68085858	Cyhalothrin/karate	709.64			6.05E-05	1.48E-06			4.760E+05	449.86					5.00E-03			1.50E-09
68359375	Baythroid	720.96			6.13E-09	1.50E-10			1.790E+05	434.3					3.00E-03			1.50E-10
69409945	Fluvalinate	778.45			5.93E-07	1.45E-08			7.300E+05	502.92					5.00E-03			2.02E-08
69806402	Haloxyfop, Methyl	661.04			1.30E-05	3.17E-07			1.780E+04	375.73					9.30E+00			6.00E-06
72178020	Fomesafen	835.28			3.08E-11	7.51E-13			1.100E+04	438.76					5.00E+01			7.50E-07
73506942	Chlorodibromoethane					0.00E+00												
74051802	Sethoxydim	714.11			8.83E-10	2.15E-11			2.845E+03	327.49					2.50E+01			1.13E-08
74115245	Apollo	741.61			1.59E-08	3.88E-10			6.450E+05	303.15					1.00E+00			9.75E-10
74223646	Ally	834.79			3.07E-12	7.49E-14			6.922E+01	381.37					9.50E+03			3.18E-11
76578148	Assure	745.57			4.33E-07	1.06E-08			5.423E+03	372.81					4.00E-01			6.49E-09
76738620	Paclobutrazol	659.42			3.39E-09	8.27E-11			1.230E+04	293.8					2.60E+01			7.50E-09
77182822	Glufosinate, Ammonium	749.71			1.03E-22	2.51E-24			6.002E+01	198.16					1.37E+06			9.13E-12
77501634	Lactofen	731.84			2.34E-08	5.71E-10			2.540E+04	461.78					1.00E-01			7.69E-09
78587050	Savey	811.65			9.69E-07	2.36E-08			4.075E+03	352.88					5.00E-01			2.55E-08
79277273	Harmony	840.51			1.67E-12	4.07E-14			3.753E+01	387.39					2.30E+02			1.28E-10
81335377	Imazaquin	882.41			2.83E-16	6.90E-18			4.929E+03	311.34					9.00E+01			3.39E-13
81335775	Pursuit	834.71			4.25E-15	1.04E-16			1.389E+03	289.34					1.40E+03			2.15E-11
82097505	Triasulfuron	851.75			1.32E-11	3.22E-13			3.577E+02	401.83					3.20E+01			5.53E-12
82558507	Isoxaben	742.26			5.19E-08	1.27E-09			2.927E+03	332.4					1.42E+00			4.13E-09
82657043	Biphenthrin	710.44			4.09E-05	9.98E-07			3.230E+06	422.88					1.00E-01			1.80E-07
83055996	Londax	853.01			1.55E-13	3.78E-15			3.325E+01	410.4					1.20E+02			2.10E-14
85509199	Nustar	647.12			2.07E-05	5.05E-07			1.770E+06	315.4					5.40E+01			2.93E-07
88671890	Systhane	680.26			1.75E-07	4.27E-09			1.140E+05	288.78					1.42E+02			1.60E-06
90982324	Chlorimuron, Ethyl-	848.05			7.44E-14	1.81E-15			7.819E+01	414.82					1.20E+03			4.00E-12
XYLENES1314	m,p-Xylene (toxicity surrogate Xylenes, total)	411.65	8.70E-02	1.00E-05	2.12E-01	5.17E-03			4.431E+02	106.17	7.00E+00	HEAST			1.06E+02			7.99E+00

Notes:
The bis (2-Chloroisopropyl) ether CAS number is reported in the analytical data as 3968329. The correct CAS is 108601.
The EPA based its toxicity value for xylene mixtures on products that also contain ethylbenzene. As the Quanta analysis identifies individual isomers of xylene and reports the sum of the isomers as Xylenes (Total), chroonic inhalation toxicity is more accurately represented by those given in the Health Effects Assessment Summary Tables (HEAST).

Table 10
Texas Risk Reduction Program Toxicity Factor Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Abbreviations:
SFo = Oral Slope Factor
RfDo - Oral Reference Dose
URF - Inhalation Unit Risk Factor
RfC - Inhalation Reference Concentration
RS-ESL - Chronic Remediation-Specific Effects Screening Level

Toxicity Factors[a]												
CAS #	Chemical of Concern	Class	Ref[b]	SFo $(mg/kg\text{-}day)^{-1}$	Ref[b]	RfDo (mg/kg-day)	Ref[b]	URF $(\mu g/m^3)^{-1}$	Ref[b]	RfC (mg/m^3)	Ref[b]	
50000	Formaldehyde	B1	I		---	2.0E-01	I	1.3E-05	I	9.8E-03	RfC	A
50293	DDT	B2	I	3.4E-01	I	5.0E-04	I	9.7E-05	I	1.8E-03	---	---
50328	Benzo-a-pyrene	B2	I	7.3E+00	I	---	---	8.8E-04	N	0.0E+00	---	---
51285	Dinitrophenol, 2,4-	NA	---		---	2.0E-03	I		---	7.0E-03	---	---
52857	Famphur	NA	---		---	3.0E-05	T		---	1.0E-03	RS-ESL	---
53703	Dibenz-a,h-anthracene	B2	I	7.3E+00	EPA-93	---	---	8.8E-04	EPA-93	0.0E+00	---	---
53963	Acetylaminofluorene, 2-	NA	---	3.8E+00	OEHHA	---	---	1.3E-03	OEHHA	0.0E+00	---	---
55185	Nitrosodiethylamine, N-	B2	I	1.5E+02	I	---	---	4.3E-02	I	0.0E+00	---	---
55389	Fenthion	NA	---		---	7.0E-05	EPA-OP		---	2.5E-04	---	---
55630	Nitroglycerin	C	N	1.4E-02	N	7.0E-05	T	4.0E-06	---	2.5E-04	---	---
56235	Carbon tetrachloride	B2	---	1.3E-01	I	7.0E-04	I	1.5E-05	I	2.0E-03	RfC	N
56359	Tributyltin oxide	D	I		---	3.0E-04	I		---	5.0E-05	RS-ESL	---
56382	Parathion (ethyl parathion)	C	I		---	6.0E-03	H		---	5.0E-05	RS-ESL	---
56495	Methylcholanthrene, 3-	NA	---	2.2E+01	T	---	---	2.1E-03	T	0.0E+00	---	---
56531	Diethylstilbestrol	A	H	4.7E+03	H	---	---	1.3E+00	---	0.0E+00	---	---
56553	Benz-a-anthracene	B2	I	7.3E-01	EPA-93	---	---	8.8E-05	EPA-93	0.0E+00	---	---
56575	Nitroquinoline-N-oxide, 4-	B2	T	9.4E+00	T	---	---	2.7E-03	T	0.0E+00	---	---
56724	Coumaphos	NA	---		---	7.0E-03	T		---	2.5E-02	---	---
57125	Cyanide	D	I		---	2.0E-02	I		---	5.0E-03	RS-ESL	---
57249	Strychnine	NA	---		---	3.0E-04	I		---	1.1E-03	---	---
57556	Propylene glycol	NA	---		---	2.0E+01	H		---	1.6E-01	RS-ESL	---
57749	Chlordane, gamma	B2	T	3.5E-01	T	5.0E-04	T	1.0E-04	T	7.0E-04	RfC	T
57976	Dimethylbenz-a-anthracene, 7,12-	NA	---	2.5E+02	T	---	---	2.4E-02	T	0.0E+00	---	---
58899	Hexachlorocyclohexane, gamma (lindane; gamma-BHC)	B2	H	1.3E+00	H	3.0E-04	I	3.7E-04	---	5.0E-04	RS-ESL	---
58902	Tetrachlorophenol, 2,3,4,6-	NA	---		---	3.0E-02	I		---	7.0E-03	RS-ESL	---
59507	Chloro-3-methylphenol, 4-	NA	---		---	5.0E-03	T		---	3.0E-02	RS-ESL	---
59892	Nitrosomorpholine, N-	C	OEHHA	6.7E+00	OEHHA	---	---	1.9E-03	OEHHA	0.0E+00	---	---
60117	Dimethylaminoazobenzene, p-	NA	---		---	1.0E-05	T		---	3.5E-05	---	---
60297	Ethyl ether	NA	---		---	2.0E-01	I		---	1.2E+00	RS-ESL	---
60515	Dimethoate	NA	---		---	2.0E-04	I		---	7.0E-04	---	---
60571	Dieldrin	B2	I	1.6E+01	I	5.0E-05	I	4.6E-03	I	1.8E-04	---	---
62384	Phenyl mercuric acetate	NA	---		---	8.0E-05	I		---	2.8E-04	---	---
62442	Phenacetin	B1	OEHHA	2.2E-03	OEHHA	---	---	6.3E-07	OEHHA	0.0E+00	---	---
62500	Ethyl methanesulfonate	NA	---	9.9E-02	T	---	---	2.8E-05	T	0.0E+00	---	---
62533	Aniline	B2	I	5.7E-03	I	7.0E-03	N	1.6E-06	---	1.0E-03	RfC	I
62737	Dichlorvos	B2	I	2.9E-01	I	5.0E-04	I	8.3E-05	---	5.0E-04	RfC	I
62759	Nitrosodimethylamine, N-	B2	I	5.1E+01	I	---	---	1.4E-02	I	0.0E+00	---	---
63252	Carbaryl	NA	---		---	1.0E-01	I		---	5.0E-03	RS-ESL	---

Table 10
Texas Risk Reduction Program Toxicity Factor Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

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Toxicity Factors[a]												
CAS #	Chemical of Concern	Class	Ref[b]	SFo $(mg/kg\text{-}day)^{-1}$	Ref[b]	RfDo (mg/kg-day)	Ref[b]	URF $(\mu g/m^3)^{-1}$	Ref[b]	RfC (mg/m^3)	Ref[b]	
64175	Ethanol	NA	---		---	3.3E+01	T		---	1.9E+00	RS-ESL	---
64186	Formic acid	NA	---		---	2.0E+00	H		---	9.4E-03	RS-ESL	---
64197	Acetic acid*	---	---		---	---	---		---	0.0E+00	---	---
65850	Benzoic acid	D	I		---	4.0E+00	I		---	5.0E-03	RS-ESL	---
66273	Methyl methanesulfonate	C	OEHHA	9.9E-02	OEHHA	---	---	2.8E-05	OEHHA	0.0E+00	---	---
67561	Methanol	NA	---		---	5.0E-01	I		---	2.6E-01	RS-ESL	---
67630	Isopropyl alcohol	NA	---		---	2.0E-01	T		---	7.0E-01	RfC	T
67641	Acetone (2-propanone)	D	I		---	9.0E-01	I		---	5.9E-01	RS-ESL	---
67663	Chloroform	B2	I		---	1.0E-02	I	2.3E-05	I	9.7E-02	RfC	A
67721	Hexachloroethane	C	I	1.4E-02	I	1.0E-03	I	4.0E-06	I	3.5E-03	---	---
70304	Hexachlorophene	NA	---		---	3.0E-04	I		---	1.1E-03	---	---
71238	Propanol, 1-	NA	---		---	2.0E-01	T		---	5.0E-01	RS-ESL	---
71363	Butanol, n-	D	I		---	1.0E-01	I		---	7.6E-02	RS-ESL	---
71410	Pentanol, 1-	NA	---		---	3.3E-02	T		---	9.2E-01	RS-ESL	---
71432	Benzene	A	I	5.5E-02	I	4.0E-03	I	7.8E-06	I	3.0E-02	RfC	I
71556	Trichloroethane, 1,1,1-	D	I		---	2.0E-01	N		---	1.0E+00	RfC	N
72208	Endrin	D	I		---	3.0E-04	I		---	1.0E-04	RS-ESL	---
72435	Methoxychlor	D	I		---	5.0E-03	I		---	5.0E-03	RS-ESL	---
72548	DDD	B2	I	2.4E-01	I	---	---	6.9E-05	---	0.0E+00	---	---
72559	DDE	B2	I	3.4E-01	I	---	---	9.7E-05	---	0.0E+00	---	---
74839	Bromomethane (methyl bromide)	D	I		---	1.4E-03	I		---	5.0E-03	RfC	I
74851	Ethylene*	---	---		---	---	---		---	0.0E+00	---	---
74873	Chloromethane (methyl chloride)	D	I	1.3E-02	H	---	---	1.8E-06	H	9.0E-02	RfC	I
74884	Methyl iodide (iodomethane)	NA	---		---	1.4E-03	T		---	1.2E-02	RS-ESL	---
74953	Methylene bromide (dibromomethane)	NA	---	7.5E-03	T	6.0E-02	T	2.1E-06	---	1.3E-02	RS-ESL	---
74975	Chlorobromomethane (bromochloromethane)	NA	---		---	4.0E-02	T		---	5.0E-02	RfC	T
75003	Chloroethane (ethyl chloride)	NA	---		---	4.0E-01	N		---	1.0E+01	RfC	I
75014	Vinyl chloride	A	I	1.5E+00	I	3.0E-03	I	8.8E-06	I	1.0E-01	RfC	I
75058	Acetonitrile	D	I		---	3.2E-02	T		---	6.0E-02	RfC	I
75070	Acetaldehyde	B2	I		---	1.0E-01	T	2.2E-06	I	9.0E-03	RfC	I
75092	Methylene chloride (dichloromethane)	B2	I	7.5E-03	I	6.0E-02	I	4.7E-07	I	3.0E+00	RfC	H
75150	Carbon disulfide	NA	---		---	1.0E-01	I		---	7.0E-01	RfC	I
75218	Ethylene oxide	B1	H	1.0E+00	H	---	---	1.0E-04	H	0.0E+00	---	---
75252	Bromoform	B2	I	7.9E-03	I	2.0E-02	I	1.1E-06	I	7.0E-02	---	---
75274	Bromodichloromethane	B2	I	6.2E-02	I	2.0E-02	I	1.8E-05	---	7.0E-02	---	---
75296	Chloropropane, 2-	NA	---		---	3.0E-02	T		---	1.0E-01	RfC	H
75343	Dichloroethane, 1,1-	C	I		---	1.0E-01	H		---	4.0E-01	RS-ESL	---
75354	Dichloroethylene, 1,1-	C	I		---	5.0E-02	I		---	2.0E-01	RfC	I

Table 10
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75434	Dichlorofluoromethane	NA	---		---	2.0E-01	T		---	4.2E-02	RS-ESL	---
75456	Chlorodifluoromethane	NA	---		---	---	---		---	5.0E+01	RfC	I
75503	Trimethylamine	NA	---		---	---	---		---	7.0E-03	RfC	T
75569	Propylene oxide	B2	I	2.4E-01	I	---	---	3.7E-06	I	3.0E-02	RfC	I
75605	Cacodylic acid	D	I		---	3.0E-03	H		---	1.1E-02	---	---
75650	Tert-butyl alcohol (2-methyl-2-propanol)	NA	---		---	9.0E-02	T		---	3.0E-01	RS-ESL	---
75694	Trichlorofluoromethane	NA	---		---	3.0E-01	I		---	2.8E+00	RS-ESL	---
75718	Dichlorodifluoromethane	NA	---		---	2.0E-01	I		---	5.0E+00	RS-ESL	---
75854	Butanol, 2-methyl-2-	NA	---		---	1.0E-02	T		---	9.2E-01	RS-ESL	---
75865	Acetone cyanohydrin	NA	---		---	8.0E-04	H		---	4.0E-03	RS-ESL	---
75876	Chloral	C	I		---	1.0E-01	I		---	5.0E-03	RS-ESL	---
75990	Dalapon, sodium salt (2,2-dichloropropanoic acid)	NA	---		---	3.0E-02	I		---	1.1E-01	---	---
76017	Pentachloroethane	NA	---	2.6E-02	T	3.0E-02	T	7.4E-06	T	1.1E-01	---	---
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	NA	---		---	3.0E+01	I		---	3.0E+01	RfC	H
76448	Heptachlor	B2	I	4.5E+00	I	5.0E-04	I	1.3E-03	I	1.8E-03	---	---
77474	Hexachlorocyclopentadiene (HCCPD)	E	I		---	6.0E-03	I		---	2.0E-04	RfC	I
77736	Dicyclopentadiene	NA	---		---	3.0E-02	H		---	2.7E-02	RS-ESL	---
78002	Tetraethyl lead	NA	---		---	1.0E-07	I		---	7.5E-05	RS-ESL	---
78115	Pentaerythritol tetranitrate (PETN)	NA	---		---	4.0E-01	T		---	1.4E+00	---	---
78591	Isophorone	C	I	9.5E-04	I	2.0E-01	I	2.7E-07	---	2.3E-02	RS-ESL	---
78795	Butadiene, 2-methyl-1,3- (isoprene)	NA	---		---	6.0E-02	T		---	1.8E+01	RfC	T
78831	Isobutyl alcohol	NA	---		---	3.0E-01	I		---	1.5E-01	RS-ESL	---
78842	Methyl-1-propanal, 2- (isobutyraldehyde)	NA	---		---	4.0E-02	T		---	2.9E-01	RS-ESL	---
78875	Dichloropropane, 1,2-	B2	H	6.8E-02	H	9.0E-02	A	1.9E-05	---	4.0E-03	RfC	I
78922	Butanol, 2-	NA	---		---	1.0E-01	T		---	3.0E-01	RS-ESL	---
78933	Methyl ethyl ketone (2-butanone)	D	I		---	6.0E-01	I		---	5.0E+00	RfC	I
79005	Trichloroethane, 1,1,2-	C	I	5.7E-02	I	4.0E-03	I	1.6E-05	I	1.4E-02	---	---
79016	Trichloroethylene	B2	N	1.1E-02	N	6.0E-03	N	1.7E-06	N	2.1E-02	---	---
79061	Acrylamide	B2	I	4.5E+00	I	2.0E-04	I	1.3E-03	I	7.0E-04	---	---
79094	Propanoic acid (propionic acid)	NA	---		---	5.0E-01	T		---	1.0E-03	RfC	T
79107	Acrylic acid (propenoic acid)	NA	---		---	5.0E-01	I		---	1.0E-03	RfC	I
79209	Methyl acetate (acetic acid, methyl ester)	NA	---		---	1.0E+00	H		---	6.0E-01	RS-ESL	---
79298	Butane, 2,3-dimethyl-	NA	---		---	6.0E-02	T		---	1.8E+01	RfC	T
79312	Isobutyric acid (2-methylpropanoic acid)	NA	---		---	5.0E-01	T		---	1.0E-03	RfC	T
79345	Tetrachloroethane, 1,1,2,2-	C	I	2.0E-01	I	4.0E-02	A	5.8E-05	I	1.4E-01	---	---
79414	Methacrylic acid (2-methyl-2-propenoic acid)	NA	---		---	1.0E-02	T		---	7.0E-02	RS-ESL	---
79469	Nitropropane, 2-	NA	---		---	1.4E-04	T	2.7E-03	H	2.0E-02	RfC	I
80057	Bisphenol A	NA	---		---	5.0E-02	I		---	8.0E-02	RS-ESL	---

Table 10
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80626	Methyl methacrylate	E	I		---	1.4E+00	I		---	7.0E-01	RfC	I
81812	Warfarin	NA	---		---	3.0E-04	I		---	1.0E-04	RS-ESL	---
82688	Pentachloronitrobenzene	C	H	2.6E-01	H	3.0E-03	I	7.4E-05	---	5.0E-04	RS-ESL	---
83329	Acenaphthene	NA	---		---	6.0E-02	I		---	2.1E-01	---	---
84651	Anthraquinone, 9,10-	NA	---		---	2.0E-02	T		---	7.0E-02	---	---
84662	Diethyl phthalate	D	I		---	8.0E-01	I		---	5.0E-03	RS-ESL	---
84742	Di-n-butyl phthalate	D	I		---	1.0E-01	I		---	5.0E-03	RS-ESL	---
85007	Diquat	NA	---		---	2.2E-03	I		---	1.0E-04	RS-ESL	---
85018	Phenanthrene	D	I		---	3.0E-02	T		---	1.1E-01	---	---
85449	Phthalic anhydride	NA	---		---	2.0E+00	I		---	1.2E-01	RfC	H
85687	Butyl benzyl phthalate	C	I		---	2.0E-01	I		---	5.0E-03	RS-ESL	---
86306	Nitrosodiphenylamine, N-	B2	I	4.9E-03	I	---	---	1.4E-06	---	0.0E+00	---	---
86500	Azinphos-methyl (guthion)	NA	---		---	1.5E-03	EPA-99		---	5.3E-03	---	---
86737	Fluorene	D	I		---	4.0E-02	I		---	1.4E-01	---	---
86748	Carbazole	B2	H	2.0E-02	H	---	---	5.7E-06	---	0.0E+00	---	---
87616	Trichlorobenzene, 1,2,3-	NA	---		---	3.0E-03	T		---	4.0E-02	RS-ESL	---
87650	Dichlorophenol, 2,6-	NA	---		---	1.0E-03	T		---	1.8E-02	RS-ESL	---
87683	Hexachlorobutadiene	C	I	7.8E-02	I	2.0E-04	H	2.2E-05	I	7.0E-04	---	---
87865	Pentachlorophenol	B2	I	1.2E-01	I	3.0E-02	I	3.4E-05	---	5.0E-04	RS-ESL	---
88062	Trichlorophenol, 2,4,6-	B2	I	1.1E-02	I	---	---	3.1E-06	I	0.0E+00	---	---
88722	Nitrotoluene, o-	NA	---		---	1.0E-02	H		---	1.1E-02	RS-ESL	---
88744	Nitroaniline, 2-	D	N		---	3.0E-04	N		---	2.0E-04	RfC	H
88755	Nitrophenol, 2-	NA	---		---	2.0E-03	T		---	4.0E-03	RS-ESL	---
88857	Dinoseb	D	I		---	1.0E-03	I		---	3.5E-03	---	---
90120	Methylnaphthalene, 1-	NA	---		---	7.0E-02	A		---	2.5E-01	---	---
90131	Chloronaphthalene, 1- (Chloronaphthalene, alpha-)	NA	---		---	8.0E-02	I		---	2.8E-01	---	---
91203	Naphthalene	D	I		---	2.0E-02	I		---	3.0E-03	RfC	I
91225	Quinoline	B2	I	3.0E+00	I	---	---	8.6E-04	---	5.0E-04	RS-ESL	---
91576	Methylnaphthalene, 2-	D	---		---	4.0E-03	I		---	1.4E-02	---	---
91587	Chloronaphthalene, 2- (chloronaphthalene, beta)	NA	---		---	8.0E-02	I		---	2.8E-01	---	---
91598	Naphthylamine, 2-	NA	---	1.8E+00	OEHHA	---	---	5.1E-04	---	0.0E+00	---	---
91805	Methapyrilene	NA	---	4.7E+00	NTP-00	---	---	1.3E-03	---	3.0E-04	RS-ESL	---
91941	Dichlorobenzidine, 3,3-	B2	I	4.5E-01	I	---	---	1.3E-04	---	0.0E+00	---	---
92524	Biphenyl, 1,1-	D	I		---	5.0E-02	I		---	1.3E-03	RS-ESL	---
92671	Aminobiphenyl, 4- (1,1-biphenyl-4-amine)	A	T	6.1E+00	T	---	---	1.7E-03	---	0.0E+00	---	---
92842	Phenothiazine	NA	---		---	1.1E-03	T		---	5.0E-03	RS-ESL	---
92875	Benzidine	A	I	2.3E+02	I	3.0E-03	I	6.7E-02	I	1.1E-02	---	---
93721	TP Silvex, 2,4,5-	D	I		---	8.0E-03	I		---	1.0E-02	RS-ESL	---

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93765	Trichlorophenoxyacetic acid, 2,4,5-	NA	---		---	1.0E-02	I		---	1.0E-02	RS-ESL	---
94360	Benzoyl peroxide	NA	---		---	5.0E-02	T		---	5.0E-03	RfC	T
94597	Safrole	C	OEHHA	2.2E-01	OEHHA	---	---	6.3E-05	OEHHA	0.0E+00	---	---
94746	MCPA (4-(chloro-2-methylphenoxy) acetic acid)	NA	---		---	5.0E-04	I		---	1.8E-03	---	---
94757	Dichlorophenoxyacetic acid, 2,4- (2,4-D)	NA	---		---	1.0E-02	I		---	1.0E-03	RS-ESL	---
94826	Dichlorophenoxy, 2,4- butyric acid, 4- (2,4-DB)	NA	---		---	8.0E-03	I		---	2.8E-02	---	---
95136	Indene	NA	---		---	2.0E-02	T		---	3.0E-03	RfC	T
95476	Xylene, o-	NA	---		---	2.0E+00	H		---	4.3E-01	RS-ESL	---
95487	Cresol, o- (2-methylphenol)	C	I		---	5.0E-02	I		---	1.0E-02	RS-ESL	---
95498	Chlorotoluene, o- (2-chlorotoluene)	NA	---		---	2.0E-02	I		---	2.6E-01	RS-ESL	---
95501	Dichlorobenzene, 1,2-	D	I		---	9.0E-02	I		---	3.0E-02	RfC	N
95534	Toluidine, o-	B2	H	2.4E-01	H	---	---	5.1E-05	OEHHA	0.0E+00	---	---
95578	Chlorophenol, 2-	NA	---		---	5.0E-03	I		---	3.0E-02	RS-ESL	---
95636	Trimethylbenzene, 1,2,4-	NA	---		---	5.0E-02	N		---	6.0E-03	RfC	N
95772	Dichlorophenol, 3,4-	NA	---		---	3.0E-03	T		---	5.3E-02	RS-ESL	---
95807	Toluenediamine, 2,4-	B2	H	3.2E+00	H	---	---	9.1E-04	---	5.0E-03	RS-ESL	---
95943	Tetrachlorobenzene, 1,2,4,5-	NA	---		---	3.0E-04	I		---	3.5E-01	RS-ESL	---
95954	Trichlorophenol, 2,4,5-	NA	---		---	1.0E-01	I		---	4.4E-02	RS-ESL	---
96128	Dibromo-3-chloropropane, 1,2-	B2	H	1.4E+00	H	---	---	6.9E-07	H	2.0E-04	RfC	I
96140	Pentane, 3-methyl-	NA	---		---	6.0E-02	T		---	1.8E+01	RfC	T
96184	Trichloropropane, 1,2,3-	B2	H	7.0E+00	H	6.0E-03	I	2.0E-03	---	6.0E-02	RS-ESL	---
96333	Methyl acrylate	D	I		---	2.0E-03	T		---	7.0E-03	RS-ESL	---
96377	Cyclopentane, methyl-	NA	---		---	1.0E-01	T		---	1.0E+00	RfC	T
96457	Ethylene thiourea	B2	H	1.1E-01	H	8.0E-05	I	3.1E-05	---	5.0E-03	RS-ESL	---
96479	Methyltetrahydrofuran, 2-	NA	---	7.6E-03	T	2.0E-01	T	1.9E-06	T	7.0E-01	---	---
97632	Ethyl methacrylate	NA	---		---	9.0E-02	H		---	5.0E-01	RS-ESL	---
98011	Furfural	NA	---		---	3.0E-03	I		---	8.0E-03	RS-ESL	---
98066	Butylbenzene, tert-	D	N		---	4.0E-02	N		---	2.7E-01	RS-ESL	---
98077	Benzotrichloride	B2	I	1.3E+01	I	---	---	3.7E-03	---	8.0E-04	RS-ESL	---
98544	Phenol, 4-tert-butyl-	NA	---		---	5.0E-03	T		---	1.0E-02	RfC	T
98828	Cumene (isopropylbenzene)	D	I		---	1.0E-01	I		---	4.0E-01	RfC	I
98862	Acetophenone	D	I		---	1.0E-01	I		---	4.9E-02	RS-ESL	---
98873	Benzyl dichloride	B2	T	1.7E-01	T	---	---	4.9E-05	---	2.0E-03	RS-ESL	---
98953	Nitrobenzene	D	I		---	5.0E-04	I		---	5.0E-03	RS-ESL	---
99081	Nitrotoluene, m-	NA	---		---	1.0E-02	H		---	1.1E-02	RS-ESL	---
99092	Nitroaniline, 3-	C	N	3.8E-02	N	3.0E-04	N	1.1E-05	---	3.0E-03	RS-ESL	---
99354	Trinitrobenzene, 1,3,5-	NA	---		---	3.0E-02	I		---	1.1E-01	---	---
99558	Methyl-5-nitroaniline, 2- (5-nitro-o-toluidine)	C	H	3.3E-02	H	---	---	9.4E-06	---	0.0E+00	---	---

Table 10
Texas Risk Reduction Program Toxicity Factor Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

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Toxicity Factors[a]												
CAS #	Chemical of Concern	Class	Ref[b]	SFo $(mg/kg\text{-}day)^{-1}$	Ref[b]	RfDo (mg/kg-day)	Ref[b]	URF $(\mu g/m^3)^{-1}$	Ref[b]	RfC (mg/m^3)	Ref[b]	
99650	Dinitrobenzene, 1,3- (dinitrobenzene, 2,4-)	D	I		---	1.0E-04	I		---	1.0E-03	RS-ESL	---
99876	Cymene (isopropyltoluene)	NA	---		---	1.0E-01	T		---	3.0E-01	RS-ESL	---
99990	Nitrotoluene, p-	NA	---		---	1.0E-02	H		---	1.1E-02	RS-ESL	---
100005	Chloronitrobenzene, p- (1-chloro-4-nitrobenzene)	B2	H	1.8E-02	H	---	---	5.1E-06	---	0.0E+00	---	---
100016	Nitroaniline, 4-	C	N	3.8E-02	N	3.0E-03	N	1.1E-05	---	3.0E-03	RS-ESL	---
100027	Nitrophenol, 4-	NA	---		---	2.0E-03	T		---	1.0E-03	RS-ESL	---
100254	Dinitrobenzene, 1,4-	NA	---		---	4.0E-04	H		---	1.0E-03	RS-ESL	---
100414	Ethyl benzene	D	I		---	1.0E-01	I		---	1.0E+00	RfC	I
100425	Styrene	NA	---		---	2.0E-01	I		---	1.0E+00	RfC	I
100447	Benzyl chloride	B2	I	1.7E-01	I	---	---	4.9E-05	---	5.0E-03	RS-ESL	---
100516	Benzyl alcohol	NA	---		---	3.0E-01	H		---	5.0E-02	RS-ESL	---
100527	Benzaldehyde	NA	---		---	1.0E-01	I		---	9.0E-03	RS-ESL	---
100754	Nitrosopiperidine, N-	C	OEHHA	9.4E+00	OEHHA	---	---	2.7E-03	OEHHA	0.0E+00	---	---
101144	Methylene-bis (2-chloroaniline) 4,4'-	B2	H	1.3E-01	H	7.0E-04	H	3.7E-05	H	2.5E-03	---	---
101553	Bromophenyl phenylether, 4-	NA	---	1.5E+01	T	---	---	3.3E-03	T	0.0E+00	---	---
101848	Diphenyl ether	NA	---		---	6.2E-03	T		---	7.0E-03	RS-ESL	---
102716	Triethanolamine	NA	---		---	2.0E-01	T		---	5.0E-03	RS-ESL	---
103117	Ethylhexyl acrylate, 2-	B2	T	4.8E-02	T	---	---	1.4E-05	---	1.6E-02	RS-ESL	---
103231	Diethylhexyl adipate	C	I	1.2E-03	I	6.0E-01	I	3.4E-07	---	1.2E-01	RS-ESL	---
103333	Azobenzene	B2	I	1.1E-01	I	---	---	3.1E-05	I	0.0E+00	---	---
103651	Propylbenzene, n-	NA	---		---	4.0E-02	N		---	4.0E-01	RfC	T
104358	Nonylphenol ethoxylate	NA	---		---	1.0E-01	T		---	6.0E-02	RS-ESL	---
104518	Butylbenzene, n-	D	N		---	4.0E-02	N		---	2.7E-01	RS-ESL	---
104767	Ethyl-1-hexanol, 2-	NA	---		---	1.5E-01	T		---	1.6E-01	RS-ESL	---
105464	Acetate, sec-butyl	NA	---		---	4.8E-02	T		---	9.5E-01	RS-ESL	---
105602	Caprolactam	NA	---		---	5.0E-01	I		---	1.0E-03	RS-ESL	---
105679	Dimethyl phenol, 2,4-	NA	---		---	2.0E-02	I		---	1.7E-02	RS-ESL	---
106423	Xylene, p-	NA	---		---	2.0E+00	H		---	4.3E-01	RS-ESL	---
106434	Chlorotoluene, p- (4-chlorotoluene)	NA	---		---	2.0E-02	T		---	2.6E-04	RS-ESL	---
106445	Cresol, p- (4-methylphenol)	C	I		---	5.0E-03	H		---	1.0E-02	RS-ESL	---
106467	Dichlorobenzene, 1,4-	C	H	2.4E-02	H	---	---	6.9E-06	---	8.0E-01	RfC	I
106478	Chloroaniline, p-	NA	---		---	4.0E-03	I		---	5.3E-03	RS-ESL	---
106489	Chlorophenol, 4-	NA	---		---	5.0E-03	T		---	3.0E-02	RS-ESL	---
106490	Toluidine, p-	C	H	1.9E-01	H	---	---	5.4E-05	---	0.0E+00	---	---
106503	Phenylene diamine, p-	NA	---		---	1.9E-01	H		---	1.0E-04	RS-ESL	---
106683	Octanone	NA	---		---	6.0E-02	T		---	1.8E+01	RfC	T
106898	Epichlorohydrin	B2	I	9.9E-03	I	2.0E-03	H	1.2E-06	I	1.0E-03	RfC	I
106934	Ethylene dibromide (dibromoethane, 1,2-)	B2	I	2.0E+00	I	6.0E-04	I	6.0E-04	I	9.0E-03	RfC	I

Table 10
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Toxicity Factors[a]												
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106989	Butene, 1-	NA	---		---	6.0E-02	T		---	1.8E+01	RfC	T
106990	Butadiene, 1,3-	A	I		---	---	---	3.0E-05	I	2.0E-03	RfC	I
107028	Acrolein	D	I		---	5.0E-04	I		---	2.0E-05	RfC	I
107040	Bromo-2-chloroethane, 1-	NA	---		---	4.0E-02	T		---	5.0E-02	RS-ESL	---
107051	Allyl chloride	C	I		---	1.0E-02	I		---	1.0E-03	RfC	I
107062	Dichloroethane, 1,2-	B2	I	9.1E-02	I	---	---	2.6E-05	I	2.4E+00	RfC	A
107073	Chloroethanol, 2-	NA	---		---	4.0E-01	T		---	3.3E-03	RS-ESL	---
107120	Propionitrile (propane nitrile)	NA	---		---	4.0E-04	T		---	1.0E-02	RS-ESL	---
107131	Acrylonitrile	B1	I	5.4E-01	I	1.0E-03	H	6.8E-05	I	2.0E-03	RfC	I
107153	Ethylenediamine	D	I		---	2.0E-02	H		---	2.5E-02	RS-ESL	---
107186	Allyl alcohol	NA	---		---	5.0E-03	I		---	4.8E-03	RS-ESL	---
107197	Propargyl alcohol	NA	---		---	2.0E-03	I		---	2.3E-03	RS-ESL	---
107211	Ethylene glycol	NA	---		---	2.0E+00	I		---	2.6E-02	RS-ESL	---
107391	Diisobutylene (trimethyl-1-pentene, 2,4,4-)	NA	---		---	6.0E-02	T		---	2.0E-01	RfC	T
107415	Hexylene glycol (2-methyl-2,4-pentanediol)	NA	---		---	3.0E-01	T		---	1.5E-04	RS-ESL	---
107493	Tetraethyl pyrophosphate (TEPP)	NA	---		---	1.1E-05	T		---	5.0E-05	RS-ESL	T
107835	Pentane, 2-methyl-	NA	---		---	6.0E-02	T		---	1.8E+01	RfC	T
107879	Pentanone, 2-	NA	---		---	4.0E-02	T		---	5.0E-01	RS-ESL	---
107926	Butanoic acid (butyric acid)	NA	---		---	5.0E-01	T		---	1.0E-03	RfC	T
107982	Propylene glycol monomethyl ether	NA	---		---	7.0E-01	H		---	2.0E+00	RfC	I
108054	Vinyl acetate	NA	---		---	1.0E+00	H		---	2.0E-01	RfC	I
108101	Methyl isobutyl ketone (4-methyl-2-pentanone)	D	---		---	8.0E-02	H		---	3.0E+00	RfC	I
108112	Pentanol, 4-methyl-2-	NA	---		---	2.6E-02	T		---	1.0E-01	RS-ESL	---
108203	Diisopropyl ether (2,2'-oxybis-propane)	NA	---		---	1.0E-01	T		---	1.0E+00	RS-ESL	---
108214	Isopropyl acetate	NA	---		---	7.0E-02	T		---	2.5E-01	---	---
108316	Maleic anhydride	NA	---		---	1.0E-01	I		---	1.0E-03	RS-ESL	---
108383	Xylene, m-	NA	---		---	2.0E+00	H		---	4.3E-01	RS-ESL	---
108394	Cresol, m- (3-methylphenol)	C	I		---	5.0E-02	I		---	1.0E-02	RS-ESL	---
108430	Chlorophenol, 3-	NA	---		---	5.0E-03	T		---	3.0E-02	RS-ESL	---
108452	Phenylene diamine, m-	NA	---		---	6.0E-03	I		---	1.0E-04	RS-ESL	---
108601	Bis (2-chloroisopropyl) ether	C	H	7.0E-02	H	4.0E-02	I	1.0E-05	H	1.4E-01	---	---
108678	Trimethylbenzene, 1,3,5-	NA	---		---	5.0E-02	N		---	6.0E-03	RfC	N
108703	Trichlorobenzene, 1,3,5-	NA	---		---	3.0E-03	T		---	4.0E-02	RS-ESL	---
108861	Bromobenzene	NA	---		---	2.0E-02	N		---	1.0E-02	RfC	N
108872	Methyl cyclohexane	NA	---		---	5.0E+00	T		---	3.0E+00	RfC	H
108883	Toluene	D	I		---	8.0E-02	I		---	5.0E+00	RfC	I
108907	Chlorobenzene	D	I		---	2.0E-02	I		---	6.0E-02	RfC	N
108930	Cyclohexanol	NA	---		---	5.0E+00	T		---	2.0E-01	RS-ESL	---

Table 10
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Toxicity Factors[a]													
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108941	Cyclohexanone	NA	---		---	5.0E+00	I		---	1.0E-01	RS-ESL	---	
108952	Phenol	D	I		---	3.0E-01	I		---	1.9E-02	RS-ESL	---	
108985	Benzenethiol	NA	---		---	1.0E-05	H		---	5.0E-04	RS-ESL	---	
109068	Picoline, 2- (2-methylpyridine)	NA	---		---	9.0E-03	T		---	3.0E-04	RfC	T	
109524	Valeric acid (pentanoic acid)	NA	---		---	5.0E-01	T		---	1.0E-03	RfC	T	
109604	Propyl acetate, n-	NA	---		---	9.0E-02	T		---	3.2E-01	---	---	
109660	Pentane	NA	---		---	7.0E-01	T		---	3.5E-01	RS-ESL	---	
109773	Malononitrile	NA	---		---	2.0E-05	H		---	8.0E-03	RS-ESL	---	
109864	Methoxyethanol, 2-	NA	---		---	---	---		---	2.0E-02	RfC	I	
109999	Tetrahydrofuran	C	N	7.6E-03	N	2.0E-01	N	1.9E-06	N	3.0E-01	RfC	N	
110009	Furan	NA	---		---	1.0E-03	I		---	2.8E-02	RS-ESL	---	
110190	Acetate, isobutyl	NA	---		---	4.8E-02	T		---	4.8E-01	RS-ESL	---	
110430	Methyl amyl ketone (2-heptanone)	NA	---		---	5.0E-02	T		---	2.3E-01	RS-ESL	---	
110543	Hexane, n-	D	I		---	6.0E-02	H		---	7.0E-01	RfC	I	
110576	Dichloro-2-butene, 1,4- trans	B2	T		---	---	---	2.6E-03	T	0.0E+00	---	---	
110758	Chloroethoxy ethene, 2- (2-chloroethylvinylether)	NA	---	1.1E+00	T	2.0E-03	T	3.1E-04	---	3.0E-04	RfC	T	
110805	Ethoxy ethanol, 2-	NA	---		---	4.0E-01	H		---	2.0E-01	RfC	I	
110827	Cyclohexane	D	I		---	5.0E+00	T		---	6.0E+00	RfC	I	
110861	Pyridine	NA	---		---	1.0E-03	I		---	1.5E-02	RS-ESL	---	
110918	Morpholine	NA	---		---	5.0E+02	T		---	1.0E-03	RfC	T	
110985	Dipropylene glycol	NA	---		---	1.2E-01	T		---	1.2E-01	RS-ESL	---	
111148	Heptanoic acid, n-	NA	---		---	5.0E-01	T		---	1.0E-03	RfC	T	
111159	Acetate, 2-ethoxyethanol	NA	---		---	1.7E-02	T		---	2.7E-02	RS-ESL	---	
111295	Pentanediol, 1,5-	NA	---		---	5.0E+00	T		---	1.8E+01	RfC	T	
111422	Diethanolamine	NA	---		---	5.0E-04	T		---	2.0E-03	RS-ESL	---	
111444	Bis (2-chloroethyl) ether	B2	I	1.1E+00	I	---	---	3.3E-04	I	0.0E+00	---	---	
111466	Diethylene glycol	NA	---		---	2.0E+00	T		---	7.0E+00	---	---	
111762	Butoxy ethanol, 2- (Ethylene glycol monobutyl ether, EGBE)	C	I		---	5.0E-01	I		---	1.3E+01	RfC	I	
111911	Bis (2-chloroethoxy) methane	B2	T	1.1E+00	T	---	---	3.3E-04	T	0.0E+00	---	---	
112276	Triethylene glycol	NA	---		---	3.0E+00	T		---	1.1E+01	---	---	
112345	Diethylene glycol monobutyl ether	NA	---		---	9.0E-02	T		---	2.0E-02	RfC	H	
112607	Tetraethylene glycol	NA	---		---	3.3E-01	T		---	1.0E-02	RS-ESL	---	
115117	Isobutylene (2-methyl-1-propene)	NA	---		---	---	---		---	4.0E+00	RfC	T	
115297	Endosulfan	NA	---		---	6.0E-03	I		---	1.0E-04	RS-ESL	---	
115322	Kelthane (dicofol)	NA	---		---	6.0E-03	T		---	2.1E-02	---	---	
115902	Fensulfothion	NA	---		---	1.0E-03	T		---	3.5E-03	---	---	
116063	Aldicarb	D	I		---	1.0E-03	I		---	3.5E-03	---	---	
116290	Tetradifon	NA	---		---	2.0E-02	T		---	7.0E-02	---	---	

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117817	Bis (2-ethyl-hexyl) phthalate	B2	I	1.4E-02	I	2.0E-02	I	4.0E-06	---	7.0E-02	---	---
117840	Di-n-octyl phthalate	NA	---		---	2.0E-02	H		---	5.0E-03	RS-ESL	T
118741	Hexachlorobenzene	B2	I	1.6E+00	I	8.0E-04	I	4.6E-04	I	2.8E-03	---	---
118967	Trinitrotoluene, 2,4,6-	C	I	3.0E-02	I	5.0E-04	I	8.6E-06	---	2.0E-01/1.8E+01[e]	RS-ESL	---
119619	Benzophenone	NA	---		---	6.7E-03	T		---	2.3E-02	---	---
119904	Dimethoxybenzidine, 3,3'-	B2	H	1.4E-02	H	---	---	4.0E-06	---	0.0E+00	---	---
119915	Biquinoline, 2,2'-	NA	---		---	3.0E-03	T		---	1.1E-02	---	---
119937	Dimethylbenzidine, 3,3'-	B2	H	9.2E+00	H	---	---	2.6E-03	---	0.0E+00	---	---
120127	Anthracene	D	I		---	3.0E-01	I		---	1.1E+00	---	---
120365	Dichloroprop (2-(2,4-dichlorophenoxy) propanoic acid)	NA	---		---	1.0E-02	T		---	3.5E-02	---	---
120581	Isosafrole	B2	T	2.2E-01	T	---	---	6.3E-05	T	0.0E+00	---	---
120821	Trichlorobenzene, 1,2,4-	D	I		---	1.0E-02	I		---	2.0E-01	RfC	H
120832	Dichlorophenol, 2,4-	NA	---		---	3.0E-03	I		---	5.3E-02	RS-ESL	---
121142	Dinitrotoluene, 2,4-	B2	I	6.8E-01	I (for mixed isomers)	2.0E-03	I	1.9E-04	---	1.5E-04	RS-ESL	---
121448	Triethylamine	NA	---		---	---	---		---	7.0E-03	RfC	I
121755	Malathion	NA	---		---	1.4E-01/4.7E-02[d]	I		---	5.0E-03	RS-ESL	---
121824	Cyclotrimethylenetrinitramine (RDX)	C	I	1.1E-01	I	3.0E-03	I	3.1E-05	---	5.0E-04	RS-ESL	---
122098	Dimethylphenethylamine, alpha, alpha-	NA	---		---	2.0E-03	T		---	5.0E-01	RS-ESL	---
122349	Simazine	C	H	1.2E-01	H	5.0E-03	I	3.4E-05	---	1.8E-02	---	---
122394	Diphenylamine	NA	---		---	2.5E-02	I		---	1.0E-02	RS-ESL	---
122429	Propham	NA	---		---	2.0E-02	I		---	7.0E-02	---	---
122667	Diphenylhydrazine, 1,2-	B2	I	8.0E-01	I	---	---	2.2E-04	I	0.0E+00	---	---
123057	Hexanal, 2-ethyl-	NA	---		---	1.5E-01	T		---	1.4E-01	RfC	T
123319	Hydroquinone	NA	---		---	4.0E-02	H		---	1.4E-01	---	---
123331	Maleic hydrazide	NA	---		---	5.0E-01	I		---	1.0E-01	RS-ESL	---
123386	Propanal (propionaldehyde)	NA	---		---	8.0E-03	T		---	1.8E-01	RS-ESL	---
123422	Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	NA	---		---	4.0E-02	T		---	1.4E-01	---	---
123513	Isoamyl alcohol	NA	---		---	5.0E-03	T		---	3.6E-01	RfC	T
123728	Butanal (butyraldehyde)	NA	---		---	6.0E-02	T		---	8.0E-01	RS-ESL	---
123739	Crotonaldehyde	C	I	1.9E+00	H	---	---	5.4E-04	---	6.0E-03	RS-ESL	---
123864	Butyl acetate	NA	---		---	1.4E-01	T		---	7.0E-02	RfC	T
123911	Dioxane 1,4-	B2	I	1.1E-02	I	1.0E-01	A	3.1E-06	---	9.0E-02	RS-ESL	---
123922	Acetate, isoamyl	NA	---		---	7.2E-02	T		---	2.7E-01	RS-ESL	---
124049	Adipic acid (hexanedioic acid)	NA	---		---	5.0E+00	T		---	5.0E-03	RS-ESL	---
124196	Nonanal	NA	---		---	2.0E-01	T		---	7.0E-01	---	---
124481	Dibromochloromethane (chlorodibromomethane)	C	I	8.4E-02	I	2.0E-02	I	2.4E-05	---	7.0E-02	---	---
126307	Neopentyl glycol	NA	---		---	3.0E-01	T		---	1.1E+00	---	---
126330	Sulfolane	NA	---		---	2.0E-05	T		---	7.0E-05	---	---

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Toxicity Factors[a]												
CAS #	Chemical of Concern	Class	Ref[b]	SFo $(mg/kg\text{-}day)^{-1}$	Ref[b]	RfDo (mg/kg-day)	Ref[b]	URF $(\mu g/m^3)^{-1}$	Ref[b]	RfC (mg/m^3)	Ref[b]	
126681	Triethylphosphorothioate, O, O, O-	NA	---		---	8.3E-06	T		---	2.9E-05	---	---
126987	Methacrylonitrile	NA	---		---	1.0E-04	I		---	2.7E-03	RS-ESL	---
126998	Chloro-1,3-butadiene, 2-	NA	---		---	---	---		---	7.0E-03	RfC	H
127004	Chloro-2-propanol, 1-	NA	---		---	2.0E-02	T		---	7.0E-02	---	---
127184	Tetrachloroethylene (perchlorethylene)	B2	N	5.2E-02	N	1.0E-02	I	5.8E-07	N	2.7E-01	RfC	A
129000	Pyrene	D	I		---	3.0E-02	I		---	1.1E-01	---	---
130154	Naphthoquinone, 1,4-	NA	---		---	7.0E-03	T		---	1.0E-04	RS-ESL	---
131113	Dimethylphthalate	D	I		---	8.0E-01	T		---	5.0E-03	RS-ESL	---
132649	Dibenzofuran	D	I		---	4.0E-03	N		---	1.4E-02	---	---
132650	Dibenzothiophene	NA	---		---	3.0E-03	T		---	1.1E-02	---	---
133062	Captan	B2	H	3.5E-03	H	1.3E-01	I	1.0E-06	---	5.0E-03	RS-ESL	---
133904	Chloramben (amiben; 3-amino-2,5-dichlorobenzoic acid)	NA	---		---	1.5E-02	I		---	5.3E-02	---	---
134327	Naphthylamine, 1-	NA	---		---	2.0E-02	T		---	7.0E-02	---	---
135988	Butylbenzene, sec-	D	N		---	4.0E-02	N		---	2.7E-01	RS-ESL	---
137268	Thiram	NA	---		---	5.0E-03	I		---	1.0E-03	RS-ESL	---
139402	Propazine	C	EPA-OP	4.5E-02	EPA-OP	2.0E-02	I	1.3E-05	---	7.0E-02	---	---
140578	Aramite	B2	I	2.5E-02	I	5.0E-02	H	7.1E-06	I	1.8E-01	---	---
140885	Ethyl acrylate	B2	H	4.8E-02	H	---	---	1.4E-05	---	1.6E-02	RS-ESL	---
141322	Butyl acrylate	NA	---		---	9.0E-03	T		---	5.0E-03	RfC	T
141662	Dicrotophos (bidrin)	NA	---		---	1.0E-04	I		---	3.5E-04	---	---
141786	Ethyl acetate	NA	---		---	9.0E-01	I		---	1.4E+00	RS-ESL	---
142289	Dichloropropane, 1,3-	NA	---	1.0E-01	T	3.0E-02	T	4.0E-06	T	2.0E-02	RfC	T
142621	Hexanoic acid	NA	---		---	6.4E-02	T		---	1.0E-03	RfC	T
142687	Tetrahydropyran	NA	---	7.6E-03	T	2.0E-01	T	1.9E-06	T	7.0E-01	---	---
142825	Heptane, n-	D	I		---	6.0E-02	T		---	1.8E+01	RfC	T
142961	Butyl ether, n- (dibutyl ether)	D	N		---	1.0E-01	T		---	7.6E-02	RS-ESL	---
143500	Kepone (chlordecone)	C	OEHHA	1.6E+01	OEHHA	5.0E-04	A	4.6E-03	OEHHA	1.8E-03	---	---
145733	Endothall	NA	---		---	2.0E-02	I		---	7.0E-02	---	---
148185	Sodium diethyldithiocarbamate	C	H	2.7E-01	H	3.0E-02	I	7.7E-05	---	5.0E-03	RS-ESL	---
150505	Merphos	NA	---		---	3.0E-05	I		---	1.1E-04	---	---
151564	Ethylenimine	C	T	6.5E+01	OEHHA	---	---	1.9E-02	OEHHA	0.0E+00	---	---
152169	Octamethylpyrophosphoramide	NA	---		---	2.0E-03	H		---	7.0E-03	---	---
156592	Dichloroethylene, cis-1,2-	D	I		---	1.0E-02	H		---	7.9E-01	RS-ESL	---
156605	Dichloroethylene, trans-1,2	NA	---		---	2.0E-02	I		---	7.9E-01	RS-ESL	---
189559	Dibenzo(a,i)pyrene	NA	---	7.3E+01	T	---	---	8.8E-03	T	0.0E+00	---	---
189640	Dibenzo(a,h)pyrene	NA	---	7.3E+01	T	---	---	8.8E-03	T	0.0E+00	---	---
191071	Coronene	NA	---		---	2.0E-03	T		---	7.0E-03	---	---
191242	Benzo-g,h,i-perylene	D	I		---	3.0E-02	T		---	1.1E-01	---	---

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Toxicity Factors[a]												
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192654	Dibenzo(a,e)pyrene	NA	---	7.3E+00	T	---	---	8.8E-04	T	0.0E+00	---	---
192972	Benzo-e-pyrene	NA	---		---	3.0E-02	T		---	1.1E-01	---	---
193395	Indeno-1,2,3-cd-pyrene	B2	I	7.3E-01	EPA-93	---	---	8.8E-05	EPA-93	0.0E+00	---	---
198550	Perylene	NA	---		---	2.0E-02	T		---	7.0E-02	---	---
205823	Benzo-j-fluoranthene	NA	---	7.3E-01	T	---	---	8.8E-05	T	0.0E+00	---	---
205992	Benzo-b-fluoranthene	B2	I	7.3E-01	EPA-93	---	---	8.8E-05	EPA-93	0.0E+00	---	---
206440	Fluoranthene	D	I		---	4.0E-02	I		---	1.4E-01	---	---
207089	Benzo-k-fluoranthene	B2	I	7.3E-02	EPA-93	---	---	8.8E-06	EPA-93	0.0E+00	---	---
208968	Acenaphthylene	D	I		---	6.0E-02	T		---	2.1E-01	---	---
218019	Chrysene	B2	I	7.3E-03	EPA-93	---	---	8.8E-07	EPA-93	0.0E+00	---	---
224420	Dibenz-a,j-acridine	NA	---	7.3E-01	T	---	---	8.8E-05	T	0.0E+00	---	---
226368	Dibenz-a,h-acridine	C	OEHHA	1.2E+00	OEHHA	---	---	1.1E-04	OEHHA	0.0E+00	---	---
229878	Phenanthridine	NA	---		---	3.0E-03	T		---	1.1E-02	---	---
260946	Acridine	NA	---		---	3.0E-03	T		---	1.1E-02	---	---
297972	Thionazin	NA	---		---	7.0E-05	T		---	2.5E-04	---	---
298000	Methyl parathion	NA	---		---	2.5E-04	I		---	2.0E-04	RS-ESL	---
298022	Phorate	NA	---		---	2.0E-04	H		---	5.0E-05	RS-ESL	---
298044	Disulfoton	NA	---		---	4.0E-05	I		---	1.0E-04	RS-ESL	---
299843	Ronnel	NA	---		---	5.0E-02	H		---	1.8E-01	---	---
300765	Naled	NA	---		---	2.0E-03	I		---	3.0E-03	RS-ESL	---
302012	Hydrazine	B2	I	3.0E+00	I	---	---	4.9E-03	I	0.0E+00	---	---
302170	Chloral hydrate (1,1-ethanediol, 2,2,2-trichloro-)	C	I		---	1.0E-01	I		---	5.0E-03	RS-ESL	---
309002	Aldrin	B2	I	1.7E+01	I	3.0E-05	I	4.9E-03	I	1.1E-04	---	---
314409	Bromacil	NA	---		---	1.0E-01	T		---	3.5E-01	---	---
319846	Hexachlorocyclohexane, alpha (alpha-BHC)	B2	I	6.3E+00	I	8.0E-03	A	1.8E-03	I	2.8E-02	---	---
319857	Hexachlorocyclohexane, beta (beta-BHC)	C	I	1.8E+00	I	---	---	5.3E-04	I	0.0E+00	---	---
319868	Hexachlorocyclohexane, delta (delta-BHC)	B2	T	1.8E+00	T	3.0E-04	T	5.1E-04	T	1.1E-03	---	---
327980	Trichloronate	NA	---		---	3.0E-03	T		---	1.1E-02	---	---
329715	Dinitrophenol, 2,5-	NA	---		---	2.0E-03	T		---	7.0E-03	---	---
330541	Diuron	NA	---		---	2.0E-03	I		---	1.0E-02	RS-ESL	---
333415	Diazinon	NA	---		---	9.0E-04	H		---	1.0E-04	RS-ESL	---
460195	Cyanogen	NA	---		---	4.0E-02	I		---	2.1E-02	RS-ESL	---
465736	Isodrin	NA	--	1.7E+02	T	3.0E-06	T	4.9E-02	T	1.1E-05	---	---
470906	Chlorfenvinphos	NA	---		---	7.0E-04	A		---	2.0E-03	RfC	T
479458	Trinitrophenylmethylnitramine (tetryl; nitramine)	NA	---		---	1.0E-02	H		---	1.0E-04	RS-ESL	---
504245	Aminopyridine, 4-	D	I		---	2.0E-05	H		---	2.5E-04	RS-ESL	---
510156	Chlorobenzilate	B2	H	2.7E-01	H	2.0E-02	I	7.8E-05	H	7.0E-02	---	---
513359	Methyl-2-butene, 2-	NA	---		---	6.0E-02	T		---	1.8E+01	RfC	T

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Toxicity Factors[a]												
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526738	Trimethylbenzene, 1,2,3-	NA	---		---	5.0E-02	T		---	6.0E-03	RfC	T
534521	Dinitro-2-methylphenol, 4,6- (dinitro-o-cresol, 4, 6-)	NA	---		---	2.0E-03	T		---	3.0E-04	RS-ESL	---
541731	Dichlorobenzene, 1,3-	D	I		---	3.0E-02	N		---	8.0E-03	RfC	N
542756	Dichloropropene, 1,3- (mixed isomers)	B2	I	1.0E-01	I	3.0E-02	I	4.0E-06	I	2.0E-02	RfC	I
542881	Bis (2-chloromethyl) ether	A	I	2.2E+02	I	---	---	6.2E-02	I	0.0E+00	---	---
544105	Chlorohexane, 1-	NA	---		---	4.0E-02	T		---	1.0E+00	RfC	T
554847	Nitrophenol, 3-	NA	---		---	2.0E-03	T		---	4.0E-03	RS-ESL	---
563122	Ethion	NA	---		---	5.0E-04	I		---	4.0E-04	RS-ESL	---
563462	Methyl-1-butene, 2-	NA	---		---	6.0E-02	T		---	1.8E+01	RfC	T
563586	Dichloropropene, 1,1-	B2	T	1.0E-01	T	3.0E-02	T	4.0E-06	T	2.0E-02	RfC	T
575417	Dimethylnaphthalene, 1,3-	NA	---		---	4.0E-02	T		---	1.4E-01	---	---
576249	Dichlorophenol, 2,3-	NA	---		---	3.0E-03	T		---	5.3E-02	RS-ESL	---
583788	Dichlorophenol, 2,5-	NA	---		---	3.0E-03	T		---	5.3E-02	RS-ESL	---
590181	Butene, cis-2-	NA	---		---	6.0E-02	T		---	1.8E+01	RfC	T
591355	Dichlorophenol, 3,5-	NA	---		---	3.0E-03	T		---	5.3E-02	RS-ESL	---
591786	Hexanone, 2-	NA	---		---	6.0E-02	T		---	4.0E-03	RS-ESL	---
594207	Dichloropropane, 2,2-	NA	---	6.8E-02	T	9.0E-02	T	1.9E-05	---	4.0E-03	RfC	T
598776	Trichloropropane, 1,1,2-	NA	---		---	5.0E-03	I		---	6.0E-02	RS-ESL	---
606202	Dinitrotoluene, 2,6-	B2	I	6.8E-01	I (for mixed isomers)	1.0E-03	H	1.9E-04	---	1.5E-04	RS-ESL	---
608731	Hexachlorocyclohexane, techn (technical-BHC)	B2	I	1.8E+00	I	---	---	5.1E-04	I	0.0E+00	---	---
608935	Pentachlorobenzene	D	I		---	8.0E-04	I		---	1.0E-01	RS-ESL	---
609198	Trichlorophenol, 3,4,5-	NA	---		---	1.0E-01	T		---	4.4E-02	RS-ESL	---
611143	Ethyl-2-methyl benzene, 1-	D	T		---	2.0E-01	T		---	4.0E-01	RfC	T
616239	Dichloropropanol, 2,3-	NA	---		---	3.0E-03	I		---	1.1E-02	---	---
621647	Nitrosodi-n-propylamine, N-	B2	I	7.0E+00	I	---	---	2.0E-03	---	0.0E+00	---	---
622968	Ethyl-4-methyl benzene, 1-	D	T		---	2.0E-01	T		---	4.0E-01	RfC	T
623369	Methyl-2-pentenal, 2-	NA	---	1.9E+00	T	---	---	5.4E-04	---	6.0E-03	RS-ESL	---
624646	Butene, trans-2-	NA	---		---	6.0E-02	T		---	1.8E+01	RfC	T
626175	Benzenedicarbonitrile, 1,3-	NA	---		---	6.0E-03	T		---	2.1E-02	---	---
627190	Pentyne, 1-	NA	---		---	6.0E-02	T		---	1.8E+01	RfC	T
629118	Hexanediol, 1,6-	NA	---		---	5.0E+00	T		---	1.8E+01	RfC	T
630104	Selenourea	NA	---		---	5.0E-03	H		---	1.8E-02	---	---
630206	Tetrachloroethane, 1,1,1,2-	C	I	2.6E-02	I	3.0E-02	I	7.4E-06	I	1.1E-01	---	---
634662	Tetrachlorobenzene, 1,2,3,4-	NA	---		---	3.0E-04	T		---	3.5E-01	RS-ESL	---
634902	Tetrachlorobenzene, 1,2,3,5-	NA	---		---	3.0E-04	T		---	3.5E-01	RfC	T
637923	Ethyl tert-butyl ether (2-ethyl-2-ethoxypropane)	NA	---		---	1.0E-03	T		---	3.0E-01	RfC	T
645625	Ethyl-2-hexenal, 2-	NA	---		---	1.5E-01	T		---	1.6E-01	RS-ESL	---
695125	Vinylcyclohexane	NA	---		---	5.0E-01	T		---	1.0E-02	RS-ESL	---

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709988	Propanil	NA	---		---	5.0E-03	I		---	1.8E-02	---	---
732116	Phosmet	NA	---		---	2.0E-02	I		---	2.0E-03	RS-ESL	---
759739	Nitroso-N-ethylurea, N-	B2	H	1.4E+02	H	---	---	4.0E-02	---	0.0E+00	---	---
759944	Ethyl dipropylthiocarbamate, S-	NA	---		---	2.5E-02	I		---	8.8E-02	---	---
764410	Dichloro-2-butene, 1,4-	B2	H		---	---	---	2.6E-03	H	0.0E+00	---	---
765344	Glycidylaldehyde	B2	I		---	4.0E-04	I		---	1.0E-03	RfC	H
786196	Carbophenothion	NA	---		---	1.3E-02	CU		---	4.6E-02	---	---
823405	Toluenediamine, 2,6-	NA	---		---	2.0E-01	H		---	7.0E-01	---	---
834128	Ametryn	NA	---		---	9.0E-03	I		---	3.2E-02	---	---
872504	Methylpyrrolidone, N-	NA	---		---	2.0E-02	T		---	8.0E-02	RS-ESL	---
919948	Tert-amyl-ethyl ether (TAEE)	NA	---		---	4.0E-02	T		---	8.0E-02	RS-ESL	T
924163	Nitrosodi-n-butylamine, N-	B2	I	5.4E+00	I	---	---	1.6E-03	I	0.0E+00	---	---
930552	Nitrosopyrrolidine, N-	B2	I	2.1E+00	I	---	---	6.1E-04	I	0.0E+00	---	---
933755	Trichlorophenol, 2,3,6-	NA	---		---	1.0E-01	T		---	4.4E-02	RS-ESL	---
933788	Trichlorophenol, 2,3,5-	NA	---		---	1.0E-01	T		---	4.4E-02	RS-ESL	---
935955	Tetrachlorophenol, 2,3,5,6-	NA	---		---	3.0E-02	T		---	7.0E-03	RS-ESL	---
944229	Fonofos	NA	---		---	2.0E-03	I		---	7.0E-03	---	---
959988	Endosulfan I	NA	---		---	2.0E-03	T		---	3.3E-05	RS-ESL	---
994058	Tert-amyl-methyl ether (TAME)	NA	---		---	4.0E-02	T		---	8.0E-02	RS-ESL	T
1024573	Heptachlor epoxide	B2	I	9.1E+00	I	1.3E-05	I	2.6E-03	I	4.6E-05	---	---
1031078	Endosulfan sulfate	NA	---		---	6.0E-03	T		---	2.1E-02	---	---
1071836	Glyphosate	D	I		---	1.0E-01	I		---	3.5E-01	---	---
1114712	Pebulate	NA	---		---	5.0E-02	H		---	1.8E-01	---	---
1116547	Nitrosodiethanolamine, N-	B2	I	2.8E+00	I	---	---	8.0E-04	---	0.0E+00	---	---
1134232	Cycloate	NA	---		---	5.5E-02	CU		---	1.9E-01	---	---
1184572	Methylmecury hydroxide	C	T		---	1.0E-04	T		---	1.0E-05	RS-ESL	---
1191259	Hydrocaproic acid, 6- (6-hydroxyhexanoic acid)	NA	---		---	6.4E-02	T		---	1.0E-03	RfC	T
1319773	Cresol	C	I		---	5.0E-02	I		---	1.0E-02	RS-ESL	---
1330207	Xylenes	D	I		---	2.0E-01	I		---	1.0E-01	RfC	I
1332214	Asbestos	A	I		---	---	---	7.7E-03	I	0.0E+00	---	---
1336363	Polychlorinated biphenyls (PCBs)	B2	I	2.0E+00	I	2.0E-05	I	5.7E-04	I	7.0E-05	---	---
1563662	Carbofuran	NA	---		---	5.0E-03	I		---	1.0E-04	RS-ESL	---
1582098	Trifluralin	C	I	7.7E-03	I	7.5E-03	I	2.2E-06	---	1.0E-02	RS-ESL	---
1610180	Prometon (pramitol)	NA	---		---	1.5E-02	I		---	5.3E-02	---	---
1634044	MTBE (methyl tert-butyl ether)	NA	---	1.8E-03	OEHHA	1.0E-02	OEHHA	2.6E-07	OEHHA	3.0E+00	RfC	I
1646884	Aldicarb sulfone	NA	---		---	1.0E-03	I		---	3.5E-03	---	---
1705857	Methyl chrysene, 6-	NA	---	7.3E-02	T	---	---	8.8E-06	T	0.0E+00	---	---
1746016	TCDD, 2,3,7,8- (dioxin)	---	---		---	---	---		---	0.0E+00	---	---

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Toxicity Factors[a]												
CAS #	Chemical of Concern	Class	Ref[b]	SFo $(mg/kg\text{-}day)^{-1}$	Ref[b]	RfDo (mg/kg-day)	Ref[b]	URF $(\mu g/m^3)^{-1}$	Ref[b]	RfC (mg/m^3)	Ref[b]	
1861321	Dacthal (DCPA)	NA	---		---	1.0E-02	I		---	3.5E-02	---	---
1861401	Benefin (benfluralin)	NA	---		---	3.0E-01	I		---	1.1E+00	---	---
1868537	Dibromofluoromethane	NA	---		---	2.0E-01	T		---	5.0E+00	RS-ESL	---
1888717	Hexachloropropylene	NA	---	1.4E-02	T	1.0E-03	T	4.0E-06	T	3.5E-03	---	---
1897456	Chlorothalonil	B2	H	1.1E-02	H	1.5E-02	I	3.1E-06	---	5.3E-02	---	---
1910425	Paraquat	C	I		---	4.5E-03	I		---	1.6E-02	---	---
1912249	Atrazine	C	H	2.2E-01	H	3.5E-02	I	6.3E-05	---	5.0E-03	RS-ESL	---
1918009	Dicamba	NA	---		---	3.0E-02	I		---	1.0E-02	RS-ESL	---
1918021	Picloram	NA	---		---	7.0E-02	I		---	2.5E-01	---	---
1929777	Vernam	NA	---		---	1.0E-03	I		---	3.5E-03	---	---
2004708	Pentadiene, 1,3-trans-	NA	---		---	6.0E-02	T		---	1.8E+01	RfC	T
2008415	Butylate	NA	---		---	5.0E-02	I		---	1.8E-01	---	---
2104645	EPN (o-ethyl o-(4-nitrophenyl)phenylphosphonothioate)	NA	---		---	1.0E-05	I		---	3.5E-05	---	---
2157984	Monocrotophos	NA	---		---	6.0E-04	T		---	2.5E-04	RS-ESL	T
2212671	Molinate	NA	---		---	2.0E-03	I		---	7.0E-03	---	---
2303164	Diallate	B2	H	6.1E-02	H	---	---	1.7E-05	---	0.0E+00	---	---
2303175	Triallate	NA	---		---	1.3E-02	I		---	4.6E-02	---	---
2310170	Phosalone	NA	---		---	2.0E-03	EPA-OP		---	7.0E-03	---	---
2312358	Propargite	NA	---		---	2.0E-02	I		---	7.0E-02	---	---
2385855	Mirex	B2	H		---	2.0E-04	I		---	7.0E-04	---	---
2691410	Cyclotetramethylenetetranitramine (HMX)	D	I		---	5.0E-02	I		---	2.7E-03	RS-ESL	---
2921882	Chlorpyrifos	NA	---		---	3.0E-03	I		---	2.0E-04	RS-ESL	---
3058386	Triaminotrinitrobenzene (TATB)	NA	---	3.0E-02	T	3.0E-03	T	8.6E-06	---	2.0E-03	RS-ESL	---
3351288	Methyl chrysene, 1-	NA	---	7.3E-03	T	---	---	8.8E-07	T	0.0E+00	---	---
3351324	Methyl chrysene, 2-	NA	---	7.3E-03	T	---	---	8.8E-07	T	0.0E+00	---	---
3689245	Tetraethyl dithiopyrophosphate (sulfotep)	NA	---		---	5.0E-04	I		---	2.0E-04	RS-ESL	T
4901513	Tetrachlorophenol, 2,3,4,5-	NA	---		---	3.0E-02	T		---	7.0E-03	RS-ESL	---
5103719	Chlordane, cis- (alpha chlordane)	B2	T	3.5E-01	T	5.0E-04	T	1.0E-04	T	7.0E-04	RfC	T
5103731	Nonachlor, cis-	B2	T	3.5E-01	T	5.0E-04	T	1.0E-04	T	7.0E-04	RfC	T
5234684	Carboxin	NA	---		---	1.0E-01	I		---	3.5E-01	---	---
5989275	Limonene, d-*	---	---		---	---	---		---	0.0E+00	---	---
6842155	Propylene tetramer	NA	---		---	1.0E-01	T		---	1.0E+00	RfC	T
7005723	Chlorophenyl phenylether, 4-	NA	---	1.5E+01	T	---	---	3.3E-03	T	0.0E+00	---	---
7421934	Endrin aldehyde	D	T		---	3.0E-04	T		---	1.1E-03	---	---
7429905	Aluminum	NA	---		---	1.0E+00	N		---	5.0E-03	RS-ESL	---
7439896	Iron*	---	---		---	---	---		---	0.0E+00	---	---
7439921	Lead (inorganic)	---	---		---	---	---		---	0.0E+00	---	---
7439932	Lithium	NA	---		---	2.0E-02	N		---	7.0E-02	---	---

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Toxicity Factors[a]												
CAS #	Chemical of Concern	Class	Ref[b]	SFo (mg/kg-day)$^{-1}$	Ref[b]	RfDo (mg/kg-day)	Ref[b]	URF ($\mu g/m^3$)$^{-1}$	Ref[b]	RfC (mg/m^3)	Ref[b]	
7439954	Magnesium*	---	---		---	---	---		---	0.0E+00	---	---
7439965	Manganese	D	I		---	1.4E-01/4.7E-02[d]	I		---	5.0E-05	RfC	I
7439987	Molybdenum	NA	---		---	5.0E-03	I		---	5.0E-03	RS-ESL	---
7440020	Nickel and compounds	A	I		---	2.0E-02	I	4.8E-04	I	9.0E-05	RfC	A
7440097	Potassium*	---	---		---	---	---		---	0.0E+00	---	---
7440224	Silver	D	I		---	5.0E-03	I		---	1.0E-05	RS-ESL	---
7440235	Sodium*	---	---		---	---	---		---	0.0E+00	---	---
7440246	Strontium	NA	---		---	6.0E-01	I		---	2.1E+00	---	---
7440315	Tin	NA	---		---	6.0E-01	H		---	2.0E-02	RS-ESL	---
7440326	Titanium	NA	---		---	5.0E+02	T		---	1.8E+03	---	---
7440360	Antimony	NA	---		---	4.0E-04	I		---	5.0E-04	RS-ESL	---
7440382	Arsenic	A	I	1.5E+00	I	3.0E-04	I	4.3E-03	I	1.1E-03	---	---
7440393	Barium	D	I		---	2.0E-01	I		---	5.0E-04	RS-ESL	---
7440417	Beryllium	B1	I		---	2.0E-03	I	2.4E-03	I	2.0E-05	RfC	I
7440428	Boron	D	I		---	2.0E-01	I		---	2.0E-02	RfC	H
7440439	Cadmium	B1	I		---	1.0E-03/5.0E-04[c]	I	1.8E-03	I	0.0E+00	---	---
7440484	Cobalt	NA	---		---	6.0E-02	N		---	1.0E-04	RfC	A
7440508	Copper	D	I		---	4.0E-02	N		---	1.0E-03	RS-ESL	---
7440611	Uranium (soluble salts)	NA	---		---	3.0E-03	I		---	2.0E-01/1.8E+01[e]	RfC	A
7440622	Vanadium	NA	---		---	7.0E-03	H		---	5.0E-05	RS-ESL	---
7440666	Zinc	D	I		---	3.0E-01	I		---	1.1E+00	---	---
7440699	Bismuth	NA	---		---	5.0E-01	T		---	1.8E+00	---	---
7440702	Calcium*	---	---		---	---	---		---	0.0E+00	---	---
7581977	Dichlorobutane, 2,3-	NA	---		---	1.0E-02	T		---	7.0E-03	RfC	T
7647010	Hydrogen chloride (hydrochloric acid)*	---	---		---	---	---		---	0.0E+00	---	---
7664417	Ammonia	NA	---		---	---	---		---	1.0E-01	RfC	I
7681529	Sodium hypochlorite	NA	---		---	2.1E-01	T		---	1.5E-03	RS-ESL	T
7704349	Sulfur*	---	---		---	---	---		---	0.0E+00	---	---
7723140	Phosphorus, total*	---	---		---	---	---		---	0.0E+00	---	---
7723140	Phosphorus, white	D	I		---	2.0E-05	I		---	1.0E-04	RS-ESL	---
7782414	Fluorine (soluble fluoride)	NA	---		---	6.0E-02	I		---	2.0E-04	RS-ESL	---
7782492	Selenium	D	I		---	5.0E-03	I		---	2.0E-04	RS-ESL	---
7782505	Chlorine	NA	---		---	1.0E-01	I		---	1.5E-03	RS-ESL	---
7784421	Arsine	NA	---		---	---	---		---	5.0E-05	RfC	I
7786347	Phosdrin (mevinphos)	NA	---		---	2.5E-05	EPA-OP		---	8.8E-05	---	---
7791120	Thallium and compounds (as thallium chloride)	D	I		---	8.0E-05	I		---	1.0E-04	RS-ESL	---
7803512	Phosphine	D	I		---	3.0E-04	I		---	3.0E-04	RfC	I
8001352	Toxaphene	B2	I	1.1E+00	I	---	---	3.2E-04	I	0.0E+00	---	---

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8018017	Mancozeb	NA	---		---	3.0E-02	I (for $HgCl^2$)		---	1.1E-01	---	---
8065483	Demeton	NA	---		---	4.0E-05	I		---	1.4E-04	---	---
9003047	Sodium polyacrylate	NA	---		---	5.0E-01	T		---	1.0E-03	RfC	T
10061015	Dichloropropene, cis 1,3-	NA	---	5.4E-01	T	1.0E-04	T	1.5E-04	---	6.7E-03	RS-ESL	---
10061026	Dichloropropene, trans 1,3-	NA	---	1.0E-01	T	3.0E-02	T	4.0E-06	T	2.0E-02	RfC	T
10141727	Methyltetrahydropyran, 2-	NA	---	7.6E-03	T	2.0E-01	T	1.9E-06	T	7.0E-01	---	---
10595956	Nitroso-methyl-ethyl-amine, N-	B2	I	2.2E+01	I	---	---	6.3E-03	---	0.0E+00	---	---
12789036	Chlordane (technical)	B2	I	3.5E-01	I	5.0E-04	I	1.0E-04	I	7.0E-04	RfC	I
13071799	Terbufos	NA	---		---	2.5E-05	H		---	8.8E-05	---	---
13194484	Ethoprop	B2	EPA-OP	2.8E-02	EPA-OP	1.0E-04	EPA-OP	8.0E-06	---	3.5E-04	---	---
14797558	Nitrate	NA	---		---	1.6E+00	I		---	5.6E+00	---	---
14797650	Nitrite	NA	---		---	1.0E-01	I		---	3.5E-01	---	---
14797730	Perchlorate	NA	---		---	7.0E-04	I		---	2.5E-03	---	---
14808798	Sulfate*	---	---		---	---	---		---	0.0E+00	---	---
15299997	Napropamide	NA	---		---	1.0E-01	I		---	3.5E-01	---	---
15950660	Trichlorophenol, 2,3,4-	NA	---		---	1.0E-01	T		---	4.4E-02	RS-ESL	---
15972608	Alachlor	B2	H	8.0E-02	H	1.0E-02	I	2.3E-05	---	3.5E-02	---	---
16752775	Methomyl	NA	---		---	2.5E-02	I		---	2.5E-03	RS-ESL	---
16887006	Chloride*	---	---		---	---	---		---	0.0E+00	---	---
17804352	Benomyl	NA	I		---	5.0E-02	I		---	1.8E-01	---	---
18496258	Sulfide*	---	---		---	---	---		---	0.0E+00	---	---
18540299	Chromium (VI)	A	I		---	3.0E-03	I	1.2E-02	I	1.0E-04	RfC	I
19406510	Amino-2,6-dinitrotoluene, 4-	NA	---	1.0E-02	T	1.7E-04	T	2.9E-06	---	1.0E-04	RS-ESL	---
21087649	Metribuzin	D	I		---	2.5E-02	I		---	8.8E-02	---	---
21725462	Cyanazine	C	H	8.4E-01	H	2.0E-03	H	2.4E-04	---	7.0E-03	---	---
22248799	Tetrachlorvinphos (Stirophos)	NA	---		---	4.2E-02	EPA-OP		---	1.0E-02	RS-ESL	---
22967926	Methyl mercury	C	I		---	1.0E-04	I		---	1.0E-05	RS-ESL	---
23135220	Oxamyl	NA	---		---	2.5E-02	I		---	8.8E-02	---	---
23564058	Thiophanate-methyl	NA	---		---	8.0E-02	I		---	2.8E-01	---	---
23950585	Pronamide	NA	---		---	7.5E-02	I		---	2.6E-01	---	---
25339177	Isodecanol	NA	---		---	1.6E-03	T		---	5.6E-03	---	---
26471625	Toluene diisocyanate, 2,4/2,6-	NA	---		---	---	---		---	7.0E-05	RfC	I
27304138	Oxychlordane	B2	T	3.5E-01	T	5.0E-04	T	1.0E-04	T	7.0E-04	RfC	T
33213659	Endosulfan II	NA	---		---	6.0E-03	T		---	2.1E-02	---	---
34014181	Tebuthiuron	NA	---		---	7.0E-02	I		---	2.5E-01	---	---
34643464	Prothiofos (Tokuthion)	NA	---		---	1.0E-04	T		---	3.0E-03	RS-ESL	T
35400432	Sulprofos (Bolstar)	NA	---		---	3.0E-03	EPA-OP		---	1.0E-03	RS-ESL	T
35572782	Amino-4,6-dinitrotoluene, 2-	NA	---	1.0E-02	T	1.7E-04	T	2.9E-06	---	1.0E-04	RS-ESL	---

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37764253	Dichlormid	NA	---		---	2.5E-02	T		---	8.8E-02	---	---
39196184	Thiofanox	NA	---		---	3.0E-04	H		---	8.0E-04	RS-ESL	---
39765805	Nonachlor, trans-	B2	T	3.5E-01	T	5.0E-04	T	1.0E-04	T	7.0E-04	RfC	T
40487421	Pendimethalin	NA	---		---	4.0E-02	I		---	1.4E-01	---	---
43121433	Bayleton	NA	---		---	3.0E-02	I		---	1.1E-01	---	---
51218452	Metolachlor	C	I		---	1.5E-01	I		---	5.3E-01	---	---
51235042	Hexazinone	NA	---		---	3.3E-02	I		---	5.0E-03	RS-ESL	---
53494705	Endrin ketone	D	T		---	3.0E-04	T		---	1.0E-04	RfC	T
55219653	Triademenol	NA	---		---	3.0E-02	T		---	1.1E-01	---	---
55283686	Ethalfluralin (sonolan)	NA	---	8.9E-02	EPA-97	4.0E-02	EPA-97	2.5E-05	---	1.4E-01	---	---
55285148	Carbosulfan	NA	---		---	1.0E-02	I		---	3.5E-02	---	---
57966957	Cymoxanil	NA	---		---	1.3E-02	EPA-OP		---	4.6E-02	---	---
61213250	Fluorochloridone	NA	---		---	7.5E-03	T		---	1.0E-02	RS-ESL	---
62476599	Acifluorfen, sodium	NA	---		---	1.3E-02	I		---	1.0E-02	RS-ESL	---
66230044	Esfenvalerate	NA	---		---	2.0E-03	T		---	7.0E-03	---	---
67774327	Polybrominated biphenyls (PBBs)	B2	H	8.9E+00	H	7.0E-06	H	2.5E-03	---	2.5E-05	---	---
68333799	Ammonium polyphosphate*	NA	---		---	---	---		---	0.0E+00	---	---
68955533	Primene	NA	---		---	6.0E-03	T		---	6.0E-03	RfC	T
69418264	Copolymer acrylamide	NA	---		---	2.0E-04	T		---	3.0E-05	RS-ESL	---
87674688	Dimethenamid	NA	---		---	1.5E-02	T		---	5.3E-02	---	---
107534963	Tebuconazole	C	EPA-OP		---	3.0E-02	EPA-OP		---	1.1E-01	---	---
16065831/ 7440473	Chromium (III) (total chromium)	NA	---		---	1.5E+00	I		---	1.0E-04	RS-ESL	---
25154523/ 84852153/ 104405	Nonylphenol	NA	---		---	1.0E-01	T		---	4.0E-02	RS-ESL	---
27193868/ 104438	Dodecylphenol, 4-	NA	---		---	5.0E-02	T		---	1.2E-01	RS-ESL	---
7085190/ 93652	MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)	NA	---		---	1.0E-03	I		---	3.5E-03	---	---
7439976/ 7487947	Mercury (pH = 4.9)	D	I		---	3.0E-04	I (for $HgCl_2$)		---	3.0E-04	RfC	I
928723/ 142734	Disodium iminodiacetate (iminodiacetic acid, disodium salt)	NA	---		---	1.0E-02	T		---	3.5E-02	---	---
NA	Ammonium salts*	---	---		---	---	---		---	0.0E+00	---	---
NA	6 C aliphatics (TPH)	NA	---		---	6.0E-02	T		---	2.0E-01/1.8E+01[c]	RfC	T
NA	>6-8 C aliphatics (TPH)	NA	---		---	6.0E-02	T		---	2.0E-01/1.8E+01[c]	RfC	T
NA	>8-10 C aliphatics (TPH)	NA	---		---	1.0E-01	TPH wg		---	1.0E+00	RfC	TPH wg
NA	>10-12 C aliphatics (TPH)	NA	---		---	1.0E-01	TPH wg		---	1.0E+00	RfC	TPH wg
NA	>12-16 C aliphatics (TPH)	NA	---		---	1.0E-01	TPH wg		---	1.0E+00	RfC	TPH wg
NA	>16-21 C aliphatics (TPH)	NA	---		---	2.0E+00	TPH wg		---	7.0E+00	---	---

Table 10
Texas Risk Reduction Program Toxicity Factor Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Abbreviations:
SFo = Oral Slope Factor
RfDo - Oral Reference Dose
URF - Inhalation Unit Risk Factor
RfC - Inhalation Reference Concentration
RS-ESL - Chronic Remediation-Specific Effects Screening Level

Toxicity Factors[a]												
CAS #	Chemical of Concern	Class	Ref[b]	SFo $(mg/kg\text{-}day)^{-1}$	Ref[b]	RfDo (mg/kg-day)	Ref[b]	URF $(\mu g/m^3)^{-1}$	Ref[b]	RfC (mg/m^3)	Ref[b]	
NA	>16-21 C, >21-35 C aliphatics (TPH) (for transformer mineral oil releases only)	NA	---		---	1.6E+00	T		---	5.6E+00	---	---
NA	>7-8 C aromatics (TPH)	NA	---		---	1.0E-01	T		---	1.0E+00	RfC	T
NA	>8-10 C aromatics (TPH)	NA	---		---	4.0E-02	TPH wg		---	2.0E-01	RfC	T
NA	>10-12 C aromatics (TPH)	NA	---		---	4.0E-02	TPH wg		---	2.0E-01	RfC	T
NA	>12-16 C aromatics (TPH)	NA	---		---	4.0E-02	TPH wg		---	2.0E-01	RfC	T
NA	>16-21 C aromatics (TPH)	NA	---		---	3.0E-02	T		---	1.1E-01	---	---
NA	>21-35 C aromatics (TPH)	NA	---		---	3.0E-02	T		---	1.1E-01	---	---

Footnotes

a - The general hierarchy of the sources for the toxicity factors is: EPA Integrated Risk Information System (IRIS); EPA National Center for Environmental Assessment (NCEA); EPA Health Effects Assessment Summary Tables (HEAST); TCEQ Chronic Remediation-Specific Effects Screening Levels (RS-ESLs); Agency for Toxic Substances Disease Registry Minimal Risk Levels (ATSDR MRLs); other scientifically valid sources as approved by the executive director.

b - Reference (Ref): A = ATSDR MRL, 2005; CU = Cornell University Pesticide Management Education Program; EPA-OP = EPA Office of Pesticide Programs; H = HEAST, July, 1997; I = IRIS, as of March 21, 2005; N = NCEA; OEHHA = Cal/EPA Office of Environmental Health Hazard Assessment; T = derived by TCEQ.

EPA, 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, Office of Research and Development, EPA/600/R-93/089, July.

EPA, 1997. *Ethalfluralin; Pesticide Tolerances for Emergency Exemptions*, Final Rule, Federal Register Vol. 62, Number 242, December 17.

EPA, 1999. *Human Health Risk Assessment, Azinphos-Methyl*, Office of Pesticide Programs, May 19.

NTP, 2000. *NTP Technical Report on the Hepatotoxicity Studies of the Liver Carcinogen Methapyrilene Hydrochloride*, NTP Toxicity Report Series Number 46, July, 2000.

TPH wg = TPH Criteria Working Group. Compounds used as surrogates for toxicity factors for the various TPH fractions are listed in Figure: 30 TAC §350.76(g)(2) of the TRRP rule.

footnote c - The first value represents the toxicity value to be used for evaluating all residential and commercial/industrial soil pathways for cadmium; the second value represents the toxicity value to be used for evaluating the groundwater dermal pathway (if applicable) for cadmium; as an MCL is available, a risk-based calculation for the groundwater ingestion and groundwater protection pathways is not appropriate.

d - The first value represents the toxicity value to be used for evaluating all residential and commercial/industrial soil pathways and all commercial/industrial groundwater pathways for manganese; the second value represents the toxicity value to be used for evaluating all residential groundwater pathways for manganese.

e - The first value represents the toxicity value to be used for evaluating mixtures with greater than 53% n-hexane content; the second value represents the toxicity value to be used for evaluating mixtures with less than 53% n-hexane content.

f - Much higher PCLs may be obtained using a pH-dependent Kd based on site-specific information (see Figure:30 TAC §350.73(e)(1)(C)).

*These compounds are not necessarily of concern from a human health standpoint, therefore calculation of human health-based values is not required. However, aesthetics and ecological criteria would still apply. See table entitled "Compounds for which

Table 11
Texas Risk Reduction Program Physical-Chemical Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical and Physical Factors

CAS #	Chemical of Concern	Brabg.inorg ((µg/g DW)/ (µg/g soil))	Brbg.inorg ((µg/g DW)/ ((µg/g soil))	Physical State	Type	MW (g/mole)	H_unitless (unitless)	H atm-m^3/mol	LogKoc (unitless)	Koc	LogKd (unitless)	Dair (cm^2/s)	Dwat (cm^2/s)	Solubility (mg/l)	Vapor_P (mm Hg)	logKow (unitless)
50000	Formaldehyde	—	—	g	O	3.00E+01	1.37E-05	3.35E-07	3.40E-01	2.19E+00	—	1.80E-01	2.00E-05	5.50E+05	3.88E+03	3.50E-01
50293	DDT	—	—	s	O	3.54E+02	2.23E-03	5.44E-05	5.14E+00	1.37E+05	—	1.37E-02	4.95E-06	3.10E-03	3.93E-07	6.79E+00
50328	Benzo-a-pyrene	—	—	s	O	2.52E+02	4.70E-05	1.15E-06	5.98E+00	9.55E+05	—	4.30E-02	9.00E-06	1.62E-03	4.89E-09	6.11E+00
51285	Dinitrophenol, 2,4-	—	—	s	OA	1.84E+02	2.01E-07	4.91E-09	-2.00E+00	1.00E-02	—	2.73E-02	9.06E-06	5.80E+03	1.14E-04	1.73E+00
52857	Famphur	—	—	s	O	3.25E+02	6.70E-11	1.64E-12	1.14E+00	1.39E+01	—	4.02E-02	5.31E-06	7.06E+03	2.66E-08	1.29E+00
53703	Dibenz-a,h-anthracene	—	—	s	O	2.78E+02	4.66E-07	1.14E-08	6.28E+00	1.91E+06	—	2.00E-02	5.18E-06	5.00E-04	2.10E-11	6.70E+00
53963	Acetylaminofluorene, 2-	—	—	s	O	2.23E+02	7.00E-10	1.71E-11	2.63E+00	4.23E+02	—	4.25E-02	6.08E-06	1.66E+00	9.52E-11	2.80E+00
55185	Nitrosodiethylamine, N-	—	—	l	O	1.02E+02	3.60E-05	8.77E-07	4.77E-01	3.00E+00	—	8.00E-02	8.00E-06	1.47E+05	1.42E+00	3.44E-01
55389	Fenthion	—	—	l	O	2.78E+02	2.13E-05	5.20E-07	3.04E+00	1.10E+03	—	4.35E-02	5.42E-06	2.17E+01	1.38E-04	3.06E+00
55630	Nitroglycerin	—	—	l	O	2.27E+02	3.40E-06	8.29E-08	1.97E+00	9.25E+01	—	5.53E-02	7.34E-06	6.70E+04	1.00E-04	2.00E+00
56235	Carbon tetrachloride	—	—	l	O	1.54E+02	1.20E+00	2.92E-02	2.27E+00	1.86E+02	—	7.80E-02	8.80E-06	8.05E+02	1.12E+02	2.44E+00
56359	Tributyltin oxide	—	—	l	O	5.96E+02	2.08E-03	5.08E-05	—		—	—	—	1.80E+01	6.91E-05	5.80E+00
56382	Parathion (ethyl parathion)	—	—	s	O	2.91E+02	2.37E-05	5.78E-07	3.75E+00	5.60E+03	—	1.70E-02	5.80E-06	1.18E+01	1.73E-05	3.73E+00
56495	Methylcholanthrene, 3-	—	—	s	O	2.68E+02	7.72E-07	1.88E-08	6.96E+00	9.17E+06	—	3.83E-02	5.40E-06	1.76E-04	6.64E-12	7.08E+00
56531	Diethylstilbestrol	—	—	s	O	2.68E+02	2.62E-13	6.39E-15	4.88E+00	7.50E+04	—	4.43E-02	8.00E-06	1.30E+04	1.06E-09	5.64E+00
56553	Benz-a-anthracene	—	—	s	O	2.28E+02	1.39E-04	3.40E-06	5.55E+00	3.55E+05	—	5.10E-02	9.00E-06	1.00E-02	1.54E-07	5.52E+00
56575	Nitroquinoline-N-oxide, 4-	—	—	s	O	1.90E+02	8.23E-13	2.01E-14	1.07E+00	1.18E+01	—	6.78E-02	7.44E-06	1.17E+07	9.23E-07	1.09E+00
56724	Coumaphos	—	—	s	O	3.63E+02	2.17E-07	5.30E-09	4.20E+00	1.60E+04	—	3.53E-02	4.81E-06	3.86E-01	4.22E-09	4.26E+00
57125	Cyanide	—	—	—	I	2.60E+01			—		9.96E-01	5.21E-01	2.28E-05	1.00E+05	1.38E+01	-6.93E-01
57249	Strychnine	—	—	s	O	3.34E+02	6.65E-12	1.62E-13	1.90E+00	7.90E+01	—	8.00E-02	8.00E-06	1.43E+02	1.67E-10	1.85E+00
57556	Propylene glycol	—	—	—	O	7.61E+01	2.06E-07	5.02E-09	-5.67E-01	2.71E-01	—	1.06E-01	1.23E-05	1.00E+05	2.05E-02	-9.21E-01
57749	Chlordane, gamma	—	—	s	O	4.10E+02	4.11E-03	1.00E-04	5.59E+00	3.93E+05	—	3.32E-02	4.65E-06	2.28E-02	4.17E-06	6.97E+00
57976	Dimethylbenz-a-anthracene, 7,12-	—	—	s	O	2.56E+02	6.49E-06	1.58E-07	6.93E+00	8.54E+06	—	3.90E-02	5.39E-06	1.27E-03	4.03E-10	7.14E+00
58899	Hexachlorocyclohexane, gamma (lindane; gamma-BHC)	—	—	s	O	2.91E+02	1.41E-04	3.44E-06	3.04E+00	1.10E+03	—	1.42E-02	7.34E-06	5.75E+00	3.72E-05	4.26E+00
58902	Tetrachlorophenol, 2,3,4,6-	—	—	s	OA	2.32E+02	2.54E-04	6.18E-06	2.02E+00	1.05E+02	—	2.17E-02	7.10E-06	1.00E+02	5.02E-03	4.09E+00
59507	Chloro-3-methylphenol, 4-	—	—	s	O	1.43E+02	1.40E-05	3.42E-07	2.94E+00	8.78E+02	—	6.46E-02	8.01E-06	5.43E+03	9.75E-03	2.99E+00
59892	Nitrosomorpholine, N-	—	—	s	O	1.16E+02	3.99E-08	9.74E-10	-1.37E+00	4.31E-02	—	7.41E-02	9.22E-06	4.71E+06	2.96E-02	-1.39E+00
60117	Dimethylaminoazobenzene, p-	—	—	s	OB	2.25E+02	3.25E-05	7.94E-07	5.06E+00	1.15E+05	—	4.25E-02	5.57E-06	4.04E-01	1.07E-06	5.00E+00
60297	Ethyl ether	—	—	l	O	7.41E+01	2.70E-02	6.59E-04	8.80E-01	7.59E+00	—	7.40E-02	9.30E-06	6.10E+04	5.40E+02	1.05E+00
60515	Dimethoate	—	—	s	O	2.29E+02	2.58E-09	6.29E-11	6.30E-01	4.27E+00	—	8.00E-02	8.00E-06	2.50E+04	5.09E-06	2.78E-01
60571	Dieldrin	—	—	s	O	3.81E+02	1.11E-04	2.71E-06	4.33E+00	2.14E+04	—	1.25E-02	4.74E-06	1.95E-01	9.96E-07	5.45E+00
62384	Phenyl mercuric acetate	—	—	s	O	3.37E+02	3.41E-09	8.31E-11	2.20E+00	1.60E+02	—	8.00E-02	8.00E-06	4.37E+03	3.04E-06	8.90E-01
62442	Phenacetin	—	—	s	O	1.79E+02	8.80E-09	2.15E-10	1.43E+00	2.66E+01	—	5.04E-02	6.65E-06	3.60E+02	3.30E-07	1.45E+00
62500	Ethyl methanesulfonate	—	—	l	O	1.24E+02	2.49E-06	6.06E-08	-6.04E-01	2.49E-01	—	6.94E-02	8.72E-06	6.95E+04	2.54E-02	-6.14E-01
62533	Aniline	—	—	l	O	9.31E+01	5.82E-05	1.42E-06	9.60E-01	9.12E+00	—	7.00E-02	8.30E-06	3.60E+04	6.69E-01	1.08E+00
62737	Dichlorvos	—	—	l	O	2.21E+02	3.98E-05	9.71E-07	9.59E+00	3.89E+09	—	2.32E-02	7.80E-06	1.60E+04	5.27E-02	1.40E+00
62759	Nitrosodimethylamine, N-	—	—	l	O	7.41E+01	2.16E-05	5.27E-07	5.56E-01	3.60E+00	—	1.34E-01	9.72E-06	1.00E+06	5.37E+00	-6.39E-01
63252	Carbaryl	—	—	s	O	2.01E+02	5.32E-07	1.30E-08	2.37E+00	2.34E+02	—	2.78E-02	5.60E-06	3.00E+01	1.36E-06	2.35E+00
64175	Ethanol	—	—	l	O	4.61E+01	2.77E-04	6.77E-06	7.68E-02	1.19E+00	—	1.15E-01	1.22E-05	2.96E+05	3.26E+01	-2.00E-03
64186	Formic acid	—	—	l	O	4.60E+01	1.79E-04	4.36E-06	-5.40E-01	2.88E-01	—	7.90E-02	1.40E-06	1.00E+06	4.10E+01	-4.61E-01
64197	Acetic acid*	—	—	—	—	—	—		—		—	—	—	—	—	—
65850	Benzoic acid	—	—	s	OA	1.22E+02	1.39E-05	3.39E-07	-3.01E-01	5.00E-01	—	5.36E-02	7.97E-06	3.50E+03	6.51E-03	1.87E+00
66273	Methyl methanesulfonate	—	—	l	O	1.10E+02	3.25E-06	7.93E-08	-7.54E-01	1.76E-01	—	7.52E-02	9.50E-06	4.95E+04	2.67E-02	-7.67E-01
67561	Methanol	—	—	l	O	3.20E+01	1.94E-04	4.72E-06	-7.40E-01	1.82E-01	—	1.50E-01	1.64E-05	1.00E+06	1.22E+02	-6.32E-01
67630	Isopropyl alcohol	—	—	l	O	6.01E+01	3.70E-04	9.02E-06	5.30E-01	3.39E+00	—	9.59E-02	1.03E-05	1.97E+05	2.22E+01	5.00E-01
67641	Acetone (2-propanone)	—	—	l	O	5.81E+01	1.61E-03	3.93E-05	-2.44E-01	5.70E-01	—	1.24E-01	1.14E-05	6.00E+05	2.27E+02	-2.35E-01
67663	Chloroform	—	—	l	O	1.19E+02	1.53E-01	3.72E-03	1.67E+00	4.68E+01	—	1.04E-01	1.00E-05	7.92E+03	1.98E+02	1.52E+00
67721	Hexachloroethane	—	—	s	O	2.37E+02	1.62E-01	3.94E-03	3.26E+00	1.82E+03	—	2.50E-03	6.80E-06	5.00E+01	4.72E-01	4.03E+00
70304	Hexachlorophene	—	—	s	O	4.07E+02	2.54E-09	6.18E-11	7.30E+00	2.00E+07	—	8.00E-02	8.00E-06	3.00E-03	2.74E-12	6.92E+00
71238	Propanol, 1-	—	—	l	O	6.01E+01	4.66E-04	1.14E-05	5.70E-01	3.72E+00	—	9.75E-02	1.05E-05	1.21E+05	1.71E+01	6.21E-01
71363	Butanol, n-	—	—	l	O	7.41E+01	3.55E-04	8.66E-06	7.70E-01	5.89E+00	—	8.00E-02	9.30E-06	7.47E+04	6.54E+00	8.41E-01
71410	Pentanol, 1-	0.00E+00	0.00E+00	l	O	8.81E+01	6.10E-04	1.49E-05	1.35E+00	2.26E+01	0.00E+00	7.44E-02	7.77E-06	1.50E+04	1.90E+00	1.61E+00
71432	Benzene	—	—	l	O	7.81E+01	2.27E-01	5.55E-03	1.82E+00	6.61E+01	—	8.80E-02	9.80E-06	1.77E+03	9.50E+01	1.99E+00
71556	Trichloroethane, 1,1,1-	—	—	l	O	1.33E+02	7.15E-01	1.74E-02	2.04E+00	1.10E+02	—	7.80E-02	8.80E-06	1.33E+03	1.24E+02	2.68E+00
72208	Endrin	—	—	s	O	3.81E+02	4.95E-05	1.21E-06	3.97E+00	9.33E+03	—	1.25E-02	4.74E-06	2.50E-01	5.84E-07	5.45E+00
72435	Methoxychlor	—	—	s	O	3.46E+02	6.57E-04	1.60E-05	4.89E+00	7.76E+04	—	1.56E-02	4.46E-06	4.50E-02	1.23E-06	5.67E+00
72548	DDD	—	—	s	O	3.20E+02	1.66E-04	4.06E-06	4.93E+00	8.51E+04	—	1.69E-02	4.76E-06	9.00E-02	8.66E-07	5.87E+00
72559	DDE	—	—	s	O	2.42E+02	8.73E-04	2.13E-05	5.04E+00	1.10E+05	—	1.44E-02	5.87E-06	6.50E-02	5.66E-06	6.00E+00
74839	Bromomethane (methyl bromide)	—	—	g	O	9.49E+01	5.90E-01	1.44E-02	1.02E+00	1.05E+01	—	7.28E-02	1.21E-05	1.52E+04	1.64E+03	1.18E+00
74851	Ethylene*	—	—	—	—	—	—		—		—	—	—	—	—	—
74873	Chloromethane (methyl chloride)	—	—	g	O	5.05E+01	1.44E+00	3.51E-02	7.78E-01	6.00E+00	—	1.26E-01	6.50E-06	7.25E+03	3.77E+03	1.09E+00
74884	Methyl iodide (iodomethane)	—	—	l	O	1.42E+02	2.36E-01	5.76E-03	1.31E+00	2.02E+01	—	1.02E-01	1.17E-05	1.24E+04	3.79E+02	1.55E+00
74953	Methylene bromide (dibromomethane)	—	—	l	O	1.74E+02	3.49E-02	8.51E-04	2.26E+00	1.82E+02	—	8.00E-02	8.00E-06	1.10E+04	4.56E+01	1.52E+00
74975	Chlorobromomethane (bromochloromethane)	—	—	l	O	1.29E+02	3.69E-02	9.00E-04	1.44E+00	2.75E+01	—	9.65E-02	1.12E-05	2.04E+04	1.06E+02	1.32E+00

Table 11
Texas Risk Reduction Program Physical-Chemical Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical and Physical Factors

CAS #	Chemical of Concern	Brabg.inorg ((µg/g DW)/ (µg/g soil))	Brbg.inorg ((µg/g DW)/ ((µg/g soil))	Physical State	Type	MW (g/mole)	H_unitless (unitless)	H atm-m^3/mol	LogKoc (unitless)	Koc	LogKd (unitless)	Dair (cm^2/s)	Dwat (cm^2/s)	Solubility (mg/l)	Vapor_P (mm Hg)	logKow (unitless)
75003	Chloroethane (ethyl chloride)	—	—	l	O	6.45E+01	2.12E-01	5.17E-03	1.25E+00	1.78E+01	—	1.50E-01	1.18E-05	2.00E+04	1.20E+03	1.58E+00
75014	Vinyl chloride	—	—	g	O	6.25E+01	3.49E+00	8.52E-02	1.04E+00	1.10E+01	—	1.06E-01	1.23E-05	2.76E+03	2.80E+03	1.62E+00
75058	Acetonitrile	—	—	l	O	4.11E+01	1.21E-03	2.94E-05	-3.30E-01	4.68E-01	—	1.28E-01	1.45E-05	2.05E+05	9.00E+01	-3.40E-01
75070	Acetaldehyde	—	—	g	O	4.41E+01	2.75E-03	6.70E-05	4.19E-01	2.62E+00	—	1.24E-01	1.23E-05	1.00E+06	9.00E+02	4.30E-01
75092	Methylene chloride (dichloromethane)	—	—	l	O	8.49E+01	9.10E-02	2.22E-03	1.07E+00	1.17E+01	—	1.01E-01	1.17E-05	1.54E+04	4.55E+02	1.34E+00
75150	Carbon disulfide	—	—	l	O	7.61E+01	6.13E-01	1.50E-02	1.72E+00	5.25E+01	—	1.04E-01	1.00E-05	2.30E+03	3.40E+02	1.94E+00
75218	Ethylene oxide	—	—	g	O	4.41E+01	4.92E-03	1.20E-04	3.42E-01	2.20E+00	—	1.04E-01	1.45E-05	3.83E+05	1.32E+03	-4.54E-02
75252	Bromoform	—	—	l	O	2.53E+02	2.56E-02	6.24E-04	1.94E+00	8.71E+01	—	1.49E-02	1.03E-05	3.20E+03	5.60E+00	1.79E+00
75274	Bromodichloromethane	—	—	l	O	1.64E+02	1.32E-01	3.21E-03	1.74E+00	5.50E+01	—	2.98E-02	1.06E-05	4.50E+03	5.84E+01	1.61E+00
75296	Chloropropane, 2-	—	—	l	O	7.85E+01	1.11E+00	2.72E-02	1.83E+00	6.73E+01	—	9.12E-02	9.30E-06	1.56E+03	4.04E+02	2.21E+00
75343	Dichloroethane, 1,1-	—	—	l	O	9.90E+01	2.39E-01	5.84E-03	1.50E+00	3.16E+01	—	7.42E-02	1.05E-05	5.50E+03	2.28E+02	1.76E+00
75354	Dichloroethylene, 1,1-	—	—	l	O	9.69E+01	1.06E+00	2.58E-02	1.81E+00	6.46E+01	—	9.00E-02	1.04E-05	2.40E+03	5.91E+02	2.12E+00
75434	Dichlorofluoromethane	—	—	g	O	1.03E+02	1.98E-01	4.82E-03	1.08E+00	1.20E+01	0.00E+00	1.00E-01	9.81E-06	1.99E+04	7.43E+02	1.26E+00
75456	Chlorodifluoromethane	—	—	g	O	8.65E+01	1.22E+00	2.98E-02	7.87E-01	6.12E+00	—	1.13E-01	1.32E-05	2.90E+03	7.83E+03	8.94E-01
75503	Trimethylamine	—	—	g	OB	5.91E+01	4.14E-03	1.01E-04	1.24E+00	1.74E+01	—	9.58E-02	9.13E-06	5.50E+05	9.36E+01	2.47E-01
75569	Propylene oxide	—	—	l	O	5.81E+01	3.47E-03	8.46E-05	1.02E-01	1.27E+00	—	1.04E-01	1.16E-05	4.76E+05	5.32E+02	3.00E-02
75605	Cacodylic acid	—	—	s	O	1.38E+02			3.80E-01	2.40E+00	—	—	—	2.00E+06	0.00E+00	0.00E+00
75650	Tert-butyl alcohol (2-methyl-2-propanol)	—	—	s	O	7.41E+01	5.42E-04	1.32E-05	6.25E-01	4.21E+00	—	8.52E-02	9.11E-06	2.35E+05	3.14E+01	6.90E-01
75694	Trichlorofluoromethane	—	—	l	O	1.37E+02	4.03E+00	9.83E-02	2.13E+00	1.35E+02	—	8.70E-02	9.70E-06	1.10E+03	6.87E+02	2.13E+00
75718	Dichlorodifluoromethane	—	—	l	O	1.21E+02	1.67E+01	4.07E-01	2.11E+00	1.29E+02	—	5.20E-02	1.05E-05	2.80E+02	4.80E+03	1.82E+00
75854	Butanol, 2-methyl-2-	—	—	L	O	8.81E+01	1.64E-03	3.99E-05	1.09E+00	1.23E+01	0.00E+00	7.65E-02	7.72E-06	3.59E+04	1.22E+01	1.28E+00
75865	Acetone cyanohydrin	—	—	l	O	8.51E+01	1.34E-04	3.27E-06	-2.16E-01	6.09E-01	—	8.12E-02	9.09E-06	1.83E+06	8.00E-01	-3.45E-02
75876	Chloral	—	—	l	O	1.47E+02	2.66E-05	6.49E-07	8.02E-01	6.35E+00	—	3.85E-02	9.70E-06	8.30E+06	3.50E+01	1.19E+00
75990	Dalapon, sodium salt (2,2-dichloropropanoic acid)	—	—	s	O	1.43E+02	1.46E-05	3.55E-07	1.40E+00	2.51E+01	—	6.98E-02	8.70E-06	6.98E+04	1.30E-01	1.60E+00
76017	Pentachloroethane	—	—	l	O	2.02E+02	2.15E-02	5.24E-04	2.28E+00	1.90E+02	—	6.37E-02	7.88E-06	6.19E+02	1.20E+00	2.78E+00
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2-	—	—	l	O	1.87E+02	2.20E+01	5.37E-01	3.11E+00	1.29E+03	—	7.80E-02	8.20E-06	2.00E+02	3.60E+02	3.09E+00
76448	Heptachlor	—	—	s	O	3.73E+02	2.44E-02	5.95E-04	4.07E+00	1.17E+04	—	1.12E-02	5.69E-06	1.80E-01	3.26E-04	6.21E+00
77474	Hexachlorocyclopentadiene (HCCPD)	—	—	l	O	2.74E+02	7.15E-01	1.74E-02	3.98E+00	9.55E+03	—	1.61E-02	7.21E-06	1.80E+00	7.32E-02	4.63E+00
77736	Dicyclopentadiene	—	—	—	O	1.32E+02	—		2.96E+00	9.12E+02	—	7.32E-02	8.48E-06	insoluble	1.40E+00	3.60E+00
78002	Tetraethyl lead	—	—	l	O	3.23E+02	3.31E+00	8.08E-02	3.69E+00	4.90E+03	—	1.32E-02	6.40E-06	8.00E-01	1.50E-01	4.88E+00
78115	Pentaerythritol tetranitrate (PETN)	—	—	s	O	3.16E+02	5.60E-05	1.37E-06	3.80E+00	6.29E+03	—	4.48E-02	6.20E-06	2.66E+01	8.63E-05	3.86E+00
78591	Isophorone	—	—	l	O	1.38E+02	2.57E-04	6.28E-06	1.48E+00	3.02E+01	—	6.23E-02	6.76E-06	1.20E+04	4.10E-01	2.62E+00
78795	Butadiene, 2-methyl-1,3- (isoprene)	0.00E+00	0.00E+00	l	O	6.81E+01	1.20E+00	2.92E-02	1.82E+00	6.59E+01	———	8.78E-02	8.10E-06	1.11E+03	3.58E+02	2.20E+00
78831	Isobutyl alcohol	—	—	l	O	7.41E+01	4.99E-04	1.22E-05	7.50E-01	5.62E+00	—	8.60E-02	8.00E-06	9.49E+04	1.00E+01	7.68E-01
78842	Methyl-1-propanal, 2- (isobutyraldehyde)	—	—	l	O	7.21E+01	7.48E-03	1.83E-04	7.04E-01	5.06E+00	—	8.90E-02	9.36E-06	4.59E+04	8.89E+01	7.90E-01
78875	Dichloropropane, 1,2-	—	—	l	O	1.13E+02	1.17E-01	2.85E-03	1.77E+00	5.89E+01	—	7.82E-02	8.73E-06	2.80E+03	5.00E+01	2.25E+00
78922	Butanol, 2-	—	—	L	O	7.41E+01	5.29E-04	1.29E-05	7.35E-01	5.43E+00	0.00E+00	8.47E-02	8.60E-06	9.91E+04	1.29E+01	8.29E-01
78933	Methyl ethyl ketone (2-butanone)	—	—	l	O	7.21E+01	1.94E-03	4.72E-05	2.79E-01	1.90E+00	—	8.08E-02	9.80E-06	2.40E+05	9.10E+01	2.56E-01
79005	Trichloroethane, 1,1,2-	—	—	l	O	1.33E+02	3.80E-02	9.26E-04	1.70E+00	5.01E+01	—	7.92E-02	8.80E-06	4.42E+03	2.52E+01	2.01E+00
79016	Trichloroethylene	—	—	l	O	1.31E+02	4.28E-01	1.04E-02	1.97E+00	9.33E+01	—	7.90E-02	9.10E-06	1.10E+03	7.20E+01	2.47E+00
79061	Acrylamide	—	—	s	O	7.11E+01	1.33E-08	3.24E-10	-6.60E-01	2.19E-01	—	9.70E-02	1.28E-05	2.20E+06	7.00E-03	-8.07E-01
79094	Propanoic acid (propionic acid)	—	—	l	OA	7.41E+01	1.54E-05	3.75E-07	-2.79E+00	1.61E-03	—	9.01E-02	1.04E-05	1.92E+05	2.90E+00	4.95E-01
79107	Acrylic acid (propenoic acid)	—	—	l	O	7.21E+01	1.32E-05	3.21E-07	5.43E-02	1.13E+00	—	9.08E-02	1.06E-05	1.00E+06	3.72E+00	4.42E-01
79209	Methyl acetate (acetic acid, methyl ester)	—	—	l	O	7.41E+01	4.46E-03	1.09E-04	2.43E-01	1.75E+00	—	9.50E-02	1.01E-05	1.44E+05	1.58E+02	2.46E-01
79298	Butane, 2,3-dimethyl-	0.00E+00	0.00E+00	l	O	8.62E+01	5.45E+01	1.33E+00	3.14E+00	1.37E+03	———	7.40E-02	6.94E-06	1.82E+01	2.11E+02	3.86E+00
79312	Isobutyric acid (2-methylpropanoic acid)	—	—	l	OA	8.81E+01	2.40E-05	5.86E-07	-2.05E+00	8.94E-03	—	7.76E-02	9.17E-06	4.96E+04	4.52E-01	1.15E+00
79345	Tetrachloroethane, 1,1,2,2-	—	—	l	O	1.68E+02	1.55E-02	3.77E-04	1.89E+00	7.76E+01	—	7.10E-02	7.90E-06	2.97E+03	5.17E+00	2.19E+00
79414	Methacrylic acid (2-methyl-2-propenoic acid)	—	—	l	O	8.61E+01	5.21E-04	1.27E-05	-2.40E+00	3.98E-03	—	8.50E-02	9.59E-06	9.59E+04	1.06E+01	1.67E+00
79469	Nitropropane, 2-	—	—	l	O	8.91E+01	5.15E-03	1.26E-04	5.44E-01	3.50E+00	—	9.23E-02	1.01E-05	1.70E+04	1.82E+01	8.72E-01
80057	Bisphenol A	—	—	—	O	2.28E+02	2.18E-10	5.31E-12	2.74E+00	5.50E+02	—	5.09E-02	5.89E-06	1.00E+03	7.25E-07	3.32E+00
80626	Methyl methacrylate	—	—	l	O	1.00E+02	1.33E-02	3.24E-04	1.36E+00	2.30E+01	—	7.70E-02	8.60E-06	1.60E+04	3.80E+01	1.28E+00
81812	Warfarin	—	—	s	O	3.08E+02	1.15E-07	2.81E-09	2.96E+00	9.12E+02	—	1.63E-02	4.40E-06	1.70E+01	1.16E-07	3.20E+00
82688	Pentachloronitrobenzene	—	—	s	O	2.95E+02	2.57E-02	6.27E-04	4.11E+00	1.30E+04	—	1.59E-02	6.10E-06	7.11E-02	1.13E-04	5.03E+00
83329	Acenaphthene	—	—	s	O	1.54E+02	6.44E-03	1.57E-04	3.60E+00	3.98E+03	—	4.21E-02	7.69E-06	4.24E+00	3.75E-03	4.15E+00
84651	Anthraquinone, 9,10-	—	—	s	O	2.08E+02	3.58E-06	8.72E-08	3.07E+00	1.17E+03	—	4.81E-02	6.26E-06	1.22E-01	3.83E-08	3.12E+00
84662	Diethyl phthalate	—	—	l	O	2.22E+02	1.87E-05	4.56E-07	2.18E+00	1.51E+02	—	2.56E-02	6.35E-06	1.08E+03	1.65E-03	2.65E+00
84742	Di-n-butyl phthalate	—	—	l	O	2.78E+02	5.94E-05	1.45E-06	4.53E+00	3.39E+04	—	4.38E-02	7.86E-06	1.12E+01	4.25E-05	4.61E+00
85007	Diquat	—	—	s	O	3.44E+02	2.69E-12	6.56E-14	2.31E+00	2.05E+02	—	5.52E-02	5.52E-06	7.00E+05	1.00E-07	-2.82E+00
85018	Phenanthrene	—	—	s	O	1.78E+02	5.40E-03	1.32E-04	4.15E+00	1.41E+04	—	3.33E-02	7.47E-06	9.94E-01	6.80E-04	4.35E+00
85449	Phthalic anhydride	—	—	s	O	1.48E+02	2.54E-07	6.18E-09	1.90E+00	7.94E+01	—	6.36E-02	7.90E-06	6.20E+03	2.00E-04	2.07E+00
85687	Butyl benzyl phthalate	—	—	l	O	3.12E+02	7.94E-05	1.94E-06	4.14E+00	1.37E+04	—	1.74E-02	4.83E-06	2.90E+00	1.20E-05	4.84E+00
86306	Nitrosodiphenylamine, N-	—	—	s	O	1.98E+02	2.08E-04	5.07E-06	2.52E+00	3.31E+02	—	3.12E-02	6.35E-06	3.51E+01	9.88E-02	3.16E+00
86500	Azinphos-methyl (guthion)	—	—	s	O	3.17E+02	8.80E-11	2.15E-12	2.40E+00	2.51E+02	—	4.11E-02	5.34E-06	9.00E-02	4.70E-09	2.50E+00
86737	Fluorene	—	—	s	O	1.66E+02	2.64E-03	6.45E-05	3.88E+00	7.59E+03	—	3.63E-02	7.88E-06	1.98E+00	3.24E-03	4.02E+00

Table 11
Texas Risk Reduction Program Physical-Chemical Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical and Physical Factors

CAS #	Chemical of Concern	Brabg.inorg ((µg/g DW)/ (µg/g soil))	Brbg.inorg ((µg/g DW)/ ((µg/g soil))	Physical State	Type	MW (g/mole)	H_unitless (unitless)	H atm-m^3/mol	LogKoc (unitless)	Koc	LogKd (unitless)	Dair (cm^2/s)	Dwat (cm^2/s)	Solubility (mg/l)	Vapor_P (mm Hg)	logKow (unitless)
86748	Carbazole	—	—	s	O	1.67E+02	3.38E-03	8.23E-05	3.39E+00	2.45E+03	—	3.90E-02	7.03E-06	7.21E-01	2.66E-04	3.23E+00
87616	Trichlorobenzene, 1,2,3-	—	—	l	O	1.81E+02	3.80E-02	9.27E-04	3.95E+00	8.91E+03	—	6.20E-02	7.71E-06	1.64E+01	6.30E-02	4.02E+00
87650	Dichlorophenol, 2,6-	—	—	s	O	1.63E+02	1.20E-05	2.93E-07	1.35E+00	2.22E+01	—	6.57E-02	8.12E-06	1.03E+02	1.50E-01	2.83E+00
87683	Hexachlorobutadiene	—	—	l	O	2.61E+02	9.94E-01	2.42E-02	3.84E+00	6.92E+03	—	5.61E-02	6.16E-06	2.55E+00	1.77E-01	4.72E+00
87865	Pentachlorophenol	—	—	s	OA	2.66E+02	1.16E-05	2.84E-07	2.61E+00	4.10E+02	—	5.60E-02	6.10E-06	1.40E+01	1.70E-05	4.74E+00
88062	Trichlorophenol, 2,4,6-	—	—	s	OA	1.97E+02	3.19E-04	7.78E-06	2.12E+00	1.31E+02	—	3.18E-02	6.25E-06	9.82E+02	1.18E-02	3.45E+00
88722	Nitrotoluene, o-	—	—	l	O	1.37E+02	1.87E-03	4.57E-05	2.15E+00	1.41E+02	—	6.47E-02	7.73E-06	6.00E+02	1.50E-01	2.36E+00
88744	Nitroaniline, 2-	—	—	s	O	1.38E+02	2.08E-05	5.07E-07	1.43E+00	2.69E+01	—	5.99E-02	7.18E-06	1.26E+03	4.75E-03	2.02E+00
88755	Nitrophenol, 2-	—	—	s	O	1.39E+02	2.21E-05	5.39E-07	1.32E+00	2.09E+01	—	6.87E-02	8.47E-06	1.73E+04	5.03E-02	2.35E+00
88857	Dinoseb	—	—	s	O	2.40E+02	2.08E-02	5.07E-04	3.08E+00	1.20E+03	—	2.25E-02	6.25E-06	5.20E+01	7.52E-02	3.67E+00
90120	Methylnaphthalene, 1-	—	—	s	O	1.42E+02	1.64E-02	4.00E-04	3.36E+00	2.29E+03	—	6.31E-02	7.13E-06	2.80E+01	6.62E-02	3.72E+00
90131	Chloronaphthalene, 1- (Chloronaphthalene, alpha-)	—	—	l	O	1.63E+02	6.33E-03	1.54E-04	3.98E+00	9.46E+03	—	5.76E-02	7.31E-06	1.69E+01	1.21E-02	4.04E+00
91203	Naphthalene	—	—	s	O	1.28E+02	2.00E-02	4.89E-04	3.19E+00	1.55E+03	—	5.90E-02	7.50E-06	3.14E+01	8.89E-02	3.17E+00
91225	Quinoline	—	—	l	O	1.29E+02	1.15E-04	2.80E-06	2.76E+00	5.70E+02	—	5.46E-02	8.31E-06	6.78E+03	9.60E-02	2.14E+00
91576	Methylnaphthalene, 2-	—	—	s	O	1.42E+02	1.85E-02	4.50E-04	3.64E+00	4.32E+03	—	6.29E-02	7.20E-06	2.54E+01	6.75E-02	3.72E+00
91587	Chloronaphthalene, 2- (chloronaphthalene, beta)	—	—	s	O	1.63E+02	2.54E-02	6.21E-04	3.93E+00	8.51E+03	—	6.18E-02	6.98E-06	6.74E+00	1.70E-02	3.81E+00
91598	Naphthylamine, 2-	—	—	s	O	1.43E+02	1.00E-06	2.44E-08	2.76E+00	5.81E+02	—	5.86E-02	7.46E-06	1.25E+02	6.76E-05	2.76E+00
91805	Methapyrilene	—	—	l	O	2.61E+02	1.18E-07	2.89E-09	1.30E+00	2.00E+01	—	4.00E-02	5.29E-06	2.03E+03	1.68E-05	3.15E+00
91941	Dichlorobenzidine, 3,3-	—	—	s	O	2.53E+02	8.65E-07	2.11E-08	2.86E+00	7.24E+02	—	1.94E-02	6.74E-06	3.11E+00	2.20E-07	3.21E+00
92524	Biphenyl, 1,1-	—	—	s	O	1.54E+02	1.25E-02	3.04E-04	3.71E+00	5.13E+03	—	5.73E-02	6.71E-06	7.50E+00	2.94E-02	3.76E+00
92671	Aminobiphenyl, 4- (1,1-biphenyl-4-amine)	—	—	s	O	1.69E+02	1.84E-06	4.48E-08	3.24E+00	1.75E+03	—	5.25E-02	6.82E-06	7.14E+01	1.42E-05	3.24E+00
92842	Phenothiazine	0.00E+00	0.00E+00	S	O	1.99E+02	1.46E-06	3.57E-08	3.87E+00	7.41E+03	0.00E+00	5.09E-02	6.32E-06	1.39E-02	1.87E-09	4.19E+00
92875	Benzidine	—	—	s	O	1.84E+02	1.62E-09	3.95E-11	1.32E+00	2.09E+01	—	3.40E-02	1.50E-05	5.20E+02	8.36E-08	1.34E+00
93721	TP Silvex, 2,4,5-	—	—	s	O	2.70E+02	5.45E-07	1.33E-08	3.41E+00	2.60E+03	—	1.94E-02	5.80E-06	1.40E+02	5.20E-06	3.68E+00
93765	Trichlorophenoxyacetic acid, 2,4,5-	—	—	s	O	2.55E+02	3.62E-07	8.82E-09	1.72E+00	5.30E+01	—	8.00E-02	8.00E-06	2.78E+02	3.61E-06	3.26E+00
94360	Benzoyl peroxide	0.00E+00	0.00E+00	S	O	2.42E+02	8.12E-06	1.98E-07	3.02E+00	1.06E+03	0.00E+00	4.49E-02	5.48E-06	8.44E+00	5.17E-06	3.08E+00
94597	Safrole	—	—	l	O	1.62E+02	3.09E-03	7.54E-05	2.97E+00	9.40E+02	—	5.60E-02	7.01E-06	1.37E+02	4.77E-02	3.02E+00
94746	MCPA (4-(chloro-2-methylphenoxy) acetic acid)	—	—	s	O	2.01E+02	1.18E-07	2.88E-09	-1.50E+00	3.16E-02	—	5.12E-02	6.82E-06	6.50E+02	6.99E-06	3.39E+00
94757	Dichlorophenoxyacetic acid, 2,4- (2,4-D)	—	—	s	O	2.21E+02	5.82E-09	1.42E-10	2.95E+00	8.91E+02	—	5.90E-02	6.50E-06	8.90E+02	2.40E-05	2.62E+00
94826	Dichlorophenoxy, 2,4- butyric acid, 4- (2,4-DB)	—	—	s	O	2.49E+02	3.19E-08	7.79E-10	2.74E-01	1.88E+00	—	4.41E-02	6.13E-06	7.76E+01	1.82E-07	3.79E+00
95136	Indene	—	—	l	O	1.16E+02	2.08E-02	5.07E-04	2.50E+00	3.16E+02	—	6.82E-02	7.97E-06	3.90E+02	1.30E+00	2.80E+00
95476	Xylene, o-	—	—	l	O	1.06E+02	7.36E-04	1.79E-05	2.11E+00	1.29E+02	—	8.70E-02	1.00E-05	1.78E+02	6.75E+00	3.13E+00
95487	Cresol, o- (2-methylphenol)	—	—	s	O	1.08E+02	6.65E-05	1.62E-06	1.99E+00	9.77E+01	—	7.40E-02	8.30E-06	2.04E+04	3.20E-01	2.06E+00
95498	Chlorotoluene, o- (2-chlorotoluene)	—	—	l	O	1.27E+02	1.35E-01	3.29E-03	2.61E+00	4.07E+02	—	7.01E-02	8.01E-06	1.54E+02	3.90E-03	3.20E+00
95501	Dichlorobenzene, 1,2-	—	—	l	O	1.47E+02	8.73E-02	2.13E-03	2.84E+00	6.92E+02	—	6.90E-02	7.90E-06	1.50E+02	1.36E+00	3.28E+00
95534	Toluidine, o-	—	—	l	OB	1.07E+02	1.57E-04	3.83E-06	2.31E+00	2.05E+02	—	7.01E-02	8.43E-06	1.06E+04	2.84E-01	1.61E+00
95578	Chlorophenol, 2-	—	—	l	OA	1.29E+02	7.40E-04	1.80E-05	2.46E+00	2.86E+02	—	5.01E-02	9.46E-06	2.80E+04	1.42E+00	2.16E+00
95636	Trimethylbenzene, 1,2,4-	—	—	l	O	1.20E+02	1.84E-01	4.49E-03	2.97E+00	9.33E+02	—	6.22E-02	7.28E-06	5.68E+01	1.59E+00	3.65E+00
95772	Dichlorophenol, 3,4-	—	—	s	OA	1.63E+02	2.75E-06	6.71E-08	2.81E+00	6.41E+02	—	6.50E-02	8.21E-06	6.80E+03	2.10E-03	2.89E+00
95807	Toluenediamine, 2,4-	—	—	s	O	1.22E+02	7.48E-08	1.83E-09	3.11E+00	1.29E+03	—	8.00E-02	8.00E-06	7.47E+03	8.36E-05	1.56E-01
95943	Tetrachlorobenzene, 1,2,4,5-	—	—	s	O	2.16E+02	4.99E-02	1.22E-03	3.20E+00	1.60E+03	—	2.11E-02	8.80E-06	3.00E-01	5.40E-03	4.57E+00
95954	Trichlorophenol, 2,4,5-	—	—	s	OA	1.97E+02	1.78E-04	4.34E-06	2.47E+00	2.98E+02	—	2.91E-02	7.03E-06	1.20E+03	1.63E-02	3.45E+00
96128	Dibromo-3-chloropropane, 1,2-	—	—	l	O	2.36E+02	8.31E-03	2.03E-04	2.23E+00	1.70E+02	—	8.00E-02	8.00E-06	1.00E+03	7.60E-01	2.68E+00
96140	Pentane, 3-methyl-	0.00E+00	0.00E+00	l	O	8.62E+01	5.78E+01	1.41E+00	3.21E+00	1.64E+03	———	7.38E-02	6.96E-06	1.48E+01	1.81E+02	3.96E+00
96184	Trichloropropane, 1,2,3-	—	—	l	O	1.47E+02	1.58E-02	3.85E-04	2.59E+00	3.89E+02	—	7.10E-02	7.90E-06	1.90E+03	3.70E+00	2.50E+00
96333	Methyl acrylate	—	—	l	O	8.61E+01	9.15E-03	2.23E-04	6.56E-01	4.53E+00	—	8.70E-02	9.35E-06	4.03E+04	7.93E+01	7.30E-01
96377	Cyclopentane, methyl-	0.00E+00	0.00E+00	l	O	8.42E+01	9.82E+00	2.40E-01	2.87E+00	7.33E+02	———	7.84E-02	7.59E-06	5.02E+01	1.07E+02	3.52E+00
96457	Ethylene thiourea	—	—	s	O	1.02E+02	4.99E-05	1.22E-06	-6.60E-01	2.19E-01	—	7.15E-02	1.02E-05	1.20E+04	8.36E-02	-4.91E-01
96479	Methyltetrahydrofuran, 2-	—	—	l	O	8.61E+01	8.78E-03	2.14E-04	9.43E-01	8.77E+00	—	8.09E-02	8.72E-06	3.99E+04	7.44E+01	1.09E+00
97632	Ethyl methacrylate	—	—	l	O	1.14E+02	6.65E-03	1.62E-04	1.57E+00	3.70E+01	—	8.00E-02	8.00E-06	1.90E+04	1.75E+01	1.77E+00
98011	Furfural	—	—	l	O	9.61E+01	1.25E-04	3.04E-06	4.45E-01	2.79E+00	—	8.72E-02	1.12E-05	8.60E+04	2.00E+00	8.32E-01
98066	Butylbenzene, tert-	—	—	l	O	1.34E+02	8.56E-01	2.09E-02	3.39E+00	2.45E+03	—	5.84E-02	6.76E-06	1.51E+01	1.76E+00	4.18E+00
98077	Benzotrichloride	—	—	l	O	1.95E+02	2.03E-02	4.95E-04	3.16E+00	1.46E+03	—	5.91E-02	7.02E-06	1.00E+02	1.90E-01	3.90E+00
98544	Phenol, 4-tert-butyl-	0.00E+00	0.00E+00	s	O	1.50E+02	7.03E-05	1.72E-06	2.94E+00	8.76E+02	———	5.57E-02	6.25E-06	1.83E+02	1.57E-03	3.62E+00
98828	Cumene (isopropylbenzene)	—	—	l	O	1.20E+02	6.07E-01	1.48E-02	3.54E+00	3.47E+03	—	6.50E-02	7.10E-06	5.00E+01	4.60E+00	3.45E+00
98862	Acetophenone	—	—	l	O	1.20E+02	4.45E-04	1.08E-05	1.56E+00	3.63E+01	—	6.00E-02	8.73E-06	5.50E+03	3.95E-01	1.67E+00
98873	Benzyl dichloride	—	—	l	O	1.61E+02	8.28E-03	2.02E-04	2.39E+00	2.47E+02	—	6.14E-02	7.62E-06	2.09E+02	1.96E-01	2.92E+00
98953	Nitrobenzene	—	—	l	O	1.23E+02	8.56E-04	2.09E-05	2.12E+00	1.32E+02	—	7.60E-02	8.60E-06	1.90E+03	2.44E-01	1.81E+00
99081	Nitrotoluene, m-	—	—	l	O	1.37E+02	2.24E-03	5.48E-05	2.15E+00	1.41E+02	—	6.42E-02	7.69E-06	4.98E+02	1.50E-01	2.36E+00
99092	Nitroaniline, 3-	—	—	s	O	1.38E+02	2.31E-07	5.63E-09	1.60E+00	3.94E+01	—	6.73E-02	8.59E-06	4.56E+02	1.39E-05	1.62E+00
99354	Trinitrobenzene, 1,3,5-	—	—	s	O	2.13E+02	2.87E-06	7.00E-08	1.15E+00	1.41E+01	—	8.00E-02	8.00E-06	3.53E+02	9.90E-05	1.45E+00
99558	Methyl-5-nitroaniline, 2- (5-nitro-o-toluidine)	—	—	s	O	1.52E+02	9.00E-07	2.20E-08	1.90E+00	8.03E+01	—	6.27E-02	7.93E-06	3.48E+02	1.91E-05	1.94E+00
99650	Dinitrobenzene, 1,3- (dinitrobenzene, 2,4-)	—	—	s	O	1.68E+02	4.57E-06	1.12E-07	1.48E+00	3.00E+01	—	2.80E-01	7.60E-06	5.40E+02	2.49E-04	1.63E+00
99876	Cymene (isopropyltoluene)	—	—	l	O	1.34E+02	4.66E-01	1.14E-02	3.36E+00	2.29E+03	—	5.72E-02	6.73E-06	1.72E+01	1.08E+00	4.14E+00

Table 11
Texas Risk Reduction Program Physical-Chemical Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical and Physical Factors

CAS #	Chemical of Concern	Brabg.inorg ((µg/g DW)/ (µg/g soil))	Brbg.inorg ((µg/g DW)/ ((µg/g soil))	Physical State	Type	MW (g/mole)	H_unitless (unitless)	H atm-m^3/mol	LogKoc (unitless)	Koc	LogKd (unitless)	Dair (cm^2/s)	Dwat (cm^2/s)	Solubility (mg/l)	Vapor_P (mm Hg)	logKow (unitless)
99990	Nitrotoluene, p-	—	—	s	O	1.37E+02	2.29E-03	5.58E-05	2.15E+00	1.41E+02	—	6.40E-02	7.70E-06	4.00E+02	1.20E-01	2.36E+00
100005	Chloronitrobenzene, p- (1-chloro-4-nitrobenzene)	—	—	s	O	1.58E+02	1.00E-03	2.44E-05	2.03E+00	1.08E+02	—	6.37E-02	8.04E-06	2.67E+02	3.92E-02	2.47E+00
100016	Nitroaniline, 4-	—	—	s	O	1.38E+02	3.33E-08	8.12E-10	1.05E+00	1.12E+01	—	6.69E-02	8.59E-06	6.49E+02	2.86E-06	1.07E+00
100027	Nitrophenol, 4-	—	—	s	O	1.39E+02	3.24E-08	7.90E-10	5.00E-01	3.16E+00	—	6.73E-02	8.66E-06	4.49E+03	1.91E-05	1.73E+00
100254	Dinitrobenzene, 1,4-	—	—	s	O	1.68E+02	4.44E-06	1.08E-07	1.42E+00	2.62E+01	—	6.15E-02	7.18E-06	1.00E+02	4.83E-05	1.63E+00
100414	Ethyl benzene	—	—	l	O	1.06E+02	3.28E-01	7.99E-03	2.31E+00	2.04E+02	—	7.50E-02	7.80E-06	1.69E+02	9.60E+00	3.03E+00
100425	Styrene	—	—	l	O	1.04E+02	1.14E-01	2.79E-03	2.88E+00	7.59E+02	—	7.10E-02	8.00E-06	3.10E+02	6.24E+00	2.90E+00
100447	Benzyl chloride	—	—	l	O	1.27E+02	1.66E-02	4.06E-04	2.26E+00	1.82E+02	—	7.50E-02	7.80E-06	4.93E+02	1.20E+00	2.79E+00
100516	Benzyl alcohol	—	—	l	O	1.08E+02	1.62E-05	3.95E-07	1.08E+00	1.20E+01	—	8.00E-02	8.00E-06	4.00E+04	1.06E-01	1.08E+00
100527	Benzaldehyde	—	—	l	O	1.06E+02	2.04E-03	4.97E-05	1.77E+00	5.94E+01	—	7.28E-02	8.67E-06	3.58E+03	1.26E+00	1.90E+00
100754	Nitrosopiperidine, N-	—	—	l	O	1.14E+02	1.30E-05	3.17E-07	7.28E-01	5.34E+00	—	6.90E-02	8.57E-06	4.91E+04	1.00E-01	7.40E-01
101144	Methylene-bis (2-chloroaniline) 4,4'-	—	—	s	O	2.67E+02	1.40E-05	3.42E-07	3.90E+00	7.89E+03	—	1.99E-02	5.80E-06	7.24E+01	6.94E-05	3.47E+00
101553	Bromophenyl phenylether, 4-	—	—	l	O	2.49E+02	9.66E-03	2.36E-04	5.16E+00	1.45E+05	—	4.75E-02	6.28E-06	8.25E-01	5.85E-04	5.25E+00
101848	Diphenyl ether	—	—	s	O	1.70E+02	1.75E-02	4.28E-04	4.18E+00	1.51E+04	—	5.30E-02	6.69E-06	7.78E+00	1.47E-02	4.25E+00
102716	Triethanolamine	—	—	s	O	1.49E+02	3.50E-13	8.54E-15	-2.93E+00	1.19E-03	—	5.33E-02	7.54E-06	miscible	2.90E-06	-2.98E+00
103117	Ethylhexyl acrylate, 2-	—	—	l	O	1.84E+02	4.29E-02	1.05E-03	4.00E+00	1.00E+04	—	4.68E-02	5.74E-06	1.37E+01	5.85E-02	4.07E+00
103231	Diethylhexyl adipate	—	—	l	O	3.71E+02	9.78E-01	2.39E-02	5.58E+00	3.80E+05	—	3.56E-02	3.72E-06	1.71E-03	8.25E-05	8.12E+00
103333	Azobenzene	—	—	l	O	1.82E+02	1.89E-03	4.61E-05	4.73E+00	5.32E+04	—	4.96E-02	6.36E-06	1.60E+00	3.02E-04	4.77E+00
103651	Propylbenzene, n-	—	—	l	O	1.20E+02	4.24E-01	1.03E-02	3.03E+00	1.07E+03	—	6.22E-02	7.21E-06	4.20E+01	2.71E+00	3.73E+00
104358	Nonylphenol ethoxylate	—	—	l	O	2.92E+02	8.19E-04	2.00E-05	6.88E+00	7.62E+06	0.00E+00	3.29E-02	4.08E-06	2.79E-02	1.38E-06	7.00E+00
104518	Butylbenzene, n-	—	—	l	O	1.34E+02	5.57E-01	1.36E-02	3.48E+00	3.02E+03	—	5.70E-02	6.74E-06	1.08E+01	8.14E-01	4.29E+00
104767	Ethyl-1-hexanol, 2-	—	—	l	O	1.30E+02	8.73E-04	2.13E-05	2.67E+00	4.72E+02	—	5.70E-02	6.73E-06	8.66E+02	1.10E-01	2.72E+00
105464	Acetate, sec-butyl	—	—	L	O	1.16E+02	3.02E-02	7.38E-04	1.54E+00	3.49E+01	0.00E+00	6.69E-02	6.91E-06	3.34E+03	1.59E+01	1.85E+00
105602	Caprolactam	—	—	s	O	1.13E+02	2.19E-08	5.34E-10	1.68E+00	4.81E+01	—	6.71E-02	8.45E-06	3.40E+04	1.20E-04	5.62E-01
105679	Dimethyl phenol, 2,4-	—	—	s	O	1.22E+02	8.31E-05	2.03E-06	2.07E+00	1.17E+02	—	5.84E-02	8.69E-06	6.20E+03	1.26E-01	2.61E+00
106423	Xylene, p-	—	—	l	O	1.06E+02	3.18E-01	7.77E-03	2.49E+00	3.09E+02	—	7.69E-02	8.44E-06	1.85E+02	8.76E+00	3.17E+00
106434	Chlorotoluene, p- (4-chlorotoluene)	—	—	l	O	1.27E+02	1.33E-01	3.26E-03	2.70E+00	4.96E+02	—	6.76E-02	7.96E-06	1.18E+02	2.27E+00	3.31E+00
106445	Cresol, p- (4-methylphenol)	—	—	s	O	1.08E+02	3.99E-05	9.73E-07	1.91E+00	8.13E+01	—	7.40E-02	1.00E-05	2.30E+04	1.30E-01	2.06E+00
106467	Dichlorobenzene, 1,4-	—	—	s	O	1.47E+02	1.17E-01	2.85E-03	2.81E+00	6.46E+02	—	6.90E-02	7.90E-06	7.38E+01	1.06E+00	3.28E+00
106478	Chloroaniline, p-	—	—	s	O	1.28E+02	4.86E-05	1.19E-06	1.82E+00	6.61E+01	—	4.83E-02	1.01E-05	3.90E+03	2.35E-02	1.72E+00
106489	Chlorophenol, 4-	—	—	s	OA	1.29E+02	9.97E-06	2.43E-07	2.09E+00	1.23E+02	—	7.13E-02	8.75E-06	2.86E+04	4.06E-02	2.10E+00
106490	Toluidine, p-	—	—	s	O	1.07E+02	3.82E-04	9.33E-06	1.40E+00	2.50E+01	—	8.00E-02	8.00E-06	7.20E+03	3.30E-01	1.62E+00
106503	Phenylene diamine, p-	—	—	s	O	1.08E+02	5.24E-08	1.28E-09	4.14E-02	1.10E+00	—	7.15E-02	8.92E-06	3.80E+04	4.60E-03	-3.91E-01
106683	Octanone	—	—	l	O	1.28E+02	6.35E-03	1.55E-04	2.15E+00	1.40E+02	—	5.78E-02	6.67E-06	1.65E+03	1.50E+00	2.61E+00
106898	Epichlorohydrin	—	—	l	O	9.25E+01	1.37E-03	3.35E-05	3.00E-01	2.00E+00	—	8.60E-02	9.80E-06	6.60E+04	1.67E+01	6.26E-01
106934	Ethylene dibromide (dibromoethane, 1,2-)	—	—	l	O	1.88E+02	2.93E-02	7.16E-04	1.73E+00	5.37E+01	—	2.17E-02	1.90E-05	4.32E+03	1.10E+01	2.01E+00
106989	Butene, 1-	0.00E+00	0.00E+00	g	O	5.61E+01	9.53E+00	2.32E-01	2.02E+00	1.04E+02	———	9.88E-02	8.42E-06	2.40E+02	1.61E+03	2.45E+00
106990	Butadiene, 1,3-	—	—	g	O	5.41E+01	2.61E+00	6.38E-02	2.11E+00	1.29E+02	—	1.79E-01	1.02E-05	7.35E+02	2.11E+03	2.03E+00
107028	Acrolein	—	—	l	O	5.61E+01	1.83E-04	4.46E-06	-2.80E-01	5.25E-01	—	1.05E-01	1.12E-05	2.00E+05	2.65E+02	-1.00E-01
107040	Bromo-2-chloroethane, 1-	—	—	l	O	1.43E+02	3.79E-02	9.26E-04	1.58E+00	3.80E+01	—	8.35E-02	9.83E-06	4.93E+03	2.38E+01	1.90E+00
107051	Allyl chloride	—	—	l	O	7.65E+01	4.57E-01	1.12E-02	1.43E+00	2.69E+01	—	9.80E-02	1.08E-05	3.40E+03	3.60E+02	1.93E+00
107062	Dichloroethane, 1,2-	—	—	l	O	9.90E+01	5.32E-02	1.30E-03	1.24E+00	1.74E+01	—	1.04E-01	9.90E-06	8.70E+03	8.13E+01	1.83E+00
107073	Chloroethanol, 2-	—	—	l	O	8.05E+01	3.23E-05	7.89E-07	2.42E-01	1.74E+00	—	9.60E-02	1.11E-05	5.51E+05	2.29E+00	2.06E-01
107120	Propionitrile (propane nitrile)	—	—	l	O	5.51E+01	1.02E-03	2.48E-05	2.15E-01	1.64E+00	—	1.02E-01	1.72E-05	9.73E+04	3.28E+01	1.73E-01
107131	Acrylonitrile	—	—	l	O	5.31E+01	4.57E-03	1.12E-04	4.00E-02	1.10E+00	—	1.22E-01	1.34E-05	7.50E+04	1.10E+02	2.09E-01
107153	Ethylenediamine	—	—	l	O	6.01E+01	7.19E-08	1.75E-09	6.73E-01	4.71E+00	—	1.53E-01	1.12E-05	7.95E+06	1.10E+01	-1.62E+00
107186	Allyl alcohol	—	—	l	O	5.81E+01	2.08E-04	5.07E-06	5.10E-01	3.24E+00	—	1.14E-01	1.10E-05	3.20E+05	2.63E+01	1.70E-01
107197	Propargyl alcohol	—	—	l	O	5.61E+01	1.34E-05	3.26E-07	7.31E-01	5.38E+00	—	1.04E-01	1.24E-05	5.57E+06	1.20E+01	-4.22E-01
107211	Ethylene glycol	—	—	l	O	6.21E+01	2.49E-06	6.08E-08	-9.00E-01	1.26E-01	—	1.08E-01	1.22E-05	1.00E+06	7.00E-02	-1.20E+00
107391	Diisobutylene (trimethyl-1-pentene, 2,4,4-)	—	—	l	O	1.12E+02	7.34E+01	1.79E+00	3.75E+00	5.66E+03	—	6.25E-02	6.70E-06	3.17E+00	3.80E+01	4.64E+00
107415	Hexylene glycol (2-methyl-2,4-pentanediol)	—	—	l	O	1.18E+02	6.57E-07	1.60E-08	3.93E-01	2.47E+00	—	6.57E-02	7.70E-06	7.27E+05	7.40E-02	4.00E-01
107493	Tetraethyl pyrophosphate (TEPP)	—	—	l	O	2.90E+02	1.52E-08	3.71E-10	2.91E+00	8.12E+02	0.00E+00	3.77E-02	4.76E-06	1.48E+04	1.41E-05	3.00E+00
107835	Pentane, 2-methyl-	0.00E+00	0.00E+00	l	O	8.62E+01	7.44E+01	1.81E+00	3.26E+00	1.81E+03	0.00E+00	7.34E-02	6.89E-06	1.25E+01	1.97E+02	4.01E+00
107879	Pentanone, 2-	—	—	l	O	8.61E+01	2.54E-03	6.20E-05	9.31E-01	8.53E+00	—	7.78E-02	8.46E-06	5.40E+04	2.91E+01	1.08E+00
107926	Butanoic acid (butyric acid)	—	—	l	O	8.81E+01	7.86E-06	1.92E-07	-2.26E+00	5.46E-03	—	7.80E-02	9.25E-06	8.96E+04	2.80E-01	1.02E+00
107982	Propylene glycol monomethyl ether	—	—	—	O	9.01E+01	1.40E-05	3.41E-07	-1.89E-01	6.47E-01	—	9.45E-02	1.09E-05	1.00E+05	1.18E+01	-4.37E-01
108054	Vinyl acetate	—	—	l	O	8.61E+01	2.29E-02	5.58E-04	7.20E-01	5.25E+00	—	8.50E-02	9.20E-06	2.00E+04	1.09E+02	7.28E-01
108101	Methyl isobutyl ketone (4-methyl-2-pentanone)	—	—	l	O	1.00E+02	5.82E-03	1.42E-04	1.18E+00	1.50E+01	—	7.50E-02	7.80E-06	1.90E+04	1.45E+01	1.16E+00
108112	Pentanol, 4-methyl-2-	0.00E+00	0.00E+00	l	O	1.02E+02	9.33E-04	2.27E-05	1.33E+00	2.13E+01	0.00E+00	6.72E-02	7.08E-06	1.47E+04	2.46E+00	1.58E+00
108203	Diisopropyl ether (2,2'-oxybis-propane)	—	—	l	O	1.02E+02	1.63E-01	3.97E-03	1.81E+00	6.52E+01	—	6.81E-02	7.15E-06	2.67E+03	7.76E+01	2.19E+00
108214	Isopropyl acetate	—	—	l	O	1.02E+02	1.16E-02	2.82E-04	1.02E+00	1.05E+01	—	7.35E-02	8.00E-06	2.14E+04	4.43E+01	1.19E+00
108316	Maleic anhydride	—	—	s	O	9.81E+01	8.31E-06	2.03E-07	1.41E+00	2.57E+01	—	9.50E-02	1.11E-05	8.65E+02	1.34E-03	1.62E+00
108383	Xylene, m-	—	—	l	O	1.06E+02	3.05E-01	7.44E-03	2.29E+00	1.96E+02	—	7.00E-02	7.80E-06	1.60E+02	8.00E+00	3.20E+00
108394	Cresol, m- (3-methylphenol)	—	—	l	O	1.08E+02	3.62E-05	8.82E-07	1.94E+00	8.71E+01	—	7.40E-02	1.00E-05	2.30E+04	1.40E-01	2.06E+00

Table 11
Texas Risk Reduction Program Physical-Chemical Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical and Physical Factors																
CAS #	Chemical of Concern	Brabg.inorg ((µg/g DW)/ (µg/g soil))	Brbg.inorg ((µg/g DW)/ ((µg/g soil))	Physical State	Type	MW (g/mole)	H_unitless (unitless)	H atm-m^3/mol	LogKoc (unitless)	Koc	LogKd (unitless)	Dair (cm^2/s)	Dwat (cm^2/s)	Solubility (mg/l)	Vapor_P (mm Hg)	logKow (unitless)
108430	Chlorophenol, 3-	—	—	s	OA	1.29E+02	9.20E-06	2.24E-07	2.05E+00	1.11E+02	—	7.13E-02	8.74E-06	4.11E+04	5.38E-02	2.07E+00
108452	Phenylene diamine, m-	—	—	s	O	1.08E+02	9.56E-07	2.33E-08	4.14E-02	1.10E+00	—	6.63E-02	9.90E-06	3.51E+05	2.28E-02	-3.91E-01
108601	Bis (2-chloroisopropyl) ether	—	—	l	O	1.71E+02	4.16E-03	1.01E-04	2.50E+00	3.16E+02	—	6.00E-02	6.40E-06	1.70E+03	8.50E-01	2.58E+00
108678	Trimethylbenzene, 1,3,5-	—	—	l	O	1.20E+02	2.72E-01	6.63E-03	3.01E+00	1.02E+03	—	6.21E-02	7.23E-06	5.15E+01	2.13E+00	3.70E+00
108703	Trichlorobenzene, 1,3,5-	—	—	s	O	1.81E+02	6.03E-02	1.47E-03	3.40E+00	2.49E+03	—	6.25E-02	7.66E-06	1.82E+01	1.11E-01	4.19E+00
108861	Bromobenzene	—	—	l	O	1.57E+02	8.38E-02	2.04E-03	2.38E+00	2.42E+02	—	7.05E-02	8.54E-06	2.98E+02	2.91E+00	2.91E+00
108872	Methyl cyclohexane	—	—	l	O	9.82E+01	1.59E+01	3.89E-01	3.33E+00	2.13E+03	—	6.97E-02	7.59E-06	1.04E+01	3.08E+01	4.10E+00
108883	Toluene	—	—	l	O	9.21E+01	2.76E-01	6.73E-03	2.15E+00	1.40E+02	—	8.70E-02	8.60E-06	5.30E+02	2.82E+01	2.54E+00
108907	Chlorobenzene	—	—	l	O	1.13E+02	1.82E-01	4.43E-03	2.33E+00	2.14E+02	—	7.30E-02	8.70E-06	5.02E+02	1.21E+01	2.64E+00
108930	Cyclohexanol	—	—	s	O	1.00E+02	3.52E-05	8.57E-07	1.09E+00	1.22E+01	—	7.20E-02	8.63E-06	2.09E+00	2.84E-01	1.11E+00
108941	Cyclohexanone	—	—	l	O	9.81E+01	4.99E-04	1.22E-05	7.39E-01	5.48E+00	—	7.72E-02	8.73E-06	2.30E+04	4.00E+00	1.13E+00
108952	Phenol	—	—	s	O	9.41E+01	2.47E-05	6.03E-07	1.24E+00	1.74E+01	—	8.20E-02	9.10E-06	8.70E+04	4.63E-01	1.51E+00
108985	Benzenethiol	—	—	l	O	1.10E+02	1.83E-02	4.46E-04	1.32E+00	2.09E+01	—	7.60E-02	8.68E-06	7.60E+02	2.40E+00	2.69E+00
109068	Picoline, 2- (2-methylpyridine)	—	—	l	O	9.31E+01	6.21E-04	1.52E-05	1.20E+00	1.58E+01	—	7.77E-02	8.86E-06	6.14E+04	7.48E+00	1.28E+00
109524	Valeric acid (pentanoic acid)	—	—	l	O	1.02E+02	1.16E-05	2.82E-07	-1.80E+00	1.58E-02	—	6.92E-02	8.37E-06	2.20E+00	7.39E-02	1.53E+00
109604	Propyl acetate, n-	—	—	l	O	1.02E+02	8.89E-03	2.17E-04	1.07E+00	1.19E+01	—	7.36E-02	8.09E-06	1.84E+04	2.93E+01	1.26E+00
109660	Pentane	—	—	l	O	7.22E+01	4.50E+01	1.10E+00	3.48E+00	3.02E+03	—	8.26E-01	8.07E-06	4.06E+01	4.62E+02	3.54E+00
109773	Malononitrile	—	—	s	O	6.61E+01	1.97E-07	4.80E-09	6.90E-01	4.90E+00	—	9.97E-02	1.09E-05	6.96E+06	3.79E-01	-1.78E-01
109864	Methoxyethanol, 2-	—	—	l	O	7.61E+01	1.28E+00	3.13E-02	9.31E-01	8.53E+00	—	9.15E-02	1.02E-05	2.01E+01	6.20E+00	-9.07E-01
109999	Tetrahydrofuran	—	—	l	O	7.21E+01	5.75E-03	1.40E-04	5.73E-01	3.74E+00	—	9.36E-02	9.88E-06	1.09E+05	1.59E+02	6.25E-01
110009	Furan	—	—	l	O	6.81E+01	2.24E-01	5.48E-03	1.32E+00	2.09E+01	—	1.04E-01	1.20E-05	1.00E+04	6.00E+02	1.36E+00
110190	Acetate, isobutyl	—	—	L	O	1.16E+02	1.98E-02	4.82E-04	1.46E+00	2.90E+01	0.00E+00	6.62E-02	6.88E-06	3.81E+03	1.19E+01	1.75E+00
110430	Methyl amyl ketone (2-heptanone)	—	—	l	O	1.14E+02	3.64E-03	8.88E-05	1.69E+00	4.88E+01	—	6.32E-02	7.20E-06	6.06E+03	3.53E+00	2.03E+00
110543	Hexane, n-	—	—	l	O	8.62E+01	4.66E+01	1.14E+00	2.68E+00	4.79E+02	—	2.00E-01	7.77E-06	1.30E+01	1.52E+02	3.29E+00
110576	Dichloro-2-butene, 1,4- trans	—	—	l	O	1.25E+02	1.35E-02	3.29E-04	2.31E+00	2.04E+02	—	7.14E-02	8.48E-06	1.27E+03	2.52E+00	2.35E+00
110758	Chloroethoxy ethene, 2- (2-chloroethylvinylether)	—	—	l	O	1.07E+02	3.02E-02	7.37E-04	1.57E+00	3.72E+01	—	7.60E-02	8.55E-06	5.02E+03	2.60E+01	1.88E+00
110805	Ethoxy ethanol, 2-	—	—	l	O	9.01E+01	2.13E+00	5.19E-02	-9.69E-02	8.00E-01	—	9.47E-02	9.75E-06	1.20E+01	4.56E+00	-4.16E-01
110827	Cyclohexane	—	—	l	O	8.42E+01	6.68E+00	1.63E-01	2.87E+00	7.35E+02	—	7.84E-02	8.39E-06	4.25E+01	6.16E+01	3.52E+00
110861	Pyridine	—	—	l	O	7.91E+01	2.91E-01	7.10E-03	6.43E-01	4.40E+00	—	9.10E-02	7.60E-06	3.00E+02	2.00E+01	8.05E-01
110918	Morpholine	—	—	l	O	8.71E+01	2.28E-06	5.56E-08	-2.63E-02	9.41E-01	—	8.34E-02	9.44E-06	3.33E+07	1.59E+01	-8.80E-01
110985	Dipropylene glycol	—	—	L	O	1.34E+02	1.79E-08	4.37E-10	-4.77E-01	3.33E-01	0.00E+00	5.97E-02	6.90E-06	9.83E+05	2.39E-03	-4.86E-01
111148	Heptanoic acid, n-	—	—	l	OA	1.30E+02	3.72E-05	9.06E-07	-3.00E-01	5.02E-01	—	5.73E-02	7.13E-06	1.70E+03	8.84E-03	2.99E+00
111159	Acetate, 2-ethoxyethanol	—	—	L	O	1.32E+02	1.37E-04	3.33E-06	8.17E-01	6.56E+00	0.00E+00	6.13E-02	6.70E-06	1.02E+05	1.93E+00	9.33E-01
111295	Pentanediol, 1,5-	—	—	l	O	1.04E+02	2.51E-08	6.12E-10	1.47E-01	1.40E+00	—	7.14E-02	8.57E-06	7.44E+04	3.27E-04	1.49E-01
111422	Diethanolamine	—	—	s	O	1.05E+02	1.90E-11	4.63E-13	-2.10E+00	8.03E-03	—	7.15E-02	9.10E-06	Misc.	1.00E-04	-2.13E+00
111444	Bis (2-chloroethyl) ether	—	—	l	O	1.43E+02	8.90E-04	2.17E-05	1.19E+00	1.55E+01	—	6.92E-02	7.53E-06	1.02E+04	1.34E+00	1.56E+00
111466	Diethylene glycol	—	—	l	O	1.06E+02	3.88E-09	9.47E-11	-1.33E+00	4.64E-02	—	7.31E-02	9.15E-06	1.00E+06	1.30E-03	-1.36E+00
111762	Butoxy ethanol, 2- (Ethylene glycol monobutyl ether; EGBE)	—	—	l	O	1.18E+02	2.11E-05	5.14E-07	1.09E+00	1.24E+01	—	6.30E-02	7.46E-06	3.43E+04	1.12E-01	1.28E+00
111911	Bis (2-chloroethoxy) methane	—	—	l	O	1.73E+02	1.25E-03	3.04E-05	2.49E+00	3.07E+02	—	5.82E-02	7.11E-06	1.35E+03	1.78E-01	2.53E+00
112276	Triethylene glycol	—	—	l	O	1.50E+02	8.96E-11	2.18E-12	-1.16E+00	6.98E-02	—	5.65E-02	7.38E-06	2.11E+06	2.31E-05	-1.18E+00
112345	Diethylene glycol monobutyl ether	—	—	l	O	1.62E+02	2.75E-07	6.71E-09	7.50E-01	5.62E+00	—	5.14E-02	6.35E-06	5.11E+04	1.58E-03	1.00E+00
112607	Tetraethylene glycol	—	—	L	O	1.94E+02	5.69E-12	1.39E-13	-5.54E-01	2.79E-01	0.00E+00	4.61E-02	5.81E-06	6.54E+05	2.54E-07	-5.90E-01
115117	Isobutylene (2-methyl-1-propene)	—	—	g	O	5.61E+01	9.56E+00	2.33E-01	2.03E+00	1.08E+02	—	9.90E-02	9.08E-06	2.39E+02	1.75E+03	2.47E+00
115297	Endosulfan	—	—	s	O	4.07E+02	4.66E-04	1.14E-05	2.87E+00	7.41E+02	—	1.15E-02	4.55E-06	5.10E-01	9.96E-06	3.84E+00
115322	Kelthane (dicofol)	—	—	s	OA	3.70E+02	8.20E-07	2.00E-08	4.10E+00	1.26E+04	—	3.91E-02	5.20E-06	7.00E-01	3.90E-08	5.10E+00
115902	Fensulfothion	—	—	l	O	3.08E+02	1.42E-07	3.46E-09	2.49E+00	3.10E+02	—	4.04E-02	5.32E-06	4.10E+04	3.45E-04	2.05E+00
116063	Aldicarb	—	—	s	O	1.90E+02	5.82E-08	1.42E-09	1.20E+00	1.58E+01	—	3.05E-02	7.20E-06	6.00E+03	2.90E-05	1.36E+00
116290	Tetradifon	—	—	s	O	3.56E+02	7.32E-09	1.79E-10	3.65E+00	4.42E+03	—	4.14E-02	5.80E-06	7.02E-01	2.64E-10	4.17E+00
117817	Bis (2-ethyl-hexyl) phthalate	—	—	l	O	3.91E+02	4.57E-04	1.12E-05	5.83E+00	6.81E+05	—	3.51E-02	3.66E-06	3.00E-01	6.45E-06	8.39E+00
117840	Di-n-octyl phthalate	—	—	l	O	3.91E+02	2.78E-03	6.77E-05	7.92E+00	8.32E+07	—	1.51E-02	3.90E-06	2.00E-02	4.47E-06	8.54E+00
118741	Hexachlorobenzene	—	—	s	O	2.85E+02	2.22E-02	5.42E-04	4.45E+00	2.82E+04	—	5.42E-02	5.91E-06	6.00E-03	1.23E-05	5.86E+00
118967	Trinitrotoluene, 2,4,6-	—	—	s	O	2.27E+02	1.90E-05	4.63E-07	2.48E+00	3.02E+02	—	5.41E-02	6.57E-06	1.30E+02	1.24E-04	1.99E+00
119619	Benzophenone	0.00E+00	0.00E+00	s	O	1.82E+02	1.05E-04	2.56E-06	3.40E+00	2.54E+03	0.00E+00	5.07E-02	6.03E-06	3.43E+01	3.61E-04	3.46E+00
119904	Dimethoxybenzidine, 3,3'-	—	—	s	O	2.44E+02	1.66E-08	4.06E-10	1.78E+00	6.03E+01	—	2.42E-02	5.50E-06	2.40E+02	2.50E-07	2.08E+00
119915	Biquinoline, 2,2'-	—	—	s	O	2.56E+02	2.85E-09	6.95E-11	3.96E+00	9.04E+03	—	4.18E-02	5.65E-06	1.70E+00	3.45E-10	4.02E+00
119937	Dimethylbenzidine, 3,3'-	—	—	s	O	2.12E+02	5.40E-09	1.32E-10	2.30E+00	2.00E+02	—	5.10E-02	8.00E-06	2.40E+02	3.70E-07	3.02E+00
120127	Anthracene	—	—	s	O	1.78E+02	4.61E-03	1.13E-04	4.37E+00	2.34E+04	—	3.24E-02	7.74E-06	4.34E-02	2.55E-05	4.35E+00
120365	Dichloroprop (2-(2,4-dichlorophenoxy) propanoic acid)	—	—	s	O	2.35E+02	9.00E-07	2.20E-08	-1.54E+00	2.86E-02	—	4.70E-02	6.43E-06	2.30E+02	1.60E-05	3.26E+00
120581	Isosafrole	—	—	l	O	1.62E+02	1.28E-03	3.12E-05	2.87E+00	7.34E+02	—	5.59E-02	7.07E-06	1.43E+02	2.06E-02	2.92E+00
120821	Trichlorobenzene, 1,2,4-	—	—	l	O	1.81E+02	5.90E-02	1.44E-03	3.22E+00	1.66E+03	—	3.00E-02	8.23E-06	4.88E+01	3.36E-01	3.93E+00
120832	Dichlorophenol, 2,4-	—	—	s	OA	1.63E+02	1.31E-04	3.20E-06	1.86E+00	7.20E+01	—	3.46E-02	8.77E-06	4.50E+03	7.15E-02	2.80E+00
121142	Dinitrotoluene, 2,4-	—	—	s	O	1.82E+02	3.60E-05	8.79E-07	1.71E+00	5.13E+01	—	2.03E-01	7.06E-06	2.85E+02	1.74E-04	2.18E+00
121448	Triethylamine	—	—	l	O	1.01E+02	1.99E-02	4.86E-04	1.12E+00	1.33E+01	—	7.54E-02	7.51E-06	1.50E+04	5.00E+01	1.51E+00
121755	Malathion	—	—	l	O	3.30E+02	9.98E-07	2.43E-08	2.46E+00	2.88E+02	—	1.50E-02	4.40E-06	1.45E+02	7.90E-06	2.29E+00

Table 11
Texas Risk Reduction Program Physical-Chemical Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical and Physical Factors

CAS #	Chemical of Concern	Brabg.inorg ((µg/g DW)/ (µg/g soil))	Brbg.inorg ((µg/g DW)/ ((µg/g soil))	Physical State	Type	MW (g/mole)	H_unitless (unitless)	H atm-m^3/mol	LogKoc (unitless)	Koc	LogKd (unitless)	Dair (cm^2/s)	Dwat (cm^2/s)	Solubility (mg/l)	Vapor_P (mm Hg)	logKow (unitless)
121824	Cyclotrimethylenetrinitramine (RDX)	—	—	s	O	2.22E+02	4.99E-04	1.22E-05	1.80E+00	6.31E+01	—	6.65E-02	6.39E-06	3.87E+01	1.00E-09	8.70E-01
122098	Dimethylphenethylamine, alpha, alpha-	—	—	l	O	1.49E+02	5.45E-05	1.33E-06	2.16E+00	1.46E+02	—	5.57E-02	6.64E-06	3.54E+03	1.30E-01	2.20E+00
122349	Simazine	—	—	s	O	2.02E+02	2.48E-07	6.04E-09	2.47E+00	2.97E+02	—	4.90E-02	6.37E-06	4.06E+01	9.10E-07	2.64E+00
122394	Diphenylamine	—	—	s	O	1.69E+02	1.83E-04	4.46E-06	2.54E+00	3.47E+02	—	6.80E-02	6.30E-06	3.00E+02	4.26E-03	3.29E+00
122429	Propham	—	—	s	O	1.79E+02	5.30E-06	1.29E-07	1.71E+00	5.10E+01	—	5.71E-02	6.28E-06	2.50E+02	1.35E-04	2.66E+00
122667	Diphenylhydrazine, 1,2-	—	—	s	O	1.84E+02	1.42E-07	3.47E-09	2.82E+00	6.61E+02	—	5.62E-02	5.70E-06	1.84E+03	2.60E-05	3.06E+00
123057	Hexanal, 2-ethyl-	0.00E+00	0.00E+00	l	O	1.28E+02	1.23E-02	2.99E-04	2.12E+00	1.31E+02	0.00E+00	5.81E-02	6.26E-06	5.48E+02	9.59E-01	2.58E+00
123319	Hydroquinone	0.00E+00	0.00E+00	S	O	1.10E+02	1.35E-09	3.30E-11	4.98E-01	3.15E+00	0.00E+00	6.82E-02	8.56E-06	2.06E+04	4.62E-06	5.30E-01
123331	Maleic hydrazide	—	—	s	O	1.12E+02	1.03E-10	2.51E-12	1.40E+00	2.50E+01	—	8.75E-02	8.75E-06	6.00E+03	7.50E-08	-8.87E-01
123386	Propanal (propionaldehyde)	—	—	l	O	5.81E+01	4.40E-03	1.07E-04	3.40E-01	2.19E+00	—	1.04E-01	1.07E-05	1.09E+05	1.51E+02	3.30E-01
123422	Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	—	—	l	O	1.16E+02	1.68E-06	4.09E-08	2.67E-01	1.85E+00	—	6.39E-02	7.74E-06	6.81E+05	1.80E-01	2.71E-01
123513	Isoamyl alcohol	0.00E+00	0.00E+00	l	O	8.81E+01	5.64E-04	1.38E-05	1.24E+00	1.75E+01	0.00E+00	7.40E-02	7.75E-06	1.75E+04	2.05E+00	1.47E+00
123728	Butanal (butyraldehyde)	—	—	l	O	7.21E+01	5.40E-03	1.32E-04	7.44E-01	5.54E+00	—	8.90E-02	9.48E-06	4.67E+04	6.35E+01	8.40E-01
123739	Crotonaldehyde	—	—	l	O	7.01E+01	8.15E-04	1.99E-05	2.14E-01	1.64E+00	—	9.37E-02	1.02E-05	1.60E+05	1.90E+01	6.01E-01
123864	Butyl acetate	—	—	l	O	1.16E+02	1.11E-02	2.71E-04	1.42E+00	2.66E+01	—	6.63E-02	7.45E-06	5.75E+03	1.00E+01	1.70E+00
123911	Dioxane 1,4-	—	—	l	O	8.81E+01	2.04E-04	4.97E-06	-2.68E-01	5.40E-01	—	2.30E-01	1.00E-05	9.00E+05	3.80E+01	-3.20E-01
123922	Acetate, isoamyl	—	—	L	O	1.30E+02	2.04E-02	4.99E-04	1.87E+00	7.47E+01	0.00E+00	6.01E-02	6.40E-06	1.13E+03	3.25E+00	2.27E+00
124049	Adipic acid (hexanedioic acid)	—	—	s	O	1.46E+02	1.80E-11	4.40E-13	-6.56E+00	2.76E-07	—	6.13E-02	7.90E-06	7.72E+04	1.74E-07	1.25E-01
124196	Nonanal	—	—	l	O	1.42E+02	2.34E-02	5.70E-04	2.85E+00	7.06E+02	—	5.29E-02	6.29E-06	1.24E+02	3.71E-01	3.50E+00
124481	Dibromochloromethane (chlorodibromomethane)	—	—	l	O	2.08E+02	3.25E-02	7.94E-04	1.80E+00	6.31E+01	—	1.96E-02	1.05E-05	5.25E+03	1.50E+01	1.70E+00
126307	Neopentyl glycol	—	—	s	O	1.04E+02	5.11E-07	1.25E-08	2.54E-01	1.80E+00	—	7.23E-02	8.54E-06	2.81E+05	2.52E-02	2.22E-01
126330	Sulfolane	—	—	s	O	1.20E+02	4.82E-07	1.18E-08	-7.89E-01	1.63E-01	—	6.98E-01	9.30E-06	8.37E+03	6.15E-04	-8.03E-01
126681	Triethylphosphorothioate, O, O, O-	—	—	l	O	1.98E+02	2.08E-02	5.07E-04	2.69E+00	4.90E+02	—	5.26E-02	6.24E-06	8.45E+02	7.30E-01	2.64E+00
126987	Methacrylonitrile	—	—	l	O	6.71E+01	3.03E-03	7.40E-05	5.30E-01	3.39E+00	—	8.00E-02	8.00E-06	2.50E+04	6.80E+01	7.57E-01
126998	Chloro-1,3-butadiene, 2-	—	—	l	O	8.85E+01	1.33E+00	3.24E-02	2.00E+00	1.00E+02	—	1.00E-01	1.00E-05	6.30E+02	2.12E+02	2.53E+00
127004	Chloro-2-propanol, 1-	—	—	s	O	9.55E+01	9.64E-05	2.35E-06	8.29E-01	6.75E+00	—	8.28E-02	9.65E-06	1.10E+05	2.05E+00	9.48E-01
127184	Tetrachloroethylene (perchlorethylene)	—	—	l	O	1.66E+02	7.65E-01	1.87E-02	2.19E+00	1.55E+02	—	7.20E-02	8.20E-06	2.00E+02	1.84E+01	2.97E+00
129000	Pyrene	—	—	s	O	2.02E+02	4.57E-04	1.12E-05	4.58E+00	3.80E+04	—	2.72E-02	7.24E-06	1.35E-01	4.25E-06	4.93E+00
130154	Naphthoquinone, 1,4-	—	—	s	O	1.58E+02	4.00E-05	9.76E-07	1.29E+00	1.95E+01	—	5.55E-02	7.09E-06	2.20E+02	1.34E-03	1.50E+00
131113	Dimethylphthalate	—	—	l	O	1.94E+02	2.40E-05	5.85E-07	1.50E+00	3.16E+01	—	5.68E-02	6.30E-06	4.19E+03	9.12E-03	1.66E+00
132649	Dibenzofuran	—	—	s	O	1.68E+02	5.28E-03	1.29E-04	3.93E+00	8.49E+03	—	5.51E-02	7.04E-06	2.86E+00	1.64E-03	4.00E+00
132650	Dibenzothiophene	—	—	s	O	1.84E+02	9.79E-04	2.39E-05	4.54E+00	3.44E+04	—	5.22E-02	6.74E-06	2.11E-01	2.05E-05	4.61E+00
133062	Captan	—	—	s	O	3.01E+02	2.99E-04	7.30E-06	3.81E+00	6.40E+03	—	1.83E-02	4.90E-06	5.00E-01	7.50E-06	1.84E+00
133904	Chloramben (amiben; 3-amino-2,5-dichlorobenzoic acid)	—	—	s	O	2.06E+02	3.49E-08	8.52E-10	2.32E+00	2.10E+02	—	5.71E-02	7.46E-06	6.26E+03	1.94E-05	2.48E+00
134327	Naphthylamine, 1-	—	—	s	O	1.43E+02	8.64E-06	2.11E-07	2.64E+00	4.34E+02	—	5.89E-02	7.56E-06	5.84E+02	6.44E-04	2.64E+00
135988	Butylbenzene, sec-	—	—	l	O	1.34E+02	5.07E-01	1.24E-02	3.32E+00	2.09E+03	—	5.76E-02	6.75E-06	1.81E+01	1.25E+00	4.09E+00
137268	Thiram	—	—	s	O	2.40E+02	3.28E-06	8.00E-08	2.83E+00	6.70E+02	—	2.25E-02	6.24E-06	3.00E+01	7.50E-06	1.70E+00
139402	Propazine	—	—	s	O	2.30E+02	2.15E-06	5.23E-08	3.04E+00	1.11E+03	—	4.40E-02	5.69E-06	7.23E+00	1.23E-06	3.25E+00
140578	Aramite	—	—	l	O	3.35E+02	—		4.00E+00	9.92E+03	—	4.23E-02	4.45E-06	—	1.23E-04	4.82E+00
140885	Ethyl acrylate	—	—	l	O	1.00E+02	1.06E-02	2.58E-04	2.03E+00	1.07E+02	—	7.40E-02	8.68E-06	2.00E+04	2.95E+01	1.22E+00
141322	Butyl acrylate	—	—	l	O	1.28E+02	1.16E-02	2.83E-04	1.84E+00	6.92E+01	—	6.00E-02	7.13E-06	1.43E+03	2.43E+00	2.22E+00
141662	Dicrotophos (bidrin)	—	—	l	O	2.37E+02	1.49E-10	3.64E-12	-9.68E-01	1.08E-01	—	4.33E-02	5.70E-06	1.31E+07	1.68E-03	-7.65E-01
141786	Ethyl acetate	—	—	l	O	8.81E+01	5.57E-03	1.36E-04	7.20E-01	5.25E+00	—	7.30E-02	9.70E-06	7.90E+04	9.41E+01	8.64E-01
142289	Dichloropropane, 1,3-	—	—	l	O	1.13E+02	5.52E-02	1.35E-03	2.10E+00	1.25E+02	—	7.91E-02	9.07E-06	2.16E+03	1.93E+01	2.23E+00
142621	Hexanoic acid	—	—	l	O	1.16E+02	1.31E-05	3.19E-07	-1.29E+00	5.13E-02	—	6.20E-02	7.68E-06	1.19E+04	2.46E-02	2.06E+00
142687	Tetrahydropyran	—	—	l	O	8.61E+01	5.53E-03	1.35E-04	9.19E-01	8.30E+00	—	8.14E-02	8.95E-06	3.40E+04	3.99E+01	1.06E+00
142825	Heptane, n-	—	—	l	O	1.00E+02	8.37E+01	2.04E+00	3.84E+00	6.90E+03	—	6.54E-02	7.00E-06	2.66E+00	4.07E+01	4.75E+00
142961	Butyl ether, n- (dibutyl ether)	—	—	l	O	1.30E+02	4.84E-02	1.18E-03	2.59E+00	3.93E+02	—	5.65E-02	6.40E-06	4.90E+02	3.33E+00	3.18E+00
143500	Kepone (chlordecone)	—	—	s	O	4.91E+02	1.04E-06	2.53E-08	4.43E+00	2.70E+04	—	4.22E-02	4.30E-06	7.60E+00	2.25E-07	4.91E+00
145733	Endothall	—	—	s	O	2.30E+02	1.08E-08	2.64E-10	1.93E+00	8.50E+01	—	5.72E-02	7.50E-06	1.00E+05	1.80E-04	1.89E+00
148185	Sodium diethyldithiocarbamate	—	—	s	O	1.71E+02	—		—		—	—	—	—	—	2.69E-01
150505	Merphos	—	—	l	O	2.99E+02	1.26E+00	3.07E-02	5.34E+00	2.20E+05	—	3.65E-02	4.75E-06	4.97E-03	3.83E-04	7.29E+00
151564	Ethylenimine	—	—	l	OB	4.31E+01	1.68E-05	4.11E-07	2.68E-01	1.85E+00	—	1.20E-01	1.30E-05	8.62E+05	2.31E+02	-6.04E-01
152169	Octamethylpyrophosphoramide	—	—	l	O	2.86E+02	1.16E-08	2.84E-10	-5.09E-01	3.10E-01	—	8.00E-02	8.00E-06	1.00E+06	9.88E-04	-1.01E+00
156592	Dichloroethylene, cis-1,2-	—	—	l	O	9.69E+01	1.87E-01	4.57E-03	1.46E+00	2.90E+01	—	7.35E-02	1.13E-05	4.93E+03	1.75E+02	1.86E+00
156605	Dichloroethylene, trans-1,2	—	—	l	O	9.69E+01	3.90E-01	9.51E-03	1.70E+00	5.01E+01	—	7.07E-02	1.19E-05	6.30E+03	3.52E+02	2.07E+00
189559	Dibenzo(a,i)pyrene	—	—	s	O	3.02E+02	1.83E-06	4.46E-08	7.38E+00	2.41E+07	—	3.68E-02	5.07E-06	3.39E-05	2.11E-13	7.81E+00
189640	Dibenzo(a,h)pyrene	—	—	s	O	3.02E+02	1.83E-06	4.46E-08	7.38E+00	2.41E+07	—	3.68E-02	5.07E-06	2.08E-05	1.30E-13	7.81E+00
191071	Coronene	—	—	s	O	3.00E+02	6.60E-06	1.61E-07	7.46E+00	2.88E+07	—	3.70E-02	4.93E-06	9.03E-06	2.21E-13	7.59E+00
191242	Benzo-g,h,i-perylene	—	—	s	O	2.76E+02	5.82E-06	1.42E-07	6.20E+00	1.58E+06	—	4.90E-02	5.65E-05	2.60E-04	1.00E-10	6.70E+00
192654	Dibenzo(a,e)pyrene	—	—	s	O	3.02E+02	2.16E-06	5.26E-08	7.42E+00	2.61E+07	—	3.67E-02	5.06E-06	7.84E-05	5.32E-13	7.85E+00
192972	Benzo-e-pyrene	—	—	s	O	2.52E+02	2.38E-05	5.80E-07	6.59E+00	3.86E+06	—	4.05E-02	5.49E-06	8.60E-04	7.26E-10	6.70E+00
193395	Indeno-1,2,3-cd-pyrene	—	—	s	O	2.76E+02	2.85E-06	6.96E-08	6.54E+00	3.47E+06	—	1.90E-02	5.66E-06	3.75E-03	1.40E-10	6.70E+00
198550	Perylene	—	—	s	O	2.52E+02	3.50E-13	8.54E-15	6.59E+00	3.89E+06	—	4.06E-02	5.49E-06	1.31E-04	1.11E-10	6.70E+00

Table 11
Texas Risk Reduction Program Physical-Chemical Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical and Physical Factors

CAS #	Chemical of Concern	Brabg.inorg ((µg/g DW)/ (µg/g soil))	Brbg.inorg ((µg/g DW)/ ((µg/g soil))	Physical State	Type	MW (g/mole)	H_unitless (unitless)	H atm-m³/mol	LogKoc (unitless)	Koc	LogKd (unitless)	Dair (cm²/s)	Dwat (cm²/s)	Solubility (mg/l)	Vapor_P (mm Hg)	logKow (unitless)
205823	Benzo-j-fluoranthene	—	—	s	O	2.52E+02	4.63E-04	1.13E-05	5.72E+00	5.25E+05	—	4.15E-02	5.48E-06	2.50E-03	8.39E-08	6.11E+00
205992	Benzo-b-fluoranthene	—	—	s	O	2.52E+02	4.99E-04	1.22E-05	6.08E+00	1.20E+06	—	2.26E-02	5.56E-06	1.50E-03	8.06E-08	6.11E+00
206440	Fluoranthene	—	—	s	O	2.02E+02	3.88E-04	9.46E-06	4.69E+00	4.90E+04	—	3.02E-02	6.35E-06	2.60E-01	8.13E-06	4.93E+00
207089	Benzo-k-fluoranthene	—	—	s	O	2.52E+02	4.45E-07	1.08E-08	6.09E+00	1.23E+06	—	2.26E-02	5.56E-06	5.50E-04	9.59E-11	6.11E+00
208968	Acenaphthylene	—	—	s	O	1.52E+02	4.74E-03	1.16E-04	3.84E+00	6.92E+03	—	4.39E-02	7.07E-06	3.93E+00	2.90E-02	3.94E+00
218019	Chrysene	—	—	s	O	2.28E+02	5.03E-05	1.23E-06	5.49E+00	3.09E+05	—	2.48E-02	6.21E-06	2.00E-03	7.80E-09	5.52E+00
224420	Dibenz-a,j-acridine	—	—	s	O	2.79E+02	7.08E-09	1.73E-10	6.35E+00	2.26E+06	—	3.79E-02	5.41E-06	8.14E-04	3.77E-13	6.36E+00
226368	Dibenz-a,h-acridine	—	—	s	O	2.79E+02	8.44E-09	2.06E-10	6.28E+00	1.91E+06	—	3.78E-02	5.39E-06	6.84E-04	3.79E-13	6.39E+00
229878	Phenanthridine	—	—	s	O	1.79E+02	1.83E-06	4.46E-08	3.24E+00	1.75E+03	—	5.46E-02	7.19E-06	2.50E+01	4.30E-06	3.30E+00
260946	Acridine	—	—	s	O	1.79E+02	3.93E-06	9.59E-08	3.40E+00	2.53E+03	—	5.11E-02	6.66E-06	2.24E+01	8.96E-06	3.46E+00
297972	Thionazin	—	—	l	O	2.48E+02	1.62E-05	3.96E-07	2.06E+00	1.14E+02	—	4.67E-02	5.81E-06	2.10E+02	2.51E-04	2.09E+00
298000	Methyl parathion	—	—	s	O	2.63E+02	5.82E-06	1.42E-07	2.81E+00	6.50E+02	—	8.00E-02	8.00E-06	5.00E+01	1.52E-05	2.75E+00
298022	Phorate	—	—	l	O	2.60E+02	4.99E-04	1.22E-05	3.74E+00	5.50E+03	—	8.00E-02	8.00E-06	4.40E+01	1.30E-03	3.37E+00
298044	Disulfoton	—	—	s	O	2.74E+02	2.58E-04	6.29E-06	3.95E+00	8.91E+03	—	8.00E-02	8.00E-06	1.60E+01	2.30E-04	3.86E+00
299843	Ronnel	—	—	s	O	3.22E+02	1.32E-03	3.22E-05	3.93E+00	8.45E+03	—	4.62E-02	5.54E-06	2.28E+00	1.01E-04	4.86E+00
300765	Naled	—	—	l	O	3.81E+02	2.71E-03	6.61E-05	2.12E+00	1.33E+02	—	4.40E-02	6.80E-06	1.50E+00	2.00E-04	1.60E+00
302012	Hydrazine	—	—	l	O	3.20E+01	7.20E-08	1.76E-09	-1.00E+00	1.00E-01	—	4.16E-01	1.90E-05	3.41E+08	1.40E+01	-1.47E+00
302170	Chloral hydrate (1,1-ethanediol, 2,2,2-trichloro-)	—	—	l	O	1.65E+02	4.91E-09	1.20E-10	7.27E-01	5.34E+00	—	7.43E-02	9.16E-06	1.80E+06	9.79E-04	3.30E-01
309002	Aldrin	—	—	s	O	3.65E+02	7.07E-03	1.72E-04	4.68E+00	4.79E+04	—	1.32E-02	4.86E-06	7.84E-02	1.67E-05	6.75E+00
314409	Bromacil	0.00E+00	0.00E+00	s	O	2.61E+02	9.94E-09	2.42E-10	2.11E+00	1.28E+02	0.00E+00	4.58E-02	5.80E-06	7.64E+02	6.32E-07	2.25E+00
319846	Hexachlorocyclohexane, alpha (alpha-BHC)	—	—	s	O	2.91E+02	2.82E-04	6.88E-06	3.12E+00	1.32E+03	—	1.42E-02	7.34E-06	2.00E+00	4.26E-05	4.26E+00
319857	Hexachlorocyclohexane, beta (beta-BHC)	—	—	s	O	2.91E+02	1.44E-05	3.51E-07	3.14E+00	1.38E+03	—	1.42E-02	7.34E-06	5.42E-01	4.90E-07	4.26E+00
319868	Hexachlorocyclohexane, delta (delta-BHC)	—	—	s	O	2.91E+02	1.77E-04	4.32E-06	3.93E+00	8.51E+03	—	4.50E-02	6.20E-06	2.59E+00	2.87E-05	4.00E+00
327980	Trichloronate	—	—	l	O	3.34E+02	4.82E-04	1.18E-05	4.62E+00	4.21E+04	—	4.27E-02	5.18E-06	8.13E-01	4.48E-05	5.74E+00
329715	Dinitrophenol, 2,5-	—	—	s	OA	1.84E+02	1.47E-07	3.58E-09	2.55E-03	1.01E+00	—	5.98E-02	7.84E-06	1.79E+03	2.61E-05	2.62E+00
330541	Diuron	—	—	s	O	2.33E+02	3.04E-08	7.42E-10	2.63E+00	4.27E+02	—	5.40E-02	5.30E-06	4.20E+01	1.00E-07	2.67E+00
333415	Diazinon	—	—	l	O	3.04E+02	4.70E-06	1.15E-07	2.12E+00	1.32E+02	—	1.80E-02	4.90E-06	4.00E+01	8.40E-05	3.86E+00
460195	Cyanogen	—	—	g	O	5.20E+01	2.06E-01	5.03E-03	1.34E-01	1.36E+00	—	2.04E-01	1.37E-05	1.00E+04	3.88E+03	7.00E-02
465736	Isodrin	—	—	s	O	3.65E+02	9.13E-02	2.23E-03	6.84E+00	6.88E+06	—	3.40E-02	4.49E-06	1.70E-02	7.77E-05	6.82E+00
470906	Chlorfenvinphos	—	—	l	O	3.60E+02	2.31E-08	5.63E-10	3.11E+00	1.29E+03	—	—	—	1.45E+02	1.70E-07	4.15E+00
479458	Trinitrophenylmethylnitramine (tetryl; nitramine)	—	—	s	O	2.87E+02	8.31E-11	2.03E-12	2.37E+00	2.34E+02	—	5.69E-02	6.40E-06	7.50E+01	4.00E-10	2.04E+00
504245	Aminopyridine, 4-	—	—	s	O	9.41E+01	2.44E-07	5.96E-09	-3.23E-01	4.76E-01	—	8.02E-02	1.08E-05	7.66E+04	2.00E-03	-1.13E-01
510156	Chlorobenzilate	—	—	s	O	3.25E+02	3.78E-06	9.23E-08	2.90E+00	8.00E+02	—	8.00E-02	8.00E-06	1.30E+01	2.20E-06	3.99E+00
513359	Methyl-2-butene, 2-	—	—	l	O	7.01E+01	7.32E+00	1.78E-01	2.19E+00	1.56E+02	—	8.57E-02	8.93E-06	2.06E+02	3.93E+02	2.67E+00
526738	Trimethylbenzene, 1,2,3-	—	—	l	O	1.20E+02	1.33E-01	3.23E-03	2.77E+00	5.89E+02	—	6.77E-02	7.41E-06	7.52E+01	1.49E+00	3.55E+00
534521	Dinitro-2-methylphenol, 4,6- (dinitro-o-cresol, 4, 6-)	—	—	s	O	1.98E+02	1.07E-07	2.61E-09	-1.50E+00	3.16E-02	—	5.31E-02	7.27E-06	3.00E+03	2.87E-05	2.07E+00
541731	Dichlorobenzene, 1,3-	—	—	l	O	1.47E+02	1.95E-01	4.76E-03	2.23E+00	1.70E+02	—	6.80E-02	8.13E-06	1.10E+02	2.30E+00	3.28E+00
542756	Dichloropropene, 1,3- (mixed isomers)	—	—	l	O	1.11E+02	1.23E-01	2.99E-03	1.72E+00	5.25E+01	—	6.26E-02	1.00E-05	1.55E+03	3.12E+01	1.75E+00
542881	Bis (2-chloromethyl) ether	—	—	l	O	1.15E+02	4.99E-03	1.22E-04	8.00E-02	1.20E+00	—	8.32E-02	9.59E-06	3.80E+04	3.00E+01	5.75E-01
544105	Chlorohexane, 1-	—	—	l	O	1.21E+02	9.98E-01	2.43E-02	2.95E+00	8.97E+02	—	6.40E-02	7.27E-06	5.39E+01	8.22E+00	3.63E+00
554847	Nitrophenol, 3-	—	—	s	O	1.39E+02	1.90E-11	4.63E-13	1.84E+00	6.91E+01	—	6.65E-02	8.61E-06	5.86E+03	7.81E-05	1.97E+00
563122	Ethion	—	—	l	O	3.84E+02	2.87E-05	7.00E-07	4.19E+00	1.54E+04	—	3.20E-02	4.60E-06	1.20E+00	1.50E-06	4.75E+00
563462	Methyl-1-butene, 2-	—	—	l	O	7.01E+01	1.41E+01	3.44E-01	2.23E+00	1.71E+02	—	8.57E-02	8.93E-06	1.38E+02	5.06E+02	2.72E+00
563586	Dichloropropene, 1,1-	—	—	l	O	1.11E+02	1.82E+00	4.44E-02	2.31E+00	2.06E+02	—	8.21E-02	8.95E-06	5.44E+02	1.63E+02	2.82E+00
575417	Dimethylnaphthalene, 1,3-	—	—	l	O	1.56E+02	7.23E-03	1.76E-04	4.30E+00	2.01E+04	—	5.39E-02	6.77E-06	8.85E+00	7.49E-03	4.38E+00
576249	Dichlorophenol, 2,3-	—	—	s	OA	1.63E+02	9.40E-06	2.29E-07	2.14E+00	1.37E+02	—	6.63E-02	8.21E-06	6.94E+03	7.32E-03	2.77E+00
583788	Dichlorophenol, 2,5-	—	—	s	OA	1.63E+02	9.09E-06	2.22E-07	2.09E+00	1.23E+02	—	6.63E-02	8.19E-06	8.34E+03	8.50E-03	2.73E+00
590181	Butene, cis-2-	0.00E+00	0.00E+00	g	O	5.61E+01	6.56E+00	1.60E-01	1.95E+00	8.95E+01	———	9.92E-02	8.50E-06	3.48E+02	1.46E+03	2.37E+00
591355	Dichlorophenol, 3,5-	—	—	s	OA	1.63E+02	3.68E-06	8.98E-08	2.61E+00	4.04E+02	—	6.51E-02	8.18E-06	1.06E+04	4.38E-03	2.75E+00
591786	Hexanone, 2-	—	—	l	O	1.00E+02	3.38E-03	8.25E-05	1.25E+00	1.79E+01	—	6.96E-02	7.75E-06	1.79E+04	1.11E+01	1.48E+00
594207	Dichloropropane, 2,2-	—	—	l	O	1.13E+02	3.39E-01	8.28E-03	2.19E+00	1.56E+02	—	7.96E-02	8.71E-06	1.68E+03	9.24E+01	2.36E+00
598776	Trichloropropane, 1,1,2-	—	—	l	O	1.47E+02	1.21E+00	2.94E-02	2.24E+00	1.74E+02	—	3.96E-02	9.30E-06	4.44E+01	6.64E+00	2.43E+00
606202	Dinitrotoluene, 2,6-	—	—	s	O	1.82E+02	3.11E-05	7.57E-07	1.62E+00	4.17E+01	—	3.27E-02	7.26E-06	1.82E+02	5.70E-04	2.18E+00
608731	Hexachlorocyclohexane, techn (technical-BHC)	—	—	—	O	2.91E+02	5.99E-05	1.46E-06	3.38E+00	2.40E+03	—	1.42E-02	7.34E-06	4.35E+01	1.64E-04	4.26E+00
608935	Pentachlorobenzene	—	—	s	O	2.50E+02	3.16E-02	7.71E-04	4.50E+00	3.16E+04	—	6.70E-02	6.30E-06	6.50E-01	1.67E-03	5.22E+00
609198	Trichlorophenol, 3,4,5-	—	—	s	OA	1.97E+02	1.15E-06	2.80E-08	3.52E+00	3.31E+03	—	6.00E-02	7.73E-06	1.52E+03	1.61E-04	3.91E+00
611143	Ethyl-2-methyl benzene, 1-	—	—	l	O	1.20E+02	2.19E-01	5.33E-03	3.03E+00	1.08E+03	—	6.76E-02	7.29E-06	7.46E+01	2.48E+00	3.53E+00
616239	Dichloropropanol, 2,3-	—	—	l	O	1.29E+02	3.97E-05	9.69E-07	1.53E+00	3.39E+01	—	4.84E-02	9.84E-06	2.95E+05	5.82E-01	7.84E-01
621647	Nitrosodi-n-propylamine, N-	—	—	s	O	1.30E+02	9.35E-05	2.28E-06	1.30E+00	1.97E+01	—	5.45E-02	8.17E-06	9.89E+03	4.00E-01	1.35E+00
622968	Ethyl-4-methyl benzene, 1-	—	—	l	O	1.20E+02	3.27E-01	7.99E-03	3.07E+00	1.17E+03	—	6.70E-02	7.18E-06	9.49E+01	2.95E+00	3.58E+00
623369	Methyl-2-pentenal, 2-	—	—	l	O	9.81E+01	1.34E-02	3.27E-04	1.44E+00	2.76E+01	—	7.21E-02	8.05E-06	5.04E+03	1.26E+01	1.72E+00
624646	Butene, trans-2-	0.00E+00	0.00E+00	g	O	5.61E+01	6.56E+00	1.60E-01	1.95E+00	8.95E+01	———	9.92E-02	8.50E-06	3.48E+02	1.46E+03	2.37E+00
626175	Benzenedicarbonitrile, 1,3-	0.00E+00	0.00E+00	s	O	1.28E+02	1.88E-06	4.58E-08	8.79E-01	7.57E+00	0.00E+00	6.71E-02	7.62E-06	1.28E+04	3.43E-03	1.03E+00
627190	Pentyne, 1-	—	—	l	O	6.81E+01	1.35E+00	3.30E-02	1.92E+00	8.24E+01	—	8.92E-02	8.84E-06	8.34E+02	3.03E+02	2.32E+00

Table 11
Texas Risk Reduction Program Physical-Chemical Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical and Physical Factors

CAS #	Chemical of Concern	Brabg.inorg ((µg/g DW)/ (µg/g soil))	Brbg.inorg ((µg/g DW)/ ((µg/g soil))	Physical State	Type	MW (g/mole)	H_unitless (unitless)	H atm-m^3/mol	LogKoc (unitless)	Koc	LogKd (unitless)	Dair (cm^2/s)	Dwat (cm^2/s)	Solubility (mg/l)	Vapor_P (mm Hg)	logKow (unitless)
629118	Hexanediol, 1,6-	—	—	s	O	1.18E+02	3.14E-08	7.66E-10	7.62E-01	5.78E+00	—	6.58E-02	7.82E-06	2.34E+04	1.10E-04	7.75E-01
630104	Selenourea	—	—	—	O	1.19E+02			—		—	—	—	—	—	-2.63E+00
630206	Tetrachloroethane, 1,1,1,2-	—	—	s	O	1.68E+02	9.98E-02	2.43E-03	2.98E+00	9.55E+02	—	7.10E-02	7.90E-06	1.10E+03	1.22E+01	2.93E+00
634662	Tetrachlorobenzene, 1,2,3,4-	—	—	s	O	2.16E+02	3.02E-02	7.36E-04	4.61E+00	4.07E+04	—	5.72E-02	7.31E-06	6.43E+00	1.64E-02	4.69E+00
634902	Tetrachlorobenzene, 1,2,3,5-	—	—	s	O	2.16E+02	2.41E-02	5.87E-04	3.80E+00	6.35E+03	—	5.75E-02	7.31E-06	5.18E+00	1.06E-02	4.70E+00
637923	Ethyl tert-butyl ether (2-ethyl-2-ethoxypropane)	—	—	l	O	1.02E+02	9.99E-02	2.44E-03	1.57E+00	3.71E+01	—	6.95E-02	7.34E-06	5.03E+03	9.00E+01	1.88E+00
645625	Ethyl-2-hexenal, 2-	—	—	l	O	1.26E+02	1.79E-02	4.36E-04	2.15E+00	1.42E+02	—	6.00E-02	6.91E-06	5.85E+02	1.52E+00	2.62E+00
695125	Vinylcyclohexane	—	—	l	O	1.10E+02	3.57E+00	8.71E-02	3.42E+00	2.62E+03	—	6.49E-02	7.33E-06	1.08E+01	6.40E+00	4.22E+00
709988	Propanil	—	—	s	OA	2.18E+02	8.47E-08	2.07E-09	2.96E+00	9.03E+02	—	4.93E-02	6.59E-06	1.27E+02	8.99E-07	2.97E+00
732116	Phosmet	—	—	s	O	3.17E+02	8.02E-08	1.95E-09	2.21E+00	1.61E+02	—	4.07E-02	5.37E-06	3.70E+03	1.71E-05	1.53E+00
759739	Nitroso-N-ethylurea, N-	—	—	s	O	1.17E+02	1.05E-04	2.57E-06	1.51E+00	3.24E+01	—	8.08E-02	8.25E-06	4.85E+04	7.97E-01	-2.47E-02
759944	Ethyl dipropylthiocarbamate, S-	—	—	l	O	1.89E+02	4.57E-03	1.12E-04	2.38E+00	2.40E+02	—	5.35E-02	5.65E-06	3.70E+02	1.60E-01	3.02E+00
764410	Dichloro-2-butene, 1,4-	—	—	l	O	1.25E+02	1.24E-02	3.03E-04	2.26E+00	1.82E+02	—	7.43E-02	8.62E-06	6.91E+03	1.26E+01	2.60E+00
765344	Glycidylaldehyde	—	—	l	O	7.21E+01	1.08E-05	2.64E-07	9.64E-01	9.21E+00	—	9.64E-02	1.16E-05	8.55E+07	2.70E+01	-1.17E-01
786196	Carbophenothion	—	—	l	O	3.43E+02	1.66E-04	4.05E-06	5.07E+00	1.17E+05	—	3.77E-02	5.00E-06	3.90E+00	3.45E-05	5.10E+00
823405	Toluenediamine, 2,6-	—	—	s	O	1.22E+02	5.15E-10	1.26E-11	1.60E-01	1.45E+00	—	6.87E-02	7.97E-06	4.80E+04	1.98E-05	1.56E-01
834128	Ametryn	—	—	s	OB	2.27E+02	7.33E-08	1.79E-09	2.89E+00	7.68E+02	—	4.24E-02	5.70E-06	1.85E+02	1.81E-07	2.88E+00
872504	Methylpyrrolidone, N-	—	—	l	O	9.91E+01	1.83E-06	4.46E-08	1.01E-02	1.02E+00	—	7.16E-02	8.75E-06	miscible	4.90E-01	1.00E-02
919948	Tert-amyl-ethyl ether (TAEE)	—	—	l	O	1.66E+02	3.31E-01	8.08E-03	2.24E+00	1.74E+02	0.00E+00	6.43E-02	6.38E-06	7.76E+02	4.04E+01	2.73E+00
924163	Nitrosodi-n-butylamine, N-	—	—	—	O	1.58E+02	3.58E-03	8.72E-05	2.36E+00	2.30E+02	—	8.00E-02	8.00E-06	1.20E+03	2.89E-01	2.31E+00
930552	Nitrosopyrrolidine, N-	—	—	l	O	1.00E+02	7.48E-07	1.83E-08	-1.87E-01	6.50E-01	—	8.00E-02	8.00E-06	7.80E+05	1.75E-01	2.31E-01
933755	Trichlorophenol, 2,3,6-	—	—	s	OA	1.97E+02	8.78E-03	2.14E-04	2.39E+00	2.45E+02	—	6.08E-02	7.70E-06	2.78E+01	2.26E-02	4.66E+00
933788	Trichlorophenol, 2,3,5-	—	—	s	OA	1.97E+02	3.95E-06	9.63E-08	2.37E+00	2.35E+02	—	6.10E-02	7.71E-06	3.74E+03	1.37E-03	3.75E+00
935955	Tetrachlorophenol, 2,3,5,6-	—	—	s	O	2.32E+02	5.82E-03	1.42E-04	1.40E+00	2.54E+01	—	5.60E-02	7.29E-06	2.03E+00	9.20E-04	4.51E+00
944229	Fonofos	—	—	s	O	2.46E+02	3.17E-01	7.72E-03	3.55E+00	3.58E+03	—	4.65E-02	5.52E-06	1.46E+01	3.43E-01	4.00E+00
959988	Endosulfan I	—	—	s	O	4.07E+02	3.55E-05	8.65E-07	4.20E+00	1.57E+04	—	3.22E-02	4.67E-06	1.73E+00	2.75E-06	5.20E+00
994058	Tert-amyl-methyl ether (TAME)	—	—	l	O	1.02E+02	1.30E-01	3.17E-03	1.62E+00	4.17E+01	—	6.99E-02	7.37E-06	4.29E+03	9.97E+01	1.95E+00
1024573	Heptachlor epoxide	—	—	s	O	3.89E+02	3.45E-04	8.41E-06	3.86E+00	7.24E+03	—	1.32E-02	4.23E-06	2.75E-01	4.34E-06	4.91E+00
1031078	Endosulfan sulfate	—	—	s	O	4.23E+02	3.65E-05	8.90E-07	5.90E+00	7.94E+05	—	3.00E-02	4.63E-06	1.03E-01	1.62E-07	6.01E+00
1071836	Glyphosate	—	—	s	OA	1.69E+02	5.82E-11	1.42E-12	-1.31E+01	8.33E-14	—	5.07E-02	8.30E-06	1.20E+04	7.50E-08	-1.60E+00
1114712	Pebulate	—	—	l	O	2.03E+02	9.85E-04	2.40E-05	2.63E+00	4.30E+02	—	5.10E-02	5.38E-06	9.20E+01	8.85E-03	3.51E+00
1116547	Nitrosodiethanolamine, N-	—	—	l	O	1.34E+02	2.05E-09	4.99E-11	4.76E-01	2.99E+00	—	7.27E-02	7.70E-06	7.33E+07	5.00E-04	-1.28E+00
1134232	Cycloate	—	—	l	O	2.15E+02	8.55E-05	2.09E-06	3.44E+00	2.78E+03	—	4.28E-02	5.60E-06	8.32E+01	6.04E-04	3.80E+00
1184572	Methylmecury hydroxide	—	—	s	OM	2.33E+02	5.47E-09	1.33E-10	1.92E-02	1.05E+00	—	1.05E-01	1.43E-05	1.00E+06	7.50E-03	-1.33E+00
1191259	Hydrocaproic acid, 6- (6-hydroxyhexanoic acid)	—	—	l	OA	1.32E+02	1.84E-09	4.48E-11	-2.55E-01	5.56E-01	0.00E+00	5.77E-02	7.22E-06	9.86E+03	2.51E-06	-3.00E+00
1319773	Cresol	—	—	l	O	1.08E+02	3.62E-05	8.82E-07	1.94E+00	8.71E+01	—	7.40E-02	1.00E-05	2.30E+04	1.40E-01	2.06E+00
1330207	Xylenes	—	—	l	O	1.06E+02	2.93E-01	7.14E-03	2.38E+00	2.40E+02	—	7.40E-02	8.50E-06	1.98E+02	8.06E+00	3.09E+00
1332214	Asbestos	—	—	s	I	varies			—		5.00E+00	—	—	0.00E+00	0.00E+00	—
1336363	Polychlorinated biphenyls (PCBs)	—	—	l	O	2.90E+02	1.75E-02	4.26E-04	5.72E+00	5.30E+05	—	1.04E-01	1.00E-05	5.55E-02	7.60E-05	6.30E+00
1563662	Carbofuran	—	—	s	O	2.21E+02	1.62E-07	3.95E-09	1.46E+00	2.90E+01	—	5.35E-02	5.40E-06	7.00E+02	8.30E-06	2.30E+00
1582098	Trifluralin	—	—	s	O	3.35E+02	2.01E-03	4.91E-05	4.14E+00	1.37E+04	—	1.49E-02	4.70E-06	6.00E-01	1.10E-04	5.31E+00
1610180	Prometon (pramitol)	—	—	s	O	2.25E+02	7.32E-07	1.78E-08	2.78E+00	6.07E+02	—	4.25E-02	5.54E-06	5.76E+01	3.43E-06	2.88E+00
1634044	MTBE (methyl tert-butyl ether)	—	—	l	O	8.81E+01	2.44E-02	5.95E-04	1.15E+00	1.41E+01	—	7.92E-02	9.41E-05	4.80E+04	2.49E+02	1.43E+00
1646884	Aldicarb sulfone	—	—	s	O	2.22E+02	1.10E-07	2.67E-09	2.30E-01	1.70E+00	—	5.55E-02	5.79E-06	8.00E+03	9.00E-05	-6.66E-01
1705857	Methyl chrysene, 6-	—	—	s	O	2.42E+02	1.17E-05	2.84E-07	6.55E+00	3.53E+06	—	4.09E-02	5.61E-06	1.07E-03	9.44E-10	6.76E+00
1746016	TCDD, 2,3,7,8- (dioxin)	—	—	s	O	3.22E+02	1.47E-03	3.60E-05	7.15E+00	1.41E+07	—	4.70E-02	8.00E-06	1.93E-05	7.40E-10	7.02E+00
1861321	Dacthal (DCPA)	—	—	s	O	3.32E+02	9.35E-06	2.28E-07	4.67E+00	4.64E+04	—	4.20E-02	2.05E+00	2.20E-01	1.13E-07	4.71E+00
1861401	Benefin (benfluralin)	—	—	s	O	3.35E+02	7.77E-06	1.90E-07	5.22E+00	1.67E+05	—	3.60E-02	4.92E-06	5.09E+00	2.16E-06	5.25E+00
1868537	Dibromofluoromethane	—	—	l	O	1.92E+02	1.14E-01	2.79E-03	1.40E+00	2.51E+01	—	8.70E-02	1.01E-05	1.26E+04	1.37E+02	1.67E+00
1888717	Hexachloropropylene	—	—	l	O	2.49E+02	3.94E-02	9.61E-04	4.03E+00	1.06E+04	—	5.64E-02	7.15E-06	4.11E+01	1.19E-01	4.10E+00
1897456	Chlorothalonil	—	—	s	O	2.66E+02	1.53E-06	3.72E-08	3.38E+00	2.40E+03	—	4.90E-02	6.57E-06	2.30E+01	2.41E-06	3.46E+00
1910425	Paraquat	—	—	s	OB	2.57E+02	2.91E-11	7.11E-13	-4.81E+00	1.55E-05	—	3.74E-02	3.57E-06	7.00E+05	1.45E-06	-4.50E+00
1912249	Atrazine	—	—	s	O	2.16E+02	1.09E-07	2.67E-09	2.20E+00	1.60E+02	—	5.64E-02	5.58E-06	3.00E+01	3.00E-07	2.82E+00
1918009	Dicamba	—	—	s	O	2.09E+02	3.28E-07	8.01E-09	3.42E-01	2.20E+00	—	6.02E-02	6.69E-06	5.60E+03	9.70E-05	2.14E+00
1918021	Picloram	—	—	s	O	2.41E+02	1.01E-07	2.45E-09	-6.00E-02	8.71E-01	—	5.50E-02	7.27E-06	2.82E+02	2.15E-06	2.94E+00
1929777	Vernam	—	—	l	O	2.03E+02	7.36E-04	1.79E-05	3.44E+00	2.75E+03	—	5.10E-02	5.39E-06	9.85E+01	1.04E-02	3.51E+00
2004708	Pentadiene, 1,3-trans-	—	—	l	O	6.81E+01	1.31E+00	3.20E-02	1.95E+00	8.96E+01	—	8.75E-02	8.74E-06	8.94E+02	3.15E+02	2.37E+00
2008415	Butylate	—	—	l	O	2.17E+02	3.50E-03	8.55E-05	2.10E+00	1.26E+02	—	4.89E-02	5.14E-06	4.60E+01	1.30E-02	3.85E+00
2104645	EPN (o-ethyl o-(4-nitrophenyl)phenylphosphonothioate)	—	—	s	O	3.23E+02	2.00E-08	4.88E-10	3.75E+00	5.57E+03	—	3.93E-02	5.16E-06	1.40E+00	1.91E-09	3.81E+00
2157984	Monocrotophos	—	—	s	O	2.23E+02	1.24E-12	3.02E-14	3.18E-01	2.08E+00	0.00E+00	4.48E-02	5.67E-06	8.02E+05	8.12E-08	4.84E-01
2212671	Molinate	—	—	l	O	1.87E+02	5.25E-05	1.28E-06	1.70E+00	5.00E+01	—	5.65E-02	6.00E-06	9.00E+02	5.60E-03	2.91E+00
2303164	Diallate	—	—	s	O	2.70E+02	1.58E-04	3.85E-06	3.28E+00	1.90E+03	—	8.00E-02	8.00E-06	1.40E+01	1.50E-04	4.08E+00
2303175	Triallate	—	—	s	O	3.05E+02	4.53E-04	1.11E-05	3.16E+00	1.44E+03	—	4.58E-02	4.84E-06	4.00E+00	1.20E-04	4.57E+00
2310170	Phosalone	—	—	s	O	3.68E+02	1.95E-05	4.76E-07	3.06E+00	1.15E+03	—	3.80E-02	4.97E-06	7.77E+01	7.53E-05	3.15E+00

Table 11
Texas Risk Reduction Program Physical-Chemical Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical and Physical Factors

CAS #	Chemical of Concern	Brabg.inorg ((µg/g DW)/ (µg/g soil))	Brbg.inorg ((µg/g DW)/ ((µg/g soil))	Physical State	Type	MW (g/mole)	H_unitless (unitless)	H atm-m^3/mol	LogKoc (unitless)	Koc	LogKd (unitless)	Dair (cm^2/s)	Dwat (cm^2/s)	Solubility (mg/l)	Vapor_P (mm Hg)	logKow (unitless)
2312358	Propargite	—	—	l	O	3.50E+02	1.44E-06	3.50E-08	3.75E+00	5.58E+03	—	3.94E-02	4.20E-06	5.00E-01	4.48E-08	3.73E+00
2385855	Mirex	—	—	s	O	5.46E+02	3.20E-01	7.80E-03	7.36E+00	2.30E+07	—	3.50E-02	4.08E-06	3.41E-08	7.50E-07	1.10E+01
2691410	Cyclotetramethylenetetranitramine (HMX)	—	—	s	O	2.96E+02	2.50E-14	6.10E-16	-1.40E+00	3.98E-02	—	3.74E-02	6.34E-06	2.37E+03	4.75E-15	-1.30E+00
2921882	Chlorpyrifos	—	—	s	O	3.51E+02	1.73E-04	4.22E-06	3.70E+00	5.01E+03	—	4.85E-02	5.11E-06	9.00E-01	1.87E-05	4.66E+00
3058386	Triaminotrinitrobenzene (TATB)	—	—	s	O	2.58E+02	5.80E-12	1.41E-13	6.88E-01	4.88E+00	—	5.02E-02	6.84E-06	3.20E+01	1.34E-11	7.00E-01
3351288	Methyl chrysene, 1-	—	—	s	O	2.42E+02	1.16E-05	2.83E-07	6.65E+00	4.47E+06	—	4.09E-02	5.61E-06	2.53E-04	2.22E-10	6.76E+00
3351324	Methyl chrysene, 2-	—	—	s	O	2.42E+02	1.18E-05	2.88E-07	6.65E+00	4.47E+06	—	4.09E-02	5.61E-06	3.54E-04	3.17E-10	6.76E+00
3689245	Tetraethyl dithiopyrophosphate (sulfotep)	—	—	l	O	3.22E+02	1.75E-04	4.26E-06	2.87E+00	7.41E+02	—	1.50E-02	5.50E-06	2.50E+01	1.70E-04	3.98E+00
4901513	Tetrachlorophenol, 2,3,4,5-	—	—	s	OA	2.32E+02	1.98E-06	4.84E-08	2.66E+00	4.57E+02	—	5.65E-02	7.32E-06	2.96E+02	4.62E-05	4.41E+00
5103719	Chlordane, cis- (alpha chlordane)	—	—	l	O	4.10E+02	4.11E-03	1.00E-04	6.85E+00	7.08E+06	—	3.32E-02	4.66E-06	4.64E-02	8.51E-06	6.97E+00
5103731	Nonachlor, cis-	—	—	s	O	4.10E+02	2.02E-03	4.93E-05	5.08E+00	1.20E+05	—	1.18E-02	4.37E-06	5.60E-02	1.00E-05	6.60E+00
5234684	Carboxin	—	—	s	O	2.35E+02	2.77E-08	6.75E-10	2.93E+00	8.46E+02	—	4.48E-02	6.14E-06	2.24E+01	4.82E-08	3.02E+00
5989275	Limonene, d-*	—	—	—	—	—			—		—	—	—	—	—	—
6842155	Propylene tetramer	—	—	l	O	1.60E+02	1.20E+02	2.93E+00	5.40E+00	2.51E+05	—	1.00E-01	1.00E-05	3.40E-02	4.79E-01	—
7005723	Chlorophenyl phenylether, 4-	—	—	l	O	2.05E+02	1.30E-02	3.17E-04	4.12E+00	1.31E+04	—	4.89E-02	6.19E-06	1.43E+00	1.66E-03	5.04E+00
7421934	Endrin aldehyde	—	—	l	O	3.81E+02	1.80E-02	4.39E-04	6.33E+00	2.14E+06	—	2.97E-02	3.83E-06	1.68E-02	1.46E-05	6.44E+00
7429905	Aluminum	1.50E-03	6.50E-04	s	M	2.70E+01			—		2.55E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.29E-01
7439896	Iron*	—	—	—	—	—	—		—		—	—	—	—	—	—
7439921	Lead (inorganic)	—	—	s	M	2.07E+02			—		1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.29E-01
7439932	Lithium	2.00E-02	4.00E-03	s	M	6.94E+00			—		—	—	—	—	—	—
7439954	Magnesium*	—	—	—	—	—			—		—	—	—	—	—	—
7439965	Manganese	1.00E-01	5.00E-02	s	M	5.49E+01			—		1.70E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7439987	Molybdenum	1.00E-01	6.00E-02	s	M	9.59E+01			—		1.30E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440020	Nickel and compounds	2.50E-02	8.00E-03	s	M	5.87E+01			—		1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.71E-01
7440097	Potassium*	—	—	—	—	—	—		—		—	—	—	—	—	—
7440224	Silver	1.70E-01	1.00E-01	s	M	1.08E+02			—		-1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440235	Sodium*	—	—	—	—	—	—		—		—	—	—	—	—	—
7440246	Strontium	?	?	s	M	8.76E+01			—		3.01E-01	0.00E+00	0.00E+00	—	0.00E+00	0.00E+00
7440315	Tin	1.00E-02	6.00E-03	s	M	1.19E+02			—		2.10E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E+00
7440326	Titanium	3.70E-03	3.00E-03	s	M	4.79E+01			—		—	—	—	0.00E+00	—	—
7440360	Antimony	7.00E-02	3.00E-02	s	M	1.22E+02			—		1.65E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440382	Arsenic	1.00E-02	8.00E-03	s	M	7.49E+01			—		1.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.79E-01
7440393	Barium	4.90E-02	1.50E-02	s	M	1.37E+02			—		1.04E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440417	Beryllium	3.60E-03	1.50E-03	s	M	9.01E+00			—		1.36E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.71E-01
7440428	Boron	—	—	s	I	1.08E+01			—		—	—	—	—	—	—
7440439	Cadmium	1.40E-01	6.40E-02	s	M	1.12E+02			—		1.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.10E-02
7440484	Cobalt	1.00E-02	7.00E-03	s	M	5.89E+01			—		1.65E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440508	Copper	2.90E-01	2.50E-01	s	M	6.35E+01			—		1.60E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.71E-01
7440611	Uranium (soluble salts)	5.00E-03	4.00E-03	s	M	2.38E+02			—		3.47E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440622	Vanadium	3.60E-03	3.00E-03	s	M	5.09E+01			—		3.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440666	Zinc	9.00E-02	4.40E-02	s	M	6.54E+01			—		1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-4.71E-01
7440699	Bismuth	—	—	s	M	2.09E+02	—		—		7.30E-01	—	—	—	—	—
7440702	Calcium*	—	—	—	—	—			—		—	—	—	—	—	—
7581977	Dichlorobutane, 2,3-	—	—	l	O	1.27E+02	2.31E-01	5.64E-03	2.30E+00	2.01E+02	—	7.10E-02	8.07E-06	4.52E+02	1.50E+01	2.81E+00
7647010	Hydrogen chloride (hydrochloric acid)*	—	—	—	—	—	—		—		—	—	—	—	—	—
7664417	Ammonia	—	—	g	I	1.70E+01	1.36E-02	3.33E-04	4.90E-01	3.09E+00	—	2.59E-01	6.93E-05	5.31E+05	7.47E+03	2.29E-01
7681529	Sodium hypochlorite	—	—	l	I	7.44E+01	—		—		-2.08E-01	—	—	—	—	—
7704349	Sulfur*	—	—	—	—	—			—		—	—	—	—	—	—
7723140	Phosphorus, total*	—	—	—	—	—	—		—		—	—	—	—	—	—
7723140	Phosphorus, white	—	—	s	I	1.24E+02	5.65E-02	1.38E-03	3.05E+00	1.12E+03	—	—	—	3.00E+00	2.50E-02	3.08E+00
7782414	Fluorine (soluble fluoride)	—	—	g	I	3.80E+01	—		—		2.18E+00	—	—	NA/reacts	7.60E+02	2.23E-01
7782492	Selenium	1.50E-02	2.20E-02	s	M	7.90E+01			—		3.42E-01	—	—	0.00E+00	0.00E+00	2.39E-01
7782505	Chlorine	—	—	g	I	7.09E+01	2.86E+00	6.98E-02	—		—	1.20E-01	1.48E-05	7.00E+03	5.17E+03	8.49E-01
7784421	Arsine	—	—	g	I	7.79E+01	2.41E-01	5.89E-03	—		—	—	—	2.00E+05	1.13E+04	—
7786347	Phosdrin (mevinphos)	—	—	l	O	2.24E+02	3.28E-09	7.99E-11	-9.00E-01	1.26E-01	—	4.72E-02	6.06E-06	1.24E+07	1.81E-02	-7.00E-01
7791120	Thallium and compounds (as thallium chloride)	1.00E-03	4.00E-04	s	M	2.40E+02			—		1.64E+00	—	—	2.90E+03	0.00E+00	—
7803512	Phosphine	—	—	g	I	3.40E+01	1.46E+02	3.56E+00	—		—	3.81E-01	1.82E-05	4.00E+02	3.14E+04	-2.71E-01
8001352	Toxaphene	—	—	s	O	4.14E+02	1.40E-04	3.41E-06	4.98E+00	9.58E+04	—	1.16E-02	4.34E-06	7.40E-01	4.19E-06	6.79E+00
8018017	Mancozeb	—	—	s	O	2.65E+02	1.81E-05	4.42E-07	1.13E+00	1.35E+01	—	5.69E-02	6.02E-06	6.20E+00	7.50E-06	1.33E+00
8065483	Demeton	—	—	l	O	2.58E+02	6.65E-03	1.62E-04	2.43E+00	2.69E+02	—	4.56E-02	5.45E-06	7.20E+02	1.00E-04	2.97E+00
9003047	Sodium polyacrylate	—	—	l	O	7.21E+01	1.32E-05	3.21E-07	5.43E-02	1.13E+00	—	9.08E-02	1.06E-05	1.00E+06	3.72E+00	4.42E-01
10061015	Dichloropropene, cis 1,3-	—	—	l	O	1.11E+02	9.15E-02	2.23E-03	1.65E+00	4.47E+01	—	7.94E-02	8.00E-06	2.70E+03	3.70E+01	1.53E+00
10061026	Dichloropropene, trans 1,3-	—	—	l	O	1.11E+02	9.15E-02	2.23E-03	1.65E+00	4.47E+01	—	7.94E-02	9.20E-06	2.80E+03	3.00E+01	1.53E+00
10141727	Methyltetrahydropyran, 2-	—	—	l	O	1.00E+02	8.30E-03	2.02E-04	1.28E+00	1.92E+01	—	7.19E-02	8.04E-06	1.23E+04	1.87E+01	1.52E+00

Table 11
Texas Risk Reduction Program Physical-Chemical Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical and Physical Factors

CAS #	Chemical of Concern	Brabg.inorg ((µg/g DW)/ (µg/g soil))	Brbg.inorg ((µg/g DW)/ ((µg/g soil))	Physical State	Type	MW (g/mole)	H_unitless (unitless)	H atm-m^3/mol	LogKoc (unitless)	Koc	LogKd (unitless)	Dair (cm^2/s)	Dwat (cm^2/s)	Solubility (mg/l)	Vapor_P (mm Hg)	logKow (unitless)
10595956	Nitroso-methyl-ethyl-amine, N-	—	—	—	O	8.81E+01	3.70E-05	9.02E-07	1.32E+00	2.10E+01	—	8.00E-02	8.00E-06	3.00E+05	2.28E+00	-1.48E-01
12789036	Chlordane (technical)	—	—	s	O	4.10E+02	2.02E-03	4.93E-05	5.08E+00	1.20E+05	—	1.18E-02	4.37E-06	5.60E-02	1.00E-05	6.60E+00
13071799	Terbufos	—	—	l	O	2.88E+02	6.83E-02	1.67E-03	4.14E+00	1.37E+04	—	4.18E-02	5.08E-06	6.84E+00	2.96E-02	4.20E+00
13194484	Ethoprop	—	—	l	O	2.42E+02	6.73E-06	1.64E-07	3.09E+00	1.22E+03	—	4.16E-02	5.56E-06	7.50E+02	3.80E-04	3.14E+00
14797558	Nitrate	—	—	—	I	6.20E+01			-2.00E+00	1.00E-02	—	—	—	—	—	2.09E-01
14797650	Nitrite	—	—	—	I	4.60E+01			—		—	—	—	—	—	5.64E-02
14797730	Perchlorate	—	—	s	I	9.95E+01			—		-5.00E-01	—	—	—	0.00E+00	0.00E+00
14808798	Sulfate*	—	—	—	—	—			—		—	—	—	—	—	—
15299997	Napropamide	—	—	s	OB	2.71E+02	2.17E-07	5.30E-09	3.74E+00	5.54E+03	—	3.78E-02	5.05E-06	2.57E+01	3.77E-07	3.81E+00
15950660	Trichlorophenol, 2,3,4-	—	—	s	OA	1.97E+02	4.60E-06	1.12E-07	2.75E+00	5.61E+02	—	6.10E-02	7.73E-06	1.55E+03	6.60E-04	3.88E+00
15972608	Alachlor	—	—	s	O	2.70E+02	8.62E-07	2.10E-08	2.28E+00	1.90E+02	—	1.94E-02	5.83E-06	2.40E+02	2.20E-05	3.37E+00
16752775	Methomyl	—	—	s	O	1.62E+02	7.48E-09	1.83E-10	2.20E+00	1.60E+02	—	4.07E-02	7.20E-06	5.80E+04	5.00E-05	6.10E-01
16887006	Chloride*	—	—	—	—	—	—		—		—	—	—	—	—	—
17804352	Benomyl	—	—	s	O	2.90E+02	2.08E-07	5.07E-09	1.16E+00	1.46E+01	—	4.49E-02	4.46E-06	2.90E+00	7.50E-09	1.37E+00
18496258	Sulfide*	—	—	—	—	—			—		—	—	—	—	—	—
18540299	Chromium (VI)	5.20E-03	4.50E-03	s	M	5.20E+01			—		1.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
19406510	Amino-2,6-dinitrotoluene, 4-	—	—	s	O	1.97E+02	1.74E-07	4.24E-09	2.56E+00	3.63E+02	—	5.60E-02	7.31E-06	3.64E+01	5.86E-07	2.62E+00
21087649	Metribuzin	—	—	s	O	2.14E+02	4.99E-09	1.22E-10	3.48E-01	2.23E+00	—	4.51E-02	5.98E-06	1.21E+05	5.16E-05	3.72E-01
21725462	Cyanazine	—	—	s	O	2.41E+02	6.70E-10	1.63E-11	1.69E+00	4.92E+01	—	4.33E-02	5.83E-06	1.15E+02	7.28E-09	1.72E+00
22248799	Tetrachlorvinphos (Stirophos)	—	—	s	O	3.66E+02	7.84E-08	1.91E-09	4.76E+00	5.72E+04	0.00E+00	3.88E-02	4.82E-06	9.74E+01	3.81E-07	4.80E+00
22967926	Methyl mercury	—	—	—	I	2.16E+02	—		—		—	—	—	—	—	7.63E-02
23135220	Oxamyl	—	—	s	O	2.19E+02	1.60E-11	3.90E-13	6.99E-01	5.00E+00	—	5.57E-02	5.75E-06	2.80E+05	3.83E-07	-1.20E+00
23564058	Thiophanate-methyl	—	—	s	O	3.42E+02	3.82E-07	9.32E-09	9.54E-01	9.00E+00	—	4.55E-02	4.68E-06	3.50E+00	7.50E-08	1.50E+00
23950585	Pronamide	—	—	s	O	2.56E+02	3.74E-04	9.13E-06	2.30E+00	2.00E+02	—	8.00E-02	8.00E-06	1.50E+01	4.00E-04	3.57E+00
25339177	Isodecanol	0.00E+00	0.00E+00	l	O	1.58E+02	1.67E-03	4.08E-05	3.27E+00	1.84E+03	———	4.84E-02	5.49E-06	3.43E+01	6.63E-03	4.02E+00
26471625	Toluene diisocyanate, 2,4/2,6-	—	—	l	O	1.74E+02	6.86E-06	1.67E-07	3.35E+00	2.25E+03	—	6.09E-02	6.80E-06	1.11E+05	8.00E-02	3.74E+00
27304138	Oxychlordane	—	—	s	O	4.10E+02	2.02E-03	4.93E-05	5.08E+00	1.20E+05	—	1.18E-02	4.37E-06	5.60E-02	1.00E-05	6.60E+00
33213659	Endosulfan II	—	—	s	O	4.07E+02	3.55E-05	8.65E-07	4.20E+00	1.57E+04	—	3.22E-02	4.67E-06	1.16E+00	1.84E-06	5.20E+00
34014181	Tebuthiuron	—	—	s	O	228.31	4.99E-11	1.22E-12	1.50E+00	3.13E+01	—	5.62E-02	5.85E-06	2.50E+03	2.03E-05	1.79E+00
34643464	Prothiofos (Tokuthion)	—	—	l	O	3.45E+02	5.72E-03	1.39E-04	7.39E+00	2.45E+07	0.00E+00	3.56E-02	4.58E-06	6.23E-03	1.89E-06	7.36E+00
35400432	Sulprofos (Bolstar)	—	—	l	O	3.22E+02	3.64E-05	8.87E-07	6.41E+00	2.55E+06	0.00E+00	3.55E-02	4.52E-06	1.90E-02	3.99E-08	6.40E+00
35572782	Amino-4,6-dinitrotoluene, 2-	—	—	s	O	1.97E+02	1.19E-07	2.90E-09	2.75E+00	5.62E+02	—	5.60E-02	7.30E-06	1.73E+01	1.91E-07	2.80E+00
37764253	Dichlormid	0.00E+00	0.00E+00	l	O	2.08E+02	2.75E-06	6.70E-08	1.77E+00	5.88E+01	0.00E+00	4.66E-02	5.79E-06	4.26E+03	1.03E-03	1.89E+00
39196184	Thiofanox	—	—	s	O	2.18E+02	3.90E-07	9.52E-09	1.77E+00	5.90E+01	—	2.55E-02	6.62E-06	5.20E+03	3.10E-04	2.16E+00
39765805	Nonachlor, trans-	—	—	s	O	4.10E+02	2.02E-03	4.93E-05	5.08E+00	1.20E+05	—	1.18E-02	4.37E-06	5.60E-02	1.00E-05	6.60E+00
40487421	Pendimethalin	—	—	s	O	2.81E+02	1.97E-05	4.82E-07	5.28E+00	1.91E+05	—	3.81E-02	5.26E-06	5.69E-01	7.31E-07	5.37E+00
43121433	Bayleton	—	—	s	O	2.94E+02	2.76E-08	6.72E-10	2.31E+00	2.06E+02	—	4.00E-02	5.25E-06	4.74E+01	8.13E-08	2.47E+00
51218452	Metolachlor	—	—	l	O	2.84E+02	3.13E-08	7.64E-10	2.85E+00	7.03E+02	—	3.61E-02	5.10E-06	8.64E+02	2.29E-06	2.90E+00
51235042	Hexazinone	—	—	s	O	2.52E+02	8.62E-11	2.10E-12	1.57E+00	3.70E+01	—	5.08E-02	5.11E-06	3.30E+04	2.03E-07	2.15E+00
53494705	Endrin ketone	—	—	s	O	3.81E+02	3.66E-05	8.93E-07	5.24E+00	1.74E+05	—	3.10E-02	4.46E-06	8.60E-01	1.51E-06	5.33E+00
55219653	Triademenol	—	—	s	O	295.8	5.32E-11	1.30E-12	2.37E+00	2.37E+02	—	4.55E-02	4.53E-06	9.50E+01	3.08E-10	2.90E+00
55283686	Ethalfluralin (sonolan)	—	—	l	O	3.33E+02	1.54E-05	3.76E-07	4.78E+00	6.07E+04	—	3.75E-02	4.96E-06	1.01E+01	8.54E-06	4.82E+00
55285148	Carbosulfan	—	—	l	O	3.81E+02	2.15E-05	5.25E-07	4.41E+00	2.57E+04	—	3.76E-02	3.88E-06	3.00E-01	3.10E-07	5.57E+00
57966957	Cymoxanil	—	—	s	OA	1.98E+02	1.37E-08	3.35E-10	-3.89E+00	1.29E-04	—	4.91E-02	6.76E-06	4.47E+03	1.13E-06	6.00E-01
61213250	Fluorochloridone	—	—	s	O	3.12E+02	8.44E-08	2.06E-09	2.69E+00	4.94E+02	—	4.09E-02	5.47E-06	8.23E+01	4.07E-07	3.30E+00
62476599	Acifluorfen, sodium	—	—	s	O	3.84E+02	8.31E-13	2.03E-14	2.05E+00	1.13E+02	—	1.45E-02	4.40E-06	2.50E+05	9.75E-09	3.73E-01
66230044	Esfenvalerate	—	—	s	O	4.20E+02	1.70E-08	4.15E-10	4.80E+00	6.37E+04	—	2.91E-02	4.18E-06	2.00E-04	1.80E-11	6.30E+00
67774327	Polybrominated biphenyls (PBBs)	—	—	s	O	6.28E+02	1.62E-04	3.95E-06	3.33E+00	2.14E+03	—	—	4.63E-06	1.10E-02	5.20E-08	6.39E+00
68333799	Ammonium polyphosphate*	—	—	—	—	—	—		—		—	—	—	—	—	—
68955533	Primene	—	—	l	O	1.71E+02	3.24E-03	7.90E-05	3.96E+00	9.16E+03	—	4.60E-02	1.08E-03	9.56E+01	3.30E-02	4.03E+00
69418264	Copolymer acrylamide	—	—	s	O	7.11E+01	1.33E-08	3.24E-10	-6.60E-01	2.19E-01	—	9.70E-02	1.28E-05	2.20E+06	7.00E-03	-8.07E-01
87674688	Dimethenamid	—	—	l	O	2.76E+02	2.18E-09	5.32E-11	1.35E+00	2.26E+01	—	3.80E-02	5.35E-06	3.75E+04	5.42E-06	1.49E+00
107534963	Tebuconazole	—	—	s	O	307.8	5.94E-09	1.45E-10	3.01E+00	1.02E+03	—	4.25E-02	4.17E-06	3.60E+01	1.28E-08	3.70E+00
16065831/ 7440473	Chromium (III) (total chromium)	5.20E-03	4.50E-03	s	M	5.20E+01			—		3.08E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
25154523/ 84852153/ 104405	Nonylphenol	—	—	l	OA	2.20E+02	6.96E-05	1.70E-06	6.48E+00	3.02E+06	—	3.93E-02	5.27E-06	7.23E-01	4.14E-06	6.48E+00
27193868/ 104438	Dodecylphenol, 4-	—	—	l	OA	2.62E+02	4.00E-04	9.76E-06	8.40E+00	2.50E+08	—	3.46E-02	4.72E-06	3.80E-02	1.06E-06	8.40E+00
7085190/ 93652	MCPP (2-(4-chloro-2-methylphenoxy) propanoic acid)	—	—	s	O	2.15E+02	1.00E-06	2.44E-08	-1.76E+00	1.73E-02	—	4.70E-02	6.36E-06	2.80E+02	2.50E-05	3.13E+00
7439976/ 7487947	Mercury (pH = 4.9)	5.50E-03	1.40E-02	l	M	2.01E+02	4.74E-01	1.16E-02	—		-1.40E+00	3.07E-02	6.30E-06	3.00E-02	1.30E-03	-4.71E-01
928723/ 142734	Disodium iminodiacetate (iminodiacetic acid, disodium salt)	—	—	s	O	1.33E+02	3.82E-14	9.31E-16	-1.31E+00	4.90E-02	—	6.03E-02	8.38E-06	1.57E+05	8.21E-10	-1.33E+00
NA	Ammonium salts*	—	—	—	—	—	—		—		—	—	—	—	—	—
NA	6 C aliphatics (TPH)	—	—	l	O	8.10E+01	3.30E+01	8.05E-01	2.90E+00	7.94E+02	—	1.00E-01	1.00E-05	3.60E+01	2.66E+02	—

Table 11
Texas Risk Reduction Program Physical-Chemical Database
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical and Physical Factors

CAS #	Chemical of Concern	Brabg.inorg ((µg/g DW)/ (µg/g soil))	Brbg.inorg ((µg/g DW)/ ((µg/g soil))	Physical State	Type	MW (g/mole)	H_unitless (unitless)	H atm-m^3/mol	LogKoc (unitless)	Koc	LogKd (unitless)	Dair (cm^2/s)	Dwat (cm^2/s)	Solubility (mg/l)	Vapor_P (mm Hg)	logKow (unitless)
NA	>6-8 C aliphatics (TPH)	—	—	I	O	1.00E+02	5.00E+01	1.22E+00	3.60E+00	3.98E+03	—	1.00E-01	1.00E-05	5.40E+00	4.79E+01	—
NA	>8-10 C aliphatics (TPH)	—	—	I	O	1.30E+02	8.00E+01	1.95E+00	4.50E+00	3.16E+04	—	1.00E-01	1.00E-05	4.30E-01	4.79E+00	—
NA	>10-12 C aliphatics (TPH)	—	—	I	O	1.60E+02	1.20E+02	2.93E+00	5.40E+00	2.51E+05	—	1.00E-01	1.00E-05	3.40E-02	4.79E-01	—
NA	>12-16 C aliphatics (TPH)	—	—	I	O	2.00E+02	5.20E+02	1.27E+01	6.70E+00	5.01E+06	—	1.00E-01	1.00E-05	7.60E-04	3.65E-02	—
NA	>16-21 C aliphatics (TPH)	—	—	I	O	2.70E+02	4.90E+03	1.20E+02	8.80E+00	6.31E+08	—	1.00E-01	1.00E-05	2.50E-06	8.40E-04	—
NA	>16-21 C, >21-35 C aliphatics (TPH) (for transformer mineral oil releases only)	—	—	I	O	2.70E+02	4.90E+03	1.20E+02	8.80E+00	6.31E+08	—	1.00E-01	1.00E-05	2.50E-06	8.40E-04	—
NA	>7-8 C aromatics (TPH)	—	—	I	O	9.20E+01	2.76E-01	6.73E-03	2.15E+00	1.40E+02	—	8.70E-02	8.60E-06	5.30E+02	2.82E+01	—
NA	>8-10 C aromatics (TPH)	—	—	I	O	1.20E+02	4.80E-01	1.17E-02	3.20E+00	1.58E+03	—	1.00E-01	1.00E-05	6.50E+01	4.79E+00	—
NA	>10-12 C aromatics (TPH)	—	—	I	O	1.30E+02	1.40E-01	3.41E-03	3.40E+00	2.51E+03	—	1.00E-01	1.00E-05	2.50E+01	4.79E-01	—
NA	>12-16 C aromatics (TPH)	—	—	I	O	1.50E+02	5.30E-02	1.29E-03	3.70E+00	5.01E+03	—	1.00E-01	1.00E-05	5.80E+00	3.65E-02	—
NA	>16-21 C aromatics (TPH)	—	—	I	O	1.90E+02	1.30E-02	3.17E-04	4.20E+00	1.58E+04	—	1.00E-01	1.00E-05	6.50E-01	8.40E-04	—

Footnotes

[1] This column denotes,for informational purposes, whether the COC is listed in the TRRP rule chemical/physical properties table (Figure: 30 TAC §350.73(e)). These new chemical/physical properties should be used for calculating PCLs. If alternate chemical/physical properties are proposed, the person must provide complete reference citation(s) for the empirical data which support the proposal, and taking into account the thermodynamic activity of the chemical without respect to site-specific conditions, the person must provde the justification/rationale for the proposed values.

* These compounds are not necessarily of concern from a human health standpoint, therefore calculation of human health-based values is not required. However, aesthetics and ecological criteria would still apply. See table entitled "Compounds for which Calculation of a Human Health PCL is Not Required" available on the TCEQ website at http://www.tceq.state.tx.us/remediation/trrp/trrp.htm.

Table 12
Constituents Listed in EPA Vapor Intrusion Guidance Table 1
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Chemical	Is Chemical Sufficiently Toxic? [1]	Is Chemical Sufficiently Volatile? [2]	EPA VI GWSL	
50293	DDT	YES	NO	NA	
50328	Benzo(a)pyrene	YES	NO	NA	
51285	2,4-Dinitrophenol	YES	NO	NA	
53703	Dibenz(a,h)anthracene	YES	NO	NA	
56235	Carbon tetrachloride	YES	YES	5.0E+00	†
56553	Benz(a)anthracene	YES	NO	NA	
57749	Chlordane	YES	YES	1.2E+01	
58899	gamma-HCH (Lindane)	YES	YES	1.1E+01	
60297	Ethyl ether	YES	YES	5.2E+02	
60571	Dieldrin	YES	YES	8.6E-01	
62533	Aniline	YES	NO	NA	
65850	Benzoic Acid	NO	NO	NA	
67641	Acetone	YES	YES	2.2E+05	
67663	Chloroform	YES	YES	8.0E+01	†
67721	Hexachloroethane	YES	YES	3.8E+00	
71363	Butanol	YES	NO	NA	
71432	Benzene	YES	YES	5.0E+00	†
71556	1,1,1-Trichloroethane	YES	YES	3.1E+03	
72208	Endrin	YES	NO	NA	
72435	Methoxychlor	YES	YES	*	
72548	DDD	YES	NO	NA	
72559	DDE	YES	YES	2.9E+01	
74839	Methyl bromide	YES	YES	2.0E+01	
74873	Methyl chloride (chloromethane)	YES	YES	6.7E+00	
74908	Hydrogen cyanide	YES	YES	5.5E+02	
74953	Methylene bromide	YES	YES	9.9E+02	
75003	Chloroethane (ethyl chloride)	YES	YES	2.8E+04	
75014	Vinyl chloride (chloroethene)	YES	YES	2.0E+00	†
75058	Acetonitrile	YES	YES	4.2E+04	
75070	Acetaldehyde	YES	YES	3.4E+02	
75092	Methylene chloride	YES	YES	5.8E+01	
75150	Carbon disulfide	YES	YES	5.6E+02	
75218	Ethylene oxide	YES	YES	1.1E+00	
75252	Bromoform	YES	YES	8.3E-03	
75274	Bromodichloromethane	YES	YES	2.1E+00	
75296	2-Chloropropane	YES	YES	1.7E+02	
75343	1,1-Dichloroethane	YES	YES	2.2E+03	
75354	1,1-Dichloroethylene	YES	YES	1.9E+02	
75456	Chlorodifluoromethane	YES	YES	*	
75694	Trichlorofluoromethane	YES	YES	1.8E+02	
75718	Dichlorodifluoromethane	YES	YES	1.4E+01	
76131	1,1,2-Trichloro-1,2,2-trifluoroethane	YES	YES	1.5E+03	
76448	Heptachlor	YES	YES	4.0E-01	†
77474	Hexachlorocyclopentadiene	YES	YES	5.0E+01	†
78591	Isophorone	YES	NO	NA	
78831	Isobutanol	YES	YES	2.2E+06	

Table 12
Constituents Listed in EPA Vapor Intrusion Guidance Table 1
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Chemical	Is Chemical Sufficiently Toxic? [1]	Is Chemical Sufficiently Volatile? [2]	EPA VI GWSL	
78875	1,2-Dichloropropane	YES	YES	3.5E+01	
78933	Methylethylketone (2-butanone)	YES	YES	4.4E+05	
79005	1,1,2-Trichloroethane	YES	YES	5.0E+00	†
79016	Trichloroethylene	YES	YES	5.0E+00	†
79209	Methyl acetate	YES	YES	7.2E+05	
79345	1,1,2,2-Tetrachloroethane	YES	YES	3.0E+00	
79469	2-Nitropropane	YES	YES	1.8E-01	
80626	Methylmethacrylate	YES	YES	5.1E+04	
83329	Acenaphthene	YES	YES	*	
84662	Diethylphthalate	YES	NO	NA	
84742	Di-n-butyl phthalate	NO	NO	NA	
85687	Butyl benzyl phthalate	NO	NO	NA	
86306	N-Nitrosodiphenylamine	YES	NO	NA	
86737	Fluorene	YES	YES	*	
86748	Carbazole	YES	NO	NA	
87683	Hexachloro-1,3-butadiene	YES	YES	3.3E-01	
87865	Pentachlorophenol	YES	NO	NA	
88062	2,4,6-Trichlorophenol	YES	NO	NA	
88722	o-Nitrotoluene	YES	YES	6.8E+04	
91203	Naphthalene	YES	YES	1.5E+02	
91576	2-Methylnaphthalene	YES	YES	3.3E+03	
91587	beta-Chloronaphthalene	YES	YES	*	
91941	3,3-Dichlorobenzidine	YES	NO	NA	
92524	Biphenyl	YES	YES	*	
95476	o-Xylene	YES	YES	3.3E+04	
95487	2-Methylphenol (o-cresol)	YES	NO	NA	
95501	1,2-Dichlorobenzene	YES	YES	2.6E+03	
95578	2-Chlorophenol	YES	YES	1.1E+03	
95636	1,2,4-Trimethylbenzene	YES	YES	2.4E+01	
95954	2,4,5-Trichlorophenol	YES	NO	NA	
96128	1,2-Dibromo-3-chloropropane	YES	YES	3.3E+01	
96184	1,2,3-Trichloropropane	YES	YES	2.9E+02	
96333	Methyl acrylate	YES	YES	1.4E+04	
97632	Ethylmethacrylate	YES	YES	9.1E+03	
98066	tert-Butylbenzene	YES	YES	2.9E+02	
98828	Cumene	YES	YES	8.4E+00	
98862	Acetophenone	YES	YES	8.0E+05	
98953	Nitrobenzene	YES	YES	2.0E+03	
99081	m-Nitrotoluene	YES	NO	NA	
99990	p-Nitrotoluene	YES	NO	NA	
100027	4-Nitrophenol	YES	NO	NA	
100414	Ethylbenzene	YES	YES	7.0E+02	†
100425	Styrene	YES	YES	8.9E+03	
100447	Benzylchloride	YES	YES	3.0E+00	
100516	Benzyl alcohol	YES	NO	NA	
100527	Benzaldehyde	YES	YES	3.6E+05	

Table 12
Constituents Listed in EPA Vapor Intrusion Guidance Table 1
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Chemical	Is Chemical Sufficiently Toxic? [1]	Is Chemical Sufficiently Volatile? [2]	EPA VI GWSL	
103651	n-Propylbenzene	YES	YES	3.2E+02	
104518	n-Butylbenzene	YES	YES	2.6E+02	
105679	2,4-Dimethylphenol	YES	NO	NA	
106423	p-Xylene	YES	YES	2.2E+04	
106455	4-Methylphenol (p-cresol)	YES	NO	NA	
106467	1,4-Dichlorobenzene	YES	YES	8.2E+03	
106478	p-Chloroaniline	YES	NO	NA	
106898	Epichlorohydrin	YES	YES	8.0E+02	
106934	1,2-Dibromoethane (ethylene dibromide)	YES	YES	3.6E-01	
106990	1,3-Butadiene	YES	YES	2.9E-03	
107028	Acrolein	YES	YES	4.0E+00	
107062	1,2-Dichloroethane	YES	YES	5.0E+00	†
107131	Acrylonitrile	YES	YES	8.5E+00	
108054	Vinyl acetate	YES	YES	9.6E+03	
108101	Methylisobutylketone	YES	YES	1.4E+04	
108383	m-Xylene	YES	YES	2.3E+04	
108394	3-Methylphenol (m-cresol)	YES	NO	NA	
108601	Bis(2-chloroisopropyl)ether	YES	YES	5.1E+01	
108678	1,3,5-Trimethylbenzene	YES	YES	2.5E+01	
108872	Methylcyclohexane	YES	YES	7.1E+02	
108883	Toluene	YES	YES	1.5E+03	
108907	Chlorobenzene	YES	YES	3.9E+02	
108952	Phenol	YES	NO	NA	
109693	1-Chlorobutane	YES	YES	2.0E+03	
110009	Furan	YES	YES	1.6E+01	
110543	Hexane	YES	YES	2.9E+00	
110861	Pyridine	YES	NO	NA	
111444	Bis(2-chloroethyl)ether	YES	YES	1.0E+01	
115297	Endosulfan	YES	YES	*	
117817	Bis(2-ethylhexyl)phthalate	NO	NO	NA	
117840	Di-n-octyl phthalate	NO	YES	NA	
118741	Hexachlorobenzene	YES	YES	1.0E+00	†
120127	Anthracene	NO	YES	NA	
120821	1,2,4-Trichlorobenzene	YES	YES	3.4E+03	
120832	2,4-Dichlorophenol	YES	NO	NA	
121142	2,4-Dinitrotoluene	YES	NO	NA	
123739	Crotonaldehyde (2-butenal)	YES	YES	5.6E+00	
124481	Chlorodibromomethane	YES	YES	3.2E+00	
126987	Methacrylonitrile	YES	YES	6.9E+01	
126998	2-Chloro-1,3-butadiene (chloroprene)	YES	YES	1.4E+01	
127184	Tetrachloroethylene	YES	YES	5.0E+00	†
129000	Pyrene	YES	YES	*	
131113	Dimethylphthalate	NA	NO	NA	
132649	Dibenzofuran	YES	YES	*	
135988	sec-Butylbenzene	YES	YES	2.5E+02	
141786	Ethylacetate	YES	YES	5.6E+05	

Table 12
Constituents Listed in EPA Vapor Intrusion Guidance Table 1
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Chemical	Is Chemical Sufficiently Toxic? [1]	Is Chemical Sufficiently Volatile? [2]	EPA VI GWSL	
156592	cis-1,2-Dichloroethylene	YES	YES	2.1E+02	
156605	trans-1,2-Dichloroethylene	YES	YES	1.8E+02	
193395	Indeno(1,2,3-cd)pyrene	NO	NO	NA	
205992	Benzo(b)fluoranthene	YES	YES	*	
206440	Fluoranthene	NO	YES	NA	
207089	Benzo(k)fluoranthene	NO	NO	NA	
218019	Chrysene	YES	YES	*	
309002	Aldrin	YES	YES	7.1E-02	
319846	alpha-HCH (alpha-BHC)	YES	YES	3.1E+00	
319857	beta-HCH (beta-BHC)	YES	NO	NA	
534521	4,6-Dinitro-2-methylphenol (4,6-dinitro-o-cresol)	YES	NO	NA	
541731	1,3-Dichlorobenzene	YES	YES	8.3E+02	
542756	1,3-Dichloropropene	YES	YES	8.4E-01	
542881	Bis(chloromethyl)ether	YES	YES	4.5E-03	
606202	2,6-Dinitrotoluene	YES	NO	NA	
621647	N-Nitrosodi-n-propylamine	YES	NO	NA	
630206	1,1,1,2-Tetrachloroethane	YES	YES	3.3E+00	
924163	N-Nitroso-di-n-butylamine	YES	YES	1.2E-01	
1024573	Heptachlor epoxide	YES	NO	NA	
1634044	MTBE	YES	YES	1.2E+05	
7439976	Mercury (elemental)	YES	YES	6.8E-01	
8001352	Toxaphene	YES	NO	NA	

NOTES:

EPA VI Guidance - *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)*, EPA, November 2002

1 - A chemical is considered sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 1E-6 or a non-cancer hazard index greater than 1.0.

2 - In the EPA VI Guidance, a chemical is considered sufficiently volatile if its Henry's Law Constant is 1E-5 atm-m^3/mol or greater.

GWSL - USEPA Vapor Intrusion Groundwater Screening Level at a cancer risk of 1E-6 and hazard index of one.

NA - Not Applicable. Constituent is either not sufficiently toxic or volatile for determination of vapor intrusion GWSL

† - GWSL is based on the constituent's Maximum Contaminant Level.

* - Constituent is insufficiently volatile in groundwater to exceed the toxicity criteria for EPA VI GWSL determination.

Table 13
Constituents Listed in NJDEP Vapor Intrusion Guidance Table 1, May 2006
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

NJDEP VI Guidance Generic Vapor Intrusion Screening Levels		
CAS No.	Chemical	NJDEP VI Guidance GWSL Table 1 (µg/L)
56235	Carbon tetrachloride	1.0E+00
67641	Acetone (2-propanone)	1.9E+06
67663	Chloroform	7.0E+01
71432	Benzene	1.5E+01
71556	1,1,1-Trichloroethane	2.3E+03
74839	Bromomethane (methyl bromide)	2.9E+01
74873	Chloromethane (methyl chloride)	2.4E+02
75003	Chloroethane (ethyl chloride)	4.0E+00
75014	Vinyl chloride	1.0E+00
75092	Methylene chloride (dichloromethane)	5.3E+01
75150	Carbon disulfide	7.1E+02
75252	Bromoform	3.7E+02
75274	Bromodichloromethane	5.0E+00
75343	1,1-Dichloroethane	3.6E+03
75354	1,1-Dichloroethene	2.5E+02
75650	Tertiary butyl alcohol (TBA)	1.7E+05
75694	Trichlorofluoromethane (Freon 11)	2.0E+03
75718	Dichlorodifluoromethane (Freon 12)	1.0E+03
76131	1,1,2-Trichloro-1,2,2-trifluoroethane	2.4E+03
78875	1,2-Dichloropropane	1.0E+00
78933	2-Butanone (methyl ethyl ketone)	2.7E+06
79005	1,1,2-Trichloroethane	5.0E+00
79016	Trichloroethene (TCE)	1.0E+00
79345	1,1,2,2-Tetrachloroethane	4.0E+00
87683	Hexachlorobutadiene	1.0E+00
95498	2-Chlorotoluene (o-chlorotoluene)	1.2E+03
95501	1,2-Dichlorobenzene (o)	5.9E+03
100414	Ethylbenzene	6.1E+04
100425	Styrene	1.8E+04
106467	1,4-Dichlorobenzene (p)	7.5E+01
106934	1,2-Dibromoethane (ethylene dibromide)	4.0E-01
106990	1,3-Butadiene (vinyl ethylene)	1.0E-02
107051	3-Chloropropene (allyl chloride)	8.0E-01
107062	1,2-Dichloroethane	2.0E+00
108101	4-Methyl-2-pentanone (MIBK)	8.8E+05
108883	Toluene	3.1E+05
108907	Chlorobenzene	6.4E+02
110543	n-Hexane	3.0E+01
110827	Cyclohexane	1.2E+03
120821	1,2,4-Trichlorobenzene	2.8E+03

Table 13
Constituents Listed in NJDEP Vapor Intrusion Guidance Table 1, May 2006
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

NJDEP VI Guidance Generic Vapor Intrusion Screening Levels		
CAS No.	Chemical	NJDEP VI Guidance GWSL Table 1 (µg/L)
124481	Dibromochloromethane	9.0E+00
127184	Tetrachloroethene (PCE)	1.0E+00
156592	1,2-Dichloroethene (cis)	3.5E+02
156605	1,2-Dichloroethene (trans)	3.0E+02
540590	1,2-Dichloroethene (total) [a]	1.9E+02
541731	1,3-Dichlorobenzene (m)	6.0E+02
542756	1,3-Dichloropropene (total) [a]	1.0E+00
593602	Bromoethene (vinyl bromide)	1.0E-01
1330207	Xylenes (total) [a]	7.0E+03
1634044	MTBE (methyl tert butyl ether)	7.8E+01

NOTES:

NJDEP VI Guidance - *Vapor Intrusion Guidance*, New Jersey Department of Environmental Protection (NJDEP), October 2005. Tables updated May 2006.

GWSL - Groundwater Screening Level in micrograms per liter (µg/L)

a - The concentrations of each isomer are added if multiple isomers are present and the results compared to the total screening level.

Screening levels are unavailable for six NJDEP state contract Method TO-15 chemicals (1,2-dichlorotetrafluoroethane, 4-ethyl toluene, n-heptane, 2,2,4-trimethylpentane, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene) due to absence of toxicity data.

Table 14
NJDEP Practical Quantitation Limits
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS	COC	NJDEP PQL
50000	Formaldehyde	3.0E+01
50293	4,4'-DDT	1.0E-01
50328	Benzo(a)pyrene (BaP)	1.0E-01
51285	2,4-Dinitrophenol	4.0E+01
53703	Dibenz(a,h)anthracene	3.0E-01
56235	Carbon tetrachloride	1.0E+00
56382	Parathion	8.0E-02
56553	Benz(a)anthracene	1.0E-01
57125	Cyanide (free Cyanide)	6.0E+00
57749	Chlordane	5.0E-01
58899	gamma-BHC (gamma-HCH/Lindane)	2.0E-02
58902	2,3,4,6-Tetrachlorophenol	3.0E+00
60297	Ethyl ether	5.0E+01
60571	Dieldrin	3.0E-02
62533	Aniline	2.0E+00
62759	N-Nitrosodimethylamine	8.0E-01
65850	Benzoic acid	5.0E+01
67561	Methanol	7.0E+01
67641	Acetone	1.0E+01
67663	Chloroform	1.0E+00
67721	Hexachloroethane	7.0E+00
69727	Salicylic acid	3.0E+01
71363	n-Butanol (n-Butyl alcohol)	2.0E+01
71432	Benzene	1.0E+00
71556	1,1,1-Trichloroethane (TCA)	1.0E+00
72208	Endrin	3.0E-02
72435	Methoxychlor	1.0E-01
72548	4,4'-DDD (p,p'-TDE)	2.0E-02
72559	4,4'-DDE	1.0E-02
74839	Methyl bromide (Bromomethane)	1.0E+00
75014	Vinyl chloride	1.0E+00
75092	Methylene chloride	1.0E+00
75150	Carbon disulfide	1.0E+00
75252	Bromoform	8.0E-01
75274	Bromodichloromethane (Dichlorobromomethane	1.0E+00
75343	1,1-Dichloroethane (1,1-DCA)	1.0E+00
75354	1,1-Dichloroethylene (1,1-DCE)	1.0E+00
75650	tertiary-Butyl alcohol (TBA)	2.0E+00
75694	Trichlorofluoromethane (Freon 11)	1.0E+00
75718	Dichlorodifluoromethane (Freon 12)	2.0E+00
75990	Dalapon (2,2-Dichloropropionic acid)	1.0E-01

Table 14
NJDEP Practical Quantitation Limits
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS	COC	NJDEP PQL
76222	Camphor	5.0E-01
76448	Heptachlor	5.0E-02
77474	Hexachlorocyclopentadiene	5.0E-01
78591	Isophorone	1.0E+01
78875	1,2-Dichloropropane	1.0E+00
78933	Methyl ethyl ketone (2-Butanone) (MEK)	2.0E+00
79005	1,1,2-Trichloroethane	2.0E+00
79016	Trichloroethene (TCE)	1.0E+00
79061	Acrylamide	2.0E-01
79209	Methyl acetate	5.0E-01
79345	1,1,2,2-Tetrachloroethane	1.0E+00
83329	Acenaphthene	1.0E+01
84662	Diethyl phthalate	1.0E+00
84742	Di-n-butyl phthalate	1.0E+00
85007	Diquat	2.0E+00
85687	Butylbenzyl phthalate	1.0E+00
86306	N-Nitrosodiphenylamine	1.0E+01
86737	Fluorene	1.0E+00
87683	Hexachlorobutadiene	1.0E+00
87865	Pentachlorophenol	1.0E-01
88062	2,4,6-Trichlorophenol	2.0E+01
88857	Dinoseb	2.0E+00
91203	Naphthalene	2.0E+00
91587	2-Chloronaphthalene	1.0E+01
91941	3,3-Dichlorobenzidine	3.0E+01
92524	1,1-Biphenyl	1.0E+01
92875	Benzidine	2.0E+01
93721	2,4,5-TP (2-(2,4,5-Trichlorophenoxy)propionic ac	6.0E-01
94757	2,4-D (2,4-Dichlorophenoxyacetic acid)	2.0E+00
95501	1,2-Dichlorobenzene (ortho)	5.0E+00
95578	2-Chlorophenol	2.0E+01
95954	2,4,5-Trichlorophenol	1.0E+01
96128	1,2-Dibromo-3-chloropropane (DBCP)	2.0E-02
96184	1,2,3-Trichloropropane	3.0E-02
98828	Cumene (Isopropyl benzene)	1.0E+00
98862	Acetophenone	1.0E+01
98953	Nitrobenzene	6.0E+00
100414	Ethylbenzene	2.0E+00
100425	Styrene	2.0E+00
100516	Benzyl alcohol	2.0E+01
103231	Adipates (Di(2-ethylhexyl)adipate) (DEHA)	3.0E+00

Table 14
NJDEP Practical Quantitation Limits
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS	COC	NJDEP PQL
105679	2,4-Dimethyl phenol	2.0E+01
106467	1,4-Dichlorobenzene (para)	5.0E+00
106478	4-Chloroaniline (p-Chloroaniline)	1.0E+01
106898	Epichlorohydrin	5.0E+00
106934	Ethylene dibromide (1,2-Dibromoethane)	3.0E-02
107028	Acrolein	5.0E+00
107062	1,2-Dichloroethane	2.0E+00
107131	Acrylonitrile	2.0E+00
107211	Ethylene glycol	2.0E+02
108054	Vinyl acetate	5.0E+00
108203	Diisopropyl ether (DIPE)	5.0E+00
108601	Bis(2-chloroisopropyl) ether	1.0E+01
108883	Toluene	1.0E+00
108907	Chlorobenzene (Monochlorobenzene)	1.0E+00
108952	Phenol	1.0E+01
109864	Ethylene glycol monomethyl ether	2.0E+04
109999	Tetrahydrofuran	1.0E+01
110543	Hexane (n-Hexane)	5.0E+00
111444	Bis(2-chloroethyl) ether	7.0E+00
115297	Endosulfan (alpha and beta)	1.0E-01
117817	Bis(2-ethylhexyl) phthalate (DEHP)	3.0E+00
117840	Di-n-octyl phthalate	1.0E+01
118741	Hexachlorobenzene	2.0E-02
119368	Methyl Salicylate	5.0E+01
120127	Anthracene	1.0E+01
120821	1,2,4-Trichlorobenzene	1.0E+00
120832	2,4-Dichlorophenol (DCP)	1.0E+01
121755	Malathion	6.0E-01
122349	Simazine	8.0E-01
122394	Diphenylamine	2.0E+01
122667	1,2-Diphenylhydrazine	2.0E+01
124481	Dibromochloromethane (Chlorodibromomethane	1.0E+00
127184	Tetrachloroethylene (PCE)	1.0E+00
129000	Pyrene	1.0E-01
141786	Ethyl acetate	1.0E+01
145733	Endothall	6.0E+01
156592	cis-1,2-Dichloroethylene	1.0E+00
156605	trans-1,2-Dichloroethylene	1.0E+00
193395	Indeno (1,2,3-cd)pyrene	2.0E-01
205992	Benzo(b)fluoranthene (3,4-Benzofluoranthene)	2.0E-01
206440	Fluoranthene	1.0E+01

Table 14
NJDEP Practical Quantitation Limits
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS	COC	NJDEP PQL
207089	Benzo(k)fluoranthene	3.0E-01
218019	Chrysene	2.0E-01
309002	Aldrin	4.0E-02
319846	alpha-BHC- (alpha-HCH)	2.0E-02
319857	beta-BHC (beta-HCH)	4.0E-02
541731	1,3-Dichlorobenzene (meta)	5.0E+00
542756	1,3-Dichloropropene (cis and trans)	1.0E+00
563122	Ethion	5.0E-01
621647	N-Nitrosodi-n-propylamine (Di-n-propylnitrosamir	1.0E+01
630206	1,1,1,2-Tetrachloroethane	1.0E+00
959988	alpha-Endosulfan (Endosulfan I)	2.0E-02
1024573	Heptachlor epoxide	2.0E-01
1031078	Endosulfan sulfate	2.0E-02
1071836	Glyphosate	3.0E+01
1314621	Vanadium pentoxide	1.0E+00
1330207	Xylenes (Total)	2.0E+00
1336363	PCBs (Polychlorinated biphenyls)	5.0E-01
1563662	Carbofuran	5.0E-01
1634044	Methyl tertiary butyl ether (MTBE)	1.0E+00
1646884	Aldicarb sulfone	3.0E-01
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1.0E-05
1912249	Atrazine	1.0E-01
1918021	Picloram	1.0E+00
2385855	Mirex	8.0E-02
2921882	Chlorpyrifos	1.0E-01
7429905	Aluminum	3.0E+01
7439896	Iron	2.0E+01
7439921	Lead (Total)	5.0E+00
7439965	Manganese	4.0E-01
7439976	Mercury (Total)	5.0E-02
7439987	Molybdenum	2.0E+00
7440020	Nickel (Soluble salts)	4.0E+00
7440224	Silver	1.0E+00
7440235	Sodium	4.0E+02
7440280	Thallium	2.0E+00
7440360	Antimony (Total)	3.0E+00
7440382	Arsenic (Total)	3.0E+00
7440393	Barium	2.0E+02
7440417	Beryllium	1.0E+00
7440439	Cadmium	5.0E-01
7440473	Chromium (Total)	1.0E+00

Table 14
NJDEP Practical Quantitation Limits
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS	COC	NJDEP PQL
7440508	Copper	4.0E+00
7440666	Zinc	1.0E+01
7664417	Ammonia (Total)	2.0E+02
7782414	Fluoride	5.0E+02
7782492	Selenium (Total)	4.0E+00
8001352	Toxaphene	2.0E+00
8065483	Demeton	1.0E+00
14797558	Nitrate	1.0E+02
14797650	Nitrite	1.0E+01
14808798	Sulfate	5.0E+03
15972608	Alachlor	1.0E-01
16887006	Chloride	2.0E+03
23135220	Oxamyl	1.0E+00
25321146	2,4-Dinitrotoluene/2,6-Dinitrotoluene Mix	1.0E+01
26761400	Diisodecyl phthalate (DIDP)	3.0E+00
33213659	beta-Endosulfan (Endosulfan II)	4.0E-02
67774327	PBBs (Polybrominated biphenyls)	1.0E-03

Notes:
From "Ground Water Quality Standards", New Jersey Administrative Code, Chapter 7:9C, Effective October 2005.

Attachment A
EPA Johnson and Ettinger Model Spreadsheets

Table A-1
NJDEP Johnson and Ettinger Data Entry Sheet
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

NJ-GW-SCREEN-APR06
USEPA Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [X]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [ ]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
111444		Bis(2-chloroethyl)ether

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
200	352.5	S	13	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
S			S	1.66	0.375	0.054

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

END

Table A-2
NJDEP Johnson and Ettinger Chemical Properties Shee
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (^oC)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
6.92E-02	7.53E-06	1.80E-05	25	10,803	451.15	659.79	1.55E+01	1.72E+04	3.3E-04	0.0E+00

END

Table A-3
NJDEP Johnson and Ettinger Intermediate Calculations Worksheet
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
152.5	0.321	0.003	9.98E-08	0.998	9.96E-08	17.05	0.375	0.122	0.253	4,000

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($atm-m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
2.54E+04	1.80E+06	2.22E-04	200	13,559	6.88E-06	2.93E-04	1.76E-04	1.12E-02	2.33E-03	7.86E-03

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe') (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
152.5	200	2.93E-01	0.10	8.33E+01	1.12E-02	4.00E+02	6.31E+80	1.73E-03	5.06E-04	3.3E-04	NA

Table A-4
NJDEP Johnson and Ettinger Results Sheet
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
1.46E+01	NA	1.46E+01	1.72E+07	1.46E+01

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	NA

MESSAGE SUMMARY BELOW:
MESSAGE: The values of Csource and Cbuilding on the INTERCALCS worksheet are based on unity and do not represent actual values.

END

NOTE for New Jersey cases: when the risk-based indoor exposure groundwater concentration is controlled by the carcinogenic toxicity factor, the above result must be multiplied by the child inhalation adjustment factor (0.74) unless a worker scenario is being considered.
(For vinyl chloride, the factor is 0.26.)

Table A-5
NJDEP Johnson and Ettinger VLOOKUP Data
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (^oC)	Normal boiling point, T_B (^oK)	Critical temperature, T_C (^oK)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	URF extrapolated (X)	RfC extrapolated (X)
56235	Carbon tetrachloride	1.74E+02	7.80E-02	8.80E-06	7.93E+02	1.24E+00	3.03E-02	25	349.90	556.60	7,127	1.50E-05	1.88E-01		
57749	Chlordane	1.20E+05	1.18E-02	4.37E-06	5.60E-02	1.99E-03	4.85E-05	25	624.24	885.73	14,000	1.00E-04	7.00E-04		
58899	gamma-HCH (Lindane)	1.07E+03	1.42E-02	7.34E-06	7.30E+00	5.73E-04	1.40E-05	25	596.55	839.36	15,000	3.71E-04	1.05E-03	X	X
60297	Ethyl ether	5.73E+00	7.82E-02	8.61E-06	5.68E+04	1.35E+00	3.29E-02	25	307.50	466.74	6,338	0.00E+00	7.00E-01		X
60571	Dieldrin	2.14E+04	1.25E-02	4.74E-06	1.95E-01	6.18E-04	1.51E-05	25	613.32	842.25	17,000	4.60E-03	1.75E-04		X
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.87E-05	25	329.20	508.10	6,955	0.00E+00	3.20E+00		X
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	2.30E-05	5.00E-02		
67721	Hexachloroethane	1.78E+03	2.50E-03	6.80E-06	5.00E+01	1.59E-01	3.88E-03	25	458.00	695.00	9,510	4.00E-06	3.50E-03		X
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.79E+03	2.27E-01	5.54E-03	25	353.24	562.16	7,342	7.80E-06	3.00E-02		
71556	1,1,1-Trichloroethane	1.10E+02	7.80E-02	8.80E-06	1.33E+03	7.03E-01	1.72E-02	25	347.24	545.00	7,136	0.00E+00	9.80E-01		
72435	Methoxychlor	9.77E+04	1.56E-02	4.46E-06	1.00E-01	6.46E-04	1.58E-05	25	651.02	848.49	16,000	0.00E+00	1.75E-02		X
72559	DDE	4.47E+06	1.44E-02	5.87E-06	1.20E-01	8.59E-04	2.09E-05	25	636.44	860.38	15,000	9.71E-05	0.00E+00	X	
74839	Methyl bromide	1.05E+01	7.28E-02	1.21E-05	1.52E+04	2.55E-01	6.22E-03	25	276.71	467.00	5,714	0.00E+00	5.00E-03		
74873	Methyl chloride (chloromethane)	2.12E+00	1.26E-01	6.50E-06	5.33E+03	3.61E-01	8.80E-03	25	249.00	416.25	5,115	0.00E+00	9.00E-02		
74908	Hydrogen cyanide	3.80E+00	1.93E-01	2.10E-05	1.00E+06	5.44E-03	1.33E-04	25	299.00	456.70	6,676	0.00E+00	3.00E-03		
74953	Methylene bromide	1.26E+01	4.30E-02	8.44E-06	1.19E+04	3.52E-02	8.59E-04	25	370.00	583.00	7,868	0.00E+00	3.50E-02		X
75003	Chloroethane (ethyl chloride)	4.40E+00	2.71E-01	1.15E-05	5.68E+03	3.61E-01	8.80E-03	25	285.30	460.40	5,879	8.29E-07	1.00E+01	X	
75014	Vinyl chloride (chloroethene)	1.86E+01	1.06E-01	1.23E-05	8.80E+03	1.10E+00	2.69E-02	25	259.25	432.00	5,250	8.80E-06	1.00E-01		
75058	Acetonitrile	4.20E+00	1.28E-01	1.66E-05	1.00E+06	1.42E-03	3.45E-05	25	354.60	545.50	7,110	0.00E+00	6.00E-02		
75070	Acetaldehyde	1.06E+00	1.24E-01	1.41E-05	1.00E+06	3.23E-03	7.87E-05	25	293.10	466.00	6,157	2.20E-06	9.00E-03		
75092	Methylene chloride	1.17E+01	1.01E-01	1.17E-05	1.30E+04	8.96E-02	2.18E-03	25	313.00	510.00	6,706	4.70E-07	1.04E+00		
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.00E+00	7.00E-01		
75218	Ethylene oxide	1.33E+00	1.04E-01	1.45E-05	3.04E+05	2.27E-02	5.54E-04	25	283.60	469.00	6,104	1.00E-04	0.00E+00		
75252	Bromoform	8.71E+01	1.49E-02	1.03E-05	3.10E+03	2.41E-02	5.88E-04	25	422.35	696.00	9,479	1.10E-06	7.00E-02		X
75274	Bromodichloromethane	5.50E+01	2.98E-02	1.06E-05	6.74E+03	6.54E-02	1.60E-03	25	363.15	585.85	7,800	1.77E-05	7.00E-02	X	X
75296	2-Chloropropane	9.14E+00	8.88E-02	1.01E-05	3.73E+03	5.93E-01	1.45E-02	25	308.70	485.00	6,286	0.00E+00	1.02E-01		
75343	1,1-Dichloroethane	3.16E+01	7.42E-02	1.05E-05	5.06E+03	2.30E-01	5.61E-03	25	330.55	523.00	6,895	0.00E+00	5.00E-01		
75354	1,1-Dichloroethylene	5.89E+01	9.00E-02	1.04E-05	2.25E+03	1.07E+00	2.60E-02	25	304.75	576.05	6,247	0.00E+00	2.00E-01		
75456	Chlorodifluoromethane	4.79E+01	1.01E-01	1.28E-05	2.00E+00	1.10E+00	2.70E-02	25	232.40	369.30	4,836	0.00E+00	5.00E+01		
75650	Tertiary butyl alcohol (TBA)	2.20E+00	9.85E-02	1.14E-05	1.00E+06	3.71E-04	9.05E-06	25	355.41	508	9338	0.00E+00	6.30E-02		X
75694	Trichlorofluoromethane	4.97E+02	8.70E-02	9.70E-06	1.10E+03	3.97E+00	9.68E-02	25	296.70	471.00	5,999	0.00E+00	7.00E-01		
75718	Dichlorodifluoromethane	4.57E+02	6.65E-02	9.92E-06	2.80E+02	1.40E+01	3.42E-01	25	243.20	384.95	9,421	0.00E+00	2.00E-01		
76131	1,1,2-Trichloro-1,2,2-trifluoroethai	1.11E+04	7.80E-02	8.20E-06	1.70E+02	1.97E+01	4.80E-01	25	320.70	487.30	6,463	0.00E+00	3.01E+01		
76448	Heptachlor	1.41E+06	1.12E-02	5.69E-06	1.80E-01	6.05E+01	1.48E+00	25	603.69	846.31	13,000	1.30E-03	1.75E-03		X
77474	Hexachlorocyclopentadiene	2.00E+05	1.61E-02	7.21E-06	1.80E+00	1.10E+00	2.69E-02	25	512.15	746.00	10,931	0.00E+00	2.00E-04		
78831	Isobutanol	2.59E+00	8.60E-02	9.30E-06	8.50E+04	4.83E-04	1.18E-05	25	381.04	547.78	10,936	0.00E+00	1.05E+00		X
78875	1,2-Dichloropropane	4.37E+01	7.82E-02	8.73E-06	2.80E+03	1.15E-01	2.79E-03	25	369.52	572.00	7,590	1.94E-05	4.00E-03	X	
78933	Methylethylketone (2-butanone)	2.30E+00	8.08E-02	9.80E-06	2.23E+05	2.29E-03	5.58E-05	25	352.50	536.78	7,481	0.00E+00	5.00E+00		

Table A-5
NJDEP Johnson and Ettinger VLOOKUP Data
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	URF extrapolated (X)	RfC extrapolated (X)
79005	1,1,2-Trichloroethane	5.01E+01	7.80E-02	8.80E-06	4.42E+03	3.73E-02	9.11E-04	25	386.15	602.00	8,322	1.60E-05	1.40E-02		X
79016	Trichloroethylene	1.66E+02	7.90E-02	9.10E-06	1.47E+03	4.21E-01	1.03E-02	25	360.36	544.20	7,505	1.10E-04	4.00E-02	X	
79209	Methyl acetate	3.26E+00	1.04E-01	1.00E-05	2.00E+03	4.84E-03	1.18E-04	25	329.80	506.70	7,260	0.00E+00	3.50E+00		X
79345	1,1,2,2-Tetrachloroethane	9.33E+01	7.10E-02	7.90E-06	2.96E+03	1.41E-02	3.44E-04	25	419.60	661.15	8,996	5.80E-05	1.40E-01		X
79469	2-Nitropropane	1.17E+01	9.23E-02	1.01E-05	1.70E+04	5.03E-03	1.23E-04	25	393.20	594.00	8,383	2.69E-03	2.00E-02		
80626	Methylmethacrylate	6.98E+00	7.70E-02	8.60E-06	1.50E+04	1.38E-02	3.36E-04	25	373.50	567.00	8,975	0.00E+00	7.00E-01		
83329	Acenaphthene	7.08E+03	4.21E-02	7.69E-06	3.57E+00	6.34E-03	1.55E-04	25	550.54	803.15	12,155	0.00E+00	2.10E-01		X
86737	Fluorene	1.38E+04	3.63E-02	7.88E-06	1.98E+00	2.60E-03	6.34E-05	25	570.44	870.00	12,666	0.00E+00	1.40E-01		X
87683	Hexachloro-1,3-butadiene	5.37E+04	5.61E-02	6.16E-06	3.20E+00	3.33E-01	8.13E-03	25	486.15	738.00	10,206	2.20E-05	7.00E-04		X
88722	o-Nitrotoluene	3.24E+02	5.87E-02	8.67E-06	6.50E+02	5.11E-04	1.25E-05	25	495.00	720.00	12,239	0.00E+00	3.50E-02		X
91203	Naphthalene	2.00E+03	5.90E-02	7.50E-06	3.10E+01	1.98E-02	4.82E-04	25	491.14	748.40	10,373	0.00E+00	3.00E-03		
91576	2-Methylnaphthalene	2.81E+03	5.22E-02	7.75E-06	2.46E+01	2.12E-02	5.17E-04	25	514.26	761.00	12,600	0.00E+00	7.00E-02		X
92524	Biphenyl	4.38E+03	4.04E-02	8.15E-06	7.45E+00	1.23E-02	2.99E-04	25	529.10	789.00	10,890	0.00E+00	1.75E-01		X
95476	o-Xylene	3.63E+02	8.70E-02	1.00E-05	1.78E+02	2.12E-01	5.18E-03	25	417.60	630.30	8,661	0.00E+00	7.00E+00		X
95498	2-Chlorotoluene (o-chlorotoluene)	6.12E+02	6.07E-02	8.31E-06	3.74E+02	1.46E-01	3.57E-03	25	431.97	654	9958	0.00E+00	7.00E-02		X
95501	1,2-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	1.56E+02	7.77E-02	1.90E-03	25	453.57	705.00	9,700	0.00E+00	2.00E-01		
95578	2-Chlorophenol	3.88E+02	5.01E-02	9.46E-06	2.20E+04	1.60E-02	3.90E-04	25	447.53	675.00	9,572	0.00E+00	1.75E-02		X
95636	1,2,4-Trimethylbenzene	1.35E+03	6.06E-02	7.92E-06	5.70E+01	2.52E-01	6.14E-03	25	442.30	649.17	9,369	0.00E+00	5.95E-03		
96184	1,2,3-Trichloropropane	2.20E+01	7.10E-02	7.90E-06	1.75E+03	1.67E-02	4.08E-04	25	430.00	652.00	9,171	5.71E-04	4.90E-03	X	
96333	Methyl acrylate	4.53E+00	9.76E-02	1.02E-05	6.00E+04	7.68E-03	1.87E-04	25	353.70	536.00	7,749	0.00E+00	1.05E-01		X
97632	Ethylmethacrylate	2.95E+01	6.53E-02	8.37E-06	3.67E+03	3.44E-02	8.40E-04	25	390.00	571.00	10,957	0.00E+00	3.15E-01		X
98066	tert-Butylbenzene	7.71E+02	5.65E-02	8.02E-06	2.95E+01	4.87E-01	1.19E-02	25	442.10	1220.00	8,980	0.00E+00	1.40E-01		X
98828	Cumene	4.89E+02	6.50E-02	7.10E-06	6.13E+01	4.74E+01	1.16E+00	25	425.56	631.10	10,335	0.00E+00	4.00E-01		
98862	Acetophenone	5.77E+01	6.00E-02	8.73E-06	6.13E+03	4.38E-04	1.07E-05	25	475.00	709.50	11,732	0.00E+00	3.50E-01		X
98953	Nitrobenzene	6.46E+01	7.60E-02	8.60E-06	2.09E+03	9.82E-04	2.39E-05	25	483.95	719.00	10,566	0.00E+00	2.00E-03		
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.22E-01	7.86E-03	25	409.34	617.20	8,501	0.00E+00	1.00E+00		
100425	Styrene	7.76E+02	7.10E-02	8.00E-06	3.10E+02	1.12E-01	2.74E-03	25	418.31	636.00	8,737	0.00E+00	1.00E+00		
100447	Benzylchloride	6.14E+01	7.50E-02	7.80E-06	5.25E+02	1.70E-02	4.14E-04	25	452.00	685.00	8,773	4.86E-05	0.00E+00	X	
100527	Benzaldehyde	4.59E+01	7.21E-02	9.07E-06	3.30E+03	9.73E-04	2.37E-05	25	452.00	695.00	11,658	0.00E+00	3.50E-01		X
103651	n-Propylbenzene	5.62E+02	6.01E-02	7.83E-06	6.00E+01	4.37E-01	1.07E-02	25	432.20	630.00	9,123	0.00E+00	1.40E-01		X
104518	n-Butylbenzene	1.11E+03	5.70E-02	8.12E-06	2.00E+00	5.38E-01	1.31E-02	25	456.46	660.50	9,290	0.00E+00	1.40E-01		X
106423	p-Xylene	3.89E+02	7.69E-02	8.44E-06	1.85E+02	3.13E-01	7.64E-03	25	411.52	616.20	8,525	0.00E+00	7.00E+00		X
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.90E+01	9.82E-02	2.39E-03	25	447.21	684.75	9,271	6.30E-06	8.00E-01		
106934	1,2-Dibromoethane (ethylene dibr	2.50E+01	2.17E-02	1.19E-05	4.18E+03	3.04E-02	7.41E-04	25	404.60	583.00	8,310	6.00E-04	9.00E-03		
106990	1,3-Butadiene	1.91E+01	2.49E-01	1.08E-05	7.35E+02	3.01E+00	7.34E-02	25	268.60	425.00	5,370	3.00E-05	2.00E-03		
107028	Acrolein	2.76E+00	1.05E-01	1.22E-05	2.13E+05	4.99E-03	1.22E-04	25	325.60	506.00	6,731	0.00E+00	2.00E-05		
107051	3-Chloropropene (allyl chloride)	1.50E+01	1.17E-01	1.08E-05	3.40E+03	4.51E-01	1.10E-02	25	318.1	514	6940	6.00E-06	1.00E-03		
107062	1,2-Dichloroethane	1.74E+01	1.04E-01	9.90E-06	8.52E+03	4.00E-02	9.77E-04	25	356.65	561.00	7,643	2.60E-05	2.43E+00		
107131	Acrylonitrile	5.90E+00	1.22E-01	1.34E-05	7.40E+04	4.21E-03	1.03E-04	25	350.30	519.00	7,786	6.80E-05	2.00E-03		
108054	Vinyl acetate	5.25E+00	8.50E-02	9.20E-06	2.00E+04	2.09E-02	5.10E-04	25	345.65	519.13	7,800	0.00E+00	2.00E-01		
108101	Methylisobutylketone (4-methyl-2	9.06E+00	7.50E-02	7.80E-06	1.90E+04	5.64E-03	1.38E-04	25	389.50	571.00	8,243	0.00E+00	3.00E+00		
108383	m-Xylene	4.07E+02	7.00E-02	7.80E-06	1.61E+02	3.00E-01	7.32E-03	25	412.27	617.05	8,523	0.00E+00	7.00E+00		X
108678	1,3,5-Trimethylbenzene	1.35E+03	6.02E-02	8.67E-06	2.00E+00	2.41E-01	5.87E-03	25	437.89	637.25	9,321	0.00E+00	5.95E-03		
108872	Methylcyclohexane	7.85E+01	7.35E-02	8.52E-06	1.40E+01	4.22E+00	1.03E-01	25	373.90	572.20	7,474	0.00E+00	3.01E+00		
108883	Toluene	1.82E+02	8.70E-02	8.60E-06	5.26E+02	2.72E-01	6.62E-03	25	383.78	591.79	7,930	0.00E+00	5.00E+00		
108907	Chlorobenzene	2.19E+02	7.30E-02	8.70E-06	4.72E+02	1.51E-01	3.69E-03	25	404.87	632.40	8,410	0.00E+00	5.00E-02		
109693	1-Chlorobutane	1.72E+01	8.26E-02	1.00E-05	1.10E+03	6.93E-01	1.69E-02	25	351.60	542.00	7,263	0.00E+00	1.40E+00		X

Table A-5
NJDEP Johnson and Ettinger VLOOKUP Data
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)	URF extrapolated (X)	RfC extrapolated (X)
110009	Furan	1.86E+01	1.04E-01	1.22E-05	1.00E+04	2.21E-01	5.39E-03	25	304.60	490.20	6,477	0.00E+00	3.50E-03		X
110543	Hexane	4.34E+01	2.00E-01	7.77E-06	1.24E+01	6.82E+01	1.66E+00	25	341.70	508.00	6,895	0.00E+00	7.00E-01		
110877	Cyclohexane	5.90E+02	8.39E-02	9.10E-06	5.50E+01	8.20E+00	2.00E-01	25	353.7	553	7155	0.00E+00	6.00E+00		
111444	Bis(2-chloroethyl)ether	1.55E+01	6.92E-02	7.53E-06	1.72E+04	7.36E-04	1.80E-05	25	451.15	659.79	10,803	3.30E-04	0.00E+00		
115297	Endosulfan	2.14E+03	1.15E-02	4.55E-06	5.10E-01	4.58E-04	1.12E-05	25	674.43	942.94	14,000	0.00E+00	2.10E-02		X
118741	Hexachlorobenzene	5.50E+04	5.42E-02	5.91E-06	5.00E-03	5.40E-02	1.32E-03	25	582.55	825.00	14,447	4.60E-04	2.80E-03		X
120821	1,2,4-Trichlorobenzene	1.78E+03	3.00E-02	8.23E-06	4.88E+01	5.81E-02	1.42E-03	25	486.15	725.00	10,471	0.00E+00	3.50E-02		
123739	Crotonaldehyde (2-butenal)	4.82E+00	9.56E-02	1.07E-05	3.69E+04	7.99E-04	1.95E-05	25	375.20	568.00	9	5.43E-04	0.00E+00	X	
124481	Chlorodibromomethane	6.31E+01	1.96E-02	1.05E-05	2.60E+03	3.20E-02	7.81E-04	25	416.14	678.20	5,900	2.40E-05	7.00E-02	X	X
126987	Methacrylonitrile	3.58E+01	1.12E-01	1.32E-05	2.54E+04	1.01E-02	2.46E-04	25	363.30	554.00	7,600	0.00E+00	7.00E-04		
126998	2-Chloro-1,3-butadiene (chloropre	6.73E+01	8.58E-02	1.03E-05	2.12E+03	4.91E-01	1.20E-02	25	332.40	525.00	8,075	0.00E+00	7.00E-03		
127184	Tetrachloroethylene	1.55E+02	7.20E-02	8.20E-06	2.00E+02	7.53E-01	1.84E-02	25	394.40	620.20	8,288	5.90E-06	2.80E-01		
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E+00	4.50E-04	1.10E-05	25	667.95	936	14370	0.00E+00	1.05E-01		X
132649	Dibenzofuran	5.15E+03	2.38E-02	6.00E-06	3.10E+00	5.15E-04	1.26E-05	25	560	824	66400	0.00E+00	1.40E-02		X
135988	sec-Butylbenzene	9.66E+02	5.70E-02	8.12E-06	3.94E+00	5.68E-01	1.39E-02	25	446.5	679	88730	0.00E+00	1.40E-01		X
141786	Ethylacetate	6.44E+00	7.32E-02	9.70E-06	8.03E+04	5.64E-03	1.38E-04	25	350.26	523.3	7633.66	0.00E+00	3.15E+00		X
156592	cis-1,2-Dichloroethylene	3.55E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	333.65	544	7192	0.00E+00	3.50E-02		X
156605	trans-1,2-Dichloroethylene	5.25E+01	7.07E-02	1.19E-05	6.30E+03	3.84E-01	9.36E-03	25	320.85	516.5	6717	0.00E+00	7.00E-02		X
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.54E-03	1.11E-04	25	715.9	969.27	17000	2.09E-04	0.00E+00	X	
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	6.30E-03	3.87E-03	9.44E-05	25	714.15	979	16455	2.09E-06	0.00E+00	X	
309002	Aldrin	2.45E+06	1.32E-02	4.86E-06	1.70E-02	6.95E-03	1.70E-04	25	603.01	839.37	15000	4.90E-03	1.05E-04		X
319846	alpha-HCH (alpha-BHC)	1.23E+03	1.42E-02	7.34E-06	2.00E+00	4.34E-04	1.06E-05	25	596.55	839.36	15000	1.80E-03	0.00E+00		
540590	1,2-Dichloroethene (total, avg. of	4.40E+01	7.22E-02	1.16E-05	4.90E+03	2.76E-01	6.72E-03	25	327.25	530.25	6954	0.00E+00	3.15E-02		X
541731	1,3-Dichlorobenzene	1.98E+03	6.92E-02	7.86E-06	1.34E+02	1.27E-01	3.09E-03	25	446	684	9230.18	0.00E+00	1.10E-02		X
542756	1,3-Dichloropropene	4.57E+01	6.26E-02	1.00E-05	2.80E+03	7.24E-01	1.77E-02	25	381.15	587.38	7900	4.00E-06	2.00E-02		
591786	2-Hexanone	1.48E+01	7.04E-02	8.44E-06	1.75E+04	9.32E-05	3.82E-03	25	400	586.867	9494.5	0.00E+00	1.40E-01		
593602	Bromoethene	2.10E+01	8.69E-02	1.17E-05	5.68E+03	5.74E-01	1.40E-02	25	288.8	463.51	5401	3.20E-05	3.00E-03		
630206	1,1,1,2-Tetrachloroethane	1.16E+02	7.10E-02	7.90E-06	1.10E+03	9.90E-02	2.41E-03	25	403.5	624	9768.282525	7.40E-06	1.05E-01		X
1330207	Xylenes (total, avg. of 3 J&E valu	3.86E+02	7.80E-02	8.75E-06	1.75E+02	2.75E-01	6.71E-03	25	413.8	621.18	8570	0.00E+00	1.00E-01		
1634044	MTBE	7.26E+00	1.02E-01	1.05E-05	5.10E+04	2.56E-02	6.23E-04	25	328.3	497.1	6677.66	1.10E-06	3.00E+00		
7439976	Mercury (elemental)	5.20E+01	3.07E-02	6.30E-06	2.00E+01	4.40E-01	1.07E-02	25	629.88	1750	14127	0.00E+00	3.00E-04		

Soil Properties Lookup Table

SCS Soil Type	K_s (cm/h)	α_1 (1/cm)	N (unitless)	M (unitless)	n (cm^3/cm^3)	θ_r (cm^3/cm^3)	Mean Grain Diameter (cm)	Bulk Density (g/cm^3)	θ_w (cm^3/cm^3)	SCS Soil Name
C	0.61	0.01496	1.253	0.2019	0.459	0.098	0.0092	1.43	0.215	Clay
CL	0.34	0.01581	1.416	0.2938	0.442	0.079	0.016	1.48	0.168	Clay Loam
L	0.50	0.01112	1.472	0.3207	0.399	0.061	0.020	1.59	0.148	Loam
LS	4.38	0.03475	1.746	0.4273	0.390	0.049	0.040	1.62	0.076	Loamy Sand
S	26.78	0.03524	3.177	0.6852	0.375	0.053	0.044	1.66	0.054	Sand
SC	0.47	0.03342	1.208	0.1722	0.385	0.117	0.025	1.63	0.197	Sandy Clay
SCL	0.55	0.02109	1.330	0.2481	0.384	0.063	0.029	1.63	0.146	Sandy Clay Loam
SI	1.82	0.00658	1.679	0.4044	0.489	0.050	0.0046	1.35	0.167	Silt
SIC	0.40	0.01622	1.321	0.2430	0.481	0.111	0.0039	1.38	0.216	Silty Clay
SICL	0.46	0.00839	1.521	0.3425	0.482	0.090	0.0056	1.37	0.198	Silty Clay Loam
SIL	0.76	0.00506	1.663	0.3987	0.439	0.065	0.011	1.49	0.180	Silt Loam
SL	1.60	0.02667	1.449	0.3099	0.387	0.039	0.030	1.62	0.103	Sandy Loam

Attachment B
Comparison of Detected Concentrations to Applicable GWSLs

Attachment B Table 1
Comparison of Maximum Concentrations to Applicable Groundwater Screening Levels: Quanta Property
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Constituent Name	Max Conc	Data Qual	Min GWSL	Exceed GWSL?
50293	4,4'-DDT	0.96	UJ	NA	N
50293	4,4'-DDT	0.034	J	NA	N
50328	Benzo(a)pyrene	800		NA	N
53703	Dibenz(a,h)anthracene	50	U	NA	N
53703	Dibenz(a,h)anthracene	41	J	NA	N
56553	Benzo(a)anthracene	1100		NA	N
58899	gamma-BHC (Lindane)	0.48	U	11	N
58899	gamma-BHC (Lindane)	0.011	J	11	N
67641	Acetone	1000	UJ	220000	N
67641	Acetone	470	J	220000	N
67663	Chloroform	100	U	0.7	Y
67663	Chloroform	0.73	J	0.7	Y
71432	Benzene	11000		1.4	Y
71556	1,1,1-Trichloroethane	100	U	2300	N
71556	1,1,1-Trichloroethane	0.53	J	2300	N
72208	Endrin	0.51	J	NA	N
72435	Methoxychlor	4.8	U	NA	N
72435	Methoxychlor	0.16	J	NA	N
72548	4,4'-DDD	0.96	U	NA	N
72548	4,4'-DDD	0.17		NA	N
72559	4,4'-DDE	0.96	U	29	N
72559	4,4'-DDE	0.13	J	29	N
74873	Chloromethane	100	U	6.7	Y
74873	Chloromethane	21	J	6.7	Y
75003	Chloroethane	100	U	4	Y
75003	Chloroethane	1.6	J	4	N
75150	Carbon Disulfide	100	U	560	N
75150	Carbon Disulfide	33	J	560	N
75343	1,1-Dichloroethane	100	U	2200	N
75343	1,1-Dichloroethane	5.1	J	2200	N
75354	1,1-Dichloroethene	100	U	190	N
75354	1,1-Dichloroethene	2.5		190	N
76448	Heptachlor	0.48	U	0.2	Y
76448	Heptachlor	0.016	J	0.2	N
78933	2-Butanone	1000	U	440000	N
78933	2-Butanone	61	J	440000	N
79016	Trichloroethene	142		0.05	Y
83329	Acenaphthene	3300		NA	N
85018	Phenanthrene	8300		NA	N
86737	Fluorene	2800		NA	N
86748	Carbazole	790		NA	N
91203	Naphthalene	36000		150	Y
91576	2-Methylnaphthalene	8400		3300	Y
92524	1,1'-Biphenyl	1100		NA	N
95476	o-Xylene	704		33000	N
95487	2-Methylphenol	4200		NA	N
95501	1,2-Dichlorobenzene	100	U	2600	N
95501	1,2-Dichlorobenzene	1.1	J	2600	N

Attachment B Table 1
Comparison of Maximum Concentrations to Applicable Groundwater Screening Levels: Quanta Property
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Constituent Name	Max Conc	Data Qual	Min GWSL	Exceed GWSL?
98828	Isopropylbenzene	141		8.4	Y
100414	Ethylbenzene	1300		6.9	Y
100425	Styrene	480	J	8900	N
105602	Caprolactam	150	U	NA	N
105602	Caprolactam	35		NA	N
105679	2,4-Dimethylphenol	7400		NA	N
106445	4-Methylphenol	5800		NA	N
106467	1,4-Dichlorobenzene	100	U	75	Y
106467	1,4-Dichlorobenzene	1.4		75	N
107062	1,2-Dichloroethane	100	U	1.9	Y
107062	1,2-Dichloroethane	0.2	J	1.9	N
108883	Toluene	4400		1500	Y
108952	Phenol	3100		NA	N
110827	Cyclohexane	100	U	756	N
110827	Cyclohexane	0.4	J	756	N
120127	Anthracene	1600		NA	N
120821	1,2,4-Trichlorobenzene	100	U	2800	N
120821	1,2,4-Trichlorobenzene	13	J	2800	N
127184	Tetrachloroethene	100	U	0.6	Y
127184	Tetrachloroethene	1		0.6	Y
129000	Pyrene	2800		NA	N
132649	Dibenzofuran	2200		NA	N
156592	cis-1,2-Dichloroethene	100	U	210	N
156592	cis-1,2-Dichloroethene	3.6		210	N
156605	trans-1,2-Dichloroethene	100	U	180	N
156605	trans-1,2-Dichloroethene	0.1	J	180	N
191242	Benzo(g,h,i)perylene	420		NA	N
193395	Indeno(1,2,3-cd)pyrene	390		NA	N
205992	Benzo(b)fluoranthene	920		NA	N
206440	Fluoranthene	3400		NA	N
207089	Benzo(k)fluoranthene	450		NA	N
208968	Acenaphthylene	550		NA	N
218019	Chrysene	1000		NA	N
309002	Aldrin	0.96	U	0.07	Y
309002	Aldrin	0.032	J	0.07	N
319846	alpha-BHC	0.48	U	3.1	N
319846	alpha-BHC	0.048	J	3.1	N
319868	delta-BHC	0.48	U	NA	N
319868	delta-BHC	0.1		NA	N
959988	Endosulfan I	0.14	J	NA	N
1024573	Heptachlor epoxide	0.48	U	NA	N
1024573	Heptachlor epoxide	0.0037	J	NA	N
1031078	Endosulfan sulfate	0.96	U	NA	N
1031078	Endosulfan sulfate	0.02	J	NA	N
1330207	Xylene (Total)	3900		7000	N
1634044	Methyl Tertiary Butyl Ether	100	U	78	Y
1634044	Methyl Tertiary Butyl Ether	0.2	J	78	N

Attachment B Table 1
Comparison of Maximum Concentrations to Applicable Groundwater Screening Levels: Quanta Property
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Constituent Name	Max Conc	Data Qual	Min GWSL	Exceed GWSL?
5103719	alpha-Chlordane	0.48	U	5.9	N
5103719	alpha-Chlordane	0.014	J	5.9	N
33213659	Endosulfan II	0.96	U	NA	N
33213659	Endosulfan II	0.0071	J	NA	N
34METPH	3&4-Methylphenol	64.1		NA	N
XYLENES1314	m,p-Xylene	1210		33000	N

Values reported in micrograms per liter, µg/L

Attachment B Table 2
Comparison of Maximum Concentrations to Applicable Groundwater Screening Levels: 115 River Road Property
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Constituent Name	Max Conc	Data Qual	Min GWSL	Exceed GWSL?
50328	Benzo(a)pyrene	5	U	NA	N
50328	Benzo(a)pyrene	0.484		NA	N
56553	Benzo(a)anthracene	5	U	NA	N
56553	Benzo(a)anthracene	0.761		NA	N
67641	Acetone	100	UJ	220000	N
67641	Acetone	3.9	J	220000	N
71432	Benzene	470		1.4	Y
74873	Chloromethane	10	U	6.7	Y
74873	Chloromethane	3	J	6.7	N
75003	Chloroethane	10	U	4	Y
75003	Chloroethane	1.1		4	N
75150	Carbon Disulfide	10	U	560	N
75150	Carbon Disulfide	2.5		560	N
78933	2-Butanone	100	U	440000	N
78933	2-Butanone	1.1	J	440000	N
83329	Acenaphthene	420		NA	N
85018	Phenanthrene	62		NA	N
86737	Fluorene	88		NA	N
86748	Carbazole	160		NA	N
91203	Naphthalene	1600		150	Y
91576	2-Methylnaphthalene	99		3300	N
92524	1,1'-Biphenyl	6		NA	N
95476	o-Xylene	22.9		33000	N
95487	2-Methylphenol	5.3	U	NA	N
95487	2-Methylphenol	5		NA	N
98828	Isopropylbenzene	41		8.4	Y
100414	Ethylbenzene	120		6.9	Y
105602	Caprolactam	16	U	NA	N
105602	Caprolactam	9	J	NA	N
105679	2,4-Dimethylphenol	55		NA	N
106445	4-Methylphenol	5	U	NA	N
106445	4-Methylphenol	2	J	NA	N
108872	Methylcyclohexane	10	U	710	N
108872	Methylcyclohexane	4	J	710	N
108883	Toluene	6.4	J	1500	N
108907	Chlorobenzene	10	U	390	N
108907	Chlorobenzene	1.8		390	N
108952	Phenol	5.3	U	NA	N
108952	Phenol	1	J	NA	N
110827	Cyclohexane	10	U	756	N
110827	Cyclohexane	2.7	J	756	N
120127	Anthracene	7		NA	N
129000	Pyrene	5	U	NA	N
129000	Pyrene	5		NA	N
132649	Dibenzofuran	90		NA	N
205992	Benzo(b)fluoranthene	5	U	NA	N
205992	Benzo(b)fluoranthene	0.429		NA	N
206440	Fluoranthene	9		NA	N

208968	Acenaphthylene	5	U	NA	N
208968	Acenaphthylene	2	J	NA	N
218019	Chrysene	5	U	NA	N
218019	Chrysene	0.729		NA	N
1330207	Xylene (Total)	83		7000	N
1634044	Methyl Tertiary Butyl Ether	10	U	78	N
1634044	Methyl Tertiary Butyl Ether	0.4	J	78	N
XYLENES1314	m,p-Xylene	11.3		33000	N

Values reported in micrograms per liter, µg/L

Attachment B Table 3
Comparison of Maximum Concentrations to Applicable Groundwater Screening Levels: Former Celotex Property
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Constituent Name	Max Conc	Data Qual	Min GWSL	Exceed GWSL?
50328	Benzo(a)pyrene	5	U	NA	N
50328	Benzo(a)pyrene	2.98		NA	N
53703	Dibenz(a,h)anthracene	5	U	NA	N
53703	Dibenz(a,h)anthracene	0.347		NA	N
56553	Benzo(a)anthracene	5	U	NA	N
56553	Benzo(a)anthracene	2.62		NA	N
67663	Chloroform	10	U	0.7	Y
67663	Chloroform	1.7		0.7	Y
71432	Benzene	941		1.4	Y
71556	1,1,1-Trichloroethane	10	U	2300	N
71556	1,1,1-Trichloroethane	3		2300	N
74873	Chloromethane	5	U	6.7	N
74873	Chloromethane	2.2	J	6.7	N
75003	Chloroethane	10	U	4	Y
75003	Chloroethane	8		4	Y
75014	Vinyl Chloride	10	U	0.2	Y
75014	Vinyl Chloride	4.4		0.2	Y
75092	Methylene chloride	10	U	53	N
75092	Methylene chloride	0.54	J	53	N
75150	Carbon disulfide	10	U	560	N
75150	Carbon disulfide	8.8	J	560	N
75274	Bromodichloromethane	10	U	2.1	Y
75274	Bromodichloromethane	0.1	J	2.1	N
75343	1,1-Dichloroethane	120		2200	N
75354	1,1-Dichloroethene	10	U	190	N
75354	1,1-Dichloroethene	0.3	J	190	N
76131	Freon 113	25	U	1500	N
76131	Freon 113	0.3	J	1500	N
78591	Isophorone	5		NA	N
78875	1,2-Dichloropropane	10	U	1	Y
78875	1,2-Dichloropropane	0.3	J	1	N
79016	Trichloroethene	10	U	0.05	Y
79016	Trichloroethene	0.64	J	0.05	Y
83329	Acenaphthene	77		NA	N
84662	Diethyl phthalate	18.5		NA	N
85018	Phenanthrene	30.4		NA	N
86737	Fluorene	36		NA	N
86748	Carbazole	37.7		NA	N
91203	Naphthalene	1200		150	Y
91576	2-Methylnaphthalene	92		3300	N
92524	1,1'-Biphenyl	20		NA	N
95476	o-Xylene	5		33000	N
95487	2-Methylphenol	6	U	NA	N
95487	2-Methylphenol	4.3	J	NA	N
95501	1,2-Dichlorobenzene	10	U	2600	N
95501	1,2-Dichlorobenzene	0.1	J	2600	N
98828	Isopropylbenzene	10	U	8.4	Y
98828	Isopropylbenzene	0.3	J	8.4	N

Attachment B Table 3
Comparison of Maximum Concentrations to Applicable Groundwater Screening Levels: Former Celotex Property
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Constituent Name	Max Conc	Data Qual	Min GWSL	Exceed GWSL?
100414	Ethylbenzene	5.5		6.9	N
105602	Caprolactam	76	J	NA	N
105679	2,4-Dimethylphenol	17.2		NA	N
106445	4-Methylphenol	5	U	NA	N
106445	4-Methylphenol	4	J	NA	N
106467	1,4-Dichlorobenzene	10	U	75	N
106467	1,4-Dichlorobenzene	2.5		75	N
107062	1,2-Dichloroethane	10	U	1.9	Y
107062	1,2-Dichloroethane	2.9		1.9	Y
108872	Methylcyclohexane	25	U	710	N
108872	Methylcyclohexane	0.2	J	710	N
108883	Toluene	9.3		1500	N
108907	Chlorobenzene	10	U	390	N
108907	Chlorobenzene	0.7		390	N
108952	Phenol	6	U	NA	N
108952	Phenol	2.4	J	NA	N
110827	Cyclohexane	25	U	756	N
110827	Cyclohexane	0.3	J	756	N
117817	bis(2-Ethylhexyl)phthalate	5	U	NA	N
117817	bis(2-Ethylhexyl)phthalate	2.3		NA	N
120127	Anthracene	5.03		NA	N
120821	1,2,4-Trichlorobenzene	25	U	2800	N
120821	1,2,4-Trichlorobenzene	0.1	J	2800	N
127184	Tetrachloroethene	10	U	0.6	Y
127184	Tetrachloroethene	0.81	J	0.6	Y
129000	Pyrene	5		NA	N
132649	Dibenzofuran	35		NA	N
156592	cis-1,2-Dichloroethene	10	U	210	N
156592	cis-1,2-Dichloroethene	6.2		210	N
191242	Benzo(g,h,i)perylene	5	U	NA	N
191242	Benzo(g,h,i)perylene	1.25		NA	N
193395	Indeno(1,2,3-cd)pyrene	5	U	NA	N
193395	Indeno(1,2,3-cd)pyrene	1.26		NA	N
205992	Benzo(b)fluoranthene	5	U	NA	N
205992	Benzo(b)fluoranthene	3.29		NA	N
206440	Fluoranthene	6.82		NA	N
207089	Benzo(k)fluoranthene	5	U	NA	N
207089	Benzo(k)fluoranthene	1.33		NA	N
208968	Acenaphthylene	5	U	NA	N
208968	Acenaphthylene	2.7		NA	N
218019	Chrysene	5	U	NA	N
218019	Chrysene	2.95	J	NA	N
541731	1,3-Dichlorobenzene	10	U	600	N
541731	1,3-Dichlorobenzene	4.2		600	N
1330207	Xylene (total)	15.1		7000	N
1634044	Methyl Tertiary Butyl Ether	10	U	78	N
1634044	Methyl Tertiary Butyl Ether	0.5	J	78	N

Attachment B Table 3
Comparison of Maximum Concentrations to Applicable Groundwater Screening Levels: Former Celotex Property
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Constituent Name	Max Conc	Data Qual	Min GWSL	Exceed GWSL?
11096825	Aroclor 1260	6.1		NA	N
34METPH	3&4-Methylphenol	11.2		NA	N
XYLENES1314	m,p-Xylene	10.1		33000	N

Values reported in micrograms per liter, µg/L

Attachment B Table 4
Comparison of Maximum Concentrations to Applicable Groundwater Screening Levels: Former Lever Brothers Property
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Constituent Name	Max Conc	Data Qual	Min GWSL	Exceed GWSL?
56553	Benzo(a)anthracene	48	U	NA	N
56553	Benzo(a)anthracene	0.245		NA	N
67641	Acetone	500	UJ	220000	N
67641	Acetone	28	J	220000	N
71432	Benzene	2800		1.4	Y
74873	Chloromethane	50	U	6.7	Y
74873	Chloromethane	2.7	J	6.7	N
75003	Chloroethane	50	U	4	Y
75003	Chloroethane	5.5		4	Y
75150	Carbon disulfide	50	U	560	N
75150	Carbon disulfide	14	J	560	N
75343	1,1-Dichloroethane	50	U	2200	N
75343	1,1-Dichloroethane	1.4	J	2200	N
78933	2-Butanone (MEK)	500	U	440000	N
78933	2-Butanone (MEK)	11	J	440000	N
79016	Trichloroethene	50	U	0.05	Y
79016	Trichloroethene	1.4	J	0.05	Y
83329	Acenaphthene	280		NA	N
85018	Phenanthrene	23		NA	N
86737	Fluorene	110		NA	N
86748	Carbazole	229		NA	N
91203	Naphthalene	12000		150	Y
91576	2-Methylnaphthalene	1300		3300	N
92524	1,1'-Biphenyl	170		NA	N
95476	o-Xylene	452		33000	N
95487	2-Methylphenol	51		NA	N
98828	Isopropylbenzene (Cumene)	42.9		8.4	Y
98862	Acetophenone	48	U	800000	N
98862	Acetophenone	30		800000	N
98953	Nitrobenzene	48	U	2000	N
98953	Nitrobenzene	8		2000	N
100414	Ethylbenzene	550		6.9	Y
105602	Caprolactam	140	UJ	NA	N
105602	Caprolactam	9	J	NA	N
105679	2,4-Dimethylphenol	600		NA	N
106445	4-Methylphenol	120		NA	N
108872	Methylcyclohexane	170		710	N
108883	Toluene	2000		1500	Y
108952	Phenol	11		NA	N
110827	Cyclohexane	100	U	756	N
110827	Cyclohexane	81		756	N
120127	Anthracene	48	U	NA	N
120127	Anthracene	4.4		NA	N
120821	1,2,4-Trichlorobenzene	100	U	2800	N
120821	1,2,4-Trichlorobenzene	0.5	J	2800	N
129000	Pyrene	48	U	NA	N
129000	Pyrene	2.43		NA	N
132649	Dibenzofuran	150		NA	N

Attachment B Table 4
Comparison of Maximum Concentrations to Applicable Groundwater Screening Levels: Former Lever Brothers Property
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Constituent Name	Max Conc	Data Qual	Min GWSL	Exceed GWSL?
156592	cis-1,2-Dichloroethene	50	U	210	N
156592	cis-1,2-Dichloroethene	1.6	J	210	N
206440	Fluoranthene	48	U	NA	N
206440	Fluoranthene	3.51		NA	N
208968	Acenaphthylene	31		NA	N
591786	2-Hexanone	500	U	1180	N
591786	2-Hexanone	6	J	1180	N
1330207	Xylene (Total)	1600		7000	N
34METPH	3&4-Methylphenol	68.6		NA	N
XYLENES1314	m,p-Xylene	1010		33000	N

Values reported in micrograms per liter, µg/L

Attachment B Table 5
Comparison of Maximum Concentrations to Applicable Groundwater Screening Levels:
Block 93 North Property
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Constituent Name	Max Conc	Data Qual	Min GWSL	Exceed GWSL?
50293	4,4'-DDT	0.022	U	NA	N
50293	4,4'-DDT	0.013	J	NA	N
50328	Benzo(a)pyrene	5	U	NA	N
50328	Benzo[a]pyrene	0.256		NA	N
56553	Benzo(a)anthracene	5	U	NA	N
56553	Benzo(a)anthracene	0.646		NA	N
67641	Acetone	10	UJ	220000	N
67641	Acetone	9.01		220000	N
71432	Benzene	1.6		1.4	Y
72208	Endrin	0.022	U	NA	N
72208	Endrin	0.0056	J	NA	N
72548	4,4'-DDD	0.022	U	NA	N
72548	4,4'-DDD	0.0068	J	NA	N
74873	Chloromethane	1	U	6.7	N
74873	Chloromethane	0.4	J	6.7	N
75150	Carbon disulfide	2	U	560	N
75150	Carbon Disulfide	0.2	J	560	N
79016	Trichloroethene	1	U	0.05	Y
79016	Trichloroethene	0.2	J	0.05	Y
83329	Acenaphthene	41.5		NA	N
85018	Phenanthrene	41.7		NA	N
85687	Butylbenzylphthalate	5	U	NA	N
85687	Butylbenzylphthalate	0.267		NA	N
86737	Fluorene	21		NA	N
86748	Carbazole	21.6		NA	N
91203	Naphthalene	140		150	N
91576	2-Methylnaphthalene	10.6		3300	N
92524	1,1'-Biphenyl	5	U	NA	N
92524	1,1'-Biphenyl	5		NA	N
98828	Isopropylbenzene	2	U	8.4	N
98828	Isopropylbenzene	0.2	J	8.4	N
100414	Ethylbenzene	1.6		6.9	N
105602	Caprolactam	15	U	NA	N
105602	Caprolactam	8	J	NA	N
108872	Methylcyclohexane	5	U	710	N
108872	Methylcyclohexane	0.917		710	N
108883	Toluene	1	U	1500	N
108883	Toluene	0.698		1500	N
110827	Cyclohexane	5	U	756	N
110827	Cyclohexane	2.07		756	N
120127	Anthracene	8		NA	N
127184	Tetrachloroethene	1	U	0.6	Y
127184	Tetrachloroethene	0.1	J	0.6	N
129000	Pyrene	8.56		NA	N
132649	Dibenzofuran	15.1		NA	N
156592	cis-1,2-Dichloroethene	1	U	210	N
156592	cis-1,2-Dichloroethene	0.1	J	210	N

Attachment B Table 5
Comparison of Maximum Concentrations to Applicable Groundwater Screening Levels:
Block 93 North Property
Quanta Resources Superfund Site, OU1
Edgewater, New Jersey

CAS No.	Constituent Name	Max Conc	Data Qual	Min GWSL	Exceed GWSL?
205992	Benzo(b)fluoranthene	5	U	NA	N
205992	Benzo(b)fluoranthene	0.301		NA	N
206440	Fluoranthene	8.92		NA	N
208968	Acenaphthylene	5	U	NA	N
208968	Acenaphthylene	0.373		NA	N
218019	Chrysene	5	U	NA	N
218019	Chrysene	0.549		NA	N
319868	delta-BHC	0.04	J	NA	N
959988	Endosulfan-I	0.022	U	NA	N
959988	Endosulfan I	0.0045	J	NA	N
1330207	Total Xylenes	1.1		7000	N
1634044	Methyl Tert Butyl Ether	1	U	78	N
1634044	Methyl tert-butyl ether (M	0.468		78	N
5103719	alpha-Chlordane	0.022	U	5.9	N
5103719	alpha-Chlordane	0.0044	J	5.9	N

Values reported in micrograms per liter, µg/L

Attachment 3
ProUCL Output

Appendix P, Attachment 3

ProUCL Output - 2-Methylnaphthalene

Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	26	
Number of Missing Data	0	
Number of Valid Observations	26	
Number of Distinct Observations	24	
Minimum	8.10E-02	
Maximum	1200	
Mean	145.9908	
Standard Deviation	305.5254	
Variance	93345.76	
Coefficient of Variation	2.092771	
Skewness	2.671965	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.512699	
Shapiro-Wilk 5% Critical Value	0.92	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	248.34	
Gamma Statistics		
k hat	0.33943	
k star (bias corrected)	0.325906	
Theta hat	430.1055	
Theta star	447.9534	
nu hat	17.65037	
nu star	16.94712	
5% Approximate Chi Square Value	8.633142	
Adjusted Level of Significance	0.0398	
Adjusted Chi Square Value	8.241864	
Anderson-Darling Test Statistic	0.787916	
Anderson-Darling 5% Critical Value	0.843109	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.176633	
Kolmogrov-Smirnov 5% Critical Value	0.184871	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	286.5844	
95% Adjusted Gamma UCL	300.1899	
Lognormal Statistics		
Minimum of log data	-2.51331	
Maximum of log data	7.090077	
Mean of log data	2.992542	
Standard Deviation of log data	2.506	
Variance of log data	6.280034	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.947789	
Shapiro-Wilk 5% Critical Value	0.92	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	460.6133	
MLE Standard Deviation	10632.15	
MLE Coefficient of Variation	23.0826	
MLE Skewness	12367.81	
MLE Median	19.9363	
MLE 80% Quantile	165.6888	
MLE 90% Quantile	499.0725	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
Quanta Property (Surface Soil)

MLE 95% Quantile	1230.174	
MLE 99% Quantile	6778.404	
MVU Estimate of Median	17.65865	
MVU Estimate of Mean	312.1035	
MVU Estimate of Standard Deviation	2018.642	
MVU Estimate of SE of Mean	203.0773	
95% H-UCL	5133.764	
95% Chebyshev (MVUE) UCL	1197.297	
97.5% Chebyshev (MVUE) UCL	1580.321	
99% Chebyshev (MVUE) UCL	2332.697	
Non-parametric Statisitics		
95% CLT UCL	244.5479	
95% Adjusted-CLT UCL	278.0973	
95% Modified-t UCL	253.573	
95% Jackknife UCL	248.34	
95% Chebyshev (Mean, Sd) UCL	407.1693	
97.5% Chebyshev (Mean, Sd) UCL	520.1815	
99% Chebyshev (Mean, Sd) UCL	742.1719	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	242.1529	
95% Bootstrap-t UCL	305.0467	
95% Hall's Bootstrap UCL	228.0642	
95% Percentile Bootstrap UCL	252.675	
95% BCA Bootstrap UCL	297.5777	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	300.1899	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 4-Methylphenol
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	4-Methylphenol	
Raw Statistics		
Number of Observations	21	
Number of Missing Data	0	
Number of Valid Observations	21	
Number of Distinct Observations	19	
Minimum	0.095	
Maximum	250	
Mean	16.93381	
Standard Deviation	53.58697	
Variance	2871.564	
Coefficient of Variation	3.164496	
Skewness	4.531127	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.29174	
Shapiro-Wilk 5% Critical Value	0.908	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	37.10204	
Gamma Statistics		
k hat	0.410582	
k star (bias corrected)	0.383673	
Theta hat	41.24346	
Theta star	44.13602	
nu hat	17.24443	
nu star	16.11428	
5% Approximate Chi Square Value	8.041592	
Adjusted Level of Significance	0.0383	
Adjusted Chi Square Value	7.605251	
Anderson-Darling Test Statistic	2.059186	
Anderson-Darling 5% Critical Value	0.823384	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.315956	
Kolmogrov-Smirnov 5% Critical Value	0.202613	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	33.93309	
95% Adjusted Gamma UCL	35.87996	
Lognormal Statistics		
Minimum of log data	-2.35388	
Maximum of log data	5.521461	
Mean of log data	1.233334	
Standard Deviation of log data	1.812258	
Variance of log data	3.284281	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.872297	
Shapiro-Wilk 5% Critical Value	0.908	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	17.73384	
MLE Standard Deviation	89.8841	
MLE Coefficient of Variation	5.068508	
MLE Skewness	145.4144	
MLE Median	3.432656	
MLE 80% Quantile	15.87416	
MLE 90% Quantile	35.23664	

Appendix P, Attachment 3
ProUCL Output - 4-Methylphenol
Quanta Property (Surface Soil)

MLE 95% Quantile	67.66028	
MLE 99% Quantile	232.4435	
MVU Estimate of Median	3.173569	
MVU Estimate of Mean	14.90788	
MVU Estimate of Standard Deviation	43.05134	
MVU Estimate of SE of Mean	7.291724	
95% H-UCL	83.47887	
95% Chebyshev (MVUE) UCL	46.69177	
97.5% Chebyshev (MVUE) UCL	60.44468	
99% Chebyshev (MVUE) UCL	87.45962	
Non-parametric Statisitics		
95% CLT UCL	36.16813	
95% Adjusted-CLT UCL	48.52267	
95% Modified-t UCL	39.02909	
95% Jackknife UCL	37.10204	
95% Chebyshev (Mean, Sd) UCL	67.90519	
97.5% Chebyshev (Mean, Sd) UCL	89.96055	
99% Chebyshev (Mean, Sd) UCL	133.284	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	35.32098	
95% Bootstrap-t UCL	220.4413	
95% Hall's Bootstrap UCL	129.6648	
95% Percentile Bootstrap UCL	40.19048	
95% BCA Bootstrap UCL	52.90714	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	133.284	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 4-Nitroaniline
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	4-Nitroaniline	
Raw Statistics		
Number of Observations	25	
Number of Missing Data	0	
Number of Valid Observations	25	
Number of Distinct Observations	22	
Minimum	0.095	
Maximum	37	
Mean	7.0206	
Standard Deviation	9.61948	
Variance	92.53439	
Coefficient of Variation	1.370179	
Skewness	1.984346	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.720876	
Shapiro-Wilk 5% Critical Value	0.918	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	10.31216	
Gamma Statistics		
k hat	0.579524	
k star (bias corrected)	0.536648	
Theta hat	12.11443	
Theta star	13.08233	
nu hat	28.9762	
nu star	26.83239	
5% Approximate Chi Square Value	16.01998	
Adjusted Level of Significance	0.0395	
Adjusted Chi Square Value	15.45025	
Anderson-Darling Test Statistic	0.33287	
Anderson-Darling 5% Critical Value	0.799457	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.105762	
Kolmogrov-Smirnov 5% Critical Value	0.183462	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	11.75903	
95% Adjusted Gamma UCL	12.19265	
Lognormal Statistics		
Minimum of log data	-2.35388	
Maximum of log data	3.610918	
Mean of log data	0.877164	
Standard Deviation of log data	1.748118	
Variance of log data	3.055917	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.946457	
Shapiro-Wilk 5% Critical Value	0.918	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	11.07978	
MLE Standard Deviation	49.84752	
MLE Coefficient of Variation	4.498961	
MLE Skewness	104.5588	
MLE Median	2.404071	
MLE 80% Quantile	10.531	
MLE 90% Quantile	22.72568	

Appendix P, Attachment 3
ProUCL Output - 4-Nitroaniline
Quanta Property (Surface Soil)

MLE 95% Quantile	42.64108	
MLE 99% Quantile	140.2303	
MVU Estimate of Median	2.261212	
MVU Estimate of Mean	9.689391	
MVU Estimate of Standard Deviation	27.66751	
MVU Estimate of SE of Mean	4.302926	
95% H-UCL	40.07941	
95% Chebyshev (MVUE) UCL	28.44541	
97.5% Chebyshev (MVUE) UCL	36.56116	
99% Chebyshev (MVUE) UCL	52.50297	
Non-parametric Statisitics		
95% CLT UCL	10.18513	
95% Adjusted-CLT UCL	11.00098	
95% Modified-t UCL	10.43941	
95% Jackknife UCL	10.31216	
95% Chebyshev (Mean, Sd) UCL	15.40667	
97.5% Chebyshev (Mean, Sd) UCL	19.03533	
99% Chebyshev (Mean, Sd) UCL	26.16312	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	10.10796	
95% Bootstrap-t UCL	11.87875	
95% Hall's Bootstrap UCL	11.38521	
95% Percentile Bootstrap UCL	10.3178	
95% BCA Bootstrap UCL	11.1288	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	11.75903	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Acenaphthene	
Raw Statistics		
Number of Observations	34	
Number of Missing Data	0	
Number of Valid Observations	34	
Number of Distinct Observations	30	
Minimum	0.065	
Maximum	1300	
Mean	145.2851	
Standard Deviation	251.6356	
Variance	63320.48	
Coefficient of Variation	1.732012	
Skewness	3.521382	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.572248	
Shapiro-Wilk 5% Critical Value	0.933	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	218.3192	
Gamma Statistics		
k hat	0.439906	
k star (bias corrected)	0.420699	
Theta hat	330.2639	
Theta star	345.3424	
nu hat	29.91363	
nu star	28.60752	
5% Approximate Chi Square Value	17.3998	
Adjusted Level of Significance	0.0422	
Adjusted Chi Square Value	16.96669	
Anderson-Darling Test Statistic	0.31554	
Anderson-Darling 5% Critical Value	0.824932	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.100024	
Kolmogrov-Smirnov 5% Critical Value	0.16082	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	238.8676	
95% Adjusted Gamma UCL	244.9652	
Lognormal Statistics		
Minimum of log data	-2.73337	
Maximum of log data	7.17012	
Mean of log data	3.505445	
Standard Deviation of log data	2.350563	
Variance of log data	5.525145	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.909502	
Shapiro-Wilk 5% Critical Value	0.933	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	527.4307	
MLE Standard Deviation	8338.122	
MLE Coefficient of Variation	15.80894	
MLE Skewness	3998.439	
MLE Median	33.29626	
MLE 80% Quantile	242.6623	
MLE 90% Quantile	682.6062	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
Quanta Property (Surface Soil)

MLE 95% Quantile	1591.004	
MLE 99% Quantile	7886.075	
MVU Estimate of Median	30.69204	
MVU Estimate of Mean	408.7302	
MVU Estimate of Standard Deviation	2611.613	
MVU Estimate of SE of Mean	232.6967	
95% H-UCL	3066.572	
95% Chebyshev (MVUE) UCL	1423.031	
97.5% Chebyshev (MVUE) UCL	1861.92	
99% Chebyshev (MVUE) UCL	2724.033	
Non-parametric Statisitics		
95% CLT UCL	216.2691	
95% Adjusted-CLT UCL	244.1166	
95% Modified-t UCL	222.6629	
95% Jackknife UCL	218.3192	
95% Chebyshev (Mean, Sd) UCL	333.3941	
97.5% Chebyshev (Mean, Sd) UCL	414.789	
99% Chebyshev (Mean, Sd) UCL	574.6735	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	215.3492	
95% Bootstrap-t UCL	306.9146	
95% Hall's Bootstrap UCL	559.8853	
95% Percentile Bootstrap UCL	225.5424	
95% BCA Bootstrap UCL	250.9737	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	244.9652	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1242
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Aroclor-1242	
Raw Statistics		
Number of Observations	32	
Number of Missing Data	0	
Number of Valid Observations	32	
Number of Distinct Observations	24	
Minimum	0.009	
Maximum	9.5	
Mean	0.985922	
Standard Deviation	2.31612	
Variance	5.36E+00	
Coefficient of Variation	2.349192	
Skewness	3.137718	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.476651	
Shapiro-Wilk 5% Critical Value	0.93	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.680128	
Gamma Statistics		
k hat	0.308736	
k star (bias corrected)	0.300626	
Theta hat	3.19341	
Theta star	3.279567	
nu hat	19.75913	
nu star	19.24004	
5% Approximate Chi Square Value	10.29142	
Adjusted Level of Significance	0.0416	
Adjusted Chi Square Value	9.940745	
Anderson-Darling Test Statistic	2.476199	
Anderson-Darling 5% Critical Value	0.852917	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.264999	
Kolmogrov-Smirnov 5% Critical Value	0.168511	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.843203	
95% Adjusted Gamma UCL	1.908225	
Lognormal Statistics		
Minimum of log data	-4.71053	
Maximum of log data	2.251292	
Mean of log data	-2.23725	
Standard Deviation of log data	2.180535	
Variance of log data	4.754733	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.892369	
Shapiro-Wilk 5% Critical Value	0.93	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.150411	
MLE Standard Deviation	12.34389	
MLE Coefficient of Variation	10.72999	
MLE Skewness	1267.562	
MLE Median	0.106752	
MLE 80% Quantile	0.673885	
MLE 90% Quantile	1.758991	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1242
Quanta Property (Surface Soil)

MLE 95% Quantile	3.856395	
MLE 99% Quantile	17.0249	
MVU Estimate of Median	0.099092	
MVU Estimate of Mean	0.93057	
MVU Estimate of Standard Deviation	4.724621	
MVU Estimate of SE of Mean	0.494944	
95% H-UCL	5.66981	
95% Chebyshev (MVUE) UCL	3.087982	
97.5% Chebyshev (MVUE) UCL	4.021496	
99% Chebyshev (MVUE) UCL	5.855204	
Non-parametric Statisitics		
95% CLT UCL	1.659384	
95% Adjusted-CLT UCL	1.902048	
95% Modified-t UCL	1.717979	
95% Jackknife UCL	1.680128	
95% Chebyshev (Mean, Sd) UCL	2.770612	
97.5% Chebyshev (Mean, Sd) UCL	3.542849	
99% Chebyshev (Mean, Sd) UCL	5.059758	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.655973	
95% Bootstrap-t UCL	2.806312	
95% Hall's Bootstrap UCL	4.307431	
95% Percentile Bootstrap UCL	1.735734	
95% BCA Bootstrap UCL	1.969	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	5.059758	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1260
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Aroclor-1260	
Raw Statistics		
Number of Observations	32	
Number of Missing Data	0	
Number of Valid Observations	32	
Number of Distinct Observations	29	
Minimum	7.30E-03	
Maximum	1.85E+01	
Mean	1.36E+00	
Standard Deviation	4.32E+00	
Variance	18.69477	
Coefficient of Variation	3.187993	
Skewness	3.75258	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.333094	
Shapiro-Wilk 5% Critical Value	0.93	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.65E+00	
Gamma Statistics		
k hat	0.290947	
k star (bias corrected)	0.284504	
Theta hat	4.66E+00	
Theta star	4.77E+00	
nu hat	18.62058	
nu star	18.20823	
5% Approximate Chi Square Value	9.540131	
Adjusted Level of Significance	0.0416	
Adjusted Chi Square Value	9.204023	
Anderson-Darling Test Statistic	3.974352	
Anderson-Darling 5% Critical Value	0.858801	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.24449	
Kolmogrov-Smirnov 5% Critical Value	0.169015	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	2.59E+00	
95% Adjusted Gamma UCL	2.68E+00	
Lognormal Statistics		
Minimum of log data	-4.91988	
Maximum of log data	2.917771	
Mean of log data	-2.07722	
Standard Deviation of log data	1.932972	
Variance of log data	3.736383	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.902796	
Shapiro-Wilk 5% Critical Value	0.93	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	8.11E-01	
MLE Standard Deviation	5.19E+00	
MLE Coefficient of Variation	6.40E+00	
MLE Skewness	2.81E+02	
MLE Median	1.25E-01	
MLE 80% Quantile	6.42E-01	
MLE 90% Quantile	1.50E+00	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1260
Quanta Property (Surface Soil)

MLE 95% Quantile	3.01E+00	
MLE 99% Quantile	1.12E+01	
MVU Estimate of Median	1.18E-01	
MVU Estimate of Mean	7.01E-01	
MVU Estimate of Standard Deviation	2.67E+00	
MVU Estimate of SE of Mean	3.24E-01	
95% H-UCL	2.928026	
95% Chebyshev (MVUE) UCL	2.11E+00	
97.5% Chebyshev (MVUE) UCL	2.72E+00	
99% Chebyshev (MVUE) UCL	3.92E+00	
Non-parametric Statisitics		
95% CLT UCL	2.61E+00	
95% Adjusted-CLT UCL	3.155259	
95% Modified-t UCL	2.736714	
95% Jackknife UCL	2.65E+00	
95% Chebyshev (Mean, Sd) UCL	4.69E+00	
97.5% Chebyshev (Mean, Sd) UCL	6.13E+00	
99% Chebyshev (Mean, Sd) UCL	8.96E+00	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.60E+00	
95% Bootstrap-t UCL	14.38923	
95% Hall's Bootstrap UCL	9.728063	
95% Percentile Bootstrap UCL	2.57E+00	
95% BCA Bootstrap UCL	3.47E+00	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	8.96E+00	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Arsenic

Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	40	
Number of Missing Data	0	
Number of Valid Observations	40	
Number of Distinct Observations	39	
Minimum	0.0072	
Maximum	3.90E+03	
Mean	2.81E+02	
Standard Deviation	7.79E+02	
Variance	606269.5	
Coefficient of Variation	2.766563	
Skewness	3.701629	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.408898	
Shapiro-Wilk 5% Critical Value	0.94	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.89E+02	
Gamma Statistics		
k hat	0.261981	
k star (bias corrected)	0.258999	
Theta hat	1074.292	
Theta star	1086.661	
nu hat	20.95848	
nu star	20.71992	
5% Approximate Chi Square Value	11.38204	
Adjusted Level of Significance	0.044	
Adjusted Chi Square Value	11.1219	
Anderson-Darling Test Statistic	1.754533	
Anderson-Darling 5% Critical Value	0.874846	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.199847	
Kolmogrov-Smirnov 5% Critical Value	0.152573	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	512.3426	
95% Adjusted Gamma UCL	524.3258	
Lognormal Statistics		
Minimum of log data	-4.93367	
Maximum of log data	8.268732	
Mean of log data	2.949143	
Standard Deviation of log data	3.050329	
Variance of log data	9.304505	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.906525	
Shapiro-Wilk 5% Critical Value	0.94	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2000.986	
MLE Standard Deviation	209735.5	
MLE Coefficient of Variation	104.816	
MLE Skewness	1151866	
MLE Median	19.08959	
MLE 80% Quantile	251.3059	
MLE 90% Quantile	961.8086	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Quanta Property (Surface Soil)

MLE 95% Quantile	2884.001	
MLE 99% Quantile	23022.05	
MVU Estimate of Median	16.98796	
MVU Estimate of Mean	1196.016	
MVU Estimate of Standard Deviation	20365.02	
MVU Estimate of SE of Mean	858.0987	
95% H-UCL	26215.7	
95% Chebyshev (MVUE) UCL	4936.381	
97.5% Chebyshev (MVUE) UCL	6554.84	
99% Chebyshev (MVUE) UCL	9733.99	
Non-parametric Statisitics		
95% CLT UCL	4.84E+02	
95% Adjusted-CLT UCL	560.9386	
95% Modified-t UCL	500.8829	
95% Jackknife UCL	4.89E+02	
95% Chebyshev (Mean, Sd) UCL	8.18E+02	
97.5% Chebyshev (Mean, Sd) UCL	1.05E+03	
99% Chebyshev (Mean, Sd) UCL	1.51E+03	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.83E+02	
95% Bootstrap-t UCL	756.8559	
95% Hall's Bootstrap UCL	522.6807	
95% Percentile Bootstrap UCL	4.93E+02	
95% BCA Bootstrap UCL	5.90E+02	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1.51E+03	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzene
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Benzene	
Raw Statistics		
Number of Observations	30	
Number of Missing Data	0	
Number of Valid Observations	30	
Number of Distinct Observations	25	
Minimum	0.0007	
Maximum	19	
Mean	1.697797	
Standard Deviation	4.004391	
Variance	16.03515	
Coefficient of Variation	2.358581	
Skewness	3.429236	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.489084	
Shapiro-Wilk 5% Critical Value	0.927	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.940026	
Gamma Statistics		
k hat	0.260328	
k star (bias corrected)	0.256518	
Theta hat	6.521752	
Theta star	6.618633	
nu hat	15.6197	
nu star	15.39106	
5% Approximate Chi Square Value	7.533139	
Adjusted Level of Significance	0.041	
Adjusted Chi Square Value	7.216516	
Anderson-Darling Test Statistic	1.01518	
Anderson-Darling 5% Critical Value	0.871188	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.199393	
Kolmogrov-Smirnov 5% Critical Value	0.175036	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.468792	
95% Adjusted Gamma UCL	3.620985	
Lognormal Statistics		
Minimum of log data	-7.26443	
Maximum of log data	2.944439	
Mean of log data	-2.18132	
Standard Deviation of log data	2.895859	
Variance of log data	8.386002	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.958443	
Shapiro-Wilk 5% Critical Value	0.927	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	7.475893	
MLE Standard Deviation	495.0063	
MLE Coefficient of Variation	66.21368	
MLE Skewness	290496	
MLE Median	0.112893	
MLE 80% Quantile	1.304323	
MLE 90% Quantile	4.663946	

Appendix P, Attachment 3
ProUCL Output - Benzene
Quanta Property (Surface Soil)

MLE 95% Quantile	13.22847	
MLE 99% Quantile	95.05462	
MVU Estimate of Median	0.098105	
MVU Estimate of Mean	4.324694	
MVU Estimate of Standard Deviation	47.18832	
MVU Estimate of SE of Mean	3.127258	
95% H-UCL	127.1372	
95% Chebyshev (MVUE) UCL	17.9561	
97.5% Chebyshev (MVUE) UCL	23.85441	
99% Chebyshev (MVUE) UCL	35.44052	
Non-parametric Statisitics		
95% CLT UCL	2.900347	
95% Adjusted-CLT UCL	3.389442	
95% Modified-t UCL	3.016315	
95% Jackknife UCL	2.940026	
95% Chebyshev (Mean, Sd) UCL	4.884581	
97.5% Chebyshev (Mean, Sd) UCL	6.263505	
99% Chebyshev (Mean, Sd) UCL	8.972135	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.897091	
95% Bootstrap-t UCL	4.919058	
95% Hall's Bootstrap UCL	7.637856	
95% Percentile Bootstrap UCL	3.00822	
95% BCA Bootstrap UCL	3.64954	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	23.85441	97.5% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)anthracene

Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	35	
Number of Missing Data	0	
Number of Valid Observations	35	
Number of Distinct Observations	34	
Minimum	1.2	
Maximum	990	
Mean	215.5629	
Standard Deviation	270.6051	
Variance	73227.12	
Coefficient of Variation	1.255342	
Skewness	1.777893	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.751155	
Shapiro-Wilk 5% Critical Value	0.934	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	292.9068	
Gamma Statistics		
k hat	0.580926	
k star (bias corrected)	0.55018	
Theta hat	371.0678	
Theta star	391.8044	
nu hat	40.66481	
nu star	38.51259	
5% Approximate Chi Square Value	25.29727	
Adjusted Level of Significance	0.0425	
Adjusted Chi Square Value	24.78837	
Anderson-Darling Test Statistic	0.292374	
Anderson-Darling 5% Critical Value	0.80429	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.080059	
Kolmogrov-Smirnov 5% Critical Value	0.156302	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	328.1731	
95% Adjusted Gamma UCL	334.9105	
Lognormal Statistics		
Minimum of log data	0.182322	
Maximum of log data	6.897705	
Mean of log data	4.304539	
Standard Deviation of log data	1.846339	
Variance of log data	3.408968	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.925334	
Shapiro-Wilk 5% Critical Value	0.934	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	407.0854	
MLE Standard Deviation	2201.05	
MLE Coefficient of Variation	5.40685	
MLE Skewness	174.2846	
MLE Median	74.03507	
MLE 80% Quantile	352.3748	
MLE 90% Quantile	794.001	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Quanta Property (Surface Soil)

MLE 95% Quantile	1543.437	
MLE 99% Quantile	5426.902	
MVU Estimate of Median	70.51132	
MVU Estimate of Mean	362.0703	
MVU Estimate of Standard Deviation	1278.422	
MVU Estimate of SE of Mean	153.225	
95% H-UCL	1244.513	
95% Chebyshev (MVUE) UCL	1029.963	
97.5% Chebyshev (MVUE) UCL	1318.96	
99% Chebyshev (MVUE) UCL	1886.64	
Non-parametric Statisitics		
95% CLT UCL	290.7995	
95% Adjusted-CLT UCL	305.4872	
95% Modified-t UCL	295.1977	
95% Jackknife UCL	292.9068	
95% Chebyshev (Mean, Sd) UCL	414.9416	
97.5% Chebyshev (Mean, Sd) UCL	501.2129	
99% Chebyshev (Mean, Sd) UCL	670.6762	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	290.4711	
95% Bootstrap-t UCL	309.6887	
95% Hall's Bootstrap UCL	307.2375	
95% Percentile Bootstrap UCL	298.4714	
95% BCA Bootstrap UCL	308.8857	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	328.1731	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Benzo(a)pyrene	
Raw Statistics		
Number of Observations	34	
Number of Missing Data	0	
Number of Valid Observations	34	
Number of Distinct Observations	31	
Minimum	1.2	
Maximum	941	
Mean	199.9676	
Standard Deviation	239.393	
Variance	57309.02	
Coefficient of Variation	1.197159	
Skewness	1.747973	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.781583	
Shapiro-Wilk 5% Critical Value	0.933	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	269.4484	
Gamma Statistics		
k hat	0.652604	
k star (bias corrected)	0.614629	
Theta hat	306.415	
Theta star	325.3468	
nu hat	44.37708	
nu star	41.79479	
5% Approximate Chi Square Value	27.97348	
Adjusted Level of Significance	0.0422	
Adjusted Chi Square Value	27.41343	
Anderson-Darling Test Statistic	0.144674	
Anderson-Darling 5% Critical Value	0.797021	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.076294	
Kolmogrov-Smirnov 5% Critical Value	0.15793	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	298.7689	
95% Adjusted Gamma UCL	304.8727	
Lognormal Statistics		
Minimum of log data	0.182322	
Maximum of log data	6.846943	
Mean of log data	4.362875	
Standard Deviation of log data	1.7052	
Variance of log data	2.907708	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.940414	
Shapiro-Wilk 5% Critical Value	0.933	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	335.8715	
MLE Standard Deviation	1397.596	
MLE Coefficient of Variation	4.161102	
MLE Skewness	84.53185	
MLE Median	78.48243	
MLE 80% Quantile	331.5468	
MLE 90% Quantile	702.0869	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Quanta Property (Surface Soil)

MLE 95% Quantile	1297.156	
MLE 99% Quantile	4142.98	
MVU Estimate of Median	75.19329	
MVU Estimate of Mean	305.5694	
MVU Estimate of Standard Deviation	902.8364	
MVU Estimate of SE of Mean	118.2888	
95% H-UCL	904.2931	
95% Chebyshev (MVUE) UCL	821.1783	
97.5% Chebyshev (MVUE) UCL	1044.283	
99% Chebyshev (MVUE) UCL	1482.528	
Non-parametric Statisitics		
95% CLT UCL	267.498	
95% Adjusted-CLT UCL	280.6487	
95% Modified-t UCL	271.4997	
95% Jackknife UCL	269.4484	
95% Chebyshev (Mean, Sd) UCL	378.9247	
97.5% Chebyshev (Mean, Sd) UCL	456.3596	
99% Chebyshev (Mean, Sd) UCL	608.4654	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	264.715	
95% Bootstrap-t UCL	296.7461	
95% Hall's Bootstrap UCL	285.8012	
95% Percentile Bootstrap UCL	269.5	
95% BCA Bootstrap UCL	289.2118	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	298.7689	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(b)fluoranthene

Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Benzo(b)fluoranthene	
Raw Statistics		
Number of Observations	35	
Number of Missing Data	0	
Number of Valid Observations	35	
Number of Distinct Observations	34	
Minimum	1.7	
Maximum	1100	
Mean	233.7143	
Standard Deviation	288.1837	
Variance	83049.85	
Coefficient of Variation	1.23306	
Skewness	1.686173	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.773421	
Shapiro-Wilk 5% Critical Value	0.934	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	316.0825	
Gamma Statistics		
k hat	0.603336	
k star (bias corrected)	0.570669	
Theta hat	387.3704	
Theta star	409.5446	
nu hat	42.23349	
nu star	39.94681	
5% Approximate Chi Square Value	26.4636	
Adjusted Level of Significance	0.0425	
Adjusted Chi Square Value	25.9422	
Anderson-Darling Test Statistic	0.227198	
Anderson-Darling 5% Critical Value	0.802088	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.078007	
Kolmogrov-Smirnov 5% Critical Value	0.156069	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	352.7917	
95% Adjusted Gamma UCL	359.8823	
Lognormal Statistics		
Minimum of log data	0.530628	
Maximum of log data	7.003065	
Mean of log data	4.430835	
Standard Deviation of log data	1.775787	
Variance of log data	3.153419	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.935807	
Shapiro-Wilk 5% Critical Value	0.934	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	406.4841	
MLE Standard Deviation	1924.52	
MLE Coefficient of Variation	4.734551	
MLE Skewness	120.3332	
MLE Median	84.00157	
MLE 80% Quantile	376.6722	
MLE 90% Quantile	822.8068	

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
Quanta Property (Surface Soil)

MLE 95% Quantile	1559.319	
MLE 99% Quantile	5225.55	
MVU Estimate of Median	80.29682	
MVU Estimate of Mean	366.3033	
MVU Estimate of Standard Deviation	1187.431	
MVU Estimate of SE of Mean	147.6492	
95% H-UCL	1154.171	
95% Chebyshev (MVUE) UCL	1009.891	
97.5% Chebyshev (MVUE) UCL	1288.372	
99% Chebyshev (MVUE) UCL	1835.394	
Non-parametric Statisitics		
95% CLT UCL	313.8383	
95% Adjusted-CLT UCL	328.6732	
95% Modified-t UCL	318.3964	
95% Jackknife UCL	316.0825	
95% Chebyshev (Mean, Sd) UCL	446.0447	
97.5% Chebyshev (Mean, Sd) UCL	537.9202	
99% Chebyshev (Mean, Sd) UCL	718.3919	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	309.5567	
95% Bootstrap-t UCL	342.0746	
95% Hall's Bootstrap UCL	331.4747	
95% Percentile Bootstrap UCL	312.9429	
95% BCA Bootstrap UCL	326.9657	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	352.7917	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(g,h,i)perylene

Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Benzo(g,h,i)perylene	
Raw Statistics		
Number of Observations	34	
Number of Missing Data	0	
Number of Valid Observations	34	
Number of Distinct Observations	33	
Minimum	0.87	
Maximum	553	
Mean	109.6197	
Standard Deviation	130.8061	
Variance	17110.23	
Coefficient of Variation	1.193272	
Skewness	1.77895	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.790549	
Shapiro-Wilk 5% Critical Value	0.933	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	147.5845	
Gamma Statistics		
k hat	0.657801	
k star (bias corrected)	0.619367	
Theta hat	166.6457	
Theta star	176.9866	
nu hat	44.73046	
nu star	42.11698	
5% Approximate Chi Square Value	28.23751	
Adjusted Level of Significance	0.0422	
Adjusted Chi Square Value	27.67462	
Anderson-Darling Test Statistic	0.178361	
Anderson-Darling 5% Critical Value	0.796524	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.070106	
Kolmogrov-Smirnov 5% Critical Value	0.157875	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	163.5007	
95% Adjusted Gamma UCL	166.8262	
Lognormal Statistics		
Minimum of log data	-0.13926	
Maximum of log data	6.315358	
Mean of log data	3.770178	
Standard Deviation of log data	1.676551	
Variance of log data	2.810822	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.943674	
Shapiro-Wilk 5% Critical Value	0.933	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	176.9008	
MLE Standard Deviation	699.2302	
MLE Coefficient of Variation	3.952668	
MLE Skewness	73.61284	
MLE Median	43.38779	
MLE 80% Quantile	178.9065	
MLE 90% Quantile	374.1085	

Appendix P, Attachment 3
ProUCL Output - Benzo(g,h,i)perylene
Quanta Property (Surface Soil)

MLE 95% Quantile	684.1	
MLE 99% Quantile	2142.728	
MVU Estimate of Median	41.62885	
MVU Estimate of Mean	161.6955	
MVU Estimate of Standard Deviation	461.5236	
MVU Estimate of SE of Mean	61.27507	
95% H-UCL	462.8326	
95% Chebyshev (MVUE) UCL	428.7874	
97.5% Chebyshev (MVUE) UCL	544.3582	
99% Chebyshev (MVUE) UCL	771.3748	
Non-parametric Statisitics		
95% CLT UCL	146.5188	
95% Adjusted-CLT UCL	153.8318	
95% Modified-t UCL	148.7252	
95% Jackknife UCL	147.5845	
95% Chebyshev (Mean, Sd) UCL	207.4031	
97.5% Chebyshev (Mean, Sd) UCL	249.7141	
99% Chebyshev (Mean, Sd) UCL	332.8258	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	146.5577	
95% Bootstrap-t UCL	156.2614	
95% Hall's Bootstrap UCL	159.6744	
95% Percentile Bootstrap UCL	147.2109	
95% BCA Bootstrap UCL	152.9588	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	163.5007	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(k)fluoranthene

Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Benzo(k)fluoranthene	
Raw Statistics		
Number of Observations	35	
Number of Missing Data	0	
Number of Valid Observations	35	
Number of Distinct Observations	32	
Minimum	0.57	
Maximum	632	
Mean	109.282	
Standard Deviation	134.6085	
Variance	18119.44	
Coefficient of Variation	1.231753	
Skewness	2.212937	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.758642	
Shapiro-Wilk 5% Critical Value	0.934	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	147.7556	
Gamma Statistics		
k hat	0.624125	
k star (bias corrected)	0.589676	
Theta hat	175.0963	
Theta star	185.3254	
nu hat	43.68877	
nu star	41.27735	
5% Approximate Chi Square Value	27.54994	
Adjusted Level of Significance	0.0425	
Adjusted Chi Square Value	27.01714	
Anderson-Darling Test Statistic	0.358698	
Anderson-Darling 5% Critical Value	0.800046	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.104978	
Kolmogrov-Smirnov 5% Critical Value	0.155854	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	163.7344	
95% Adjusted Gamma UCL	166.9633	
Lognormal Statistics		
Minimum of log data	-0.56212	
Maximum of log data	6.448889	
Mean of log data	3.709649	
Standard Deviation of log data	1.756541	
Variance of log data	3.085437	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.933131	
Shapiro-Wilk 5% Critical Value	0.934	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	191.0179	
MLE Standard Deviation	872.7874	
MLE Coefficient of Variation	4.569139	
MLE Skewness	109.0975	
MLE Median	40.83946	
MLE 80% Quantile	180.1745	
MLE 90% Quantile	390.2565	

Appendix P, Attachment 3
ProUCL Output - Benzo(k)fluoranthene
Quanta Property (Surface Soil)

MLE 95% Quantile	734.4773	
MLE 99% Quantile	2429.313	
MVU Estimate of Median	39.07633	
MVU Estimate of Mean	172.7183	
MVU Estimate of Standard Deviation	546.9781	
MVU Estimate of SE of Mean	68.67312	
95% H-UCL	531.8161	
95% Chebyshev (MVUE) UCL	472.0575	
97.5% Chebyshev (MVUE) UCL	601.5818	
99% Chebyshev (MVUE) UCL	856.0072	
Non-parametric Statisitics		
95% CLT UCL	146.7073	
95% Adjusted-CLT UCL	155.8013	
95% Modified-t UCL	149.174	
95% Jackknife UCL	147.7556	
95% Chebyshev (Mean, Sd) UCL	208.46	
97.5% Chebyshev (Mean, Sd) UCL	251.3744	
99% Chebyshev (Mean, Sd) UCL	335.6714	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	145.5619	
95% Bootstrap-t UCL	162.5411	
95% Hall's Bootstrap UCL	186.7316	
95% Percentile Bootstrap UCL	149.242	
95% BCA Bootstrap UCL	153.6629	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	163.7344	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	26	
Number of Missing Data	0	
Number of Valid Observations	26	
Number of Distinct Observations	25	
Minimum	0.089	
Maximum	520	
Mean	80.92265	
Standard Deviation	121.578	
Variance	14781.2	
Coefficient of Variation	1.502397	
Skewness	2.389248	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.668922	
Shapiro-Wilk 5% Critical Value	0.92	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	121.6505	
Gamma Statistics		
k hat	0.509661	
k star (bias corrected)	0.476495	
Theta hat	158.7774	
Theta star	169.8289	
nu hat	26.50238	
nu star	24.77775	
5% Approximate Chi Square Value	14.43987	
Adjusted Level of Significance	0.0398	
Adjusted Chi Square Value	13.91848	
Anderson-Darling Test Statistic	0.294858	
Anderson-Darling 5% Critical Value	0.807591	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.127065	
Kolmogrov-Smirnov 5% Critical Value	0.181126	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	138.8573	
95% Adjusted Gamma UCL	144.0589	
Lognormal Statistics		
Minimum of log data	-2.41912	
Maximum of log data	6.253829	
Mean of log data	3.150898	
Standard Deviation of log data	2.071466	
Variance of log data	4.290973	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.925203	
Shapiro-Wilk 5% Critical Value	0.92	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	199.6138	
MLE Standard Deviation	1694.22	
MLE Coefficient of Variation	8.48749	
MLE Skewness	636.8799	
MLE Median	23.35703	
MLE 80% Quantile	134.4627	
MLE 90% Quantile	334.5319	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Quanta Property (Surface Soil)

MLE 95% Quantile	705.1849	
MLE 99% Quantile	2890.338	
MVU Estimate of Median	21.50155	
MVU Estimate of Mean	160.8143	
MVU Estimate of Standard Deviation	659.2365	
MVU Estimate of SE of Mean	85.69709	
95% H-UCL	1087.571	
95% Chebyshev (MVUE) UCL	534.3592	
97.5% Chebyshev (MVUE) UCL	695.9924	
99% Chebyshev (MVUE) UCL	1013.49	
Non-parametric Statisitics		
95% CLT UCL	120.1416	
95% Adjusted-CLT UCL	132.0793	
95% Modified-t UCL	123.5126	
95% Jackknife UCL	121.6505	
95% Chebyshev (Mean, Sd) UCL	184.8536	
97.5% Chebyshev (Mean, Sd) UCL	229.8247	
99% Chebyshev (Mean, Sd) UCL	318.1615	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	118.5443	
95% Bootstrap-t UCL	150.3977	
95% Hall's Bootstrap UCL	138.4584	
95% Percentile Bootstrap UCL	120.6603	
95% BCA Bootstrap UCL	135.5281	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	138.8573	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chromium
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Chromium	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	29	
Minimum	0.002	
Maximum	37.9	
Mean	15.26817	
Standard Deviation	10.95529	
Variance	120.0183	
Coefficient of Variation	0.717524	
Skewness	0.092597	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.937748	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	18.72886	
Gamma Statistics		
k hat	0.521137	
k star (bias corrected)	0.490215	
Theta hat	29.29782	
Theta star	31.1459	
nu hat	30.22593	
nu star	28.43245	
5% Approximate Chi Square Value	17.26315	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	16.74266	
Anderson-Darling Test Statistic	3.13977	
Anderson-Darling 5% Critical Value	0.809141	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.303245	
Kolmogrov-Smirnov 5% Critical Value	0.171856	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	25.14672	
95% Adjusted Gamma UCL	25.92847	
Lognormal Statistics		
Minimum of log data	-6.21461	
Maximum of log data	3.634951	
Mean of log data	1.514697	
Standard Deviation of log data	2.836613	
Variance of log data	8.046374	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.672088	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	254.1396	
MLE Standard Deviation	14198.77	
MLE Coefficient of Variation	55.86996	
MLE Skewness	174563.1	
MLE Median	4.548042	
MLE 80% Quantile	49.9806	
MLE 90% Quantile	174.12	

Appendix P, Attachment 3
ProUCL Output - Chromium
Quanta Property (Surface Soil)

MLE 95% Quantile	483.4392	
MLE 99% Quantile	3336.438	
MVU Estimate of Median	3.956331	
MVU Estimate of Mean	150.1138	
MVU Estimate of Standard Deviation	1492.058	
MVU Estimate of SE of Mean	107.2529	
95% H-UCL	4175.74	
95% Chebyshev (MVUE) UCL	617.6186	
97.5% Chebyshev (MVUE) UCL	819.9083	
99% Chebyshev (MVUE) UCL	1217.267	
Non-parametric Statisitics		
95% CLT UCL	18.61437	
95% Adjusted-CLT UCL	18.65175	
95% Modified-t UCL	18.73469	
95% Jackknife UCL	18.72886	
95% Chebyshev (Mean, Sd) UCL	24.13568	
97.5% Chebyshev (Mean, Sd) UCL	27.97266	
99% Chebyshev (Mean, Sd) UCL	35.50966	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	18.65349	
95% Bootstrap-t UCL	18.92984	
95% Hall's Bootstrap UCL	18.70596	
95% Percentile Bootstrap UCL	18.61621	
95% BCA Bootstrap UCL	18.56721	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	18.72886	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chrysene
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Chrysene	
Raw Statistics		
Number of Observations	35	
Number of Missing Data	0	
Number of Valid Observations	35	
Number of Distinct Observations	33	
Minimum	1.20E+00	
Maximum	965	
Mean	211.5857	
Standard Deviation	244.9264	
Variance	59988.94	
Coefficient of Variation	1.157575	
Skewness	1.620285	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.802593	
Shapiro-Wilk 5% Critical Value	0.934	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	281.5902	
Gamma Statistics		
k hat	0.620349	
k star (bias corrected)	0.586224	
Theta hat	341.0754	
Theta star	360.93	
nu hat	43.42442	
nu star	41.03566	
5% Approximate Chi Square Value	27.35231	
Adjusted Level of Significance	0.0425	
Adjusted Chi Square Value	26.82157	
Anderson-Darling Test Statistic	0.298319	
Anderson-Darling 5% Critical Value	0.800417	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.090588	
Kolmogrov-Smirnov 5% Critical Value	0.155893	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	317.4343	
95% Adjusted Gamma UCL	323.7156	
Lognormal Statistics		
Minimum of log data	0.182322	
Maximum of log data	6.872128	
Mean of log data	4.363479	
Standard Deviation of log data	1.801375	
Variance of log data	3.24495	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.917554	
Shapiro-Wilk 5% Critical Value	0.934	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	397.8018	
MLE Standard Deviation	1975.455	
MLE Coefficient of Variation	4.965928	
MLE Skewness	137.3597	
MLE Median	78.52984	
MLE 80% Quantile	359.8331	
MLE 90% Quantile	794.9229	

Appendix P, Attachment 3
ProUCL Output - Chrysene
Quanta Property (Surface Soil)

MLE 95% Quantile	1520.417	
MLE 99% Quantile	5184.746	
MVU Estimate of Median	74.96808	
MVU Estimate of Mean	356.8271	
MVU Estimate of Standard Deviation	1193.145	
MVU Estimate of SE of Mean	146.4306	
95% H-UCL	1159.813	
95% Chebyshev (MVUE) UCL	995.1032	
97.5% Chebyshev (MVUE) UCL	1271.286	
99% Chebyshev (MVUE) UCL	1813.793	
Non-parametric Statisitics		
95% CLT UCL	279.6828	
95% Adjusted-CLT UCL	291.7983	
95% Modified-t UCL	283.4799	
95% Jackknife UCL	281.5902	
95% Chebyshev (Mean, Sd) UCL	392.0446	
97.5% Chebyshev (Mean, Sd) UCL	470.1294	
99% Chebyshev (Mean, Sd) UCL	623.5117	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	278.1733	
95% Bootstrap-t UCL	298.5656	
95% Hall's Bootstrap UCL	297.8211	
95% Percentile Bootstrap UCL	276.5314	
95% BCA Bootstrap UCL	291.4143	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	317.4343	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzo(a,h)anthracene

Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Dibenzo(a,h)anthracene	
Raw Statistics		
Number of Observations	33	
Number of Missing Data	0	
Number of Valid Observations	33	
Number of Distinct Observations	32	
Minimum	0.24	
Maximum	220	
Mean	39.60333	
Standard Deviation	52.74545	
Variance	2782.082	
Coefficient of Variation	1.331844	
Skewness	2.270249	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.712105	
Shapiro-Wilk 5% Critical Value	0.931	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	55.15629	
Gamma Statistics		
k hat	0.638357	
k star (bias corrected)	0.600526	
Theta hat	62.0395	
Theta star	65.9477	
nu hat	42.13155	
nu star	39.63474	
5% Approximate Chi Square Value	26.2094	
Adjusted Level of Significance	0.0419	
Adjusted Chi Square Value	25.64644	
Anderson-Darling Test Statistic	0.215853	
Anderson-Darling 5% Critical Value	0.79812	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.09225	
Kolmogrov-Smirnov 5% Critical Value	0.160456	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	59.88949	
95% Adjusted Gamma UCL	61.20413	
Lognormal Statistics		
Minimum of log data	-1.42712	
Maximum of log data	5.393628	
Mean of log data	2.719716	
Standard Deviation of log data	1.683712	
Variance of log data	2.834885	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.950631	
Shapiro-Wilk 5% Critical Value	0.931	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	62.62462	
MLE Standard Deviation	250.7211	
MLE Coefficient of Variation	4.003554	
MLE Skewness	76.18142	
MLE Median	15.17601	
MLE 80% Quantile	62.95702	
MLE 90% Quantile	132.0638	

Appendix P, Attachment 3

ProUCL Output - Dibenzo(a,h)anthracene

Quanta Property (Surface Soil)

MLE 95% Quantile	242.1172	
MLE 99% Quantile	762.0632	
MVU Estimate of Median	14.53717	
MVU Estimate of Mean	57.03279	
MVU Estimate of Standard Deviation	163.0328	
MVU Estimate of SE of Mean	21.9681	
95% H-UCL	168.0791	
95% Chebyshev (MVUE) UCL	152.7895	
97.5% Chebyshev (MVUE) UCL	194.2236	
99% Chebyshev (MVUE) UCL	275.6127	
Non-parametric Statisitics		
95% CLT UCL	54.70606	
95% Adjusted-CLT UCL	58.58332	
95% Modified-t UCL	55.76106	
95% Jackknife UCL	55.15629	
95% Chebyshev (Mean, Sd) UCL	79.62589	
97.5% Chebyshev (Mean, Sd) UCL	96.94368	
99% Chebyshev (Mean, Sd) UCL	130.9611	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	54.30509	
95% Bootstrap-t UCL	62.68578	
95% Hall's Bootstrap UCL	69.34987	
95% Percentile Bootstrap UCL	54.10273	
95% BCA Bootstrap UCL	58.83818	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	59.88949	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	26	
Number of Missing Data	0	
Number of Valid Observations	26	
Number of Distinct Observations	25	
Minimum	0.052	
Maximum	820	
Mean	107.282	
Standard Deviation	194.9859	
Variance	38019.49	
Coefficient of Variation	1.817508	
Skewness	2.98741	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.55353	
Shapiro-Wilk 5% Critical Value	0.92	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	172.6011	
Gamma Statistics		
k hat	0.437962	
k star (bias corrected)	0.413069	
Theta hat	244.9571	
Theta star	259.7191	
nu hat	22.77405	
nu star	21.47961	
5% Approximate Chi Square Value	11.94739	
Adjusted Level of Significance	0.0398	
Adjusted Chi Square Value	11.47795	
Anderson-Darling Test Statistic	0.404208	
Anderson-Darling 5% Critical Value	0.82189	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.115278	
Kolmogrov-Smirnov 5% Critical Value	0.182649	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	192.8768	
95% Adjusted Gamma UCL	200.7654	
Lognormal Statistics		
Minimum of log data	-2.95651	
Maximum of log data	6.709304	
Mean of log data	3.194626	
Standard Deviation of log data	2.299004	
Variance of log data	5.285418	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.915442	
Shapiro-Wilk 5% Critical Value	0.92	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	342.8645	
MLE Standard Deviation	4805.447	
MLE Coefficient of Variation	14.01559	
MLE Skewness	2795.222	
MLE Median	24.40105	
MLE 80% Quantile	170.2528	
MLE 90% Quantile	468.1768	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Quanta Property (Surface Soil)

MLE 95% Quantile	1071.149	
MLE 99% Quantile	5126.143	
MVU Estimate of Median	22.03423	
MVU Estimate of Mean	254.5532	
MVU Estimate of Standard Deviation	1327.408	
MVU Estimate of SE of Mean	151.8074	
95% H-UCL	2671.282	
95% Chebyshev (MVUE) UCL	916.2665	
97.5% Chebyshev (MVUE) UCL	1202.59	
99% Chebyshev (MVUE) UCL	1765.018	
Non-parametric Statisitics		
95% CLT UCL	170.181	
95% Adjusted-CLT UCL	194.1199	
95% Modified-t UCL	176.3351	
95% Jackknife UCL	172.6011	
95% Chebyshev (Mean, Sd) UCL	273.9658	
97.5% Chebyshev (Mean, Sd) UCL	346.09	
99% Chebyshev (Mean, Sd) UCL	487.764	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	168.7165	
95% Bootstrap-t UCL	299.1615	
95% Hall's Bootstrap UCL	488.3488	
95% Percentile Bootstrap UCL	173.2077	
95% BCA Bootstrap UCL	195.3981	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	200.7654	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Fluoranthene	
Raw Statistics		
Number of Observations	35	
Number of Missing Data	0	
Number of Valid Observations	35	
Number of Distinct Observations	33	
Minimum	2.1	
Maximum	2400	
Mean	532.3543	
Standard Deviation	676.4231	
Variance	457548.2	
Coefficient of Variation	1.270626	
Skewness	1.683123	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.746243	
Shapiro-Wilk 5% Critical Value	0.934	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	725.6884	
Gamma Statistics		
k hat	0.551975	
k star (bias corrected)	0.523711	
Theta hat	964.4534	
Theta star	1016.505	
nu hat	38.63826	
nu star	36.65974	
5% Approximate Chi Square Value	23.79808	
Adjusted Level of Significance	0.0425	
Adjusted Chi Square Value	23.30567	
Anderson-Darling Test Statistic	0.294185	
Anderson-Darling 5% Critical Value	0.807134	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.076607	
Kolmogrov-Smirnov 5% Critical Value	0.156602	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	820.0648	
95% Adjusted Gamma UCL	837.3916	
Lognormal Statistics		
Minimum of log data	0.741937	
Maximum of log data	7.783224	
Mean of log data	5.143875	
Standard Deviation of log data	1.937487	
Variance of log data	3.753856	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.918845	
Shapiro-Wilk 5% Critical Value	0.934	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1119.685	
MLE Standard Deviation	7229.156	
MLE Coefficient of Variation	6.45642	
MLE Skewness	288.5074	
MLE Median	171.3785	
MLE 80% Quantile	880.9943	
MLE 90% Quantile	2066.363	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
Quanta Property (Surface Soil)

MLE 95% Quantile	4150.735	
MLE 99% Quantile	15529.08	
MVU Estimate of Median	162.4171	
MVU Estimate of Mean	977.4434	
MVU Estimate of Standard Deviation	3853.407	
MVU Estimate of SE of Mean	439.0628	
95% H-UCL	3781.886	
95% Chebyshev (MVUE) UCL	2891.274	
97.5% Chebyshev (MVUE) UCL	3719.39	
99% Chebyshev (MVUE) UCL	5346.063	
Non-parametric Statisitics		
95% CLT UCL	720.4209	
95% Adjusted-CLT UCL	755.1782	
95% Modified-t UCL	731.1098	
95% Jackknife UCL	725.6884	
95% Chebyshev (Mean, Sd) UCL	1030.735	
97.5% Chebyshev (Mean, Sd) UCL	1246.385	
99% Chebyshev (Mean, Sd) UCL	1669.987	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	719.6913	
95% Bootstrap-t UCL	784.7834	
95% Hall's Bootstrap UCL	744.485	
95% Percentile Bootstrap UCL	719.7914	
95% BCA Bootstrap UCL	754.04	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	820.0648	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Fluorene
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Fluorene	
Raw Statistics		
Number of Observations	34	
Number of Missing Data	0	
Number of Valid Observations	34	
Number of Distinct Observations	33	
Minimum	0.066	
Maximum	1300	
Mean	191.9046	
Standard Deviation	324.6191	
Variance	105377.6	
Coefficient of Variation	1.691565	
Skewness	2.50093	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.617257	
Shapiro-Wilk 5% Critical Value	0.933	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	286.1212	
Gamma Statistics		
k hat	0.402158	
k star (bias corrected)	0.386281	
Theta hat	477.1871	
Theta star	496.8002	
nu hat	27.34674	
nu star	26.26712	
5% Approximate Chi Square Value	15.58337	
Adjusted Level of Significance	0.0422	
Adjusted Chi Square Value	15.17562	
Anderson-Darling Test Statistic	0.303107	
Anderson-Darling 5% Critical Value	0.833293	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.095525	
Kolmogrov-Smirnov 5% Critical Value	0.161618	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	323.4718	
95% Adjusted Gamma UCL	332.1631	
Lognormal Statistics		
Minimum of log data	-2.7181	
Maximum of log data	7.17012	
Mean of log data	3.622149	
Standard Deviation of log data	2.413023	
Variance of log data	5.82268	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.935481	
Shapiro-Wilk 5% Critical Value	0.933	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	687.794	
MLE Standard Deviation	12623.9	
MLE Coefficient of Variation	18.35419	
MLE Skewness	6238.159	
MLE Median	37.4179	
MLE 80% Quantile	287.4801	
MLE 90% Quantile	831.2111	

Appendix P, Attachment 3
ProUCL Output - Fluorene
Quanta Property (Surface Soil)

MLE 95% Quantile	1981.426	
MLE 99% Quantile	10248.03	
MVU Estimate of Median	34.33999	
MVU Estimate of Mean	521.364	
MVU Estimate of Standard Deviation	3587.997	
MVU Estimate of SE of Mean	305.5858	
95% H-UCL	4363.949	
95% Chebyshev (MVUE) UCL	1853.382	
97.5% Chebyshev (MVUE) UCL	2429.747	
99% Chebyshev (MVUE) UCL	3561.904	
Non-parametric Statisitics		
95% CLT UCL	283.4764	
95% Adjusted-CLT UCL	308.9903	
95% Modified-t UCL	290.1008	
95% Jackknife UCL	286.1212	
95% Chebyshev (Mean, Sd) UCL	434.572	
97.5% Chebyshev (Mean, Sd) UCL	539.5744	
99% Chebyshev (Mean, Sd) UCL	745.8312	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	284.2766	
95% Bootstrap-t UCL	331.3701	
95% Hall's Bootstrap UCL	323.3761	
95% Percentile Bootstrap UCL	281.2408	
95% BCA Bootstrap UCL	314.7538	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	332.1631	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Indeno(1,2,3-c,d)pyrene

Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Indeno(1,2,3-c,d)pyrene	
Raw Statistics		
Number of Observations	34	
Number of Missing Data	0	
Number of Valid Observations	34	
Number of Distinct Observations	31	
Minimum	0.74	
Maximum	540	
Mean	111.2424	
Standard Deviation	135.6933	
Variance	18412.68	
Coefficient of Variation	1.219799	
Skewness	1.734123	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.777211	
Shapiro-Wilk 5% Critical Value	0.933	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	150.6256	
Gamma Statistics		
k hat	0.633416	
k star (bias corrected)	0.597135	
Theta hat	175.6228	
Theta star	186.2936	
nu hat	43.07231	
nu star	40.60515	
5% Approximate Chi Square Value	27.00061	
Adjusted Level of Significance	0.0422	
Adjusted Chi Square Value	26.45111	
Anderson-Darling Test Statistic	0.185808	
Anderson-Darling 5% Critical Value	0.798857	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.062286	
Kolmogrov-Smirnov 5% Critical Value	0.158134	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	167.293	
95% Adjusted Gamma UCL	170.7684	
Lognormal Statistics		
Minimum of log data	-0.30111	
Maximum of log data	6.291569	
Mean of log data	3.743945	
Standard Deviation of log data	1.712993	
Variance of log data	2.934344	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.946647	
Shapiro-Wilk 5% Critical Value	0.933	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	183.2988	
MLE Standard Deviation	773.5375	
MLE Coefficient of Variation	4.220091	
MLE Skewness	87.81658	
MLE Median	42.2644	
MLE 80% Quantile	179.7243	
MLE 90% Quantile	381.8932	

Appendix P, Attachment 3
ProUCL Output - Indeno(1,2,3-c,d)pyrene
Quanta Property (Surface Soil)

MLE 95% Quantile	707.5572	
MLE 99% Quantile	2271.888	
MVU Estimate of Median	40.47724	
MVU Estimate of Mean	166.5445	
MVU Estimate of Standard Deviation	496.7143	
MVU Estimate of SE of Mean	64.84091	
95% H-UCL	497.4121	
95% Chebyshev (MVUE) UCL	449.1795	
97.5% Chebyshev (MVUE) UCL	571.4759	
99% Chebyshev (MVUE) UCL	811.7034	
Non-parametric Statisitics		
95% CLT UCL	149.5201	
95% Adjusted-CLT UCL	156.9151	
95% Modified-t UCL	151.7791	
95% Jackknife UCL	150.6256	
95% Chebyshev (Mean, Sd) UCL	212.6792	
97.5% Chebyshev (Mean, Sd) UCL	256.5711	
99% Chebyshev (Mean, Sd) UCL	342.788	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	147.8418	
95% Bootstrap-t UCL	164.9594	
95% Hall's Bootstrap UCL	163.2208	
95% Percentile Bootstrap UCL	150.9335	
95% BCA Bootstrap UCL	158.3171	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	167.293	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Lead

Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	34	
Number of Missing Data	0	
Number of Valid Observations	34	
Number of Distinct Observations	34	
Minimum	0.069	
Maximum	7730	
Mean	682.112	
Standard Deviation	1511.17	
Variance	2283635	
Coefficient of Variation	2.215428	
Skewness	3.778641	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.487011	
Shapiro-Wilk 5% Critical Value	0.933	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1120.71	
Gamma Statistics		
k hat	0.31909	
k star (bias corrected)	0.310543	
Theta hat	2137.68	
Theta star	2196.516	
nu hat	21.69811	
nu star	21.11691	
5% Approximate Chi Square Value	11.67703	
Adjusted Level of Significance	0.0422	
Adjusted Chi Square Value	11.32929	
Anderson-Darling Test Statistic	0.374248	
Anderson-Darling 5% Critical Value	0.851692	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.104929	
Kolmogrov-Smirnov 5% Critical Value	0.163376	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1233.542	
95% Adjusted Gamma UCL	1271.404	
Lognormal Statistics		
Minimum of log data	-2.67365	
Maximum of log data	8.952864	
Mean of log data	4.385809	
Standard Deviation of log data	2.989654	
Variance of log data	8.938029	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.893004	
Shapiro-Wilk 5% Critical Value	0.933	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	7008.114	
MLE Standard Deviation	611562.8	
MLE Coefficient of Variation	87.26496	
MLE Skewness	664799.6	
MLE Median	80.30318	
MLE 80% Quantile	1004.321	
MLE 90% Quantile	3742.519	

Appendix P, Attachment 3
ProUCL Output - Lead
Quanta Property (Surface Soil)

MLE 95% Quantile	10979.55	
MLE 99% Quantile	84098.48	
MVU Estimate of Median	70.3772	
MVU Estimate of Mean	4047.046	
MVU Estimate of Standard Deviation	54956.35	
MVU Estimate of SE of Mean	2941.306	
95% H-UCL	110843.4	
95% Chebyshev (MVUE) UCL	16867.9	
97.5% Chebyshev (MVUE) UCL	22415.49	
99% Chebyshev (MVUE) UCL	33312.67	
Non-parametric Statisitics		
95% CLT UCL	1108.398	
95% Adjusted-CLT UCL	1287.851	
95% Modified-t UCL	1148.701	
95% Jackknife UCL	1120.71	
95% Chebyshev (Mean, Sd) UCL	1811.78	
97.5% Chebyshev (Mean, Sd) UCL	2300.588	
99% Chebyshev (Mean, Sd) UCL	3260.757	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1094.941	
95% Bootstrap-t UCL	1926.368	
95% Hall's Bootstrap UCL	2942.773	
95% Percentile Bootstrap UCL	1166.636	
95% BCA Bootstrap UCL	1369.83	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	1271.404	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Trichloroethene
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Trichloroethene	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	22	
Minimum	0.0025	
Maximum	4.2	
Mean	0.4335	
Standard Deviation	0.875021	
Variance	0.765662	
Coefficient of Variation	2.018503	
Skewness	3.608671	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.509529	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.720722	
Gamma Statistics		
k hat	0.394477	
k star (bias corrected)	0.375337	
Theta hat	1.098925	
Theta star	1.154962	
nu hat	21.30173	
nu star	20.26821	
5% Approximate Chi Square Value	11.04759	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	10.61247	
Anderson-Darling Test Statistic	0.792054	
Anderson-Darling 5% Critical Value	0.831492	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.162214	
Kolmogrov-Smirnov 5% Critical Value	0.180428	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.795311	
95% Adjusted Gamma UCL	0.827919	
Lognormal Statistics		
Minimum of log data	-5.99146	
Maximum of log data	1.435085	
Mean of log data	-2.50774	
Standard Deviation of log data	2.289886	
Variance of log data	5.243578	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.882928	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.120812	
MLE Standard Deviation	15.38194	
MLE Coefficient of Variation	13.72394	
MLE Skewness	2626.026	
MLE Median	0.081452	
MLE 80% Quantile	0.563954	
MLE 90% Quantile	1.544604	

Appendix P, Attachment 3
ProUCL Output - Trichloroethene
Quanta Property (Surface Soil)

MLE 95% Quantile	3.522343	
MLE 99% Quantile	16.75236	
MVU Estimate of Median	0.07389	
MVU Estimate of Mean	0.84276	
MVU Estimate of Standard Deviation	4.442366	
MVU Estimate of SE of Mean	0.495718	
95% H-UCL	8.126631	
95% Chebyshev (MVUE) UCL	3.003544	
97.5% Chebyshev (MVUE) UCL	3.938517	
99% Chebyshev (MVUE) UCL	5.775091	
Non-parametric Statisitics		
95% CLT UCL	0.71049	
95% Adjusted-CLT UCL	0.835453	
95% Modified-t UCL	0.740214	
95% Jackknife UCL	0.720722	
95% Chebyshev (Mean, Sd) UCL	1.167529	
97.5% Chebyshev (Mean, Sd) UCL	1.485145	
99% Chebyshev (Mean, Sd) UCL	2.109038	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.701101	
95% Bootstrap-t UCL	1.379869	
95% Hall's Bootstrap UCL	1.920976	
95% Percentile Bootstrap UCL	0.720593	
95% BCA Bootstrap UCL	0.862981	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	0.827919	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	34	
Number of Missing Data	0	
Number of Valid Observations	34	
Number of Distinct Observations	33	
Minimum	0.24	
Maximum	6200	
Mean	468.4388	
Standard Deviation	1164.347	
Variance	1.36E+06	
Coefficient of Variation	2.485591	
Skewness	4.05755	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.458575	
Shapiro-Wilk 5% Critical Value	0.933	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	806.3759	
Gamma Statistics		
k hat	0.280277	
k star (bias corrected)	0.275154	
Theta hat	1671.344	
Theta star	1702.459	
nu hat	19.05882	
nu star	18.71049	
5% Approximate Chi Square Value	9.904855	
Adjusted Level of Significance	0.0422	
Adjusted Chi Square Value	9.587592	
Anderson-Darling Test Statistic	0.941245	
Anderson-Darling 5% Critical Value	0.864445	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.152702	
Kolmogrov-Smirnov 5% Critical Value	0.164449	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	884.8912	
95% Adjusted Gamma UCL	914.1733	
Lognormal Statistics		
Minimum of log data	-1.42712	
Maximum of log data	8.732305	
Mean of log data	3.661683	
Standard Deviation of log data	2.720226	
Variance of log data	7.399629	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.970913	
Shapiro-Wilk 5% Critical Value	0.933	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1574.191	
MLE Standard Deviation	63640.51	
MLE Coefficient of Variation	40.42743	
MLE Skewness	6.62E+04	
MLE Median	38.92678	
MLE 80% Quantile	387.7161	
MLE 90% Quantile	1283.278	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Quanta Property (Surface Soil)

MLE 95% Quantile	3416.781	
MLE 99% Quantile	21783.93	
MVU Estimate of Median	34.90128	
MVU Estimate of Mean	1049.106	
MVU Estimate of Standard Deviation	10386.32	
MVU Estimate of SE of Mean	697.3388	
95% H-UCL	15857.59	
95% Chebyshev (MVUE) UCL	4088.735	
97.5% Chebyshev (MVUE) UCL	5403.985	
99% Chebyshev (MVUE) UCL	7987.539	
Non-parametric Statisitics		
95% CLT UCL	796.8897	
95% Adjusted-CLT UCL	945.3628	
95% Modified-t UCL	829.5348	
95% Jackknife UCL	806.3759	
95% Chebyshev (Mean, Sd) UCL	1338.841	
97.5% Chebyshev (Mean, Sd) UCL	1715.465	
99% Chebyshev (Mean, Sd) UCL	2455.269	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	796.0317	
95% Bootstrap-t UCL	1296.764	
95% Hall's Bootstrap UCL	1977.953	
95% Percentile Bootstrap UCL	819.1012	
95% BCA Bootstrap UCL	989.9565	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	914.1733	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Phenanthrene
Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Phenanthrene	
Raw Statistics		
Number of Observations	35	
Number of Missing Data	0	
Number of Valid Observations	35	
Number of Distinct Observations	33	
Minimum	9.10E-01	
Maximum	4100	
Mean	642.9603	
Standard Deviation	985.3991	
Variance	971011.4	
Coefficient of Variation	1.532597	
Skewness	2.374427	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.663949	
Shapiro-Wilk 5% Critical Value	0.934	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	924.6054	
Gamma Statistics		
k hat	0.461219	
k star (bias corrected)	0.440733	
Theta hat	1394.046	
Theta star	1458.842	
nu hat	32.28532	
nu star	30.85134	
5% Approximate Chi Square Value	19.16131	
Adjusted Level of Significance	0.0425	
Adjusted Chi Square Value	18.72344	
Anderson-Darling Test Statistic	0.268312	
Anderson-Darling 5% Critical Value	0.820813	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.088132	
Kolmogrov-Smirnov 5% Critical Value	0.157951	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1035.221	
95% Adjusted Gamma UCL	1059.43	
Lognormal Statistics		
Minimum of log data	-0.09431	
Maximum of log data	8.318742	
Mean of log data	5.071397	
Standard Deviation of log data	2.1866	
Variance of log data	4.781218	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.926671	
Shapiro-Wilk 5% Critical Value	0.934	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1740.637	
MLE Standard Deviation	18928.14	
MLE Coefficient of Variation	10.87426	
MLE Skewness	1318.499	
MLE Median	159.3969	
MLE 80% Quantile	1011.383	
MLE 90% Quantile	2646.989	

Appendix P, Attachment 3
ProUCL Output - Phenanthrene
Quanta Property (Surface Soil)

MLE 95% Quantile	5815.917	
MLE 99% Quantile	25781.9	
MVU Estimate of Median	148.8537	
MVU Estimate of Mean	1427.97	
MVU Estimate of Standard Deviation	7604.718	
MVU Estimate of SE of Mean	742.0183	
95% H-UCL	7905.821	
95% Chebyshev (MVUE) UCL	4662.353	
97.5% Chebyshev (MVUE) UCL	6061.874	
99% Chebyshev (MVUE) UCL	8810.96	
Non-parametric Statisitics		
95% CLT UCL	916.9318	
95% Adjusted-CLT UCL	988.3622	
95% Modified-t UCL	935.7471	
95% Jackknife UCL	924.6054	
95% Chebyshev (Mean, Sd) UCL	1368.991	
97.5% Chebyshev (Mean, Sd) UCL	1683.145	
99% Chebyshev (Mean, Sd) UCL	2300.24	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	909.9787	
95% Bootstrap-t UCL	1084.875	
95% Hall's Bootstrap UCL	1020.501	
95% Percentile Bootstrap UCL	939.1977	
95% BCA Bootstrap UCL	1023.455	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	1059.43	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Pyrene

Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Pyrene	
Raw Statistics		
Number of Observations	35	
Number of Missing Data	0	
Number of Valid Observations	35	
Number of Distinct Observations	30	
Minimum	2.1	
Maximum	1700	
Mean	420.2429	
Standard Deviation	492.6849	
Variance	242738.4	
Coefficient of Variation	1.172381	
Skewness	1.390293	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.787272	
Shapiro-Wilk 5% Critical Value	0.934	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	561.0612	
Gamma Statistics		
k hat	0.59288	
k star (bias corrected)	0.56111	
Theta hat	708.8157	
Theta star	748.9497	
nu hat	41.50162	
nu star	39.27767	
5% Approximate Chi Square Value	25.91884	
Adjusted Level of Significance	0.0425	
Adjusted Chi Square Value	25.40324	
Anderson-Darling Test Statistic	0.370963	
Anderson-Darling 5% Critical Value	0.803115	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.087168	
Kolmogrov-Smirnov 5% Critical Value	0.156178	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	636.8404	
95% Adjusted Gamma UCL	649.766	
Lognormal Statistics		
Minimum of log data	0.741937	
Maximum of log data	7.438384	
Mean of log data	4.996832	
Standard Deviation of log data	1.869491	
Variance of log data	3.494996	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.90472	
Shapiro-Wilk 5% Critical Value	0.934	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	849.2303	
MLE Standard Deviation	4800.23	
MLE Coefficient of Variation	5.652448	
MLE Skewness	197.554	
MLE Median	147.9438	
MLE 80% Quantile	718.0592	
MLE 90% Quantile	1634.559	

Appendix P, Attachment 3
ProUCL Output - Pyrene
Quanta Property (Surface Soil)

MLE 95% Quantile	3203.966	
MLE 99% Quantile	11444.54	
MVU Estimate of Median	140.7287	
MVU Estimate of Mean	751.8922	
MVU Estimate of Standard Deviation	2730.256	
MVU Estimate of SE of Mean	323.1614	
95% H-UCL	2661.576	
95% Chebyshev (MVUE) UCL	2160.52	
97.5% Chebyshev (MVUE) UCL	2770.035	
99% Chebyshev (MVUE) UCL	3967.308	
Non-parametric Statisitics		
95% CLT UCL	557.2245	
95% Adjusted-CLT UCL	578.1362	
95% Modified-t UCL	564.323	
95% Jackknife UCL	561.0612	
95% Chebyshev (Mean, Sd) UCL	783.2474	
97.5% Chebyshev (Mean, Sd) UCL	940.3197	
99% Chebyshev (Mean, Sd) UCL	1248.858	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	554.3012	
95% Bootstrap-t UCL	596.506	
95% Hall's Bootstrap UCL	572.7768	
95% Percentile Bootstrap UCL	553.6743	
95% BCA Bootstrap UCL	582.1	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	636.8404	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Tetrachloroethene

Quanta Property (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Tetrachloroethene	
Raw Statistics		
Number of Observations	26	
Number of Missing Data	0	
Number of Valid Observations	26	
Number of Distinct Observations	20	
Minimum	0.003	
Maximum	4.2	
Mean	0.434192	
Standard Deviation	0.892544	
Variance	0.796635	
Coefficient of Variation	2.055642	
Skewness	3.544417	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.508436	
Shapiro-Wilk 5% Critical Value	0.92	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.733189	
Gamma Statistics		
k hat	0.38322	
k star (bias corrected)	0.364643	
Theta hat	1.13301	
Theta star	1.190731	
nu hat	19.92744	
nu star	18.96146	
5% Approximate Chi Square Value	10.08781	
Adjusted Level of Significance	0.0398	
Adjusted Chi Square Value	9.660685	
Anderson-Darling Test Statistic	0.78897	
Anderson-Darling 5% Critical Value	0.833679	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.156837	
Kolmogrov-Smirnov 5% Critical Value	0.183883	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.816126	
95% Adjusted Gamma UCL	0.852209	
Lognormal Statistics		
Minimum of log data	-5.80914	
Maximum of log data	1.435085	
Mean of log data	-2.56332	
Standard Deviation of log data	2.294139	
Variance of log data	5.263076	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.886969	
Shapiro-Wilk 5% Critical Value	0.92	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.0706	
MLE Standard Deviation	14.83754	
MLE Coefficient of Variation	13.85909	
MLE Skewness	2703.555	
MLE Median	0.077049	
MLE 80% Quantile	0.535384	
MLE 90% Quantile	1.4691	

Appendix P, Attachment 3
ProUCL Output - Tetrachloroethene
Quanta Property (Surface Soil)

MLE 95% Quantile	3.355297	
MLE 99% Quantile	16.00417	
MVU Estimate of Median	0.069605	
MVU Estimate of Mean	0.796394	
MVU Estimate of Standard Deviation	4.13179	
MVU Estimate of SE of Mean	0.473893	
95% H-UCL	8.274352	
95% Chebyshev (MVUE) UCL	2.862047	
97.5% Chebyshev (MVUE) UCL	3.755856	
99% Chebyshev (MVUE) UCL	5.511572	
Non-parametric Statisitics		
95% CLT UCL	0.722111	
95% Adjusted-CLT UCL	0.852123	
95% Modified-t UCL	0.753468	
95% Jackknife UCL	0.733189	
95% Chebyshev (Mean, Sd) UCL	1.197184	
97.5% Chebyshev (Mean, Sd) UCL	1.527331	
99% Chebyshev (Mean, Sd) UCL	2.175841	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.718047	
95% Bootstrap-t UCL	1.428182	
95% Hall's Bootstrap UCL	1.960519	
95% Percentile Bootstrap UCL	0.753712	
95% BCA Bootstrap UCL	0.899115	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	0.852209	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 1,1'-Biphenyl

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	1,1'-Biphenyl	
Raw Statistics		
Number of Observations	36	
Number of Missing Data	0	
Number of Valid Observations	36	
Number of Distinct Observations	30	
Minimum	3.59E-02	
Maximum	590	
Mean	76.49828	
Standard Deviation	135.4135	
Variance	18336.82	
Coefficient of Variation	1.770151	
Skewness	2.3127	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.632196	
Shapiro-Wilk 5% Critical Value	0.935	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	114.6301	
Gamma Statistics		
k hat	0.339548	
k star (bias corrected)	0.329771	
Theta hat	225.2943	
Theta star	231.9739	
nu hat	24.44747	
nu star	23.74352	
5% Approximate Chi Square Value	13.65207	
Adjusted Level of Significance	0.0428	
Adjusted Chi Square Value	13.30373	
Anderson-Darling Test Statistic	0.902908	
Anderson-Darling 5% Critical Value	0.84794	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.158152	
Kolmogrov-Smirnov 5% Critical Value	0.158529	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	133.0449	
95% Adjusted Gamma UCL	136.5284	
Lognormal Statistics		
Minimum of log data	-3.32702	
Maximum of log data	6.380123	
Mean of log data	2.347071	
Standard Deviation of log data	2.542998	
Variance of log data	6.466837	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.944484	
Shapiro-Wilk 5% Critical Value	0.935	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	265.2015	
MLE Standard Deviation	6721.933	
MLE Coefficient of Variation	25.34651	
MLE Skewness	16359.79	
MLE Median	10.45491	
MLE 80% Quantile	89.64922	
MLE 90% Quantile	274.4649	

Appendix P, Attachment 3
ProUCL Output - 1,1'-Biphenyl
Quanta Property (Subsurface Soil)

MLE 95% Quantile	685.6057	
MLE 99% Quantile	3874.16	
MVU Estimate of Median	9.554716	
MVU Estimate of Mean	194.1125	
MVU Estimate of Standard Deviation	1616.818	
MVU Estimate of SE of Mean	118.6954	
95% H-UCL	1886.259	
95% Chebyshev (MVUE) UCL	711.4938	
97.5% Chebyshev (MVUE) UCL	935.3651	
99% Chebyshev (MVUE) UCL	1375.117	
Non-parametric Statisitics		
95% CLT UCL	113.6208	
95% Adjusted-CLT UCL	122.9161	
95% Modified-t UCL	116.08	
95% Jackknife UCL	114.6301	
95% Chebyshev (Mean, Sd) UCL	174.8739	
97.5% Chebyshev (Mean, Sd) UCL	217.4411	
99% Chebyshev (Mean, Sd) UCL	301.0562	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	112.4889	
95% Bootstrap-t UCL	134.6577	
95% Hall's Bootstrap UCL	124.147	
95% Percentile Bootstrap UCL	115.7358	
95% BCA Bootstrap UCL	125.7493	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	136.5284	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 2,4-Dimethylphenol
Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	2,4-Dimethylphenol	
Raw Statistics		
Number of Observations	43	
Number of Missing Data	0	
Number of Valid Observations	43	
Number of Distinct Observations	37	
Minimum	0.095	
Maximum	340	
Mean	26.12558	
Standard Deviation	62.98279	
Variance	3966.832	
Coefficient of Variation	2.410771	
Skewness	3.701105	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.465996	
Shapiro-Wilk 5% Critical Value	0.943	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	42.28037	
Gamma Statistics		
k hat	0.364334	
k star (bias corrected)	0.35442	
Theta hat	71.70768	
Theta star	73.71369	
nu hat	31.33277	
nu star	30.48009	
5% Approximate Chi Square Value	18.8686	
Adjusted Level of Significance	0.044419	
Adjusted Chi Square Value	18.5503	
Anderson-Darling Test Statistic	2.261797	
Anderson-Darling 5% Critical Value	0.845126	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.237388	
Kolmogrov-Smirnov 5% Critical Value	0.145258	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	42.20292	
95% Adjusted Gamma UCL	42.92707	
Lognormal Statistics		
Minimum of log data	-2.35388	
Maximum of log data	5.828946	
Mean of log data	1.42927	
Standard Deviation of log data	2.032901	
Variance of log data	4.132688	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.966484	
Shapiro-Wilk 5% Critical Value	0.943	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	32.97052	
MLE Standard Deviation	258.2357	
MLE Coefficient of Variation	7.832323	
MLE Skewness	503.973	
MLE Median	4.175649	
MLE 80% Quantile	23.26782	
MLE 90% Quantile	56.91438	

Appendix P, Attachment 3
ProUCL Output - 2,4-Dimethylphenol
Quanta Property (Subsurface Soil)

MLE 95% Quantile	118.32	
MLE 99% Quantile	472.3869	
MVU Estimate of Median	3.979525	
MVU Estimate of Mean	28.91481	
MVU Estimate of Standard Deviation	137.737	
MVU Estimate of SE of Mean	12.8625	
95% H-UCL	104.9539	
95% Chebyshev (MVUE) UCL	84.98114	
97.5% Chebyshev (MVUE) UCL	109.2411	
99% Chebyshev (MVUE) UCL	156.895	
Non-parametric Statisitics		
95% CLT UCL	41.92405	
95% Adjusted-CLT UCL	47.71654	
95% Modified-t UCL	43.18388	
95% Jackknife UCL	42.28037	
95% Chebyshev (Mean, Sd) UCL	67.99187	
97.5% Chebyshev (Mean, Sd) UCL	86.10745	
99% Chebyshev (Mean, Sd) UCL	121.692	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	41.47683	
95% Bootstrap-t UCL	58.7458	
95% Hall's Bootstrap UCL	52.12381	
95% Percentile Bootstrap UCL	42.81942	
95% BCA Bootstrap UCL	48.83453	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	109.2411	97.5% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 2,4-Dinitrotoluene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	2,4-Dinitrotoluene	
Raw Statistics		
Number of Observations	43	
Number of Missing Data	0	
Number of Valid Observations	43	
Number of Distinct Observations	39	
Minimum	0.04	
Maximum	27	
Mean	5.243663	
Standard Deviation	7.067709	
Variance	49.95251	
Coefficient of Variation	1.347857	
Skewness	1.698155	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.73957	
Shapiro-Wilk 5% Critical Value	0.943	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	7.056497	
Gamma Statistics		
k hat	0.52948	
k star (bias corrected)	0.508043	
Theta hat	9.903419	
Theta star	10.32129	
nu hat	45.53528	
nu star	43.69174	
5% Approximate Chi Square Value	29.53113	
Adjusted Level of Significance	0.044419	
Adjusted Chi Square Value	29.1259	
Anderson-Darling Test Statistic	0.608456	
Anderson-Darling 5% Critical Value	0.810489	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.121515	
Kolmogrov-Smirnov 5% Critical Value	0.142325	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	7.758076	
95% Adjusted Gamma UCL	7.866013	
Lognormal Statistics		
Minimum of log data	-3.21888	
Maximum of log data	3.295837	
Mean of log data	0.467928	
Standard Deviation of log data	1.847905	
Variance of log data	3.414753	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.941962	
Shapiro-Wilk 5% Critical Value	0.943	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	8.80487	
MLE Standard Deviation	47.74922	
MLE Coefficient of Variation	5.423047	
MLE Skewness	175.7579	
MLE Median	1.596683	
MLE 80% Quantile	7.609582	
MLE 90% Quantile	17.15838	

Appendix P, Attachment 3
ProUCL Output - 2,4-Dinitrotoluene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	33.3725	
MLE 99% Quantile	117.4668	
MVU Estimate of Median	1.534472	
MVU Estimate of Mean	7.986909	
MVU Estimate of Standard Deviation	29.94072	
MVU Estimate of SE of Mean	3.143568	
95% H-UCL	23.41435	
95% Chebyshev (MVUE) UCL	21.68941	
97.5% Chebyshev (MVUE) UCL	27.61849	
99% Chebyshev (MVUE) UCL	39.26502	
Non-parametric Statisitics		
95% CLT UCL	7.016511	
95% Adjusted-CLT UCL	7.314753	
95% Modified-t UCL	7.103016	
95% Jackknife UCL	7.056497	
95% Chebyshev (Mean, Sd) UCL	9.941752	
97.5% Chebyshev (Mean, Sd) UCL	11.97462	
99% Chebyshev (Mean, Sd) UCL	15.96779	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	7.042106	
95% Bootstrap-t UCL	7.446852	
95% Hall's Bootstrap UCL	7.387866	
95% Percentile Bootstrap UCL	7.069535	
95% BCA Bootstrap UCL	7.335581	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	7.758076	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 2-Methylnaphthalene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	44	
Number of Missing Data	0	
Number of Valid Observations	44	
Number of Distinct Observations	39	
Minimum	0.081	
Maximum	2500	
Mean	402.5501	
Standard Deviation	696.6693	
Variance	485348.1	
Coefficient of Variation	1.73064	
Skewness	1.852285	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.634053	
Shapiro-Wilk 5% Critical Value	0.944	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	579.1076	
Gamma Statistics		
k hat	0.287572	
k star (bias corrected)	0.283116	
Theta hat	1399.824	
Theta star	1421.854	
nu hat	25.30633	
nu star	24.91423	
5% Approximate Chi Square Value	14.54423	
Adjusted Level of Significance	0.044545	
Adjusted Chi Square Value	14.27462	
Anderson-Darling Test Statistic	1.192593	
Anderson-Darling 5% Critical Value	0.86651	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.159776	
Kolmogrov-Smirnov 5% Critical Value	0.145229	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	689.5674	
95% Adjusted Gamma UCL	702.5915	
Lognormal Statistics		
Minimum of log data	-2.51331	
Maximum of log data	7.824046	
Mean of log data	3.58333	
Standard Deviation of log data	2.908135	
Variance of log data	8.457251	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.934278	
Shapiro-Wilk 5% Critical Value	0.944	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2469.956	
MLE Standard Deviation	169477.5	
MLE Coefficient of Variation	68.61557	
MLE Skewness	323254.5	
MLE Median	35.9932	
MLE 80% Quantile	420.189	
MLE 90% Quantile	1510.633	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	4303.624	
MLE 99% Quantile	31183.77	
MVU Estimate of Median	32.68835	
MVU Estimate of Mean	1643.321	
MVU Estimate of Standard Deviation	25289.14	
MVU Estimate of SE of Mean	1102.721	
95% H-UCL	22306.7	
95% Chebyshev (MVUE) UCL	6449.971	
97.5% Chebyshev (MVUE) UCL	8529.812	
99% Chebyshev (MVUE) UCL	12615.26	
Non-parametric Statisitics		
95% CLT UCL	575.3039	
95% Adjusted-CLT UCL	606.6413	
95% Modified-t UCL	583.9956	
95% Jackknife UCL	579.1076	
95% Chebyshev (Mean, Sd) UCL	860.3515	
97.5% Chebyshev (Mean, Sd) UCL	1058.443	
99% Chebyshev (Mean, Sd) UCL	1447.554	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	574.7224	
95% Bootstrap-t UCL	625.5517	
95% Hall's Bootstrap UCL	600.9164	
95% Percentile Bootstrap UCL	577.9593	
95% BCA Bootstrap UCL	622.3033	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1447.554	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 4-Methylphenol
Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	4-Methylphenol	
Raw Statistics		
Number of Observations	35	
Number of Missing Data	0	
Number of Valid Observations	35	
Number of Distinct Observations	31	
Minimum	0.095	
Maximum	630	
Mean	47.72029	
Standard Deviation	123.0246	
Variance	1.51E+04	
Coefficient of Variation	2.578035	
Skewness	3.694169	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.438257	
Shapiro-Wilk 5% Critical Value	0.934	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	82.88297	
Gamma Statistics		
k hat	0.327049	
k star (bias corrected)	0.318064	
Theta hat	145.9117	
Theta star	150.0336	
nu hat	22.89344	
nu star	22.26448	
5% Approximate Chi Square Value	12.53513	
Adjusted Level of Significance	0.0425	
Adjusted Chi Square Value	12.18818	
Anderson-Darling Test Statistic	2.800459	
Anderson-Darling 5% Critical Value	0.850471	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.293243	
Kolmogrov-Smirnov 5% Critical Value	0.160755	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	84.75915	
95% Adjusted Gamma UCL	87.17196	
Lognormal Statistics		
Minimum of log data	-2.35388	
Maximum of log data	6.44572	
Mean of log data	1.786416	
Standard Deviation of log data	2.121974	
Variance of log data	4.502773	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.944524	
Shapiro-Wilk 5% Critical Value	0.934	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	56.70162	
MLE Standard Deviation	535.7241	
MLE Coefficient of Variation	9.448127	
MLE Skewness	871.7514	
MLE Median	5.968026	
MLE 80% Quantile	35.85504	
MLE 90% Quantile	91.20892	

Appendix P, Attachment 3
ProUCL Output - 4-Methylphenol
Quanta Property (Subsurface Soil)

MLE 95% Quantile	195.794	
MLE 99% Quantile	830.5827	
MVU Estimate of Median	5.595571	
MVU Estimate of Mean	47.35066	
MVU Estimate of Standard Deviation	233.2532	
MVU Estimate of SE of Mean	23.74713	
95% H-UCL	237.6988	
95% Chebyshev (MVUE) UCL	150.862	
97.5% Chebyshev (MVUE) UCL	195.6514	
99% Chebyshev (MVUE) UCL	283.6316	
Non-parametric Statisitics		
95% CLT UCL	81.92494	
95% Adjusted-CLT UCL	95.79955	
95% Modified-t UCL	85.04713	
95% Jackknife UCL	82.88297	
95% Chebyshev (Mean, Sd) UCL	138.3634	
97.5% Chebyshev (Mean, Sd) UCL	177.5847	
99% Chebyshev (Mean, Sd) UCL	254.6274	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	81.16128	
95% Bootstrap-t UCL	124.7561	
95% Hall's Bootstrap UCL	99.67937	
95% Percentile Bootstrap UCL	83.96029	
95% BCA Bootstrap UCL	98.73357	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	195.6514	97.5% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 4-Nitroaniline
Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	4-Nitroaniline	
Raw Statistics		
Number of Observations	43	
Number of Missing Data	0	
Number of Valid Observations	43	
Number of Distinct Observations	36	
Minimum	9.50E-02	
Maximum	1.95E+02	
Mean	1.48E+01	
Standard Deviation	3.39E+01	
Variance	1151.211	
Coefficient of Variation	2.291274	
Skewness	4.180964	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.47172	
Shapiro-Wilk 5% Critical Value	0.943	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.35E+01	
Gamma Statistics		
k hat	0.410109	
k star (bias corrected)	0.397	
Theta hat	3.61E+01	
Theta star	3.73E+01	
nu hat	35.26934	
nu star	34.14202	
5% Approximate Chi Square Value	21.77575	
Adjusted Level of Significance	0.044419	
Adjusted Chi Square Value	21.43175	
Anderson-Darling Test Statistic	1.335615	
Anderson-Darling 5% Critical Value	0.834388	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.168274	
Kolmogrov-Smirnov 5% Critical Value	0.144365	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	2.32E+01	
95% Adjusted Gamma UCL	2.36E+01	
Lognormal Statistics		
Minimum of log data	-2.35388	
Maximum of log data	5.273	
Mean of log data	1.097062	
Standard Deviation of log data	1.941053	
Variance of log data	3.767687	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.970266	
Shapiro-Wilk 5% Critical Value	0.943	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1.97E+01	
MLE Standard Deviation	1.28E+02	
MLE Coefficient of Variation	6.50E+00	
MLE Skewness	2.94E+02	
MLE Median	3.00E+00	
MLE 80% Quantile	1.54E+01	
MLE 90% Quantile	3.63E+01	

Appendix P, Attachment 3
ProUCL Output - 4-Nitroaniline
Quanta Property (Subsurface Soil)

MLE 95% Quantile	7.30E+01	
MLE 99% Quantile	2.74E+02	
MVU Estimate of Median	2.87E+00	
MVU Estimate of Mean	1.76E+01	
MVU Estimate of Standard Deviation	7.44E+01	
MVU Estimate of SE of Mean	7.38E+00	
95% H-UCL	57.24907	
95% Chebyshev (MVUE) UCL	4.97E+01	
97.5% Chebyshev (MVUE) UCL	6.37E+01	
99% Chebyshev (MVUE) UCL	9.10E+01	
Non-parametric Statisitics		
95% CLT UCL	2.33E+01	
95% Adjusted-CLT UCL	26.844	
95% Modified-t UCL	24.06073	
95% Jackknife UCL	2.35E+01	
95% Chebyshev (Mean, Sd) UCL	3.74E+01	
97.5% Chebyshev (Mean, Sd) UCL	4.71E+01	
99% Chebyshev (Mean, Sd) UCL	6.63E+01	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.31E+01	
95% Bootstrap-t UCL	36.08245	
95% Hall's Bootstrap UCL	56.36087	
95% Percentile Bootstrap UCL	2.39E+01	
95% BCA Bootstrap UCL	2.81E+01	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	4.97E+01	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Acenaphthene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Acenaphthene	
Raw Statistics		
Number of Observations	61	
Number of Missing Data	0	
Number of Valid Observations	61	
Number of Distinct Observations	55	
Minimum	0.049	
Maximum	2.40E+03	
Mean	3.22E+02	
Standard Deviation	5.07E+02	
Variance	257056.3	
Coefficient of Variation	1.575779	
Skewness	2.25572	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.271207	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.30E+02	
Gamma Statistics		
k hat	0.376689	
k star (bias corrected)	0.369092	
Theta hat	854.153	
Theta star	871.7333	
nu hat	45.95607	
nu star	45.02927	
5% Approximate Chi Square Value	30.63387	
Adjusted Level of Significance	0.046066	
Adjusted Chi Square Value	30.3463	
Anderson-Darling Test Statistic	0.229079	
Anderson-Darling 5% Critical Value	0.84531	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.061529	
Kolmogrov-Smirnov 5% Critical Value	0.122387	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	472.9462	
95% Adjusted Gamma UCL	477.4281	
Lognormal Statistics		
Minimum of log data	-3.01593	
Maximum of log data	7.783224	
Mean of log data	4.009842	
Standard Deviation of log data	2.621252	
Variance of log data	6.870963	
Lilliefors Test Statisitic	0.107041	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1711.84	
MLE Standard Deviation	53118.82	
MLE Coefficient of Variation	31.03025	
MLE Skewness	29971.39	
MLE Median	55.13817	
MLE 80% Quantile	505.1222	
MLE 90% Quantile	1600.628	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	4112.565	
MLE 99% Quantile	24510.94	
MVU Estimate of Median	52.11598	
MVU Estimate of Mean	1375.624	
MVU Estimate of Standard Deviation	17631.24	
MVU Estimate of SE of Mean	752.3656	
95% H-UCL	7255.984	
95% Chebyshev (MVUE) UCL	4655.109	
97.5% Chebyshev (MVUE) UCL	6074.145	
99% Chebyshev (MVUE) UCL	8861.567	
Non-parametric Statisitics		
95% CLT UCL	4.29E+02	
95% Adjusted-CLT UCL	448.56	
95% Modified-t UCL	433.3261	
95% Jackknife UCL	4.30E+02	
95% Chebyshev (Mean, Sd) UCL	6.05E+02	
97.5% Chebyshev (Mean, Sd) UCL	7.27E+02	
99% Chebyshev (Mean, Sd) UCL	9.68E+02	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.28E+02	
95% Bootstrap-t UCL	459.291	
95% Hall's Bootstrap UCL	459.3602	
95% Percentile Bootstrap UCL	4.38E+02	
95% BCA Bootstrap UCL	4.61E+02	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	4.77E+02	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Aluminum

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Aluminum	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	300	
Maximum	8330	
Mean	4807.647	
Standard Deviation	2696.23	
Variance	7269657	
Coefficient of Variation	0.560821	
Skewness	-0.41326	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.907596	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	5949.336	
Gamma Statistics		
k hat	1.860763	
k star (bias corrected)	1.571609	
Theta hat	2583.696	
Theta star	3059.061	
nu hat	63.26595	
nu star	53.4347	
5% Approximate Chi Square Value	37.63812	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	36.25043	
Anderson-Darling Test Statistic	0.985857	
Anderson-Darling 5% Critical Value	0.751165	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.220801	
Kolmogrov-Smirnov 5% Critical Value	0.212021	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	6825.399	
95% Adjusted Gamma UCL	7086.68	
Lognormal Statistics		
Minimum of log data	5.703782	
Maximum of log data	9.027619	
Mean of log data	8.185808	
Standard Deviation of log data	0.970679	
Variance of log data	0.942218	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.801045	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	5749.78	
MLE Standard Deviation	7194.505	
MLE Coefficient of Variation	1.251266	
MLE Skewness	5.712864	
MLE Median	3589.642	
MLE 80% Quantile	8152.108	
MLE 90% Quantile	12495.59	

Appendix P, Attachment 3
ProUCL Output - Aluminum
Quanta Property (Subsurface Soil)

MLE 95% Quantile	17722.23	
MLE 99% Quantile	34324.27	
MVU Estimate of Median	3491.381	
MVU Estimate of Mean	5535.196	
MVU Estimate of Standard Deviation	6101.308	
MVU Estimate of SE of Mean	1433.77	
95% H-UCL	10911.26	
95% Chebyshev (MVUE) UCL	11784.86	
97.5% Chebyshev (MVUE) UCL	14489.09	
99% Chebyshev (MVUE) UCL	19801.03	
Non-parametric Statisitics		
95% CLT UCL	5883.269	
95% Adjusted-CLT UCL	5813.235	
95% Modified-t UCL	5938.412	
95% Jackknife UCL	5949.336	
95% Chebyshev (Mean, Sd) UCL	7658.07	
97.5% Chebyshev (Mean, Sd) UCL	8891.45	
99% Chebyshev (Mean, Sd) UCL	11314.19	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	5866.88	
95% Bootstrap-t UCL	5887.791	
95% Hall's Bootstrap UCL	5787.377	
95% Percentile Bootstrap UCL	5860	
95% BCA Bootstrap UCL	5802.353	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	5949.336	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Antimony

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Antimony	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	1.2	
Maximum	205	
Mean	42.05	
Standard Deviation	68.11336	
Variance	4639.43	
Coefficient of Variation	1.619818	
Skewness	1.691867	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.643311	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	70.89185	
Gamma Statistics		
k hat	0.46981	
k star (bias corrected)	0.426118	
Theta hat	89.5042	
Theta star	98.68151	
nu hat	15.97355	
nu star	14.48802	
5% Approximate Chi Square Value	6.905649	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	6.363059	
Anderson-Darling Test Statistic	1.159172	
Anderson-Darling 5% Critical Value	0.804549	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.249417	
Kolmogrov-Smirnov 5% Critical Value	0.221809	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	88.22073	
95% Adjusted Gamma UCL	95.74348	
Lognormal Statistics		
Minimum of log data	0.182322	
Maximum of log data	5.32301	
Mean of log data	2.373652	
Standard Deviation of log data	1.742667	
Variance of log data	3.03689	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.911147	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	49.01354	
MLE Standard Deviation	218.3185	
MLE Coefficient of Variation	4.454248	
MLE Skewness	101.7365	
MLE Median	10.73653	
MLE 80% Quantile	46.81509	
MLE 90% Quantile	100.784	

Appendix P, Attachment 3
ProUCL Output - Antimony
Quanta Property (Subsurface Soil)

MLE 95% Quantile	188.7342	
MLE 99% Quantile	618.3756	
MVU Estimate of Median	9.814714	
MVU Estimate of Mean	40.71982	
MVU Estimate of Standard Deviation	102.3224	
MVU Estimate of SE of Mean	20.33456	
95% H-UCL	273.5886	
95% Chebyshev (MVUE) UCL	129.3561	
97.5% Chebyshev (MVUE) UCL	167.7091	
99% Chebyshev (MVUE) UCL	243.0461	
Non-parametric Statisitics		
95% CLT UCL	69.22284	
95% Adjusted-CLT UCL	76.46604	
95% Modified-t UCL	72.02164	
95% Jackknife UCL	70.89185	
95% Chebyshev (Mean, Sd) UCL	114.0586	
97.5% Chebyshev (Mean, Sd) UCL	145.2168	
99% Chebyshev (Mean, Sd) UCL	206.4211	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	67.91749	
95% Bootstrap-t UCL	81.79943	
95% Hall's Bootstrap UCL	66.13559	
95% Percentile Bootstrap UCL	68.72353	
95% BCA Bootstrap UCL	75.91176	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	243.0461	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1242
Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Aroclor-1242	
Raw Statistics		
Number of Observations	50	
Number of Missing Data	0	
Number of Valid Observations	50	
Number of Distinct Observations	37	
Minimum	0.009	
Maximum	9.5	
Mean	0.6531	
Standard Deviation	1.896749	
Variance	3.597655	
Coefficient of Variation	2.904224	
Skewness	4.038305	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.384525	
Shapiro-Wilk 5% Critical Value	0.947	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.102819	
Gamma Statistics		
k hat	0.309836	
k star (bias corrected)	0.304579	
Theta hat	2.107889	
Theta star	2.14427	
nu hat	30.98361	
nu star	30.45792	
5% Approximate Chi Square Value	18.85114	
Adjusted Level of Significance	0.0452	
Adjusted Chi Square Value	18.57917	
Anderson-Darling Test Statistic	5.843786	
Anderson-Darling 5% Critical Value	0.860033	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.302962	
Kolmogrov-Smirnov 5% Critical Value	0.13588	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.055218	
95% Adjusted Gamma UCL	1.070665	
Lognormal Statistics		
Minimum of log data	-4.71053	
Maximum of log data	2.251292	
Mean of log data	-2.63992	
Standard Deviation of log data	1.903037	
Variance of log data	3.62155	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.85992	
Shapiro-Wilk 5% Critical Value	0.947	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.436423	
MLE Standard Deviation	2.632881	
MLE Coefficient of Variation	6.032866	
MLE Skewness	237.6676	
MLE Median	0.071367	
MLE 80% Quantile	0.356346	
MLE 90% Quantile	0.823233	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1242
Quanta Property (Subsurface Soil)

MLE 95% Quantile	1.633259	
MLE 99% Quantile	5.968799	
MVU Estimate of Median	0.068827	
MVU Estimate of Mean	0.397651	
MVU Estimate of Standard Deviation	1.669474	
MVU Estimate of SE of Mean	0.153833	
95% H-UCL	1.104455	
95% Chebyshev (MVUE) UCL	1.068194	
97.5% Chebyshev (MVUE) UCL	1.358339	
99% Chebyshev (MVUE) UCL	1.928273	
Non-parametric Statisitics		
95% CLT UCL	1.094317	
95% Adjusted-CLT UCL	1.258006	
95% Modified-t UCL	1.128351	
95% Jackknife UCL	1.102819	
95% Chebyshev (Mean, Sd) UCL	1.822334	
97.5% Chebyshev (Mean, Sd) UCL	2.328263	
99% Chebyshev (Mean, Sd) UCL	3.322062	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.096306	
95% Bootstrap-t UCL	1.890788	
95% Hall's Bootstrap UCL	2.709126	
95% Percentile Bootstrap UCL	1.14445	
95% BCA Bootstrap UCL	1.28083	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	2.328263	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1260
Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Aroclor-1260	
Raw Statistics		
Number of Observations	50	
Number of Missing Data	0	
Number of Valid Observations	50	
Number of Distinct Observations	43	
Minimum	0.0073	
Maximum	18.5	
Mean	0.890136	
Standard Deviation	3.496194	
Variance	12.22337	
Coefficient of Variation	3.927708	
Skewness	4.784742	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.265371	
Shapiro-Wilk 5% Critical Value	0.947	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.719084	
Gamma Statistics		
k hat	0.290193	
k star (bias corrected)	0.286115	
Theta hat	3.06739	
Theta star	3.111113	
nu hat	29.01933	
nu star	28.6115	
5% Approximate Chi Square Value	17.4029	
Adjusted Level of Significance	0.0452	
Adjusted Chi Square Value	17.1425	
Anderson-Darling Test Statistic	7.57839	
Anderson-Darling 5% Critical Value	0.866813	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.290501	
Kolmogrov-Smirnov 5% Critical Value	0.136341	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.463441	
95% Adjusted Gamma UCL	1.485672	
Lognormal Statistics		
Minimum of log data	-4.91988	
Maximum of log data	2.917771	
Mean of log data	-2.50552	
Standard Deviation of log data	1.732678	
Variance of log data	3.002171	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.872921	
Shapiro-Wilk 5% Critical Value	0.947	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.36625	
MLE Standard Deviation	1.601866	
MLE Coefficient of Variation	4.373694	
MLE Skewness	96.78633	
MLE Median	0.081633	
MLE 80% Quantile	0.352956	
MLE 90% Quantile	0.756514	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1260
Quanta Property (Subsurface Soil)

MLE 95% Quantile	1.411609	
MLE 99% Quantile	4.59369	
MVU Estimate of Median	0.079217	
MVU Estimate of Mean	0.341627	
MVU Estimate of Standard Deviation	1.140676	
MVU Estimate of SE of Mean	0.116646	
95% H-UCL	0.806481	
95% Chebyshev (MVUE) UCL	0.850074	
97.5% Chebyshev (MVUE) UCL	1.07008	
99% Chebyshev (MVUE) UCL	1.502238	
Non-parametric Statisitics		
95% CLT UCL	1.703412	
95% Adjusted-CLT UCL	2.060902	
95% Modified-t UCL	1.774845	
95% Jackknife UCL	1.719084	
95% Chebyshev (Mean, Sd) UCL	3.045335	
97.5% Chebyshev (Mean, Sd) UCL	3.977891	
99% Chebyshev (Mean, Sd) UCL	5.809717	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.696589	
95% Bootstrap-t UCL	9.278887	
95% Hall's Bootstrap UCL	6.313065	
95% Percentile Bootstrap UCL	1.673212	
95% BCA Bootstrap UCL	2.264346	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	3.977891	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Arsenic

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	72	
Number of Missing Data	0	
Number of Valid Observations	72	
Number of Distinct Observations	69	
Minimum	0.0072	
Maximum	35100	
Mean	962.9343	
Standard Deviation	4371.009	
Variance	19105718	
Coefficient of Variation	4.53926	
Skewness	7.13444	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.412819	
Lilliefors 5% Critical Value	0.104416	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1821.447	
Gamma Statistics		
k hat	0.218369	
k star (bias corrected)	0.218529	
Theta hat	4409.674	
Theta star	4406.434	
nu hat	31.44508	
nu star	31.4682	
5% Approximate Chi Square Value	19.64872	
Adjusted Level of Significance	0.046667	
Adjusted Chi Square Value	19.45768	
Anderson-Darling Test Statistic	6.106958	
Anderson-Darling 5% Critical Value	0.90167	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.242299	
Kolmogrov-Smirnov 5% Critical Value	0.11603	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1542.177	
95% Adjusted Gamma UCL	1557.319	
Lognormal Statistics		
Minimum of log data	-4.93367	
Maximum of log data	10.46596	
Mean of log data	3.546137	
Standard Deviation of log data	2.872003	
Variance of log data	8.248404	
Lilliefors Test Statisitic	0.146029	
Lilliefors 5% Critical Value	0.104416	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2143.807	
MLE Standard Deviation	132509.5	
MLE Coefficient of Variation	61.81037	
MLE Skewness	236333.3	
MLE Median	34.67908	
MLE 80% Quantile	392.674	
MLE 90% Quantile	1389.447	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Quanta Property (Subsurface Soil)

MLE 95% Quantile	3907.224	
MLE 99% Quantile	27623.35	
MVU Estimate of Median	32.74699	
MVU Estimate of Mean	1658.95	
MVU Estimate of Standard Deviation	35319.61	
MVU Estimate of SE of Mean	966.1907	
95% H-UCL	10132.2	
95% Chebyshev (MVUE) UCL	5870.478	
97.5% Chebyshev (MVUE) UCL	7692.809	
99% Chebyshev (MVUE) UCL	11272.43	
Non-parametric Statisitics		
95% CLT UCL	1810.245	
95% Adjusted-CLT UCL	2273.041	
95% Modified-t UCL	1893.634	
95% Jackknife UCL	1821.447	
95% Chebyshev (Mean, Sd) UCL	3208.327	
97.5% Chebyshev (Mean, Sd) UCL	4179.91	
99% Chebyshev (Mean, Sd) UCL	6088.396	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1792.339	
95% Bootstrap-t UCL	5324.511	
95% Hall's Bootstrap UCL	4865.3	
95% Percentile Bootstrap UCL	1947.432	
95% BCA Bootstrap UCL	2576.22	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	6088.396	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Benzene	
Raw Statistics		
Number of Observations	50	
Number of Missing Data	0	
Number of Valid Observations	50	
Number of Distinct Observations	42	
Minimum	0.0007	
Maximum	33	
Mean	4.02561	
Standard Deviation	8.304445	
Variance	68.96381	
Coefficient of Variation	2.062904	
Skewness	2.471966	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.547195	
Shapiro-Wilk 5% Critical Value	0.947	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	5.994594	
Gamma Statistics		
k hat	0.26221	
k star (bias corrected)	0.259811	
Theta hat	15.3526	
Theta star	15.49438	
nu hat	26.22103	
nu star	25.9811	
5% Approximate Chi Square Value	15.36299	
Adjusted Level of Significance	0.0452	
Adjusted Chi Square Value	15.11971	
Anderson-Darling Test Statistic	1.364929	
Anderson-Darling 5% Critical Value	0.879405	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.13984	
Kolmogrov-Smirnov 5% Critical Value	0.137145	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	6.807907	
95% Adjusted Gamma UCL	6.917448	
Lognormal Statistics		
Minimum of log data	-7.26443	
Maximum of log data	3.496508	
Mean of log data	-1.29538	
Standard Deviation of log data	2.965024	
Variance of log data	8.79137	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.953414	
Shapiro-Wilk 5% Critical Value	0.947	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	22.20474	
MLE Standard Deviation	1800.671	
MLE Coefficient of Variation	81.094	
MLE Skewness	533536.5	
MLE Median	0.273794	
MLE 80% Quantile	3.353707	
MLE 90% Quantile	12.36262	

Appendix P, Attachment 3
ProUCL Output - Benzene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	35.94844	
MLE 99% Quantile	270.7694	
MVU Estimate of Median	0.250713	
MVU Estimate of Mean	15.02822	
MVU Estimate of Standard Deviation	278.6345	
MVU Estimate of SE of Mean	9.98934	
95% H-UCL	178.273	
95% Chebyshev (MVUE) UCL	58.57074	
97.5% Chebyshev (MVUE) UCL	77.41163	
99% Chebyshev (MVUE) UCL	114.4209	
Non-parametric Statisitics		
95% CLT UCL	5.957369	
95% Adjusted-CLT UCL	6.396065	
95% Modified-t UCL	6.063022	
95% Jackknife UCL	5.994594	
95% Chebyshev (Mean, Sd) UCL	9.144814	
97.5% Chebyshev (Mean, Sd) UCL	11.3599	
99% Chebyshev (Mean, Sd) UCL	15.711	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	5.948926	
95% Bootstrap-t UCL	6.911261	
95% Hall's Bootstrap UCL	6.019537	
95% Percentile Bootstrap UCL	6.009528	
95% BCA Bootstrap UCL	6.47489	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	77.41163	97.5% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)anthracene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	61	
Number of Missing Data	0	
Number of Valid Observations	61	
Number of Distinct Observations	56	
Minimum	0.905	
Maximum	3700	
Mean	410.3017	
Standard Deviation	657.58	
Variance	432411.4	
Coefficient of Variation	1.602674	
Skewness	2.94475	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.276525	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	550.9611	
Gamma Statistics		
k hat	0.500058	
k star (bias corrected)	0.486394	
Theta hat	820.508	
Theta star	843.5582	
nu hat	61.00709	
nu star	59.34008	
5% Approximate Chi Square Value	42.62469	
Adjusted Level of Significance	0.046066	
Adjusted Chi Square Value	42.28193	
Anderson-Darling Test Statistic	0.434565	
Anderson-Darling 5% Critical Value	0.81605	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.099239	
Kolmogrov-Smirnov 5% Critical Value	0.120482	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	571.2027	
95% Adjusted Gamma UCL	575.8332	
Lognormal Statistics		
Minimum of log data	-0.09982	
Maximum of log data	8.216088	
Mean of log data	4.746701	
Standard Deviation of log data	1.967235	
Variance of log data	3.870013	
Lilliefors Test Statisitic	0.130711	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	797.6797	
MLE Standard Deviation	5465.3	
MLE Coefficient of Variation	6.851497	
MLE Skewness	342.1844	
MLE Median	115.2036	
MLE 80% Quantile	607.2946	
MLE 90% Quantile	1443.17	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	2930.13	
MLE 99% Quantile	11186.79	
MVU Estimate of Median	111.6047	
MVU Estimate of Mean	731.9733	
MVU Estimate of Standard Deviation	3543.449	
MVU Estimate of SE of Mean	274.6617	
95% H-UCL	1898.136	
95% Chebyshev (MVUE) UCL	1929.196	
97.5% Chebyshev (MVUE) UCL	2447.235	
99% Chebyshev (MVUE) UCL	3464.823	
Non-parametric Statisitics		
95% CLT UCL	548.7893	
95% Adjusted-CLT UCL	582.7087	
95% Modified-t UCL	556.2519	
95% Jackknife UCL	550.9611	
95% Chebyshev (Mean, Sd) UCL	777.297	
97.5% Chebyshev (Mean, Sd) UCL	936.0961	
99% Chebyshev (Mean, Sd) UCL	1248.026	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	549.4367	
95% Bootstrap-t UCL	598.2845	
95% Hall's Bootstrap UCL	604.9558	
95% Percentile Bootstrap UCL	553.5393	
95% BCA Bootstrap UCL	583.0198	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	571.2027	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Benzo(a)pyrene	
Raw Statistics		
Number of Observations	61	
Number of Missing Data	0	
Number of Valid Observations	61	
Number of Distinct Observations	54	
Minimum	0.29	
Maximum	3500	
Mean	392.3494	
Standard Deviation	665.7048	
Variance	443162.9	
Coefficient of Variation	1.696714	
Skewness	2.88057	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.289902	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	534.7467	
Gamma Statistics		
k hat	0.479552	
k star (bias corrected)	0.466896	
Theta hat	818.1584	
Theta star	840.3352	
nu hat	58.50533	
nu star	56.96135	
5% Approximate Chi Square Value	40.61026	
Adjusted Level of Significance	0.046066	
Adjusted Chi Square Value	40.27617	
Anderson-Darling Test Statistic	0.616828	
Anderson-Darling 5% Critical Value	0.820907	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.114575	
Kolmogrov-Smirnov 5% Critical Value	0.120798	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	550.3228	
95% Adjusted Gamma UCL	554.8877	
Lognormal Statistics		
Minimum of log data	-1.23787	
Maximum of log data	8.160518	
Mean of log data	4.638976	
Standard Deviation of log data	2.023094	
Variance of log data	4.09291	
Lilliefors Test Statisitic	0.110046	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	800.6554	
MLE Standard Deviation	6145.468	
MLE Coefficient of Variation	7.675546	
MLE Skewness	475.2238	
MLE Median	103.4383	
MLE 80% Quantile	571.629	
MLE 90% Quantile	1392.215	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)pyrene

Quanta Property (Subsurface Soil)

MLE 95% Quantile	2884.092	
MLE 99% Quantile	11437.96	
MVU Estimate of Median	100.0239	
MVU Estimate of Mean	728.8406	
MVU Estimate of Standard Deviation	3824.016	
MVU Estimate of SE of Mean	284.102	
95% H-UCL	1990.108	
95% Chebyshev (MVUE) UCL	1967.213	
97.5% Chebyshev (MVUE) UCL	2503.057	
99% Chebyshev (MVUE) UCL	3555.62	
Non-parametric Statisitics		
95% CLT UCL	532.5481	
95% Adjusted-CLT UCL	566.1382	
95% Modified-t UCL	539.9861	
95% Jackknife UCL	534.7467	
95% Chebyshev (Mean, Sd) UCL	763.8791	
97.5% Chebyshev (Mean, Sd) UCL	924.6404	
99% Chebyshev (Mean, Sd) UCL	1240.425	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	529.6976	
95% Bootstrap-t UCL	602.6678	
95% Hall's Bootstrap UCL	594.831	
95% Percentile Bootstrap UCL	543.8128	
95% BCA Bootstrap UCL	589.4891	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	554.8877	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(b)fluoranthene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Benzo(b)fluoranthene	
Raw Statistics		
Number of Observations	61	
Number of Missing Data	0	
Number of Valid Observations	61	
Number of Distinct Observations	56	
Minimum	8.47E-01	
Maximum	4100	
Mean	450.0418	
Standard Deviation	761.8196	
Variance	580369.2	
Coefficient of Variation	1.692775	
Skewness	2.931059	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.278737	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	612.9985	
Gamma Statistics		
k hat	0.486915	
k star (bias corrected)	0.473898	
Theta hat	924.2708	
Theta star	949.66	
nu hat	59.40369	
nu star	57.81553	
5% Approximate Chi Square Value	41.33275	
Adjusted Level of Significance	0.046066	
Adjusted Chi Square Value	40.99553	
Anderson-Darling Test Statistic	0.606842	
Anderson-Darling 5% Critical Value	0.81916	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.102766	
Kolmogrov-Smirnov 5% Critical Value	0.120684	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	629.5105	
95% Adjusted Gamma UCL	634.6887	
Lognormal Statistics		
Minimum of log data	-0.16605	
Maximum of log data	8.318742	
Mean of log data	4.799448	
Standard Deviation of log data	1.939222	
Variance of log data	3.76058	
Lilliefors Test Statisitic	0.109833	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	796.1102	
MLE Standard Deviation	5157.747	
MLE Coefficient of Variation	6.478684	
MLE Skewness	291.3682	
MLE Median	121.4433	
MLE 80% Quantile	625.2114	
MLE 90% Quantile	1467.547	

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	2949.724	
MLE 99% Quantile	11048.8	
MVU Estimate of Median	117.7552	
MVU Estimate of Mean	733.329	
MVU Estimate of Standard Deviation	3410.239	
MVU Estimate of SE of Mean	269.8393	
95% H-UCL	1854.274	
95% Chebyshev (MVUE) UCL	1909.531	
97.5% Chebyshev (MVUE) UCL	2418.475	
99% Chebyshev (MVUE) UCL	3418.196	
Non-parametric Statisitics		
95% CLT UCL	610.4824	
95% Adjusted-CLT UCL	649.596	
95% Modified-t UCL	619.0994	
95% Jackknife UCL	612.9985	
95% Chebyshev (Mean, Sd) UCL	875.2132	
97.5% Chebyshev (Mean, Sd) UCL	1059.185	
99% Chebyshev (Mean, Sd) UCL	1420.563	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	606.8525	
95% Bootstrap-t UCL	680.3693	
95% Hall's Bootstrap UCL	684.3633	
95% Percentile Bootstrap UCL	618.7942	
95% BCA Bootstrap UCL	664.0285	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	634.6887	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(g,h,i)perylene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Benzo(g,h,i)perylene	
Raw Statistics		
Number of Observations	61	
Number of Missing Data	0	
Number of Valid Observations	61	
Number of Distinct Observations	55	
Minimum	0.22	
Maximum	1900	
Mean	208.367	
Standard Deviation	361.0259	
Variance	130339.7	
Coefficient of Variation	1.732644	
Skewness	3.014128	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.282124	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	285.5921	
Gamma Statistics		
k hat	0.482511	
k star (bias corrected)	0.469709	
Theta hat	431.8393	
Theta star	443.6083	
nu hat	58.86628	
nu star	57.30455	
5% Approximate Chi Square Value	40.90043	
Adjusted Level of Significance	0.046066	
Adjusted Chi Square Value	40.56509	
Anderson-Darling Test Statistic	0.584028	
Anderson-Darling 5% Critical Value	0.820205	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.096433	
Kolmogrov-Smirnov 5% Critical Value	0.120752	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	291.9377	
95% Adjusted Gamma UCL	294.3511	
Lognormal Statistics		
Minimum of log data	-1.51413	
Maximum of log data	7.549609	
Mean of log data	4.015573	
Standard Deviation of log data	1.982552	
Variance of log data	3.930511	
Lilliefors Test Statisitic	0.088448	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	395.7681	
MLE Standard Deviation	2796.628	
MLE Coefficient of Variation	7.06633	
MLE Skewness	374.0422	
MLE Median	55.45504	
MLE 80% Quantile	296.139	
MLE 90% Quantile	708.5011	

Appendix P, Attachment 3
ProUCL Output - Benzo(g,h,i)perylene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	1446.454	
MLE 99% Quantile	5580.245	
MVU Estimate of Median	53.696	
MVU Estimate of Mean	362.3901	
MVU Estimate of Standard Deviation	1793.369	
MVU Estimate of SE of Mean	137.4255	
95% H-UCL	952.9663	
95% Chebyshev (MVUE) UCL	961.4139	
97.5% Chebyshev (MVUE) UCL	1220.612	
99% Chebyshev (MVUE) UCL	1729.756	
Non-parametric Statisitics		
95% CLT UCL	284.3998	
95% Adjusted-CLT UCL	303.461	
95% Modified-t UCL	288.5653	
95% Jackknife UCL	285.5921	
95% Chebyshev (Mean, Sd) UCL	409.8555	
97.5% Chebyshev (Mean, Sd) UCL	497.0397	
99% Chebyshev (Mean, Sd) UCL	668.2963	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	283.6421	
95% Bootstrap-t UCL	317.4619	
95% Hall's Bootstrap UCL	313.6533	
95% Percentile Bootstrap UCL	287.7918	
95% BCA Bootstrap UCL	310.6659	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	294.3511	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(k)fluoranthene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Benzo(k)fluoranthene	
Raw Statistics		
Number of Observations	61	
Number of Missing Data	0	
Number of Valid Observations	61	
Number of Distinct Observations	55	
Minimum	0.57	
Maximum	2000	
Mean	199.5394	
Standard Deviation	340.2477	
Variance	115768.5	
Coefficient of Variation	1.705165	
Skewness	3.35713	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.279348	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	272.32	
Gamma Statistics		
k hat	0.518195	
k star (bias corrected)	0.503639	
Theta hat	385.0664	
Theta star	396.1955	
nu hat	63.21977	
nu star	61.44393	
5% Approximate Chi Square Value	44.41242	
Adjusted Level of Significance	0.046066	
Adjusted Chi Square Value	44.06214	
Anderson-Darling Test Statistic	0.587733	
Anderson-Darling 5% Critical Value	0.814313	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.099796	
Kolmogrov-Smirnov 5% Critical Value	0.12033	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	276.0599	
95% Adjusted Gamma UCL	278.2545	
Lognormal Statistics		
Minimum of log data	-0.56212	
Maximum of log data	7.600902	
Mean of log data	4.077002	
Standard Deviation of log data	1.871813	
Variance of log data	3.503683	
Lilliefors Test Statisitic	0.095724	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	339.9654	
MLE Standard Deviation	1930.262	
MLE Coefficient of Variation	5.67782	
MLE Skewness	200.0729	
MLE Median	58.96844	
MLE 80% Quantile	286.771	
MLE 90% Quantile	653.4602	

Appendix P, Attachment 3
ProUCL Output - Benzo(k)fluoranthene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	1281.946	
MLE 99% Quantile	4586.345	
MVU Estimate of Median	57.29826	
MVU Estimate of Mean	315.8823	
MVU Estimate of Standard Deviation	1334.332	
MVU Estimate of SE of Mean	110.743	
95% H-UCL	752.9768	
95% Chebyshev (MVUE) UCL	798.6	
97.5% Chebyshev (MVUE) UCL	1007.472	
99% Chebyshev (MVUE) UCL	1417.762	
Non-parametric Statisitics		
95% CLT UCL	271.1962	
95% Adjusted-CLT UCL	291.2047	
95% Modified-t UCL	275.4409	
95% Jackknife UCL	272.32	
95% Chebyshev (Mean, Sd) UCL	389.4316	
97.5% Chebyshev (Mean, Sd) UCL	471.5981	
99% Chebyshev (Mean, Sd) UCL	632.9983	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	272.2718	
95% Bootstrap-t UCL	313.9478	
95% Hall's Bootstrap UCL	321.5001	
95% Percentile Bootstrap UCL	274.4557	
95% BCA Bootstrap UCL	295.1885	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	276.0599	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Cadmium

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Cadmium	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	15	
Minimum	0.185	
Maximum	12.3	
Mean	2.975294	
Standard Deviation	3.826919	
Variance	14.64531	
Coefficient of Variation	1.286232	
Skewness	1.715618	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.693719	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.595761	
Gamma Statistics		
k hat	0.84082	
k star (bias corrected)	0.731655	
Theta hat	3.538564	
Theta star	4.066524	
nu hat	28.58787	
nu star	24.87628	
5% Approximate Chi Square Value	14.51521	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	13.68936	
Anderson-Darling Test Statistic	0.731992	
Anderson-Darling 5% Critical Value	0.772625	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.161652	
Kolmogrov-Smirnov 5% Critical Value	0.216472	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	5.099085	
95% Adjusted Gamma UCL	5.406701	
Lognormal Statistics		
Minimum of log data	-1.6874	
Maximum of log data	2.509599	
Mean of log data	0.389051	
Standard Deviation of log data	1.22958	
Variance of log data	1.511867	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.95972	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	3.142393	
MLE Standard Deviation	5.908358	
MLE Coefficient of Variation	1.88021	
MLE Skewness	12.28752	
MLE Median	1.47558	
MLE 80% Quantile	4.170543	
MLE 90% Quantile	7.16395	

Appendix P, Attachment 3
ProUCL Output - Cadmium
Quanta Property (Subsurface Soil)

MLE 95% Quantile	11.15302	
MLE 99% Quantile	25.76596	
MVU Estimate of Median	1.411248	
MVU Estimate of Mean	2.929331	
MVU Estimate of Standard Deviation	4.387075	
MVU Estimate of SE of Mean	0.992635	
95% H-UCL	8.021778	
95% Chebyshev (MVUE) UCL	7.256124	
97.5% Chebyshev (MVUE) UCL	9.128331	
99% Chebyshev (MVUE) UCL	12.80592	
Non-parametric Statisitics		
95% CLT UCL	4.501988	
95% Adjusted-CLT UCL	4.914657	
95% Modified-t UCL	4.660129	
95% Jackknife UCL	4.595761	
95% Chebyshev (Mean, Sd) UCL	7.021068	
97.5% Chebyshev (Mean, Sd) UCL	8.771678	
99% Chebyshev (Mean, Sd) UCL	12.21041	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.43168	
95% Bootstrap-t UCL	5.298237	
95% Hall's Bootstrap UCL	4.345001	
95% Percentile Bootstrap UCL	4.633235	
95% BCA Bootstrap UCL	5.117059	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	5.099085	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	44	
Number of Missing Data	0	
Number of Valid Observations	44	
Number of Distinct Observations	43	
Minimum	0.081	
Maximum	1200	
Mean	132.8378	
Standard Deviation	227.2915	
Variance	51661.42	
Coefficient of Variation	1.711045	
Skewness	2.96927	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.628577	
Shapiro-Wilk 5% Critical Value	0.944	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	190.4405	
Gamma Statistics		
k hat	0.404616	
k star (bias corrected)	0.39218	
Theta hat	328.3056	
Theta star	338.7161	
nu hat	35.60624	
nu star	34.51188	
5% Approximate Chi Square Value	22.0717	
Adjusted Level of Significance	0.044545	
Adjusted Chi Square Value	21.73339	
Anderson-Darling Test Statistic	0.400487	
Anderson-Darling 5% Critical Value	0.836111	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.112976	
Kolmogrov-Smirnov 5% Critical Value	0.142826	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	207.7086	
95% Adjusted Gamma UCL	210.9419	
Lognormal Statistics		
Minimum of log data	-2.51331	
Maximum of log data	7.090077	
Mean of log data	3.265806	
Standard Deviation of log data	2.378451	
Variance of log data	5.657027	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.928393	
Shapiro-Wilk 5% Critical Value	0.944	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	443.3326	
MLE Standard Deviation	7488.205	
MLE Coefficient of Variation	16.89072	
MLE Skewness	4869.532	
MLE Median	26.20123	
MLE 80% Quantile	195.5072	
MLE 90% Quantile	556.7496	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Quanta Property (Subsurface Soil)

MLE 95% Quantile	1310.754	
MLE 99% Quantile	6621.536	
MVU Estimate of Median	24.56763	
MVU Estimate of Mean	358.632	
MVU Estimate of Standard Deviation	2717.068	
MVU Estimate of SE of Mean	192.2685	
95% H-UCL	2015.326	
95% Chebyshev (MVUE) UCL	1196.711	
97.5% Chebyshev (MVUE) UCL	1559.349	
99% Chebyshev (MVUE) UCL	2271.68	
Non-parametric Statisitics		
95% CLT UCL	189.1995	
95% Adjusted-CLT UCL	205.5888	
95% Modified-t UCL	192.9969	
95% Jackknife UCL	190.4405	
95% Chebyshev (Mean, Sd) UCL	282.1976	
97.5% Chebyshev (Mean, Sd) UCL	346.8257	
99% Chebyshev (Mean, Sd) UCL	473.7751	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	189.5665	
95% Bootstrap-t UCL	220.9824	
95% Hall's Bootstrap UCL	239.1113	
95% Percentile Bootstrap UCL	193.9896	
95% BCA Bootstrap UCL	206.8244	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	210.9419	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chromium
Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Chromium	
Raw Statistics		
Number of Observations	45	
Number of Missing Data	0	
Number of Valid Observations	45	
Number of Distinct Observations	44	
Minimum	0.002	
Maximum	105	
Mean	15.82504	
Standard Deviation	16.86971	
Variance	284.5873	
Coefficient of Variation	1.066014	
Skewness	3.494352	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.70359	
Shapiro-Wilk 5% Critical Value	0.945	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	20.05047	
Gamma Statistics		
k hat	0.634544	
k star (bias corrected)	0.607056	
Theta hat	24.93924	
Theta star	26.06851	
nu hat	57.10897	
nu star	54.63504	
5% Approximate Chi Square Value	38.64771	
Adjusted Level of Significance	0.044667	
Adjusted Chi Square Value	38.20167	
Anderson-Darling Test Statistic	2.567427	
Anderson-Darling 5% Critical Value	0.800654	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.188635	
Kolmogrov-Smirnov 5% Critical Value	0.138083	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	22.37136	
95% Adjusted Gamma UCL	22.63257	
Lognormal Statistics		
Minimum of log data	-6.21461	
Maximum of log data	4.65396	
Mean of log data	1.795797	
Standard Deviation of log data	2.372795	
Variance of log data	5.630158	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.693141	
Shapiro-Wilk 5% Critical Value	0.945	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	100.5722	
MLE Standard Deviation	1675.987	
MLE Coefficient of Variation	16.66452	
MLE Skewness	4677.833	
MLE Median	6.024272	
MLE 80% Quantile	44.73735	
MLE 90% Quantile	127.0828	

Appendix P, Attachment 3

ProUCL Output - Chromium

Quanta Property (Subsurface Soil)

MLE 95% Quantile	298.5821	
MLE 99% Quantile	1502.55	
MVU Estimate of Median	5.658472	
MVU Estimate of Mean	81.82345	
MVU Estimate of Standard Deviation	622.2929	
MVU Estimate of SE of Mean	43.44778	
95% H-UCL	443.7162	
95% Chebyshev (MVUE) UCL	271.2079	
97.5% Chebyshev (MVUE) UCL	353.1547	
99% Chebyshev (MVUE) UCL	514.1234	
Non-parametric Statisitics		
95% CLT UCL	19.9615	
95% Adjusted-CLT UCL	21.36123	
95% Modified-t UCL	20.2688	
95% Jackknife UCL	20.05047	
95% Chebyshev (Mean, Sd) UCL	26.78675	
97.5% Chebyshev (Mean, Sd) UCL	31.52989	
99% Chebyshev (Mean, Sd) UCL	40.84687	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	19.95653	
95% Bootstrap-t UCL	22.49431	
95% Hall's Bootstrap UCL	39.9642	
95% Percentile Bootstrap UCL	20.40791	
95% BCA Bootstrap UCL	21.40956	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	40.84687	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Chrysene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Chrysene	
Raw Statistics		
Number of Observations	61	
Number of Missing Data	0	
Number of Valid Observations	61	
Number of Distinct Observations	55	
Minimum	0.998	
Maximum	4200	
Mean	430.9491	
Standard Deviation	726.0447	
Variance	527140.9	
Coefficient of Variation	1.684757	
Skewness	3.216679	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.281912	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	586.2535	
Gamma Statistics		
k hat	0.499274	
k star (bias corrected)	0.485649	
Theta hat	863.1513	
Theta star	887.3681	
nu hat	60.91145	
nu star	59.24914	
5% Approximate Chi Square Value	42.54753	
Adjusted Level of Significance	0.046066	
Adjusted Chi Square Value	42.20511	
Anderson-Darling Test Statistic	0.526764	
Anderson-Darling 5% Critical Value	0.816228	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.099053	
Kolmogrov-Smirnov 5% Critical Value	0.120493	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	600.1139	
95% Adjusted Gamma UCL	604.9828	
Lognormal Statistics		
Minimum of log data	-0.002	
Maximum of log data	8.34284	
Mean of log data	4.793494	
Standard Deviation of log data	1.9488	
Variance of log data	3.797821	
Lilliefors Test Statisitic	0.122189	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	806.2582	
MLE Standard Deviation	5323.984	
MLE Coefficient of Variation	6.603323	
MLE Skewness	307.7405	
MLE Median	120.7224	
MLE 80% Quantile	626.5506	
MLE 90% Quantile	1476.901	

Appendix P, Attachment 3
ProUCL Output - Chrysene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	2978.781	
MLE 99% Quantile	11230.65	
MVU Estimate of Median	117.0204	
MVU Estimate of Mean	741.7182	
MVU Estimate of Standard Deviation	3496.901	
MVU Estimate of SE of Mean	274.7678	
95% H-UCL	1891.646	
95% Chebyshev (MVUE) UCL	1939.403	
97.5% Chebyshev (MVUE) UCL	2457.642	
99% Chebyshev (MVUE) UCL	3475.623	
Non-parametric Statisitics		
95% CLT UCL	583.8556	
95% Adjusted-CLT UCL	624.7648	
95% Modified-t UCL	592.6345	
95% Jackknife UCL	586.2535	
95% Chebyshev (Mean, Sd) UCL	836.1546	
97.5% Chebyshev (Mean, Sd) UCL	1011.487	
99% Chebyshev (Mean, Sd) UCL	1355.894	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	588.367	
95% Bootstrap-t UCL	657.1808	
95% Hall's Bootstrap UCL	656.1988	
95% Percentile Bootstrap UCL	592.4065	
95% BCA Bootstrap UCL	623.4541	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	604.9828	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Copper

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Copper	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	32.1	
Maximum	9690	
Mean	1462.818	
Standard Deviation	2619.326	
Variance	6860867	
Coefficient of Variation	1.790603	
Skewness	2.51853	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.600109	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2571.942	
Gamma Statistics		
k hat	0.499008	
k star (bias corrected)	0.450163	
Theta hat	2931.454	
Theta star	3249.528	
nu hat	16.96626	
nu star	15.30555	
5% Approximate Chi Square Value	7.473356	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	6.905521	
Anderson-Darling Test Statistic	0.959431	
Anderson-Darling 5% Critical Value	0.798148	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.24536	
Kolmogrov-Smirnov 5% Critical Value	0.220959	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	2995.873	
95% Adjusted Gamma UCL	3242.221	
Lognormal Statistics		
Minimum of log data	3.468856	
Maximum of log data	9.17885	
Mean of log data	6.014838	
Standard Deviation of log data	1.648051	
Variance of log data	2.716072	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.953637	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1592.203	
MLE Standard Deviation	5983.127	
MLE Coefficient of Variation	3.757766	
MLE Skewness	64.33599	
MLE Median	409.4595	
MLE 80% Quantile	1648.203	
MLE 90% Quantile	3403.581	

Appendix P, Attachment 3
ProUCL Output - Copper
Quanta Property (Subsurface Soil)

MLE 95% Quantile	6160.306	
MLE 99% Quantile	18924.34	
MVU Estimate of Median	377.887	
MVU Estimate of Mean	1359.589	
MVU Estimate of Standard Deviation	3124.386	
MVU Estimate of SE of Mean	639.3608	
95% H-UCL	7541.7	
95% Chebyshev (MVUE) UCL	4146.498	
97.5% Chebyshev (MVUE) UCL	5352.396	
99% Chebyshev (MVUE) UCL	7721.148	
Non-parametric Statisitics		
95% CLT UCL	2507.76	
95% Adjusted-CLT UCL	2922.397	
95% Modified-t UCL	2636.617	
95% Jackknife UCL	2571.942	
95% Chebyshev (Mean, Sd) UCL	4231.938	
97.5% Chebyshev (Mean, Sd) UCL	5430.139	
99% Chebyshev (Mean, Sd) UCL	7783.772	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2490.729	
95% Bootstrap-t UCL	4782.043	
95% Hall's Bootstrap UCL	6984.567	
95% Percentile Bootstrap UCL	2523.988	
95% BCA Bootstrap UCL	2925.547	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	7721.148	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzo(a,h)anthracene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Dibenzo(a,h)anthracene	
Raw Statistics		
Number of Observations	60	
Number of Missing Data	0	
Number of Valid Observations	60	
Number of Distinct Observations	50	
Minimum	0.063	
Maximum	510	
Mean	65.55117	
Standard Deviation	104.8078	
Variance	1.10E+04	
Coefficient of Variation	1.59887	
Skewness	2.591973	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.269639	
Lilliefors 5% Critical Value	0.114382	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	88.16209	
Gamma Statistics		
k hat	0.506704	
k star (bias corrected)	0.49248	
Theta hat	129.3677	
Theta star	133.1042	
nu hat	60.80452	
nu star	59.09763	
5% Approximate Chi Square Value	42.41902	
Adjusted Level of Significance	0.046	
Adjusted Chi Square Value	42.07127	
Anderson-Darling Test Statistic	0.605945	
Anderson-Darling 5% Critical Value	0.815339	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.091334	
Kolmogrov-Smirnov 5% Critical Value	0.121303	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	91.32502	
95% Adjusted Gamma UCL	92.07991	
Lognormal Statistics		
Minimum of log data	-2.76462	
Maximum of log data	6.234411	
Mean of log data	2.93186	
Standard Deviation of log data	1.956994	
Variance of log data	3.829825	
Lilliefors Test Statisitic	0.119231	
Lilliefors 5% Critical Value	0.114382	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	127.3287	
MLE Standard Deviation	854.6639	
MLE Coefficient of Variation	6.712263	
MLE Skewness	3.23E+02	
MLE Median	18.76249	
MLE 80% Quantile	98.05412	
MLE 90% Quantile	231.9674	

Appendix P, Attachment 3
ProUCL Output - Dibenzo(a,h)anthracene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	469.2401	
MLE 99% Quantile	1779.037	
MVU Estimate of Median	18.17283	
MVU Estimate of Mean	116.8527	
MVU Estimate of Standard Deviation	555.0212	
MVU Estimate of SE of Mean	43.81256	
95% H-UCL	303.3779	
95% Chebyshev (MVUE) UCL	307.8272	
97.5% Chebyshev (MVUE) UCL	390.4621	
99% Chebyshev (MVUE) UCL	552.7822	
Non-parametric Statisitics		
95% CLT UCL	87.80706	
95% Adjusted-CLT UCL	92.64492	
95% Modified-t UCL	88.9167	
95% Jackknife UCL	88.16209	
95% Chebyshev (Mean, Sd) UCL	124.5298	
97.5% Chebyshev (Mean, Sd) UCL	150.0499	
99% Chebyshev (Mean, Sd) UCL	200.1792	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	87.23798	
95% Bootstrap-t UCL	96.564	
95% Hall's Bootstrap UCL	93.61659	
95% Percentile Bootstrap UCL	90.59983	
95% BCA Bootstrap UCL	94.43843	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	91.32502	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzofuran

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	44	
Number of Missing Data	0	
Number of Valid Observations	44	
Number of Distinct Observations	42	
Minimum	5.20E-02	
Maximum	1900	
Mean	245.1565	
Standard Deviation	430.7118	
Variance	185512.7	
Coefficient of Variation	1.756885	
Skewness	2.317114	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.627214	
Shapiro-Wilk 5% Critical Value	0.944	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	354.3122	
Gamma Statistics		
k hat	0.343686	
k star (bias corrected)	0.335404	
Theta hat	713.3155	
Theta star	730.9283	
nu hat	30.24436	
nu star	29.51558	
5% Approximate Chi Square Value	18.11044	
Adjusted Level of Significance	0.044545	
Adjusted Chi Square Value	17.80653	
Anderson-Darling Test Statistic	0.601261	
Anderson-Darling 5% Critical Value	0.850644	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.126073	
Kolmogrov-Smirnov 5% Critical Value	0.144018	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	399.5451	
95% Adjusted Gamma UCL	406.3643	
Lognormal Statistics		
Minimum of log data	-2.95651	
Maximum of log data	7.549609	
Mean of log data	3.539539	
Standard Deviation of log data	2.67651	
Variance of log data	7.163704	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.926437	
Shapiro-Wilk 5% Critical Value	0.944	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1238.172	
MLE Standard Deviation	44482.74	
MLE Coefficient of Variation	35.92613	
MLE Skewness	46477.17	
MLE Median	34.45105	
MLE 80% Quantile	330.6929	
MLE 90% Quantile	1073.688	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Quanta Property (Subsurface Soil)

MLE 95% Quantile	2814.1	
MLE 99% Quantile	17415.24	
MVU Estimate of Median	31.75295	
MVU Estimate of Mean	907.4081	
MVU Estimate of Standard Deviation	10235.43	
MVU Estimate of SE of Mean	557.4038	
95% H-UCL	8144.548	
95% Chebyshev (MVUE) UCL	3337.075	
97.5% Chebyshev (MVUE) UCL	4388.394	
99% Chebyshev (MVUE) UCL	6453.506	
Non-parametric Statisitics		
95% CLT UCL	351.9606	
95% Adjusted-CLT UCL	376.1966	
95% Modified-t UCL	358.0925	
95% Jackknife UCL	354.3122	
95% Chebyshev (Mean, Sd) UCL	528.1896	
97.5% Chebyshev (Mean, Sd) UCL	650.6583	
99% Chebyshev (Mean, Sd) UCL	891.2243	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	351.2629	
95% Bootstrap-t UCL	394.4577	
95% Hall's Bootstrap UCL	370.7629	
95% Percentile Bootstrap UCL	354.0881	
95% BCA Bootstrap UCL	381.271	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	406.3643	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dieldrin

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Dieldrin	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	12	
Minimum	0.00205	
Maximum	0.95	
Mean	0.186177	
Standard Deviation	0.335912	
Variance	0.112837	
Coefficient of Variation	1.804265	
Skewness	1.987611	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.588634	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.352224	
Gamma Statistics		
k hat	0.396655	
k star (bias corrected)	0.356402	
Theta hat	0.469367	
Theta star	0.52238	
nu hat	10.31304	
nu star	9.26644	
5% Approximate Chi Square Value	3.487902	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	3.000749	
Anderson-Darling Test Statistic	0.939938	
Anderson-Darling 5% Critical Value	0.810541	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.28995	
Kolmogrov-Smirnov 5% Critical Value	0.253184	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.494623	
95% Adjusted Gamma UCL	0.574922	
Lognormal Statistics		
Minimum of log data	-6.18992	
Maximum of log data	-0.05129	
Mean of log data	-3.34227	
Standard Deviation of log data	1.98754	
Variance of log data	3.950314	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.928691	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.254842	
MLE Standard Deviation	1.81907	
MLE Coefficient of Variation	7.138044	
MLE Skewness	385.1094	
MLE Median	0.035357	
MLE 80% Quantile	0.189607	
MLE 90% Quantile	0.454625	

Appendix P, Attachment 3
ProUCL Output - Dieldrin
Quanta Property (Subsurface Soil)

MLE 95% Quantile	0.929817	
MLE 99% Quantile	3.599327	
MVU Estimate of Median	0.030322	
MVU Estimate of Mean	0.181941	
MVU Estimate of Standard Deviation	0.506038	
MVU Estimate of SE of Mean	0.111097	
95% H-UCL	4.009407	
95% Chebyshev (MVUE) UCL	0.666201	
97.5% Chebyshev (MVUE) UCL	0.875741	
99% Chebyshev (MVUE) UCL	1.287342	
Non-parametric Statisitics		
95% CLT UCL	0.33942	
95% Adjusted-CLT UCL	0.394298	
95% Modified-t UCL	0.360784	
95% Jackknife UCL	0.352224	
95% Chebyshev (Mean, Sd) UCL	0.592275	
97.5% Chebyshev (Mean, Sd) UCL	0.767994	
99% Chebyshev (Mean, Sd) UCL	1.113161	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.332881	
95% Bootstrap-t UCL	0.829886	
95% Hall's Bootstrap UCL	1.115271	
95% Percentile Bootstrap UCL	0.342677	
95% BCA Bootstrap UCL	0.395004	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	1.287342	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Fluoranthene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Fluoranthene	
Raw Statistics		
Number of Observations	61	
Number of Missing Data	0	
Number of Valid Observations	61	
Number of Distinct Observations	55	
Minimum	2.1	
Maximum	10000	
Mean	992.5493	
Standard Deviation	1611.965	
Variance	2598432	
Coefficient of Variation	1.624065	
Skewness	3.511496	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.269464	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1337.356	
Gamma Statistics		
k hat	0.487291	
k star (bias corrected)	0.474255	
Theta hat	2036.871	
Theta star	2092.86	
nu hat	59.44951	
nu star	57.8591	
5% Approximate Chi Square Value	41.36963	
Adjusted Level of Significance	0.046066	
Adjusted Chi Square Value	41.03226	
Anderson-Darling Test Statistic	0.225396	
Anderson-Darling 5% Critical Value	0.819071	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.062448	
Kolmogrov-Smirnov 5% Critical Value	0.120678	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1388.168	
95% Adjusted Gamma UCL	1399.582	
Lognormal Statistics		
Minimum of log data	0.741937	
Maximum of log data	9.21034	
Mean of log data	5.591551	
Standard Deviation of log data	2.042789	
Variance of log data	4.172988	
Lilliefors Test Statisitic	0.10443	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	2160.392	
MLE Standard Deviation	17270.85	
MLE Coefficient of Variation	7.994315	
MLE Skewness	534.8923	
MLE Median	268.1512	
MLE 80% Quantile	1506.746	
MLE 90% Quantile	3701.655	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	7722.854	
MLE 99% Quantile	31041.45	
MVU Estimate of Median	259.1294	
MVU Estimate of Mean	1960.815	
MVU Estimate of Standard Deviation	10585.3	
MVU Estimate of SE of Mean	774.433	
95% H-UCL	5454.651	
95% Chebyshev (MVUE) UCL	5336.49	
97.5% Chebyshev (MVUE) UCL	6797.147	
99% Chebyshev (MVUE) UCL	9666.326	
Non-parametric Statisitics		
95% CLT UCL	1332.032	
95% Adjusted-CLT UCL	1431.184	
95% Modified-t UCL	1352.822	
95% Jackknife UCL	1337.356	
95% Chebyshev (Mean, Sd) UCL	1892.187	
97.5% Chebyshev (Mean, Sd) UCL	2281.461	
99% Chebyshev (Mean, Sd) UCL	3046.114	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1332.151	
95% Bootstrap-t UCL	1541.406	
95% Hall's Bootstrap UCL	1759.363	
95% Percentile Bootstrap UCL	1343.558	
95% BCA Bootstrap UCL	1443.558	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	1399.582	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Fluorene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Fluorene	
Raw Statistics		
Number of Observations	60	
Number of Missing Data	0	
Number of Valid Observations	60	
Number of Distinct Observations	54	
Minimum	0.066	
Maximum	2000	
Mean	329.0966	
Standard Deviation	483.7872	
Variance	234050	
Coefficient of Variation	1.470046	
Skewness	1.738329	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.257313	
Lilliefors 5% Critical Value	0.114382	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	433.4674	
Gamma Statistics		
k hat	0.381683	
k star (bias corrected)	0.37371	
Theta hat	862.2249	
Theta star	880.6203	
nu hat	45.80196	
nu star	44.84519	
5% Approximate Chi Square Value	30.4819	
Adjusted Level of Significance	0.046	
Adjusted Chi Square Value	30.19015	
Anderson-Darling Test Statistic	0.401817	
Anderson-Darling 5% Critical Value	0.84395	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.081598	
Kolmogrov-Smirnov 5% Critical Value	0.123188	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	484.1694	
95% Adjusted Gamma UCL	488.8481	
Lognormal Statistics		
Minimum of log data	-2.7181	
Maximum of log data	7.600902	
Mean of log data	4.059207	
Standard Deviation of log data	2.580963	
Variance of log data	6.661372	
Lilliefors Test Statisitic	0.097516	
Lilliefors 5% Critical Value	0.114382	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1619.533	
MLE Standard Deviation	45249.16	
MLE Coefficient of Variation	27.93963	
MLE Skewness	21894.13	
MLE Median	57.92836	
MLE 80% Quantile	512.9207	
MLE 90% Quantile	1596.781	

Appendix P, Attachment 3
ProUCL Output - Fluorene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	4043.605	
MLE 99% Quantile	23447.71	
MVU Estimate of Median	54.79752	
MVU Estimate of Mean	1311.736	
MVU Estimate of Standard Deviation	15659.71	
MVU Estimate of SE of Mean	707.348	
95% H-UCL	6721.514	
95% Chebyshev (MVUE) UCL	4394.994	
97.5% Chebyshev (MVUE) UCL	5729.123	
99% Chebyshev (MVUE) UCL	8349.759	
Non-parametric Statisitics		
95% CLT UCL	431.8286	
95% Adjusted-CLT UCL	446.8053	
95% Modified-t UCL	435.8035	
95% Jackknife UCL	433.4674	
95% Chebyshev (Mean, Sd) UCL	601.3388	
97.5% Chebyshev (Mean, Sd) UCL	719.1383	
99% Chebyshev (Mean, Sd) UCL	950.5324	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	431.0895	
95% Bootstrap-t UCL	451.383	
95% Hall's Bootstrap UCL	448.7991	
95% Percentile Bootstrap UCL	431.6689	
95% BCA Bootstrap UCL	449.0208	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	488.8481	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Heptachlor

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Heptachlor	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	12	
Minimum	0.00105	
Maximum	0.43	
Mean	0.091288	
Standard Deviation	0.14387	
Variance	0.020698	
Coefficient of Variation	1.575988	
Skewness	1.754854	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.669701	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.162406	
Gamma Statistics		
k hat	0.469931	
k star (bias corrected)	0.412767	
Theta hat	0.194259	
Theta star	0.221162	
nu hat	12.2182	
nu star	10.73195	
5% Approximate Chi Square Value	4.40335	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	3.84236	
Anderson-Darling Test Statistic	0.582696	
Anderson-Darling 5% Critical Value	0.795941	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.235757	
Kolmogrov-Smirnov 5% Critical Value	0.250792	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.22249	
95% Adjusted Gamma UCL	0.254974	
Lognormal Statistics		
Minimum of log data	-6.85897	
Maximum of log data	-0.84397	
Mean of log data	-3.75853	
Standard Deviation of log data	1.889173	
Variance of log data	3.568975	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.958705	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.138894	
MLE Standard Deviation	0.815581	
MLE Coefficient of Variation	5.871985	
MLE Skewness	220.0832	
MLE Median	0.023318	
MLE 80% Quantile	0.115074	
MLE 90% Quantile	0.264227	

Appendix P, Attachment 3
ProUCL Output - Heptachlor
Quanta Property (Subsurface Soil)

MLE 95% Quantile	0.521605	
MLE 99% Quantile	1.88831	
MVU Estimate of Median	0.020299	
MVU Estimate of Mean	0.103783	
MVU Estimate of Standard Deviation	0.267402	
MVU Estimate of SE of Mean	0.060451	
95% H-UCL	1.703638	
95% Chebyshev (MVUE) UCL	0.367282	
97.5% Chebyshev (MVUE) UCL	0.481298	
99% Chebyshev (MVUE) UCL	0.705261	
Non-parametric Statisitics		
95% CLT UCL	0.156922	
95% Adjusted-CLT UCL	0.177673	
95% Modified-t UCL	0.165642	
95% Jackknife UCL	0.162406	
95% Chebyshev (Mean, Sd) UCL	0.265218	
97.5% Chebyshev (Mean, Sd) UCL	0.340478	
99% Chebyshev (Mean, Sd) UCL	0.488311	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.154268	
95% Bootstrap-t UCL	0.239984	
95% Hall's Bootstrap UCL	0.174946	
95% Percentile Bootstrap UCL	0.160085	
95% BCA Bootstrap UCL	0.169777	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	0.254974	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Indeno(1,2,3-c,d)pyrene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Indeno(1,2,3-c,d)pyrene	
Raw Statistics		
Number of Observations	60	
Number of Missing Data	0	
Number of Valid Observations	60	
Number of Distinct Observations	53	
Minimum	0.22	
Maximum	1700	
Mean	206.3054	
Standard Deviation	350.6704	
Variance	122969.7	
Coefficient of Variation	1.699764	
Skewness	2.873626	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.27837	
Lilliefors 5% Critical Value	0.114382	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	281.958	
Gamma Statistics		
k hat	0.475911	
k star (bias corrected)	0.463227	
Theta hat	433.4955	
Theta star	445.3658	
nu hat	57.10935	
nu star	55.58721	
5% Approximate Chi Square Value	39.45006	
Adjusted Level of Significance	0.046	
Adjusted Chi Square Value	39.11542	
Anderson-Darling Test Statistic	0.47661	
Anderson-Darling 5% Critical Value	0.821675	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.089232	
Kolmogrov-Smirnov 5% Critical Value	0.121732	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	290.6951	
95% Adjusted Gamma UCL	293.1821	
Lognormal Statistics		
Minimum of log data	-1.51413	
Maximum of log data	7.438384	
Mean of log data	3.984377	
Standard Deviation of log data	2.019961	
Variance of log data	4.080244	
Lilliefors Test Statisitic	0.087153	
Lilliefors 5% Critical Value	0.114382	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	413.4345	
MLE Standard Deviation	3152.961	
MLE Coefficient of Variation	7.626265	
MLE Skewness	466.4217	
MLE Median	53.75179	
MLE 80% Quantile	296.2621	
MLE 90% Quantile	720.5591	

Appendix P, Attachment 3
ProUCL Output - Indeno(1,2,3-c,d)pyrene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	1491.017	
MLE 99% Quantile	5900.588	
MVU Estimate of Median	51.95386	
MVU Estimate of Mean	375.9847	
MVU Estimate of Standard Deviation	1954.518	
MVU Estimate of SE of Mean	147.1616	
95% H-UCL	1035.094	
95% Chebyshev (MVUE) UCL	1017.447	
97.5% Chebyshev (MVUE) UCL	1295.009	
99% Chebyshev (MVUE) UCL	1840.224	
Non-parametric Statisitics		
95% CLT UCL	280.7701	
95% Adjusted-CLT UCL	298.7157	
95% Modified-t UCL	284.7571	
95% Jackknife UCL	281.958	
95% Chebyshev (Mean, Sd) UCL	403.6386	
97.5% Chebyshev (Mean, Sd) UCL	489.0249	
99% Chebyshev (Mean, Sd) UCL	656.7497	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	280.5565	
95% Bootstrap-t UCL	314.7438	
95% Hall's Bootstrap UCL	306.6969	
95% Percentile Bootstrap UCL	282.6267	
95% BCA Bootstrap UCL	298.375	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	293.1821	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Iron

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Iron	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	16	
Minimum	11600	
Maximum	257000	
Mean	66241.18	
Standard Deviation	65340.63	
Variance	4.27E+09	
Coefficient of Variation	0.986405	
Skewness	1.920284	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.777921	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	93908.94	
Gamma Statistics		
k hat	1.430438	
k star (bias corrected)	1.217223	
Theta hat	46308.33	
Theta star	54419.91	
nu hat	48.63488	
nu star	41.38559	
5% Approximate Chi Square Value	27.63848	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	26.4633	
Anderson-Darling Test Statistic	0.356762	
Anderson-Darling 5% Critical Value	0.757097	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.130856	
Kolmogrov-Smirnov 5% Critical Value	0.213231	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	99188.87	
95% Adjusted Gamma UCL	103593.7	
Lognormal Statistics		
Minimum of log data	9.35876	
Maximum of log data	12.45683	
Mean of log data	10.71245	
Standard Deviation of log data	0.907174	
Variance of log data	0.822965	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.97043	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	67774.07	
MLE Standard Deviation	76594.97	
MLE Coefficient of Variation	1.130152	
MLE Skewness	4.833933	
MLE Median	44911.64	
MLE 80% Quantile	96665.76	
MLE 90% Quantile	144086.8	

Appendix P, Attachment 3
ProUCL Output - Iron
Quanta Property (Subsurface Soil)

MLE 95% Quantile	199736.5	
MLE 99% Quantile	370474.5	
MVU Estimate of Median	43836.17	
MVU Estimate of Mean	65630.83	
MVU Estimate of Standard Deviation	66586.46	
MVU Estimate of SE of Mean	15751.11	
95% H-UCL	120761	
95% Chebyshev (MVUE) UCL	134288.3	
97.5% Chebyshev (MVUE) UCL	163996.5	
99% Chebyshev (MVUE) UCL	222352.4	
Non-parametric Statisitics		
95% CLT UCL	92307.88	
95% Adjusted-CLT UCL	100194.3	
95% Modified-t UCL	95139.07	
95% Jackknife UCL	93908.94	
95% Chebyshev (Mean, Sd) UCL	135318.5	
97.5% Chebyshev (Mean, Sd) UCL	165208.3	
99% Chebyshev (Mean, Sd) UCL	223921.1	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	91608.69	
95% Bootstrap-t UCL	111668.2	
95% Hall's Bootstrap UCL	125810.6	
95% Percentile Bootstrap UCL	93070.59	
95% BCA Bootstrap UCL	99941.18	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	99188.87	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Lead

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	60	
Number of Missing Data	0	
Number of Valid Observations	60	
Number of Distinct Observations	60	
Minimum	0.069	
Maximum	38800	
Mean	1318.858	
Standard Deviation	5149.483	
Variance	26517173	
Coefficient of Variation	3.9045	
Skewness	6.824316	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.398936	
Lilliefors 5% Critical Value	0.114382	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2429.793	
Gamma Statistics		
k hat	0.29788	
k star (bias corrected)	0.294097	
Theta hat	4427.485	
Theta star	4484.434	
nu hat	35.74558	
nu star	35.29164	
5% Approximate Chi Square Value	22.69695	
Adjusted Level of Significance	0.046	
Adjusted Chi Square Value	22.44789	
Anderson-Darling Test Statistic	2.846729	
Anderson-Darling 5% Critical Value	0.864249	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.204624	
Kolmogrov-Smirnov 5% Critical Value	0.124507	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	2050.702	
95% Adjusted Gamma UCL	2073.454	
Lognormal Statistics		
Minimum of log data	-2.67365	
Maximum of log data	10.56618	
Mean of log data	4.86693	
Standard Deviation of log data	2.597771	
Variance of log data	6.748412	
Lilliefors Test Statisitic	0.135266	
Lilliefors 5% Critical Value	0.114382	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	3793.849	
MLE Standard Deviation	110719.5	
MLE Coefficient of Variation	29.18396	
MLE Skewness	24943.64	
MLE Median	129.9215	
MLE 80% Quantile	1166.831	
MLE 90% Quantile	3659.44	

Appendix P, Attachment 3
ProUCL Output - Lead
Quanta Property (Subsurface Soil)

MLE 95% Quantile	9323.216	
MLE 99% Quantile	54685	
MVU Estimate of Median	122.8104	
MVU Estimate of Mean	3058.786	
MVU Estimate of Standard Deviation	37462.21	
MVU Estimate of SE of Mean	1662.755	
95% H-UCL	15995.43	
95% Chebyshev (MVUE) UCL	10306.57	
97.5% Chebyshev (MVUE) UCL	13442.69	
99% Chebyshev (MVUE) UCL	19602.99	
Non-parametric Statisitics		
95% CLT UCL	2412.35	
95% Adjusted-CLT UCL	3038.173	
95% Modified-t UCL	2527.409	
95% Jackknife UCL	2429.793	
95% Chebyshev (Mean, Sd) UCL	4216.634	
97.5% Chebyshev (Mean, Sd) UCL	5470.504	
99% Chebyshev (Mean, Sd) UCL	7933.489	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2405.81	
95% Bootstrap-t UCL	5388.427	
95% Hall's Bootstrap UCL	5748.484	
95% Percentile Bootstrap UCL	2579.846	
95% BCA Bootstrap UCL	3426.213	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	7933.489	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Manganese

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Manganese	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	27.7	
Maximum	306	
Mean	134.6941	
Standard Deviation	82.44251	
Variance	6796.767	
Coefficient of Variation	0.612072	
Skewness	0.496583	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.929805	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	169.6035	
Gamma Statistics		
k hat	2.528863	
k star (bias corrected)	2.121809	
Theta hat	53.26271	
Theta star	63.48079	
nu hat	85.98136	
nu star	72.14151	
5% Approximate Chi Square Value	53.5809	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	51.9059	
Anderson-Darling Test Statistic	0.384795	
Anderson-Darling 5% Critical Value	0.747299	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.163809	
Kolmogrov-Smirnov 5% Critical Value	0.211125	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	181.3526	
95% Adjusted Gamma UCL	187.2048	
Lognormal Statistics		
Minimum of log data	3.321432	
Maximum of log data	5.723585	
Mean of log data	4.692449	
Standard Deviation of log data	0.710636	
Variance of log data	0.505003	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.94365	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	140.4639	
MLE Standard Deviation	113.8529	
MLE Coefficient of Variation	0.810549	
MLE Skewness	2.964172	
MLE Median	109.1201	
MLE 80% Quantile	198.9266	
MLE 90% Quantile	271.9493	

Appendix P, Attachment 3
ProUCL Output - Manganese
Quanta Property (Subsurface Soil)

MLE 95% Quantile	351.2312	
MLE 99% Quantile	569.8581	
MVU Estimate of Median	107.51	
MVU Estimate of Mean	137.9726	
MVU Estimate of Standard Deviation	105.1665	
MVU Estimate of SE of Mean	25.24218	
95% H-UCL	210.6467	
95% Chebyshev (MVUE) UCL	248.0007	
97.5% Chebyshev (MVUE) UCL	295.61	
99% Chebyshev (MVUE) UCL	389.1291	
Non-parametric Statisitics		
95% CLT UCL	167.5834	
95% Adjusted-CLT UCL	170.1566	
95% Modified-t UCL	170.0049	
95% Jackknife UCL	169.6035	
95% Chebyshev (Mean, Sd) UCL	221.8514	
97.5% Chebyshev (Mean, Sd) UCL	259.5644	
99% Chebyshev (Mean, Sd) UCL	333.6443	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	166.7292	
95% Bootstrap-t UCL	172.1833	
95% Hall's Bootstrap UCL	169.3736	
95% Percentile Bootstrap UCL	167.5	
95% BCA Bootstrap UCL	167.5882	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	169.6035	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Mercury

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Mercury	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	16	
Minimum	0.15	
Maximum	69.2	
Mean	10.22118	
Standard Deviation	17.14227	
Variance	293.8574	
Coefficient of Variation	1.677133	
Skewness	2.901977	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.610203	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	17.47988	
Gamma Statistics		
k hat	0.568729	
k star (bias corrected)	0.507581	
Theta hat	17.97196	
Theta star	20.13704	
nu hat	19.33679	
nu star	17.25775	
5% Approximate Chi Square Value	8.85533	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	8.229671	
Anderson-Darling Test Statistic	0.375229	
Anderson-Darling 5% Critical Value	0.792014	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.15802	
Kolmogrov-Smirnov 5% Critical Value	0.219921	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	19.91959	
95% Adjusted Gamma UCL	21.43397	
Lognormal Statistics		
Minimum of log data	-1.89712	
Maximum of log data	4.237001	
Mean of log data	1.22936	
Standard Deviation of log data	1.640955	
Variance of log data	2.692735	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.990835	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	13.14088	
MLE Standard Deviation	48.76667	
MLE Coefficient of Variation	3.711067	
MLE Skewness	62.24208	
MLE Median	3.419042	
MLE 80% Quantile	13.68045	
MLE 90% Quantile	28.16241	

Appendix P, Attachment 3
ProUCL Output - Mercury
Quanta Property (Subsurface Soil)

MLE 95% Quantile	50.84247	
MLE 99% Quantile	155.4342	
MVU Estimate of Median	3.157593	
MVU Estimate of Mean	11.24276	
MVU Estimate of Standard Deviation	25.66141	
MVU Estimate of SE of Mean	5.262291	
95% H-UCL	61.50498	
95% Chebyshev (MVUE) UCL	34.18056	
97.5% Chebyshev (MVUE) UCL	44.10576	
99% Chebyshev (MVUE) UCL	63.6019	
Non-parametric Statisitics		
95% CLT UCL	17.05984	
95% Adjusted-CLT UCL	20.18659	
95% Modified-t UCL	17.96759	
95% Jackknife UCL	17.47988	
95% Chebyshev (Mean, Sd) UCL	28.34378	
97.5% Chebyshev (Mean, Sd) UCL	36.18545	
99% Chebyshev (Mean, Sd) UCL	51.58889	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	16.64205	
95% Bootstrap-t UCL	27.03021	
95% Hall's Bootstrap UCL	43.39407	
95% Percentile Bootstrap UCL	17.70059	
95% BCA Bootstrap UCL	20.77647	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	19.91959	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Naphthalene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	61	
Number of Missing Data	0	
Number of Valid Observations	61	
Number of Distinct Observations	57	
Minimum	0.16	
Maximum	10000	
Mean	1190.324	
Standard Deviation	2176.43	
Variance	4736846	
Coefficient of Variation	1.828435	
Skewness	2.267974	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.304324	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1655.872	
Gamma Statistics		
k hat	0.273504	
k star (bias corrected)	0.270982	
Theta hat	4352.123	
Theta star	4392.629	
nu hat	33.36751	
nu star	33.05981	
5% Approximate Chi Square Value	20.91214	
Adjusted Level of Significance	0.046066	
Adjusted Chi Square Value	20.67787	
Anderson-Darling Test Statistic	1.23957	
Anderson-Darling 5% Critical Value	0.875797	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.131338	
Kolmogrov-Smirnov 5% Critical Value	0.124277	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1881.772	
95% Adjusted Gamma UCL	1903.091	
Lognormal Statistics		
Minimum of log data	-1.83258	
Maximum of log data	9.21034	
Mean of log data	4.522495	
Standard Deviation of log data	3.010094	
Variance of log data	9.060668	
Lilliefors Test Statisitic	0.103469	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	8542.67	
MLE Standard Deviation	792624.3	
MLE Coefficient of Variation	92.78414	
MLE Skewness	799047.3	
MLE Median	92.06503	
MLE 80% Quantile	1171.482	
MLE 90% Quantile	4404.871	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	13018.16	
MLE 99% Quantile	101111	
MVU Estimate of Median	85.46767	
MVU Estimate of Mean	6039.193	
MVU Estimate of Standard Deviation	141623.8	
MVU Estimate of SE of Mean	3886.734	
95% H-UCL	51887.67	
95% Chebyshev (MVUE) UCL	22981.07	
97.5% Chebyshev (MVUE) UCL	30311.84	
99% Chebyshev (MVUE) UCL	44711.71	
Non-parametric Statisitics		
95% CLT UCL	1648.684	
95% Adjusted-CLT UCL	1735.148	
95% Modified-t UCL	1669.359	
95% Jackknife UCL	1655.872	
95% Chebyshev (Mean, Sd) UCL	2404.989	
97.5% Chebyshev (Mean, Sd) UCL	2930.575	
99% Chebyshev (Mean, Sd) UCL	3962.988	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1650.901	
95% Bootstrap-t UCL	1774.389	
95% Hall's Bootstrap UCL	1725.985	
95% Percentile Bootstrap UCL	1654.714	
95% BCA Bootstrap UCL	1738.438	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	30311.84	97.5% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Phenanthrene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Phenanthrene	
Raw Statistics		
Number of Observations	61	
Number of Missing Data	0	
Number of Valid Observations	61	
Number of Distinct Observations	57	
Minimum	0.91	
Maximum	11000	
Mean	1242.755	
Standard Deviation	2000.773	
Variance	4003091	
Coefficient of Variation	1.609949	
Skewness	2.881744	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.267404	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1670.73	
Gamma Statistics		
k hat	0.43318	
k star (bias corrected)	0.422805	
Theta hat	2868.909	
Theta star	2939.308	
nu hat	52.84802	
nu star	51.58227	
5% Approximate Chi Square Value	36.08435	
Adjusted Level of Significance	0.046066	
Adjusted Chi Square Value	35.77057	
Anderson-Darling Test Statistic	0.222746	
Anderson-Darling 5% Critical Value	0.831908	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.080739	
Kolmogrov-Smirnov 5% Critical Value	0.121514	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1776.508	
95% Adjusted Gamma UCL	1792.092	
Lognormal Statistics		
Minimum of log data	-0.09431	
Maximum of log data	9.305651	
Mean of log data	5.625284	
Standard Deviation of log data	2.259126	
Variance of log data	5.10365	
Lilliefors Test Statisitic	0.099344	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	3558.552	
MLE Standard Deviation	45519.09	
MLE Coefficient of Variation	12.79147	
MLE Skewness	2131.335	
MLE Median	277.3511	
MLE 80% Quantile	1871.032	
MLE 90% Quantile	5055.645	

Appendix P, Attachment 3
ProUCL Output - Phenanthrene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	11402.02	
MLE 99% Quantile	53104.17	
MVU Estimate of Median	265.9804	
MVU Estimate of Mean	3111.874	
MVU Estimate of Standard Deviation	23074.19	
MVU Estimate of SE of Mean	1406.509	
95% H-UCL	10779.32	
95% Chebyshev (MVUE) UCL	9242.705	
97.5% Chebyshev (MVUE) UCL	11895.52	
99% Chebyshev (MVUE) UCL	17106.46	
Non-parametric Statisitics		
95% CLT UCL	1664.122	
95% Adjusted-CLT UCL	1765.118	
95% Modified-t UCL	1686.483	
95% Jackknife UCL	1670.73	
95% Chebyshev (Mean, Sd) UCL	2359.386	
97.5% Chebyshev (Mean, Sd) UCL	2842.553	
99% Chebyshev (Mean, Sd) UCL	3791.641	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1674.43	
95% Bootstrap-t UCL	1895.993	
95% Hall's Bootstrap UCL	1945.866	
95% Percentile Bootstrap UCL	1661.454	
95% BCA Bootstrap UCL	1781.136	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	1792.092	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Pyrene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Pyrene	
Raw Statistics		
Number of Observations	61	
Number of Missing Data	0	
Number of Valid Observations	61	
Number of Distinct Observations	52	
Minimum	1.82	
Maximum	8700	
Mean	828.5462	
Standard Deviation	1387.539	
Variance	1925266	
Coefficient of Variation	1.674667	
Skewness	3.692069	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.275647	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1125.347	
Gamma Statistics		
k hat	0.497677	
k star (bias corrected)	0.48413	
Theta hat	1664.826	
Theta star	1711.411	
nu hat	60.71665	
nu star	59.06391	
5% Approximate Chi Square Value	42.39043	
Adjusted Level of Significance	0.046066	
Adjusted Chi Square Value	42.04867	
Anderson-Darling Test Statistic	0.292159	
Anderson-Darling 5% Critical Value	0.816607	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.067476	
Kolmogrov-Smirnov 5% Critical Value	0.120518	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1154.439	
95% Adjusted Gamma UCL	1163.822	
Lognormal Statistics		
Minimum of log data	0.598837	
Maximum of log data	9.071078	
Mean of log data	5.442459	
Standard Deviation of log data	1.998327	
Variance of log data	3.99331	
Lilliefors Test Statisitic	0.10705	
Lilliefors 5% Critical Value	0.113441	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1701.242	
MLE Standard Deviation	12412.55	
MLE Coefficient of Variation	7.29617	
MLE Skewness	410.2936	
MLE Median	231.0095	
MLE 80% Quantile	1250.183	
MLE 90% Quantile	3011.846	

Appendix P, Attachment 3
ProUCL Output - Pyrene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	6183.911	
MLE 99% Quantile	24114.46	
MVU Estimate of Median	223.5666	
MVU Estimate of Mean	1554.263	
MVU Estimate of Standard Deviation	7868.36	
MVU Estimate of SE of Mean	595.7975	
95% H-UCL	4147.004	
95% Chebyshev (MVUE) UCL	4151.284	
97.5% Chebyshev (MVUE) UCL	5275.017	
99% Chebyshev (MVUE) UCL	7482.373	
Non-parametric Statisitics		
95% CLT UCL	1120.765	
95% Adjusted-CLT UCL	1210.5	
95% Modified-t UCL	1139.344	
95% Jackknife UCL	1125.347	
95% Chebyshev (Mean, Sd) UCL	1602.932	
97.5% Chebyshev (Mean, Sd) UCL	1938.009	
99% Chebyshev (Mean, Sd) UCL	2596.203	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1114.75	
95% Bootstrap-t UCL	1296.486	
95% Hall's Bootstrap UCL	1512.152	
95% Percentile Bootstrap UCL	1142.388	
95% BCA Bootstrap UCL	1243.156	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	1163.822	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Selenium

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Selenium	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	0.495	
Maximum	302	
Mean	24.71147	
Standard Deviation	71.77264	
Variance	5151.312	
Coefficient of Variation	2.904426	
Skewness	4.062998	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.335567	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	55.1028	
Gamma Statistics		
k hat	0.457548	
k star (bias corrected)	0.41602	
Theta hat	54.00844	
Theta star	59.39969	
nu hat	15.55664	
nu star	14.14469	
5% Approximate Chi Square Value	6.669377	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	6.137588	
Anderson-Darling Test Statistic	1.946422	
Anderson-Darling 5% Critical Value	0.807238	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.327287	
Kolmogrov-Smirnov 5% Critical Value	0.222165	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	52.40909	
95% Adjusted Gamma UCL	56.95006	
Lognormal Statistics		
Minimum of log data	-0.7032	
Maximum of log data	5.710427	
Mean of log data	1.79962	
Standard Deviation of log data	1.437509	
Variance of log data	2.066432	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.935506	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	16.99358	
MLE Standard Deviation	44.62746	
MLE Coefficient of Variation	2.626137	
MLE Skewness	25.98982	
MLE Median	6.047347	
MLE 80% Quantile	20.37512	
MLE 90% Quantile	38.35245	

Appendix P, Attachment 3
ProUCL Output - Selenium
Quanta Property (Subsurface Soil)

MLE 95% Quantile	64.34902	
MLE 99% Quantile	171.2741	
MVU Estimate of Median	5.689574	
MVU Estimate of Mean	15.26197	
MVU Estimate of Standard Deviation	28.49561	
MVU Estimate of SE of Mean	6.170894	
95% H-UCL	57.70485	
95% Chebyshev (MVUE) UCL	42.16027	
97.5% Chebyshev (MVUE) UCL	53.79919	
99% Chebyshev (MVUE) UCL	76.66159	
Non-parametric Statisitics		
95% CLT UCL	53.34413	
95% Adjusted-CLT UCL	71.67306	
95% Modified-t UCL	57.96175	
95% Jackknife UCL	55.1028	
95% Chebyshev (Mean, Sd) UCL	100.5887	
97.5% Chebyshev (Mean, Sd) UCL	133.4208	
99% Chebyshev (Mean, Sd) UCL	197.9131	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	52.08572	
95% Bootstrap-t UCL	345.478	
95% Hall's Bootstrap UCL	196.1955	
95% Percentile Bootstrap UCL	58.89412	
95% BCA Bootstrap UCL	77.84088	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	42.16027	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Tetrachloroethene
Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Tetrachloroethene	
Raw Statistics		
Number of Observations	45	
Number of Missing Data	0	
Number of Valid Observations	45	
Number of Distinct Observations	36	
Minimum	0.003	
Maximum	15	
Mean	1.025844	
Standard Deviation	2.412261	
Variance	5.819004	
Coefficient of Variation	2.351488	
Skewness	4.776235	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.44811	
Shapiro-Wilk 5% Critical Value	0.945	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.630053	
Gamma Statistics		
k hat	0.375932	
k star (bias corrected)	0.365684	
Theta hat	2.728806	
Theta star	2.805273	
nu hat	33.83385	
nu star	32.91159	
5% Approximate Chi Square Value	20.79414	
Adjusted Level of Significance	0.044667	
Adjusted Chi Square Value	20.47415	
Anderson-Darling Test Statistic	1.063345	
Anderson-Darling 5% Critical Value	0.8435	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.147117	
Kolmogrov-Smirnov 5% Critical Value	0.141742	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.623639	
95% Adjusted Gamma UCL	1.649015	
Lognormal Statistics		
Minimum of log data	-5.80914	
Maximum of log data	2.70805	
Mean of log data	-1.74255	
Standard Deviation of log data	2.307197	
Variance of log data	5.323158	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.908793	
Shapiro-Wilk 5% Critical Value	0.945	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.50686	
MLE Standard Deviation	35.80778	
MLE Coefficient of Variation	14.28392	
MLE Skewness	2957.204	
MLE Median	0.175074	
MLE 80% Quantile	1.230024	
MLE 90% Quantile	3.394648	

Appendix P, Attachment 3
ProUCL Output - Tetrachloroethene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	7.789611	
MLE 99% Quantile	37.48692	
MVU Estimate of Median	0.165006	
MVU Estimate of Mean	2.076158	
MVU Estimate of Standard Deviation	14.46153	
MVU Estimate of SE of Mean	1.06555	
95% H-UCL	10.26945	
95% Chebyshev (MVUE) UCL	6.720781	
97.5% Chebyshev (MVUE) UCL	8.730514	
99% Chebyshev (MVUE) UCL	12.67824	
Non-parametric Statisitics		
95% CLT UCL	1.617332	
95% Adjusted-CLT UCL	1.890908	
95% Modified-t UCL	1.672725	
95% Jackknife UCL	1.630053	
95% Chebyshev (Mean, Sd) UCL	2.593299	
97.5% Chebyshev (Mean, Sd) UCL	3.271537	
99% Chebyshev (Mean, Sd) UCL	4.603806	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.621714	
95% Bootstrap-t UCL	2.480502	
95% Hall's Bootstrap UCL	3.700141	
95% Percentile Bootstrap UCL	1.690511	
95% BCA Bootstrap UCL	1.932722	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	4.603806	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Thallium

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Thallium	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	14	
Minimum	0.5	
Maximum	36.2	
Mean	7.70625	
Standard Deviation	10.82602	
Variance	117.2026	
Coefficient of Variation	1.404836	
Skewness	1.947678	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.696781	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	12.45089	
Gamma Statistics		
k hat	0.640051	
k star (bias corrected)	0.561708	
Theta hat	12.04006	
Theta star	13.71932	
nu hat	20.48162	
nu star	17.97465	
5% Approximate Chi Square Value	9.371171	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	8.670442	
Anderson-Darling Test Statistic	0.708634	
Anderson-Darling 5% Critical Value	0.784116	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.191218	
Kolmogrov-Smirnov 5% Critical Value	0.22497	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	14.7812	
95% Adjusted Gamma UCL	15.97579	
Lognormal Statistics		
Minimum of log data	-0.69315	
Maximum of log data	3.589059	
Mean of log data	1.085739	
Standard Deviation of log data	1.510302	
Variance of log data	2.281011	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.89286	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	9.265002	
MLE Standard Deviation	27.46345	
MLE Coefficient of Variation	2.964214	
MLE Skewness	34.93791	
MLE Median	2.961627	
MLE 80% Quantile	10.61156	
MLE 90% Quantile	20.62443	

Appendix P, Attachment 3
ProUCL Output - Thallium
Quanta Property (Subsurface Soil)

MLE 95% Quantile	35.52315	
MLE 99% Quantile	99.35508	
MVU Estimate of Median	2.757033	
MVU Estimate of Mean	8.135078	
MVU Estimate of Standard Deviation	16.09689	
MVU Estimate of SE of Mean	3.546328	
95% H-UCL	37.42837	
95% Chebyshev (MVUE) UCL	23.59316	
97.5% Chebyshev (MVUE) UCL	30.28189	
99% Chebyshev (MVUE) UCL	43.42059	
Non-parametric Statisitics		
95% CLT UCL	12.15805	
95% Adjusted-CLT UCL	13.56619	
95% Modified-t UCL	12.67053	
95% Jackknife UCL	12.45089	
95% Chebyshev (Mean, Sd) UCL	19.50363	
97.5% Chebyshev (Mean, Sd) UCL	24.60836	
99% Chebyshev (Mean, Sd) UCL	34.63563	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	11.8782	
95% Bootstrap-t UCL	18.80107	
95% Hall's Bootstrap UCL	32.29707	
95% Percentile Bootstrap UCL	12.54063	
95% BCA Bootstrap UCL	13.54063	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	14.7812	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Toluene

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Toluene	
Raw Statistics		
Number of Observations	50	
Number of Missing Data	0	
Number of Valid Observations	50	
Number of Distinct Observations	45	
Minimum	0.002	
Maximum	95	
Mean	7.926938	
Standard Deviation	18.94366	
Variance	358.8623	
Coefficient of Variation	2.389783	
Skewness	3.217313	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.488369	
Shapiro-Wilk 5% Critical Value	0.947	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	12.41848	
Gamma Statistics		
k hat	0.244881	
k star (bias corrected)	0.243522	
Theta hat	32.37055	
Theta star	32.55126	
nu hat	24.48812	
nu star	24.35217	
5% Approximate Chi Square Value	14.11505	
Adjusted Level of Significance	0.0452	
Adjusted Chi Square Value	13.8828	
Anderson-Darling Test Statistic	1.587738	
Anderson-Darling 5% Critical Value	0.887203	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.14764	
Kolmogrov-Smirnov 5% Critical Value	0.137642	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	13.67605	
95% Adjusted Gamma UCL	13.90484	
Lognormal Statistics		
Minimum of log data	-6.21461	
Maximum of log data	4.553877	
Mean of log data	-0.83996	
Standard Deviation of log data	3.022048	
Variance of log data	9.132774	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.95239	
Shapiro-Wilk 5% Critical Value	0.947	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	41.53029	
MLE Standard Deviation	3994.829	
MLE Coefficient of Variation	96.19072	
MLE Skewness	890308	
MLE Median	0.431726	
MLE 80% Quantile	5.549272	
MLE 90% Quantile	20.97577	

Appendix P, Attachment 3
ProUCL Output - Toluene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	62.25912	
MLE 99% Quantile	487.5144	
MVU Estimate of Median	0.39398	
MVU Estimate of Mean	27.40406	
MVU Estimate of Standard Deviation	551.2413	
MVU Estimate of SE of Mean	18.57997	
95% H-UCL	359.8114	
95% Chebyshev (MVUE) UCL	108.3923	
97.5% Chebyshev (MVUE) UCL	143.436	
99% Chebyshev (MVUE) UCL	212.2725	
Non-parametric Statisitics		
95% CLT UCL	12.33356	
95% Adjusted-CLT UCL	13.63603	
95% Modified-t UCL	12.62164	
95% Jackknife UCL	12.41848	
95% Chebyshev (Mean, Sd) UCL	19.60459	
97.5% Chebyshev (Mean, Sd) UCL	24.65753	
99% Chebyshev (Mean, Sd) UCL	34.58303	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	12.42838	
95% Bootstrap-t UCL	15.43555	
95% Hall's Bootstrap UCL	13.80624	
95% Percentile Bootstrap UCL	12.75469	
95% BCA Bootstrap UCL	13.691	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	143.436	97.5% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Trichloroethene
Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Trichloroethene	
Raw Statistics		
Number of Observations	46	
Number of Missing Data	0	
Number of Valid Observations	46	
Number of Distinct Observations	38	
Minimum	0.0025	
Maximum	15	
Mean	1.012576	
Standard Deviation	2.386963	
Variance	5.70E+00	
Coefficient of Variation	2.357317	
Skewness	4.832377	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.444918	
Shapiro-Wilk 5% Critical Value	0.945	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.603631	
Gamma Statistics		
k hat	0.381094	
k star (bias corrected)	0.370733	
Theta hat	2.657024	
Theta star	2.731282	
nu hat	35.06065	
nu star	34.10742	
5% Approximate Chi Square Value	21.74808	
Adjusted Level of Significance	0.044783	
Adjusted Chi Square Value	21.42765	
Anderson-Darling Test Statistic	1.101034	
Anderson-Darling 5% Critical Value	0.842376	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.13805	
Kolmogrov-Smirnov 5% Critical Value	0.140228	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	1.588019	
95% Adjusted Gamma UCL	1.611766	
Lognormal Statistics		
Minimum of log data	-5.99146	
Maximum of log data	2.70805	
Mean of log data	-1.72777	
Standard Deviation of log data	2.296174	
Variance of log data	5.272413	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.907262	
Shapiro-Wilk 5% Critical Value	0.945	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.480451	
MLE Standard Deviation	34.5385	
MLE Coefficient of Variation	13.92428	
MLE Skewness	2741.491	
MLE Median	0.177681	
MLE 80% Quantile	1.236767	
MLE 90% Quantile	3.396743	

Appendix P, Attachment 3
ProUCL Output - Trichloroethene
Quanta Property (Subsurface Soil)

MLE 95% Quantile	7.763548	
MLE 99% Quantile	37.08207	
MVU Estimate of Median	0.167773	
MVU Estimate of Mean	2.067563	
MVU Estimate of Standard Deviation	14.33535	
MVU Estimate of SE of Mean	1.047704	
95% H-UCL	9.826694	
95% Chebyshev (MVUE) UCL	6.634398	
97.5% Chebyshev (MVUE) UCL	8.61047	
99% Chebyshev (MVUE) UCL	12.49208	
Non-parametric Statisitics		
95% CLT UCL	1.591463	
95% Adjusted-CLT UCL	1.859398	
95% Modified-t UCL	1.645423	
95% Jackknife UCL	1.603631	
95% Chebyshev (Mean, Sd) UCL	2.54664	
97.5% Chebyshev (Mean, Sd) UCL	3.210431	
99% Chebyshev (Mean, Sd) UCL	4.51432	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.601168	
95% Bootstrap-t UCL	2.36324	
95% Hall's Bootstrap UCL	3.666832	
95% Percentile Bootstrap UCL	1.622272	
95% BCA Bootstrap UCL	2.002217	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	1.611766	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Vanadium

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Vanadium	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	2.00E+00	
Maximum	8.22E+01	
Mean	3.55E+01	
Standard Deviation	2.44E+01	
Variance	595.7103	
Coefficient of Variation	0.687185	
Skewness	0.328123	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.945232	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	4.59E+01	
Gamma Statistics		
k hat	1.592056	
k star (bias corrected)	1.350321	
Theta hat	2.23E+01	
Theta star	2.63E+01	
nu hat	54.12991	
nu star	45.9109	
5% Approximate Chi Square Value	31.36266	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	30.10448	
Anderson-Darling Test Statistic	0.389621	
Anderson-Darling 5% Critical Value	0.754513	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.166283	
Kolmogrov-Smirnov 5% Critical Value	0.212698	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	5.20E+01	
95% Adjusted Gamma UCL	5.42E+01	
Lognormal Statistics		
Minimum of log data	0.693147	
Maximum of log data	4.409155	
Mean of log data	3.224209	
Standard Deviation of log data	1.002373	
Variance of log data	1.004752	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.902955	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	4.15E+01	
MLE Standard Deviation	5.47E+01	
MLE Coefficient of Variation	1.32E+00	
MLE Skewness	6.23E+00	
MLE Median	2.51E+01	
MLE 80% Quantile	5.86E+01	
MLE 90% Quantile	9.11E+01	

Appendix P, Attachment 3
ProUCL Output - Vanadium
Quanta Property (Subsurface Soil)

MLE 95% Quantile	1.31E+02	
MLE 99% Quantile	2.59E+02	
MVU Estimate of Median	2.44E+01	
MVU Estimate of Mean	3.99E+01	
MVU Estimate of Standard Deviation	4.57E+01	
MVU Estimate of SE of Mean	1.07E+01	
95% H-UCL	81.45702	
95% Chebyshev (MVUE) UCL	8.65E+01	
97.5% Chebyshev (MVUE) UCL	1.07E+02	
99% Chebyshev (MVUE) UCL	1.46E+02	
Non-parametric Statisitics		
95% CLT UCL	4.53E+01	
95% Adjusted-CLT UCL	45.75791	
95% Modified-t UCL	45.93111	
95% Jackknife UCL	4.59E+01	
95% Chebyshev (Mean, Sd) UCL	6.13E+01	
97.5% Chebyshev (Mean, Sd) UCL	7.25E+01	
99% Chebyshev (Mean, Sd) UCL	9.44E+01	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.49E+01	
95% Bootstrap-t UCL	46.32932	
95% Hall's Bootstrap UCL	46.18932	
95% Percentile Bootstrap UCL	4.49E+01	
95% BCA Bootstrap UCL	4.57E+01	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	4.59E+01	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Xylene (Total)	
Raw Statistics		
Number of Observations	44	
Number of Missing Data	0	
Number of Valid Observations	44	
Number of Distinct Observations	38	
Minimum	1.00E-03	
Maximum	2.30E+02	
Mean	2.34E+01	
Standard Deviation	5.19E+01	
Variance	2691.832	
Coefficient of Variation	2.217457	
Skewness	2.75131	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.522767	
Shapiro-Wilk 5% Critical Value	0.944	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	3.65E+01	
Gamma Statistics		
k hat	0.211994	
k star (bias corrected)	0.212691	
Theta hat	1.10E+02	
Theta star	1.10E+02	
nu hat	18.65546	
nu star	18.71683	
5% Approximate Chi Square Value	9.90947	
Adjusted Level of Significance	0.044545	
Adjusted Chi Square Value	9.691402	
Anderson-Darling Test Statistic	1.259992	
Anderson-Darling 5% Critical Value	0.89963	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.155324	
Kolmogrov-Smirnov 5% Critical Value	0.147403	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	4.42E+01	
95% Adjusted Gamma UCL	4.52E+01	
Lognormal Statistics		
Minimum of log data	-6.90776	
Maximum of log data	5.438079	
Mean of log data	-0.28724	
Standard Deviation of log data	3.560384	
Variance of log data	12.67633	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.940297	
Shapiro-Wilk 5% Critical Value	0.944	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	4.25E+02	
MLE Standard Deviation	2.40E+05	
MLE Coefficient of Variation	5.66E+02	
MLE Skewness	1.81E+08	
MLE Median	7.50E-01	
MLE 80% Quantile	1.52E+01	
MLE 90% Quantile	7.28E+01	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
Quanta Property (Subsurface Soil)

MLE 95% Quantile	2.62E+02	
MLE 99% Quantile	2.96E+03	
MVU Estimate of Median	6.49E-01	
MVU Estimate of Mean	1.93E+02	
MVU Estimate of Standard Deviation	7.08E+03	
MVU Estimate of SE of Mean	1.55E+02	
95% H-UCL	10770.34	
95% Chebyshev (MVUE) UCL	8.69E+02	
97.5% Chebyshev (MVUE) UCL	1.16E+03	
99% Chebyshev (MVUE) UCL	1.74E+03	
Non-parametric Statisitics		
95% CLT UCL	3.63E+01	
95% Adjusted-CLT UCL	39.72941	
95% Modified-t UCL	37.08689	
95% Jackknife UCL	3.65E+01	
95% Chebyshev (Mean, Sd) UCL	5.75E+01	
97.5% Chebyshev (Mean, Sd) UCL	7.22E+01	
99% Chebyshev (Mean, Sd) UCL	1.01E+02	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	3.56E+01	
95% Bootstrap-t UCL	43.23027	
95% Hall's Bootstrap UCL	37.91089	
95% Percentile Bootstrap UCL	3.66E+01	
95% BCA Bootstrap UCL	4.12E+01	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	3.79E+01	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Zinc

Quanta Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Qnta_newFD_ss_mix.xls	
Variable:	Zinc	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	16	
Minimum	65	
Maximum	4830	
Mean	1017.125	
Standard Deviation	1494.462	
Variance	2233417	
Coefficient of Variation	1.4693	
Skewness	1.761871	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.661623	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1672.092	
Gamma Statistics		
k hat	0.67869	
k star (bias corrected)	0.593102	
Theta hat	1498.66	
Theta star	1714.924	
nu hat	21.71807	
nu star	18.97927	
5% Approximate Chi Square Value	10.10081	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	9.369643	
Anderson-Darling Test Statistic	1.464172	
Anderson-Darling 5% Critical Value	0.780744	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.295095	
Kolmogrov-Smirnov 5% Critical Value	0.224355	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1911.163	
95% Adjusted Gamma UCL	2060.301	
Lognormal Statistics		
Minimum of log data	4.174387	
Maximum of log data	8.482602	
Mean of log data	6.030404	
Standard Deviation of log data	1.317916	
Variance of log data	1.736904	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.880622	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	991.1404	
MLE Standard Deviation	2144.103	
MLE Coefficient of Variation	2.163268	
MLE Skewness	16.61331	
MLE Median	415.8832	
MLE 80% Quantile	1266.54	
MLE 90% Quantile	2261.824	

Appendix P, Attachment 3
ProUCL Output - Zinc
Quanta Property (Subsurface Soil)

MLE 95% Quantile	3635.045	
MLE 99% Quantile	8918.454	
MVU Estimate of Median	393.8427	
MVU Estimate of Mean	906.3924	
MVU Estimate of Standard Deviation	1477.014	
MVU Estimate of SE of Mean	339.7276	
95% H-UCL	2984.322	
95% Chebyshev (MVUE) UCL	2387.231	
97.5% Chebyshev (MVUE) UCL	3027.991	
99% Chebyshev (MVUE) UCL	4286.639	
Non-parametric Statisitics		
95% CLT UCL	1631.668	
95% Adjusted-CLT UCL	1807.509	
95% Modified-t UCL	1699.519	
95% Jackknife UCL	1672.092	
95% Chebyshev (Mean, Sd) UCL	2645.677	
97.5% Chebyshev (Mean, Sd) UCL	3350.353	
99% Chebyshev (Mean, Sd) UCL	4734.553	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1612.514	
95% Bootstrap-t UCL	2030.133	
95% Hall's Bootstrap UCL	1734.453	
95% Percentile Bootstrap UCL	1669.313	
95% BCA Bootstrap UCL	1789.938	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	4734.553	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 1,1'-Biphenyl
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	1,1'-Biphenyl	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	31	
Minimum	1	
Maximum	1100	
Mean	88.85714	
Standard Deviation	171.9196	
Variance	29556.36	
Coefficient of Variation	1.934787	
Skewness	5.205917	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.4376	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	133.5001	
Gamma Statistics		
k hat	0.522823	
k star (bias corrected)	0.501352	
Theta hat	169.9564	
Theta star	177.2352	
nu hat	43.91714	
nu star	42.11353	
5% Approximate Chi Square Value	28.23467	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	27.82923	
Anderson-Darling Test Statistic	1.383029	
Anderson-Darling 5% Critical Value	0.811058	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.141895	
Kolmogrov-Smirnov 5% Critical Value	0.144033	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	132.5352	
95% Adjusted Gamma UCL	134.4661	
Lognormal Statistics		
Minimum of log data	0	
Maximum of log data	7.003065	
Mean of log data	3.280461	
Standard Deviation of log data	1.854021	
Variance of log data	3.437395	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.836004	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	148.2883	
MLE Standard Deviation	813.6398	
MLE Coefficient of Variation	5.486877	
MLE Skewness	181.6476	
MLE Median	26.58803	
MLE 80% Quantile	127.3716	
MLE 90% Quantile	287.9764	

Appendix P, Attachment 3
ProUCL Output - 1,1'-Biphenyl
Quanta Property (Groundwater)

MLE 95% Quantile	561.3396	
MLE 99% Quantile	1984.088	
MVU Estimate of Median	25.52097	
MVU Estimate of Mean	134.0913	
MVU Estimate of Standard Deviation	503.4254	
MVU Estimate of SE of Mean	53.46021	
95% H-UCL	402.8181	
95% Chebyshev (MVUE) UCL	367.119	
97.5% Chebyshev (MVUE) UCL	467.9502	
99% Chebyshev (MVUE) UCL	666.0137	
Non-parametric Statisitics		
95% CLT UCL	132.4915	
95% Adjusted-CLT UCL	155.261	
95% Modified-t UCL	137.0517	
95% Jackknife UCL	133.5001	
95% Chebyshev (Mean, Sd) UCL	204.489	
97.5% Chebyshev (Mean, Sd) UCL	254.5231	
99% Chebyshev (Mean, Sd) UCL	352.8052	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	131.7121	
95% Bootstrap-t UCL	197.6675	
95% Hall's Bootstrap UCL	314.2779	
95% Percentile Bootstrap UCL	140.1357	
95% BCA Bootstrap UCL	168.7262	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	132.5352	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 1,4-Dichlorobenzene

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	1,4-Dichlorobenzene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	12	
Minimum	0.25	
Maximum	50	
Mean	12.2631	
Standard Deviation	13.2285	
Variance	174.9933	
Coefficient of Variation	1.078725	
Skewness	1.180073	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.745736	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	15.69819	
Gamma Statistics		
k hat	0.645395	
k star (bias corrected)	0.615169	
Theta hat	19.0009	
Theta star	19.93452	
nu hat	54.21321	
nu star	51.67417	
5% Approximate Chi Square Value	36.16131	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	35.6986	
Anderson-Darling Test Statistic	1.311235	
Anderson-Darling 5% Critical Value	0.79934	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.185501	
Kolmogrov-Smirnov 5% Critical Value	0.142815	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	17.52385	
95% Adjusted Gamma UCL	17.75098	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	3.912023	
Mean of log data	1.559357	
Standard Deviation of log data	1.69117	
Variance of log data	2.860054	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.830123	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	19.87344	
MLE Standard Deviation	80.63444	
MLE Coefficient of Variation	4.057398	
MLE Skewness	78.967	
MLE Median	4.755762	
MLE 80% Quantile	19.85379	
MLE 90% Quantile	41.78384	

Appendix P, Attachment 3
ProUCL Output - 1,4-Dichlorobenzene
Quanta Property (Groundwater)

MLE 95% Quantile	76.80969	
MLE 99% Quantile	242.9892	
MVU Estimate of Median	4.596438	
MVU Estimate of Mean	18.41917	
MVU Estimate of Standard Deviation	56.14237	
MVU Estimate of SE of Mean	6.518028	
95% H-UCL	46.58608	
95% Chebyshev (MVUE) UCL	46.83059	
97.5% Chebyshev (MVUE) UCL	59.12424	
99% Chebyshev (MVUE) UCL	83.27272	
Non-parametric Statisitics		
95% CLT UCL	15.62057	
95% Adjusted-CLT UCL	16.01772	
95% Modified-t UCL	15.76014	
95% Jackknife UCL	15.69819	
95% Chebyshev (Mean, Sd) UCL	21.16049	
97.5% Chebyshev (Mean, Sd) UCL	25.0104	
99% Chebyshev (Mean, Sd) UCL	32.5728	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	15.61058	
95% Bootstrap-t UCL	16.21806	
95% Hall's Bootstrap UCL	16.10323	
95% Percentile Bootstrap UCL	15.64524	
95% BCA Bootstrap UCL	16.39286	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	32.5728	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 2,4-Dimethylphenol

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	2,4-Dimethylphenol	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	31	
Minimum	2.5	
Maximum	7400	
Mean	901.219	
Standard Deviation	1819.877	
Variance	3311951	
Coefficient of Variation	2.01935	
Skewness	2.598989	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.541398	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1373.793	
Gamma Statistics		
k hat	0.299779	
k star (bias corrected)	0.294239	
Theta hat	3006.283	
Theta star	3062.883	
nu hat	25.1814	
nu star	24.71606	
5% Approximate Chi Square Value	14.39273	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	14.11135	
Anderson-Darling Test Statistic	1.56245	
Anderson-Darling 5% Critical Value	0.859471	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.174853	
Kolmogrov-Smirnov 5% Critical Value	0.148162	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1547.627	
95% Adjusted Gamma UCL	1578.487	
Lognormal Statistics		
Minimum of log data	0.916291	
Maximum of log data	8.909235	
Mean of log data	4.503222	
Standard Deviation of log data	2.571353	
Variance of log data	6.611858	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.854042	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2463.037	
MLE Standard Deviation	67131.36	
MLE Coefficient of Variation	27.25552	
MLE Skewness	20328.9	
MLE Median	90.3076	
MLE 80% Quantile	793.1522	
MLE 90% Quantile	2458.755	

Appendix P, Attachment 3
ProUCL Output - 2,4-Dimethylphenol
Quanta Property (Groundwater)

MLE 95% Quantile	6204.919	
MLE 99% Quantile	35745.84	
MVU Estimate of Median	83.45973	
MVU Estimate of Mean	1854.291	
MVU Estimate of Standard Deviation	17649.81	
MVU Estimate of SE of Mean	1102.705	
95% H-UCL	14984.64	
95% Chebyshev (MVUE) UCL	6660.869	
97.5% Chebyshev (MVUE) UCL	8740.679	
99% Chebyshev (MVUE) UCL	12826.06	
Non-parametric Statisitics		
95% CLT UCL	1363.115	
95% Adjusted-CLT UCL	1483.446	
95% Modified-t UCL	1392.562	
95% Jackknife UCL	1373.793	
95% Chebyshev (Mean, Sd) UCL	2125.255	
97.5% Chebyshev (Mean, Sd) UCL	2654.896	
99% Chebyshev (Mean, Sd) UCL	3695.274	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1355.594	
95% Bootstrap-t UCL	1645.258	
95% Hall's Bootstrap UCL	1394.481	
95% Percentile Bootstrap UCL	1410.974	
95% BCA Bootstrap UCL	1530.786	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	3695.274	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 2-Methylnaphthalene

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	35	
Minimum	1.1	
Maximum	8400	
Mean	802.3381	
Standard Deviation	1326.852	
Variance	1760536	
Coefficient of Variation	1.653732	
Skewness	4.78272	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.498294	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1146.887	
Gamma Statistics		
k hat	0.401419	
k star (bias corrected)	0.388619	
Theta hat	1998.754	
Theta star	2064.586	
nu hat	33.71921	
nu star	32.64403	
5% Approximate Chi Square Value	20.5813	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	20.23935	
Anderson-Darling Test Statistic	2.314123	
Anderson-Darling 5% Critical Value	0.835979	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.201295	
Kolmogrov-Smirnov 5% Critical Value	0.14618	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1272.589	
95% Adjusted Gamma UCL	1294.09	
Lognormal Statistics		
Minimum of log data	0.09531	
Maximum of log data	9.035987	
Mean of log data	5.049187	
Standard Deviation of log data	2.661723	
Variance of log data	7.084771	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.755478	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	5386.078	
MLE Standard Deviation	186007	
MLE Coefficient of Variation	34.53477	
MLE Skewness	41291.5	
MLE Median	155.8957	
MLE 80% Quantile	1477.85	
MLE 90% Quantile	4767.139	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
Quanta Property (Groundwater)

MLE 95% Quantile	12428.18	
MLE 99% Quantile	76142.03	
MVU Estimate of Median	143.2625	
MVU Estimate of Mean	3920.856	
MVU Estimate of Standard Deviation	42010.9	
MVU Estimate of SE of Mean	2422.602	
95% H-UCL	36935.91	
95% Chebyshev (MVUE) UCL	14480.73	
97.5% Chebyshev (MVUE) UCL	19050	
99% Chebyshev (MVUE) UCL	28025.44	
Non-parametric Statisitics		
95% CLT UCL	1139.102	
95% Adjusted-CLT UCL	1300.548	
95% Modified-t UCL	1172.069	
95% Jackknife UCL	1146.887	
95% Chebyshev (Mean, Sd) UCL	1694.769	
97.5% Chebyshev (Mean, Sd) UCL	2080.925	
99% Chebyshev (Mean, Sd) UCL	2839.453	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1137.99	
95% Bootstrap-t UCL	1501.425	
95% Hall's Bootstrap UCL	2560.168	
95% Percentile Bootstrap UCL	1160.3	
95% BCA Bootstrap UCL	1346.314	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	2839.453	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 2-Methylphenol
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	2-Methylphenol	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	33	
Minimum	1	
Maximum	4200	
Mean	419.3976	
Standard Deviation	999.1754	
Variance	9.98E+05	
Coefficient of Variation	2.382406	
Skewness	2.901293	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.4655	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	678.8571	
Gamma Statistics		
k hat	0.286439	
k star (bias corrected)	0.281852	
Theta hat	1464.177	
Theta star	1488.006	
nu hat	24.06088	
nu star	23.67558	
5% Approximate Chi Square Value	13.60051	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	13.32775	
Anderson-Darling Test Statistic	2.537299	
Anderson-Darling 5% Critical Value	0.865405	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.175159	
Kolmogrov-Smirnov 5% Critical Value	0.148553	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	730.0815	
95% Adjusted Gamma UCL	745.0232	
Lognormal Statistics		
Minimum of log data	0	
Maximum of log data	8.34284	
Mean of log data	3.613221	
Standard Deviation of log data	2.408399	
Variance of log data	5.800385	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.860677	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	674.1238	
MLE Standard Deviation	12235.42	
MLE Coefficient of Variation	18.15011	
MLE Skewness	6033.582	
MLE Median	37.08533	
MLE 80% Quantile	283.8138	
MLE 90% Quantile	818.9425	

Appendix P, Attachment 3
ProUCL Output - 2-Methylphenol
Quanta Property (Groundwater)

MLE 95% Quantile	1948.933	
MLE 99% Quantile	10048.28	
MVU Estimate of Median	34.60707	
MVU Estimate of Mean	535.6984	
MVU Estimate of Standard Deviation	4120.498	
MVU Estimate of SE of Mean	295.4956	
95% H-UCL	3338.172	
95% Chebyshev (MVUE) UCL	1823.734	
97.5% Chebyshev (MVUE) UCL	2381.068	
99% Chebyshev (MVUE) UCL	3475.842	
Non-parametric Statisitics		
95% CLT UCL	672.9948	
95% Adjusted-CLT UCL	746.7452	
95% Modified-t UCL	690.3607	
95% Jackknife UCL	678.8571	
95% Chebyshev (Mean, Sd) UCL	1091.436	
97.5% Chebyshev (Mean, Sd) UCL	1382.227	
99% Chebyshev (Mean, Sd) UCL	1953.431	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	667.6514	
95% Bootstrap-t UCL	836.5246	
95% Hall's Bootstrap UCL	666.4306	
95% Percentile Bootstrap UCL	697.9976	
95% BCA Bootstrap UCL	766.819	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1953.431	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 4-Methylphenol
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	4-Methylphenol	
Raw Statistics		
Number of Observations	37	
Number of Missing Data	0	
Number of Valid Observations	37	
Number of Distinct Observations	23	
Minimum	2.50E+00	
Maximum	5.80E+03	
Mean	5.58E+02	
Standard Deviation	1.36E+03	
Variance	1836882	
Coefficient of Variation	2.427471	
Skewness	2.812087	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.482236	
Shapiro-Wilk 5% Critical Value	0.936	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	9.34E+02	
Gamma Statistics		
k hat	0.24046	
k star (bias corrected)	0.238981	
Theta hat	2.32E+03	
Theta star	2.34E+03	
nu hat	17.79406	
nu star	17.68463	
5% Approximate Chi Square Value	9.161986	
Adjusted Level of Significance	0.0431	
Adjusted Chi Square Value	8.895138	
Anderson-Darling Test Statistic	3.677791	
Anderson-Darling 5% Critical Value	0.883081	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.255708	
Kolmogrov-Smirnov 5% Critical Value	0.159274	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.08E+03	
95% Adjusted Gamma UCL	1.11E+03	
Lognormal Statistics		
Minimum of log data	0.916291	
Maximum of log data	8.665613	
Mean of log data	3.352512	
Standard Deviation of log data	2.557175	
Variance of log data	6.539145	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.844478	
Shapiro-Wilk 5% Critical Value	0.936	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	7.52E+02	
MLE Standard Deviation	1.98E+04	
MLE Coefficient of Variation	2.63E+01	
MLE Skewness	1.82E+04	
MLE Median	2.86E+01	
MLE 80% Quantile	2.48E+02	
MLE 90% Quantile	7.64E+02	

Appendix P, Attachment 3
ProUCL Output - 4-Methylphenol
Quanta Property (Groundwater)

MLE 95% Quantile	1.92E+03	
MLE 99% Quantile	1.09E+04	
MVU Estimate of Median	2.62E+01	
MVU Estimate of Mean	5.51E+02	
MVU Estimate of Standard Deviation	4.75E+03	
MVU Estimate of SE of Mean	3.37E+02	
95% H-UCL	5264.43	
95% Chebyshev (MVUE) UCL	2.02E+03	
97.5% Chebyshev (MVUE) UCL	2.65E+03	
99% Chebyshev (MVUE) UCL	3.90E+03	
Non-parametric Statisitics		
95% CLT UCL	9.25E+02	
95% Adjusted-CLT UCL	1034.883	
95% Modified-t UCL	951.6662	
95% Jackknife UCL	9.34E+02	
95% Chebyshev (Mean, Sd) UCL	1.53E+03	
97.5% Chebyshev (Mean, Sd) UCL	1.95E+03	
99% Chebyshev (Mean, Sd) UCL	2.78E+03	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	9.11E+02	
95% Bootstrap-t UCL	1224.975	
95% Hall's Bootstrap UCL	961.9329	
95% Percentile Bootstrap UCL	9.44E+02	
95% BCA Bootstrap UCL	1.02E+03	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	2.78E+03	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Acenaphthene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	33	
Minimum	2.48	
Maximum	3.30E+03	
Mean	2.36E+02	
Standard Deviation	5.01E+02	
Variance	250803.6	
Coefficient of Variation	2.122907	
Skewness	5.847153	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.35666	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	3.66E+02	
Gamma Statistics		
k hat	0.659288	
k star (bias corrected)	0.628069	
Theta hat	357.8165	
Theta star	375.6023	
nu hat	55.38022	
nu star	52.75783	
5% Approximate Chi Square Value	37.06976	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	36.60091	
Anderson-Darling Test Statistic	1.579455	
Anderson-Darling 5% Critical Value	0.798012	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.14855	
Kolmogrov-Smirnov 5% Critical Value	0.142677	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	335.7399	
95% Adjusted Gamma UCL	340.0407	
Lognormal Statistics		
Minimum of log data	0.908259	
Maximum of log data	8.101678	
Mean of log data	4.538977	
Standard Deviation of log data	1.594593	
Variance of log data	2.542726	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.83445	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	333.7324	
MLE Standard Deviation	1142.237	
MLE Coefficient of Variation	3.422613	
MLE Skewness	50.36128	
MLE Median	93.59497	
MLE 80% Quantile	360.1092	
MLE 90% Quantile	726.3472	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
Quanta Property (Groundwater)

MLE 95% Quantile	1289.592	
MLE 99% Quantile	3819.975	
MVU Estimate of Median	90.80232	
MVU Estimate of Mean	313.1387	
MVU Estimate of Standard Deviation	843.5854	
MVU Estimate of SE of Mean	102.6256	
95% H-UCL	721.2698	
95% Chebyshev (MVUE) UCL	760.4734	
97.5% Chebyshev (MVUE) UCL	954.0355	
99% Chebyshev (MVUE) UCL	1334.251	
Non-parametric Statisitics		
95% CLT UCL	3.63E+02	
95% Adjusted-CLT UCL	437.5089	
95% Modified-t UCL	377.5697	
95% Jackknife UCL	3.66E+02	
95% Chebyshev (Mean, Sd) UCL	5.73E+02	
97.5% Chebyshev (Mean, Sd) UCL	7.18E+02	
99% Chebyshev (Mean, Sd) UCL	1.00E+03	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	3.61E+02	
95% Bootstrap-t UCL	677.5755	
95% Hall's Bootstrap UCL	868.998	
95% Percentile Bootstrap UCL	3.84E+02	
95% BCA Bootstrap UCL	4.72E+02	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1.00E+03	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Acenaphthylene
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Acenaphthylene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	26	
Minimum	0.1	
Maximum	550	
Mean	55.82048	
Standard Deviation	117.0811	
Variance	13707.98	
Coefficient of Variation	2.097458	
Skewness	3.201829	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.518129	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	86.22335	
Gamma Statistics		
k hat	0.362192	
k star (bias corrected)	0.352194	
Theta hat	154.1185	
Theta star	158.4935	
nu hat	30.42413	
nu star	29.58431	
5% Approximate Chi Square Value	18.16435	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	17.84482	
Anderson-Darling Test Statistic	2.020579	
Anderson-Darling 5% Critical Value	0.845027	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.228214	
Kolmogrov-Smirnov 5% Critical Value	0.146944	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	90.9149	
95% Adjusted Gamma UCL	92.54286	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	6.309918	
Mean of log data	2.17588	
Standard Deviation of log data	2.15368	
Variance of log data	4.638337	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.89888	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	89.57252	
MLE Standard Deviation	906.2875	
MLE Coefficient of Variation	10.11792	
MLE Skewness	1066.148	
MLE Median	8.809935	
MLE 80% Quantile	54.36603	
MLE 90% Quantile	140.2405	

Appendix P, Attachment 3
ProUCL Output - Acenaphthylene
Quanta Property (Groundwater)

MLE 95% Quantile	304.5038	
MLE 99% Quantile	1319.937	
MVU Estimate of Median	8.33606	
MVU Estimate of Mean	76.26485	
MVU Estimate of Standard Deviation	421.2118	
MVU Estimate of SE of Mean	36.75822	
95% H-UCL	330.2642	
95% Chebyshev (MVUE) UCL	236.4902	
97.5% Chebyshev (MVUE) UCL	305.8199	
99% Chebyshev (MVUE) UCL	442.0045	
Non-parametric Statisitics		
95% CLT UCL	85.53641	
95% Adjusted-CLT UCL	95.07351	
95% Modified-t UCL	87.71095	
95% Jackknife UCL	86.22335	
95% Chebyshev (Mean, Sd) UCL	134.5684	
97.5% Chebyshev (Mean, Sd) UCL	168.6426	
99% Chebyshev (Mean, Sd) UCL	235.575	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	85.66264	
95% Bootstrap-t UCL	110.1425	
95% Hall's Bootstrap UCL	210.5209	
95% Percentile Bootstrap UCL	87.23833	
95% BCA Bootstrap UCL	94.02857	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	235.575	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - alpha-BHC
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	alpha-BHC	
Raw Statistics		
Number of Observations	24	
Number of Missing Data	0	
Number of Valid Observations	24	
Number of Distinct Observations	15	
Minimum	4.70E-03	
Maximum	2.40E-01	
Mean	2.77E-02	
Standard Deviation	5.01E-02	
Variance	0.00251	
Coefficient of Variation	1.810514	
Skewness	3.676228	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.501745	
Shapiro-Wilk 5% Critical Value	0.916	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.52E-02	
Gamma Statistics		
k hat	0.759276	
k star (bias corrected)	0.692144	
Theta hat	3.64E-02	
Theta star	4.00E-02	
nu hat	36.44523	
nu star	33.22291	
5% Approximate Chi Square Value	21.04206	
Adjusted Level of Significance	0.0392	
Adjusted Chi Square Value	20.36012	
Anderson-Darling Test Statistic	2.121895	
Anderson-Darling 5% Critical Value	0.782086	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.239685	
Kolmogrov-Smirnov 5% Critical Value	0.184868	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	4.37E-02	
95% Adjusted Gamma UCL	4.52E-02	
Lognormal Statistics		
Minimum of log data	-5.36019	
Maximum of log data	-1.42712	
Mean of log data	-4.37449	
Standard Deviation of log data	1.142189	
Variance of log data	1.304596	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.826431	
Shapiro-Wilk 5% Critical Value	0.916	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.42E-02	
MLE Standard Deviation	3.96E-02	
MLE Coefficient of Variation	1.64E+00	
MLE Skewness	9.32E+00	
MLE Median	1.26E-02	
MLE 80% Quantile	3.31E-02	
MLE 90% Quantile	5.47E-02	

Appendix P, Attachment 3
ProUCL Output - alpha-BHC
Quanta Property (Groundwater)

MLE 95% Quantile	8.24E-02	
MLE 99% Quantile	1.79E-01	
MVU Estimate of Median	1.23E-02	
MVU Estimate of Mean	2.32E-02	
MVU Estimate of Standard Deviation	3.29E-02	
MVU Estimate of SE of Mean	6.28E-03	
95% H-UCL	4.61E-02	
95% Chebyshev (MVUE) UCL	5.06E-02	
97.5% Chebyshev (MVUE) UCL	6.24E-02	
99% Chebyshev (MVUE) UCL	8.57E-02	
Non-parametric Statisitics		
95% CLT UCL	4.45E-02	
95% Adjusted-CLT UCL	0.052691	
95% Modified-t UCL	0.046476	
95% Jackknife UCL	4.52E-02	
95% Chebyshev (Mean, Sd) UCL	7.22E-02	
97.5% Chebyshev (Mean, Sd) UCL	9.15E-02	
99% Chebyshev (Mean, Sd) UCL	1.29E-01	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.38E-02	
95% Bootstrap-t UCL	0.079816	
95% Hall's Bootstrap UCL	0.109885	
95% Percentile Bootstrap UCL	4.67E-02	
95% BCA Bootstrap UCL	5.76E-02	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1.29E-01	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Anthracene
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Anthracene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	37	
Minimum	5.113674295E-317	
Maximum	141	
Mean	22.20405	
Standard Deviation	41.06247	
Variance	1686.127	
Coefficient of Variation	1.849324	
Skewness	2.192059	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.563774	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	32.86689	
Gamma Statistics		
k hat	N/A	
k star (bias corrected)	N/A	
Theta hat	N/A	
Theta star	N/A	
nu hat	N/A	
nu star	N/A	
5% Approximate Chi Square Value	N/A	
Adjusted Level of Significance	N/A	
Adjusted Chi Square Value	N/A	
Anderson-Darling Test Statistic	N/A	
Anderson-Darling 5% Critical Value	N/A	
Anderson-Darling 5% Gamma Test Result	N/A	
Kolmogrov-Smirnov Test Statistic	N/A	
Kolmogrov-Smirnov 5% Critical Value	N/A	
Kolmogrov-Smirnov 5% Gamma Test Result	N/A	
5% Gamma Test Result	N/A	
95% Approximate Gamma UCL	N/A	
95% Adjusted Gamma UCL	N/A	
Lognormal Statistics		
Minimum of log data	-728.288	
Maximum of log data	4.94876	
Mean of log data	-217.814	
Standard Deviation of log data	332.6311	
Variance of log data	110643.5	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.549738	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.#INF	
MLE Standard Deviation	1.#INF	
MLE Coefficient of Variation	1.#INF	
MLE Skewness	1.#INF	
MLE Median	2.54E-95	
MLE 80% Quantile	2.97E+27	
MLE 90% Quantile	1.09E+91	

Appendix P, Attachment 3
ProUCL Output - Anthracene
Quanta Property (Groundwater)

MLE 95% Quantile	########	
MLE 99% Quantile	########	
MVU Estimate of Median	-1.72E-39	
MVU Estimate of Mean	1.81E+11	
MVU Estimate of Standard Deviation	4.60E-33	
MVU Estimate of SE of Mean	1.81E+11	
95% H-UCL	N/A	
95% Chebyshev (MVUE) UCL	9.69E+11	
97.5% Chebyshev (MVUE) UCL	1.31E+12	
99% Chebyshev (MVUE) UCL	1.98E+12	
Non-parametric Statisitics		
95% CLT UCL	32.62597	
95% Adjusted-CLT UCL	34.91593	
95% Modified-t UCL	33.22408	
95% Jackknife UCL	32.86689	
95% Chebyshev (Mean, Sd) UCL	49.82237	
97.5% Chebyshev (Mean, Sd) UCL	61.77284	
99% Chebyshev (Mean, Sd) UCL	85.24722	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	32.46328	
95% Bootstrap-t UCL	37.2836	
95% Hall's Bootstrap UCL	32.9159	
95% Percentile Bootstrap UCL	32.99809	
95% BCA Bootstrap UCL	35.19667	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	49.82237	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	31	
Minimum	0	Zero value
Maximum	61	
Mean	3.975833	
Standard Deviation	12.03821	
Variance	144.9186	
Coefficient of Variation	3.027846	
Skewness	4.168169	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.359093	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	7.10184	
Gamma Statistics		
k hat	N/A	Negative or Zero Values - Cannot calculate gamma statistics
k star (bias corrected)	N/A	Negative or Zero Values - Cannot calculate gamma statistics
Theta hat	N/A	Negative or Zero Values - Cannot calculate gamma statistics
Theta star	N/A	Negative or Zero Values - Cannot calculate gamma statistics
nu hat	N/A	Negative or Zero Values - Cannot calculate gamma statistics
nu star	N/A	Negative or Zero Values - Cannot calculate gamma statistics
5% Approximate Chi Square Value	N/A	Negative or Zero Values - Cannot calculate gamma statistics
Adjusted Level of Significance	N/A	Negative or Zero Values - Cannot calculate gamma statistics
Adjusted Chi Square Value	N/A	Negative or Zero Values - Cannot calculate gamma statistics
Anderson-Darling Test Statistic	N/A	Negative or Zero Values - Cannot calculate gamma statistics
Anderson-Darling 5% Critical Value	N/A	Negative or Zero Values - Cannot calculate gamma statistics
Anderson-Darling 5% Gamma Test Result	N/A	Negative or Zero Values - Cannot calculate gamma statistics
Kolmogrov-Smirnov Test Statistic	N/A	Negative or Zero Values - Cannot calculate gamma statistics
Kolmogrov-Smirnov 5% Critical Value	N/A	Negative or Zero Values - Cannot calculate gamma statistics
Kolmogrov-Smirnov 5% Gamma Test Result	N/A	Negative or Zero Values - Cannot calculate gamma statistics
5% Gamma Test Result	N/A	Negative or Zero Values - Cannot calculate gamma statistics
95% Approximate Gamma UCL	N/A	Negative or Zero Values - Cannot calculate gamma statistics
95% Adjusted Gamma UCL	N/A	Negative or Zero Values - Cannot calculate gamma statistics
Lognormal Statistics		
Minimum of log data	N/A	Negative or Zero Values - Cannot calculate log statistics
Maximum of log data	N/A	Negative or Zero Values - Cannot calculate log statistics
Mean of log data	N/A	Negative or Zero Values - Cannot calculate log statistics
Standard Deviation of log data	N/A	Negative or Zero Values - Cannot calculate log statistics
Variance of log data	N/A	Negative or Zero Values - Cannot calculate log statistics
Lilliefors Test Statisitic	N/A	Negative or Zero Values - Cannot calculate log statistics
Lilliefors 5% Critical Value	N/A	Negative or Zero Values - Cannot calculate log statistics
Shapiro-Wilk Test Statisitic	N/A	Negative or Zero Values - Cannot calculate log statistics
Shapiro-Wilk 5% Critical Value	N/A	Negative or Zero Values - Cannot calculate log statistics
5% Lognormality Test Result	N/A	Negative or Zero Values - Cannot calculate log statistics
MLE Mean	N/A	Negative or Zero Values - Cannot calculate log statistics
MLE Standard Deviation	N/A	Negative or Zero Values - Cannot calculate log statistics
MLE Coefficient of Variation	N/A	Negative or Zero Values - Cannot calculate log statistics
MLE Skewness	N/A	Negative or Zero Values - Cannot calculate log statistics
MLE Median	N/A	Negative or Zero Values - Cannot calculate log statistics
MLE 80% Quantile	N/A	Negative or Zero Values - Cannot calculate log statistics
MLE 90% Quantile	N/A	Negative or Zero Values - Cannot calculate log statistics

Appendix P, Attachment 3
ProUCL Output - Arsenic
Quanta Property (Groundwater)

MLE 95% Quantile	N/A	Negative or Zero Values - Cannot calculate log statistics
MLE 99% Quantile	N/A	Negative or Zero Values - Cannot calculate log statistics
MVU Estimate of Median	N/A	Negative or Zero Values - Cannot calculate log statistics
MVU Estimate of Mean	N/A	Negative or Zero Values - Cannot calculate log statistics
MVU Estimate of Standard Deviation	N/A	Negative or Zero Values - Cannot calculate log statistics
MVU Estimate of SE of Mean	N/A	Negative or Zero Values - Cannot calculate log statistics
95% H-UCL	N/A	
95% Chebyshev (MVUE) UCL	N/A	Negative or Zero Values - Cannot calculate log statistics
97.5% Chebyshev (MVUE) UCL	N/A	Negative or Zero Values - Cannot calculate log statistics
99% Chebyshev (MVUE) UCL	N/A	Negative or Zero Values - Cannot calculate log statistics
Non-parametric Statisitics		
95% CLT UCL	7.031209	
95% Adjusted-CLT UCL	8.307761	
95% Modified-t UCL	7.300956	
95% Jackknife UCL	7.10184	
95% Chebyshev (Mean, Sd) UCL	12.07265	
97.5% Chebyshev (Mean, Sd) UCL	15.57615	
99% Chebyshev (Mean, Sd) UCL	22.45809	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	6.94567	
95% Bootstrap-t UCL	17.27545	
95% Hall's Bootstrap UCL	19.18445	
95% Percentile Bootstrap UCL	7.335833	
95% BCA Bootstrap UCL	8.740476	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	12.07265	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzene

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Benzene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	37	
Minimum	0.25	
Maximum	1.10E+04	
Mean	1.06E+03	
Standard Deviation	2.39E+03	
Variance	5.71E+06	
Coefficient of Variation	2.247799	
Skewness	3.191719	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.494417	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.68E+03	
Gamma Statistics		
k hat	0.270324	
k star (bias corrected)	0.266888	
Theta hat	3931.133	
Theta star	3981.741	
nu hat	22.70722	
nu star	22.41861	
5% Approximate Chi Square Value	12.65097	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	12.38887	
Anderson-Darling Test Statistic	1.026306	
Anderson-Darling 5% Critical Value	0.872574	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.147504	
Kolmogrov-Smirnov 5% Critical Value	0.149025	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	1883.16	
95% Adjusted Gamma UCL	1923.001	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	9.305651	
Mean of log data	4.37403	
Standard Deviation of log data	2.986081	
Variance of log data	8.916683	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.882711	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	6852.514	
MLE Standard Deviation	591635	
MLE Coefficient of Variation	86.33838	
MLE Skewness	643852.5	
MLE Median	79.36279	
MLE 80% Quantile	989.568	
MLE 90% Quantile	3681.753	

Appendix P, Attachment 3
ProUCL Output - Benzene
Quanta Property (Groundwater)

MLE 95% Quantile	10787.4	
MLE 99% Quantile	82425.92	
MVU Estimate of Median	71.35126	
MVU Estimate of Mean	4319.109	
MVU Estimate of Standard Deviation	70796.98	
MVU Estimate of SE of Mean	3006.382	
95% H-UCL	74755.69	
95% Chebyshev (MVUE) UCL	17423.62	
97.5% Chebyshev (MVUE) UCL	23093.96	
99% Chebyshev (MVUE) UCL	34232.23	
Non-parametric Statisitics		
95% CLT UCL	1.67E+03	
95% Adjusted-CLT UCL	1.86E+03	
95% Modified-t UCL	1.71E+03	
95% Jackknife UCL	1.68E+03	
95% Chebyshev (Mean, Sd) UCL	2.67E+03	
97.5% Chebyshev (Mean, Sd) UCL	3.36E+03	
99% Chebyshev (Mean, Sd) UCL	4.73E+03	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.66E+03	
95% Bootstrap-t UCL	2.27E+03	
95% Hall's Bootstrap UCL	2.00E+03	
95% Percentile Bootstrap UCL	1.74E+03	
95% BCA Bootstrap UCL	1.86E+03	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	1.92E+03	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)anthracene

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	17	
Minimum	0.306	
Maximum	1100	
Mean	43.46905	
Standard Deviation	175.8333	
Variance	30917.34	
Coefficient of Variation	4.045022	
Skewness	5.681434	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.263993	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	89.12832	
Gamma Statistics		
k hat	0.295152	
k star (bias corrected)	0.289943	
Theta hat	147.2767	
Theta star	149.9227	
nu hat	24.7928	
nu star	24.35521	
5% Approximate Chi Square Value	14.11737	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	13.83896	
Anderson-Darling Test Statistic	6.183659	
Anderson-Darling 5% Critical Value	0.861529	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.339318	
Kolmogrov-Smirnov 5% Critical Value	0.148298	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	74.99256	
95% Adjusted Gamma UCL	76.50126	
Lognormal Statistics		
Minimum of log data	-1.18417	
Maximum of log data	7.003065	
Mean of log data	1.429528	
Standard Deviation of log data	1.776541	
Variance of log data	3.156099	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.830661	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	20.23832	
MLE Standard Deviation	95.95358	
MLE Coefficient of Variation	4.741184	
MLE Skewness	120.7998	
MLE Median	4.176728	
MLE 80% Quantile	18.74085	
MLE 90% Quantile	40.95131	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Quanta Property (Groundwater)

MLE 95% Quantile	77.62881	
MLE 99% Quantile	260.2814	
MVU Estimate of Median	4.022577	
MVU Estimate of Mean	18.52847	
MVU Estimate of Standard Deviation	62.99102	
MVU Estimate of SE of Mean	6.9903	
95% H-UCL	51.17136	
95% Chebyshev (MVUE) UCL	48.99848	
97.5% Chebyshev (MVUE) UCL	62.18288	
99% Chebyshev (MVUE) UCL	88.08108	
Non-parametric Statisitics		
95% CLT UCL	88.09666	
95% Adjusted-CLT UCL	113.5117	
95% Modified-t UCL	93.09254	
95% Jackknife UCL	89.12832	
95% Chebyshev (Mean, Sd) UCL	161.7332	
97.5% Chebyshev (Mean, Sd) UCL	212.9062	
99% Chebyshev (Mean, Sd) UCL	313.4257	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	86.06306	
95% Bootstrap-t UCL	518.8338	
95% Hall's Bootstrap UCL	291.6152	
95% Percentile Bootstrap UCL	94.68333	
95% BCA Bootstrap UCL	138.2541	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	313.4257	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Benzo(a)pyrene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	15	
Minimum	0.1	
Maximum	800	
Mean	33.26552	
Standard Deviation	127.4971	
Variance	16255.51	
Coefficient of Variation	3.83271	
Skewness	5.684814	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.272503	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	66.37316	
Gamma Statistics		
k hat	0.321244	
k star (bias corrected)	0.314171	
Theta hat	103.5522	
Theta star	105.8835	
nu hat	26.9845	
nu star	26.39037	
5% Approximate Chi Square Value	15.67845	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	15.38357	
Anderson-Darling Test Statistic	5.625207	
Anderson-Darling 5% Critical Value	0.854472	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.358409	
Kolmogrov-Smirnov 5% Critical Value	0.147742	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	55.99338	
95% Adjusted Gamma UCL	57.06672	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	6.684612	
Mean of log data	1.381817	
Standard Deviation of log data	1.842316	
Variance of log data	3.394127	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.851278	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	21.73404	
MLE Standard Deviation	116.6141	
MLE Coefficient of Variation	5.365503	
MLE Skewness	170.5619	
MLE Median	3.982129	
MLE 80% Quantile	18.88888	
MLE 90% Quantile	42.48674	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Quanta Property (Groundwater)

MLE 95% Quantile	82.46926	
MLE 99% Quantile	289.178	
MVU Estimate of Median	3.824288	
MVU Estimate of Mean	19.69153	
MVU Estimate of Standard Deviation	72.82795	
MVU Estimate of SE of Mean	7.78686	
95% H-UCL	58.39188	
95% Chebyshev (MVUE) UCL	53.63367	
97.5% Chebyshev (MVUE) UCL	68.32046	
99% Chebyshev (MVUE) UCL	97.16981	
Non-parametric Statisitics		
95% CLT UCL	65.62511	
95% Adjusted-CLT UCL	84.06455	
95% Modified-t UCL	69.24934	
95% Jackknife UCL	66.37316	
95% Chebyshev (Mean, Sd) UCL	119.0191	
97.5% Chebyshev (Mean, Sd) UCL	156.1248	
99% Chebyshev (Mean, Sd) UCL	229.0117	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	64.91277	
95% Bootstrap-t UCL	315.6921	
95% Hall's Bootstrap UCL	199.6817	
95% Percentile Bootstrap UCL	69.79014	
95% BCA Bootstrap UCL	96.03929	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	229.0117	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(b)fluoranthene

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Benzo(b)fluoranthene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	16	
Minimum	0.1	
Maximum	920	
Mean	37.13729	
Standard Deviation	146.3989	
Variance	21432.65	
Coefficient of Variation	3.942101	
Skewness	5.723156	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.266935	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	75.15323	
Gamma Statistics		
k hat	0.312654	
k star (bias corrected)	0.306195	
Theta hat	118.7806	
Theta star	121.2864	
nu hat	26.26298	
nu star	25.72038	
5% Approximate Chi Square Value	15.16242	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	14.87288	
Anderson-Darling Test Statistic	5.919802	
Anderson-Darling 5% Critical Value	0.856453	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.362916	
Kolmogrov-Smirnov 5% Critical Value	0.147909	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	62.9969	
95% Adjusted Gamma UCL	64.22328	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	6.824374	
Mean of log data	1.423927	
Standard Deviation of log data	1.792246	
Variance of log data	3.212145	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.857369	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	20.69721	
MLE Standard Deviation	101.0403	
MLE Coefficient of Variation	4.881833	
MLE Skewness	130.9908	
MLE Median	4.153397	
MLE 80% Quantile	18.88512	
MLE 90% Quantile	41.5527	

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
Quanta Property (Groundwater)

MLE 95% Quantile	79.21542	
MLE 99% Quantile	268.4569	
MVU Estimate of Median	3.997434	
MVU Estimate of Mean	18.90298	
MVU Estimate of Standard Deviation	65.56902	
MVU Estimate of SE of Mean	7.213418	
95% H-UCL	53.08512	
95% Chebyshev (MVUE) UCL	50.34554	
97.5% Chebyshev (MVUE) UCL	63.95076	
99% Chebyshev (MVUE) UCL	90.67559	
Non-parametric Statisitics		
95% CLT UCL	74.29427	
95% Adjusted-CLT UCL	95.61022	
95% Modified-t UCL	78.47809	
95% Jackknife UCL	75.15323	
95% Chebyshev (Mean, Sd) UCL	135.6041	
97.5% Chebyshev (Mean, Sd) UCL	178.2108	
99% Chebyshev (Mean, Sd) UCL	261.9034	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	75.19731	
95% Bootstrap-t UCL	338.6592	
95% Hall's Bootstrap UCL	230.8183	
95% Percentile Bootstrap UCL	79.61962	
95% BCA Bootstrap UCL	113.5307	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	261.9034	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(g,h,i)perylene

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Benzo(g,h,i)perylene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	12	
Minimum	1.00E-01	
Maximum	420	
Mean	19.766	
Standard Deviation	66.29607	
Variance	4395.169	
Coefficient of Variation	3.354046	
Skewness	5.709039	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.295959	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	36.98134	
Gamma Statistics		
k hat	0.3903	
k star (bias corrected)	0.378295	
Theta hat	50.64303	
Theta star	52.25024	
nu hat	32.78524	
nu star	31.77677	
5% Approximate Chi Square Value	19.89302	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	19.55731	
Anderson-Darling Test Statistic	4.899293	
Anderson-Darling 5% Critical Value	0.838543	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.370937	
Kolmogrov-Smirnov 5% Critical Value	0.146397	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	31.57387	
95% Adjusted Gamma UCL	32.11585	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	6.040255	
Mean of log data	1.291296	
Standard Deviation of log data	1.750155	
Variance of log data	3.063044	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.834687	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	16.8242	
MLE Standard Deviation	75.97493	
MLE Coefficient of Variation	4.515813	
MLE Skewness	105.6365	
MLE Median	3.637499	
MLE 80% Quantile	15.96147	
MLE 90% Quantile	34.4754	

Appendix P, Attachment 3
ProUCL Output - Benzo(g,h,i)perylene
Quanta Property (Groundwater)

MLE 95% Quantile	64.73499	
MLE 99% Quantile	213.1844	
MVU Estimate of Median	3.507139	
MVU Estimate of Mean	15.46362	
MVU Estimate of Standard Deviation	50.82641	
MVU Estimate of SE of Mean	5.72179	
95% H-UCL	41.54087	
95% Chebyshev (MVUE) UCL	40.40433	
97.5% Chebyshev (MVUE) UCL	51.19619	
99% Chebyshev (MVUE) UCL	72.39471	
Non-parametric Statisitics		
95% CLT UCL	36.59237	
95% Adjusted-CLT UCL	46.22139	
95% Modified-t UCL	38.48328	
95% Jackknife UCL	36.98134	
95% Chebyshev (Mean, Sd) UCL	64.35625	
97.5% Chebyshev (Mean, Sd) UCL	83.65049	
99% Chebyshev (Mean, Sd) UCL	121.5503	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	35.89935	
95% Bootstrap-t UCL	112.2507	
95% Hall's Bootstrap UCL	103.6514	
95% Percentile Bootstrap UCL	38.59367	
95% BCA Bootstrap UCL	54.0581	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	121.5503	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(k)fluoranthene

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Benzo(k)fluoranthene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	12	
Minimum	0.1	
Maximum	450	
Mean	20.77938	
Standard Deviation	71.16295	
Variance	5064.165	
Coefficient of Variation	3.42469	
Skewness	5.698603	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.293656	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	39.25852	
Gamma Statistics		
k hat	0.375887	
k star (bias corrected)	0.36491	
Theta hat	55.281	
Theta star	56.94377	
nu hat	31.57447	
nu star	30.65248	
5% Approximate Chi Square Value	19.00446	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	18.67698	
Anderson-Darling Test Statistic	4.987682	
Anderson-Darling 5% Critical Value	0.841868	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.367218	
Kolmogrov-Smirnov 5% Critical Value	0.146678	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	33.51526	
95% Adjusted Gamma UCL	34.10293	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	6.109248	
Mean of log data	1.26565	
Standard Deviation of log data	1.782644	
Variance of log data	3.177818	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.838301	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	17.36679	
MLE Standard Deviation	83.27795	
MLE Coefficient of Variation	4.795242	
MLE Skewness	124.6492	
MLE Median	3.545398	
MLE 80% Quantile	15.99033	
MLE 90% Quantile	35.035	

Appendix P, Attachment 3
ProUCL Output - Benzo(k)fluoranthene
Quanta Property (Groundwater)

MLE 95% Quantile	66.55969	
MLE 99% Quantile	224.0971	
MVU Estimate of Median	3.413663	
MVU Estimate of Mean	15.88475	
MVU Estimate of Standard Deviation	54.42659	
MVU Estimate of SE of Mean	6.019601	
95% H-UCL	44.15482	
95% Chebyshev (MVUE) UCL	42.12358	
97.5% Chebyshev (MVUE) UCL	53.47714	
99% Chebyshev (MVUE) UCL	75.77902	
Non-parametric Statisitics		
95% CLT UCL	38.84099	
95% Adjusted-CLT UCL	49.158	
95% Modified-t UCL	40.86777	
95% Jackknife UCL	39.25852	
95% Chebyshev (Mean, Sd) UCL	68.64306	
97.5% Chebyshev (Mean, Sd) UCL	89.35371	
99% Chebyshev (Mean, Sd) UCL	130.0358	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	38.5983	
95% Bootstrap-t UCL	120.2374	
95% Hall's Bootstrap UCL	108.3073	
95% Percentile Bootstrap UCL	41.94629	
95% BCA Bootstrap UCL	55.15748	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	130.0358	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Carbazole

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	34	
Minimum	1.1	
Maximum	790	
Mean	175.9738	
Standard Deviation	168.5892	
Variance	28422.31	
Coefficient of Variation	0.958036	
Skewness	1.218562	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.817434	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	219.752	
Gamma Statistics		
k hat	0.640646	
k star (bias corrected)	0.610759	
Theta hat	274.6817	
Theta star	288.1232	
nu hat	53.81429	
nu star	51.30375	
5% Approximate Chi Square Value	35.8512	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	35.3906	
Anderson-Darling Test Statistic	1.599467	
Anderson-Darling 5% Critical Value	0.799794	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.190565	
Kolmogrov-Smirnov 5% Critical Value	0.142863	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	251.8219	
95% Adjusted Gamma UCL	255.0992	
Lognormal Statistics		
Minimum of log data	0.09531	
Maximum of log data	6.672033	
Mean of log data	4.21506	
Standard Deviation of log data	1.85614	
Variance of log data	3.445256	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.806002	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	379.0574	
MLE Standard Deviation	2088.304	
MLE Coefficient of Variation	5.509202	
MLE Skewness	183.7391	
MLE Median	67.69821	
MLE 80% Quantile	324.8937	
MLE 90% Quantile	735.242	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Quanta Property (Groundwater)

MLE 95% Quantile	1434.268	
MLE 99% Quantile	5076.826	
MVU Estimate of Median	64.97519	
MVU Estimate of Mean	342.6449	
MVU Estimate of Standard Deviation	1289.907	
MVU Estimate of SE of Mean	136.8087	
95% H-UCL	1031.756	
95% Chebyshev (MVUE) UCL	938.9802	
97.5% Chebyshev (MVUE) UCL	1197.015	
99% Chebyshev (MVUE) UCL	1703.874	
Non-parametric Statisitics		
95% CLT UCL	218.7628	
95% Adjusted-CLT UCL	223.9893	
95% Modified-t UCL	220.5672	
95% Jackknife UCL	219.752	
95% Chebyshev (Mean, Sd) UCL	289.3657	
97.5% Chebyshev (Mean, Sd) UCL	338.4304	
99% Chebyshev (Mean, Sd) UCL	434.8086	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	217.8773	
95% Bootstrap-t UCL	228.0188	
95% Hall's Bootstrap UCL	231.4003	
95% Percentile Bootstrap UCL	218.5667	
95% BCA Bootstrap UCL	225.65	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	434.8086	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chloromethane
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Chloromethane	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	15	
Minimum	0.2	
Maximum	50	
Mean	10.9869	
Standard Deviation	11.83204	
Variance	139.9972	
Coefficient of Variation	1.076922	
Skewness	1.108515	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.752052	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	14.05937	
Gamma Statistics		
k hat	0.606671	
k star (bias corrected)	0.57921	
Theta hat	18.11016	
Theta star	18.96877	
nu hat	50.96034	
nu star	48.65365	
5% Approximate Chi Square Value	33.63916	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	33.19393	
Anderson-Darling Test Statistic	1.419073	
Anderson-Darling 5% Critical Value	0.803042	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.159941	
Kolmogrov-Smirnov 5% Critical Value	0.1432	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	15.89079	
95% Adjusted Gamma UCL	16.10394	
Lognormal Statistics		
Minimum of log data	-1.60944	
Maximum of log data	3.912023	
Mean of log data	1.379891	
Standard Deviation of log data	1.77911	
Variance of log data	3.165231	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.815497	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	19.3464	
MLE Standard Deviation	92.16322	
MLE Coefficient of Variation	4.763844	
MLE Skewness	122.4032	
MLE Median	3.974467	
MLE 80% Quantile	17.87205	
MLE 90% Quantile	39.09703	

Appendix P, Attachment 3
ProUCL Output - Chloromethane
Quanta Property (Groundwater)

MLE 95% Quantile	74.18233	
MLE 99% Quantile	249.1611	
MVU Estimate of Median	3.827364	
MVU Estimate of Mean	17.70498	
MVU Estimate of Standard Deviation	60.38958	
MVU Estimate of SE of Mean	6.692145	
95% H-UCL	49.03027	
95% Chebyshev (MVUE) UCL	46.87536	
97.5% Chebyshev (MVUE) UCL	59.49741	
99% Chebyshev (MVUE) UCL	84.29098	
Non-parametric Statisitics		
95% CLT UCL	13.98995	
95% Adjusted-CLT UCL	14.32363	
95% Modified-t UCL	14.11142	
95% Jackknife UCL	14.05937	
95% Chebyshev (Mean, Sd) UCL	18.94505	
97.5% Chebyshev (Mean, Sd) UCL	22.38855	
99% Chebyshev (Mean, Sd) UCL	29.15263	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	14.00873	
95% Bootstrap-t UCL	14.42862	
95% Hall's Bootstrap UCL	14.30528	
95% Percentile Bootstrap UCL	13.90476	
95% BCA Bootstrap UCL	14.17381	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	29.15263	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chrysene
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Chrysene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	17	
Minimum	0.243	
Maximum	1000	
Mean	40.5466	
Standard Deviation	160.6836	
Variance	25819.21	
Coefficient of Variation	3.962936	
Skewness	5.60715	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.268127	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	82.27189	
Gamma Statistics		
k hat	0.307256	
k star (bias corrected)	0.301182	
Theta hat	131.9638	
Theta star	134.625	
nu hat	25.80946	
nu star	25.29926	
5% Approximate Chi Square Value	14.83911	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	14.55297	
Anderson-Darling Test Statistic	6.188674	
Anderson-Darling 5% Critical Value	0.857698	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.343528	
Kolmogrov-Smirnov 5% Critical Value	0.148015	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	69.12808	
95% Adjusted Gamma UCL	70.48725	
Lognormal Statistics		
Minimum of log data	-1.41469	
Maximum of log data	6.907755	
Mean of log data	1.466915	
Standard Deviation of log data	1.744777	
Variance of log data	3.044247	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.840882	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	19.86657	
MLE Standard Deviation	88.83315	
MLE Coefficient of Variation	4.47149	
MLE Skewness	102.8184	
MLE Median	4.335836	
MLE 80% Quantile	18.93953	
MLE 90% Quantile	40.81106	

Appendix P, Attachment 3
ProUCL Output - Chrysene
Quanta Property (Groundwater)

MLE 95% Quantile	76.48334	
MLE 99% Quantile	250.9531	
MVU Estimate of Median	4.181386	
MVU Estimate of Mean	18.27433	
MVU Estimate of Standard Deviation	59.65297	
MVU Estimate of SE of Mean	6.734811	
95% H-UCL	48.81748	
95% Chebyshev (MVUE) UCL	47.63069	
97.5% Chebyshev (MVUE) UCL	60.33321	
99% Chebyshev (MVUE) UCL	85.28485	
Non-parametric Statisitics		
95% CLT UCL	81.32912	
95% Adjusted-CLT UCL	104.2507	
95% Modified-t UCL	85.84719	
95% Jackknife UCL	82.27189	
95% Chebyshev (Mean, Sd) UCL	148.6212	
97.5% Chebyshev (Mean, Sd) UCL	195.3852	
99% Chebyshev (Mean, Sd) UCL	287.2439	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	80.46294	
95% Bootstrap-t UCL	426.8495	
95% Hall's Bootstrap UCL	264.6402	
95% Percentile Bootstrap UCL	84.3739	
95% BCA Bootstrap UCL	117.9336	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	287.2439	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - delta-BHC
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	delta-BHC	
Raw Statistics		
Number of Observations	24	
Number of Missing Data	0	
Number of Valid Observations	24	
Number of Distinct Observations	17	
Minimum	0.0047	
Maximum	0.24	
Mean	0.031085	
Standard Deviation	0.053118	
Variance	0.002821	
Coefficient of Variation	1.708767	
Skewness	3.069918	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.541556	
Shapiro-Wilk 5% Critical Value	0.916	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.049668	
Gamma Statistics		
k hat	0.75969	
k star (bias corrected)	0.692506	
Theta hat	0.040919	
Theta star	0.044888	
nu hat	36.4651	
nu star	33.2403	
5% Approximate Chi Square Value	21.05592	
Adjusted Level of Significance	0.0392	
Adjusted Chi Square Value	20.37374	
Anderson-Darling Test Statistic	2.246632	
Anderson-Darling 5% Critical Value	0.782068	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.263001	
Kolmogrov-Smirnov 5% Critical Value	0.184865	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.049074	
95% Adjusted Gamma UCL	0.050717	
Lognormal Statistics		
Minimum of log data	-5.36019	
Maximum of log data	-1.42712	
Mean of log data	-4.25765	
Standard Deviation of log data	1.134213	
Variance of log data	1.28644	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.853624	
Shapiro-Wilk 5% Critical Value	0.916	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.026932	
MLE Standard Deviation	0.043593	
MLE Coefficient of Variation	1.618603	
MLE Skewness	9.096346	
MLE Median	0.014156	
MLE 80% Quantile	0.036911	
MLE 90% Quantile	0.060799	

Appendix P, Attachment 3
ProUCL Output - delta-BHC
Quanta Property (Groundwater)

MLE 95% Quantile	0.091459	
MLE 99% Quantile	0.198004	
MVU Estimate of Median	0.013781	
MVU Estimate of Mean	0.025847	
MVU Estimate of Standard Deviation	0.036265	
MVU Estimate of SE of Mean	0.006944	
95% H-UCL	0.051025	
95% Chebyshev (MVUE) UCL	0.056115	
97.5% Chebyshev (MVUE) UCL	0.069212	
99% Chebyshev (MVUE) UCL	0.094939	
Non-parametric Statisitics		
95% CLT UCL	0.04892	
95% Adjusted-CLT UCL	0.05618	
95% Modified-t UCL	0.050801	
95% Jackknife UCL	0.049668	
95% Chebyshev (Mean, Sd) UCL	0.078347	
97.5% Chebyshev (Mean, Sd) UCL	0.098798	
99% Chebyshev (Mean, Sd) UCL	0.138968	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.048401	
95% Bootstrap-t UCL	0.077839	
95% Hall's Bootstrap UCL	0.064496	
95% Percentile Bootstrap UCL	0.050063	
95% BCA Bootstrap UCL	0.058873	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	0.138968	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzo(a,h)anthracene

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Dibenzo(a,h)anthracene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	11	
Minimum	0.1	
Maximum	41	
Mean	7.631429	
Standard Deviation	10.18024	
Variance	103.6373	
Coefficient of Variation	1.333989	
Skewness	1.621494	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.622291	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	10.27497	
Gamma Statistics		
k hat	0.681879	
k star (bias corrected)	0.649047	
Theta hat	11.19176	
Theta star	11.75791	
nu hat	57.27785	
nu star	54.51991	
5% Approximate Chi Square Value	38.55078	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	38.07206	
Anderson-Darling Test Statistic	4.593138	
Anderson-Darling 5% Critical Value	0.795852	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.37422	
Kolmogrov-Smirnov 5% Critical Value	0.142453	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	10.79264	
95% Adjusted Gamma UCL	10.92835	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	3.713572	
Mean of log data	1.142716	
Standard Deviation of log data	1.508491	
Variance of log data	2.275544	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.777262	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	9.781453	
MLE Standard Deviation	28.90616	
MLE Coefficient of Variation	2.955201	
MLE Skewness	34.67399	
MLE Median	3.135273	
MLE 80% Quantile	11.21655	
MLE 90% Quantile	21.78293	

Appendix P, Attachment 3
ProUCL Output - Dibenzo(a,h)anthracene
Quanta Property (Groundwater)

MLE 95% Quantile	37.49408	
MLE 99% Quantile	104.7383	
MVU Estimate of Median	3.051427	
MVU Estimate of Mean	9.266861	
MVU Estimate of Standard Deviation	22.3581	
MVU Estimate of SE of Mean	2.824611	
95% H-UCL	19.73944	
95% Chebyshev (MVUE) UCL	21.57905	
97.5% Chebyshev (MVUE) UCL	26.90655	
99% Chebyshev (MVUE) UCL	37.37138	
Non-parametric Statisitics		
95% CLT UCL	10.21524	
95% Adjusted-CLT UCL	10.6352	
95% Modified-t UCL	10.34047	
95% Jackknife UCL	10.27497	
95% Chebyshev (Mean, Sd) UCL	14.47858	
97.5% Chebyshev (Mean, Sd) UCL	17.44135	
99% Chebyshev (Mean, Sd) UCL	23.26114	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	10.1868	
95% Bootstrap-t UCL	10.89183	
95% Hall's Bootstrap UCL	10.40369	
95% Percentile Bootstrap UCL	10.11048	
95% BCA Bootstrap UCL	10.60714	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	23.26114	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	33	
Minimum	1.6	
Maximum	2200	
Mean	151.7738	
Standard Deviation	338.7931	
Variance	114780.7	
Coefficient of Variation	2.232224	
Skewness	5.667316	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.370016	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	239.7494	
Gamma Statistics		
k hat	0.574948	
k star (bias corrected)	0.549753	
Theta hat	263.9785	
Theta star	276.0764	
nu hat	48.2956	
nu star	46.17925	
5% Approximate Chi Square Value	31.58478	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	31.15427	
Anderson-Darling Test Statistic	1.497924	
Anderson-Darling 5% Critical Value	0.806075	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.140699	
Kolmogrov-Smirnov 5% Critical Value	0.143515	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	221.9043	
95% Adjusted Gamma UCL	224.9708	
Lognormal Statistics		
Minimum of log data	0.470004	
Maximum of log data	7.696213	
Mean of log data	3.940897	
Standard Deviation of log data	1.747907	
Variance of log data	3.055179	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.829304	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	237.101	
MLE Standard Deviation	1066.295	
MLE Coefficient of Variation	4.497219	
MLE Skewness	104.4478	
MLE Median	51.46473	
MLE 80% Quantile	225.4003	
MLE 90% Quantile	486.3639	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Quanta Property (Groundwater)

MLE 95% Quantile	912.5142	
MLE 99% Quantile	3000.482	
MVU Estimate of Median	49.625	
MVU Estimate of Mean	217.9984	
MVU Estimate of Standard Deviation	714.4677	
MVU Estimate of SE of Mean	80.52833	
95% H-UCL	584.2527	
95% Chebyshev (MVUE) UCL	569.0133	
97.5% Chebyshev (MVUE) UCL	720.8977	
99% Chebyshev (MVUE) UCL	1019.245	
Non-parametric Statisitics		
95% CLT UCL	237.7617	
95% Adjusted-CLT UCL	286.6093	
95% Modified-t UCL	247.3687	
95% Jackknife UCL	239.7494	
95% Chebyshev (Mean, Sd) UCL	379.6436	
97.5% Chebyshev (Mean, Sd) UCL	478.243	
99% Chebyshev (Mean, Sd) UCL	671.9224	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	237.8095	
95% Bootstrap-t UCL	441.2804	
95% Hall's Bootstrap UCL	579.3094	
95% Percentile Bootstrap UCL	248.3167	
95% BCA Bootstrap UCL	303.0952	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	221.9043	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Ethylbenzene
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Ethylbenzene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	34	
Minimum	0.25	
Maximum	1300	
Mean	438.3493	
Standard Deviation	436.8414	
Variance	1.91E+05	
Coefficient of Variation	0.99656	
Skewness	0.469733	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.779296	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	551.7855	
Gamma Statistics		
k hat	0.37909	
k star (bias corrected)	0.367885	
Theta hat	1156.319	
Theta star	1191.538	
nu hat	31.84358	
nu star	30.90237	
5% Approximate Chi Square Value	19.20159	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	18.87226	
Anderson-Darling Test Statistic	2.261172	
Anderson-Darling 5% Critical Value	0.841129	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.200324	
Kolmogrov-Smirnov 5% Critical Value	0.146615	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	705.4643	
95% Adjusted Gamma UCL	717.7749	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	7.17012	
Mean of log data	4.332059	
Standard Deviation of log data	2.907557	
Variance of log data	8.453885	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.756635	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	5213.474	
MLE Standard Deviation	357123.8	
MLE Coefficient of Variation	68.50015	
MLE Skewness	3.22E+05	
MLE Median	76.10084	
MLE 80% Quantile	887.9759	
MLE 90% Quantile	3191.574	

Appendix P, Attachment 3
ProUCL Output - Ethylbenzene
Quanta Property (Groundwater)

MLE 95% Quantile	9090.542	
MLE 99% Quantile	65843.49	
MVU Estimate of Median	68.79843	
MVU Estimate of Mean	3414.67	
MVU Estimate of Standard Deviation	50501.1	
MVU Estimate of SE of Mean	2314.937	
95% H-UCL	50575.58	
95% Chebyshev (MVUE) UCL	13505.25	
97.5% Chebyshev (MVUE) UCL	17871.45	
99% Chebyshev (MVUE) UCL	26448	
Non-parametric Statisitics		
95% CLT UCL	549.2224	
95% Adjusted-CLT UCL	554.4429	
95% Modified-t UCL	552.5998	
95% Jackknife UCL	551.7855	
95% Chebyshev (Mean, Sd) UCL	732.1656	
97.5% Chebyshev (Mean, Sd) UCL	859.3002	
99% Chebyshev (Mean, Sd) UCL	1109.031	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	548.2097	
95% Bootstrap-t UCL	565.8987	
95% Hall's Bootstrap UCL	549.868	
95% Percentile Bootstrap UCL	552.4167	
95% BCA Bootstrap UCL	550.5369	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1109.031	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Fluoranthene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	31	
Minimum	2.00E+00	
Maximum	3400	
Mean	127.6324	
Standard Deviation	540.0652	
Variance	291670.5	
Coefficient of Variation	4.231412	
Skewness	5.789333	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.249274	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	267.8731	
Gamma Statistics		
k hat	0.317101	
k star (bias corrected)	0.310324	
Theta hat	402.4975	
Theta star	411.2875	
nu hat	26.63649	
nu star	26.06721	
5% Approximate Chi Square Value	15.4293	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	15.13699	
Anderson-Darling Test Statistic	7.160797	
Anderson-Darling 5% Critical Value	0.855427	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.380787	
Kolmogrov-Smirnov 5% Critical Value	0.147823	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	215.63	
95% Adjusted Gamma UCL	219.7941	
Lognormal Statistics		
Minimum of log data	0.693147	
Maximum of log data	8.131531	
Mean of log data	2.694153	
Standard Deviation of log data	1.550829	
Variance of log data	2.405071	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.831637	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	49.23912	
MLE Standard Deviation	156.3233	
MLE Coefficient of Variation	3.174779	
MLE Skewness	41.52364	
MLE Median	14.79298	
MLE 80% Quantile	54.85007	
MLE 90% Quantile	108.5237	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
Quanta Property (Groundwater)

MLE 95% Quantile	189.6664	
MLE 99% Quantile	545.3248	
MVU Estimate of Median	14.37516	
MVU Estimate of Mean	46.43476	
MVU Estimate of Standard Deviation	118.2797	
MVU Estimate of SE of Mean	14.6748	
95% H-UCL	102.7266	
95% Chebyshev (MVUE) UCL	110.4007	
97.5% Chebyshev (MVUE) UCL	138.0789	
99% Chebyshev (MVUE) UCL	192.4472	
Non-parametric Statisitics		
95% CLT UCL	264.7044	
95% Adjusted-CLT UCL	344.2481	
95% Modified-t UCL	280.2803	
95% Jackknife UCL	267.8731	
95% Chebyshev (Mean, Sd) UCL	490.8763	
97.5% Chebyshev (Mean, Sd) UCL	648.0523	
99% Chebyshev (Mean, Sd) UCL	956.794	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	257.8641	
95% Bootstrap-t UCL	1752.059	
95% Hall's Bootstrap UCL	1161.148	
95% Percentile Bootstrap UCL	288.0829	
95% BCA Bootstrap UCL	403.5871	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	956.794	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Fluorene

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Fluorene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	33	
Minimum	0.617	
Maximum	2800	
Mean	173.9733	
Standard Deviation	435.0968	
Variance	189309.2	
Coefficient of Variation	2.50094	
Skewness	5.693875	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.327768	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	286.9564	
Gamma Statistics		
k hat	0.55457	
k star (bias corrected)	0.530831	
Theta hat	313.7085	
Theta star	327.7377	
nu hat	46.58387	
nu star	44.58978	
5% Approximate Chi Square Value	30.27114	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	29.85029	
Anderson-Darling Test Statistic	2.740576	
Anderson-Darling 5% Critical Value	0.808023	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.221005	
Kolmogrov-Smirnov 5% Critical Value	0.143718	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	256.2649	
95% Adjusted Gamma UCL	259.8779	
Lognormal Statistics		
Minimum of log data	-0.48289	
Maximum of log data	7.937375	
Mean of log data	4.03157	
Standard Deviation of log data	1.755342	
Variance of log data	3.081226	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.818601	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	263.0076	
MLE Standard Deviation	1199.069	
MLE Coefficient of Variation	4.559068	
MLE Skewness	108.4379	
MLE Median	56.34929	
MLE 80% Quantile	248.3487	
MLE 90% Quantile	537.6374	

Appendix P, Attachment 3
ProUCL Output - Fluorene
Quanta Property (Groundwater)

MLE 95% Quantile	1011.417	
MLE 99% Quantile	3342.571	
MVU Estimate of Median	54.31807	
MVU Estimate of Mean	241.5534	
MVU Estimate of Standard Deviation	799.2322	
MVU Estimate of SE of Mean	89.72289	
95% H-UCL	652.4161	
95% Chebyshev (MVUE) UCL	632.6465	
97.5% Chebyshev (MVUE) UCL	801.8727	
99% Chebyshev (MVUE) UCL	1134.285	
Non-parametric Statisitics		
95% CLT UCL	284.4036	
95% Adjusted-CLT UCL	347.4304	
95% Modified-t UCL	296.7873	
95% Jackknife UCL	286.9564	
95% Chebyshev (Mean, Sd) UCL	466.6162	
97.5% Chebyshev (Mean, Sd) UCL	593.243	
99% Chebyshev (Mean, Sd) UCL	841.9769	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	284.0325	
95% Bootstrap-t UCL	747.2206	
95% Hall's Bootstrap UCL	744.039	
95% Percentile Bootstrap UCL	298.5756	
95% BCA Bootstrap UCL	383.3324	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	841.9769	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Heptachlor
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Heptachlor	
Raw Statistics		
Number of Observations	24	
Number of Missing Data	0	
Number of Valid Observations	24	
Number of Distinct Observations	16	
Minimum	0.0021	
Maximum	0.24	
Mean	0.023702	
Standard Deviation	0.049784	
Variance	0.002478	
Coefficient of Variation	2.100399	
Skewness	3.99293	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.42682	
Shapiro-Wilk 5% Critical Value	0.916	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.041119	
Gamma Statistics		
k hat	0.712808	
k star (bias corrected)	0.651485	
Theta hat	0.033252	
Theta star	0.036382	
nu hat	34.2148	
nu star	31.27128	
5% Approximate Chi Square Value	19.49299	
Adjusted Level of Significance	0.0392	
Adjusted Chi Square Value	18.83886	
Anderson-Darling Test Statistic	2.125819	
Anderson-Darling 5% Critical Value	0.786028	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.251428	
Kolmogrov-Smirnov 5% Critical Value	0.185415	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.038024	
95% Adjusted Gamma UCL	0.039344	
Lognormal Statistics		
Minimum of log data	-6.16582	
Maximum of log data	-1.42712	
Mean of log data	-4.58789	
Standard Deviation of log data	1.131507	
Variance of log data	1.280309	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.897435	
Shapiro-Wilk 5% Critical Value	0.916	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.019298	
MLE Standard Deviation	0.031104	
MLE Coefficient of Variation	1.611754	
MLE Skewness	9.022196	
MLE Median	0.010174	
MLE 80% Quantile	0.026469	
MLE 90% Quantile	0.043547	

Appendix P, Attachment 3
ProUCL Output - Heptachlor
Quanta Property (Groundwater)

MLE 95% Quantile	0.065444	
MLE 99% Quantile	0.141422	
MVU Estimate of Median	0.009906	
MVU Estimate of Mean	0.018525	
MVU Estimate of Standard Deviation	0.025905	
MVU Estimate of SE of Mean	0.004963	
95% H-UCL	0.036474	
95% Chebyshev (MVUE) UCL	0.040158	
97.5% Chebyshev (MVUE) UCL	0.049518	
99% Chebyshev (MVUE) UCL	0.067905	
Non-parametric Statisitics		
95% CLT UCL	0.040417	
95% Adjusted-CLT UCL	0.049267	
95% Modified-t UCL	0.042499	
95% Jackknife UCL	0.041119	
95% Chebyshev (Mean, Sd) UCL	0.067998	
97.5% Chebyshev (Mean, Sd) UCL	0.087164	
99% Chebyshev (Mean, Sd) UCL	0.124814	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.040132	
95% Bootstrap-t UCL	0.111882	
95% Hall's Bootstrap UCL	0.116034	
95% Percentile Bootstrap UCL	0.042133	
95% BCA Bootstrap UCL	0.052321	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	0.124814	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Indeno(1,2,3-c,d)pyrene

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Indeno(1,2,3-c,d)pyrene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	12	
Minimum	0.1	
Maximum	390	
Mean	18.59895	
Standard Deviation	61.5034	
Variance	3782.668	
Coefficient of Variation	3.306821	
Skewness	5.708715	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.29838	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	34.56977	
Gamma Statistics		
k hat	0.398938	
k star (bias corrected)	0.386316	
Theta hat	46.62111	
Theta star	48.14442	
nu hat	33.51083	
nu star	32.45053	
5% Approximate Chi Square Value	20.42753	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	20.08696	
Anderson-Darling Test Statistic	4.88323	
Anderson-Darling 5% Critical Value	0.836551	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.368806	
Kolmogrov-Smirnov 5% Critical Value	0.146229	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	29.54571	
95% Adjusted Gamma UCL	30.04665	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	5.966147	
Mean of log data	1.272927	
Standard Deviation of log data	1.730975	
Variance of log data	2.996275	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.834091	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	15.97564	
MLE Standard Deviation	69.65612	
MLE Coefficient of Variation	4.360145	
MLE Skewness	95.97058	
MLE Median	3.571292	
MLE 80% Quantile	15.41902	
MLE 90% Quantile	33.02387	

Appendix P, Attachment 3
ProUCL Output - Indeno(1,2,3-c,d)pyrene
Quanta Property (Groundwater)

MLE 95% Quantile	61.58275	
MLE 99% Quantile	200.1718	
MVU Estimate of Median	3.446047	
MVU Estimate of Mean	14.72459	
MVU Estimate of Standard Deviation	47.22455	
MVU Estimate of SE of Mean	5.370851	
95% H-UCL	38.77749	
95% Chebyshev (MVUE) UCL	38.13559	
97.5% Chebyshev (MVUE) UCL	48.26555	
99% Chebyshev (MVUE) UCL	68.16389	
Non-parametric Statisitics		
95% CLT UCL	34.20891	
95% Adjusted-CLT UCL	43.14132	
95% Modified-t UCL	35.96304	
95% Jackknife UCL	34.56977	
95% Chebyshev (Mean, Sd) UCL	59.96569	
97.5% Chebyshev (Mean, Sd) UCL	77.86511	
99% Chebyshev (Mean, Sd) UCL	113.0251	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	34.21537	
95% Bootstrap-t UCL	103.9212	
95% Hall's Bootstrap UCL	96.49308	
95% Percentile Bootstrap UCL	36.72752	
95% BCA Bootstrap UCL	49.6981	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	113.0251	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Isopropylbenzene (Cumene)

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Isopropylbenzene (Cumene)	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	34	
Minimum	0.1	
Maximum	141	
Mean	39.32857	
Standard Deviation	42.8317	
Variance	1834.554	
Coefficient of Variation	1.089073	
Skewness	1.105816	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.784294	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	50.45083	
Gamma Statistics		
k hat	0.580432	
k star (bias corrected)	0.554846	
Theta hat	67.75736	
Theta star	70.88196	
nu hat	48.75632	
nu star	46.60706	
5% Approximate Chi Square Value	31.93918	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	31.5061	
Anderson-Darling Test Statistic	0.631471	
Anderson-Darling 5% Critical Value	0.805551	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.125406	
Kolmogrov-Smirnov 5% Critical Value	0.143461	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	57.38999	
95% Adjusted Gamma UCL	58.17887	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	4.94876	
Mean of log data	2.602194	
Standard Deviation of log data	1.936438	
Variance of log data	3.749793	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.856375	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	87.97829	
MLE Standard Deviation	566.8443	
MLE Coefficient of Variation	6.443002	
MLE Skewness	286.7927	
MLE Median	13.49331	
MLE 80% Quantile	69.3027	
MLE 90% Quantile	162.4738	

Appendix P, Attachment 3
ProUCL Output - Isopropylbenzene (Cumene)
Quanta Property (Groundwater)

MLE 95% Quantile	326.2404	
MLE 99% Quantile	1219.686	
MVU Estimate of Median	12.90361	
MVU Estimate of Mean	78.40836	
MVU Estimate of Standard Deviation	327.2168	
MVU Estimate of SE of Mean	33.05511	
95% H-UCL	258.796	
95% Chebyshev (MVUE) UCL	222.4922	
97.5% Chebyshev (MVUE) UCL	284.8374	
99% Chebyshev (MVUE) UCL	407.3025	
Non-parametric Statisitics		
95% CLT UCL	50.19953	
95% Adjusted-CLT UCL	51.40451	
95% Modified-t UCL	50.63879	
95% Jackknife UCL	50.45083	
95% Chebyshev (Mean, Sd) UCL	68.13686	
97.5% Chebyshev (Mean, Sd) UCL	80.60223	
99% Chebyshev (Mean, Sd) UCL	105.088	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	50.12096	
95% Bootstrap-t UCL	51.46851	
95% Hall's Bootstrap UCL	51.58817	
95% Percentile Bootstrap UCL	50.69524	
95% BCA Bootstrap UCL	51.69762	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	57.38999	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Lead

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	34	
Minimum	0.09	
Maximum	50.2	
Mean	2.952976	
Standard Deviation	7.87826	
Variance	62.06698	
Coefficient of Variation	2.667905	
Skewness	5.596871	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.337494	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.998753	
Gamma Statistics		
k hat	0.605588	
k star (bias corrected)	0.578205	
Theta hat	4.876211	
Theta star	5.107145	
nu hat	50.86941	
nu star	48.56921	
5% Approximate Chi Square Value	33.56888	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	33.12415	
Anderson-Darling Test Statistic	2.378099	
Anderson-Darling 5% Critical Value	0.803146	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.217283	
Kolmogrov-Smirnov 5% Critical Value	0.143211	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	4.272521	
95% Adjusted Gamma UCL	4.329885	
Lognormal Statistics		
Minimum of log data	-2.40795	
Maximum of log data	3.916015	
Mean of log data	0.063915	
Standard Deviation of log data	1.281539	
Variance of log data	1.642342	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.937736	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.423193	
MLE Standard Deviation	4.946671	
MLE Coefficient of Variation	2.041386	
MLE Skewness	14.63113	
MLE Median	1.066002	
MLE 80% Quantile	3.148151	
MLE 90% Quantile	5.532791	

Appendix P, Attachment 3
ProUCL Output - Lead
Quanta Property (Groundwater)

MLE 95% Quantile	8.776225	
MLE 99% Quantile	21.00529	
MVU Estimate of Median	1.045353	
MVU Estimate of Mean	2.342591	
MVU Estimate of Standard Deviation	4.213773	
MVU Estimate of SE of Mean	0.577741	
95% H-UCL	4.15098	
95% Chebyshev (MVUE) UCL	4.860907	
97.5% Chebyshev (MVUE) UCL	5.950584	
99% Chebyshev (MVUE) UCL	8.091045	
Non-parametric Statisitics		
95% CLT UCL	4.952529	
95% Adjusted-CLT UCL	6.074307	
95% Modified-t UCL	5.173727	
95% Jackknife UCL	4.998753	
95% Chebyshev (Mean, Sd) UCL	8.251836	
97.5% Chebyshev (Mean, Sd) UCL	10.54466	
99% Chebyshev (Mean, Sd) UCL	15.04846	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.9539	
95% Bootstrap-t UCL	12.0754	
95% Hall's Bootstrap UCL	12.82367	
95% Percentile Bootstrap UCL	5.217619	
95% BCA Bootstrap UCL	6.66869	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	15.04846	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	35	
Minimum	0.943	
Maximum	36000	
Mean	7122.559	
Standard Deviation	7173.908	
Variance	51464956	
Coefficient of Variation	1.007209	
Skewness	1.607798	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.797267	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	8985.434	
Gamma Statistics		
k hat	0.362663	
k star (bias corrected)	0.352631	
Theta hat	19639.63	
Theta star	20198.33	
nu hat	30.46366	
nu star	29.62102	
5% Approximate Chi Square Value	18.19315	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	17.87334	
Anderson-Darling Test Statistic	3.314774	
Anderson-Darling 5% Critical Value	0.844918	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.250687	
Kolmogrov-Smirnov 5% Critical Value	0.146935	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	11596.53	
95% Adjusted Gamma UCL	11804.03	
Lognormal Statistics		
Minimum of log data	-0.05869	
Maximum of log data	10.49127	
Mean of log data	7.027546	
Standard Deviation of log data	3.232858	
Variance of log data	10.45137	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.733067	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	209657.7	
MLE Standard Deviation	38993352	
MLE Coefficient of Variation	185.9858	
MLE Skewness	6433942	
MLE Median	1127.261	
MLE 80% Quantile	17314.7	
MLE 90% Quantile	71809.26	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Quanta Property (Groundwater)

MLE 95% Quantile	229945.5	
MLE 99% Quantile	2078535	
MVU Estimate of Median	995.0198	
MVU Estimate of Mean	115287.4	
MVU Estimate of Standard Deviation	2608278	
MVU Estimate of SE of Mean	86383.8	
95% H-UCL	3372506	
95% Chebyshev (MVUE) UCL	491825.6	
97.5% Chebyshev (MVUE) UCL	654754	
99% Chebyshev (MVUE) UCL	974795.3	
Non-parametric Statisitics		
95% CLT UCL	8943.343	
95% Adjusted-CLT UCL	9236.782	
95% Modified-t UCL	9031.204	
95% Jackknife UCL	8985.434	
95% Chebyshev (Mean, Sd) UCL	11947.68	
97.5% Chebyshev (Mean, Sd) UCL	14035.51	
99% Chebyshev (Mean, Sd) UCL	18136.65	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	8885.673	
95% Bootstrap-t UCL	9349.579	
95% Hall's Bootstrap UCL	9694.136	
95% Percentile Bootstrap UCL	9039.239	
95% BCA Bootstrap UCL	9198.525	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	18136.65	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Phenanthrene
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Phenanthrene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	33	
Minimum	0.11	
Maximum	8300	
Mean	352.5	
Standard Deviation	1302.41	
Variance	1696271	
Coefficient of Variation	3.694779	
Skewness	5.882903	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.261968	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	690.7015	
Gamma Statistics		
k hat	0.37545	
k star (bias corrected)	0.364505	
Theta hat	938.8739	
Theta star	967.065	
nu hat	31.53778	
nu star	30.61842	
5% Approximate Chi Square Value	18.97761	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	18.65037	
Anderson-Darling Test Statistic	3.739072	
Anderson-Darling 5% Critical Value	0.841969	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.28271	
Kolmogrov-Smirnov 5% Critical Value	0.146686	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	568.7224	
95% Adjusted Gamma UCL	578.7011	
Lognormal Statistics		
Minimum of log data	-2.20727	
Maximum of log data	9.024011	
Mean of log data	4.094349	
Standard Deviation of log data	1.954693	
Variance of log data	3.820825	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.878952	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	405.3544	
MLE Standard Deviation	2708.358	
MLE Coefficient of Variation	6.681456	
MLE Skewness	318.3169	
MLE Median	60.00028	
MLE 80% Quantile	312.9567	
MLE 90% Quantile	739.6151	

Appendix P, Attachment 3
ProUCL Output - Phenanthrene
Quanta Property (Groundwater)

MLE 95% Quantile	1494.907	
MLE 99% Quantile	5658.79	
MVU Estimate of Median	57.32948	
MVU Estimate of Mean	360.0297	
MVU Estimate of Standard Deviation	1538.165	
MVU Estimate of SE of Mean	153.6088	
95% H-UCL	1214.173	
95% Chebyshev (MVUE) UCL	1029.595	
97.5% Chebyshev (MVUE) UCL	1319.316	
99% Chebyshev (MVUE) UCL	1888.418	
Non-parametric Statisitics		
95% CLT UCL	683.0599	
95% Adjusted-CLT UCL	877.9862	
95% Modified-t UCL	721.106	
95% Jackknife UCL	690.7015	
95% Chebyshev (Mean, Sd) UCL	1228.491	
97.5% Chebyshev (Mean, Sd) UCL	1607.533	
99% Chebyshev (Mean, Sd) UCL	2352.088	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	688.5264	
95% Bootstrap-t UCL	3395.213	
95% Hall's Bootstrap UCL	2132.354	
95% Percentile Bootstrap UCL	732.8	
95% BCA Bootstrap UCL	1021.909	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	2352.088	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Phenol

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Phenol	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	21	
Minimum	2	
Maximum	3100	
Mean	232.6119	
Standard Deviation	662.6096	
Variance	439051.4	
Coefficient of Variation	2.848563	
Skewness	3.337059	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.409265	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	404.6742	
Gamma Statistics		
k hat	0.240804	
k star (bias corrected)	0.239477	
Theta hat	965.9809	
Theta star	971.3347	
nu hat	20.22752	
nu star	20.11603	
5% Approximate Chi Square Value	10.93522	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	10.69344	
Anderson-Darling Test Statistic	6.812335	
Anderson-Darling 5% Critical Value	0.885706	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.302213	
Kolmogrov-Smirnov 5% Critical Value	0.149889	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	427.9042	
95% Adjusted Gamma UCL	437.5794	
Lognormal Statistics		
Minimum of log data	0.693147	
Maximum of log data	8.039157	
Mean of log data	2.481865	
Standard Deviation of log data	2.216806	
Variance of log data	4.91423	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.706889	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	139.6278	
MLE Standard Deviation	1623.617	
MLE Coefficient of Variation	11.62817	
MLE Skewness	1607.182	
MLE Median	11.96356	
MLE 80% Quantile	77.87201	
MLE 90% Quantile	206.5332	

Appendix P, Attachment 3
ProUCL Output - Phenol
Quanta Property (Groundwater)

MLE 95% Quantile	458.7529	
MLE 99% Quantile	2075.914	
MVU Estimate of Median	11.28284	
MVU Estimate of Mean	117.0601	
MVU Estimate of Standard Deviation	701.6598	
MVU Estimate of SE of Mean	58.46247	
95% H-UCL	552.1578	
95% Chebyshev (MVUE) UCL	371.8921	
97.5% Chebyshev (MVUE) UCL	482.1582	
99% Chebyshev (MVUE) UCL	698.7544	
Non-parametric Statisitics		
95% CLT UCL	400.7865	
95% Adjusted-CLT UCL	457.0404	
95% Modified-t UCL	413.4486	
95% Jackknife UCL	404.6742	
95% Chebyshev (Mean, Sd) UCL	678.2783	
97.5% Chebyshev (Mean, Sd) UCL	871.1185	
99% Chebyshev (Mean, Sd) UCL	1249.916	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	399.8068	
95% Bootstrap-t UCL	611.4167	
95% Hall's Bootstrap UCL	431.3881	
95% Percentile Bootstrap UCL	407.0905	
95% BCA Bootstrap UCL	466.0976	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1249.916	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Pyrene

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Pyrene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	29	
Minimum	1	
Maximum	2800	
Mean	107.3538	
Standard Deviation	449.2302	
Variance	201807.8	
Coefficient of Variation	4.184576	
Skewness	5.657254	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.253203	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	224.0071	
Gamma Statistics		
k hat	0.317213	
k star (bias corrected)	0.310428	
Theta hat	338.4282	
Theta star	345.8253	
nu hat	26.64589	
nu star	26.07594	
5% Approximate Chi Square Value	15.43603	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	15.14364	
Anderson-Darling Test Statistic	7.376813	
Anderson-Darling 5% Critical Value	0.855402	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.394875	
Kolmogrov-Smirnov 5% Critical Value	0.147821	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	181.3519	
95% Adjusted Gamma UCL	184.8533	
Lognormal Statistics		
Minimum of log data	0	
Maximum of log data	7.937375	
Mean of log data	2.522013	
Standard Deviation of log data	1.534434	
Variance of log data	2.354488	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.838814	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	40.41727	
MLE Standard Deviation	124.7888	
MLE Coefficient of Variation	3.087513	
MLE Skewness	38.69499	
MLE Median	12.45364	
MLE 80% Quantile	45.54086	
MLE 90% Quantile	89.45726	

Appendix P, Attachment 3
ProUCL Output - Pyrene
Quanta Property (Groundwater)

MLE 95% Quantile	155.4241	
MLE 99% Quantile	441.9103	
MVU Estimate of Median	12.1092	
MVU Estimate of Mean	38.18453	
MVU Estimate of Standard Deviation	95.24316	
MVU Estimate of SE of Mean	11.90108	
95% H-UCL	83.23439	
95% Chebyshev (MVUE) UCL	90.06013	
97.5% Chebyshev (MVUE) UCL	112.5067	
99% Chebyshev (MVUE) UCL	156.5988	
Non-parametric Statisitics		
95% CLT UCL	221.3713	
95% Adjusted-CLT UCL	286.0269	
95% Modified-t UCL	234.092	
95% Jackknife UCL	224.0071	
95% Chebyshev (Mean, Sd) UCL	409.5028	
97.5% Chebyshev (Mean, Sd) UCL	540.2429	
99% Chebyshev (Mean, Sd) UCL	797.0565	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	221.0557	
95% Bootstrap-t UCL	1341.462	
95% Hall's Bootstrap UCL	1181.384	
95% Percentile Bootstrap UCL	238.1364	
95% BCA Bootstrap UCL	365.7069	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	797.0565	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Toluene

Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Toluene	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	37	
Minimum	0.25	
Maximum	4400	
Mean	666.8736	
Standard Deviation	1170.768	
Variance	1370698	
Coefficient of Variation	1.755607	
Skewness	2.243	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.607197	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	970.8912	
Gamma Statistics		
k hat	0.267424	
k star (bias corrected)	0.264195	
Theta hat	2493.692	
Theta star	2524.168	
nu hat	22.46363	
nu star	22.19242	
5% Approximate Chi Square Value	12.48102	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	12.22087	
Anderson-Darling Test Statistic	0.858474	
Anderson-Darling 5% Critical Value	0.873864	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.121526	
Kolmogrov-Smirnov 5% Critical Value	0.14911	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1185.763	
95% Adjusted Gamma UCL	1211.005	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	8.38936	
Mean of log data	3.875352	
Standard Deviation of log data	3.164243	
Variance of log data	10.01244	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.852104	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	7198.082	
MLE Standard Deviation	1074930	
MLE Coefficient of Variation	149.3356	
MLE Skewness	3330797	
MLE Median	48.19964	
MLE 80% Quantile	698.6412	
MLE 90% Quantile	2811.306	

Appendix P, Attachment 3
ProUCL Output - Toluene
Quanta Property (Groundwater)

MLE 95% Quantile	8782.637	
MLE 99% Quantile	75764.25	
MVU Estimate of Median	42.76941	
MVU Estimate of Mean	4121.416	
MVU Estimate of Standard Deviation	85268.74	
MVU Estimate of SE of Mean	3029.58	
95% H-UCL	103617.1	
95% Chebyshev (MVUE) UCL	17327.05	
97.5% Chebyshev (MVUE) UCL	23041.14	
99% Chebyshev (MVUE) UCL	34265.36	
Non-parametric Statisitics		
95% CLT UCL	964.022	
95% Adjusted-CLT UCL	1030.83	
95% Modified-t UCL	981.312	
95% Jackknife UCL	970.8912	
95% Chebyshev (Mean, Sd) UCL	1454.324	
97.5% Chebyshev (Mean, Sd) UCL	1795.054	
99% Chebyshev (Mean, Sd) UCL	2464.353	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	963.403	
95% Bootstrap-t UCL	1121.459	
95% Hall's Bootstrap UCL	994.4655	
95% Percentile Bootstrap UCL	984.1021	
95% BCA Bootstrap UCL	1041.228	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	1211.005	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
Quanta Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Qnta_GWshallow.xls	
Variable:	Xylene (Total)	
Raw Statistics		
Number of Observations	42	
Number of Missing Data	0	
Number of Valid Observations	42	
Number of Distinct Observations	38	
Minimum	0.25	
Maximum	3900	
Mean	974.7345	
Standard Deviation	1100.652	
Variance	1211435	
Coefficient of Variation	1.129182	
Skewness	0.926488	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.781947	
Shapiro-Wilk 5% Critical Value	0.942	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1260.545	
Gamma Statistics		
k hat	0.345064	
k star (bias corrected)	0.336289	
Theta hat	2824.797	
Theta star	2898.501	
nu hat	28.98534	
nu star	28.24829	
5% Approximate Chi Square Value	17.11954	
Adjusted Level of Significance	0.044286	
Adjusted Chi Square Value	16.81015	
Anderson-Darling Test Statistic	1.645848	
Anderson-Darling 5% Critical Value	0.848978	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.15716	
Kolmogrov-Smirnov 5% Critical Value	0.147278	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1608.372	
95% Adjusted Gamma UCL	1637.974	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	8.268732	
Mean of log data	4.928916	
Standard Deviation of log data	3.010614	
Variance of log data	9.063796	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.790406	
Shapiro-Wilk 5% Critical Value	0.942	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	12846.34	
MLE Standard Deviation	1193802	
MLE Coefficient of Variation	92.92939	
MLE Skewness	802804.9	
MLE Median	138.2296	
MLE 80% Quantile	1759.676	
MLE 90% Quantile	6618.044	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
Quanta Property (Groundwater)

MLE 95% Quantile	19562.63	
MLE 99% Quantile	151995.2	
MVU Estimate of Median	124.0571	
MVU Estimate of Mean	7996.561	
MVU Estimate of Standard Deviation	135353.3	
MVU Estimate of SE of Mean	5610.504	
95% H-UCL	145467.5	
95% Chebyshev (MVUE) UCL	32452.18	
97.5% Chebyshev (MVUE) UCL	43034.15	
99% Chebyshev (MVUE) UCL	63820.37	
Non-parametric Statisitics		
95% CLT UCL	1254.087	
95% Adjusted-CLT UCL	1280.03	
95% Modified-t UCL	1264.592	
95% Jackknife UCL	1260.545	
95% Chebyshev (Mean, Sd) UCL	1715.025	
97.5% Chebyshev (Mean, Sd) UCL	2035.35	
99% Chebyshev (Mean, Sd) UCL	2664.565	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1247.175	
95% Bootstrap-t UCL	1291.866	
95% Hall's Bootstrap UCL	1292.248	
95% Percentile Bootstrap UCL	1274.451	
95% BCA Bootstrap UCL	1281.825	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	2664.565	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Aluminum
Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Aluminum	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	23	
Minimum	9.34E+03	
Maximum	19100	
Mean	12276.9	
Standard Deviation	2179.173	
Variance	4748794	
Coefficient of Variation	0.177502	
Skewness	1.383654	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.892217	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	12965.28	
Gamma Statistics		
k hat	36.64219	
k star (bias corrected)	32.87461	
Theta hat	335.0481	
Theta star	373.4462	
nu hat	2125.247	
nu star	1906.727	
5% Approximate Chi Square Value	1806.281	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	1800.462	
Anderson-Darling Test Statistic	0.642832	
Anderson-Darling 5% Critical Value	0.744062	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.121102	
Kolmogrov-Smirnov 5% Critical Value	0.162227	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	12959.61	
95% Adjusted Gamma UCL	13001.49	
Lognormal Statistics		
Minimum of log data	9.142062	
Maximum of log data	9.857444	
Mean of log data	9.401767	
Standard Deviation of log data	0.164634	
Variance of log data	0.027104	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.943511	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	12274.99	
MLE Standard Deviation	2034.653	
MLE Coefficient of Variation	0.165756	
MLE Skewness	0.501822	
MLE Median	12109.76	
MLE 80% Quantile	13917.23	
MLE 90% Quantile	14962.79	

Appendix P, Attachment 3
ProUCL Output - Aluminum
Former Celotex (Surface Soil)

MLE 95% Quantile	15876.42	
MLE 99% Quantile	17760.03	
MVU Estimate of Median	12104.1	
MVU Estimate of Mean	12269.18	
MVU Estimate of Standard Deviation	2030.079	
MVU Estimate of SE of Mean	376.9594	
95% H-UCL	12954.41	
95% Chebyshev (MVUE) UCL	13912.31	
97.5% Chebyshev (MVUE) UCL	14623.3	
99% Chebyshev (MVUE) UCL	16019.88	
Non-parametric Statisitics		
95% CLT UCL	12942.51	
95% Adjusted-CLT UCL	13053.6	
95% Modified-t UCL	12982.61	
95% Jackknife UCL	12965.28	
95% Chebyshev (Mean, Sd) UCL	14040.78	
97.5% Chebyshev (Mean, Sd) UCL	14804.01	
99% Chebyshev (Mean, Sd) UCL	16303.23	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	12922.85	
95% Bootstrap-t UCL	13122.75	
95% Hall's Bootstrap UCL	13179.38	
95% Percentile Bootstrap UCL	12938.97	
95% BCA Bootstrap UCL	13027.59	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	12959.61	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	29	
Minimum	1.82	
Maximum	54.2	
Mean	14.11	
Standard Deviation	12.41658	
Variance	154.1714	
Coefficient of Variation	0.879984	
Skewness	1.546867	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.82356	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	18.0323	
Gamma Statistics		
k hat	1.575467	
k star (bias corrected)	1.435477	
Theta hat	8.956072	
Theta star	9.829489	
nu hat	91.37711	
nu star	83.25764	
5% Approximate Chi Square Value	63.22475	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	62.1818	
Anderson-Darling Test Statistic	0.701539	
Anderson-Darling 5% Critical Value	0.76187	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.1693	
Kolmogrov-Smirnov 5% Critical Value	0.165394	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	18.58078	
95% Adjusted Gamma UCL	18.89243	
Lognormal Statistics		
Minimum of log data	0.598837	
Maximum of log data	3.992681	
Mean of log data	2.297105	
Standard Deviation of log data	0.863894	
Variance of log data	0.746312	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.967949	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	14.44374	
MLE Standard Deviation	15.21199	
MLE Coefficient of Variation	1.053189	
MLE Skewness	4.33E+00	
MLE Median	9.945351	
MLE 80% Quantile	20.6372	
MLE 90% Quantile	30.18087	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Former Celotex (Surface Soil)

MLE 95% Quantile	41.1906	
MLE 99% Quantile	74.18199	
MVU Estimate of Median	9.818145	
MVU Estimate of Mean	14.19929	
MVU Estimate of Standard Deviation	14.05863	
MVU Estimate of SE of Mean	2.54142	
95% H-UCL	21.00279	
95% Chebyshev (MVUE) UCL	25.27708	
97.5% Chebyshev (MVUE) UCL	30.07045	
99% Chebyshev (MVUE) UCL	39.4861	
Non-parametric Statisitics		
95% CLT UCL	17.90254	
95% Adjusted-CLT UCL	18.61022	
95% Modified-t UCL	18.14268	
95% Jackknife UCL	18.0323	
95% Chebyshev (Mean, Sd) UCL	24.16032	
97.5% Chebyshev (Mean, Sd) UCL	28.5091	
99% Chebyshev (Mean, Sd) UCL	37.05143	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	17.906	
95% Bootstrap-t UCL	19.07843	
95% Hall's Bootstrap UCL	19.28447	
95% Percentile Bootstrap UCL	18.08897	
95% BCA Bootstrap UCL	18.79414	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	18.58078	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	29	
Minimum	0.0595	
Maximum	10.4	
Mean	2.13319	
Standard Deviation	2.403647	
Variance	5.777517	
Coefficient of Variation	1.126785	
Skewness	1.807368	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.806023	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.892483	
Gamma Statistics		
k hat	0.79385	
k star (bias corrected)	0.734716	
Theta hat	2.687146	
Theta star	2.903422	
nu hat	46.04327	
nu star	42.61351	
5% Approximate Chi Square Value	28.64482	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	27.95994	
Anderson-Darling Test Statistic	0.215858	
Anderson-Darling 5% Critical Value	0.782035	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.087125	
Kolmogrov-Smirnov 5% Critical Value	0.168732	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	3.173442	
95% Adjusted Gamma UCL	3.251176	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	2.341806	
Mean of log data	0.009244	
Standard Deviation of log data	1.425422	
Variance of log data	2.031829	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.9561	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	2.787537	
MLE Standard Deviation	7.176499	
MLE Coefficient of Variation	2.574495	
MLE Skewness	24.7873	
MLE Median	1.009287	
MLE 80% Quantile	3.366002	
MLE 90% Quantile	6.302281	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Former Celotex (Surface Soil)

MLE 95% Quantile	10.52827	
MLE 99% Quantile	27.79278	
MVU Estimate of Median	0.974502	
MVU Estimate of Mean	2.612798	
MVU Estimate of Standard Deviation	5.350624	
MVU Estimate of SE of Mean	0.858839	
95% H-UCL	6.282718	
95% Chebyshev (MVUE) UCL	6.356391	
97.5% Chebyshev (MVUE) UCL	7.976247	
99% Chebyshev (MVUE) UCL	11.15814	
Non-parametric Statisitics		
95% CLT UCL	2.867363	
95% Adjusted-CLT UCL	3.02743	
95% Modified-t UCL	2.91745	
95% Jackknife UCL	2.892483	
95% Chebyshev (Mean, Sd) UCL	4.078767	
97.5% Chebyshev (Mean, Sd) UCL	4.920619	
99% Chebyshev (Mean, Sd) UCL	6.574276	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.851378	
95% Bootstrap-t UCL	3.188742	
95% Hall's Bootstrap UCL	3.324487	
95% Percentile Bootstrap UCL	2.90931	
95% BCA Bootstrap UCL	3.090483	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	3.173442	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Benzo(a)pyrene	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	28	
Minimum	0.0525	
Maximum	8.89	
Mean	1.993655	
Standard Deviation	2.365573	
Variance	5.595935	
Coefficient of Variation	1.186551	
Skewness	1.806642	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.765533	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.740921	
Gamma Statistics		
k hat	0.761674	
k star (bias corrected)	0.705868	
Theta hat	2.617466	
Theta star	2.8244	
nu hat	44.17708	
nu star	40.94037	
5% Approximate Chi Square Value	27.27443	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	26.60737	
Anderson-Darling Test Statistic	0.278516	
Anderson-Darling 5% Critical Value	0.783264	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.122274	
Kolmogrov-Smirnov 5% Critical Value	0.168929	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	2.992583	
95% Adjusted Gamma UCL	3.067609	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	2.184927	
Mean of log data	-0.09434	
Standard Deviation of log data	1.447061	
Variance of log data	2.093987	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.955031	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	2.592587	
MLE Standard Deviation	6.916531	
MLE Coefficient of Variation	2.66781	
MLE Skewness	26.9908	
MLE Median	0.909976	
MLE 80% Quantile	3.0908	
MLE 90% Quantile	5.842372	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Former Celotex (Surface Soil)

MLE 95% Quantile	9.836294	
MLE 99% Quantile	26.35157	
MVU Estimate of Median	0.877671	
MVU Estimate of Mean	2.423159	
MVU Estimate of Standard Deviation	5.091389	
MVU Estimate of SE of Mean	0.811492	
95% H-UCL	5.96594	
95% Chebyshev (MVUE) UCL	5.960369	
97.5% Chebyshev (MVUE) UCL	7.490922	
99% Chebyshev (MVUE) UCL	10.4974	
Non-parametric Statisitics		
95% CLT UCL	2.7162	
95% Adjusted-CLT UCL	2.873667	
95% Modified-t UCL	2.765483	
95% Jackknife UCL	2.740921	
95% Chebyshev (Mean, Sd) UCL	3.908414	
97.5% Chebyshev (Mean, Sd) UCL	4.736932	
99% Chebyshev (Mean, Sd) UCL	6.364395	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.711958	
95% Bootstrap-t UCL	3.072237	
95% Hall's Bootstrap UCL	3.076024	
95% Percentile Bootstrap UCL	2.753828	
95% BCA Bootstrap UCL	2.887276	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	2.992583	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(b)fluoranthene

Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Benzo(b)fluoranthene	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	29	
Minimum	0.0525	
Maximum	9.62	
Mean	1.893828	
Standard Deviation	2.379972	
Variance	5.66E+00	
Coefficient of Variation	1.256699	
Skewness	2.115851	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.732007	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.645642	
Gamma Statistics		
k hat	0.735642	
k star (bias corrected)	0.68253	
Theta hat	2.574387	
Theta star	2.774718	
nu hat	42.66725	
nu star	39.58673	
5% Approximate Chi Square Value	26.17032	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	25.51794	
Anderson-Darling Test Statistic	0.3155	
Anderson-Darling 5% Critical Value	0.785305	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.099665	
Kolmogrov-Smirnov 5% Critical Value	0.169179	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	2.864713	
95% Adjusted Gamma UCL	2.93795	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	2.263844	
Mean of log data	-0.1773	
Standard Deviation of log data	1.468688	
Variance of log data	2.157044	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.952556	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	2.462607	
MLE Standard Deviation	6.80925	
MLE Coefficient of Variation	2.765058	
MLE Skewness	29.43555	
MLE Median	0.837527	
MLE 80% Quantile	2.897185	
MLE 90% Quantile	5.528753	

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
Former Celotex (Surface Soil)

MLE 95% Quantile	9.381033	
MLE 99% Quantile	25.50479	
MVU Estimate of Median	0.806914	
MVU Estimate of Mean	2.294921	
MVU Estimate of Standard Deviation	4.946874	
MVU Estimate of SE of Mean	0.782777	
95% H-UCL	5.78745	
95% Chebyshev (MVUE) UCL	5.706969	
97.5% Chebyshev (MVUE) UCL	7.183364	
99% Chebyshev (MVUE) UCL	10.08346	
Non-parametric Statisitics		
95% CLT UCL	2.62077	
95% Adjusted-CLT UCL	2.806311	
95% Modified-t UCL	2.674582	
95% Jackknife UCL	2.645642	
95% Chebyshev (Mean, Sd) UCL	3.820242	
97.5% Chebyshev (Mean, Sd) UCL	4.653803	
99% Chebyshev (Mean, Sd) UCL	6.291172	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.613787	
95% Bootstrap-t UCL	3.12957	
95% Hall's Bootstrap UCL	3.341146	
95% Percentile Bootstrap UCL	2.601707	
95% BCA Bootstrap UCL	2.853207	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	2.864713	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chromium
Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Chromium	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	28	
Minimum	1.19E+01	
Maximum	1.53E+02	
Mean	3.99E+01	
Standard Deviation	2.59E+01	
Variance	671.4738	
Coefficient of Variation	0.649276	
Skewness	3.194353	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.681622	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.81E+01	
Gamma Statistics		
k hat	4.05988	
k star (bias corrected)	3.662881	
Theta hat	9.83E+00	
Theta star	1.09E+01	
nu hat	235.473	
nu star	212.4471	
5% Approximate Chi Square Value	179.7097	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	177.9137	
Anderson-Darling Test Statistic	0.99743	
Anderson-Darling 5% Critical Value	0.750181	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.139768	
Kolmogrov-Smirnov 5% Critical Value	0.163405	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	4.72E+01	
95% Adjusted Gamma UCL	4.77E+01	
Lognormal Statistics		
Minimum of log data	2.476538	
Maximum of log data	5.030438	
Mean of log data	3.558453	
Standard Deviation of log data	0.479838	
Variance of log data	0.230244	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.945497	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	3.94E+01	
MLE Standard Deviation	2.00E+01	
MLE Coefficient of Variation	5.09E-01	
MLE Skewness	1.66E+00	
MLE Median	3.51E+01	
MLE 80% Quantile	5.27E+01	
MLE 90% Quantile	6.50E+01	

Appendix P, Attachment 3
ProUCL Output - Chromium
Former Celotex (Surface Soil)

MLE 95% Quantile	7.73E+01	
MLE 99% Quantile	1.07E+02	
MVU Estimate of Median	3.50E+01	
MVU Estimate of Mean	3.92E+01	
MVU Estimate of Standard Deviation	1.96E+01	
MVU Estimate of SE of Mean	3.64E+00	
95% H-UCL	46.9031	
95% Chebyshev (MVUE) UCL	5.51E+01	
97.5% Chebyshev (MVUE) UCL	6.19E+01	
99% Chebyshev (MVUE) UCL	7.54E+01	
Non-parametric Statisitics		
95% CLT UCL	4.78E+01	
95% Adjusted-CLT UCL	50.87506	
95% Modified-t UCL	48.57171	
95% Jackknife UCL	4.81E+01	
95% Chebyshev (Mean, Sd) UCL	6.09E+01	
97.5% Chebyshev (Mean, Sd) UCL	7.00E+01	
99% Chebyshev (Mean, Sd) UCL	8.78E+01	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.79E+01	
95% Bootstrap-t UCL	54.36665	
95% Hall's Bootstrap UCL	82.69351	
95% Percentile Bootstrap UCL	4.82E+01	
95% BCA Bootstrap UCL	5.25E+01	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	4.72E+01	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzo(a,h)anthracene

Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Dibenzo(a,h)anthracene	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	29	
Minimum	0.051	
Maximum	2.17E+00	
Mean	4.87E-01	
Standard Deviation	5.50E-01	
Variance	0.302481	
Coefficient of Variation	1.129447	
Skewness	1.823312	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.760677	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	6.61E-01	
Gamma Statistics		
k hat	0.990292	
k star (bias corrected)	0.910837	
Theta hat	0.491722	
Theta star	0.534616	
nu hat	57.43696	
nu star	52.82854	
5% Approximate Chi Square Value	37.1291	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	36.34222	
Anderson-Darling Test Statistic	0.598354	
Anderson-Darling 5% Critical Value	0.774531	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.101288	
Kolmogrov-Smirnov 5% Critical Value	0.167529	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.692846	
95% Adjusted Gamma UCL	0.707848	
Lognormal Statistics		
Minimum of log data	-2.97593	
Maximum of log data	0.774727	
Mean of log data	-1.30314	
Standard Deviation of log data	1.135051	
Variance of log data	1.288342	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.946803	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.517384	
MLE Standard Deviation	0.83854	
MLE Coefficient of Variation	1.62073	
MLE Skewness	9.119472	
MLE Median	0.271677	
MLE 80% Quantile	0.708913	
MLE 90% Quantile	1.168125	

Appendix P, Attachment 3
ProUCL Output - Dibenzo(a,h)anthracene
Former Celotex (Surface Soil)

MLE 95% Quantile	1.757722	
MLE 99% Quantile	3.807561	
MVU Estimate of Median	0.265705	
MVU Estimate of Mean	0.499848	
MVU Estimate of Standard Deviation	0.716264	
MVU Estimate of SE of Mean	0.124089	
95% H-UCL	0.907621	
95% Chebyshev (MVUE) UCL	1.040737	
97.5% Chebyshev (MVUE) UCL	1.27478	
99% Chebyshev (MVUE) UCL	1.734513	
Non-parametric Statisitics		
95% CLT UCL	6.55E-01	
95% Adjusted-CLT UCL	0.691884	
95% Modified-t UCL	0.666447	
95% Jackknife UCL	6.61E-01	
95% Chebyshev (Mean, Sd) UCL	9.32E-01	
97.5% Chebyshev (Mean, Sd) UCL	1.12E+00	
99% Chebyshev (Mean, Sd) UCL	1.50E+00	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	6.46E-01	
95% Bootstrap-t UCL	0.715511	
95% Hall's Bootstrap UCL	0.709547	
95% Percentile Bootstrap UCL	6.60E-01	
95% BCA Bootstrap UCL	6.97E-01	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	6.93E-01	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Indeno(1,2,3-c,d)pyrene

Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Indeno(1,2,3-c,d)pyrene	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	28	
Minimum	0.0525	
Maximum	5.07	
Mean	1.142448	
Standard Deviation	1.346057	
Variance	1.811869	
Coefficient of Variation	1.178221	
Skewness	1.889458	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.75077	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.567657	
Gamma Statistics		
k hat	0.841163	
k star (bias corrected)	0.777134	
Theta hat	1.358177	
Theta star	1.470078	
nu hat	48.78744	
nu star	45.07379	
5% Approximate Chi Square Value	30.67064	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	29.96018	
Anderson-Darling Test Statistic	0.33647	
Anderson-Darling 5% Critical Value	0.780228	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.080831	
Kolmogrov-Smirnov 5% Critical Value	0.168442	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.67895	
95% Adjusted Gamma UCL	1.718764	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	1.623341	
Mean of log data	-0.5678	
Standard Deviation of log data	1.318702	
Variance of log data	1.738974	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.957972	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1.352145	
MLE Standard Deviation	2.928728	
MLE Coefficient of Variation	2.165988	
MLE Skewness	16.6597	
MLE Median	0.566774	
MLE 80% Quantile	1.727211	
MLE 90% Quantile	3.08557	

Appendix P, Attachment 3
ProUCL Output - Indeno(1,2,3-c,d)pyrene
Former Celotex (Surface Soil)

MLE 95% Quantile	4.960314	
MLE 99% Quantile	12.17647	
MVU Estimate of Median	0.550016	
MVU Estimate of Mean	1.283668	
MVU Estimate of Standard Deviation	2.31235	
MVU Estimate of SE of Mean	0.383218	
95% H-UCL	2.763051	
95% Chebyshev (MVUE) UCL	2.954075	
97.5% Chebyshev (MVUE) UCL	3.676861	
99% Chebyshev (MVUE) UCL	5.096635	
Non-parametric Statisitics		
95% CLT UCL	1.55359	
95% Adjusted-CLT UCL	1.647299	
95% Modified-t UCL	1.582274	
95% Jackknife UCL	1.567657	
95% Chebyshev (Mean, Sd) UCL	2.231983	
97.5% Chebyshev (Mean, Sd) UCL	2.703426	
99% Chebyshev (Mean, Sd) UCL	3.629484	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.547457	
95% Bootstrap-t UCL	1.796207	
95% Hall's Bootstrap UCL	1.72508	
95% Percentile Bootstrap UCL	1.552621	
95% BCA Bootstrap UCL	1.661897	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	1.67895	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Iron
Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Iron	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	24	
Minimum	15300	
Maximum	38100	
Mean	21875.86	
Standard Deviation	4848.759	
Variance	23510468	
Coefficient of Variation	0.221649	
Skewness	1.808814	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.835996	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	23407.55	
Gamma Statistics		
k hat	24.76368	
k star (bias corrected)	22.22491	
Theta hat	883.3849	
Theta star	984.2948	
nu hat	1436.293	
nu star	1289.045	
5% Approximate Chi Square Value	1206.662	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	1201.917	
Anderson-Darling Test Statistic	0.799273	
Anderson-Darling 5% Critical Value	0.744189	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.146621	
Kolmogrov-Smirnov 5% Critical Value	0.162286	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	23369.39	
95% Adjusted Gamma UCL	23461.65	
Lognormal Statistics		
Minimum of log data	9.635608	
Maximum of log data	10.54797	
Mean of log data	9.972812	
Standard Deviation of log data	0.198715	
Variance of log data	0.039488	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.923659	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	21863.12	
MLE Standard Deviation	4387.782	
MLE Coefficient of Variation	0.200693	
MLE Skewness	0.610164	
MLE Median	21435.69	
MLE 80% Quantile	25354.89	
MLE 90% Quantile	27671.59	

Appendix P, Attachment 3
ProUCL Output - Iron
Former Celotex (Surface Soil)

MLE 95% Quantile	29723.68	
MLE 99% Quantile	34030.91	
MVU Estimate of Median	21421.1	
MVU Estimate of Mean	21847.97	
MVU Estimate of Standard Deviation	4373.349	
MVU Estimate of SE of Mean	812.0342	
95% H-UCL	23345.73	
95% Chebyshev (MVUE) UCL	25387.55	
97.5% Chebyshev (MVUE) UCL	26919.12	
99% Chebyshev (MVUE) UCL	29927.61	
Non-parametric Statisitics		
95% CLT UCL	23356.88	
95% Adjusted-CLT UCL	23680.03	
95% Modified-t UCL	23457.95	
95% Jackknife UCL	23407.55	
95% Chebyshev (Mean, Sd) UCL	25800.58	
97.5% Chebyshev (Mean, Sd) UCL	27498.81	
99% Chebyshev (Mean, Sd) UCL	30834.65	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	23352.23	
95% Bootstrap-t UCL	24007.23	
95% Hall's Bootstrap UCL	24955.06	
95% Percentile Bootstrap UCL	23427.59	
95% BCA Bootstrap UCL	23772.41	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	23369.39	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Lead
Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	28	
Minimum	15.6	
Maximum	951	
Mean	161.6379	
Standard Deviation	165.5382	
Variance	27402.9	
Coefficient of Variation	1.02413	
Skewness	4.060155	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.565217	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	213.9301	
Gamma Statistics		
k hat	1.71053	
k star (bias corrected)	1.556567	
Theta hat	94.4958	
Theta star	103.8425	
nu hat	99.21076	
nu star	90.28091	
5% Approximate Chi Square Value	69.36843	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	68.27343	
Anderson-Darling Test Statistic	1.159874	
Anderson-Darling 5% Critical Value	0.760404	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.166256	
Kolmogrov-Smirnov 5% Critical Value	0.165186	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	210.3669	
95% Adjusted Gamma UCL	213.7408	
Lognormal Statistics		
Minimum of log data	2.747271	
Maximum of log data	6.857514	
Mean of log data	4.765423	
Standard Deviation of log data	0.851639	
Variance of log data	0.725289	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.890204	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	168.6908	
MLE Standard Deviation	174.1137	
MLE Coefficient of Variation	1.032147	
MLE Skewness	4.196017	
MLE Median	117.3808	
MLE 80% Quantile	241.0629	
MLE 90% Quantile	350.6467	

Appendix P, Attachment 3
ProUCL Output - Lead
Former Celotex (Surface Soil)

MLE 95% Quantile	476.453	
MLE 99% Quantile	850.9346	
MVU Estimate of Median	115.9214	
MVU Estimate of Mean	165.9341	
MVU Estimate of Standard Deviation	161.347	
MVU Estimate of SE of Mean	29.20629	
95% H-UCL	243.4572	
95% Chebyshev (MVUE) UCL	293.2414	
97.5% Chebyshev (MVUE) UCL	348.3273	
99% Chebyshev (MVUE) UCL	456.5331	
Non-parametric Statisitics		
95% CLT UCL	212.2002	
95% Adjusted-CLT UCL	236.9643	
95% Modified-t UCL	217.7928	
95% Jackknife UCL	213.9301	
95% Chebyshev (Mean, Sd) UCL	295.6291	
97.5% Chebyshev (Mean, Sd) UCL	353.6071	
99% Chebyshev (Mean, Sd) UCL	467.4938	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	210.7429	
95% Bootstrap-t UCL	269.9377	
95% Hall's Bootstrap UCL	429.84	
95% Percentile Bootstrap UCL	217.2655	
95% BCA Bootstrap UCL	250.2448	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	295.6291	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Manganese
Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Manganese	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	28	
Minimum	200	
Maximum	582	
Mean	332.7241	
Standard Deviation	80.45935	
Variance	6473.707	
Coefficient of Variation	0.24182	
Skewness	1.113792	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.929327	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	358.1406	
Gamma Statistics		
k hat	19.2539	
k star (bias corrected)	17.2851	
Theta hat	17.28087	
Theta star	19.24918	
nu hat	1116.726	
nu star	1002.536	
5% Approximate Chi Square Value	930.0219	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	925.8632	
Anderson-Darling Test Statistic	0.397897	
Anderson-Darling 5% Critical Value	0.744347	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.118163	
Kolmogrov-Smirnov 5% Critical Value	0.162322	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	358.6667	
95% Adjusted Gamma UCL	360.2778	
Lognormal Statistics		
Minimum of log data	5.298317	
Maximum of log data	6.36647	
Mean of log data	5.78112	
Standard Deviation of log data	0.230229	
Variance of log data	0.053006	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.977544	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	332.8271	
MLE Standard Deviation	77.65331	
MLE Coefficient of Variation	0.233314	
MLE Skewness	0.712643	
MLE Median	324.1221	
MLE 80% Quantile	393.7295	
MLE 90% Quantile	435.7049	

Appendix P, Attachment 3
ProUCL Output - Manganese
Former Celotex (Surface Soil)

MLE 95% Quantile	473.356	
MLE 99% Quantile	553.7061	
MVU Estimate of Median	323.826	
MVU Estimate of Mean	332.5158	
MVU Estimate of Standard Deviation	77.30889	
MVU Estimate of SE of Mean	14.35348	
95% H-UCL	359.3582	
95% Chebyshev (MVUE) UCL	395.0812	
97.5% Chebyshev (MVUE) UCL	422.1533	
99% Chebyshev (MVUE) UCL	475.3311	
Non-parametric Statisitics		
95% CLT UCL	357.2998	
95% Adjusted-CLT UCL	360.6017	
95% Modified-t UCL	358.6556	
95% Jackknife UCL	358.1406	
95% Chebyshev (Mean, Sd) UCL	397.8501	
97.5% Chebyshev (Mean, Sd) UCL	426.0302	
99% Chebyshev (Mean, Sd) UCL	481.3845	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	356.6959	
95% Bootstrap-t UCL	360.9821	
95% Hall's Bootstrap UCL	365.0057	
95% Percentile Bootstrap UCL	357.0345	
95% BCA Bootstrap UCL	359.4483	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	358.1406	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Mercury
Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Mercury	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	29	
Minimum	0.02	
Maximum	2.64	
Mean	0.515034	
Standard Deviation	0.563937	
Variance	0.318025	
Coefficient of Variation	1.09495	
Skewness	2.572511	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.711625	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.693178	
Gamma Statistics		
k hat	1.110498	
k star (bias corrected)	1.018608	
Theta hat	0.463787	
Theta star	0.505626	
nu hat	64.4089	
nu star	59.07924	
5% Approximate Chi Square Value	42.40343	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	41.55893	
Anderson-Darling Test Statistic	0.389531	
Anderson-Darling 5% Critical Value	0.771625	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.127139	
Kolmogrov-Smirnov 5% Critical Value	0.167037	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.71758	
95% Adjusted Gamma UCL	0.732162	
Lognormal Statistics		
Minimum of log data	-3.91202	
Maximum of log data	0.970779	
Mean of log data	-1.17714	
Standard Deviation of log data	1.132218	
Variance of log data	1.281917	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.955317	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.584978	
MLE Standard Deviation	0.94389	
MLE Coefficient of Variation	1.613549	
MLE Skewness	9.041587	
MLE Median	0.308159	
MLE 80% Quantile	0.802185	
MLE 90% Quantile	1.320169	

Appendix P, Attachment 3
ProUCL Output - Mercury
Former Celotex (Surface Soil)

MLE 95% Quantile	1.984483	
MLE 99% Quantile	4.29048	
MVU Estimate of Median	0.301418	
MVU Estimate of Mean	0.56528	
MVU Estimate of Standard Deviation	0.807088	
MVU Estimate of SE of Mean	0.139905	
95% H-UCL	1.023953	
95% Chebyshev (MVUE) UCL	1.175111	
97.5% Chebyshev (MVUE) UCL	1.438985	
99% Chebyshev (MVUE) UCL	1.957314	
Non-parametric Statisitics		
95% CLT UCL	0.687284	
95% Adjusted-CLT UCL	0.740737	
95% Modified-t UCL	0.701515	
95% Jackknife UCL	0.693178	
95% Chebyshev (Mean, Sd) UCL	0.9715	
97.5% Chebyshev (Mean, Sd) UCL	1.169013	
99% Chebyshev (Mean, Sd) UCL	1.55699	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.677452	
95% Bootstrap-t UCL	0.837161	
95% Hall's Bootstrap UCL	1.596029	
95% Percentile Bootstrap UCL	0.699207	
95% BCA Bootstrap UCL	0.744724	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	0.71758	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	26	
Minimum	0.051	
Maximum	14.5	
Mean	1.144638	
Standard Deviation	3.050658	
Variance	9.306514	
Coefficient of Variation	2.665173	
Skewness	3.659965	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.408468	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.108317	
Gamma Statistics		
k hat	0.400217	
k star (bias corrected)	0.381804	
Theta hat	2.860041	
Theta star	2.997972	
nu hat	23.21261	
nu star	22.14464	
5% Approximate Chi Square Value	12.44516	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	12.01051	
Anderson-Darling Test Statistic	3.866166	
Anderson-Darling 5% Critical Value	0.833791	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.334893	
Kolmogrov-Smirnov 5% Critical Value	0.1744	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	2.036743	
95% Adjusted Gamma UCL	2.110451	
Lognormal Statistics		
Minimum of log data	-2.97593	
Maximum of log data	2.674149	
Mean of log data	-1.50897	
Standard Deviation of log data	1.53449	
Variance of log data	2.354659	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.835364	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.717747	
MLE Standard Deviation	2.216262	
MLE Coefficient of Variation	3.087805	
MLE Skewness	38.70421	
MLE Median	0.221138	
MLE 80% Quantile	0.808703	
MLE 90% Quantile	1.588598	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Former Celotex (Surface Soil)

MLE 95% Quantile	2.760103	
MLE 99% Quantile	7.847975	
MVU Estimate of Median	0.212328	
MVU Estimate of Mean	0.662536	
MVU Estimate of Standard Deviation	1.542925	
MVU Estimate of SE of Mean	0.238557	
95% H-UCL	1.801606	
95% Chebyshev (MVUE) UCL	1.702381	
97.5% Chebyshev (MVUE) UCL	2.152322	
99% Chebyshev (MVUE) UCL	3.036145	
Non-parametric Statisitics		
95% CLT UCL	2.076436	
95% Adjusted-CLT UCL	2.487825	
95% Modified-t UCL	2.172485	
95% Jackknife UCL	2.108317	
95% Chebyshev (Mean, Sd) UCL	3.613924	
97.5% Chebyshev (Mean, Sd) UCL	4.682385	
99% Chebyshev (Mean, Sd) UCL	6.781172	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.092798	
95% Bootstrap-t UCL	7.331183	
95% Hall's Bootstrap UCL	3.006318	
95% Percentile Bootstrap UCL	2.110897	
95% BCA Bootstrap UCL	2.585328	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	6.781172	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Thallium
Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Thallium	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	27	
Minimum	0.121	
Maximum	1.37	
Mean	0.292448	
Standard Deviation	0.233113	
Variance	0.054342	
Coefficient of Variation	0.797108	
Skewness	3.784927	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.589953	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.366087	
Gamma Statistics		
k hat	3.211159	
k star (bias corrected)	2.901958	
Theta hat	0.091073	
Theta star	0.100776	
nu hat	186.2472	
nu star	168.3136	
5% Approximate Chi Square Value	139.308	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	137.7334	
Anderson-Darling Test Statistic	1.142536	
Anderson-Darling 5% Critical Value	0.752212	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.182375	
Kolmogrov-Smirnov 5% Critical Value	0.163793	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.353339	
95% Adjusted Gamma UCL	0.357379	
Lognormal Statistics		
Minimum of log data	-2.11196	
Maximum of log data	0.314811	
Mean of log data	-1.39318	
Standard Deviation of log data	0.52477	
Variance of log data	0.275384	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.909825	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.284936	
MLE Standard Deviation	0.160436	
MLE Coefficient of Variation	0.56306	
MLE Skewness	1.86769	
MLE Median	0.248284	
MLE 80% Quantile	0.386838	
MLE 90% Quantile	0.487312	

Appendix P, Attachment 3
ProUCL Output - Thallium
Former Celotex (Surface Soil)

MLE 95% Quantile	0.588644	
MLE 99% Quantile	0.841504	
MVU Estimate of Median	0.247108	
MVU Estimate of Mean	0.283422	
MVU Estimate of Standard Deviation	0.15647	
MVU Estimate of SE of Mean	0.028933	
95% H-UCL	0.346079	
95% Chebyshev (MVUE) UCL	0.40954	
97.5% Chebyshev (MVUE) UCL	0.464111	
99% Chebyshev (MVUE) UCL	0.571306	
Non-parametric Statisitics		
95% CLT UCL	0.363651	
95% Adjusted-CLT UCL	0.39616	
95% Modified-t UCL	0.371158	
95% Jackknife UCL	0.366087	
95% Chebyshev (Mean, Sd) UCL	0.481136	
97.5% Chebyshev (Mean, Sd) UCL	0.562782	
99% Chebyshev (Mean, Sd) UCL	0.723158	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.362786	
95% Bootstrap-t UCL	0.454613	
95% Hall's Bootstrap UCL	0.685452	
95% Percentile Bootstrap UCL	0.370759	
95% BCA Bootstrap UCL	0.405103	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	0.481136	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Vanadium
Former Celotex (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_Surf.xls	
Variable:	Vanadium	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	28	
Minimum	24.1	
Maximum	57.3	
Mean	40.56897	
Standard Deviation	7.10081	
Variance	50.4215	
Coefficient of Variation	0.175031	
Skewness	0.320148	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.965025	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	42.81205	
Gamma Statistics		
k hat	33.53352	
k star (bias corrected)	30.08753	
Theta hat	1.209803	
Theta star	1.348365	
nu hat	1944.944	
nu star	1745.077	
5% Approximate Chi Square Value	1649.033	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	1643.476	
Anderson-Darling Test Statistic	0.399027	
Anderson-Darling 5% Critical Value	0.744096	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.124238	
Kolmogrov-Smirnov 5% Critical Value	0.162242	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	42.93181	
95% Adjusted Gamma UCL	43.07697	
Lognormal Statistics		
Minimum of log data	3.182212	
Maximum of log data	4.048301	
Mean of log data	3.688019	
Standard Deviation of log data	0.177617	
Variance of log data	0.031548	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.959555	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	40.601	
MLE Standard Deviation	7.268685	
MLE Coefficient of Variation	0.179027	
MLE Skewness	0.54282	
MLE Median	39.96559	
MLE 80% Quantile	46.43741	
MLE 90% Quantile	50.21214	

Appendix P, Attachment 3
ProUCL Output - Vanadium
Former Celotex (Surface Soil)

MLE 95% Quantile	53.52769	
MLE 99% Quantile	60.4101	
MVU Estimate of Median	39.94386	
MVU Estimate of Mean	40.57861	
MVU Estimate of Standard Deviation	7.249635	
MVU Estimate of SE of Mean	1.346142	
95% H-UCL	43.03911	
95% Chebyshev (MVUE) UCL	46.44631	
97.5% Chebyshev (MVUE) UCL	48.98527	
99% Chebyshev (MVUE) UCL	53.97256	
Non-parametric Statisitics		
95% CLT UCL	42.73785	
95% Adjusted-CLT UCL	42.82161	
95% Modified-t UCL	42.82512	
95% Jackknife UCL	42.81205	
95% Chebyshev (Mean, Sd) UCL	46.31655	
97.5% Chebyshev (Mean, Sd) UCL	48.80354	
99% Chebyshev (Mean, Sd) UCL	53.68874	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	42.70291	
95% Bootstrap-t UCL	43.01578	
95% Hall's Bootstrap UCL	42.81435	
95% Percentile Bootstrap UCL	42.73793	
95% BCA Bootstrap UCL	42.68621	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	42.81205	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 1,2,4-Trimethylbenzene

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	1,2,4-Trimethylbenzene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	12	
Minimum	2.93E-01	
Maximum	37.5	
Mean	3.110464	
Standard Deviation	9.905868	
Variance	98.12622	
Coefficient of Variation	3.184691	
Skewness	3.731483	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.315816	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	7.79893	
Gamma Statistics		
k hat	0.38261	
k star (bias corrected)	0.348241	
Theta hat	8.129596	
Theta star	8.931926	
nu hat	10.71308	
nu star	9.750752	
5% Approximate Chi Square Value	3.785762	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	3.307539	
Anderson-Darling Test Statistic	4.16728	
Anderson-Darling 5% Critical Value	0.81602	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.508108	
Kolmogrov-Smirnov 5% Critical Value	0.245251	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	8.011429	
95% Adjusted Gamma UCL	9.169767	
Lognormal Statistics		
Minimum of log data	-1.22758	
Maximum of log data	3.624341	
Mean of log data	-0.59748	
Standard Deviation of log data	1.295137	
Variance of log data	1.677379	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.475167	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.272783	
MLE Standard Deviation	2.655061	
MLE Coefficient of Variation	2.086027	
MLE Skewness	15.33545	
MLE Median	0.550195	
MLE 80% Quantile	1.64363	
MLE 90% Quantile	2.90597	

Appendix P, Attachment 3
ProUCL Output - 1,2,4-Trimethylbenzene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	4.632128	
MLE 99% Quantile	11.18982	
MVU Estimate of Median	0.518077	
MVU Estimate of Mean	1.156204	
MVU Estimate of Standard Deviation	1.793323	
MVU Estimate of SE of Mean	0.445964	
95% H-UCL	4.195385	
95% Chebyshev (MVUE) UCL	3.100115	
97.5% Chebyshev (MVUE) UCL	3.941247	
99% Chebyshev (MVUE) UCL	5.593487	
Non-parametric Statisitics		
95% CLT UCL	7.46514	
95% Adjusted-CLT UCL	10.28629	
95% Modified-t UCL	8.238972	
95% Jackknife UCL	7.79893	
95% Chebyshev (Mean, Sd) UCL	14.65045	
97.5% Chebyshev (Mean, Sd) UCL	19.64381	
99% Chebyshev (Mean, Sd) UCL	29.4523	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	7.293818	
95% Bootstrap-t UCL	962.8601	
95% Hall's Bootstrap UCL	245.3919	
95% Percentile Bootstrap UCL	8.402679	
95% BCA Bootstrap UCL	11.07568	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	29.4523	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 2-Chlorotoluene
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	2-Chlorotoluene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	12	
Minimum	0.293	
Maximum	34.4	
Mean	2.908321	
Standard Deviation	9.075941	
Variance	82.3727	
Coefficient of Variation	3.12068	
Skewness	3.72485	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.32076	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	7.203981	
Gamma Statistics		
k hat	0.396618	
k star (bias corrected)	0.359248	
Theta hat	7.332796	
Theta star	8.095587	
nu hat	11.10531	
nu star	10.05894	
5% Approximate Chi Square Value	3.977785	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	3.485048	
Anderson-Darling Test Statistic	4.090384	
Anderson-Darling 5% Critical Value	0.813305	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.508905	
Kolmogrov-Smirnov 5% Critical Value	0.244819	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	7.3545	
95% Adjusted Gamma UCL	8.394324	
Lognormal Statistics		
Minimum of log data	-1.22758	
Maximum of log data	3.538057	
Mean of log data	-0.59382	
Standard Deviation of log data	1.284055	
Variance of log data	1.648796	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.48351	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.259333	
MLE Standard Deviation	2.581084	
MLE Coefficient of Variation	2.049565	
MLE Skewness	1.48E+01	
MLE Median	0.552216	
MLE 80% Quantile	1.634292	
MLE 90% Quantile	2.875406	

Appendix P, Attachment 3
ProUCL Output - 2-Chlorotoluene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	4.56516	
MLE 99% Quantile	10.94513	
MVU Estimate of Median	0.520516	
MVU Estimate of Mean	1.146484	
MVU Estimate of Standard Deviation	1.758259	
MVU Estimate of SE of Mean	0.438084	
95% H-UCL	4.079312	
95% Chebyshev (MVUE) UCL	3.056048	
97.5% Chebyshev (MVUE) UCL	3.882318	
99% Chebyshev (MVUE) UCL	5.505366	
Non-parametric Statisitics		
95% CLT UCL	6.898156	
95% Adjusted-CLT UCL	9.478353	
95% Modified-t UCL	7.606439	
95% Jackknife UCL	7.203981	
95% Chebyshev (Mean, Sd) UCL	13.48147	
97.5% Chebyshev (Mean, Sd) UCL	18.05648	
99% Chebyshev (Mean, Sd) UCL	27.04321	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	6.773187	
95% Bootstrap-t UCL	831.2596	
95% Hall's Bootstrap UCL	222.131	
95% Percentile Bootstrap UCL	7.770357	
95% BCA Bootstrap UCL	10.21907	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	27.04321	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 2-Methylnaphthalene

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	56	
Number of Missing Data	0	
Number of Valid Observations	56	
Number of Distinct Observations	50	
Minimum	0.051	
Maximum	578	
Mean	32.67716	
Standard Deviation	115.4527	
Variance	13329.33	
Coefficient of Variation	3.533131	
Skewness	3.877659	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.47248	
Lilliefors 5% Critical Value	0.118397	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	58.48875	
Gamma Statistics		
k hat	0.166943	
k star (bias corrected)	0.169904	
Theta hat	195.7388	
Theta star	192.3271	
nu hat	18.69758	
nu star	19.02926	
5% Approximate Chi Square Value	10.13731	
Adjusted Level of Significance	0.045714	
Adjusted Chi Square Value	9.965245	
Anderson-Darling Test Statistic	11.33766	
Anderson-Darling 5% Critical Value	0.932454	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.35904	
Kolmogrov-Smirnov 5% Critical Value	0.133071	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	61.33996	
95% Adjusted Gamma UCL	62.39907	
Lognormal Statistics		
Minimum of log data	-2.97593	
Maximum of log data	6.359574	
Mean of log data	-1.04506	
Standard Deviation of log data	2.576585	
Variance of log data	6.638792	
Lilliefors Test Statisitic	0.226811	
Lilliefors 5% Critical Value	0.118397	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	9.721432	
MLE Standard Deviation	268.5599	
MLE Coefficient of Variation	27.62555	
MLE Skewness	21165.9	
MLE Median	0.35167	
MLE 80% Quantile	3.102324	
MLE 90% Quantile	9.639306	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	24.37163	
MLE 99% Quantile	140.9034	
MVU Estimate of Median	0.33141	
MVU Estimate of Mean	7.780088	
MVU Estimate of Standard Deviation	88.7188	
MVU Estimate of SE of Mean	4.275008	
95% H-UCL	42.96959	
95% Chebyshev (MVUE) UCL	26.41442	
97.5% Chebyshev (MVUE) UCL	34.4775	
99% Chebyshev (MVUE) UCL	50.31588	
Non-parametric Statisitics		
95% CLT UCL	58.05399	
95% Adjusted-CLT UCL	66.59612	
95% Modified-t UCL	59.82115	
95% Jackknife UCL	58.48875	
95% Chebyshev (Mean, Sd) UCL	99.92632	
97.5% Chebyshev (Mean, Sd) UCL	129.0251	
99% Chebyshev (Mean, Sd) UCL	186.184	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	57.92287	
95% Bootstrap-t UCL	82.881	
95% Hall's Bootstrap UCL	61.47424	
95% Percentile Bootstrap UCL	60.45164	
95% BCA Bootstrap UCL	69.27761	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	186.184	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Acenaphthene	
Raw Statistics		
Number of Observations	58	
Number of Missing Data	0	
Number of Valid Observations	58	
Number of Distinct Observations	53	
Minimum	0.0525	
Maximum	557	
Mean	20.02258	
Standard Deviation	79.33617	
Variance	6294.227	
Coefficient of Variation	3.962335	
Skewness	5.89803	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.421796	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	37.44068	
Gamma Statistics		
k hat	0.212347	
k star (bias corrected)	0.212858	
Theta hat	94.29176	
Theta star	94.0655	
nu hat	24.63226	
nu star	24.69151	
5% Approximate Chi Square Value	14.37398	
Adjusted Level of Significance	0.045862	
Adjusted Chi Square Value	14.17275	
Anderson-Darling Test Statistic	7.597865	
Anderson-Darling 5% Critical Value	0.903703	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.275305	
Kolmogrov-Smirnov 5% Critical Value	0.129175	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	34.39463	
95% Adjusted Gamma UCL	34.88298	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	6.322565	
Mean of log data	-0.43638	
Standard Deviation of log data	2.398687	
Variance of log data	5.7537	
Lilliefors Test Statisitic	0.147633	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	11.47842	
MLE Standard Deviation	203.5131	
MLE Coefficient of Variation	17.73007	
MLE Skewness	5626.731	
MLE Median	0.646371	
MLE 80% Quantile	4.906247	
MLE 90% Quantile	14.09657	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	33.43018	
MLE 99% Quantile	171.2227	
MVU Estimate of Median	0.615067	
MVU Estimate of Mean	9.67706	
MVU Estimate of Standard Deviation	86.36527	
MVU Estimate of SE of Mean	4.80952	
95% H-UCL	41.14956	
95% Chebyshev (MVUE) UCL	30.64127	
97.5% Chebyshev (MVUE) UCL	39.7125	
99% Chebyshev (MVUE) UCL	57.53118	
Non-parametric Statisitics		
95% CLT UCL	37.15759	
95% Adjusted-CLT UCL	45.77806	
95% Modified-t UCL	38.7853	
95% Jackknife UCL	37.44068	
95% Chebyshev (Mean, Sd) UCL	65.43075	
97.5% Chebyshev (Mean, Sd) UCL	85.0789	
99% Chebyshev (Mean, Sd) UCL	123.6739	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	37.34343	
95% Bootstrap-t UCL	68.04656	
95% Hall's Bootstrap UCL	90.15719	
95% Percentile Bootstrap UCL	38.97018	
95% BCA Bootstrap UCL	48.1987	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	123.6739	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Aluminum
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Aluminum	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	47	
Minimum	468	
Maximum	19100	
Mean	9307.418	
Standard Deviation	4361.967	
Variance	1.90E+07	
Coefficient of Variation	0.468655	
Skewness	-0.45386	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.162887	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	10291.75	
Gamma Statistics		
k hat	2.510105	
k star (bias corrected)	2.385311	
Theta hat	3707.98	
Theta star	3901.972	
nu hat	276.1115	
nu star	262.3842	
5% Approximate Chi Square Value	225.8676	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	224.9595	
Anderson-Darling Test Statistic	3.556385	
Anderson-Darling 5% Critical Value	0.760128	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.221569	
Kolmogrov-Smirnov 5% Critical Value	0.121191	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	10812.17	
95% Adjusted Gamma UCL	10855.82	
Lognormal Statistics		
Minimum of log data	6.148468	
Maximum of log data	9.857444	
Mean of log data	8.926342	
Standard Deviation of log data	0.818074	
Variance of log data	0.669246	
Lilliefors Test Statisitic	0.240172	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	10519.28	
MLE Standard Deviation	10267.83	
MLE Coefficient of Variation	0.976096	
MLE Skewness	3.858278	
MLE Median	7527.679	
MLE 80% Quantile	15027.17	
MLE 90% Quantile	21537.86	

Appendix P, Attachment 3
ProUCL Output - Aluminum
Former Celotex (Subsurface Soil)

MLE 95% Quantile	28913.81	
MLE 99% Quantile	50472.46	
MVU Estimate of Median	7482.015	
MVU Estimate of Mean	10435.64	
MVU Estimate of Standard Deviation	9880.188	
MVU Estimate of SE of Mean	1297.745	
95% H-UCL	13317.28	
95% Chebyshev (MVUE) UCL	16092.38	
97.5% Chebyshev (MVUE) UCL	18540.05	
99% Chebyshev (MVUE) UCL	23348.04	
Non-parametric Statisitics		
95% CLT UCL	10274.87	
95% Adjusted-CLT UCL	10236.41	
95% Modified-t UCL	10285.76	
95% Jackknife UCL	10291.75	
95% Chebyshev (Mean, Sd) UCL	11871.18	
97.5% Chebyshev (Mean, Sd) UCL	12980.52	
99% Chebyshev (Mean, Sd) UCL	15159.61	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	10280.41	
95% Bootstrap-t UCL	10219.2	
95% Hall's Bootstrap UCL	10262.83	
95% Percentile Bootstrap UCL	10271.64	
95% BCA Bootstrap UCL	10191.87	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	11871.18	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Antimony
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Antimony	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	27	
Minimum	1.05E+00	
Maximum	1.35E+02	
Mean	6.22E+00	
Standard Deviation	2.30E+01	
Variance	526.9701	
Coefficient of Variation	3.691079	
Skewness	5.062443	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.481322	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.14E+01	
Gamma Statistics		
k hat	0.470327	
k star (bias corrected)	0.456794	
Theta hat	1.32E+01	
Theta star	1.36E+01	
nu hat	51.73594	
nu star	50.24731	
5% Approximate Chi Square Value	34.96799	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	34.6246	
Anderson-Darling Test Statistic	17.51752	
Anderson-Darling 5% Critical Value	0.822203	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.505051	
Kolmogrov-Smirnov 5% Critical Value	0.127381	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	8.94E+00	
95% Adjusted Gamma UCL	9.03E+00	
Lognormal Statistics		
Minimum of log data	0.04879	
Maximum of log data	4.905275	
Mean of log data	0.464179	
Standard Deviation of log data	1.00732	
Variance of log data	1.014693	
Lilliefors Test Statisitic	0.452123	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.64E+00	
MLE Standard Deviation	3.50E+00	
MLE Coefficient of Variation	1.33E+00	
MLE Skewness	6.31E+00	
MLE Median	1.59E+00	
MLE 80% Quantile	3.73E+00	
MLE 90% Quantile	5.80E+00	

Appendix P, Attachment 3
ProUCL Output - Antimony
Former Celotex (Subsurface Soil)

MLE 95% Quantile	8.34E+00	
MLE 99% Quantile	1.66E+01	
MVU Estimate of Median	1.58E+00	
MVU Estimate of Mean	2.61E+00	
MVU Estimate of Standard Deviation	3.28E+00	
MVU Estimate of SE of Mean	4.19E-01	
95% H-UCL	3.621719	
95% Chebyshev (MVUE) UCL	4.43E+00	
97.5% Chebyshev (MVUE) UCL	5.22E+00	
99% Chebyshev (MVUE) UCL	6.77E+00	
Non-parametric Statisitics		
95% CLT UCL	1.13E+01	
95% Adjusted-CLT UCL	13.56842	
95% Modified-t UCL	11.75172	
95% Jackknife UCL	1.14E+01	
95% Chebyshev (Mean, Sd) UCL	1.97E+01	
97.5% Chebyshev (Mean, Sd) UCL	2.55E+01	
99% Chebyshev (Mean, Sd) UCL	3.70E+01	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.12E+01	
95% Bootstrap-t UCL	45.90254	
95% Hall's Bootstrap UCL	40.97975	
95% Percentile Bootstrap UCL	1.18E+01	
95% BCA Bootstrap UCL	1.44E+01	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	2.55E+01	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1254
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Aroclor-1254	
Raw Statistics		
Number of Observations	54	
Number of Missing Data	0	
Number of Valid Observations	54	
Number of Distinct Observations	11	
Minimum	0.0075	
Maximum	1.54E+00	
Mean	4.94E-02	
Standard Deviation	2.14E-01	
Variance	0.045663	
Coefficient of Variation	4.324231	
Skewness	6.705584	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.477825	
Lilliefors 5% Critical Value	0.120569	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	9.81E-02	
Gamma Statistics		
k hat	0.44953	
k star (bias corrected)	0.436902	
Theta hat	0.10993	
Theta star	0.113107	
nu hat	48.54922	
nu star	47.18538	
5% Approximate Chi Square Value	32.41879	
Adjusted Level of Significance	0.045556	
Adjusted Chi Square Value	32.08264	
Anderson-Darling Test Statistic	16.90049	
Anderson-Darling 5% Critical Value	0.827014	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.523121	
Kolmogrov-Smirnov 5% Critical Value	0.12885	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.071926	
95% Adjusted Gamma UCL	0.072679	
Lognormal Statistics		
Minimum of log data	-4.89285	
Maximum of log data	0.431782	
Mean of log data	-4.44424	
Standard Deviation of log data	1.013801	
Variance of log data	1.027792	
Lilliefors Test Statisitic	0.471796	
Lilliefors 5% Critical Value	0.120569	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.019637	
MLE Standard Deviation	0.026308	
MLE Coefficient of Variation	1.339734	
MLE Skewness	6.423877	
MLE Median	0.011746	
MLE 80% Quantile	0.027665	
MLE 90% Quantile	0.043218	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1254
Former Celotex (Subsurface Soil)

MLE 95% Quantile	0.062254	
MLE 99% Quantile	0.124166	
MVU Estimate of Median	0.011635	
MVU Estimate of Mean	0.019363	
MVU Estimate of Standard Deviation	0.024587	
MVU Estimate of SE of Mean	0.003162	
95% H-UCL	0.027091	
95% Chebyshev (MVUE) UCL	0.033146	
97.5% Chebyshev (MVUE) UCL	0.03911	
99% Chebyshev (MVUE) UCL	0.050824	
Non-parametric Statisitics		
95% CLT UCL	9.72E-02	
95% Adjusted-CLT UCL	0.125601	
95% Modified-t UCL	0.102522	
95% Jackknife UCL	9.81E-02	
95% Chebyshev (Mean, Sd) UCL	1.76E-01	
97.5% Chebyshev (Mean, Sd) UCL	2.31E-01	
99% Chebyshev (Mean, Sd) UCL	3.39E-01	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	9.66E-02	
95% Bootstrap-t UCL	0.395618	
95% Hall's Bootstrap UCL	0.321462	
95% Percentile Bootstrap UCL	1.05E-01	
95% BCA Bootstrap UCL	1.51E-01	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	2.31E-01	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	55	
Minimum	1.82	
Maximum	5700	
Mean	261.6413	
Standard Deviation	870.9351	
Variance	758528	
Coefficient of Variation	3.328737	
Skewness	5.194762	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.382728	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	458.1795	
Gamma Statistics		
k hat	0.322793	
k star (bias corrected)	0.317307	
Theta hat	810.555	
Theta star	824.568	
nu hat	35.5072	
nu star	34.90378	
5% Approximate Chi Square Value	22.38573	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	22.11529	
Anderson-Darling Test Statistic	5.348018	
Anderson-Darling 5% Critical Value	0.857393	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.232018	
Kolmogrov-Smirnov 5% Critical Value	0.12987	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	407.9505	
95% Adjusted Gamma UCL	412.9391	
Lognormal Statistics		
Minimum of log data	0.598837	
Maximum of log data	8.648221	
Mean of log data	3.456111	
Standard Deviation of log data	1.848388	
Variance of log data	3.416539	
Lilliefors Test Statisitic	0.116511	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	174.9291	
MLE Standard Deviation	949.5251	
MLE Coefficient of Variation	5.428056	
MLE Skewness	176.2153	
MLE Median	31.69349	
MLE 80% Quantile	151.1087	
MLE 90% Quantile	340.7981	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Former Celotex (Subsurface Soil)

MLE 95% Quantile	662.9569	
MLE 99% Quantile	2334.288	
MVU Estimate of Median	30.72371	
MVU Estimate of Mean	161.8383	
MVU Estimate of Standard Deviation	645.84	
MVU Estimate of SE of Mean	58.07254	
95% H-UCL	401.3874	
95% Chebyshev (MVUE) UCL	414.9706	
97.5% Chebyshev (MVUE) UCL	524.5012	
99% Chebyshev (MVUE) UCL	739.6528	
Non-parametric Statisitics		
95% CLT UCL	454.8077	
95% Adjusted-CLT UCL	542.7037	
95% Modified-t UCL	471.8895	
95% Jackknife UCL	458.1795	
95% Chebyshev (Mean, Sd) UCL	773.5367	
97.5% Chebyshev (Mean, Sd) UCL	995.0343	
99% Chebyshev (Mean, Sd) UCL	1430.123	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	455.9918	
95% Bootstrap-t UCL	726.4155	
95% Hall's Bootstrap UCL	560.449	
95% Percentile Bootstrap UCL	478.7171	
95% BCA Bootstrap UCL	594.3111	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	401.3874	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Barium

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Barium	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	53	
Minimum	11.8	
Maximum	721	
Mean	131.0509	
Standard Deviation	132.3893	
Variance	17526.93	
Coefficient of Variation	1.010213	
Skewness	3.28738	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.300951	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	160.9263	
Gamma Statistics		
k hat	1.905987	
k star (bias corrected)	1.814145	
Theta hat	68.75752	
Theta star	72.23839	
nu hat	209.6585	
nu star	199.5559	
5% Approximate Chi Square Value	167.8647	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	167.0852	
Anderson-Darling Test Statistic	2.233509	
Anderson-Darling 5% Critical Value	0.763863	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.18876	
Kolmogrov-Smirnov 5% Critical Value	0.121627	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	155.792	
95% Adjusted Gamma UCL	156.5189	
Lognormal Statistics		
Minimum of log data	2.4681	
Maximum of log data	6.580639	
Mean of log data	4.590881	
Standard Deviation of log data	0.729037	
Variance of log data	0.531495	
Lilliefors Test Statisitic	0.140112	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	128.5899	
MLE Standard Deviation	107.6992	
MLE Coefficient of Variation	0.837541	
MLE Skewness	3.100135	
MLE Median	98.58121	
MLE 80% Quantile	182.5304	
MLE 90% Quantile	251.563	

Appendix P, Attachment 3
ProUCL Output - Barium
Former Celotex (Subsurface Soil)

MLE 95% Quantile	327.061	
MLE 99% Quantile	537.3345	
MVU Estimate of Median	98.106	
MVU Estimate of Mean	127.8164	
MVU Estimate of Standard Deviation	104.6104	
MVU Estimate of SE of Mean	13.86585	
95% H-UCL	157.4513	
95% Chebyshev (MVUE) UCL	188.2563	
97.5% Chebyshev (MVUE) UCL	214.4086	
99% Chebyshev (MVUE) UCL	265.7799	
Non-parametric Statisitics		
95% CLT UCL	160.4138	
95% Adjusted-CLT UCL	168.8689	
95% Modified-t UCL	162.2452	
95% Jackknife UCL	160.9263	
95% Chebyshev (Mean, Sd) UCL	208.8632	
97.5% Chebyshev (Mean, Sd) UCL	242.5327	
99% Chebyshev (Mean, Sd) UCL	308.6698	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	160.0992	
95% Bootstrap-t UCL	185.517	
95% Hall's Bootstrap UCL	170.9738	
95% Percentile Bootstrap UCL	162.5309	
95% BCA Bootstrap UCL	172.0527	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	208.8632	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzene
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Benzene	
Raw Statistics		
Number of Observations	56	
Number of Missing Data	0	
Number of Valid Observations	56	
Number of Distinct Observations	47	
Minimum	0.049	
Maximum	8.53	
Mean	0.825036	
Standard Deviation	1.666916	
Variance	2.778608	
Coefficient of Variation	2.020417	
Skewness	3.846078	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.449645	
Lilliefors 5% Critical Value	0.118397	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.197706	
Gamma Statistics		
k hat	0.860588	
k star (bias corrected)	0.82639	
Theta hat	0.958688	
Theta star	0.998361	
nu hat	96.38589	
nu star	92.55569	
5% Approximate Chi Square Value	71.36574	
Adjusted Level of Significance	0.045714	
Adjusted Chi Square Value	70.8748	
Anderson-Darling Test Statistic	10.75066	
Anderson-Darling 5% Critical Value	0.786778	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.420468	
Kolmogrov-Smirnov 5% Critical Value	0.123116	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.070006	
95% Adjusted Gamma UCL	1.077418	
Lognormal Statistics		
Minimum of log data	-3.01593	
Maximum of log data	2.143589	
Mean of log data	-0.87548	
Standard Deviation of log data	0.911313	
Variance of log data	0.830492	
Lilliefors Test Statisitic	0.345342	
Lilliefors 5% Critical Value	0.118397	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.631137	
MLE Standard Deviation	0.718069	
MLE Coefficient of Variation	1.137737	
MLE Skewness	4.885952	
MLE Median	0.416663	
MLE 80% Quantile	0.899948	
MLE 90% Quantile	1.343878	

Appendix P, Attachment 3
ProUCL Output - Benzene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	1.865693	
MLE 99% Quantile	3.470285	
MVU Estimate of Median	0.413584	
MVU Estimate of Mean	0.624682	
MVU Estimate of Standard Deviation	0.683312	
MVU Estimate of SE of Mean	0.087822	
95% H-UCL	0.827334	
95% Chebyshev (MVUE) UCL	1.007488	
97.5% Chebyshev (MVUE) UCL	1.173128	
99% Chebyshev (MVUE) UCL	1.498497	
Non-parametric Statisitics		
95% CLT UCL	1.191428	
95% Adjusted-CLT UCL	1.313756	
95% Modified-t UCL	1.216786	
95% Jackknife UCL	1.197706	
95% Chebyshev (Mean, Sd) UCL	1.795985	
97.5% Chebyshev (Mean, Sd) UCL	2.216115	
99% Chebyshev (Mean, Sd) UCL	3.04138	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.18797	
95% Bootstrap-t UCL	1.595327	
95% Hall's Bootstrap UCL	1.36104	
95% Percentile Bootstrap UCL	1.203054	
95% BCA Bootstrap UCL	1.327179	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1.795985	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)anthracene

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	58	
Number of Missing Data	0	
Number of Valid Observations	58	
Number of Distinct Observations	58	
Minimum	0.058	
Maximum	241	
Mean	13.8858	
Standard Deviation	35.98764	
Variance	1295.11	
Coefficient of Variation	2.591686	
Skewness	4.828267	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.357926	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	21.78682	
Gamma Statistics		
k hat	0.34556	
k star (bias corrected)	0.33918	
Theta hat	40.18352	
Theta star	40.93932	
nu hat	40.08491	
nu star	39.34489	
5% Approximate Chi Square Value	25.97351	
Adjusted Level of Significance	0.045862	
Adjusted Chi Square Value	25.69619	
Anderson-Darling Test Statistic	3.775871	
Anderson-Darling 5% Critical Value	0.852279	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.23295	
Kolmogrov-Smirnov 5% Critical Value	0.126042	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	21.03433	
95% Adjusted Gamma UCL	21.26133	
Lognormal Statistics		
Minimum of log data	-2.84731	
Maximum of log data	5.484797	
Mean of log data	0.680878	
Standard Deviation of log data	1.99966	
Variance of log data	3.998642	
Lilliefors Test Statisitic	0.088155	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	14.588	
MLE Standard Deviation	106.726	
MLE Coefficient of Variation	7.316013	
MLE Skewness	413.5307	
MLE Median	1.975612	
MLE 80% Quantile	10.70372	
MLE 90% Quantile	25.80174	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	53.00147	
MLE 99% Quantile	206.8695	
MVU Estimate of Median	1.908632	
MVU Estimate of Mean	13.26769	
MVU Estimate of Standard Deviation	66.35156	
MVU Estimate of SE of Mean	5.188096	
95% H-UCL	36.65538	
95% Chebyshev (MVUE) UCL	35.88207	
97.5% Chebyshev (MVUE) UCL	45.66734	
99% Chebyshev (MVUE) UCL	64.88859	
Non-parametric Statisitics		
95% CLT UCL	21.65841	
95% Adjusted-CLT UCL	24.85949	
95% Modified-t UCL	22.28612	
95% Jackknife UCL	21.78682	
95% Chebyshev (Mean, Sd) UCL	34.48338	
97.5% Chebyshev (Mean, Sd) UCL	43.39597	
99% Chebyshev (Mean, Sd) UCL	60.90302	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	21.68465	
95% Bootstrap-t UCL	29.63186	
95% Hall's Bootstrap UCL	50.76602	
95% Percentile Bootstrap UCL	22.28181	
95% BCA Bootstrap UCL	25.77891	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	36.65538	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Benzo(a)pyrene	
Raw Statistics		
Number of Observations	58	
Number of Missing Data	0	
Number of Valid Observations	58	
Number of Distinct Observations	56	
Minimum	0.0525	
Maximum	145	
Mean	10.1311	
Standard Deviation	23.6028	
Variance	557.0922	
Coefficient of Variation	2.329736	
Skewness	3.940955	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.348554	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	15.31305	
Gamma Statistics		
k hat	0.366795	
k star (bias corrected)	0.359317	
Theta hat	27.62059	
Theta star	28.19542	
nu hat	42.54825	
nu star	41.68081	
5% Approximate Chi Square Value	27.88014	
Adjusted Level of Significance	0.045862	
Adjusted Chi Square Value	27.59209	
Anderson-Darling Test Statistic	3.275654	
Anderson-Darling 5% Critical Value	0.847241	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.214508	
Kolmogrov-Smirnov 5% Critical Value	0.125702	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	15.146	
95% Adjusted Gamma UCL	15.30412	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	4.976734	
Mean of log data	0.496257	
Standard Deviation of log data	1.962115	
Variance of log data	3.849896	
Lilliefors Test Statisitic	0.074051	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	11.25942	
MLE Standard Deviation	76.35532	
MLE Coefficient of Variation	6.781459	
MLE Skewness	332.2114	
MLE Median	1.642562	
MLE 80% Quantile	8.621376	
MLE 90% Quantile	20.44167	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	41.42717	
MLE 99% Quantile	157.6122	
MVU Estimate of Median	1.588913	
MVU Estimate of Mean	10.29721	
MVU Estimate of Standard Deviation	48.82446	
MVU Estimate of SE of Mean	3.924806	
95% H-UCL	27.45203	
95% Chebyshev (MVUE) UCL	27.40505	
97.5% Chebyshev (MVUE) UCL	34.80762	
99% Chebyshev (MVUE) UCL	49.34854	
Non-parametric Statisitics		
95% CLT UCL	15.22883	
95% Adjusted-CLT UCL	16.94246	
95% Modified-t UCL	15.58035	
95% Jackknife UCL	15.31305	
95% Chebyshev (Mean, Sd) UCL	23.6402	
97.5% Chebyshev (Mean, Sd) UCL	29.4856	
99% Chebyshev (Mean, Sd) UCL	40.96775	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	15.1204	
95% Bootstrap-t UCL	19.27501	
95% Hall's Bootstrap UCL	21.38211	
95% Percentile Bootstrap UCL	15.39569	
95% BCA Bootstrap UCL	17.49076	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	27.45203	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(b)fluoranthene

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Benzo(b)fluoranthene	
Raw Statistics		
Number of Observations	58	
Number of Missing Data	0	
Number of Valid Observations	58	
Number of Distinct Observations	57	
Minimum	0.0525	
Maximum	150	
Mean	10.03779	
Standard Deviation	23.90672	
Variance	571.531	
Coefficient of Variation	2.38167	
Skewness	4.113691	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.352231	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	15.28647	
Gamma Statistics		
k hat	0.362028	
k star (bias corrected)	0.354796	
Theta hat	27.7266	
Theta star	28.29171	
nu hat	41.9952	
nu star	41.15637	
5% Approximate Chi Square Value	27.45099	
Adjusted Level of Significance	0.045862	
Adjusted Chi Square Value	27.16533	
Anderson-Darling Test Statistic	3.290436	
Anderson-Darling 5% Critical Value	0.848372	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.220779	
Kolmogrov-Smirnov 5% Critical Value	0.125778	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	15.04933	
95% Adjusted Gamma UCL	15.20759	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	5.010635	
Mean of log data	0.459122	
Standard Deviation of log data	1.979801	
Variance of log data	3.919614	
Lilliefors Test Statisitic	0.082812	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	11.23382	
MLE Standard Deviation	78.94182	
MLE Coefficient of Variation	7.02716	
MLE Skewness	368.0895	
MLE Median	1.582683	
MLE 80% Quantile	8.432167	
MLE 90% Quantile	20.14924	

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	41.09535	
MLE 99% Quantile	158.2443	
MVU Estimate of Median	1.530068	
MVU Estimate of Mean	10.24736	
MVU Estimate of Standard Deviation	49.8216	
MVU Estimate of SE of Mean	3.95345	
95% H-UCL	27.77914	
95% Chebyshev (MVUE) UCL	27.48005	
97.5% Chebyshev (MVUE) UCL	34.93664	
99% Chebyshev (MVUE) UCL	49.58369	
Non-parametric Statisitics		
95% CLT UCL	15.20116	
95% Adjusted-CLT UCL	17.01294	
95% Modified-t UCL	15.56907	
95% Jackknife UCL	15.28647	
95% Chebyshev (Mean, Sd) UCL	23.72084	
97.5% Chebyshev (Mean, Sd) UCL	29.6415	
99% Chebyshev (Mean, Sd) UCL	41.2715	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	15.12337	
95% Bootstrap-t UCL	19.28115	
95% Hall's Bootstrap UCL	26.43722	
95% Percentile Bootstrap UCL	15.65934	
95% BCA Bootstrap UCL	16.72894	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	27.77914	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(k)fluoranthene

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Benzo(k)fluoranthene	
Raw Statistics		
Number of Observations	58	
Number of Missing Data	0	
Number of Valid Observations	58	
Number of Distinct Observations	57	
Minimum	0.0525	
Maximum	117	
Mean	7.254371	
Standard Deviation	17.73817	
Variance	314.6425	
Coefficient of Variation	2.44517	
Skewness	4.620454	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.342667	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	11.14875	
Gamma Statistics		
k hat	0.381299	
k star (bias corrected)	0.373071	
Theta hat	19.02539	
Theta star	19.445	
nu hat	44.23074	
nu star	43.27628	
5% Approximate Chi Square Value	29.18933	
Adjusted Level of Significance	0.045862	
Adjusted Chi Square Value	28.89412	
Anderson-Darling Test Statistic	3.329795	
Anderson-Darling 5% Critical Value	0.8438	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.221414	
Kolmogrov-Smirnov 5% Critical Value	0.12547	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	10.75537	
95% Adjusted Gamma UCL	10.86526	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	4.762174	
Mean of log data	0.24243	
Standard Deviation of log data	1.885117	
Variance of log data	3.553665	
Lilliefors Test Statisitic	0.089105	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	7.532763	
MLE Standard Deviation	43.88513	
MLE Coefficient of Variation	5.825901	
MLE Skewness	215.2154	
MLE Median	1.274342	
MLE 80% Quantile	6.267347	
MLE 90% Quantile	14.36514	

Appendix P, Attachment 3
ProUCL Output - Benzo(k)fluoranthene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	28.31655	
MLE 99% Quantile	102.2285	
MVU Estimate of Median	1.235874	
MVU Estimate of Mean	6.962387	
MVU Estimate of Standard Deviation	29.61482	
MVU Estimate of SE of Mean	2.513554	
95% H-UCL	17.29549	
95% Chebyshev (MVUE) UCL	17.91872	
97.5% Chebyshev (MVUE) UCL	22.65953	
99% Chebyshev (MVUE) UCL	31.97194	
Non-parametric Statisitics		
95% CLT UCL	11.08546	
95% Adjusted-CLT UCL	12.59535	
95% Modified-t UCL	11.38426	
95% Jackknife UCL	11.14875	
95% Chebyshev (Mean, Sd) UCL	17.40684	
97.5% Chebyshev (Mean, Sd) UCL	21.79982	
99% Chebyshev (Mean, Sd) UCL	30.42897	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	11.06573	
95% Bootstrap-t UCL	14.58458	
95% Hall's Bootstrap UCL	25.88768	
95% Percentile Bootstrap UCL	11.28441	
95% BCA Bootstrap UCL	12.95284	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	17.29549	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Cadmium
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Cadmium	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	48	
Minimum	0.263	
Maximum	12	
Mean	0.829127	
Standard Deviation	1.695223	
Variance	2.873781	
Coefficient of Variation	2.044587	
Skewness	5.722804	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.369207	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.211677	
Gamma Statistics		
k hat	1.084975	
k star (bias corrected)	1.037916	
Theta hat	0.76419	
Theta star	0.798839	
nu hat	119.3472	
nu star	114.1707	
5% Approximate Chi Square Value	90.49858	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	89.93242	
Anderson-Darling Test Statistic	7.749207	
Anderson-Darling 5% Critical Value	0.777598	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.299313	
Kolmogrov-Smirnov 5% Critical Value	0.123247	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.046006	
95% Adjusted Gamma UCL	1.052591	
Lognormal Statistics		
Minimum of log data	-1.3356	
Maximum of log data	2.484907	
Mean of log data	-0.71444	
Standard Deviation of log data	0.786003	
Variance of log data	0.6178	
Lilliefors Test Statisitic	0.234021	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.666616	
MLE Standard Deviation	0.616338	
MLE Coefficient of Variation	0.924577	
MLE Skewness	3.564101	
MLE Median	0.489465	
MLE 80% Quantile	0.950973	
MLE 90% Quantile	1.343895	

Appendix P, Attachment 3
ProUCL Output - Cadmium
Former Celotex (Subsurface Soil)

MLE 95% Quantile	1.78342	
MLE 99% Quantile	3.045913	
MVU Estimate of Median	0.486724	
MVU Estimate of Mean	0.661809	
MVU Estimate of Standard Deviation	0.595205	
MVU Estimate of SE of Mean	0.07846	
95% H-UCL	0.833607	
95% Chebyshev (MVUE) UCL	1.003807	
97.5% Chebyshev (MVUE) UCL	1.15179	
99% Chebyshev (MVUE) UCL	1.442474	
Non-parametric Statisitics		
95% CLT UCL	1.205114	
95% Adjusted-CLT UCL	1.393589	
95% Modified-t UCL	1.241075	
95% Jackknife UCL	1.211677	
95% Chebyshev (Mean, Sd) UCL	1.825501	
97.5% Chebyshev (Mean, Sd) UCL	2.256633	
99% Chebyshev (Mean, Sd) UCL	3.103508	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.197086	
95% Bootstrap-t UCL	2.022436	
95% Hall's Bootstrap UCL	2.532994	
95% Percentile Bootstrap UCL	1.256	
95% BCA Bootstrap UCL	1.430618	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1.825501	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	56	
Number of Missing Data	0	
Number of Valid Observations	56	
Number of Distinct Observations	54	
Minimum	5.10E-02	
Maximum	44	
Mean	3.491509	
Standard Deviation	8.660761	
Variance	75.00879	
Coefficient of Variation	2.480521	
Skewness	3.103741	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.411015	
Lilliefors 5% Critical Value	0.118397	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	5.427783	
Gamma Statistics		
k hat	0.310907	
k star (bias corrected)	0.306156	
Theta hat	11.23008	
Theta star	11.40435	
nu hat	34.82158	
nu star	34.28947	
5% Approximate Chi Square Value	21.89369	
Adjusted Level of Significance	0.045714	
Adjusted Chi Square Value	21.6314	
Anderson-Darling Test Statistic	6.446329	
Anderson-Darling 5% Critical Value	0.860319	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.264421	
Kolmogrov-Smirnov 5% Critical Value	0.128913	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	5.468334	
95% Adjusted Gamma UCL	5.534639	
Lognormal Statistics		
Minimum of log data	-2.97593	
Maximum of log data	3.78419	
Mean of log data	-0.95469	
Standard Deviation of log data	1.950427	
Variance of log data	3.804167	
Lilliefors Test Statisitic	0.15003	
Lilliefors 5% Critical Value	0.118397	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.578976	
MLE Standard Deviation	17.08517	
MLE Coefficient of Variation	6.62479	
MLE Skewness	310.622	
MLE Median	0.384931	
MLE 80% Quantile	2.000546	
MLE 90% Quantile	4.719052	

Appendix P, Attachment 3

ProUCL Output - Carbazole

Former Celotex (Subsurface Soil)

MLE 95% Quantile	9.523494	
MLE 99% Quantile	35.94546	
MVU Estimate of Median	0.372069	
MVU Estimate of Mean	2.355712	
MVU Estimate of Standard Deviation	10.88373	
MVU Estimate of SE of Mean	0.902565	
95% H-UCL	6.354432	
95% Chebyshev (MVUE) UCL	6.2899	
97.5% Chebyshev (MVUE) UCL	7.992226	
99% Chebyshev (MVUE) UCL	11.33612	
Non-parametric Statisitics		
95% CLT UCL	5.395169	
95% Adjusted-CLT UCL	5.90807	
95% Modified-t UCL	5.507785	
95% Jackknife UCL	5.427783	
95% Chebyshev (Mean, Sd) UCL	8.53625	
97.5% Chebyshev (Mean, Sd) UCL	10.71911	
99% Chebyshev (Mean, Sd) UCL	15.00693	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	5.3361	
95% Bootstrap-t UCL	6.625353	
95% Hall's Bootstrap UCL	5.844725	
95% Percentile Bootstrap UCL	5.41292	
95% BCA Bootstrap UCL	5.996232	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	10.71911	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chromium
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Chromium	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	52	
Minimum	3.39	
Maximum	153	
Mean	29.42564	
Standard Deviation	23.14854	
Variance	535.8551	
Coefficient of Variation	0.786679	
Skewness	3.021694	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.173518	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	34.64942	
Gamma Statistics		
k hat	2.175966	
k star (bias corrected)	2.069399	
Theta hat	13.52302	
Theta star	14.21941	
nu hat	239.3563	
nu star	227.6338	
5% Approximate Chi Square Value	193.704	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	192.8648	
Anderson-Darling Test Statistic	0.390933	
Anderson-Darling 5% Critical Value	0.761937	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.081046	
Kolmogrov-Smirnov 5% Critical Value	0.121397	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	34.57993	
95% Adjusted Gamma UCL	34.73039	
Lognormal Statistics		
Minimum of log data	1.22083	
Maximum of log data	5.030438	
Mean of log data	3.134824	
Standard Deviation of log data	0.736148	
Variance of log data	0.541914	
Lilliefors Test Statisitic	0.125111	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	30.13782	
MLE Standard Deviation	25.56026	
MLE Coefficient of Variation	0.848112	
MLE Skewness	3.15438	
MLE Median	22.98459	
MLE 80% Quantile	42.81416	
MLE 90% Quantile	59.19128	

Appendix P, Attachment 3

ProUCL Output - Chromium

Former Celotex (Subsurface Soil)

MLE 95% Quantile	77.15277	
MLE 99% Quantile	127.371	
MVU Estimate of Median	22.87162	
MVU Estimate of Mean	29.95229	
MVU Estimate of Standard Deviation	24.81023	
MVU Estimate of SE of Mean	3.286464	
95% H-UCL	36.99722	
95% Chebyshev (MVUE) UCL	44.27765	
97.5% Chebyshev (MVUE) UCL	50.47625	
99% Chebyshev (MVUE) UCL	62.65219	
Non-parametric Statisitics		
95% CLT UCL	34.5598	
95% Adjusted-CLT UCL	35.91871	
95% Modified-t UCL	34.86138	
95% Jackknife UCL	34.64942	
95% Chebyshev (Mean, Sd) UCL	43.03128	
97.5% Chebyshev (Mean, Sd) UCL	48.91845	
99% Chebyshev (Mean, Sd) UCL	60.48267	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	34.40696	
95% Bootstrap-t UCL	36.82869	
95% Hall's Bootstrap UCL	42.12014	
95% Percentile Bootstrap UCL	34.72273	
95% BCA Bootstrap UCL	36.10073	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	34.57993	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chrysene
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Chrysene	
Raw Statistics		
Number of Observations	58	
Number of Missing Data	0	
Number of Valid Observations	58	
Number of Distinct Observations	58	
Minimum	0.0525	
Maximum	272	
Mean	14.46078	
Standard Deviation	39.48277	
Variance	1558.889	
Coefficient of Variation	2.730336	
Skewness	5.231954	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.358892	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	23.12914	
Gamma Statistics		
k hat	0.345215	
k star (bias corrected)	0.338854	
Theta hat	41.88915	
Theta star	42.67559	
nu hat	40.04498	
nu star	39.30702	
5% Approximate Chi Square Value	25.9427	
Adjusted Level of Significance	0.045862	
Adjusted Chi Square Value	25.66556	
Anderson-Darling Test Statistic	3.734707	
Anderson-Darling 5% Critical Value	0.852361	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.243468	
Kolmogrov-Smirnov 5% Critical Value	0.126048	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	21.91021	
95% Adjusted Gamma UCL	22.1468	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	5.605802	
Mean of log data	0.719189	
Standard Deviation of log data	1.995743	
Variance of log data	3.982992	
Lilliefors Test Statisitic	0.100476	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	15.03958	
MLE Standard Deviation	109.156	
MLE Coefficient of Variation	7.257919	
MLE Skewness	404.102	
MLE Median	2.052768	
MLE 80% Quantile	11.085	
MLE 90% Quantile	26.67481	

Appendix P, Attachment 3
ProUCL Output - Chrysene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	54.7177	
MLE 99% Quantile	212.9992	
MVU Estimate of Median	1.983441	
MVU Estimate of Mean	13.68646	
MVU Estimate of Standard Deviation	68.06577	
MVU Estimate of SE of Mean	5.337718	
95% H-UCL	37.6705	
95% Chebyshev (MVUE) UCL	36.95303	
97.5% Chebyshev (MVUE) UCL	47.0205	
99% Chebyshev (MVUE) UCL	66.79609	
Non-parametric Statisitics		
95% CLT UCL	22.98826	
95% Adjusted-CLT UCL	26.79387	
95% Modified-t UCL	23.72274	
95% Jackknife UCL	23.12914	
95% Chebyshev (Mean, Sd) UCL	37.0588	
97.5% Chebyshev (Mean, Sd) UCL	46.83698	
99% Chebyshev (Mean, Sd) UCL	66.04433	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	22.81429	
95% Bootstrap-t UCL	32.5844	
95% Hall's Bootstrap UCL	54.86945	
95% Percentile Bootstrap UCL	23.76908	
95% BCA Bootstrap UCL	28.48747	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	37.6705	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Copper

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Copper	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	54	
Minimum	13.6	
Maximum	4540	
Mean	214.1618	
Standard Deviation	645.5586	
Variance	416745.9	
Coefficient of Variation	3.01435	
Skewness	6.026767	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.385185	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	359.8408	
Gamma Statistics		
k hat	0.619489	
k star (bias corrected)	0.59782	
Theta hat	345.7072	
Theta star	358.238	
nu hat	68.14379	
nu star	65.76019	
5% Approximate Chi Square Value	48.09675	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	47.69018	
Anderson-Darling Test Statistic	6.812984	
Anderson-Darling 5% Critical Value	0.804409	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.28082	
Kolmogrov-Smirnov 5% Critical Value	0.125893	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	292.8123	
95% Adjusted Gamma UCL	295.3086	
Lognormal Statistics		
Minimum of log data	2.61007	
Maximum of log data	8.420682	
Mean of log data	4.374004	
Standard Deviation of log data	1.075229	
Variance of log data	1.156117	
Lilliefors Test Statisitic	0.1819	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	141.4664	
MLE Standard Deviation	208.7563	
MLE Coefficient of Variation	1.47566	
MLE Skewness	7.640336	
MLE Median	79.36074	
MLE 80% Quantile	196.8756	
MLE 90% Quantile	315.9781	

Appendix P, Attachment 3
ProUCL Output - Copper
Former Celotex (Subsurface Soil)

MLE 95% Quantile	465.334	
MLE 99% Quantile	967.7623	
MVU Estimate of Median	78.53086	
MVU Estimate of Mean	139.2047	
MVU Estimate of Standard Deviation	193.1201	
MVU Estimate of SE of Mean	24.28533	
95% H-UCL	200.1438	
95% Chebyshev (MVUE) UCL	245.062	
97.5% Chebyshev (MVUE) UCL	290.8665	
99% Chebyshev (MVUE) UCL	380.8407	
Non-parametric Statisitics		
95% CLT UCL	357.3416	
95% Adjusted-CLT UCL	432.9269	
95% Modified-t UCL	371.6306	
95% Jackknife UCL	359.8408	
95% Chebyshev (Mean, Sd) UCL	593.5914	
97.5% Chebyshev (Mean, Sd) UCL	757.7708	
99% Chebyshev (Mean, Sd) UCL	1080.27	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	355.9144	
95% Bootstrap-t UCL	865.2189	
95% Hall's Bootstrap UCL	863.6958	
95% Percentile Bootstrap UCL	371.0818	
95% BCA Bootstrap UCL	491.8127	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	757.7708	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzo(a,h)anthracene

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Dibenzo(a,h)anthracene	
Raw Statistics		
Number of Observations	58	
Number of Missing Data	0	
Number of Valid Observations	58	
Number of Distinct Observations	55	
Minimum	0.051	
Maximum	35.5	
Mean	2.233276	
Standard Deviation	5.410303	
Variance	29.27137	
Coefficient of Variation	2.422586	
Skewness	4.593029	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.343343	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	3.421098	
Gamma Statistics		
k hat	0.421978	
k star (bias corrected)	0.411645	
Theta hat	5.292405	
Theta star	5.425242	
nu hat	48.94939	
nu star	47.75086	
5% Approximate Chi Square Value	32.88834	
Adjusted Level of Significance	0.045862	
Adjusted Chi Square Value	32.57372	
Anderson-Darling Test Statistic	3.892265	
Anderson-Darling 5% Critical Value	0.834149	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.211796	
Kolmogrov-Smirnov 5% Critical Value	0.124818	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.242512	
95% Adjusted Gamma UCL	3.273831	
Lognormal Statistics		
Minimum of log data	-2.97593	
Maximum of log data	3.569533	
Mean of log data	-0.74261	
Standard Deviation of log data	1.682879	
Variance of log data	2.832081	
Lilliefors Test Statisitic	0.095377	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1.960958	
MLE Standard Deviation	7.839117	
MLE Coefficient of Variation	3.997595	
MLE Skewness	75.87739	
MLE Median	0.475872	
MLE 80% Quantile	1.972744	
MLE 90% Quantile	4.136674	

Appendix P, Attachment 3
ProUCL Output - Dibenzo(a,h)anthracene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	7.581632	
MLE 99% Quantile	23.84964	
MVU Estimate of Median	0.464389	
MVU Estimate of Mean	1.855288	
MVU Estimate of Standard Deviation	5.95627	
MVU Estimate of SE of Mean	0.573795	
95% H-UCL	3.886725	
95% Chebyshev (MVUE) UCL	4.356401	
97.5% Chebyshev (MVUE) UCL	5.438635	
99% Chebyshev (MVUE) UCL	7.564474	
Non-parametric Statisitics		
95% CLT UCL	3.401792	
95% Adjusted-CLT UCL	3.85959	
95% Modified-t UCL	3.492505	
95% Jackknife UCL	3.421098	
95% Chebyshev (Mean, Sd) UCL	5.329871	
97.5% Chebyshev (Mean, Sd) UCL	6.66977	
99% Chebyshev (Mean, Sd) UCL	9.301742	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	3.404336	
95% Bootstrap-t UCL	4.521702	
95% Hall's Bootstrap UCL	7.696521	
95% Percentile Bootstrap UCL	3.462776	
95% BCA Bootstrap UCL	3.948871	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	3.886725	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	56	
Number of Missing Data	0	
Number of Valid Observations	56	
Number of Distinct Observations	52	
Minimum	0.051	
Maximum	345	
Mean	12.54797	
Standard Deviation	50.20873	
Variance	2520.917	
Coefficient of Variation	4.001342	
Skewness	5.746349	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.428101	
Lilliefors 5% Critical Value	0.118397	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	23.77307	
Gamma Statistics		
k hat	0.211626	
k star (bias corrected)	0.212194	
Theta hat	59.29307	
Theta star	59.13446	
nu hat	23.70214	
nu star	23.76572	
5% Approximate Chi Square Value	13.66893	
Adjusted Level of Significance	0.045714	
Adjusted Chi Square Value	13.46596	
Anderson-Darling Test Statistic	8.677342	
Anderson-Darling 5% Critical Value	0.90357	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.2954	
Kolmogrov-Smirnov 5% Critical Value	0.131545	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	21.81675	
95% Adjusted Gamma UCL	22.14559	
Lognormal Statistics		
Minimum of log data	-2.97593	
Maximum of log data	5.843544	
Mean of log data	-0.91722	
Standard Deviation of log data	2.284515	
Variance of log data	5.219011	
Lilliefors Test Statisitic	0.183752	
Lilliefors 5% Critical Value	0.118397	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	5.431868	
MLE Standard Deviation	73.63165	
MLE Coefficient of Variation	13.55549	
MLE Skewness	2531.506	
MLE Median	0.399628	
MLE 80% Quantile	2.754382	
MLE 90% Quantile	7.526123	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Former Celotex (Subsurface Soil)

MLE 95% Quantile	17.12956	
MLE 99% Quantile	81.17121	
MVU Estimate of Median	0.381418	
MVU Estimate of Mean	4.673957	
MVU Estimate of Standard Deviation	34.75241	
MVU Estimate of SE of Mean	2.207327	
95% H-UCL	17.94305	
95% Chebyshev (MVUE) UCL	14.29547	
97.5% Chebyshev (MVUE) UCL	18.45871	
99% Chebyshev (MVUE) UCL	26.63658	
Non-parametric Statisitics		
95% CLT UCL	23.58399	
95% Adjusted-CLT UCL	29.08907	
95% Modified-t UCL	24.63175	
95% Jackknife UCL	23.77307	
95% Chebyshev (Mean, Sd) UCL	41.79368	
97.5% Chebyshev (Mean, Sd) UCL	54.44831	
99% Chebyshev (Mean, Sd) UCL	79.3059	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	23.81313	
95% Bootstrap-t UCL	51.24044	
95% Hall's Bootstrap UCL	56.92808	
95% Percentile Bootstrap UCL	25.05522	
95% BCA Bootstrap UCL	31.79175	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	79.3059	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Fluoranthene	
Raw Statistics		
Number of Observations	58	
Number of Missing Data	0	
Number of Valid Observations	58	
Number of Distinct Observations	58	
Minimum	0.058	
Maximum	756	
Mean	38.57178	
Standard Deviation	109.6063	
Variance	12013.53	
Coefficient of Variation	2.841618	
Skewness	5.283113	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.363844	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	62.63563	
Gamma Statistics		
k hat	0.30689	
k star (bias corrected)	0.302511	
Theta hat	125.686	
Theta star	127.5055	
nu hat	35.59926	
nu star	35.09125	
5% Approximate Chi Square Value	22.5361	
Adjusted Level of Significance	0.045862	
Adjusted Chi Square Value	22.27917	
Anderson-Darling Test Statistic	3.806935	
Anderson-Darling 5% Critical Value	0.861453	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.243165	
Kolmogrov-Smirnov 5% Critical Value	0.126662	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	60.06061	
95% Adjusted Gamma UCL	60.75325	
Lognormal Statistics		
Minimum of log data	-2.84731	
Maximum of log data	6.628041	
Mean of log data	1.413887	
Standard Deviation of log data	2.193406	
Variance of log data	4.811029	
Lilliefors Test Statisitic	0.103717	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	45.57694	
MLE Standard Deviation	503.1205	
MLE Coefficient of Variation	11.03893	
MLE Skewness	1378.298	
MLE Median	4.111909	
MLE 80% Quantile	26.2408	
MLE 90% Quantile	68.8833	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	151.7205	
MLE 99% Quantile	675.7	
MVU Estimate of Median	3.944743	
MVU Estimate of Mean	40.11704	
MVU Estimate of Standard Deviation	265.008	
MVU Estimate of SE of Mean	17.74896	
95% H-UCL	134.9854	
95% Chebyshev (MVUE) UCL	117.483	
97.5% Chebyshev (MVUE) UCL	150.9592	
99% Chebyshev (MVUE) UCL	216.7169	
Non-parametric Statisitics		
95% CLT UCL	62.24453	
95% Adjusted-CLT UCL	72.9124	
95% Modified-t UCL	64.2996	
95% Jackknife UCL	62.63563	
95% Chebyshev (Mean, Sd) UCL	101.3051	
97.5% Chebyshev (Mean, Sd) UCL	128.4498	
99% Chebyshev (Mean, Sd) UCL	181.7705	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	62.09849	
95% Bootstrap-t UCL	91.1756	
95% Hall's Bootstrap UCL	149.1896	
95% Percentile Bootstrap UCL	64.02431	
95% BCA Bootstrap UCL	80.75339	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	117.483	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Indeno(1,2,3-c,d)pyrene

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Indeno(1,2,3-c,d)pyrene	
Raw Statistics		
Number of Observations	58	
Number of Missing Data	0	
Number of Valid Observations	58	
Number of Distinct Observations	56	
Minimum	0.0525	
Maximum	81.9	
Mean	5.391216	
Standard Deviation	12.99674	
Variance	168.9152	
Coefficient of Variation	2.410725	
Skewness	4.239364	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.340619	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	8.244625	
Gamma Statistics		
k hat	0.390279	
k star (bias corrected)	0.381586	
Theta hat	13.81375	
Theta star	14.12842	
nu hat	45.27237	
nu star	44.26403	
5% Approximate Chi Square Value	30.00252	
Adjusted Level of Significance	0.045862	
Adjusted Chi Square Value	29.70294	
Anderson-Darling Test Statistic	3.351308	
Anderson-Darling 5% Critical Value	0.841669	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.209675	
Kolmogrov-Smirnov 5% Critical Value	0.125326	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	7.953895	
95% Adjusted Gamma UCL	8.034117	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	4.405499	
Mean of log data	-0.008	
Standard Deviation of log data	1.834863	
Variance of log data	3.366724	
Lilliefors Test Statisitic	0.071756	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	5.340706	
MLE Standard Deviation	28.25199	
MLE Coefficient of Variation	5.289936	
MLE Skewness	163.9003	
MLE Median	0.992028	
MLE 80% Quantile	4.676059	
MLE 90% Quantile	10.48343	

Appendix P, Attachment 3
ProUCL Output - Indeno(1,2,3-c,d)pyrene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	20.29443	
MLE 99% Quantile	70.80208	
MVU Estimate of Median	0.963636	
MVU Estimate of Mean	4.967933	
MVU Estimate of Standard Deviation	19.69449	
MVU Estimate of SE of Mean	1.728797	
95% H-UCL	11.80583	
95% Chebyshev (MVUE) UCL	12.50359	
97.5% Chebyshev (MVUE) UCL	15.76427	
99% Chebyshev (MVUE) UCL	22.16925	
Non-parametric Statisitics		
95% CLT UCL	8.198249	
95% Adjusted-CLT UCL	9.213299	
95% Modified-t UCL	8.402952	
95% Jackknife UCL	8.244625	
95% Chebyshev (Mean, Sd) UCL	12.82992	
97.5% Chebyshev (Mean, Sd) UCL	16.04865	
99% Chebyshev (Mean, Sd) UCL	22.37123	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	8.110316	
95% Bootstrap-t UCL	10.33286	
95% Hall's Bootstrap UCL	13.41507	
95% Percentile Bootstrap UCL	8.383647	
95% BCA Bootstrap UCL	9.588871	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	11.80583	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Iron

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Iron	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	46	
Minimum	1100	
Maximum	274000	
Mean	29311.45	
Standard Deviation	42576.74	
Variance	1.81E+09	
Coefficient of Variation	1.452563	
Skewness	4.880008	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.364557	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	38919.47	
Gamma Statistics		
k hat	1.642398	
k star (bias corrected)	1.564934	
Theta hat	17846.74	
Theta star	18730.16	
nu hat	180.6638	
nu star	172.1427	
5% Approximate Chi Square Value	142.7953	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	142.0781	
Anderson-Darling Test Statistic	6.134623	
Anderson-Darling 5% Critical Value	0.766591	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.287601	
Kolmogrov-Smirnov 5% Critical Value	0.12197	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	35335.57	
95% Adjusted Gamma UCL	35513.93	
Lognormal Statistics		
Minimum of log data	7.003065	
Maximum of log data	12.52088	
Mean of log data	9.951401	
Standard Deviation of log data	0.718078	
Variance of log data	0.515635	
Lilliefors Test Statisitic	0.217496	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	27152.34	
MLE Standard Deviation	22303.01	
MLE Coefficient of Variation	0.821403	
MLE Skewness	3.02E+00	
MLE Median	20981.6	
MLE 80% Quantile	38490.87	
MLE 90% Quantile	52792.83	

Appendix P, Attachment 3

ProUCL Output - Iron

Former Celotex (Subsurface Soil)

MLE 95% Quantile	68366.52	
MLE 99% Quantile	111485.4	
MVU Estimate of Median	20883.46	
MVU Estimate of Mean	26994.81	
MVU Estimate of Standard Deviation	21685.69	
MVU Estimate of SE of Mean	2877.09	
95% H-UCL	33115.92	
95% Chebyshev (MVUE) UCL	39535.76	
97.5% Chebyshev (MVUE) UCL	44962.23	
99% Chebyshev (MVUE) UCL	55621.49	
Non-parametric Statisitics		
95% CLT UCL	38754.63	
95% Adjusted-CLT UCL	42791.19	
95% Modified-t UCL	39549.09	
95% Jackknife UCL	38919.47	
95% Chebyshev (Mean, Sd) UCL	54336.09	
97.5% Chebyshev (Mean, Sd) UCL	65164.28	
99% Chebyshev (Mean, Sd) UCL	86434.14	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	38374.62	
95% Bootstrap-t UCL	65887.15	
95% Hall's Bootstrap UCL	82893.37	
95% Percentile Bootstrap UCL	39828	
95% BCA Bootstrap UCL	44416.91	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	54336.09	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Lead

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	54	
Minimum	5.02E+00	
Maximum	12000	
Mean	908.4422	
Standard Deviation	2180.301	
Variance	4753714	
Coefficient of Variation	2.400044	
Skewness	3.905187	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.358813	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1400.456	
Gamma Statistics		
k hat	0.456234	
k star (bias corrected)	0.44347	
Theta hat	1991.176	
Theta star	2048.488	
nu hat	50.18574	
nu star	48.78167	
5% Approximate Chi Square Value	33.74575	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	33.4088	
Anderson-Darling Test Statistic	4.705729	
Anderson-Darling 5% Critical Value	0.825564	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.282674	
Kolmogrov-Smirnov 5% Critical Value	0.127619	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1313.212	
95% Adjusted Gamma UCL	1326.457	
Lognormal Statistics		
Minimum of log data	1.61343	
Maximum of log data	9.392662	
Mean of log data	5.399386	
Standard Deviation of log data	1.574387	
Variance of log data	2.478695	
Lilliefors Test Statisitic	0.171217	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	764.1268	
MLE Standard Deviation	2525.747	
MLE Coefficient of Variation	3.305403	
MLE Skewness	46.03	
MLE Median	221.2706	
MLE 80% Quantile	836.9325	
MLE 90% Quantile	1673.167	

Appendix P, Attachment 3
ProUCL Output - Lead
Former Celotex (Subsurface Soil)

MLE 95% Quantile	2949.093	
MLE 99% Quantile	8616.297	
MVU Estimate of Median	216.3384	
MVU Estimate of Mean	728.6076	
MVU Estimate of Standard Deviation	1999.489	
MVU Estimate of SE of Mean	210.3897	
95% H-UCL	1437.892	
95% Chebyshev (MVUE) UCL	1645.675	
97.5% Chebyshev (MVUE) UCL	2042.491	
99% Chebyshev (MVUE) UCL	2821.958	
Non-parametric Statisitics		
95% CLT UCL	1392.016	
95% Adjusted-CLT UCL	1557.431	
95% Modified-t UCL	1426.258	
95% Jackknife UCL	1400.456	
95% Chebyshev (Mean, Sd) UCL	2189.923	
97.5% Chebyshev (Mean, Sd) UCL	2744.42	
99% Chebyshev (Mean, Sd) UCL	3833.623	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1381.798	
95% Bootstrap-t UCL	1862.804	
95% Hall's Bootstrap UCL	1859.977	
95% Percentile Bootstrap UCL	1436.613	
95% BCA Bootstrap UCL	1599.14	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	2744.42	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Manganese
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Manganese	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	53	
Minimum	14.3	
Maximum	702	
Mean	242.5055	
Standard Deviation	147.7156	
Variance	21819.9	
Coefficient of Variation	0.609123	
Skewness	0.485972	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.098642	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	275.8395	
Gamma Statistics		
k hat	1.875379	
k star (bias corrected)	1.785207	
Theta hat	129.3101	
Theta star	135.8416	
nu hat	206.2917	
nu star	196.3728	
5% Approximate Chi Square Value	164.9451	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	164.1725	
Anderson-Darling Test Statistic	1.786088	
Anderson-Darling 5% Critical Value	0.76418	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.196567	
Kolmogrov-Smirnov 5% Critical Value	0.121667	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	288.7111	
95% Adjusted Gamma UCL	290.0697	
Lognormal Statistics		
Minimum of log data	2.66026	
Maximum of log data	6.553933	
Mean of log data	5.201319	
Standard Deviation of log data	0.914967	
Variance of log data	0.837164	
Lilliefors Test Statisitic	0.227525	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	275.862	
MLE Standard Deviation	315.7152	
MLE Coefficient of Variation	1.144468	
MLE Skewness	4.932435	
MLE Median	181.5114	
MLE 80% Quantile	393.2578	
MLE 90% Quantile	588.1904	

Appendix P, Attachment 3

ProUCL Output - Manganese

Former Celotex (Subsurface Soil)

MLE 95% Quantile	817.6535	
MLE 99% Quantile	1524.666	
MVU Estimate of Median	180.1351	
MVU Estimate of Mean	272.9612	
MVU Estimate of Standard Deviation	300.0274	
MVU Estimate of SE of Mean	38.89323	
95% H-UCL	363.2053	
95% Chebyshev (MVUE) UCL	442.4928	
97.5% Chebyshev (MVUE) UCL	515.8493	
99% Chebyshev (MVUE) UCL	659.9439	
Non-parametric Statisitics		
95% CLT UCL	275.2676	
95% Adjusted-CLT UCL	276.6622	
95% Modified-t UCL	276.057	
95% Jackknife UCL	275.8395	
95% Chebyshev (Mean, Sd) UCL	329.3259	
97.5% Chebyshev (Mean, Sd) UCL	366.8931	
99% Chebyshev (Mean, Sd) UCL	440.6867	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	274.6234	
95% Bootstrap-t UCL	275.934	
95% Hall's Bootstrap UCL	276.4305	
95% Percentile Bootstrap UCL	274.1291	
95% BCA Bootstrap UCL	273.2673	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	275.8395	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Mercury
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Mercury	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	54	
Minimum	0.02	
Maximum	316	
Mean	9.772345	
Standard Deviation	44.72344	
Variance	2000.186	
Coefficient of Variation	4.576531	
Skewness	6.373165	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.425242	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	19.86479	
Gamma Statistics		
k hat	0.256887	
k star (bias corrected)	0.254996	
Theta hat	38.04144	
Theta star	38.32352	
nu hat	28.25755	
nu star	28.04957	
5% Approximate Chi Square Value	16.96472	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	16.73202	
Anderson-Darling Test Statistic	7.104584	
Anderson-Darling 5% Critical Value	0.882591	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.29746	
Kolmogrov-Smirnov 5% Critical Value	0.131458	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	16.15765	
95% Adjusted Gamma UCL	16.38237	
Lognormal Statistics		
Minimum of log data	-3.91202	
Maximum of log data	5.755742	
Mean of log data	-0.47333	
Standard Deviation of log data	1.989621	
Variance of log data	3.958594	
Lilliefors Test Statisitic	0.133323	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	4.508522	
MLE Standard Deviation	32.31815	
MLE Coefficient of Variation	7.168236	
MLE Skewness	389.8345	
MLE Median	0.622926	
MLE 80% Quantile	3.346459	
MLE 90% Quantile	8.031217	

Appendix P, Attachment 3
ProUCL Output - Mercury
Former Celotex (Subsurface Soil)

MLE 95% Quantile	16.43807	
MLE 99% Quantile	63.72214	
MVU Estimate of Median	0.600893	
MVU Estimate of Mean	4.087465	
MVU Estimate of Standard Deviation	19.84997	
MVU Estimate of SE of Mean	1.619291	
95% H-UCL	11.59356	
95% Chebyshev (MVUE) UCL	11.14579	
97.5% Chebyshev (MVUE) UCL	14.19993	
99% Chebyshev (MVUE) UCL	20.19921	
Non-parametric Statisitics		
95% CLT UCL	19.69165	
95% Adjusted-CLT UCL	25.22908	
95% Modified-t UCL	20.72852	
95% Jackknife UCL	19.86479	
95% Chebyshev (Mean, Sd) UCL	36.05872	
97.5% Chebyshev (Mean, Sd) UCL	47.43285	
99% Chebyshev (Mean, Sd) UCL	69.77514	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	19.59977	
95% Bootstrap-t UCL	85.32253	
95% Hall's Bootstrap UCL	65.72086	
95% Percentile Bootstrap UCL	21.21105	
95% BCA Bootstrap UCL	28.83829	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	47.43285	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	58	
Number of Missing Data	0	
Number of Valid Observations	58	
Number of Distinct Observations	53	
Minimum	0.051	
Maximum	1450	
Mean	77.52225	
Standard Deviation	291.2662	
Variance	84836	
Coefficient of Variation	3.757195	
Skewness	4.086162	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.485344	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	141.4692	
Gamma Statistics		
k hat	0.158694	
k star (bias corrected)	0.16198	
Theta hat	488.5025	
Theta star	478.5926	
nu hat	18.40846	
nu star	18.78963	
5% Approximate Chi Square Value	9.962501	
Adjusted Level of Significance	0.045862	
Adjusted Chi Square Value	9.798144	
Anderson-Darling Test Statistic	10.31597	
Anderson-Darling 5% Critical Value	0.939505	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.33118	
Kolmogrov-Smirnov 5% Critical Value	0.131026	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	146.2098	
95% Adjusted Gamma UCL	148.6623	
Lognormal Statistics		
Minimum of log data	-2.97593	
Maximum of log data	7.279319	
Mean of log data	-0.4528	
Standard Deviation of log data	2.767851	
Variance of log data	7.660999	
Lilliefors Test Statisitic	0.198383	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	29.30341	
MLE Standard Deviation	1350.146	
MLE Coefficient of Variation	46.07471	
MLE Skewness	97949.26	
MLE Median	0.635848	
MLE 80% Quantile	6.593198	
MLE 90% Quantile	22.28453	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	60.35956	
MLE 99% Quantile	397.5123	
MVU Estimate of Median	0.595167	
MVU Estimate of Mean	22.28499	
MVU Estimate of Standard Deviation	346.0708	
MVU Estimate of SE of Mean	13.20689	
95% H-UCL	151.2421	
95% Chebyshev (MVUE) UCL	79.8525	
97.5% Chebyshev (MVUE) UCL	104.762	
99% Chebyshev (MVUE) UCL	153.6919	
Non-parametric Statisitics		
95% CLT UCL	140.4299	
95% Adjusted-CLT UCL	162.3558	
95% Modified-t UCL	144.8892	
95% Jackknife UCL	141.4692	
95% Chebyshev (Mean, Sd) UCL	244.2289	
97.5% Chebyshev (Mean, Sd) UCL	316.363	
99% Chebyshev (Mean, Sd) UCL	458.0564	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	140.5607	
95% Bootstrap-t UCL	205.9617	
95% Hall's Bootstrap UCL	141.6526	
95% Percentile Bootstrap UCL	143.268	
95% BCA Bootstrap UCL	167.3149	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	458.0564	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Pyrene

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Pyrene	
Raw Statistics		
Number of Observations	58	
Number of Missing Data	0	
Number of Valid Observations	58	
Number of Distinct Observations	58	
Minimum	0.058	
Maximum	645	
Mean	32.81959	
Standard Deviation	95.01231	
Variance	9027.339	
Coefficient of Variation	2.894987	
Skewness	5.152426	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.377087	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	53.67937	
Gamma Statistics		
k hat	0.306881	
k star (bias corrected)	0.302502	
Theta hat	106.9458	
Theta star	108.4939	
nu hat	35.59816	
nu star	35.09021	
5% Approximate Chi Square Value	22.53527	
Adjusted Level of Significance	0.045862	
Adjusted Chi Square Value	22.27834	
Anderson-Darling Test Statistic	4.112897	
Anderson-Darling 5% Critical Value	0.861456	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.242393	
Kolmogrov-Smirnov 5% Critical Value	0.126662	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	51.10418	
95% Adjusted Gamma UCL	51.69354	
Lognormal Statistics		
Minimum of log data	-2.84731	
Maximum of log data	6.46925	
Mean of log data	1.252312	
Standard Deviation of log data	2.146627	
Variance of log data	4.608006	
Lilliefors Test Statisitic	0.098759	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	35.03387	
MLE Standard Deviation	349.0822	
MLE Coefficient of Variation	9.964135	
MLE Skewness	1019.172	
MLE Median	3.498422	
MLE 80% Quantile	21.46045	
MLE 90% Quantile	55.187	

Appendix P, Attachment 3
ProUCL Output - Pyrene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	119.5235	
MLE 99% Quantile	515.6178	
MVU Estimate of Median	3.362084	
MVU Estimate of Mean	31.10243	
MVU Estimate of Standard Deviation	192.006	
MVU Estimate of SE of Mean	13.3734	
95% H-UCL	99.58355	
95% Chebyshev (MVUE) UCL	89.39571	
97.5% Chebyshev (MVUE) UCL	114.6193	
99% Chebyshev (MVUE) UCL	164.166	
Non-parametric Statisitics		
95% CLT UCL	53.34034	
95% Adjusted-CLT UCL	62.35904	
95% Modified-t UCL	55.0861	
95% Jackknife UCL	53.67937	
95% Chebyshev (Mean, Sd) UCL	87.20003	
97.5% Chebyshev (Mean, Sd) UCL	110.7305	
99% Chebyshev (Mean, Sd) UCL	156.9515	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	53.26206	
95% Bootstrap-t UCL	78.64428	
95% Hall's Bootstrap UCL	129.881	
95% Percentile Bootstrap UCL	54.77312	
95% BCA Bootstrap UCL	65.1199	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	89.39571	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Selenium
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Selenium	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	41	
Minimum	2.1	
Maximum	168	
Mean	7.134182	
Standard Deviation	22.79216	
Variance	519.4824	
Coefficient of Variation	3.194782	
Skewness	6.793566	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.412596	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	12.27754	
Gamma Statistics		
k hat	0.76248	
k star (bias corrected)	0.733011	
Theta hat	9.356549	
Theta star	9.732702	
nu hat	83.8728	
nu star	80.63126	
5% Approximate Chi Square Value	60.93683	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	60.47637	
Anderson-Darling Test Statistic	13.2285	
Anderson-Darling 5% Critical Value	0.792048	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.4049	
Kolmogrov-Smirnov 5% Critical Value	0.124748	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	9.439907	
95% Adjusted Gamma UCL	9.511782	
Lognormal Statistics		
Minimum of log data	0.741937	
Maximum of log data	5.123964	
Mean of log data	1.181532	
Standard Deviation of log data	0.819086	
Variance of log data	0.670901	
Lilliefors Test Statisitic	0.370539	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	4.558449	
MLE Standard Deviation	4.457034	
MLE Coefficient of Variation	0.977752	
MLE Skewness	3.867988	
MLE Median	3.259363	
MLE 80% Quantile	6.512082	
MLE 90% Quantile	9.337671	

Appendix P, Attachment 3
ProUCL Output - Selenium
Former Celotex (Subsurface Soil)

MLE 95% Quantile	12.54005	
MLE 99% Quantile	21.90522	
MVU Estimate of Median	3.239542	
MVU Estimate of Mean	4.522094	
MVU Estimate of Standard Deviation	4.288265	
MVU Estimate of SE of Mean	0.563189	
95% H-UCL	5.773212	
95% Chebyshev (MVUE) UCL	6.976977	
97.5% Chebyshev (MVUE) UCL	8.039206	
99% Chebyshev (MVUE) UCL	10.12575	
Non-parametric Statisitics		
95% CLT UCL	12.1893	
95% Adjusted-CLT UCL	15.19746	
95% Modified-t UCL	12.74675	
95% Jackknife UCL	12.27754	
95% Chebyshev (Mean, Sd) UCL	20.53036	
97.5% Chebyshev (Mean, Sd) UCL	26.3269	
99% Chebyshev (Mean, Sd) UCL	37.71307	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	12.15249	
95% Bootstrap-t UCL	33.258	
95% Hall's Bootstrap UCL	28.57975	
95% Percentile Bootstrap UCL	12.85636	
95% BCA Bootstrap UCL	18.59709	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	20.53036	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Silver
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Silver	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	41	
Minimum	0.533	
Maximum	41.7	
Mean	2.211436	
Standard Deviation	6.409721	
Variance	41.08452	
Coefficient of Variation	2.898442	
Skewness	5.360374	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.396716	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	3.657876	
Gamma Statistics		
k hat	0.680134	
k star (bias corrected)	0.655157	
Theta hat	3.251474	
Theta star	3.375432	
nu hat	74.81469	
nu star	72.06722	
5% Approximate Chi Square Value	53.51682	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	53.08672	
Anderson-Darling Test Statistic	11.94312	
Anderson-Darling 5% Critical Value	0.798971	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.369041	
Kolmogrov-Smirnov 5% Critical Value	0.125392	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	2.977981	
95% Adjusted Gamma UCL	3.002108	
Lognormal Statistics		
Minimum of log data	-0.62923	
Maximum of log data	3.730501	
Mean of log data	-0.09852	
Standard Deviation of log data	0.926788	
Variance of log data	0.858937	
Lilliefors Test Statisitic	0.347868	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.392284	
MLE Standard Deviation	1.624056	
MLE Coefficient of Variation	1.166469	
MLE Skewness	5.08656	
MLE Median	0.906175	
MLE 80% Quantile	1.983006	
MLE 90% Quantile	2.981423	

Appendix P, Attachment 3
ProUCL Output - Silver
Former Celotex (Subsurface Soil)

MLE 95% Quantile	4.162203	
MLE 99% Quantile	7.823932	
MVU Estimate of Median	0.899126	
MVU Estimate of Mean	1.377159	
MVU Estimate of Standard Deviation	1.540732	
MVU Estimate of SE of Mean	0.199358	
95% H-UCL	1.842296	
95% Chebyshev (MVUE) UCL	2.246138	
97.5% Chebyshev (MVUE) UCL	2.622146	
99% Chebyshev (MVUE) UCL	3.360741	
Non-parametric Statisitics		
95% CLT UCL	3.633061	
95% Adjusted-CLT UCL	4.300562	
95% Modified-t UCL	3.761993	
95% Jackknife UCL	3.657876	
95% Chebyshev (Mean, Sd) UCL	5.978774	
97.5% Chebyshev (Mean, Sd) UCL	7.608904	
99% Chebyshev (Mean, Sd) UCL	10.81098	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	3.621056	
95% Bootstrap-t UCL	10.16151	
95% Hall's Bootstrap UCL	9.644113	
95% Percentile Bootstrap UCL	3.776055	
95% BCA Bootstrap UCL	4.499273	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	5.978774	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Tetrachloroethene
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Tetrachloroethene	
Raw Statistics		
Number of Observations	56	
Number of Missing Data	0	
Number of Valid Observations	56	
Number of Distinct Observations	46	
Minimum	0.2095	
Maximum	1.34	
Mean	0.374563	
Standard Deviation	0.176716	
Variance	0.031229	
Coefficient of Variation	0.471794	
Skewness	4.359174	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.330086	
Lilliefors 5% Critical Value	0.118397	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.414071	
Gamma Statistics		
k hat	8.916816	
k star (bias corrected)	8.451034	
Theta hat	0.042006	
Theta star	0.044321	
nu hat	998.6834	
nu star	946.5159	
5% Approximate Chi Square Value	876.0901	
Adjusted Level of Significance	0.045714	
Adjusted Chi Square Value	874.3117	
Anderson-Darling Test Statistic	6.084335	
Anderson-Darling 5% Critical Value	0.751172	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.269487	
Kolmogrov-Smirnov 5% Critical Value	0.118972	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.404672	
95% Adjusted Gamma UCL	0.405495	
Lognormal Statistics		
Minimum of log data	-1.56303	
Maximum of log data	0.29267	
Mean of log data	-1.03912	
Standard Deviation of log data	0.296796	
Variance of log data	0.088088	
Lilliefors Test Statisitic	0.231738	
Lilliefors 5% Critical Value	0.118397	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.369696	
MLE Standard Deviation	0.112186	
MLE Coefficient of Variation	0.303453	
MLE Skewness	0.938303	
MLE Median	0.353767	
MLE 80% Quantile	0.454606	
MLE 90% Quantile	0.518024	

Appendix P, Attachment 3
ProUCL Output - Tetrachloroethene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	0.576438	
MLE 99% Quantile	0.705555	
MVU Estimate of Median	0.353489	
MVU Estimate of Mean	0.369394	
MVU Estimate of Standard Deviation	0.11174	
MVU Estimate of SE of Mean	0.014924	
95% H-UCL	0.396596	
95% Chebyshev (MVUE) UCL	0.434445	
97.5% Chebyshev (MVUE) UCL	0.462593	
99% Chebyshev (MVUE) UCL	0.517884	
Non-parametric Statisitics		
95% CLT UCL	0.413405	
95% Adjusted-CLT UCL	0.428104	
95% Modified-t UCL	0.416363	
95% Jackknife UCL	0.414071	
95% Chebyshev (Mean, Sd) UCL	0.477497	
97.5% Chebyshev (Mean, Sd) UCL	0.522036	
99% Chebyshev (Mean, Sd) UCL	0.609526	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.413832	
95% Bootstrap-t UCL	0.48207	
95% Hall's Bootstrap UCL	0.621033	
95% Percentile Bootstrap UCL	0.419643	
95% BCA Bootstrap UCL	0.430161	
Recommendations		
Human Inspection Recommended?	YES	Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	0.414071	95% Student's-t UCL
2nd Recommended UCL	0.416363	95% Modified-t UCL
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Thallium

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Thallium	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	53	
Minimum	0.118	
Maximum	38.7	
Mean	2.102927	
Standard Deviation	5.942139	
Variance	35.30901	
Coefficient of Variation	2.825651	
Skewness	4.979134	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.388271	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	3.443851	
Gamma Statistics		
k hat	0.468123	
k star (bias corrected)	0.45471	
Theta hat	4.492256	
Theta star	4.624766	
nu hat	51.49351	
nu star	50.0181	
5% Approximate Chi Square Value	34.77661	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	34.43422	
Anderson-Darling Test Statistic	6.430454	
Anderson-Darling 5% Critical Value	0.822729	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.258145	
Kolmogrov-Smirnov 5% Critical Value	0.127418	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.024574	
95% Adjusted Gamma UCL	3.054649	
Lognormal Statistics		
Minimum of log data	-2.13707	
Maximum of log data	3.65584	
Mean of log data	-0.62757	
Standard Deviation of log data	1.36787	
Variance of log data	1.871068	
Lilliefors Test Statisitic	0.19152	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.360646	
MLE Standard Deviation	3.189614	
MLE Coefficient of Variation	2.344191	
MLE Skewness	19.91444	
MLE Median	0.533885	
MLE 80% Quantile	1.696005	
MLE 90% Quantile	3.096085	

Appendix P, Attachment 3
ProUCL Output - Thallium
Former Celotex (Subsurface Soil)

MLE 95% Quantile	5.066101	
MLE 99% Quantile	12.8596	
MVU Estimate of Median	0.524878	
MVU Estimate of Mean	1.318488	
MVU Estimate of Standard Deviation	2.736284	
MVU Estimate of SE of Mean	0.31511	
95% H-UCL	2.248887	
95% Chebyshev (MVUE) UCL	2.692019	
97.5% Chebyshev (MVUE) UCL	3.286347	
99% Chebyshev (MVUE) UCL	4.453789	
Non-parametric Statisitics		
95% CLT UCL	3.420846	
95% Adjusted-CLT UCL	3.995643	
95% Modified-t UCL	3.533507	
95% Jackknife UCL	3.443851	
95% Chebyshev (Mean, Sd) UCL	5.595442	
97.5% Chebyshev (Mean, Sd) UCL	7.106656	
99% Chebyshev (Mean, Sd) UCL	10.07514	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	3.395187	
95% Bootstrap-t UCL	5.730842	
95% Hall's Bootstrap UCL	7.047976	
95% Percentile Bootstrap UCL	3.542491	
95% BCA Bootstrap UCL	4.125509	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	7.106656	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Vanadium
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Vanadium	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	52	
Minimum	5.34	
Maximum	69.3	
Mean	33.86618	
Standard Deviation	14.48299	
Variance	209.7571	
Coefficient of Variation	0.427654	
Skewness	-0.13111	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.129032	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	37.13446	
Gamma Statistics		
k hat	3.896752	
k star (bias corrected)	3.696323	
Theta hat	8.690874	
Theta star	9.162126	
nu hat	428.6428	
nu star	406.5956	
5% Approximate Chi Square Value	360.8449	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	359.6908	
Anderson-Darling Test Statistic	2.415873	
Anderson-Darling 5% Critical Value	0.753942	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.202665	
Kolmogrov-Smirnov 5% Critical Value	0.120464	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	38.15999	
95% Adjusted Gamma UCL	38.28243	
Lognormal Statistics		
Minimum of log data	1.675226	
Maximum of log data	4.238445	
Mean of log data	3.388652	
Standard Deviation of log data	0.593538	
Variance of log data	0.352287	
Lilliefors Test Statisitic	0.232062	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	35.33223	
MLE Standard Deviation	22.96096	
MLE Coefficient of Variation	0.649859	
MLE Skewness	2.224023	
MLE Median	29.62599	
MLE 80% Quantile	48.92025	
MLE 90% Quantile	63.51956	

Appendix P, Attachment 3

ProUCL Output - Vanadium

Former Celotex (Subsurface Soil)

MLE 95% Quantile	78.65109	
MLE 99% Quantile	117.8274	
MVU Estimate of Median	29.53126	
MVU Estimate of Mean	35.2006	
MVU Estimate of Standard Deviation	22.55055	
MVU Estimate of SE of Mean	3.016762	
95% H-UCL	41.30753	
95% Chebyshev (MVUE) UCL	48.35036	
97.5% Chebyshev (MVUE) UCL	54.04027	
99% Chebyshev (MVUE) UCL	65.217	
Non-parametric Statisitics		
95% CLT UCL	37.07839	
95% Adjusted-CLT UCL	37.0415	
95% Modified-t UCL	37.12871	
95% Jackknife UCL	37.13446	
95% Chebyshev (Mean, Sd) UCL	42.37862	
97.5% Chebyshev (Mean, Sd) UCL	46.06195	
99% Chebyshev (Mean, Sd) UCL	53.29716	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	37.10746	
95% Bootstrap-t UCL	37.09729	
95% Hall's Bootstrap UCL	37.06203	
95% Percentile Bootstrap UCL	36.94509	
95% BCA Bootstrap UCL	36.94655	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	42.37862	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Xylene (Total)	
Raw Statistics		
Number of Observations	56	
Number of Missing Data	0	
Number of Valid Observations	56	
Number of Distinct Observations	49	
Minimum	0.13	
Maximum	213	
Mean	8.177205	
Standard Deviation	30.86349	
Variance	952.555	
Coefficient of Variation	3.774332	
Skewness	5.785057	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.397148	
Lilliefors 5% Critical Value	0.118397	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	15.07731	
Gamma Statistics		
k hat	0.293361	
k star (bias corrected)	0.28955	
Theta hat	27.87423	
Theta star	28.24111	
nu hat	32.8564	
nu star	32.42957	
5% Approximate Chi Square Value	20.41088	
Adjusted Level of Significance	0.045714	
Adjusted Chi Square Value	20.15835	
Anderson-Darling Test Statistic	11.13314	
Anderson-Darling 5% Critical Value	0.86597	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.404856	
Kolmogrov-Smirnov 5% Critical Value	0.129278	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	12.99225	
95% Adjusted Gamma UCL	13.15501	
Lognormal Statistics		
Minimum of log data	-2.04022	
Maximum of log data	5.361292	
Mean of log data	-0.25782	
Standard Deviation of log data	1.704161	
Variance of log data	2.904165	
Lilliefors Test Statisitic	0.364148	
Lilliefors 5% Critical Value	0.118397	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	3.301129	
MLE Standard Deviation	13.71062	
MLE Coefficient of Variation	4.153312	
MLE Skewness	84.10456	
MLE Median	0.772736	
MLE 80% Quantile	3.261536	
MLE 90% Quantile	6.903504	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
Former Celotex (Subsurface Soil)

MLE 95% Quantile	12.74995	
MLE 99% Quantile	40.69319	
MVU Estimate of Median	0.752948	
MVU Estimate of Mean	3.110451	
MVU Estimate of Standard Deviation	10.21742	
MVU Estimate of SE of Mean	0.99266	
95% H-UCL	6.74392	
95% Chebyshev (MVUE) UCL	7.437356	
97.5% Chebyshev (MVUE) UCL	9.309611	
99% Chebyshev (MVUE) UCL	12.98729	
Non-parametric Statisitics		
95% CLT UCL	14.96109	
95% Adjusted-CLT UCL	18.36787	
95% Modified-t UCL	15.6087	
95% Jackknife UCL	15.07731	
95% Chebyshev (Mean, Sd) UCL	26.15464	
97.5% Chebyshev (Mean, Sd) UCL	33.9335	
99% Chebyshev (Mean, Sd) UCL	49.21354	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	14.75735	
95% Bootstrap-t UCL	29.38999	
95% Hall's Bootstrap UCL	36.2712	
95% Percentile Bootstrap UCL	15.31714	
95% BCA Bootstrap UCL	20.78535	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	33.9335	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Zinc

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Zinc	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	54	
Minimum	11.7	
Maximum	4300	
Mean	228.0109	
Standard Deviation	590.2532	
Variance	348398.8	
Coefficient of Variation	2.588706	
Skewness	6.419048	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.382131	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	361.2095	
Gamma Statistics		
k hat	0.846684	
k star (bias corrected)	0.812623	
Theta hat	269.2986	
Theta star	280.5864	
nu hat	93.13528	
nu star	89.38851	
5% Approximate Chi Square Value	68.58583	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	68.09594	
Anderson-Darling Test Statistic	5.111228	
Anderson-Darling 5% Critical Value	0.787617	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.257622	
Kolmogrov-Smirnov 5% Critical Value	0.124295	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	297.1686	
95% Adjusted Gamma UCL	299.3065	
Lognormal Statistics		
Minimum of log data	2.459589	
Maximum of log data	8.36637	
Mean of log data	4.733581	
Standard Deviation of log data	0.953582	
Variance of log data	0.909319	
Lilliefors Test Statisitic	0.141128	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	179.153	
MLE Standard Deviation	218.1427	
MLE Coefficient of Variation	1.217633	
MLE Skewness	5.458201	
MLE Median	113.702	
MLE 80% Quantile	254.5145	
MLE 90% Quantile	387.1971	

Appendix P, Attachment 3

ProUCL Output - Zinc

Former Celotex (Subsurface Soil)

MLE 95% Quantile	545.784	
MLE 99% Quantile	1044.833	
MVU Estimate of Median	112.7658	
MVU Estimate of Mean	177.0596	
MVU Estimate of Standard Deviation	206.1214	
MVU Estimate of SE of Mean	26.55248	
95% H-UCL	239.8029	
95% Chebyshev (MVUE) UCL	292.7992	
97.5% Chebyshev (MVUE) UCL	342.8798	
99% Chebyshev (MVUE) UCL	441.2534	
Non-parametric Statisitics		
95% CLT UCL	358.9244	
95% Adjusted-CLT UCL	432.5326	
95% Modified-t UCL	372.6909	
95% Jackknife UCL	361.2095	
95% Chebyshev (Mean, Sd) UCL	574.9345	
97.5% Chebyshev (Mean, Sd) UCL	725.0486	
99% Chebyshev (Mean, Sd) UCL	1019.919	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	356.5276	
95% Bootstrap-t UCL	851.6082	
95% Hall's Bootstrap UCL	832.0746	
95% Percentile Bootstrap UCL	376.4727	
95% BCA Bootstrap UCL	467.8091	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	574.9345	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Fluorene

Former Celotex (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_EDGEWATER_MIX.xls	
Variable:	Fluorene	
Raw Statistics		
Number of Observations	58	
Number of Missing Data	0	
Number of Valid Observations	58	
Number of Distinct Observations	56	
Minimum	0.0525	
Maximum	466	
Mean	19.96264	
Standard Deviation	71.93616	
Variance	5174.811	
Coefficient of Variation	3.60354	
Skewness	4.925301	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.424008	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	35.75609	
Gamma Statistics		
k hat	0.210466	
k star (bias corrected)	0.211074	
Theta hat	94.84957	
Theta star	94.57633	
nu hat	24.41409	
nu star	24.48463	
5% Approximate Chi Square Value	14.21605	
Adjusted Level of Significance	0.045862	
Adjusted Chi Square Value	14.01604	
Anderson-Darling Test Statistic	7.809413	
Anderson-Darling 5% Critical Value	0.904574	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.287656	
Kolmogrov-Smirnov 5% Critical Value	0.129227	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	34.38209	
95% Adjusted Gamma UCL	34.87275	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	6.144186	
Mean of log data	-0.47492	
Standard Deviation of log data	2.420829	
Variance of log data	5.860414	
Lilliefors Test Statisitic	0.153592	
Lilliefors 5% Critical Value	0.116337	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	11.6498	
MLE Standard Deviation	217.9072	
MLE Coefficient of Variation	18.7048	
MLE Skewness	6600.354	
MLE Median	0.621936	
MLE 80% Quantile	4.809931	
MLE 90% Quantile	13.95514	

Appendix P, Attachment 3
ProUCL Output - Fluorene
Former Celotex (Subsurface Soil)

MLE 95% Quantile	33.35962	
MLE 99% Quantile	173.4572	
MVU Estimate of Median	0.59127	
MVU Estimate of Mean	9.770447	
MVU Estimate of Standard Deviation	90.10554	
MVU Estimate of SE of Mean	4.91315	
95% H-UCL	42.67828	
95% Chebyshev (MVUE) UCL	31.18637	
97.5% Chebyshev (MVUE) UCL	40.45306	
99% Chebyshev (MVUE) UCL	58.65567	
Non-parametric Statisitics		
95% CLT UCL	35.4994	
95% Adjusted-CLT UCL	42.02668	
95% Modified-t UCL	36.77421	
95% Jackknife UCL	35.75609	
95% Chebyshev (Mean, Sd) UCL	61.1354	
97.5% Chebyshev (Mean, Sd) UCL	78.95089	
99% Chebyshev (Mean, Sd) UCL	113.946	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	35.34327	
95% Bootstrap-t UCL	55.78156	
95% Hall's Bootstrap UCL	43.48094	
95% Percentile Bootstrap UCL	36.37895	
95% BCA Bootstrap UCL	44.8116	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	113.946	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Former Celotex (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_EDGEWATER_GWshallow.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	16	
Minimum	1.59E+01	
Maximum	126000	
Mean	21088.49	
Standard Deviation	38889.58	
Variance	1.51E+09	
Coefficient of Variation	1.844114	
Skewness	1.908482	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.620321	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	38132.33	
Gamma Statistics		
k hat	0.2462	
k star (bias corrected)	0.241704	
Theta hat	85655.95	
Theta star	87249.19	
nu hat	7.878397	
nu star	7.734531	
5% Approximate Chi Square Value	2.581611	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	2.255059	
Anderson-Darling Test Statistic	1.093947	
Anderson-Darling 5% Critical Value	0.859624	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.280394	
Kolmogrov-Smirnov 5% Critical Value	0.235447	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	63181.32	
95% Adjusted Gamma UCL	72330.51	
Lognormal Statistics		
Minimum of log data	2.766319	
Maximum of log data	11.74404	
Mean of log data	7.064341	
Standard Deviation of log data	2.970075	
Variance of log data	8.821345	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.909057	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	96279.76	
MLE Standard Deviation	7925627	
MLE Coefficient of Variation	82.31872	
MLE Skewness	558069.3	
MLE Median	1169.511	
MLE 80% Quantile	14386.63	
MLE 90% Quantile	53150.74	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Former Celotex (Groundwater)

MLE 95% Quantile	154834.8	
MLE 99% Quantile	1170258	
MVU Estimate of Median	883.6152	
MVU Estimate of Mean	37614.89	
MVU Estimate of Standard Deviation	247121.9	
MVU Estimate of SE of Mean	30449.1	
95% H-UCL	13027693	
95% Chebyshev (MVUE) UCL	170339.4	
97.5% Chebyshev (MVUE) UCL	227769.5	
99% Chebyshev (MVUE) UCL	340579.6	
Non-parametric Statisitics		
95% CLT UCL	37080.41	
95% Adjusted-CLT UCL	42036.98	
95% Modified-t UCL	38905.46	
95% Jackknife UCL	38132.33	
95% Chebyshev (Mean, Sd) UCL	63467.43	
97.5% Chebyshev (Mean, Sd) UCL	81804.83	
99% Chebyshev (Mean, Sd) UCL	117825.1	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	37024.16	
95% Bootstrap-t UCL	51286.16	
95% Hall's Bootstrap UCL	36867.99	
95% Percentile Bootstrap UCL	38506.53	
95% BCA Bootstrap UCL	40688.34	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	340579.6	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 1,1'-Biphenyl

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	1,1'-Biphenyl	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	12	
Minimum	5.40E-02	
Maximum	380	
Mean	45.44783	
Standard Deviation	110.1441	
Variance	12131.73	
Coefficient of Variation	2.423529	
Skewness	3.016374	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.490029	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	102.5496	
Gamma Statistics		
k hat	0.227119	
k star (bias corrected)	0.225895	
Theta hat	200.1054	
Theta star	201.19	
nu hat	5.450866	
nu star	5.421483	
5% Approximate Chi Square Value	1.351291	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	1.068347	
Anderson-Darling Test Statistic	1.104285	
Anderson-Darling 5% Critical Value	0.854247	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.333998	
Kolmogrov-Smirnov 5% Critical Value	0.269487	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	182.3402	
95% Adjusted Gamma UCL	230.6317	
Lognormal Statistics		
Minimum of log data	-2.91877	
Maximum of log data	5.940171	
Mean of log data	0.640672	
Standard Deviation of log data	2.872104	
Variance of log data	8.248979	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.908488	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	117.3501	
MLE Standard Deviation	7255.537	
MLE Coefficient of Variation	61.82814	
MLE Skewness	236537.1	
MLE Median	1.897756	
MLE 80% Quantile	21.49026	
MLE 90% Quantile	76.04499	

Appendix P, Attachment 3
ProUCL Output - 1,1'-Biphenyl
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	213.8516	
MLE 99% Quantile	1511.995	
MVU Estimate of Median	1.33279	
MVU Estimate of Mean	41.72326	
MVU Estimate of Standard Deviation	198.9572	
MVU Estimate of SE of Mean	34.16543	
95% H-UCL	46250.25	
95% Chebyshev (MVUE) UCL	190.6469	
97.5% Chebyshev (MVUE) UCL	255.0863	
99% Chebyshev (MVUE) UCL	381.665	
Non-parametric Statisitics		
95% CLT UCL	97.74739	
95% Adjusted-CLT UCL	127.3306	
95% Modified-t UCL	107.1639	
95% Jackknife UCL	102.5496	
95% Chebyshev (Mean, Sd) UCL	184.0428	
97.5% Chebyshev (Mean, Sd) UCL	244.013	
99% Chebyshev (Mean, Sd) UCL	361.8128	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	94.70041	
95% Bootstrap-t UCL	434.0764	
95% Hall's Bootstrap UCL	438.7022	
95% Percentile Bootstrap UCL	105.2695	
95% BCA Bootstrap UCL	139.5216	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	381.665	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 2,4-Dinitrotoluene
115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	2,4-Dinitrotoluene	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	13	
Minimum	0.095	
Maximum	29	
Mean	3.924231	
Standard Deviation	8.187553	
Variance	67.03603	
Coefficient of Variation	2.08641	
Skewness	2.830852	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.543688	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	7.971482	
Gamma Statistics		
k hat	0.393002	
k star (bias corrected)	0.353591	
Theta hat	9.985281	
Theta star	11.09822	
nu hat	10.21804	
nu star	9.193364	
5% Approximate Chi Square Value	3.443393	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	2.960051	
Anderson-Darling Test Statistic	1.127034	
Anderson-Darling 5% Critical Value	0.811269	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.280876	
Kolmogrov-Smirnov 5% Critical Value	0.253303	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	10.47713	
95% Adjusted Gamma UCL	12.18793	
Lognormal Statistics		
Minimum of log data	-2.35388	
Maximum of log data	3.367296	
Mean of log data	-0.31199	
Standard Deviation of log data	1.859411	
Variance of log data	3.457409	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.895803	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	4.123543	
MLE Standard Deviation	22.86045	
MLE Coefficient of Variation	5.543885	
MLE Skewness	187.0211	
MLE Median	0.731987	
MLE 80% Quantile	3.522639	
MLE 90% Quantile	7.983295	

Appendix P, Attachment 3
ProUCL Output - 2,4-Dinitrotoluene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	15.59171	
MLE 99% Quantile	55.31246	
MVU Estimate of Median	0.640017	
MVU Estimate of Mean	3.121153	
MVU Estimate of Standard Deviation	7.854308	
MVU Estimate of SE of Mean	1.790795	
95% H-UCL	47.028	
95% Chebyshev (MVUE) UCL	10.92705	
97.5% Chebyshev (MVUE) UCL	14.30466	
99% Chebyshev (MVUE) UCL	20.93934	
Non-parametric Statisitics		
95% CLT UCL	7.659395	
95% Adjusted-CLT UCL	9.564454	
95% Modified-t UCL	8.268633	
95% Jackknife UCL	7.971482	
95% Chebyshev (Mean, Sd) UCL	13.8225	
97.5% Chebyshev (Mean, Sd) UCL	18.10549	
99% Chebyshev (Mean, Sd) UCL	26.51859	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	7.573159	
95% Bootstrap-t UCL	22.72944	
95% Hall's Bootstrap UCL	22.23933	
95% Percentile Bootstrap UCL	7.989615	
95% BCA Bootstrap UCL	9.919615	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	20.93934	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	13	
Minimum	0.075	
Maximum	2100	
Mean	288.8012	
Standard Deviation	642.313	
Variance	412566	
Coefficient of Variation	2.224067	
Skewness	2.403056	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.536914	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	606.3078	
Gamma Statistics		
k hat	0.180438	
k star (bias corrected)	0.190081	
Theta hat	1600.554	
Theta star	1519.361	
nu hat	4.691395	
nu star	4.942099	
5% Approximate Chi Square Value	1.125133	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	0.890774	
Anderson-Darling Test Statistic	1.423834	
Anderson-Darling 5% Critical Value	0.875341	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.32536	
Kolmogrov-Smirnov 5% Critical Value	0.262184	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1268.547	
95% Adjusted Gamma UCL	1602.296	
Lognormal Statistics		
Minimum of log data	-2.59027	
Maximum of log data	7.649693	
Mean of log data	1.521924	
Standard Deviation of log data	3.405484	
Variance of log data	11.59732	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.887567	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1511.088	
MLE Standard Deviation	498441.6	
MLE Coefficient of Variation	329.856	
MLE Skewness	35890980	
MLE Median	4.581033	
MLE 80% Quantile	81.41492	
MLE 90% Quantile	364.2977	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	1241.339	
MLE 99% Quantile	12620.53	
MVU Estimate of Median	2.887793	
MVU Estimate of Mean	303.1857	
MVU Estimate of Standard Deviation	2122.528	
MVU Estimate of SE of Mean	269.0963	
95% H-UCL	3476143	
95% Chebyshev (MVUE) UCL	1476.149	
97.5% Chebyshev (MVUE) UCL	1983.692	
99% Chebyshev (MVUE) UCL	2980.66	
Non-parametric Statisitics		
95% CLT UCL	581.8245	
95% Adjusted-CLT UCL	708.6913	
95% Modified-t UCL	626.0964	
95% Jackknife UCL	606.3078	
95% Chebyshev (Mean, Sd) UCL	1065.32	
97.5% Chebyshev (Mean, Sd) UCL	1401.32	
99% Chebyshev (Mean, Sd) UCL	2061.327	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	572.581	
95% Bootstrap-t UCL	1661.925	
95% Hall's Bootstrap UCL	2132.254	
95% Percentile Bootstrap UCL	610.8635	
95% BCA Bootstrap UCL	736.4877	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	2132.254	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Acenaphthene

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Acenaphthene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	0.051	
Maximum	1300	
Mean	139.0136	
Standard Deviation	350.2492	
Variance	122674.5	
Coefficient of Variation	2.519531	
Skewness	3.229238	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.463621	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	304.7872	
Gamma Statistics		
k hat	0.224777	
k star (bias corrected)	0.224229	
Theta hat	618.4524	
Theta star	619.9621	
nu hat	6.293745	
nu star	6.278419	
5% Approximate Chi Square Value	1.783236	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	1.484706	
Anderson-Darling Test Statistic	1.087178	
Anderson-Darling 5% Critical Value	0.863218	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.291681	
Kolmogrov-Smirnov 5% Critical Value	0.251682	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	489.4395	
95% Adjusted Gamma UCL	587.851	
Lognormal Statistics		
Minimum of log data	-2.97593	
Maximum of log data	7.17012	
Mean of log data	1.720275	
Standard Deviation of log data	2.952872	
Variance of log data	8.719454	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.959649	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	437.03	
MLE Standard Deviation	34188.59	
MLE Coefficient of Variation	78.22939	
MLE Skewness	478985.8	
MLE Median	5.586063	
MLE 80% Quantile	67.72475	
MLE 90% Quantile	248.3193	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	718.9196	
MLE 99% Quantile	5370.388	
MVU Estimate of Median	4.063576	
MVU Estimate of Mean	158.908	
MVU Estimate of Standard Deviation	912.5664	
MVU Estimate of SE of Mean	130.1152	
95% H-UCL	103619.9	
95% Chebyshev (MVUE) UCL	726.067	
97.5% Chebyshev (MVUE) UCL	971.4772	
99% Chebyshev (MVUE) UCL	1453.538	
Non-parametric Statisitics		
95% CLT UCL	292.9852	
95% Adjusted-CLT UCL	379.3088	
95% Modified-t UCL	318.252	
95% Jackknife UCL	304.7872	
95% Chebyshev (Mean, Sd) UCL	547.0416	
97.5% Chebyshev (Mean, Sd) UCL	723.5957	
99% Chebyshev (Mean, Sd) UCL	1070.402	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	287.8049	
95% Bootstrap-t UCL	685.5316	
95% Hall's Bootstrap UCL	727.8929	
95% Percentile Bootstrap UCL	319.5372	
95% BCA Bootstrap UCL	419.28	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	1453.538	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Arsenic

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	2.1	
Maximum	57.7	
Mean	21.62857	
Standard Deviation	16.68885	
Variance	2.79E+02	
Coefficient of Variation	0.771611	
Skewness	0.917239	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.904584	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	29.52743	
Gamma Statistics		
k hat	1.648126	
k star (bias corrected)	1.342575	
Theta hat	13.12313	
Theta star	16.10976	
nu hat	46.14754	
nu star	37.59211	
5% Approximate Chi Square Value	24.55139	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	23.1596	
Anderson-Darling Test Statistic	0.219202	
Anderson-Darling 5% Critical Value	0.749252	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.157027	
Kolmogrov-Smirnov 5% Critical Value	0.232407	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	33.11681	
95% Adjusted Gamma UCL	35.10698	
Lognormal Statistics		
Minimum of log data	0.741937	
Maximum of log data	4.055257	
Mean of log data	2.740942	
Standard Deviation of log data	0.923925	
Variance of log data	0.853637	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.960851	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	23.75422	
MLE Standard Deviation	27.58121	
MLE Coefficient of Variation	1.161108	
MLE Skewness	5.048694	
MLE Median	15.50158	
MLE 80% Quantile	33.8405	
MLE 90% Quantile	50.81467	

Appendix P, Attachment 3
ProUCL Output - Arsenic
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	70.86651	
MLE 99% Quantile	132.9523	
MVU Estimate of Median	15.03518	
MVU Estimate of Mean	22.81469	
MVU Estimate of Standard Deviation	23.24375	
MVU Estimate of SE of Mean	6.067454	
95% H-UCL	47.16549	
95% Chebyshev (MVUE) UCL	49.2621	
97.5% Chebyshev (MVUE) UCL	60.70592	
99% Chebyshev (MVUE) UCL	83.18509	
Non-parametric Statisitics		
95% CLT UCL	28.96508	
95% Adjusted-CLT UCL	30.1334	
95% Modified-t UCL	29.70967	
95% Jackknife UCL	29.52743	
95% Chebyshev (Mean, Sd) UCL	41.07049	
97.5% Chebyshev (Mean, Sd) UCL	49.48302	
99% Chebyshev (Mean, Sd) UCL	66.00781	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	28.73848	
95% Bootstrap-t UCL	31.45224	
95% Hall's Bootstrap UCL	31.09696	
95% Percentile Bootstrap UCL	29.12143	
95% BCA Bootstrap UCL	29.81429	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	29.52743	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzene

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Benzene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	11	
Minimum	8.00E-04	
Maximum	2.90E+01	
Mean	3.83E+00	
Standard Deviation	9.66E+00	
Variance	93.2451	
Coefficient of Variation	2.523617	
Skewness	2.343623	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.448213	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	8.40E+00	
Gamma Statistics		
k hat	0.146938	
k star (bias corrected)	0.16307	
Theta hat	2.60E+01	
Theta star	2.35E+01	
nu hat	4.114269	
nu star	4.565973	
5% Approximate Chi Square Value	0.95686	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	0.76089	
Anderson-Darling Test Statistic	2.22382	
Anderson-Darling 5% Critical Value	0.891388	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.3431	
Kolmogrov-Smirnov 5% Critical Value	0.254998	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.83E+01	
95% Adjusted Gamma UCL	2.30E+01	
Lognormal Statistics		
Minimum of log data	-7.1309	
Maximum of log data	3.367296	
Mean of log data	-3.90437	
Standard Deviation of log data	3.558519	
Variance of log data	12.66306	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.803642	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.13E+01	
MLE Standard Deviation	6.37E+03	
MLE Coefficient of Variation	5.62E+02	
MLE Skewness	1.78E+08	
MLE Median	2.02E-02	
MLE 80% Quantile	4.08E-01	
MLE 90% Quantile	1.95E+00	

Appendix P, Attachment 3
ProUCL Output - Benzene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	7.02E+00	
MLE 99% Quantile	7.93E+01	
MVU Estimate of Median	1.26E-02	
MVU Estimate of Mean	1.98E+00	
MVU Estimate of Standard Deviation	1.65E+01	
MVU Estimate of SE of Mean	1.78E+00	
95% H-UCL	29362.15	
95% Chebyshev (MVUE) UCL	9.76E+00	
97.5% Chebyshev (MVUE) UCL	1.31E+01	
99% Chebyshev (MVUE) UCL	1.97E+01	
Non-parametric Statisitics		
95% CLT UCL	8.07E+00	
95% Adjusted-CLT UCL	9.798621	
95% Modified-t UCL	8.666176	
95% Jackknife UCL	8.40E+00	
95% Chebyshev (Mean, Sd) UCL	1.51E+01	
97.5% Chebyshev (Mean, Sd) UCL	1.99E+01	
99% Chebyshev (Mean, Sd) UCL	2.95E+01	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	7.87E+00	
95% Bootstrap-t UCL	355.9952	
95% Hall's Bootstrap UCL	440.1938	
95% Percentile Bootstrap UCL	7.98E+00	
95% BCA Bootstrap UCL	1.07E+01	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	4.40E+02	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Benzo(a)anthracene

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	0.26	
Maximum	6.60E+02	
Mean	7.94E+01	
Standard Deviation	1.79E+02	
Variance	31890.12	
Coefficient of Variation	2.24877	
Skewness	3.077263	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.505249	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.64E+02	
Gamma Statistics		
k hat	0.351381	
k star (bias corrected)	0.323704	
Theta hat	225.9978	
Theta star	245.3208	
nu hat	9.838679	
nu star	9.063724	
5% Approximate Chi Square Value	3.364722	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	2.919596	
Anderson-Darling Test Statistic	0.820672	
Anderson-Darling 5% Critical Value	0.822072	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.252035	
Kolmogrov-Smirnov 5% Critical Value	0.246215	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	213.9146	
95% Adjusted Gamma UCL	246.5284	
Lognormal Statistics		
Minimum of log data	-1.34707	
Maximum of log data	6.49224	
Mean of log data	2.462174	
Standard Deviation of log data	2.12949	
Variance of log data	4.534728	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.985548	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	113.2432	
MLE Standard Deviation	1087.361	
MLE Coefficient of Variation	9.60199	
MLE Skewness	914.0922	
MLE Median	11.73028	
MLE 80% Quantile	70.92288	
MLE 90% Quantile	181.013	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	389.6252	
MLE 99% Quantile	1661.321	
MVU Estimate of Median	9.958483	
MVU Estimate of Mean	76.80744	
MVU Estimate of Standard Deviation	246.9739	
MVU Estimate of SE of Mean	49.10327	
95% H-UCL	2119.773	
95% Chebyshev (MVUE) UCL	290.8436	
97.5% Chebyshev (MVUE) UCL	383.4572	
99% Chebyshev (MVUE) UCL	565.3788	
Non-parametric Statisitics		
95% CLT UCL	1.58E+02	
95% Adjusted-CLT UCL	199.8569	
95% Modified-t UCL	170.4748	
95% Jackknife UCL	1.64E+02	
95% Chebyshev (Mean, Sd) UCL	2.87E+02	
97.5% Chebyshev (Mean, Sd) UCL	3.77E+02	
99% Chebyshev (Mean, Sd) UCL	5.54E+02	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.55E+02	
95% Bootstrap-t UCL	474.636	
95% Hall's Bootstrap UCL	477.5438	
95% Percentile Bootstrap UCL	1.64E+02	
95% BCA Bootstrap UCL	2.20E+02	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	2.47E+02	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)pyrene

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Benzo(a)pyrene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	13	
Minimum	0.25	
Maximum	460	
Mean	54.22214	
Standard Deviation	121.7675	
Variance	14827.32	
Coefficient of Variation	2.245715	
Skewness	3.276443	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.488523	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	111.8549	
Gamma Statistics		
k hat	0.389	
k star (bias corrected)	0.353262	
Theta hat	139.3885	
Theta star	153.4899	
nu hat	10.892	
nu star	9.891336	
5% Approximate Chi Square Value	3.873125	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	3.388256	
Anderson-Darling Test Statistic	0.747305	
Anderson-Darling 5% Critical Value	0.814782	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.236063	
Kolmogrov-Smirnov 5% Critical Value	0.245054	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	138.4746	
95% Adjusted Gamma UCL	158.2907	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	6.131226	
Mean of log data	2.293848	
Standard Deviation of log data	2.009169	
Variance of log data	4.036761	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.983982	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	74.60655	
MLE Standard Deviation	556.5196	
MLE Coefficient of Variation	7.459394	
MLE Skewness	437.4379	
MLE Median	9.91301	
MLE 80% Quantile	54.14123	
MLE 90% Quantile	131.0567	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)pyrene

115 River Road Property (Subsurface Soil)

MLE 95% Quantile	270.1375	
MLE 99% Quantile	1061.221	
MVU Estimate of Median	8.569934	
MVU Estimate of Mean	53.74667	
MVU Estimate of Standard Deviation	157.3139	
MVU Estimate of SE of Mean	32.5845	
95% H-UCL	1032.529	
95% Chebyshev (MVUE) UCL	195.7792	
97.5% Chebyshev (MVUE) UCL	257.2368	
99% Chebyshev (MVUE) UCL	377.9583	
Non-parametric Statisitics		
95% CLT UCL	107.7518	
95% Adjusted-CLT UCL	138.2017	
95% Modified-t UCL	116.6045	
95% Jackknife UCL	111.8549	
95% Chebyshev (Mean, Sd) UCL	196.077	
97.5% Chebyshev (Mean, Sd) UCL	257.4577	
99% Chebyshev (Mean, Sd) UCL	378.0281	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	105.6074	
95% Bootstrap-t UCL	256.675	
95% Hall's Bootstrap UCL	264.034	
95% Percentile Bootstrap UCL	115.3657	
95% BCA Bootstrap UCL	153.2186	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	158.2907	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Benzo(b)fluoranthene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	0.36	
Maximum	530	
Mean	58.51643	
Standard Deviation	139.021	
Variance	19326.84	
Coefficient of Variation	2.37576	
Skewness	3.456976	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.453167	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	124.3153	
Gamma Statistics		
k hat	0.401073	
k star (bias corrected)	0.362748	
Theta hat	145.8997	
Theta star	161.3143	
nu hat	11.23005	
nu star	10.15694	
5% Approximate Chi Square Value	4.039236	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	3.541925	
Anderson-Darling Test Statistic	0.841029	
Anderson-Darling 5% Critical Value	0.812442	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.214787	
Kolmogrov-Smirnov 5% Critical Value	0.244682	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	147.1437	
95% Adjusted Gamma UCL	167.8037	
Lognormal Statistics		
Minimum of log data	-1.02165	
Maximum of log data	6.272877	
Mean of log data	2.429323	
Standard Deviation of log data	1.911146	
Variance of log data	3.652479	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.980687	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	70.49648	
MLE Standard Deviation	432.1047	
MLE Coefficient of Variation	6.129451	
MLE Skewness	248.6728	
MLE Median	11.3512	
MLE 80% Quantile	57.06789	
MLE 90% Quantile	132.3098	

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	263.2643	
MLE 99% Quantile	967.4356	
MVU Estimate of Median	9.951461	
MVU Estimate of Mean	53.07396	
MVU Estimate of Standard Deviation	143.5732	
MVU Estimate of SE of Mean	30.68849	
95% H-UCL	772.5058	
95% Chebyshev (MVUE) UCL	186.842	
97.5% Chebyshev (MVUE) UCL	244.7235	
99% Chebyshev (MVUE) UCL	358.4206	
Non-parametric Statisitics		
95% CLT UCL	119.6308	
95% Adjusted-CLT UCL	156.3108	
95% Modified-t UCL	130.0367	
95% Jackknife UCL	124.3153	
95% Chebyshev (Mean, Sd) UCL	220.471	
97.5% Chebyshev (Mean, Sd) UCL	290.5489	
99% Chebyshev (Mean, Sd) UCL	428.2033	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	117.2217	
95% Bootstrap-t UCL	358.5542	
95% Hall's Bootstrap UCL	322.2073	
95% Percentile Bootstrap UCL	126.9479	
95% BCA Bootstrap UCL	166.84	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	167.8037	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzo(k)fluoranthene
115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Benzo(k)fluoranthene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	0.16	
Maximum	200	
Mean	22.26	
Standard Deviation	51.96861	
Variance	2700.737	
Coefficient of Variation	2.334619	
Skewness	3.548032	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.44233	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	46.85684	
Gamma Statistics		
k hat	0.432137	
k star (bias corrected)	0.387155	
Theta hat	51.51142	
Theta star	57.49629	
nu hat	12.09984	
nu star	10.84035	
5% Approximate Chi Square Value	4.472653	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	3.943973	
Anderson-Darling Test Statistic	0.660457	
Anderson-Darling 5% Critical Value	0.806422	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.164901	
Kolmogrov-Smirnov 5% Critical Value	0.243724	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	53.95147	
95% Adjusted Gamma UCL	61.18353	
Lognormal Statistics		
Minimum of log data	-1.83258	
Maximum of log data	5.298317	
Mean of log data	1.59879	
Standard Deviation of log data	1.883628	
Variance of log data	3.548053	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.977945	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	29.16055	
MLE Standard Deviation	169.3964	
MLE Coefficient of Variation	5.809097	
MLE Skewness	213.4588	
MLE Median	4.947043	
MLE 80% Quantile	24.29949	
MLE 90% Quantile	55.65943	

Appendix P, Attachment 3
ProUCL Output - Benzo(k)fluoranthene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	109.657	
MLE 99% Quantile	395.4831	
MVU Estimate of Median	4.353506	
MVU Estimate of Mean	22.20971	
MVU Estimate of Standard Deviation	58.74366	
MVU Estimate of SE of Mean	12.66356	
95% H-UCL	299.9098	
95% Chebyshev (MVUE) UCL	77.40888	
97.5% Chebyshev (MVUE) UCL	101.2936	
99% Chebyshev (MVUE) UCL	148.2105	
Non-parametric Statisitics		
95% CLT UCL	45.10569	
95% Adjusted-CLT UCL	59.17851	
95% Modified-t UCL	49.05191	
95% Jackknife UCL	46.85684	
95% Chebyshev (Mean, Sd) UCL	82.8016	
97.5% Chebyshev (Mean, Sd) UCL	108.998	
99% Chebyshev (Mean, Sd) UCL	160.4558	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	44.54658	
95% Bootstrap-t UCL	151.9834	
95% Hall's Bootstrap UCL	128.5381	
95% Percentile Bootstrap UCL	49.16143	
95% BCA Bootstrap UCL	64.24286	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	61.18353	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Carbazole

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	12	
Minimum	0.1	
Maximum	340	
Mean	32.24846	
Standard Deviation	93.11494	
Variance	8670.392	
Coefficient of Variation	2.887423	
Skewness	3.520975	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.390794	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	78.27682	
Gamma Statistics		
k hat	0.2678	
k star (bias corrected)	0.257282	
Theta hat	120.4201	
Theta star	125.3429	
nu hat	6.962794	
nu star	6.689329	
5% Approximate Chi Square Value	2.001135	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	1.657193	
Anderson-Darling Test Statistic	1.309771	
Anderson-Darling 5% Critical Value	0.842152	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.25929	
Kolmogrov-Smirnov 5% Critical Value	0.257934	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	107.7991	
95% Adjusted Gamma UCL	130.1723	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	5.828946	
Mean of log data	0.850504	
Standard Deviation of log data	2.310252	
Variance of log data	5.337265	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.932068	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	33.75526	
MLE Standard Deviation	485.5869	
MLE Coefficient of Variation	14.38552	
MLE Skewness	3020.142	
MLE Median	2.340826	
MLE 80% Quantile	16.48856	
MLE 90% Quantile	45.56672	

Appendix P, Attachment 3
ProUCL Output - Carbazole
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	104.6759	
MLE 99% Quantile	504.7938	
MVU Estimate of Median	1.90048	
MVU Estimate of Mean	20.06052	
MVU Estimate of Standard Deviation	70.70206	
MVU Estimate of SE of Mean	13.94736	
95% H-UCL	1311.615	
95% Chebyshev (MVUE) UCL	80.85568	
97.5% Chebyshev (MVUE) UCL	107.1618	
99% Chebyshev (MVUE) UCL	158.835	
Non-parametric Statisitics		
95% CLT UCL	74.72753	
95% Adjusted-CLT UCL	101.6751	
95% Modified-t UCL	82.48009	
95% Jackknife UCL	78.27682	
95% Chebyshev (Mean, Sd) UCL	144.8189	
97.5% Chebyshev (Mean, Sd) UCL	193.5283	
99% Chebyshev (Mean, Sd) UCL	289.2083	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	72.20345	
95% Bootstrap-t UCL	520.517	
95% Hall's Bootstrap UCL	372.7647	
95% Percentile Bootstrap UCL	82.76462	
95% BCA Bootstrap UCL	111.0454	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	158.835	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chrysene
115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Chrysene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	13	
Minimum	0.39	
Maximum	610	
Mean	77.86429	
Standard Deviation	168.4711	
Variance	28382.51	
Coefficient of Variation	2.163651	
Skewness	2.874119	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.525816	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	157.602	
Gamma Statistics		
k hat	0.361948	
k star (bias corrected)	0.332007	
Theta hat	215.1253	
Theta star	234.526	
nu hat	10.13456	
nu star	9.296199	
5% Approximate Chi Square Value	3.506061	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	3.049617	
Anderson-Darling Test Statistic	0.872335	
Anderson-Darling 5% Critical Value	0.820024	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.266476	
Kolmogrov-Smirnov 5% Critical Value	0.245889	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	206.4545	
95% Adjusted Gamma UCL	237.355	
Lognormal Statistics		
Minimum of log data	-0.94161	
Maximum of log data	6.413459	
Mean of log data	2.507262	
Standard Deviation of log data	2.069211	
Variance of log data	4.281633	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.977775	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	104.3842	
MLE Standard Deviation	881.7747	
MLE Coefficient of Variation	8.447394	
MLE Skewness	628.1353	
MLE Median	12.27129	
MLE 80% Quantile	70.50935	
MLE 90% Quantile	175.2473	

Appendix P, Attachment 3
ProUCL Output - Chrysene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	369.117	
MLE 99% Quantile	1510.576	
MVU Estimate of Median	10.51444	
MVU Estimate of Mean	73.03373	
MVU Estimate of Standard Deviation	224.1144	
MVU Estimate of SE of Mean	45.4961	
95% H-UCL	1675.929	
95% Chebyshev (MVUE) UCL	271.3466	
97.5% Chebyshev (MVUE) UCL	357.1568	
99% Chebyshev (MVUE) UCL	525.7142	
Non-parametric Statisitics		
95% CLT UCL	151.9251	
95% Adjusted-CLT UCL	188.8809	
95% Modified-t UCL	163.3663	
95% Jackknife UCL	157.602	
95% Chebyshev (Mean, Sd) UCL	274.1272	
97.5% Chebyshev (Mean, Sd) UCL	359.0503	
99% Chebyshev (Mean, Sd) UCL	525.8653	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	147.5856	
95% Bootstrap-t UCL	444.1222	
95% Hall's Bootstrap UCL	482.6043	
95% Percentile Bootstrap UCL	156.785	
95% BCA Bootstrap UCL	198.9993	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	525.7142	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Dibenzo(a,h)anthracene
115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Dibenzo(a,h)anthracene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	13	
Minimum	0.038	
Maximum	58	
Mean	9.276	
Standard Deviation	16.25392	
Variance	264.1901	
Coefficient of Variation	1.752256	
Skewness	2.477302	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.630669	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	16.96901	
Gamma Statistics		
k hat	0.399886	
k star (bias corrected)	0.361815	
Theta hat	23.1966	
Theta star	25.63738	
nu hat	11.19681	
nu star	10.13083	
5% Approximate Chi Square Value	4.022846	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	3.526751	
Anderson-Darling Test Statistic	0.320473	
Anderson-Darling 5% Critical Value	0.812672	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.155726	
Kolmogrov-Smirnov 5% Critical Value	0.244719	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	23.35998	
95% Adjusted Gamma UCL	26.64593	
Lognormal Statistics		
Minimum of log data	-3.27017	
Maximum of log data	4.060443	
Mean of log data	0.581793	
Standard Deviation of log data	2.256631	
Variance of log data	5.092383	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.957108	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	22.82793	
MLE Standard Deviation	290.3523	
MLE Coefficient of Variation	12.71917	
MLE Skewness	2095.831	
MLE Median	1.789244	
MLE 80% Quantile	12.04496	
MLE 90% Quantile	32.51052	

Appendix P, Attachment 3
ProUCL Output - Dibenzo(a,h)anthracene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	73.25533	
MLE 99% Quantile	340.6027	
MVU Estimate of Median	1.488326	
MVU Estimate of Mean	14.41434	
MVU Estimate of Standard Deviation	51.03926	
MVU Estimate of SE of Mean	9.692846	
95% H-UCL	599.297	
95% Chebyshev (MVUE) UCL	56.66447	
97.5% Chebyshev (MVUE) UCL	74.94614	
99% Chebyshev (MVUE) UCL	110.8569	
Non-parametric Statisitics		
95% CLT UCL	16.42132	
95% Adjusted-CLT UCL	19.49451	
95% Modified-t UCL	17.44837	
95% Jackknife UCL	16.96901	
95% Chebyshev (Mean, Sd) UCL	28.21125	
97.5% Chebyshev (Mean, Sd) UCL	36.40455	
99% Chebyshev (Mean, Sd) UCL	52.49869	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	16.26109	
95% Bootstrap-t UCL	30.57369	
95% Hall's Bootstrap UCL	42.99332	
95% Percentile Bootstrap UCL	16.95186	
95% BCA Bootstrap UCL	19.97814	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	26.64593	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzofuran

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	12	
Minimum	0.13	
Maximum	960	
Mean	95.02615	
Standard Deviation	264.192	
Variance	69797.39	
Coefficient of Variation	2.780203	
Skewness	3.415819	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.416623	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	225.6209	
Gamma Statistics		
k hat	0.232963	
k star (bias corrected)	0.230484	
Theta hat	407.9025	
Theta star	412.2891	
nu hat	6.057036	
nu star	5.992592	
5% Approximate Chi Square Value	1.635585	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	1.33396	
Anderson-Darling Test Statistic	1.257614	
Anderson-Darling 5% Critical Value	0.855515	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.293284	
Kolmogrov-Smirnov 5% Critical Value	0.259658	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	348.1647	
95% Adjusted Gamma UCL	426.8889	
Lognormal Statistics		
Minimum of log data	-2.04022	
Maximum of log data	6.866933	
Mean of log data	1.470452	
Standard Deviation of log data	2.663841	
Variance of log data	7.096049	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.939493	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	151.1807	
MLE Standard Deviation	5250.539	
MLE Coefficient of Variation	34.73021	
MLE Skewness	41995.33	
MLE Median	4.351201	
MLE 80% Quantile	41.3221	
MLE 90% Quantile	133.4181	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	348.0932	
MLE 99% Quantile	2135.692	
MVU Estimate of Median	3.293495	
MVU Estimate of Mean	68.77989	
MVU Estimate of Standard Deviation	307.821	
MVU Estimate of SE of Mean	53.18071	
95% H-UCL	18498.51	
95% Chebyshev (MVUE) UCL	300.5892	
97.5% Chebyshev (MVUE) UCL	400.8933	
99% Chebyshev (MVUE) UCL	597.9212	
Non-parametric Statisitics		
95% CLT UCL	215.5506	
95% Adjusted-CLT UCL	289.7246	
95% Modified-t UCL	237.1905	
95% Jackknife UCL	225.6209	
95% Chebyshev (Mean, Sd) UCL	414.4187	
97.5% Chebyshev (Mean, Sd) UCL	552.6201	
99% Chebyshev (Mean, Sd) UCL	824.0899	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	209.2965	
95% Bootstrap-t UCL	1057.052	
95% Hall's Bootstrap UCL	1089.542	
95% Percentile Bootstrap UCL	230.7662	
95% BCA Bootstrap UCL	311.1615	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	824.0899	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzofuran

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	12	
Minimum	0.13	
Maximum	960	
Mean	95.02615	
Standard Deviation	264.192	
Variance	69797.39	
Coefficient of Variation	2.780203	
Skewness	3.415819	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.416623	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	225.6209	
Gamma Statistics		
k hat	0.232963	
k star (bias corrected)	0.230484	
Theta hat	407.9025	
Theta star	412.2891	
nu hat	6.057036	
nu star	5.992592	
5% Approximate Chi Square Value	1.635585	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	1.33396	
Anderson-Darling Test Statistic	1.257614	
Anderson-Darling 5% Critical Value	0.855515	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.293284	
Kolmogrov-Smirnov 5% Critical Value	0.259658	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	348.1647	
95% Adjusted Gamma UCL	426.8889	
Lognormal Statistics		
Minimum of log data	-2.04022	
Maximum of log data	6.866933	
Mean of log data	1.470452	
Standard Deviation of log data	2.663841	
Variance of log data	7.096049	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.939493	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	151.1807	
MLE Standard Deviation	5250.539	
MLE Coefficient of Variation	34.73021	
MLE Skewness	41995.33	
MLE Median	4.351201	
MLE 80% Quantile	41.3221	
MLE 90% Quantile	133.4181	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	348.0932	
MLE 99% Quantile	2135.692	
MVU Estimate of Median	3.293495	
MVU Estimate of Mean	68.77989	
MVU Estimate of Standard Deviation	307.821	
MVU Estimate of SE of Mean	53.18071	
95% H-UCL	18498.51	
95% Chebyshev (MVUE) UCL	300.5892	
97.5% Chebyshev (MVUE) UCL	400.8933	
99% Chebyshev (MVUE) UCL	597.9212	
Non-parametric Statisitics		
95% CLT UCL	215.5506	
95% Adjusted-CLT UCL	289.7246	
95% Modified-t UCL	237.1905	
95% Jackknife UCL	225.6209	
95% Chebyshev (Mean, Sd) UCL	414.4187	
97.5% Chebyshev (Mean, Sd) UCL	552.6201	
99% Chebyshev (Mean, Sd) UCL	824.0899	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	212.9596	
95% Bootstrap-t UCL	1052.149	
95% Hall's Bootstrap UCL	1074.283	
95% Percentile Bootstrap UCL	235.8562	
95% BCA Bootstrap UCL	309.5777	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	824.0899	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Fluoranthene

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Fluoranthene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	5.30E-01	
Maximum	2000	
Mean	201.1807	
Standard Deviation	527.0503	
Variance	277782	
Coefficient of Variation	2.619785	
Skewness	3.52889	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.423121	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	450.6346	
Gamma Statistics		
k hat	0.33117	
k star (bias corrected)	0.307824	
Theta hat	607.4843	
Theta star	653.5571	
nu hat	9.272766	
nu star	8.619078	
5% Approximate Chi Square Value	3.097825	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	2.674698	
Anderson-Darling Test Statistic	1.031144	
Anderson-Darling 5% Critical Value	0.825989	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.246761	
Kolmogrov-Smirnov 5% Critical Value	0.246838	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	559.7452	
95% Adjusted Gamma UCL	648.2946	
Lognormal Statistics		
Minimum of log data	-0.63488	
Maximum of log data	7.600902	
Mean of log data	3.255325	
Standard Deviation of log data	2.113143	
Variance of log data	4.465374	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.979171	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	241.7761	
MLE Standard Deviation	2241.534	
MLE Coefficient of Variation	9.271115	
MLE Skewness	824.6989	
MLE Median	25.92804	
MLE 80% Quantile	154.6139	
MLE 90% Quantile	391.7853	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	838.3583	
MLE 99% Quantile	3535.097	
MVU Estimate of Median	22.06754	
MVU Estimate of Mean	165.4022	
MVU Estimate of Standard Deviation	525.1864	
MVU Estimate of SE of Mean	105.0151	
95% H-UCL	4339.352	
95% Chebyshev (MVUE) UCL	623.1525	
97.5% Chebyshev (MVUE) UCL	821.2214	
99% Chebyshev (MVUE) UCL	1210.289	
Non-parametric Statisitics		
95% CLT UCL	432.875	
95% Adjusted-CLT UCL	574.8273	
95% Modified-t UCL	472.7762	
95% Jackknife UCL	450.6346	
95% Chebyshev (Mean, Sd) UCL	815.1757	
97.5% Chebyshev (Mean, Sd) UCL	1080.852	
99% Chebyshev (Mean, Sd) UCL	1602.721	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	422.3842	
95% Bootstrap-t UCL	1617.718	
95% Hall's Bootstrap UCL	1436.605	
95% Percentile Bootstrap UCL	460.7	
95% BCA Bootstrap UCL	610.3829	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	648.2946	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Fluorene

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Fluorene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	0.069	
Maximum	1200	
Mean	128.9178	
Standard Deviation	324.0101	
Variance	104982.5	
Coefficient of Variation	2.513308	
Skewness	3.203585	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.465388	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	282.2723	
Gamma Statistics		
k hat	0.222972	
k star (bias corrected)	0.222812	
Theta hat	578.1784	
Theta star	578.5955	
nu hat	6.243225	
nu star	6.238725	
5% Approximate Chi Square Value	1.762531	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	1.466259	
Anderson-Darling Test Statistic	1.217145	
Anderson-Darling 5% Critical Value	0.863966	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.302494	
Kolmogrov-Smirnov 5% Critical Value	0.251775	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	456.3225	
95% Adjusted Gamma UCL	548.5269	
Lognormal Statistics		
Minimum of log data	-2.67365	
Maximum of log data	7.090077	
Mean of log data	1.614712	
Standard Deviation of log data	2.889908	
Variance of log data	8.351567	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.94615	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	327.1752	
MLE Standard Deviation	21293.58	
MLE Coefficient of Variation	65.08313	
MLE Skewness	275875.3	
MLE Median	5.026441	
MLE 80% Quantile	57.78241	
MLE 90% Quantile	206.0757	

Appendix P, Attachment 3
ProUCL Output - Fluorene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	583.2469	
MLE 99% Quantile	4174.032	
MVU Estimate of Median	3.706973	
MVU Estimate of Mean	126.5678	
MVU Estimate of Standard Deviation	697.6176	
MVU Estimate of SE of Mean	102.2704	
95% H-UCL	62051.01	
95% Chebyshev (MVUE) UCL	572.3539	
97.5% Chebyshev (MVUE) UCL	765.2459	
99% Chebyshev (MVUE) UCL	1144.145	
Non-parametric Statisitics		
95% CLT UCL	271.3544	
95% Adjusted-CLT UCL	350.5767	
95% Modified-t UCL	294.6294	
95% Jackknife UCL	282.2723	
95% Chebyshev (Mean, Sd) UCL	506.3781	
97.5% Chebyshev (Mean, Sd) UCL	669.7055	
99% Chebyshev (Mean, Sd) UCL	990.5305	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	268.9287	
95% Bootstrap-t UCL	614.8539	
95% Hall's Bootstrap UCL	657.4574	
95% Percentile Bootstrap UCL	281.4779	
95% BCA Bootstrap UCL	367.2457	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	1144.145	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Indeno(1,2,3-cd)pyrene
115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Indeno(1,2,3-cd)pyrene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	0.18	
Maximum	210	
Mean	25.11286	
Standard Deviation	54.99474	
Variance	3024.421	
Coefficient of Variation	2.189904	
Skewness	3.361407	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.486396	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	51.14197	
Gamma Statistics		
k hat	0.41858	
k star (bias corrected)	0.376503	
Theta hat	59.99539	
Theta star	66.70025	
nu hat	11.72023	
nu star	10.54209	
5% Approximate Chi Square Value	4.282465	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	3.767364	
Anderson-Darling Test Statistic	0.545749	
Anderson-Darling 5% Critical Value	0.809049	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.197583	
Kolmogrov-Smirnov 5% Critical Value	0.244142	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	61.81999	
95% Adjusted Gamma UCL	70.27247	
Lognormal Statistics		
Minimum of log data	-1.7148	
Maximum of log data	5.347108	
Mean of log data	1.662735	
Standard Deviation of log data	1.967252	
Variance of log data	3.870079	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.983439	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	36.51686	
MLE Standard Deviation	250.2036	
MLE Coefficient of Variation	6.851728	
MLE Skewness	342.2177	
MLE Median	5.273712	
MLE 80% Quantile	27.80073	
MLE 90% Quantile	66.06591	

Appendix P, Attachment 3
ProUCL Output - Indeno(1,2,3-cd)pyrene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	134.1373	
MLE 99% Quantile	512.1215	
MVU Estimate of Median	4.586951	
MVU Estimate of Mean	26.82176	
MVU Estimate of Standard Deviation	75.9238	
MVU Estimate of SE of Mean	15.94254	
95% H-UCL	456.7077	
95% Chebyshev (MVUE) UCL	96.31366	
97.5% Chebyshev (MVUE) UCL	126.3829	
99% Chebyshev (MVUE) UCL	185.448	
Non-parametric Statisitics		
95% CLT UCL	49.28885	
95% Adjusted-CLT UCL	63.3978	
95% Modified-t UCL	53.34268	
95% Jackknife UCL	51.14197	
95% Chebyshev (Mean, Sd) UCL	89.17979	
97.5% Chebyshev (Mean, Sd) UCL	116.9016	
99% Chebyshev (Mean, Sd) UCL	171.3557	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	48.62418	
95% Bootstrap-t UCL	128.1778	
95% Hall's Bootstrap UCL	124.379	
95% Percentile Bootstrap UCL	52.47714	
95% BCA Bootstrap UCL	66.73571	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	70.27247	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Lead

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	39.1	
Maximum	1040	
Mean	359.8143	
Standard Deviation	337.6021	
Variance	113975.1	
Coefficient of Variation	0.938268	
Skewness	0.891054	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.857684	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	519.6019	
Gamma Statistics		
k hat	1.011303	
k star (bias corrected)	0.842214	
Theta hat	355.7928	
Theta star	427.2242	
nu hat	28.31648	
nu star	23.58199	
5% Approximate Chi Square Value	13.52952	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	12.528	
Anderson-Darling Test Statistic	0.662874	
Anderson-Darling 5% Critical Value	0.75975	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.226781	
Kolmogrov-Smirnov 5% Critical Value	0.235076	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	627.1572	
95% Adjusted Gamma UCL	677.2939	
Lognormal Statistics		
Minimum of log data	3.666122	
Maximum of log data	6.946976	
Mean of log data	5.315573	
Standard Deviation of log data	1.219568	
Variance of log data	1.487347	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.874584	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	428.0528	
MLE Standard Deviation	792.2259	
MLE Coefficient of Variation	1.850767	
MLE Skewness	11.8918	
MLE Median	203.4811	
MLE 80% Quantile	570.2691	
MLE 90% Quantile	975.274	

Appendix P, Attachment 3
ProUCL Output - Lead
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	1512.869	
MLE 99% Quantile	3471.316	
MVU Estimate of Median	192.9178	
MVU Estimate of Mean	394.3989	
MVU Estimate of Standard Deviation	565.6413	
MVU Estimate of SE of Mean	142.434	
95% H-UCL	1256.121	
95% Chebyshev (MVUE) UCL	1015.254	
97.5% Chebyshev (MVUE) UCL	1283.899	
99% Chebyshev (MVUE) UCL	1811.599	
Non-parametric Statisitics		
95% CLT UCL	508.226	
95% Adjusted-CLT UCL	531.1855	
95% Modified-t UCL	523.1832	
95% Jackknife UCL	519.6019	
95% Chebyshev (Mean, Sd) UCL	753.1088	
97.5% Chebyshev (Mean, Sd) UCL	923.2876	
99% Chebyshev (Mean, Sd) UCL	1257.571	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	502.9083	
95% Bootstrap-t UCL	559.5813	
95% Hall's Bootstrap UCL	569.2753	
95% Percentile Bootstrap UCL	507.7	
95% BCA Bootstrap UCL	527.4429	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	627.1572	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Naphthalene

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	0.097	
Maximum	5800	
Mean	802.6498	
Standard Deviation	1780.252	
Variance	3169299	
Coefficient of Variation	2.217969	
Skewness	2.294093	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.535041	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1645.246	
Gamma Statistics		
k hat	0.157524	
k star (bias corrected)	0.171388	
Theta hat	5095.429	
Theta star	4683.245	
nu hat	4.410658	
nu star	4.79885	
5% Approximate Chi Square Value	1.060032	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	0.849467	
Anderson-Darling Test Statistic	1.771801	
Anderson-Darling 5% Critical Value	0.887817	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.371591	
Kolmogrov-Smirnov 5% Critical Value	0.254591	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3633.659	
95% Adjusted Gamma UCL	4534.366	
Lognormal Statistics		
Minimum of log data	-2.33304	
Maximum of log data	8.665613	
Mean of log data	1.84359	
Standard Deviation of log data	3.711743	
Variance of log data	13.77704	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.855671	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	6198.791	
MLE Standard Deviation	6080689	
MLE Coefficient of Variation	980.9476	
MLE Skewness	9.44E+08	
MLE Median	6.319184	
MLE 80% Quantile	145.4763	
MLE 90% Quantile	744.8481	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	2833.897	
MLE 99% Quantile	35493.51	
MVU Estimate of Median	3.796301	
MVU Estimate of Mean	865.2315	
MVU Estimate of Standard Deviation	7871.415	
MVU Estimate of SE of Mean	791.6828	
95% H-UCL	31577225	
95% Chebyshev (MVUE) UCL	4316.097	
97.5% Chebyshev (MVUE) UCL	5809.289	
99% Chebyshev (MVUE) UCL	8742.376	
Non-parametric Statisitics		
95% CLT UCL	1585.259	
95% Adjusted-CLT UCL	1896.965	
95% Modified-t UCL	1693.866	
95% Jackknife UCL	1645.246	
95% Chebyshev (Mean, Sd) UCL	2876.581	
97.5% Chebyshev (Mean, Sd) UCL	3773.973	
99% Chebyshev (Mean, Sd) UCL	5536.725	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1552.555	
95% Bootstrap-t UCL	3466.735	
95% Hall's Bootstrap UCL	2427.514	
95% Percentile Bootstrap UCL	1629.473	
95% BCA Bootstrap UCL	1959.564	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	2427.514	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Phenanthrene

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Phenanthrene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	13	
Minimum	0.61	
Maximum	3900	
Mean	396.8579	
Standard Deviation	1040.784	
Variance	1083231	
Coefficient of Variation	2.622561	
Skewness	3.379794	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.439927	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	889.4628	
Gamma Statistics		
k hat	0.254547	
k star (bias corrected)	0.24762	
Theta hat	1559.077	
Theta star	1602.689	
nu hat	7.127308	
nu star	6.933361	
5% Approximate Chi Square Value	2.133459	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	1.79843	
Anderson-Darling Test Statistic	1.472943	
Anderson-Darling 5% Critical Value	0.850875	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.293061	
Kolmogrov-Smirnov 5% Critical Value	0.250145	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1289.717	
95% Adjusted Gamma UCL	1529.978	
Lognormal Statistics		
Minimum of log data	-0.4943	
Maximum of log data	8.268732	
Mean of log data	3.201274	
Standard Deviation of log data	2.471302	
Variance of log data	6.107334	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.920556	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	520.5786	
MLE Standard Deviation	11020.29	
MLE Coefficient of Variation	21.16931	
MLE Skewness	9550.315	
MLE Median	24.5638	
MLE 80% Quantile	198.2491	
MLE 90% Quantile	588.1001	

Appendix P, Attachment 3
ProUCL Output - Phenanthrene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	1431.626	
MLE 99% Quantile	7704.213	
MVU Estimate of Median	19.68525	
MVU Estimate of Mean	285.7183	
MVU Estimate of Standard Deviation	1183.153	
MVU Estimate of SE of Mean	206.8585	
95% H-UCL	25314.52	
95% Chebyshev (MVUE) UCL	1187.394	
97.5% Chebyshev (MVUE) UCL	1577.549	
99% Chebyshev (MVUE) UCL	2343.934	
Non-parametric Statisitics		
95% CLT UCL	854.3923	
95% Adjusted-CLT UCL	1122.867	
95% Modified-t UCL	931.3394	
95% Jackknife UCL	889.4628	
95% Chebyshev (Mean, Sd) UCL	1609.334	
97.5% Chebyshev (Mean, Sd) UCL	2133.974	
99% Chebyshev (Mean, Sd) UCL	3164.527	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	849.5873	
95% Bootstrap-t UCL	2246.381	
95% Hall's Bootstrap UCL	2328.966	
95% Percentile Bootstrap UCL	909.3586	
95% BCA Bootstrap UCL	1222.672	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	2343.934	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Pyrene

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Pyrene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	0.48	
Maximum	1600	
Mean	179.9414	
Standard Deviation	424.7404	
Variance	180404.4	
Coefficient of Variation	2.360437	
Skewness	3.310674	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.474477	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	380.9718	
Gamma Statistics		
k hat	0.34401	
k star (bias corrected)	0.317912	
Theta hat	523.0709	
Theta star	566.0096	
nu hat	9.63227	
nu star	8.901546	
5% Approximate Chi Square Value	3.26684	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	2.829683	
Anderson-Darling Test Statistic	0.871648	
Anderson-Darling 5% Critical Value	0.823501	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.238066	
Kolmogrov-Smirnov 5% Critical Value	0.246442	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	490.3077	
95% Adjusted Gamma UCL	566.0552	
Lognormal Statistics		
Minimum of log data	-0.73397	
Maximum of log data	7.377759	
Mean of log data	3.232421	
Standard Deviation of log data	2.151137	
Variance of log data	4.627391	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.977548	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	256.2407	
MLE Standard Deviation	2578.334	
MLE Coefficient of Variation	10.06216	
MLE Skewness	1048.949	
MLE Median	25.34094	
MLE 80% Quantile	156.0431	
MLE 90% Quantile	402.0726	

Appendix P, Attachment 3
ProUCL Output - Pyrene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	872.2204	
MLE 99% Quantile	3774.286	
MVU Estimate of Median	21.44063	
MVU Estimate of Mean	171.7915	
MVU Estimate of Standard Deviation	561.6514	
MVU Estimate of SE of Mean	110.819	
95% H-UCL	5073.759	
95% Chebyshev (MVUE) UCL	654.8402	
97.5% Chebyshev (MVUE) UCL	863.8557	
99% Chebyshev (MVUE) UCL	1274.426	
Non-parametric Statisitics		
95% CLT UCL	366.6597	
95% Adjusted-CLT UCL	473.9826	
95% Modified-t UCL	397.712	
95% Jackknife UCL	380.9718	
95% Chebyshev (Mean, Sd) UCL	674.749	
97.5% Chebyshev (Mean, Sd) UCL	888.8527	
99% Chebyshev (Mean, Sd) UCL	1309.418	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	358.1877	
95% Bootstrap-t UCL	937.9277	
95% Hall's Bootstrap UCL	945.7316	
95% Percentile Bootstrap UCL	384.9071	
95% BCA Bootstrap UCL	520.2271	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	566.0552	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Toluene

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Toluene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	10	
Minimum	0.002	
Maximum	89	
Mean	8.133036	
Standard Deviation	24.06018	
Variance	578.8922	
Coefficient of Variation	2.958327	
Skewness	3.389089	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.398416	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	19.52076	
Gamma Statistics		
k hat	0.141791	
k star (bias corrected)	0.159026	
Theta hat	57.35929	
Theta star	51.1427	
nu hat	3.97015	
nu star	4.452737	
5% Approximate Chi Square Value	0.907949	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	0.719152	
Anderson-Darling Test Statistic	2.133447	
Anderson-Darling 5% Critical Value	0.893124	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.36315	
Kolmogrov-Smirnov 5% Critical Value	0.255195	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	39.8858	
95% Adjusted Gamma UCL	50.35694	
Lognormal Statistics		
Minimum of log data	-6.21461	
Maximum of log data	4.488636	
Mean of log data	-3.36872	
Standard Deviation of log data	3.751542	
Variance of log data	14.07407	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.762785	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	39.18571	
MLE Standard Deviation	44593.65	
MLE Coefficient of Variation	1138.008	
MLE Skewness	1.47E+09	
MLE Median	0.034434	
MLE 80% Quantile	0.819821	
MLE 90% Quantile	4.271687	

Appendix P, Attachment 3
ProUCL Output - Toluene
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	16.48687	
MLE 99% Quantile	212.165	
MVU Estimate of Median	0.020452	
MVU Estimate of Mean	5.143299	
MVU Estimate of Standard Deviation	47.85683	
MVU Estimate of SE of Mean	4.724328	
95% H-UCL	239018.4	
95% Chebyshev (MVUE) UCL	25.73617	
97.5% Chebyshev (MVUE) UCL	34.64672	
99% Chebyshev (MVUE) UCL	52.14977	
Non-parametric Statisitics		
95% CLT UCL	18.71003	
95% Adjusted-CLT UCL	24.93352	
95% Modified-t UCL	20.4915	
95% Jackknife UCL	19.52076	
95% Chebyshev (Mean, Sd) UCL	36.1623	
97.5% Chebyshev (Mean, Sd) UCL	48.29058	
99% Chebyshev (Mean, Sd) UCL	72.11424	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	18.23445	
95% Bootstrap-t UCL	595.5714	
95% Hall's Bootstrap UCL	533.8084	
95% Percentile Bootstrap UCL	19.264	
95% BCA Bootstrap UCL	27.15886	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	533.8084	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Xylene (Total)

115 River Road Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_RR_MIX.xls	
Variable:	Xylene (Total)	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	12	
Minimum	0.002	
Maximum	240	
Mean	33.09418	
Standard Deviation	83.51453	
Variance	6.97E+03	
Coefficient of Variation	2.523542	
Skewness	2.305274	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.4397	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	72.62176	
Gamma Statistics		
k hat	0.129124	
k star (bias corrected)	0.149074	
Theta hat	256.297	
Theta star	221.9985	
nu hat	3.615481	
nu star	4.174068	
5% Approximate Chi Square Value	0.79134	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	0.620401	
Anderson-Darling Test Statistic	1.991375	
Anderson-Darling 5% Critical Value	0.897396	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.305347	
Kolmogrov-Smirnov 5% Critical Value	0.255682	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	174.5612	
95% Adjusted Gamma UCL	222.658	
Lognormal Statistics		
Minimum of log data	-6.21461	
Maximum of log data	5.480639	
Mean of log data	-2.58092	
Standard Deviation of log data	4.165022	
Variance of log data	17.34741	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.814103	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	442.6523	
MLE Standard Deviation	2588243	
MLE Coefficient of Variation	5847.124	
MLE Skewness	2.00E+11	
MLE Median	0.075704	
MLE 80% Quantile	2.556204	
MLE 90% Quantile	15.97673	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
115 River Road Property (Subsurface Soil)

MLE 95% Quantile	71.56034	
MLE 99% Quantile	1220.384	
MVU Estimate of Median	0.039601	
MVU Estimate of Mean	28.57949	
MVU Estimate of Standard Deviation	333.2248	
MVU Estimate of SE of Mean	27.10752	
95% H-UCL	19668953	
95% Chebyshev (MVUE) UCL	146.7384	
97.5% Chebyshev (MVUE) UCL	197.8659	
99% Chebyshev (MVUE) UCL	298.2959	
Non-parametric Statisitics		
95% CLT UCL	69.80764	
95% Adjusted-CLT UCL	84.50154	
95% Modified-t UCL	74.91371	
95% Jackknife UCL	72.62176	
95% Chebyshev (Mean, Sd) UCL	130.3857	
97.5% Chebyshev (Mean, Sd) UCL	172.4838	
99% Chebyshev (Mean, Sd) UCL	255.1773	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	69.67044	
95% Bootstrap-t UCL	5911.326	
95% Hall's Bootstrap UCL	5696.407	
95% Percentile Bootstrap UCL	67.42979	
95% BCA Bootstrap UCL	83.20789	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	5696.407	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	8	
Minimum	5.90E-01	
Maximum	99	
Mean	17.08063	
Standard Deviation	32.1434	
Variance	1033.198	
Coefficient of Variation	1.881863	
Skewness	2.179271	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.551154	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	31.16787	
Gamma Statistics		
k hat	0.461203	
k star (bias corrected)	0.416394	
Theta hat	37.03494	
Theta star	41.02034	
nu hat	14.75849	
nu star	13.32461	
5% Approximate Chi Square Value	6.110556	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	5.562603	
Anderson-Darling Test Statistic	2.318953	
Anderson-Darling 5% Critical Value	0.80439	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.431084	
Kolmogrov-Smirnov 5% Critical Value	0.228313	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	37.24582	
95% Adjusted Gamma UCL	40.91478	
Lognormal Statistics		
Minimum of log data	-0.52763	
Maximum of log data	4.59512	
Mean of log data	1.443204	
Standard Deviation of log data	1.588843	
Variance of log data	2.524422	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.792658	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	14.96052	
MLE Standard Deviation	50.69758	
MLE Coefficient of Variation	3.388758	
MLE Skewness	49.08168	
MLE Median	4.234239	
MLE 80% Quantile	16.21239	
MLE 90% Quantile	32.61809	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
115 River Road Property (Groundwater)

MLE 95% Quantile	57.792	
MLE 99% Quantile	170.52	
MVU Estimate of Median	3.911595	
MVU Estimate of Mean	12.87714	
MVU Estimate of Standard Deviation	27.47989	
MVU Estimate of SE of Mean	5.931969	
95% H-UCL	68.89368	
95% Chebyshev (MVUE) UCL	38.73399	
97.5% Chebyshev (MVUE) UCL	49.92227	
99% Chebyshev (MVUE) UCL	71.89949	
Non-parametric Statisitics		
95% CLT UCL	30.29842	
95% Adjusted-CLT UCL	34.97646	
95% Modified-t UCL	31.89755	
95% Jackknife UCL	31.16787	
95% Chebyshev (Mean, Sd) UCL	52.10808	
97.5% Chebyshev (Mean, Sd) UCL	67.26449	
99% Chebyshev (Mean, Sd) UCL	97.03633	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	29.8313	
95% Bootstrap-t UCL	57.90427	
95% Hall's Bootstrap UCL	82.89687	
95% Percentile Bootstrap UCL	31.07375	
95% BCA Bootstrap UCL	35.28625	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	97.03633	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Acenaphthene

115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	Acenaphthene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	15	
Minimum	4	
Maximum	420	
Mean	53.3825	
Standard Deviation	100.9007	
Variance	10180.96	
Coefficient of Variation	1.890146	
Skewness	3.627252	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.445358	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	97.60351	
Gamma Statistics		
k hat	0.845258	
k star (bias corrected)	0.728439	
Theta hat	63.15525	
Theta star	73.28341	
nu hat	27.04827	
nu star	23.31005	
5% Approximate Chi Square Value	13.32351	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	12.46923	
Anderson-Darling Test Statistic	1.782045	
Anderson-Darling 5% Critical Value	0.770245	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.36391	
Kolmogrov-Smirnov 5% Critical Value	0.222435	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	93.39498	
95% Adjusted Gamma UCL	99.79354	
Lognormal Statistics		
Minimum of log data	1.386294	
Maximum of log data	6.040255	
Mean of log data	3.280346	
Standard Deviation of log data	1.036274	
Variance of log data	1.073863	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.888275	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	45.48021	
MLE Standard Deviation	63.1285	
MLE Coefficient of Variation	1.388043	
MLE Skewness	6.838422	
MLE Median	26.58496	
MLE 80% Quantile	63.81556	
MLE 90% Quantile	100.681	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
115 River Road Property (Groundwater)

MLE 95% Quantile	146.2059	
MLE 99% Quantile	296.1063	
MVU Estimate of Median	25.70591	
MVU Estimate of Mean	43.37049	
MVU Estimate of Standard Deviation	51.53349	
MVU Estimate of SE of Mean	12.4022	
95% H-UCL	95.44875	
95% Chebyshev (MVUE) UCL	97.43045	
97.5% Chebyshev (MVUE) UCL	120.8222	
99% Chebyshev (MVUE) UCL	166.7709	
Non-parametric Statisitics		
95% CLT UCL	94.87423	
95% Adjusted-CLT UCL	119.316	
95% Modified-t UCL	101.4159	
95% Jackknife UCL	97.60351	
95% Chebyshev (Mean, Sd) UCL	163.3365	
97.5% Chebyshev (Mean, Sd) UCL	210.9137	
99% Chebyshev (Mean, Sd) UCL	304.3699	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	94.33449	
95% Bootstrap-t UCL	306.5134	
95% Hall's Bootstrap UCL	245.314	
95% Percentile Bootstrap UCL	100.4638	
95% BCA Bootstrap UCL	128.2838	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	97.43045	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Arsenic

115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	16	
Minimum	1.5	
Maximum	15.7	
Mean	7.14375	
Standard Deviation	3.986472	
Variance	15.89196	
Coefficient of Variation	0.558036	
Skewness	0.235628	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.943629	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	8.890871	
Gamma Statistics		
k hat	2.631839	
k star (bias corrected)	2.180036	
Theta hat	2.714357	
Theta star	3.276896	
nu hat	84.21885	
nu star	69.76115	
5% Approximate Chi Square Value	51.53034	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	49.74878	
Anderson-Darling Test Statistic	0.637995	
Anderson-Darling 5% Critical Value	0.746508	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.203411	
Kolmogrov-Smirnov 5% Critical Value	0.217105	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	9.671122	
95% Adjusted Gamma UCL	10.01746	
Lognormal Statistics		
Minimum of log data	0.405465	
Maximum of log data	2.753661	
Mean of log data	1.764389	
Standard Deviation of log data	0.725403	
Variance of log data	0.52621	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.882887	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	7.595028	
MLE Standard Deviation	6.320348	
MLE Coefficient of Variation	0.832169	
MLE Skewness	3.072789	
MLE Median	5.838004	
MLE 80% Quantile	10.77636	
MLE 90% Quantile	14.82822	

Appendix P, Attachment 3
ProUCL Output - Arsenic
115 River Road Property (Groundwater)

MLE 95% Quantile	19.2532	
MLE 99% Quantile	31.55326	
MVU Estimate of Median	5.742696	
MVU Estimate of Mean	7.445348	
MVU Estimate of Standard Deviation	5.79047	
MVU Estimate of SE of Mean	1.431996	
95% H-UCL	11.72776	
95% Chebyshev (MVUE) UCL	13.68728	
97.5% Chebyshev (MVUE) UCL	16.38816	
99% Chebyshev (MVUE) UCL	21.69353	
Non-parametric Statisitics		
95% CLT UCL	8.783041	
95% Adjusted-CLT UCL	8.845771	
95% Modified-t UCL	8.900656	
95% Jackknife UCL	8.890871	
95% Chebyshev (Mean, Sd) UCL	11.48791	
97.5% Chebyshev (Mean, Sd) UCL	13.36763	
99% Chebyshev (Mean, Sd) UCL	17.05997	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	8.737865	
95% Bootstrap-t UCL	8.958504	
95% Hall's Bootstrap UCL	8.953287	
95% Percentile Bootstrap UCL	8.79375	
95% BCA Bootstrap UCL	8.69375	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	8.890871	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzene

115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	Benzene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	15	
Minimum	0.25	
Maximum	470	
Mean	70.91875	
Standard Deviation	130.8287	
Variance	17116.14	
Coefficient of Variation	1.844768	
Skewness	2.397825	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.60318	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	128.256	
Gamma Statistics		
k hat	0.37774	
k star (bias corrected)	0.348581	
Theta hat	187.7447	
Theta star	203.4501	
nu hat	12.08769	
nu star	11.15458	
5% Approximate Chi Square Value	4.674668	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	4.206522	
Anderson-Darling Test Statistic	0.689683	
Anderson-Darling 5% Critical Value	0.821709	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.221129	
Kolmogrov-Smirnov 5% Critical Value	0.230709	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	169.2246	
95% Adjusted Gamma UCL	188.0577	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	6.152733	
Mean of log data	2.503304	
Standard Deviation of log data	2.272055	
Variance of log data	5.162236	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.93347	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	161.4866	
MLE Standard Deviation	2127.425	
MLE Coefficient of Variation	13.174	
MLE Skewness	2325.926	
MLE Median	12.22282	
MLE 80% Quantile	83.36189	
MLE 90% Quantile	226.5341	

Appendix P, Attachment 3
ProUCL Output - Benzene
115 River Road Property (Groundwater)

MLE 95% Quantile	513.2872	
MLE 99% Quantile	2411.744	
MVU Estimate of Median	10.38558	
MVU Estimate of Mean	105.7252	
MVU Estimate of Standard Deviation	409.0927	
MVU Estimate of SE of Mean	69.63072	
95% H-UCL	3066.801	
95% Chebyshev (MVUE) UCL	409.2385	
97.5% Chebyshev (MVUE) UCL	540.5689	
99% Chebyshev (MVUE) UCL	798.5421	
Non-parametric Statisitics		
95% CLT UCL	124.7172	
95% Adjusted-CLT UCL	145.6671	
95% Modified-t UCL	131.5238	
95% Jackknife UCL	128.256	
95% Chebyshev (Mean, Sd) UCL	213.486	
97.5% Chebyshev (Mean, Sd) UCL	275.1749	
99% Chebyshev (Mean, Sd) UCL	396.3509	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	122.4391	
95% Bootstrap-t UCL	239.6878	
95% Hall's Bootstrap UCL	302.9123	
95% Percentile Bootstrap UCL	125.6813	
95% BCA Bootstrap UCL	143.075	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	188.0577	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	4	
Minimum	0.1	
Maximum	2.5	
Mean	1.951	
Standard Deviation	0.992026	
Variance	9.84E-01	
Coefficient of Variation	0.50847	
Skewness	-1.34715	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.572154	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.385768	
Gamma Statistics		
k hat	1.49093	
k star (bias corrected)	1.253047	
Theta hat	1.308579	
Theta star	1.557004	
nu hat	47.70976	
nu star	40.09752	
5% Approximate Chi Square Value	26.58645	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	25.33734	
Anderson-Darling Test Statistic	3.536988	
Anderson-Darling 5% Critical Value	0.754846	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.471169	
Kolmogrov-Smirnov 5% Critical Value	0.218941	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	2.942486	
95% Adjusted Gamma UCL	3.087548	
Lognormal Statistics		
Minimum of log data	-2.302585	
Maximum of log data	0.916291	
Mean of log data	0.296919	
Standard Deviation of log data	1.189122	
Variance of log data	1.414012	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.57511	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.728972	
MLE Standard Deviation	4.814468	
MLE Coefficient of Variation	1.764206	
MLE Skewness	10.78357	
MLE Median	1.345706	
MLE 80% Quantile	3.675641	
MLE 90% Quantile	6.202431	
MLE 95% Quantile	9.516483	
MLE 99% Quantile	21.38774	
MVU Estimate of Median	1.287388	
MVU Estimate of Mean	2.549869	
MVU Estimate of Standard Deviation	3.6165	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
115 River Road Property (Groundwater)

MVU Estimate of SE of Mean	0.851447	
95% H-UCL	6.896027	
95% Chebyshev (MVUE) UCL	6.261239	
97.5% Chebyshev (MVUE) UCL	7.867151	
99% Chebyshev (MVUE) UCL	11.02166	
Non-parametric Statisitics		
95% CLT UCL	2.358934	
95% Adjusted-CLT UCL	2.269686	
95% Modified-t UCL	2.371847	
95% Jackknife UCL	2.385768	
95% Chebyshev (Mean, Sd) UCL	3.032035	
97.5% Chebyshev (Mean, Sd) UCL	3.4998	
99% Chebyshev (Mean, Sd) UCL	4.418633	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning
95% Bootstrap-t UCL	N/R	Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	4.418633	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Benzo(a)pyrene

115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	Benzo(a)pyrene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	4	
Minimum	1.00E-01	
Maximum	2.50E+00	
Mean	1.92E+00	
Standard Deviation	1.03E+00	
Variance	1.067842	
Coefficient of Variation	0.537004	
Skewness	-1.302435	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.561028	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.38E+00	
Gamma Statistics		
k hat	1.273646	
k star (bias corrected)	1.076504	
Theta hat	1.51E+00	
Theta star	1.79E+00	
nu hat	40.75666	
nu star	34.44812	
5% Approximate Chi Square Value	22.02065	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	20.89331	
Anderson-Darling Test Statistic	3.696844	
Anderson-Darling 5% Critical Value	0.758588	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.476254	
Kolmogrov-Smirnov 5% Critical Value	0.219923	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.01E+00	
95% Adjusted Gamma UCL	3.17E+00	
Lognormal Statistics		
Minimum of log data	-2.302585	
Maximum of log data	0.916291	
Mean of log data	0.213178	
Standard Deviation of log data	1.305321	
Variance of log data	1.703862	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.56619	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.90E+00	
MLE Standard Deviation	6.15E+00	
MLE Coefficient of Variation	2.12E+00	
MLE Skewness	1.59E+01	
MLE Median	1.24E+00	
MLE 80% Quantile	3.73E+00	
MLE 90% Quantile	6.62E+00	
MLE 95% Quantile	1.06E+01	
MLE 99% Quantile	2.58E+01	
MVU Estimate of Median	1.17E+00	
MVU Estimate of Mean	2.66E+00	
MVU Estimate of Standard Deviation	4.28E+00	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
115 River Road Property (Groundwater)

MVU Estimate of SE of Mean	9.86E-01	
95% H-UCL	8.580764	
95% Chebyshev (MVUE) UCL	6.96E+00	
97.5% Chebyshev (MVUE) UCL	8.82E+00	
99% Chebyshev (MVUE) UCL	1.25E+01	
Non-parametric Statisitics		
95% CLT UCL	2.35E+00	
95% Adjusted-CLT UCL	2.259364	
95% Modified-t UCL	2.363178	
95% Jackknife UCL	2.38E+00	
95% Chebyshev (Mean, Sd) UCL	3.05E+00	
97.5% Chebyshev (Mean, Sd) UCL	3.54E+00	
99% Chebyshev (Mean, Sd) UCL	4.49E+00	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning
95% Bootstrap-t UCL	N/R	Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	4.49E+00	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	Benzo(b)fluoranthene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	4	
Minimum	0.1	
Maximum	2.50E+00	
Mean	1.92E+00	
Standard Deviation	1.04E+00	
Variance	1.078593	
Coefficient of Variation	0.540667	
Skewness	-1.295843	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.559395	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.38E+00	
Gamma Statistics		
k hat	1.258762	
k star (bias corrected)	1.064411	
Theta hat	1.526003	
Theta star	1.804636	
nu hat	40.2804	
nu star	34.06116	
5% Approximate Chi Square Value	21.71109	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	20.59244	
Anderson-Darling Test Statistic	3.706287	
Anderson-Darling 5% Critical Value	0.758844	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.47695	
Kolmogrov-Smirnov 5% Critical Value	0.21999	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.013539	
95% Adjusted Gamma UCL	3.177245	
Lognormal Statistics		
Minimum of log data	-2.302585	
Maximum of log data	0.916291	
Mean of log data	0.205639	
Standard Deviation of log data	1.311439	
Variance of log data	1.719872	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.567838	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.902507	
MLE Standard Deviation	6.214221	
MLE Coefficient of Variation	2.140984	
MLE Skewness	16.23682	
MLE Median	1.22831	
MLE 80% Quantile	3.720302	
MLE 90% Quantile	6.624917	
MLE 95% Quantile	10.6223	
MLE 99% Quantile	25.94673	
MVU Estimate of Median	1.163837	
MVU Estimate of Mean	2.657473	
MVU Estimate of Standard Deviation	4.301171	

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
115 River Road Property (Groundwater)

MVU Estimate of SE of Mean	0.990577	
95% H-UCL	8.659369	
95% Chebyshev (MVUE) UCL	6.975297	
97.5% Chebyshev (MVUE) UCL	8.843623	
99% Chebyshev (MVUE) UCL	12.51359	
Non-parametric Statisitics		
95% CLT UCL	2.35E+00	
95% Adjusted-CLT UCL	2.258066	
95% Modified-t UCL	2.362015	
95% Jackknife UCL	2.38E+00	
95% Chebyshev (Mean, Sd) UCL	3.05E+00	
97.5% Chebyshev (Mean, Sd) UCL	3.54E+00	
99% Chebyshev (Mean, Sd) UCL	4.50E+00	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning
95% Bootstrap-t UCL	N/R	Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	4.50E+00	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Carbazole

115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	12	
Minimum	1	
Maximum	160	
Mean	17.58125	
Standard Deviation	39.21276	
Variance	1537.64	
Coefficient of Variation	2.230374	
Skewness	3.607066	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.451345	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	34.76673	
Gamma Statistics		
k hat	0.531552	
k star (bias corrected)	0.473553	
Theta hat	33.07532	
Theta star	37.12629	
nu hat	17.00966	
nu star	15.15368	
5% Approximate Chi Square Value	7.367371	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	6.756725	
Anderson-Darling Test Statistic	1.517508	
Anderson-Darling 5% Critical Value	0.793586	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.261615	
Kolmogrov-Smirnov 5% Critical Value	0.226698	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	36.16225	
95% Adjusted Gamma UCL	39.43044	
Lognormal Statistics		
Minimum of log data	0	
Maximum of log data	5.075174	
Mean of log data	1.683083	
Standard Deviation of log data	1.410446	
Variance of log data	1.989358	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.89051	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	14.55249	
MLE Standard Deviation	36.55785	
MLE Coefficient of Variation	2.512138	
MLE Skewness	23.39011	
MLE Median	5.382123	
MLE 80% Quantile	17.72382	
MLE 90% Quantile	32.96696	

Appendix P, Attachment 3
ProUCL Output - Carbazole
115 River Road Property (Groundwater)

MLE 95% Quantile	54.77679	
MLE 99% Quantile	143.1339	
MVU Estimate of Median	5.056559	
MVU Estimate of Mean	13.06816	
MVU Estimate of Standard Deviation	23.42036	
MVU Estimate of SE of Mean	5.282933	
95% H-UCL	50.21924	
95% Chebyshev (MVUE) UCL	36.09593	
97.5% Chebyshev (MVUE) UCL	46.06006	
99% Chebyshev (MVUE) UCL	65.63268	
Non-parametric Statisitics		
95% CLT UCL	33.70606	
95% Adjusted-CLT UCL	43.15193	
95% Modified-t UCL	36.2401	
95% Jackknife UCL	34.76673	
95% Chebyshev (Mean, Sd) UCL	60.31236	
97.5% Chebyshev (Mean, Sd) UCL	78.80215	
99% Chebyshev (Mean, Sd) UCL	115.1218	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	32.98679	
95% Bootstrap-t UCL	86.94058	
95% Hall's Bootstrap UCL	85.47218	
95% Percentile Bootstrap UCL	35.55	
95% BCA Bootstrap UCL	49.275	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	36.09593	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzofuran

115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	12	
Minimum	0.44	
Maximum	90	
Mean	13.365	
Standard Deviation	21.52252	
Variance	463.2188	
Coefficient of Variation	1.610364	
Skewness	3.394686	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.531591	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	22.79751	
Gamma Statistics		
k hat	0.854997	
k star (bias corrected)	0.736352	
Theta hat	15.63163	
Theta star	18.15028	
nu hat	27.35992	
nu star	23.56327	
5% Approximate Chi Square Value	13.51532	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	12.65421	
Anderson-Darling Test Statistic	0.802323	
Anderson-Darling 5% Critical Value	0.769808	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.235106	
Kolmogrov-Smirnov 5% Critical Value	0.222355	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	23.30118	
95% Adjusted Gamma UCL	24.88683	
Lognormal Statistics		
Minimum of log data	-0.82098	
Maximum of log data	4.49981	
Mean of log data	1.904452	
Standard Deviation of log data	1.20425	
Variance of log data	1.450218	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.947345	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	13.86769	
MLE Standard Deviation	25.05429	
MLE Coefficient of Variation	1.806667	
MLE Skewness	11.31704	
MLE Median	6.715729	
MLE 80% Quantile	18.57922	
MLE 90% Quantile	31.56073	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
115 River Road Property (Groundwater)

MLE 95% Quantile	48.68854	
MLE 99% Quantile	110.5577	
MVU Estimate of Median	6.41739	
MVU Estimate of Mean	12.92766	
MVU Estimate of Standard Deviation	18.64502	
MVU Estimate of SE of Mean	4.378675	
95% H-UCL	35.7414	
95% Chebyshev (MVUE) UCL	32.01387	
97.5% Chebyshev (MVUE) UCL	40.27248	
99% Chebyshev (MVUE) UCL	56.49493	
Non-parametric Statisitics		
95% CLT UCL	22.21535	
95% Adjusted-CLT UCL	27.0946	
95% Modified-t UCL	23.55858	
95% Jackknife UCL	22.79751	
95% Chebyshev (Mean, Sd) UCL	36.81862	
97.5% Chebyshev (Mean, Sd) UCL	46.96702	
99% Chebyshev (Mean, Sd) UCL	66.90159	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	21.83491	
95% Bootstrap-t UCL	46.76455	
95% Hall's Bootstrap UCL	56.53828	
95% Percentile Bootstrap UCL	22.76875	
95% BCA Bootstrap UCL	28.2025	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	32.01387	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Fluorene

115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	Fluorene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	15	
Minimum	0.1	
Maximum	88	
Mean	12.81125	
Standard Deviation	20.77842	
Variance	431.7425	
Coefficient of Variation	1.621888	
Skewness	3.540675	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.517091	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	21.91765	
Gamma Statistics		
k hat	0.726796	
k star (bias corrected)	0.632188	
Theta hat	17.62703	
Theta star	20.26493	
nu hat	23.25747	
nu star	20.23003	
5% Approximate Chi Square Value	11.01938	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	10.25139	
Anderson-Darling Test Statistic	0.587546	
Anderson-Darling 5% Critical Value	0.776545	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.198295	
Kolmogrov-Smirnov 5% Critical Value	0.223589	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	23.51964	
95% Adjusted Gamma UCL	25.28164	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	4.477337	
Mean of log data	1.72312	
Standard Deviation of log data	1.531931	
Variance of log data	2.346812	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.90678	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	18.11112	
MLE Standard Deviation	55.68161	
MLE Coefficient of Variation	3.074442	
MLE Skewness	38.28356	
MLE Median	5.601981	
MLE 80% Quantile	20.44221	
MLE 90% Quantile	40.11103	

Appendix P, Attachment 3
ProUCL Output - Fluorene
115 River Road Property (Groundwater)

MLE 95% Quantile	69.62659	
MLE 99% Quantile	197.629	
MVU Estimate of Median	5.204183	
MVU Estimate of Mean	15.81863	
MVU Estimate of Standard Deviation	31.96462	
MVU Estimate of SE of Mean	7.00386	
95% H-UCL	75.80192	
95% Chebyshev (MVUE) UCL	46.34775	
97.5% Chebyshev (MVUE) UCL	59.55772	
99% Chebyshev (MVUE) UCL	85.50616	
Non-parametric Statisitics		
95% CLT UCL	21.35561	
95% Adjusted-CLT UCL	26.26875	
95% Modified-t UCL	22.684	
95% Jackknife UCL	21.91765	
95% Chebyshev (Mean, Sd) UCL	35.454	
97.5% Chebyshev (Mean, Sd) UCL	45.25154	
99% Chebyshev (Mean, Sd) UCL	64.49691	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	20.94514	
95% Bootstrap-t UCL	39.57177	
95% Hall's Bootstrap UCL	55.03985	
95% Percentile Bootstrap UCL	22.81188	
95% BCA Bootstrap UCL	27.50813	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	23.51964	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Lead

115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	14	
Minimum	0.25	
Maximum	16.2	
Mean	3.775	
Standard Deviation	4.22636	
Variance	17.86212	
Coefficient of Variation	1.119566	
Skewness	2.224588	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.71278	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	5.627255	
Gamma Statistics		
k hat	1.191371	
k star (bias corrected)	1.009655	
Theta hat	3.168619	
Theta star	3.7389	
nu hat	38.12386	
nu star	32.30897	
5% Approximate Chi Square Value	20.3151	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	19.2364	
Anderson-Darling Test Statistic	0.427158	
Anderson-Darling 5% Critical Value	0.760005	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.177912	
Kolmogrov-Smirnov 5% Critical Value	0.220295	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	6.003729	
95% Adjusted Gamma UCL	6.340393	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	2.785011	
Mean of log data	0.853264	
Standard Deviation of log data	1.036785	
Variance of log data	1.074924	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.976146	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	4.017765	
MLE Standard Deviation	5.581324	
MLE Coefficient of Variation	1.389161	
MLE Skewness	6.848244	
MLE Median	2.347296	
MLE 80% Quantile	5.636975	
MLE 90% Quantile	8.895389	

Appendix P, Attachment 3
ProUCL Output - Lead
115 River Road Property (Groundwater)

MLE 95% Quantile	12.91999	
MLE 99% Quantile	26.17557	
MVU Estimate of Median	2.269605	
MVU Estimate of Mean	3.831161	
MVU Estimate of Standard Deviation	4.555064	
MVU Estimate of SE of Mean	1.096166	
95% H-UCL	8.436936	
95% Chebyshev (MVUE) UCL	8.609237	
97.5% Chebyshev (MVUE) UCL	10.67671	
99% Chebyshev (MVUE) UCL	14.73787	
Non-parametric Statisitics		
95% CLT UCL	5.512936	
95% Adjusted-CLT UCL	6.140816	
95% Modified-t UCL	5.725192	
95% Jackknife UCL	5.627255	
95% Chebyshev (Mean, Sd) UCL	8.380569	
97.5% Chebyshev (Mean, Sd) UCL	10.3734	
99% Chebyshev (Mean, Sd) UCL	14.28794	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	5.447038	
95% Bootstrap-t UCL	8.106743	
95% Hall's Bootstrap UCL	14.8419	
95% Percentile Bootstrap UCL	5.570625	
95% BCA Bootstrap UCL	6.15	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	6.003729	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Naphthalene

115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	14	
Minimum	0.1	
Maximum	1600	
Mean	232.0356	
Standard Deviation	477.7434	
Variance	228238.8	
Coefficient of Variation	2.058923	
Skewness	2.203413	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.568934	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	441.4126	
Gamma Statistics		
k hat	0.237095	
k star (bias corrected)	0.234306	
Theta hat	978.6627	
Theta star	990.3101	
nu hat	7.587024	
nu star	7.497791	
5% Approximate Chi Square Value	2.447119	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	2.131277	
Anderson-Darling Test Statistic	1.433931	
Anderson-Darling 5% Critical Value	0.86331	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.291198	
Kolmogrov-Smirnov 5% Critical Value	0.235871	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	710.9397	
95% Adjusted Gamma UCL	816.2964	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	7.377759	
Mean of log data	2.425443	
Standard Deviation of log data	2.836576	
Variance of log data	8.046165	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.921192	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	631.7697	
MLE Standard Deviation	35293.25	
MLE Coefficient of Variation	55.86411	
MLE Skewness	174508.3	
MLE Median	11.30723	
MLE 80% Quantile	124.2567	
MLE 90% Quantile	432.8724	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
115 River Road Property (Groundwater)

MLE 95% Quantile	1201.842	
MLE 99% Quantile	8294.259	
MVU Estimate of Median	8.759539	
MVU Estimate of Mean	278.3587	
MVU Estimate of Standard Deviation	1660.691	
MVU Estimate of SE of Mean	218.5671	
95% H-UCL	56391.98	
95% Chebyshev (MVUE) UCL	1231.071	
97.5% Chebyshev (MVUE) UCL	1643.31	
99% Chebyshev (MVUE) UCL	2453.074	
Non-parametric Statisitics		
95% CLT UCL	428.4901	
95% Adjusted-CLT UCL	498.7894	
95% Modified-t UCL	452.3779	
95% Jackknife UCL	441.4126	
95% Chebyshev (Mean, Sd) UCL	752.6444	
97.5% Chebyshev (Mean, Sd) UCL	977.9123	
99% Chebyshev (Mean, Sd) UCL	1420.407	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	421.4803	
95% Bootstrap-t UCL	694.2204	
95% Hall's Bootstrap UCL	507.1803	
95% Percentile Bootstrap UCL	433.5637	
95% BCA Bootstrap UCL	515.2723	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	2453.074	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Xylene (Total)

115 River Road Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_RR_GWshallow.xls	
Variable:	Xylene (Total)	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	16	
Minimum	0.2	
Maximum	83	
Mean	15.81938	
Standard Deviation	26.70052	
Variance	712.9179	
Coefficient of Variation	1.687837	
Skewness	1.696781	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.640577	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	27.52121	
Gamma Statistics		
k hat	0.40362	
k star (bias corrected)	0.369608	
Theta hat	39.19376	
Theta star	42.80045	
nu hat	12.91583	
nu star	11.82745	
5% Approximate Chi Square Value	5.112601	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	4.619004	
Anderson-Darling Test Statistic	1.230683	
Anderson-Darling 5% Critical Value	0.816339	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.259491	
Kolmogrov-Smirnov 5% Critical Value	0.229966	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	36.59641	
95% Adjusted Gamma UCL	40.50718	
Lognormal Statistics		
Minimum of log data	-1.60944	
Maximum of log data	4.418841	
Mean of log data	1.133258	
Standard Deviation of log data	1.940721	
Variance of log data	3.766396	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.918896	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	20.41881	
MLE Standard Deviation	132.6815	
MLE Coefficient of Variation	6.498001	
MLE Skewness	293.8657	
MLE Median	3.10576	
MLE 80% Quantile	16.00926	
MLE 90% Quantile	37.60302	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
115 River Road Property (Groundwater)

MLE 95% Quantile	75.62174	
MLE 99% Quantile	283.546	
MVU Estimate of Median	2.758618	
MVU Estimate of Mean	15.64317	
MVU Estimate of Standard Deviation	45.90029	
MVU Estimate of SE of Mean	8.877067	
95% H-UCL	183.3318	
95% Chebyshev (MVUE) UCL	54.33741	
97.5% Chebyshev (MVUE) UCL	71.08043	
99% Chebyshev (MVUE) UCL	103.9689	
Non-parametric Statisitics		
95% CLT UCL	26.79899	
95% Adjusted-CLT UCL	29.82455	
95% Modified-t UCL	27.99314	
95% Jackknife UCL	27.52121	
95% Chebyshev (Mean, Sd) UCL	44.91559	
97.5% Chebyshev (Mean, Sd) UCL	57.50555	
99% Chebyshev (Mean, Sd) UCL	82.23608	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	26.50607	
95% Bootstrap-t UCL	33.70468	
95% Hall's Bootstrap UCL	26.85755	
95% Percentile Bootstrap UCL	27.56	
95% BCA Bootstrap UCL	31.01938	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	103.9689	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 2-Methylnaphthalene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	11	
Minimum	9.50E-02	
Maximum	28	
Mean	3.931143	
Standard Deviation	9.015284	
Variance	81.27535	
Coefficient of Variation	2.293299	
Skewness	2.363347	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.482292	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	8.198093	
Gamma Statistics		
k hat	0.32195	
k star (bias corrected)	0.300579	
Theta hat	12.21043	
Theta star	13.07855	
nu hat	9.01459	
nu star	8.416225	
5% Approximate Chi Square Value	2.97764	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	2.56471	
Anderson-Darling Test Statistic	2.02523	
Anderson-Darling 5% Critical Value	0.827776	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.308962	
Kolmogrov-Smirnov 5% Critical Value	0.247123	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	11.11128	
95% Adjusted Gamma UCL	12.90024	
Lognormal Statistics		
Minimum of log data	-2.35388	
Maximum of log data	3.332205	
Mean of log data	-0.74836	
Standard Deviation of log data	1.936046	
Variance of log data	3.748274	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.799803	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	3.082598	
MLE Standard Deviation	19.84575	
MLE Coefficient of Variation	6.437995	
MLE Skewness	286.1545	
MLE Median	0.47314	
MLE 80% Quantile	2.429279	
MLE 90% Quantile	5.694237	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	11.43217	
MLE 99% Quantile	42.72904	
MVU Estimate of Median	0.413354	
MVU Estimate of Mean	2.295883	
MVU Estimate of Standard Deviation	6.337548	
MVU Estimate of SE of Mean	1.344089	
95% H-UCL	35.80312	
95% Chebyshev (MVUE) UCL	8.15463	
97.5% Chebyshev (MVUE) UCL	10.68971	
99% Chebyshev (MVUE) UCL	15.6694	
Non-parametric Statisitics		
95% CLT UCL	7.894313	
95% Adjusted-CLT UCL	9.520457	
95% Modified-t UCL	8.451739	
95% Jackknife UCL	8.198093	
95% Chebyshev (Mean, Sd) UCL	14.43363	
97.5% Chebyshev (Mean, Sd) UCL	18.97807	
99% Chebyshev (Mean, Sd) UCL	27.90473	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	7.759615	
95% Bootstrap-t UCL	74.74818	
95% Hall's Bootstrap UCL	60.80708	
95% Percentile Bootstrap UCL	7.954286	
95% BCA Bootstrap UCL	9.571786	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	27.90473	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Antimony

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Antimony	
Raw Statistics		
Number of Observations	18	
Number of Missing Data	0	
Number of Valid Observations	18	
Number of Distinct Observations	17	
Minimum	0.1855	
Maximum	53.4	
Mean	6.509278	
Standard Deviation	14.96749	
Variance	224.0258	
Coefficient of Variation	2.299409	
Skewness	2.459979	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.49524	
Shapiro-Wilk 5% Critical Value	0.897	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	12.64639	
Gamma Statistics		
k hat	0.300496	
k star (bias corrected)	0.287451	
Theta hat	21.66176	
Theta star	22.64486	
nu hat	10.81786	
nu star	10.34822	
5% Approximate Chi Square Value	4.159692	
Adjusted Level of Significance	0.03574	
Adjusted Chi Square Value	3.78957	
Anderson-Darling Test Statistic	3.558843	
Anderson-Darling 5% Critical Value	0.841966	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.383522	
Kolmogrov-Smirnov 5% Critical Value	0.220786	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	16.19337	
95% Adjusted Gamma UCL	17.77495	
Lognormal Statistics		
Minimum of log data	-1.6847	
Maximum of log data	3.977811	
Mean of log data	-0.42091	
Standard Deviation of log data	1.934923	
Variance of log data	3.743927	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.659488	
Shapiro-Wilk 5% Critical Value	0.897	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	4.267616	
MLE Standard Deviation	27.41379	
MLE Coefficient of Variation	6.423679	
MLE Skewness	2.84E+02	
MLE Median	0.65645	
MLE 80% Quantile	3.367268	
MLE 90% Quantile	7.888987	

Appendix P, Attachment 3
ProUCL Output - Antimony
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	15.83211	
MLE 99% Quantile	59.12907	
MVU Estimate of Median	0.59127	
MVU Estimate of Mean	3.357813	
MVU Estimate of Standard Deviation	10.29549	
MVU Estimate of SE of Mean	1.841708	
95% H-UCL	31.11596	
95% Chebyshev (MVUE) UCL	11.38563	
97.5% Chebyshev (MVUE) UCL	14.85927	
99% Chebyshev (MVUE) UCL	21.68257	
Non-parametric Statisitics		
95% CLT UCL	12.31211	
95% Adjusted-CLT UCL	14.4978	
95% Modified-t UCL	12.98731	
95% Jackknife UCL	12.64639	
95% Chebyshev (Mean, Sd) UCL	21.88691	
97.5% Chebyshev (Mean, Sd) UCL	28.54083	
99% Chebyshev (Mean, Sd) UCL	41.61115	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	12.07129	
95% Bootstrap-t UCL	18.85799	
95% Hall's Bootstrap UCL	12.43465	
95% Percentile Bootstrap UCL	12.61725	
95% BCA Bootstrap UCL	14.29194	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	41.61115	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Arsenic

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	32	
Number of Missing Data	0	
Number of Valid Observations	32	
Number of Distinct Observations	32	
Minimum	3.05	
Maximum	917	
Mean	69.44594	
Standard Deviation	160.806	
Variance	25858.57	
Coefficient of Variation	2.315557	
Skewness	5.02661	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.385412	
Shapiro-Wilk 5% Critical Value	0.93	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	117.644	
Gamma Statistics		
k hat	0.651058	
k star (bias corrected)	0.610855	
Theta hat	106.6663	
Theta star	113.6865	
nu hat	41.6677	
nu star	39.09469	
5% Approximate Chi Square Value	25.77005	
Adjusted Level of Significance	0.0416	
Adjusted Chi Square Value	25.19008	
Anderson-Darling Test Statistic	1.377368	
Anderson-Darling 5% Critical Value	0.796706	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.164056	
Kolmogrov-Smirnov 5% Critical Value	0.16269	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	105.3536	
95% Adjusted Gamma UCL	107.7792	
Lognormal Statistics		
Minimum of log data	1.115142	
Maximum of log data	6.821107	
Mean of log data	3.302728	
Standard Deviation of log data	1.279527	
Variance of log data	1.637189	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.974454	
Shapiro-Wilk 5% Critical Value	0.93	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	61.64069	
MLE Standard Deviation	125.4308	
MLE Coefficient of Variation	2.034871	
MLE Skewness	14.5304	
MLE Median	27.18669	
MLE 80% Quantile	80.15224	
MLE 90% Quantile	140.7408	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	223.0842	
MLE 99% Quantile	533.2057	
MVU Estimate of Median	26.49952	
MVU Estimate of Mean	59.01255	
MVU Estimate of Standard Deviation	102.6276	
MVU Estimate of SE of Mean	16.29744	
95% H-UCL	116.4394	
95% Chebyshev (MVUE) UCL	130.0514	
97.5% Chebyshev (MVUE) UCL	160.79	
99% Chebyshev (MVUE) UCL	221.17	
Non-parametric Statisitics		
95% CLT UCL	116.2038	
95% Adjusted-CLT UCL	143.1941	
95% Modified-t UCL	121.854	
95% Jackknife UCL	117.644	
95% Chebyshev (Mean, Sd) UCL	193.3553	
97.5% Chebyshev (Mean, Sd) UCL	246.971	
99% Chebyshev (Mean, Sd) UCL	352.2886	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	115.0424	
95% Bootstrap-t UCL	229.6055	
95% Hall's Bootstrap UCL	278.9549	
95% Percentile Bootstrap UCL	123.6013	
95% BCA Bootstrap UCL	155.4875	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	116.4394	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Benzene	
Raw Statistics		
Number of Observations	33	
Number of Missing Data	0	
Number of Valid Observations	33	
Number of Distinct Observations	25	
Minimum	0.0006	
Maximum	1.9	
Mean	0.183918	
Standard Deviation	0.455545	
Variance	0.207521	
Coefficient of Variation	2.476889	
Skewness	3.329788	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.430024	
Shapiro-Wilk 5% Critical Value	0.931	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.318244	
Gamma Statistics		
k hat	0.339019	
k star (bias corrected)	0.328401	
Theta hat	0.542502	
Theta star	0.560042	
nu hat	22.37523	
nu star	21.67445	
5% Approximate Chi Square Value	12.09296	
Adjusted Level of Significance	0.0419	
Adjusted Chi Square Value	11.72391	
Anderson-Darling Test Statistic	1.733214	
Anderson-Darling 5% Critical Value	0.846731	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.192034	
Kolmogrov-Smirnov 5% Critical Value	0.165404	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.32964	
95% Adjusted Gamma UCL	0.340017	
Lognormal Statistics		
Minimum of log data	-7.41858	
Maximum of log data	0.641854	
Mean of log data	-3.68708	
Standard Deviation of log data	2.145705	
Variance of log data	4.604049	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.958353	
Shapiro-Wilk 5% Critical Value	0.931	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.250311	
MLE Standard Deviation	2.489148	
MLE Coefficient of Variation	9.944241	
MLE Skewness	1013.198	
MLE Median	0.025045	
MLE 80% Quantile	0.153515	
MLE 90% Quantile	0.394614	

Appendix P, Attachment 3
ProUCL Output - Benzene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	0.854368	
MLE 99% Quantile	3.683383	
MVU Estimate of Median	0.023354	
MVU Estimate of Mean	0.205677	
MVU Estimate of Standard Deviation	1.016446	
MVU Estimate of SE of Mean	0.106402	
95% H-UCL	1.143167	
95% Chebyshev (MVUE) UCL	0.669471	
97.5% Chebyshev (MVUE) UCL	0.870155	
99% Chebyshev (MVUE) UCL	1.26436	
Non-parametric Statisitics		
95% CLT UCL	0.314355	
95% Adjusted-CLT UCL	0.36347	
95% Modified-t UCL	0.325905	
95% Jackknife UCL	0.318244	
95% Chebyshev (Mean, Sd) UCL	0.52958	
97.5% Chebyshev (Mean, Sd) UCL	0.679148	
99% Chebyshev (Mean, Sd) UCL	0.972945	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.312319	
95% Bootstrap-t UCL	0.544892	
95% Hall's Bootstrap UCL	0.369996	
95% Percentile Bootstrap UCL	0.327048	
95% BCA Bootstrap UCL	0.36713	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	0.870155	97.5% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)anthracene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	28	
Number of Missing Data	0	
Number of Valid Observations	28	
Number of Distinct Observations	26	
Minimum	0.2	
Maximum	270	
Mean	21.31036	
Standard Deviation	55.0478	
Variance	3.03E+03	
Coefficient of Variation	2.583148	
Skewness	3.899437	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.432818	
Shapiro-Wilk 5% Critical Value	0.924	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	39.02976	
Gamma Statistics		
k hat	0.34966	
k star (bias corrected)	0.336006	
Theta hat	60.94602	
Theta star	63.42263	
nu hat	19.58094	
nu star	18.81631	
5% Approximate Chi Square Value	9.981941	
Adjusted Level of Significance	0.0404	
Adjusted Chi Square Value	9.584227	
Anderson-Darling Test Statistic	1.941237	
Anderson-Darling 5% Critical Value	0.843337	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.20594	
Kolmogrov-Smirnov 5% Critical Value	0.178375	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	40.17078	
95% Adjusted Gamma UCL	41.83773	
Lognormal Statistics		
Minimum of log data	-1.60944	
Maximum of log data	5.598422	
Mean of log data	1.135769	
Standard Deviation of log data	1.944269	
Variance of log data	3.780182	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.94966	
Shapiro-Wilk 5% Critical Value	0.924	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	20.61173	
MLE Standard Deviation	134.8833	
MLE Coefficient of Variation	6.544008	
MLE Skewness	299.8728	
MLE Median	3.113567	
MLE 80% Quantile	16.0977	
MLE 90% Quantile	37.86983	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	76.25567	
MLE 99% Quantile	286.6148	
MVU Estimate of Median	2.909868	
MVU Estimate of Mean	17.43924	
MVU Estimate of Standard Deviation	64.10448	
MVU Estimate of SE of Mean	8.456336	
95% H-UCL	86.16063	
95% Chebyshev (MVUE) UCL	54.29955	
97.5% Chebyshev (MVUE) UCL	70.24903	
99% Chebyshev (MVUE) UCL	101.5787	
Non-parametric Statisitics		
95% CLT UCL	38.42186	
95% Adjusted-CLT UCL	46.61338	
95% Modified-t UCL	40.30747	
95% Jackknife UCL	39.02976	
95% Chebyshev (Mean, Sd) UCL	66.65623	
97.5% Chebyshev (Mean, Sd) UCL	86.27743	
99% Chebyshev (Mean, Sd) UCL	124.8195	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	38.01415	
95% Bootstrap-t UCL	82.84881	
95% Hall's Bootstrap UCL	94.37032	
95% Percentile Bootstrap UCL	39.20429	
95% BCA Bootstrap UCL	53.28643	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	54.29955	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)pyrene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Benzo(a)pyrene	
Raw Statistics		
Number of Observations	28	
Number of Missing Data	0	
Number of Valid Observations	28	
Number of Distinct Observations	27	
Minimum	1.70E-01	
Maximum	2.80E+02	
Mean	2.36E+01	
Standard Deviation	5.72E+01	
Variance	3271.722	
Coefficient of Variation	2.42734	
Skewness	3.758259	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.464728	
Shapiro-Wilk 5% Critical Value	0.924	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.20E+01	
Gamma Statistics		
k hat	0.348387	
k star (bias corrected)	0.334869	
Theta hat	6.76E+01	
Theta star	7.04E+01	
nu hat	19.50966	
nu star	18.75267	
5% Approximate Chi Square Value	9.935571	
Adjusted Level of Significance	0.0404	
Adjusted Chi Square Value	9.538894	
Anderson-Darling Test Statistic	1.857054	
Anderson-Darling 5% Critical Value	0.843617	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.233729	
Kolmogrov-Smirnov 5% Critical Value	0.178404	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	4.45E+01	
95% Adjusted Gamma UCL	4.63E+01	
Lognormal Statistics		
Minimum of log data	-1.77196	
Maximum of log data	5.63479	
Mean of log data	1.228141	
Standard Deviation of log data	1.993895	
Variance of log data	3.975616	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.949778	
Shapiro-Wilk 5% Critical Value	0.924	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	2.49E+01	
MLE Standard Deviation	1.80E+02	
MLE Coefficient of Variation	7.23E+00	
MLE Skewness	4.00E+02	
MLE Median	3.41E+00	
MLE 80% Quantile	1.84E+01	
MLE 90% Quantile	4.43E+01	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	9.07E+01	
MLE 99% Quantile	3.53E+02	
MVU Estimate of Median	3.18E+00	
MVU Estimate of Mean	2.08E+01	
MVU Estimate of Standard Deviation	8.08E+01	
MVU Estimate of SE of Mean	1.04E+01	
95% H-UCL	111.3713	
95% Chebyshev (MVUE) UCL	6.61E+01	
97.5% Chebyshev (MVUE) UCL	8.57E+01	
99% Chebyshev (MVUE) UCL	1.24E+02	
Non-parametric Statisitics		
95% CLT UCL	4.13E+01	
95% Adjusted-CLT UCL	49.54812	
95% Modified-t UCL	43.25588	
95% Jackknife UCL	4.20E+01	
95% Chebyshev (Mean, Sd) UCL	7.07E+01	
97.5% Chebyshev (Mean, Sd) UCL	9.11E+01	
99% Chebyshev (Mean, Sd) UCL	1.31E+02	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.14E+01	
95% Bootstrap-t UCL	72.07795	
95% Hall's Bootstrap UCL	98.71638	
95% Percentile Bootstrap UCL	4.31E+01	
95% BCA Bootstrap UCL	5.31E+01	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	6.61E+01	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(b)fluoranthene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Benzo(b)fluoranthene	
Raw Statistics		
Number of Observations	28	
Number of Missing Data	0	
Number of Valid Observations	28	
Number of Distinct Observations	25	
Minimum	0.23	
Maximum	3.20E+02	
Mean	2.42E+01	
Standard Deviation	6.39E+01	
Variance	4089.573	
Coefficient of Variation	2.642123	
Skewness	4.110029	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.414794	
Shapiro-Wilk 5% Critical Value	0.924	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.48E+01	
Gamma Statistics		
k hat	0.362347	
k star (bias corrected)	0.347333	
Theta hat	66.79774	
Theta star	69.68504	
nu hat	20.2914	
nu star	19.45066	
5% Approximate Chi Square Value	10.44573	
Adjusted Level of Significance	0.0404	
Adjusted Chi Square Value	10.03777	
Anderson-Darling Test Statistic	1.756633	
Anderson-Darling 5% Critical Value	0.840547	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.203504	
Kolmogrov-Smirnov 5% Critical Value	0.178085	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	45.06936	
95% Adjusted Gamma UCL	46.90107	
Lognormal Statistics		
Minimum of log data	-1.46968	
Maximum of log data	5.768321	
Mean of log data	1.341169	
Standard Deviation of log data	1.91265	
Variance of log data	3.658229	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.960142	
Shapiro-Wilk 5% Critical Value	0.924	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	23.81424	
MLE Standard Deviation	146.3996	
MLE Coefficient of Variation	6.147567	
MLE Skewness	250.7751	
MLE Median	3.823512	
MLE 80% Quantile	19.24706	
MLE 90% Quantile	44.65312	

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	88.89698	
MLE 99% Quantile	327.0106	
MVU Estimate of Median	3.581193	
MVU Estimate of Mean	20.3132	
MVU Estimate of Standard Deviation	72.08781	
MVU Estimate of SE of Mean	9.662951	
95% H-UCL	95.49887	
95% Chebyshev (MVUE) UCL	62.43303	
97.5% Chebyshev (MVUE) UCL	80.65831	
99% Chebyshev (MVUE) UCL	116.4584	
Non-parametric Statisitics		
95% CLT UCL	4.41E+01	
95% Adjusted-CLT UCL	54.11272	
95% Modified-t UCL	46.35329	
95% Jackknife UCL	4.48E+01	
95% Chebyshev (Mean, Sd) UCL	7.69E+01	
97.5% Chebyshev (Mean, Sd) UCL	9.97E+01	
99% Chebyshev (Mean, Sd) UCL	1.44E+02	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.34E+01	
95% Bootstrap-t UCL	101.1915	
95% Hall's Bootstrap UCL	110.3	
95% Percentile Bootstrap UCL	4.52E+01	
95% BCA Bootstrap UCL	5.76E+01	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	6.24E+01	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(k)fluoranthene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Benzo(k)fluoranthene	
Raw Statistics		
Number of Observations	28	
Number of Missing Data	0	
Number of Valid Observations	28	
Number of Distinct Observations	25	
Minimum	0.098	
Maximum	130	
Mean	11.88421	
Standard Deviation	26.79387	
Variance	717.9115	
Coefficient of Variation	2.254576	
Skewness	3.592591	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.496381	
Shapiro-Wilk 5% Critical Value	0.924	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	20.50893	
Gamma Statistics		
k hat	0.38076	
k star (bias corrected)	0.363774	
Theta hat	31.21185	
Theta star	32.66927	
nu hat	21.32254	
nu star	20.37132	
5% Approximate Chi Square Value	11.12382	
Adjusted Level of Significance	0.0404	
Adjusted Chi Square Value	10.70128	
Anderson-Darling Test Statistic	1.766826	
Anderson-Darling 5% Critical Value	0.836497	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.240999	
Kolmogrov-Smirnov 5% Critical Value	0.177665	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	21.76385	
95% Adjusted Gamma UCL	22.6232	
Lognormal Statistics		
Minimum of log data	-2.32279	
Maximum of log data	4.867534	
Mean of log data	0.733171	
Standard Deviation of log data	1.899409	
Variance of log data	3.607755	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.951133	
Shapiro-Wilk 5% Critical Value	0.924	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	12.64231	
MLE Standard Deviation	75.73066	
MLE Coefficient of Variation	5.990256	
MLE Skewness	232.9201	
MLE Median	2.081672	
MLE 80% Quantile	10.36228	
MLE 90% Quantile	23.90081	

Appendix P, Attachment 3
ProUCL Output - Benzo(k)fluoranthene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	47.35628	
MLE 99% Quantile	172.638	
MVU Estimate of Median	1.95151	
MVU Estimate of Mean	10.81952	
MVU Estimate of Standard Deviation	37.83411	
MVU Estimate of SE of Mean	5.105033	
95% H-UCL	49.83397	
95% Chebyshev (MVUE) UCL	33.07184	
97.5% Chebyshev (MVUE) UCL	42.70044	
99% Chebyshev (MVUE) UCL	61.61396	
Non-parametric Statisitics		
95% CLT UCL	20.21304	
95% Adjusted-CLT UCL	23.88642	
95% Modified-t UCL	21.0819	
95% Jackknife UCL	20.50893	
95% Chebyshev (Mean, Sd) UCL	33.95578	
97.5% Chebyshev (Mean, Sd) UCL	43.50617	
99% Chebyshev (Mean, Sd) UCL	62.26606	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	20.11733	
95% Bootstrap-t UCL	31.74104	
95% Hall's Bootstrap UCL	49.16518	
95% Percentile Bootstrap UCL	20.91929	
95% BCA Bootstrap UCL	24.96036	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	33.07184	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Cadmium

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Cadmium	
Raw Statistics		
Number of Observations	18	
Number of Missing Data	0	
Number of Valid Observations	18	
Number of Distinct Observations	18	
Minimum	0.021	
Maximum	12	
Mean	1.343472	
Standard Deviation	2.743355	
Variance	7.525998	
Coefficient of Variation	2.041989	
Skewness	3.845153	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.452035	
Shapiro-Wilk 5% Critical Value	0.897	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.468328	
Gamma Statistics		
k hat	0.555332	
k star (bias corrected)	0.499814	
Theta hat	2.419223	
Theta star	2.687946	
nu hat	19.99196	
nu star	17.9933	
5% Approximate Chi Square Value	9.384644	
Adjusted Level of Significance	0.03574	
Adjusted Chi Square Value	8.791465	
Anderson-Darling Test Statistic	0.75337	
Anderson-Darling 5% Critical Value	0.795221	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.203986	
Kolmogrov-Smirnov 5% Critical Value	0.214288	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	2.575856	
95% Adjusted Gamma UCL	2.749655	
Lognormal Statistics		
Minimum of log data	-3.86323	
Maximum of log data	2.484907	
Mean of log data	-0.83029	
Standard Deviation of log data	1.697245	
Variance of log data	2.880639	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.914756	
Shapiro-Wilk 5% Critical Value	0.897	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1.840479	
MLE Standard Deviation	7.549482	
MLE Coefficient of Variation	4.10191	
MLE Skewness	81.32311	
MLE Median	0.435921	
MLE 80% Quantile	1.829199	
MLE 90% Quantile	3.859995	

Appendix P, Attachment 3
ProUCL Output - Cadmium
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	7.11122	
MLE 99% Quantile	22.58978	
MVU Estimate of Median	0.402262	
MVU Estimate of Mean	1.562676	
MVU Estimate of Standard Deviation	3.831303	
MVU Estimate of SE of Mean	0.745461	
95% H-UCL	8.816767	
95% Chebyshev (MVUE) UCL	4.812065	
97.5% Chebyshev (MVUE) UCL	6.218079	
99% Chebyshev (MVUE) UCL	8.97992	
Non-parametric Statisitics		
95% CLT UCL	2.407059	
95% Adjusted-CLT UCL	3.033246	
95% Modified-t UCL	2.566	
95% Jackknife UCL	2.468328	
95% Chebyshev (Mean, Sd) UCL	4.162002	
97.5% Chebyshev (Mean, Sd) UCL	5.381582	
99% Chebyshev (Mean, Sd) UCL	7.777211	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.378089	
95% Bootstrap-t UCL	6.447344	
95% Hall's Bootstrap UCL	7.142439	
95% Percentile Bootstrap UCL	2.553528	
95% BCA Bootstrap UCL	3.1815	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	2.575856	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Carbazole

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	14	
Minimum	0.05	
Maximum	70	
Mean	10.00329	
Standard Deviation	23.02698	
Variance	530.2418	
Coefficient of Variation	2.301942	
Skewness	2.332399	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.48266	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	20.902	
Gamma Statistics		
k hat	0.274346	
k star (bias corrected)	0.263176	
Theta hat	36.46235	
Theta star	38.00983	
nu hat	7.681677	
nu star	7.368937	
5% Approximate Chi Square Value	2.374623	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	2.016063	
Anderson-Darling Test Statistic	1.446958	
Anderson-Darling 5% Critical Value	0.842666	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.278951	
Kolmogrov-Smirnov 5% Critical Value	0.249124	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	31.04222	
95% Adjusted Gamma UCL	36.56313	
Lognormal Statistics		
Minimum of log data	-2.99573	
Maximum of log data	4.248495	
Mean of log data	-0.24745	
Standard Deviation of log data	2.364731	
Variance of log data	5.591953	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.896747	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	12.78827	
MLE Standard Deviation	209.0634	
MLE Coefficient of Variation	16.34806	
MLE Skewness	4418.208	
MLE Median	0.780791	
MLE 80% Quantile	5.758919	
MLE 90% Quantile	16.30108	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	38.1885	
MLE 99% Quantile	191.1228	
MVU Estimate of Median	0.637688	
MVU Estimate of Mean	7.548271	
MVU Estimate of Standard Deviation	28.94655	
MVU Estimate of SE of Mean	5.277077	
95% H-UCL	454.6556	
95% Chebyshev (MVUE) UCL	30.55052	
97.5% Chebyshev (MVUE) UCL	40.50361	
99% Chebyshev (MVUE) UCL	60.05452	
Non-parametric Statisitics		
95% CLT UCL	20.12608	
95% Adjusted-CLT UCL	24.22521	
95% Modified-t UCL	21.54138	
95% Jackknife UCL	20.902	
95% Chebyshev (Mean, Sd) UCL	36.82891	
97.5% Chebyshev (Mean, Sd) UCL	48.43637	
99% Chebyshev (Mean, Sd) UCL	71.237	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	20.00892	
95% Bootstrap-t UCL	186.1867	
95% Hall's Bootstrap UCL	113.5426	
95% Percentile Bootstrap UCL	20.01721	
95% BCA Bootstrap UCL	24.33257	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	60.05452	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Chromium

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Chromium	
Raw Statistics		
Number of Observations	28	
Number of Missing Data	0	
Number of Valid Observations	28	
Number of Distinct Observations	27	
Minimum	6.07	
Maximum	67.6	
Mean	25.13286	
Standard Deviation	15.8378	
Variance	250.836	
Coefficient of Variation	0.630163	
Skewness	1.230518	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.876257	
Shapiro-Wilk 5% Critical Value	0.924	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	30.23091	
Gamma Statistics		
k hat	2.952195	
k star (bias corrected)	2.659698	
Theta hat	8.513277	
Theta star	9.449515	
nu hat	165.3229	
nu star	148.9431	
5% Approximate Chi Square Value	121.7302	
Adjusted Level of Significance	0.0404	
Adjusted Chi Square Value	120.2104	
Anderson-Darling Test Statistic	0.358301	
Anderson-Darling 5% Critical Value	0.753876	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.105883	
Kolmogrov-Smirnov 5% Critical Value	0.166627	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	30.75133	
95% Adjusted Gamma UCL	31.14012	
Lognormal Statistics		
Minimum of log data	1.803359	
Maximum of log data	4.213608	
Mean of log data	3.045353	
Standard Deviation of log data	0.613138	
Variance of log data	0.375938	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.979414	
Shapiro-Wilk 5% Critical Value	0.924	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	25.36378	
MLE Standard Deviation	17.13429	
MLE Coefficient of Variation	0.675542	
MLE Skewness	2.334913	
MLE Median	21.01746	
MLE 80% Quantile	35.28488	
MLE 90% Quantile	46.2118	

Appendix P, Attachment 3
ProUCL Output - Chromium
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	57.62547	
MLE 99% Quantile	87.48886	
MVU Estimate of Median	20.8768	
MVU Estimate of Mean	25.16599	
MVU Estimate of Standard Deviation	16.51993	
MVU Estimate of SE of Mean	3.098571	
95% H-UCL	32.2842	
95% Chebyshev (MVUE) UCL	38.67235	
97.5% Chebyshev (MVUE) UCL	44.51656	
99% Chebyshev (MVUE) UCL	55.99638	
Non-parametric Statisitics		
95% CLT UCL	30.05601	
95% Adjusted-CLT UCL	30.79972	
95% Modified-t UCL	30.34691	
95% Jackknife UCL	30.23091	
95% Chebyshev (Mean, Sd) UCL	38.17932	
97.5% Chebyshev (Mean, Sd) UCL	43.82453	
99% Chebyshev (Mean, Sd) UCL	54.91346	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	29.89124	
95% Bootstrap-t UCL	31.76752	
95% Hall's Bootstrap UCL	30.99376	
95% Percentile Bootstrap UCL	30.18393	
95% BCA Bootstrap UCL	30.45357	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	30.75133	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Chrysene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Chrysene	
Raw Statistics		
Number of Observations	28	
Number of Missing Data	0	
Number of Valid Observations	28	
Number of Distinct Observations	27	
Minimum	0.21	
Maximum	250	
Mean	23.24464	
Standard Deviation	53.1678	
Variance	2826.815	
Coefficient of Variation	2.287314	
Skewness	3.382451	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.496376	
Shapiro-Wilk 5% Critical Value	0.924	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	40.35889	
Gamma Statistics		
k hat	0.359155	
k star (bias corrected)	0.344484	
Theta hat	64.72039	
Theta star	67.47679	
nu hat	20.11267	
nu star	19.29108	
5% Approximate Chi Square Value	10.32878	
Adjusted Level of Significance	0.0404	
Adjusted Chi Square Value	9.92339	
Anderson-Darling Test Statistic	1.867506	
Anderson-Darling 5% Critical Value	0.841249	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.227648	
Kolmogrov-Smirnov 5% Critical Value	0.178158	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	43.41403	
95% Adjusted Gamma UCL	45.1876	
Lognormal Statistics		
Minimum of log data	-1.56065	
Maximum of log data	5.521461	
Mean of log data	1.28165	
Standard Deviation of log data	1.959821	
Variance of log data	3.840897	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.94719	
Shapiro-Wilk 5% Critical Value	0.924	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	24.58408	
MLE Standard Deviation	165.9512	
MLE Coefficient of Variation	6.750352	
MLE Skewness	327.846	
MLE Median	3.60258	
MLE 80% Quantile	18.87237	
MLE 90% Quantile	44.70208	

Appendix P, Attachment 3
ProUCL Output - Chrysene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	90.51861	
MLE 99% Quantile	343.8459	
MVU Estimate of Median	3.363223	
MVU Estimate of Mean	20.71497	
MVU Estimate of Standard Deviation	77.47238	
MVU Estimate of SE of Mean	10.13831	
95% H-UCL	104.9127	
95% Chebyshev (MVUE) UCL	64.90683	
97.5% Chebyshev (MVUE) UCL	84.02868	
99% Chebyshev (MVUE) UCL	121.5899	
Non-parametric Statisitics		
95% CLT UCL	39.77175	
95% Adjusted-CLT UCL	46.63458	
95% Modified-t UCL	41.42935	
95% Jackknife UCL	40.35889	
95% Chebyshev (Mean, Sd) UCL	67.04186	
97.5% Chebyshev (Mean, Sd) UCL	85.99295	
99% Chebyshev (Mean, Sd) UCL	123.2187	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	39.43539	
95% Bootstrap-t UCL	62.80845	
95% Hall's Bootstrap UCL	89.39554	
95% Percentile Bootstrap UCL	42.44536	
95% BCA Bootstrap UCL	47.38357	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	64.90683	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Copper

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Copper	
Raw Statistics		
Number of Observations	18	
Number of Missing Data	0	
Number of Valid Observations	18	
Number of Distinct Observations	18	
Minimum	7.02	
Maximum	576	
Mean	143.1178	
Standard Deviation	142.4192	
Variance	20283.24	
Coefficient of Variation	0.995119	
Skewness	1.9637	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.782821	
Shapiro-Wilk 5% Critical Value	0.897	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	201.5138	
Gamma Statistics		
k hat	1.168446	
k star (bias corrected)	1.010742	
Theta hat	122.4855	
Theta star	141.5967	
nu hat	42.06407	
nu star	36.38673	
5% Approximate Chi Square Value	23.57794	
Adjusted Level of Significance	0.03574	
Adjusted Chi Square Value	22.5897	
Anderson-Darling Test Statistic	0.40731	
Anderson-Darling 5% Critical Value	0.763113	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.196957	
Kolmogrov-Smirnov 5% Critical Value	0.208695	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	220.867	
95% Adjusted Gamma UCL	230.5293	
Lognormal Statistics		
Minimum of log data	1.948763	
Maximum of log data	6.356108	
Mean of log data	4.47821	
Standard Deviation of log data	1.140112	
Variance of log data	1.299856	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.931824	
Shapiro-Wilk 5% Critical Value	0.897	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	168.7026	
MLE Standard Deviation	275.5987	
MLE Coefficient of Variation	1.633636	
MLE Skewness	9.260704	
MLE Median	88.07683	
MLE 80% Quantile	230.8122	
MLE 90% Quantile	381.1731	

Appendix P, Attachment 3
ProUCL Output - Copper
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	574.6114	
MLE 99% Quantile	1249.015	
MVU Estimate of Median	84.9475	
MVU Estimate of Mean	159.749	
MVU Estimate of Standard Deviation	217.9175	
MVU Estimate of SE of Mean	48.5587	
95% H-UCL	372.7205	
95% Chebyshev (MVUE) UCL	371.4115	
97.5% Chebyshev (MVUE) UCL	462.998	
99% Chebyshev (MVUE) UCL	642.902	
Non-parametric Statisitics		
95% CLT UCL	198.3331	
95% Adjusted-CLT UCL	214.9348	
95% Modified-t UCL	204.1033	
95% Jackknife UCL	201.5138	
95% Chebyshev (Mean, Sd) UCL	289.4396	
97.5% Chebyshev (Mean, Sd) UCL	352.7532	
99% Chebyshev (Mean, Sd) UCL	477.1205	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	196.1722	
95% Bootstrap-t UCL	236.9768	
95% Hall's Bootstrap UCL	279.2218	
95% Percentile Bootstrap UCL	203.0556	
95% BCA Bootstrap UCL	213.6022	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	220.867	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzo(a,h)anthracene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Dibenzo(a,h)anthracene	
Raw Statistics		
Number of Observations	28	
Number of Missing Data	0	
Number of Valid Observations	28	
Number of Distinct Observations	23	
Minimum	0.0255	
Maximum	51	
Mean	3.790125	
Standard Deviation	10.08836	
Variance	101.7749	
Coefficient of Variation	2.661747	
Skewness	4.200732	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.415156	
Shapiro-Wilk 5% Critical Value	0.924	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	7.037478	
Gamma Statistics		
k hat	0.335738	
k star (bias corrected)	0.323575	
Theta hat	11.28894	
Theta star	11.71327	
nu hat	18.80132	
nu star	18.12022	
5% Approximate Chi Square Value	9.476421	
Adjusted Level of Significance	0.0404	
Adjusted Chi Square Value	9.09014	
Anderson-Darling Test Statistic	1.910549	
Anderson-Darling 5% Critical Value	0.846399	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.253802	
Kolmogrov-Smirnov 5% Critical Value	0.178693	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	7.247241	
95% Adjusted Gamma UCL	7.555209	
Lognormal Statistics		
Minimum of log data	-3.66908	
Maximum of log data	3.931826	
Mean of log data	-0.68409	
Standard Deviation of log data	2.039772	
Variance of log data	4.160671	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.943098	
Shapiro-Wilk 5% Critical Value	0.924	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	4.039989	
MLE Standard Deviation	32.09556	
MLE Coefficient of Variation	7.944467	
MLE Skewness	525.2448	
MLE Median	0.504547	
MLE 80% Quantile	2.827842	
MLE 90% Quantile	6.938001	

Appendix P, Attachment 3
ProUCL Output - Dibenzo(a,h)anthracene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	14.45921	
MLE 99% Quantile	57.99848	
MVU Estimate of Median	0.46833	
MVU Estimate of Mean	3.329213	
MVU Estimate of Standard Deviation	13.60338	
MVU Estimate of SE of Mean	1.706237	
95% H-UCL	19.22141	
95% Chebyshev (MVUE) UCL	10.76653	
97.5% Chebyshev (MVUE) UCL	13.98466	
99% Chebyshev (MVUE) UCL	20.30605	
Non-parametric Statisitics		
95% CLT UCL	6.926071	
95% Adjusted-CLT UCL	8.543286	
95% Modified-t UCL	7.289731	
95% Jackknife UCL	7.037478	
95% Chebyshev (Mean, Sd) UCL	12.10045	
97.5% Chebyshev (Mean, Sd) UCL	15.69634	
99% Chebyshev (Mean, Sd) UCL	22.75976	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	6.948442	
95% Bootstrap-t UCL	16.83858	
95% Hall's Bootstrap UCL	18.15705	
95% Percentile Bootstrap UCL	7.087	
95% BCA Bootstrap UCL	8.921125	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	13.98466	97.5% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzofuran

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	14	
Number of Missing Data	0	
Number of Valid Observations	14	
Number of Distinct Observations	12	
Minimum	0.042	
Maximum	48	
Mean	5.517786	
Standard Deviation	13.39416	
Variance	179.4035	
Coefficient of Variation	2.427452	
Skewness	2.947577	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.474535	
Shapiro-Wilk 5% Critical Value	0.874	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	11.85727	
Gamma Statistics		
k hat	0.305794	
k star (bias corrected)	0.287886	
Theta hat	18.0441	
Theta star	19.16656	
nu hat	8.562243	
nu star	8.06081	
5% Approximate Chi Square Value	2.769598	
Adjusted Level of Significance	0.03122	
Adjusted Chi Square Value	2.374787	
Anderson-Darling Test Statistic	1.284175	
Anderson-Darling 5% Critical Value	0.830907	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.264821	
Kolmogrov-Smirnov 5% Critical Value	0.247621	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	16.05931	
95% Adjusted Gamma UCL	18.72918	
Lognormal Statistics		
Minimum of log data	-3.17009	
Maximum of log data	3.871201	
Mean of log data	-0.53999	
Standard Deviation of log data	2.16758	
Variance of log data	4.698402	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.924399	
Shapiro-Wilk 5% Critical Value	0.874	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	6.105624	
MLE Standard Deviation	63.67778	
MLE Coefficient of Variation	10.42936	
MLE Skewness	1165.707	
MLE Median	0.582754	
MLE 80% Quantile	3.638655	
MLE 90% Quantile	9.443713	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	20.60797	
MLE 99% Quantile	90.17929	
MVU Estimate of Median	0.491782	
MVU Estimate of Mean	4.056854	
MVU Estimate of Standard Deviation	13.4311	
MVU Estimate of SE of Mean	2.634638	
95% H-UCL	126.2162	
95% Chebyshev (MVUE) UCL	15.54097	
97.5% Chebyshev (MVUE) UCL	20.51016	
99% Chebyshev (MVUE) UCL	30.27117	
Non-parametric Statisitics		
95% CLT UCL	11.40593	
95% Adjusted-CLT UCL	14.41917	
95% Modified-t UCL	12.32727	
95% Jackknife UCL	11.85727	
95% Chebyshev (Mean, Sd) UCL	21.12151	
97.5% Chebyshev (Mean, Sd) UCL	27.87325	
99% Chebyshev (Mean, Sd) UCL	41.13574	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	11.12761	
95% Bootstrap-t UCL	87.57655	
95% Hall's Bootstrap UCL	54.83848	
95% Percentile Bootstrap UCL	12.17243	
95% BCA Bootstrap UCL	15.35586	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	30.27117	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Fluoranthene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Fluoranthene	
Raw Statistics		
Number of Observations	28	
Number of Missing Data	0	
Number of Valid Observations	28	
Number of Distinct Observations	27	
Minimum	4.20E-01	
Maximum	530	
Mean	41.36786	
Standard Deviation	106.9082	
Variance	11429.35	
Coefficient of Variation	2.584329	
Skewness	3.972037	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.429078	
Shapiro-Wilk 5% Critical Value	0.924	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	75.78065	
Gamma Statistics		
k hat	0.366478	
k star (bias corrected)	0.351022	
Theta hat	112.8796	
Theta star	117.8498	
nu hat	20.52276	
nu star	19.65722	
5% Approximate Chi Square Value	10.59737	
Adjusted Level of Significance	0.0404	
Adjusted Chi Square Value	10.18611	
Anderson-Darling Test Statistic	2.171354	
Anderson-Darling 5% Critical Value	0.839638	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.250161	
Kolmogrov-Smirnov 5% Critical Value	0.177991	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	76.73388	
95% Adjusted Gamma UCL	79.83195	
Lognormal Statistics		
Minimum of log data	-0.8675	
Maximum of log data	6.272877	
Mean of log data	1.901319	
Standard Deviation of log data	1.847907	
Variance of log data	3.414761	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.945315	
Shapiro-Wilk 5% Critical Value	0.924	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	36.91801	
MLE Standard Deviation	200.209	
MLE Coefficient of Variation	5.423071	
MLE Skewness	175.7601	
MLE Median	6.694718	
MLE 80% Quantile	31.90621	
MLE 90% Quantile	71.94341	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	139.9278	
MLE 99% Quantile	492.528	
MVU Estimate of Median	6.297874	
MVU Estimate of Mean	31.98996	
MVU Estimate of Standard Deviation	105.6098	
MVU Estimate of SE of Mean	14.61217	
95% H-UCL	136.2723	
95% Chebyshev (MVUE) UCL	95.68296	
97.5% Chebyshev (MVUE) UCL	123.243	
99% Chebyshev (MVUE) UCL	177.3793	
Non-parametric Statisitics		
95% CLT UCL	74.60006	
95% Adjusted-CLT UCL	90.80496	
95% Modified-t UCL	78.30829	
95% Jackknife UCL	75.78065	
95% Chebyshev (Mean, Sd) UCL	129.4339	
97.5% Chebyshev (Mean, Sd) UCL	167.5402	
99% Chebyshev (Mean, Sd) UCL	242.3925	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	73.95556	
95% Bootstrap-t UCL	134.3215	
95% Hall's Bootstrap UCL	177.6603	
95% Percentile Bootstrap UCL	78.33607	
95% BCA Bootstrap UCL	94.40786	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	95.68296	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Indeno(1,2,3-c,d)pyrene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Indeno(1,2,3-c,d)pyrene	
Raw Statistics		
Number of Observations	28	
Number of Missing Data	0	
Number of Valid Observations	28	
Number of Distinct Observations	26	
Minimum	0.026	
Maximum	150	
Mean	10.91813	
Standard Deviation	30.28315	
Variance	917.0691	
Coefficient of Variation	2.773658	
Skewness	4.077628	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.404267	
Shapiro-Wilk 5% Critical Value	0.924	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	20.666	
Gamma Statistics		
k hat	0.310127	
k star (bias corrected)	0.300709	
Theta hat	35.2053	
Theta star	36.30795	
nu hat	17.36713	
nu star	16.8397	
5% Approximate Chi Square Value	8.556496	
Adjusted Level of Significance	0.0404	
Adjusted Chi Square Value	8.19181	
Anderson-Darling Test Statistic	1.947023	
Anderson-Darling 5% Critical Value	0.852033	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.255202	
Kolmogrov-Smirnov 5% Critical Value	0.179279	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	21.48753	
95% Adjusted Gamma UCL	22.44412	
Lognormal Statistics		
Minimum of log data	-3.64966	
Maximum of log data	5.010635	
Mean of log data	0.178949	
Standard Deviation of log data	2.169901	
Variance of log data	4.708472	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.966058	
Shapiro-Wilk 5% Critical Value	0.924	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	12.59356	
MLE Standard Deviation	132.0118	
MLE Coefficient of Variation	10.48249	
MLE Skewness	1183.29	
MLE Median	1.19596	
MLE 80% Quantile	7.482118	
MLE 90% Quantile	19.43883	

Appendix P, Attachment 3
ProUCL Output - Indeno(1,2,3-c,d)pyrene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	42.45467	
MLE 99% Quantile	186.0731	
MVU Estimate of Median	1.099245	
MVU Estimate of Mean	9.965094	
MVU Estimate of Standard Deviation	46.98342	
MVU Estimate of SE of Mean	5.475518	
95% H-UCL	72.15561	
95% Chebyshev (MVUE) UCL	33.83232	
97.5% Chebyshev (MVUE) UCL	44.15969	
99% Chebyshev (MVUE) UCL	64.44581	
Non-parametric Statisitics		
95% CLT UCL	20.33158	
95% Adjusted-CLT UCL	25.04386	
95% Modified-t UCL	21.40102	
95% Jackknife UCL	20.666	
95% Chebyshev (Mean, Sd) UCL	35.864	
97.5% Chebyshev (Mean, Sd) UCL	46.65811	
99% Chebyshev (Mean, Sd) UCL	67.86103	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	20.26208	
95% Bootstrap-t UCL	53.75788	
95% Hall's Bootstrap UCL	56.41526	
95% Percentile Bootstrap UCL	21.19121	
95% BCA Bootstrap UCL	27.71882	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	44.15969	97.5% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Lead

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	32	
Number of Missing Data	0	
Number of Valid Observations	32	
Number of Distinct Observations	31	
Minimum	4.96	
Maximum	3820	
Mean	441.03	
Standard Deviation	723.4755	
Variance	523416.8	
Coefficient of Variation	1.640422	
Skewness	3.611794	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.577284	
Shapiro-Wilk 5% Critical Value	0.93	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	657.876	
Gamma Statistics		
k hat	0.703441	
k star (bias corrected)	0.658327	
Theta hat	626.961	
Theta star	669.9258	
nu hat	45.02022	
nu star	42.1329	
5% Approximate Chi Square Value	28.25056	
Adjusted Level of Significance	0.0416	
Adjusted Chi Square Value	27.64119	
Anderson-Darling Test Statistic	0.772241	
Anderson-Darling 5% Critical Value	0.791962	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.136969	
Kolmogrov-Smirnov 5% Critical Value	0.16211	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	657.7525	
95% Adjusted Gamma UCL	672.253	
Lognormal Statistics		
Minimum of log data	1.601406	
Maximum of log data	8.248006	
Mean of log data	5.230574	
Standard Deviation of log data	1.387118	
Variance of log data	1.924098	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.986688	
Shapiro-Wilk 5% Critical Value	0.93	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	489.1276	
MLE Standard Deviation	1182.937	
MLE Coefficient of Variation	2.418464	
MLE Skewness	21.4009	
MLE Median	186.9001	
MLE 80% Quantile	603.4659	
MLE 90% Quantile	1111.007	

Appendix P, Attachment 3

ProUCL Output - Lead

Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	1830.573	
MLE 99% Quantile	4707.97	
MVU Estimate of Median	181.3598	
MVU Estimate of Mean	463.1015	
MVU Estimate of Standard Deviation	920.0128	
MVU Estimate of SE of Mean	141.5096	
95% H-UCL	1010.232	
95% Chebyshev (MVUE) UCL	1079.927	
97.5% Chebyshev (MVUE) UCL	1346.828	
99% Chebyshev (MVUE) UCL	1871.104	
Non-parametric Statisitics		
95% CLT UCL	651.3963	
95% Adjusted-CLT UCL	738.6486	
95% Modified-t UCL	671.4856	
95% Jackknife UCL	657.876	
95% Chebyshev (Mean, Sd) UCL	998.5053	
97.5% Chebyshev (Mean, Sd) UCL	1239.725	
99% Chebyshev (Mean, Sd) UCL	1713.555	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	649.6197	
95% Bootstrap-t UCL	885.1336	
95% Hall's Bootstrap UCL	1465.895	
95% Percentile Bootstrap UCL	677.0719	
95% BCA Bootstrap UCL	790.6988	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	657.7525	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Mercury

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Mercury	
Raw Statistics		
Number of Observations	18	
Number of Missing Data	0	
Number of Valid Observations	18	
Number of Distinct Observations	17	
Minimum	0.013	
Maximum	4.4	
Mean	1.090833	
Standard Deviation	1.314549	
Variance	1.728039	
Coefficient of Variation	1.205087	
Skewness	1.730964	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.75559	
Shapiro-Wilk 5% Critical Value	0.897	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.629837	
Gamma Statistics		
k hat	0.703448	
k star (bias corrected)	0.623244	
Theta hat	1.550695	
Theta star	1.750252	
nu hat	25.32413	
nu star	22.43677	
5% Approximate Chi Square Value	12.66463	
Adjusted Level of Significance	0.03574	
Adjusted Chi Square Value	11.96265	
Anderson-Darling Test Statistic	0.240278	
Anderson-Darling 5% Critical Value	0.78208	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.119047	
Kolmogrov-Smirnov 5% Critical Value	0.212113	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.93253	
95% Adjusted Gamma UCL	2.045932	
Lognormal Statistics		
Minimum of log data	-4.34281	
Maximum of log data	1.481605	
Mean of log data	-0.77159	
Standard Deviation of log data	1.641453	
Variance of log data	2.694368	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.920383	
Shapiro-Wilk 5% Critical Value	0.897	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1.778192	
MLE Standard Deviation	6.604773	
MLE Coefficient of Variation	3.714319	
MLE Skewness	62.3863	
MLE Median	0.462279	
MLE 80% Quantile	1.850473	
MLE 90% Quantile	3.810195	

Appendix P, Attachment 3
ProUCL Output - Mercury
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	6.879896	
MLE 99% Quantile	21.04016	
MVU Estimate of Median	0.428816	
MVU Estimate of Mean	1.53259	
MVU Estimate of Standard Deviation	3.559062	
MVU Estimate of SE of Mean	0.704772	
95% H-UCL	7.779208	
95% Chebyshev (MVUE) UCL	4.604618	
97.5% Chebyshev (MVUE) UCL	5.933887	
99% Chebyshev (MVUE) UCL	8.544979	
Non-parametric Statisitics		
95% CLT UCL	1.600478	
95% Adjusted-CLT UCL	1.735553	
95% Modified-t UCL	1.650906	
95% Jackknife UCL	1.629837	
95% Chebyshev (Mean, Sd) UCL	2.441404	
97.5% Chebyshev (Mean, Sd) UCL	3.025797	
99% Chebyshev (Mean, Sd) UCL	4.173724	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.587493	
95% Bootstrap-t UCL	1.994799	
95% Hall's Bootstrap UCL	2.096404	
95% Percentile Bootstrap UCL	1.614111	
95% BCA Bootstrap UCL	1.691333	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	1.93253	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Naphthalene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	28	
Number of Missing Data	0	
Number of Valid Observations	28	
Number of Distinct Observations	24	
Minimum	0.0355	
Maximum	75	
Mean	8.307982	
Standard Deviation	19.17857	
Variance	367.8175	
Coefficient of Variation	2.308451	
Skewness	2.651434	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.493795	
Shapiro-Wilk 5% Critical Value	0.924	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	14.4814	
Gamma Statistics		
k hat	0.285928	
k star (bias corrected)	0.279102	
Theta hat	29.05622	
Theta star	29.76681	
nu hat	16.01196	
nu star	15.62972	
5% Approximate Chi Square Value	7.700369	
Adjusted Level of Significance	0.0404	
Adjusted Chi Square Value	7.356821	
Anderson-Darling Test Statistic	2.217095	
Anderson-Darling 5% Critical Value	0.860284	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.203298	
Kolmogrov-Smirnov 5% Critical Value	0.180032	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	16.86302	
95% Adjusted Gamma UCL	17.65048	
Lognormal Statistics		
Minimum of log data	-3.33822	
Maximum of log data	4.317488	
Mean of log data	-0.31343	
Standard Deviation of log data	2.314173	
Variance of log data	5.355396	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.913867	
Shapiro-Wilk 5% Critical Value	0.924	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	10.63629	
MLE Standard Deviation	154.4087	
MLE Coefficient of Variation	14.51715	
MLE Skewness	3103.01	
MLE Median	0.730939	
MLE 80% Quantile	5.165749	
MLE 90% Quantile	14.30038	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	32.89723	
MLE 99% Quantile	159.0693	
MVU Estimate of Median	0.664065	
MVU Estimate of Mean	7.99185	
MVU Estimate of Standard Deviation	44.10313	
MVU Estimate of SE of Mean	4.709611	
95% H-UCL	75.89301	
95% Chebyshev (MVUE) UCL	28.52057	
97.5% Chebyshev (MVUE) UCL	37.40336	
99% Chebyshev (MVUE) UCL	54.85189	
Non-parametric Statisitics		
95% CLT UCL	14.2696	
95% Adjusted-CLT UCL	16.21013	
95% Modified-t UCL	14.78408	
95% Jackknife UCL	14.4814	
95% Chebyshev (Mean, Sd) UCL	24.10641	
97.5% Chebyshev (Mean, Sd) UCL	30.94241	
99% Chebyshev (Mean, Sd) UCL	44.3704	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	14.13797	
95% Bootstrap-t UCL	20.35994	
95% Hall's Bootstrap UCL	14.81054	
95% Percentile Bootstrap UCL	14.56405	
95% BCA Bootstrap UCL	16.44125	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	44.3704	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Nickel

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Nickel	
Raw Statistics		
Number of Observations	18	
Number of Missing Data	0	
Number of Valid Observations	18	
Number of Distinct Observations	18	
Minimum	6.29	
Maximum	303	
Mean	40.15	
Standard Deviation	67.37458	
Variance	4539.334	
Coefficient of Variation	1.678072	
Skewness	3.89088	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.446232	
Shapiro-Wilk 5% Critical Value	0.897	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	67.77555	
Gamma Statistics		
k hat	1.099609	
k star (bias corrected)	0.953378	
Theta hat	36.51298	
Theta star	42.11342	
nu hat	39.58592	
nu star	34.3216	
5% Approximate Chi Square Value	21.91939	
Adjusted Level of Significance	0.03574	
Adjusted Chi Square Value	20.96962	
Anderson-Darling Test Statistic	1.443387	
Anderson-Darling 5% Critical Value	0.764538	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.21927	
Kolmogrov-Smirnov 5% Critical Value	0.209	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	62.86726	
95% Adjusted Gamma UCL	65.7147	
Lognormal Statistics		
Minimum of log data	1.838961	
Maximum of log data	5.713733	
Mean of log data	3.173352	
Standard Deviation of log data	0.879228	
Variance of log data	0.773042	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.914334	
Shapiro-Wilk 5% Critical Value	0.897	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	35.15874	
MLE Standard Deviation	37.97058	
MLE Coefficient of Variation	1.079975	
MLE Skewness	4.499552	
MLE Median	23.88743	
MLE 80% Quantile	50.21431	
MLE 90% Quantile	73.93308	

Appendix P, Attachment 3
ProUCL Output - Nickel
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	101.4618	
MLE 99% Quantile	184.6454	
MVU Estimate of Median	23.37938	
MVU Estimate of Mean	34.18178	
MVU Estimate of Standard Deviation	33.5439	
MVU Estimate of SE of Mean	7.725708	
95% H-UCL	59.68394	
95% Chebyshev (MVUE) UCL	67.85737	
97.5% Chebyshev (MVUE) UCL	82.42882	
99% Chebyshev (MVUE) UCL	111.0516	
Non-parametric Statisitics		
95% CLT UCL	66.27084	
95% Adjusted-CLT UCL	81.83235	
95% Modified-t UCL	70.20283	
95% Jackknife UCL	67.77555	
95% Chebyshev (Mean, Sd) UCL	109.3708	
97.5% Chebyshev (Mean, Sd) UCL	139.3227	
99% Chebyshev (Mean, Sd) UCL	198.1574	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	66.03508	
95% Bootstrap-t UCL	144.3374	
95% Hall's Bootstrap UCL	160.9034	
95% Percentile Bootstrap UCL	69.64944	
95% BCA Bootstrap UCL	89.51833	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	59.68394	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Pyrene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Pyrene	
Raw Statistics		
Number of Observations	28	
Number of Missing Data	0	
Number of Valid Observations	28	
Number of Distinct Observations	26	
Minimum	0.415	
Maximum	440	
Mean	35.00589	
Standard Deviation	88.57314	
Variance	7845.201	
Coefficient of Variation	2.530235	
Skewness	3.966793	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.436606	
Shapiro-Wilk 5% Critical Value	0.924	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	63.51681	
Gamma Statistics		
k hat	0.367144	
k star (bias corrected)	0.351617	
Theta hat	95.3464	
Theta star	99.55688	
nu hat	20.56008	
nu star	19.69055	
5% Approximate Chi Square Value	10.62186	
Adjusted Level of Significance	0.0404	
Adjusted Chi Square Value	10.21008	
Anderson-Darling Test Statistic	1.826262	
Anderson-Darling 5% Critical Value	0.839492	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.228934	
Kolmogrov-Smirnov 5% Critical Value	0.177976	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	64.89307	
95% Adjusted Gamma UCL	67.51031	
Lognormal Statistics		
Minimum of log data	-0.87948	
Maximum of log data	6.086775	
Mean of log data	1.738174	
Standard Deviation of log data	1.900472	
Variance of log data	3.611794	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.949186	
Shapiro-Wilk 5% Critical Value	0.924	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	34.60753	
MLE Standard Deviation	207.7387	
MLE Coefficient of Variation	6.002703	
MLE Skewness	234.3002	
MLE Median	5.686951	
MLE 80% Quantile	28.3343	
MLE 90% Quantile	65.38422	

Appendix P, Attachment 3
ProUCL Output - Pyrene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	129.5998	
MLE 99% Quantile	472.8	
MVU Estimate of Median	5.330972	
MVU Estimate of Mean	29.60993	
MVU Estimate of Standard Deviation	103.6639	
MVU Estimate of SE of Mean	13.9802	
95% H-UCL	136.6051	
95% Chebyshev (MVUE) UCL	90.54823	
97.5% Chebyshev (MVUE) UCL	116.9163	
99% Chebyshev (MVUE) UCL	168.7112	
Non-parametric Statisitics		
95% CLT UCL	62.53869	
95% Adjusted-CLT UCL	75.94669	
95% Modified-t UCL	65.60818	
95% Jackknife UCL	63.51681	
95% Chebyshev (Mean, Sd) UCL	107.9684	
97.5% Chebyshev (Mean, Sd) UCL	139.5394	
99% Chebyshev (Mean, Sd) UCL	201.5544	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	62.09961	
95% Bootstrap-t UCL	121.0353	
95% Hall's Bootstrap UCL	145.352	
95% Percentile Bootstrap UCL	64.47107	
95% BCA Bootstrap UCL	78.38339	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	90.54823	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Tetrachloroethene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Tetrachloroethene	
Raw Statistics		
Number of Observations	33	
Number of Missing Data	0	
Number of Valid Observations	33	
Number of Distinct Observations	20	
Minimum	0.0025	
Maximum	1.2	
Mean	0.090273	
Standard Deviation	0.236878	
Variance	0.056111	
Coefficient of Variation	2.624025	
Skewness	4.019843	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.401506	
Shapiro-Wilk 5% Critical Value	0.931	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.16012	
Gamma Statistics		
k hat	0.420676	
k star (bias corrected)	0.402634	
Theta hat	0.21459	
Theta star	0.224205	
nu hat	27.7646	
nu star	26.57388	
5% Approximate Chi Square Value	15.82014	
Adjusted Level of Significance	0.0419	
Adjusted Chi Square Value	15.39217	
Anderson-Darling Test Statistic	2.748905	
Anderson-Darling 5% Critical Value	0.828608	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.299572	
Kolmogrov-Smirnov 5% Critical Value	0.163655	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.151636	
95% Adjusted Gamma UCL	0.155852	
Lognormal Statistics		
Minimum of log data	-5.99146	
Maximum of log data	0.182322	
Mean of log data	-3.95655	
Standard Deviation of log data	1.660161	
Variance of log data	2.756134	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.899759	
Shapiro-Wilk 5% Critical Value	0.931	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.075889	
MLE Standard Deviation	0.291348	
MLE Coefficient of Variation	3.839124	
MLE Skewness	68.10175	
MLE Median	0.019129	
MLE 80% Quantile	0.077792	
MLE 90% Quantile	0.161501	

Appendix P, Attachment 3
ProUCL Output - Tetrachloroethene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	0.293586	
MLE 99% Quantile	0.90936	
MVU Estimate of Median	0.018346	
MVU Estimate of Mean	0.069379	
MVU Estimate of Standard Deviation	0.192815	
MVU Estimate of SE of Mean	0.026257	
95% H-UCL	0.198899	
95% Chebyshev (MVUE) UCL	0.18383	
97.5% Chebyshev (MVUE) UCL	0.233353	
99% Chebyshev (MVUE) UCL	0.330631	
Non-parametric Statisitics		
95% CLT UCL	0.158099	
95% Adjusted-CLT UCL	0.18893	
95% Modified-t UCL	0.16493	
95% Jackknife UCL	0.16012	
95% Chebyshev (Mean, Sd) UCL	0.270013	
97.5% Chebyshev (Mean, Sd) UCL	0.347786	
99% Chebyshev (Mean, Sd) UCL	0.500557	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.157404	
95% Bootstrap-t UCL	0.396006	
95% Hall's Bootstrap UCL	0.444879	
95% Percentile Bootstrap UCL	0.164652	
95% BCA Bootstrap UCL	0.205152	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	0.500557	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Thallium

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Thallium	
Raw Statistics		
Number of Observations	18	
Number of Missing Data	0	
Number of Valid Observations	18	
Number of Distinct Observations	17	
Minimum	0.298	
Maximum	0.95	
Mean	0.384472	
Standard Deviation	0.152482	
Variance	2.33E-02	
Coefficient of Variation	0.3966	
Skewness	3.39914	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.526719	
Shapiro-Wilk 5% Critical Value	0.897	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.446994	
Gamma Statistics		
k hat	11.08787	
k star (bias corrected)	9.27693	
Theta hat	0.034675	
Theta star	0.041444	
nu hat	399.1634	
nu star	333.9695	
5% Approximate Chi Square Value	292.6176	
Adjusted Level of Significance	0.03574	
Adjusted Chi Square Value	288.9051	
Anderson-Darling Test Statistic	2.509039	
Anderson-Darling 5% Critical Value	0.739205	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.305341	
Kolmogrov-Smirnov 5% Critical Value	0.203429	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.438805	
95% Adjusted Gamma UCL	0.444444	
Lognormal Statistics		
Minimum of log data	-1.21066	
Maximum of log data	-0.05129	
Mean of log data	-1.00166	
Standard Deviation of log data	0.276951	
Variance of log data	0.076702	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.656386	
Shapiro-Wilk 5% Critical Value	0.897	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.38163	
MLE Standard Deviation	0.107752	
MLE Coefficient of Variation	0.282348	
MLE Skewness	8.70E-01	
MLE Median	0.367271	
MLE 80% Quantile	0.464111	
MLE 90% Quantile	0.524257	

Appendix P, Attachment 3
ProUCL Output - Thallium
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	0.579221	
MLE 99% Quantile	0.699446	
MVU Estimate of Median	0.366489	
MVU Estimate of Mean	0.380791	
MVU Estimate of Standard Deviation	0.106668	
MVU Estimate of SE of Mean	0.025135	
95% H-UCL	0.431858	
95% Chebyshev (MVUE) UCL	0.49035	
97.5% Chebyshev (MVUE) UCL	0.537756	
99% Chebyshev (MVUE) UCL	0.630877	
Non-parametric Statisitics		
95% CLT UCL	0.443589	
95% Adjusted-CLT UCL	0.474356	
95% Modified-t UCL	0.451793	
95% Jackknife UCL	0.446994	
95% Chebyshev (Mean, Sd) UCL	0.541132	
97.5% Chebyshev (Mean, Sd) UCL	0.608919	
99% Chebyshev (Mean, Sd) UCL	0.742073	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.44203	
95% Bootstrap-t UCL	0.613576	
95% Hall's Bootstrap UCL	0.710143	
95% Percentile Bootstrap UCL	0.448556	
95% BCA Bootstrap UCL	0.482944	
Recommendations		
Human Inspection Recommended?	YES	Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	0.446994	95% Student's-t UCL
2nd Recommended UCL	0.451793	95% Modified-t UCL
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Trichloroethene

Former Lever Brothers Property (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_newimproved_SO_LeverBros_MIX_031007.xls	
Variable:	Trichloroethene	
Raw Statistics		
Number of Observations	33	
Number of Missing Data	0	
Number of Valid Observations	33	
Number of Distinct Observations	21	
Minimum	2.50E-03	
Maximum	2.4	
Mean	0.144667	
Standard Deviation	0.420351	
Variance	0.176695	
Coefficient of Variation	2.905653	
Skewness	5.146569	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.342715	
Shapiro-Wilk 5% Critical Value	0.931	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.268615	
Gamma Statistics		
k hat	0.40937	
k star (bias corrected)	0.392356	
Theta hat	0.353389	
Theta star	0.368713	
nu hat	27.01839	
nu star	25.89551	
5% Approximate Chi Square Value	15.29711	
Adjusted Level of Significance	0.0419	
Adjusted Chi Square Value	14.87696	
Anderson-Darling Test Statistic	2.08127	
Anderson-Darling 5% Critical Value	0.831118	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.252615	
Kolmogrov-Smirnov 5% Critical Value	0.163897	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.244897	
95% Adjusted Gamma UCL	0.251813	
Lognormal Statistics		
Minimum of log data	-5.99146	
Maximum of log data	0.875469	
Mean of log data	-3.53479	
Standard Deviation of log data	1.830246	
Variance of log data	3.349801	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.892677	
Shapiro-Wilk 5% Critical Value	0.931	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.15569	
MLE Standard Deviation	0.816403	
MLE Coefficient of Variation	5.243765	
MLE Skewness	159.9195	
MLE Median	0.029165	
MLE 80% Quantile	0.136938	
MLE 90% Quantile	0.306383	

Appendix P, Attachment 3
ProUCL Output - Trichloroethene
Former Lever Brothers Property (Subsurface Soil)

MLE 95% Quantile	0.592128	
MLE 99% Quantile	2.059299	
MVU Estimate of Median	0.02772	
MVU Estimate of Mean	0.138046	
MVU Estimate of Standard Deviation	0.469873	
MVU Estimate of SE of Mean	0.058981	
95% H-UCL	0.487948	
95% Chebyshev (MVUE) UCL	0.395137	
97.5% Chebyshev (MVUE) UCL	0.50638	
99% Chebyshev (MVUE) UCL	0.724896	
Non-parametric Statisitics		
95% CLT UCL	0.265027	
95% Adjusted-CLT UCL	0.335075	
95% Modified-t UCL	0.279541	
95% Jackknife UCL	0.268615	
95% Chebyshev (Mean, Sd) UCL	0.463624	
97.5% Chebyshev (Mean, Sd) UCL	0.601636	
99% Chebyshev (Mean, Sd) UCL	0.872736	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.264251	
95% Bootstrap-t UCL	0.624785	
95% Hall's Bootstrap UCL	0.647138	
95% Percentile Bootstrap UCL	0.288136	
95% BCA Bootstrap UCL	0.369167	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	0.872736	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 1,1'-Biphenyl

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	1,1'-Biphenyl	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	12	
Minimum	5.40E-01	
Maximum	170	
Mean	27.94222	
Standard Deviation	48.15846	
Variance	2319.237	
Coefficient of Variation	1.723501	
Skewness	1.687425	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.619792	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	43.75006	
Gamma Statistics		
k hat	0.376944	
k star (bias corrected)	0.359752	
Theta hat	74.12841	
Theta star	77.67074	
nu hat	20.35495	
nu star	19.42662	
5% Approximate Chi Square Value	10.4281	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	10.00679	
Anderson-Darling Test Statistic	4.013207	
Anderson-Darling 5% Critical Value	0.835496	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.430037	
Kolmogrov-Smirnov 5% Critical Value	0.18085	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	52.05385	
95% Adjusted Gamma UCL	54.24549	
Lognormal Statistics		
Minimum of log data	-0.61619	
Maximum of log data	5.135798	
Mean of log data	1.567589	
Standard Deviation of log data	1.874433	
Variance of log data	3.513498	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.752987	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	27.7806	
MLE Standard Deviation	158.5332	
MLE Coefficient of Variation	5.706615	
MLE Skewness	202.9584	
MLE Median	4.795074	
MLE 80% Quantile	23.37074	
MLE 90% Quantile	53.31592	

Appendix P, Attachment 3
ProUCL Output - 1,1'-Biphenyl
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	104.6928	
MLE 99% Quantile	375.2225	
MVU Estimate of Median	4.492333	
MVU Estimate of Mean	23.80551	
MVU Estimate of Standard Deviation	79.96912	
MVU Estimate of SE of Mean	11.18845	
95% H-UCL	110.0186	
95% Chebyshev (MVUE) UCL	72.57484	
97.5% Chebyshev (MVUE) UCL	93.67737	
99% Chebyshev (MVUE) UCL	135.1292	
Non-parametric Statisitics		
95% CLT UCL	43.18689	
95% Adjusted-CLT UCL	46.40287	
95% Modified-t UCL	44.25169	
95% Jackknife UCL	43.75006	
95% Chebyshev (Mean, Sd) UCL	68.34093	
97.5% Chebyshev (Mean, Sd) UCL	85.82149	
99% Chebyshev (Mean, Sd) UCL	120.1587	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	42.84165	
95% Bootstrap-t UCL	49.7753	
95% Hall's Bootstrap UCL	44.39898	
95% Percentile Bootstrap UCL	42.84815	
95% BCA Bootstrap UCL	47.81037	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	120.1587	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 2,4-Dimethylphenol

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	2,4-Dimethylphenol	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	13	
Minimum	2.5	
Maximum	600	
Mean	62.23333	
Standard Deviation	160.688	
Variance	25820.63	
Coefficient of Variation	2.582025	
Skewness	2.7294	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.410896	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	114.9786	
Gamma Statistics		
k hat	0.347089	
k star (bias corrected)	0.333215	
Theta hat	179.3007	
Theta star	186.7663	
nu hat	18.74281	
nu star	17.99361	
5% Approximate Chi Square Value	9.384873	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	8.987746	
Anderson-Darling Test Statistic	5.752553	
Anderson-Darling 5% Critical Value	0.842315	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.408644	
Kolmogrov-Smirnov 5% Critical Value	0.181568	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	119.3199	
95% Adjusted Gamma UCL	124.5921	
Lognormal Statistics		
Minimum of log data	0.916291	
Maximum of log data	6.39693	
Mean of log data	2.190892	
Standard Deviation of log data	1.583104	
Variance of log data	2.506218	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.67164	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	31.31199	
MLE Standard Deviation	105.0632	
MLE Coefficient of Variation	3.355367	
MLE Skewness	4.78E+01	
MLE Median	8.943188	
MLE 80% Quantile	34.07674	
MLE 90% Quantile	68.38686	

Appendix P, Attachment 3
ProUCL Output - 2,4-Dimethylphenol
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	120.9163	
MLE 99% Quantile	355.3816	
MVU Estimate of Median	8.536946	
MVU Estimate of Mean	28.51629	
MVU Estimate of Standard Deviation	69.16316	
MVU Estimate of SE of Mean	10.95239	
95% H-UCL	87.08035	
95% Chebyshev (MVUE) UCL	76.25665	
97.5% Chebyshev (MVUE) UCL	96.91394	
99% Chebyshev (MVUE) UCL	137.4912	
Non-parametric Statisitics		
95% CLT UCL	113.0995	
95% Adjusted-CLT UCL	130.4562	
95% Modified-t UCL	117.6859	
95% Jackknife UCL	114.9786	
95% Chebyshev (Mean, Sd) UCL	197.0297	
97.5% Chebyshev (Mean, Sd) UCL	255.3563	
99% Chebyshev (Mean, Sd) UCL	369.9274	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	113.4282	
95% Bootstrap-t UCL	139.9461	
95% Hall's Bootstrap UCL	97.39256	
95% Percentile Bootstrap UCL	115.563	
95% BCA Bootstrap UCL	123.4481	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	369.9274	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 2-Methylnaphthalene

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	15	
Minimum	1	
Maximum	1300	
Mean	241.3074	
Standard Deviation	430.0388	
Variance	184933.4	
Coefficient of Variation	1.78212	
Skewness	1.531968	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.607522	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	382.4661	
Gamma Statistics		
k hat	0.24005	
k star (bias corrected)	0.238069	
Theta hat	1005.238	
Theta star	1013.603	
nu hat	12.9627	
nu star	12.85573	
5% Approximate Chi Square Value	5.794767	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	5.493022	
Anderson-Darling Test Statistic	4.008517	
Anderson-Darling 5% Critical Value	0.878621	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.357198	
Kolmogrov-Smirnov 5% Critical Value	0.184876	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	535.3421	
95% Adjusted Gamma UCL	564.7497	
Lognormal Statistics		
Minimum of log data	0	
Maximum of log data	7.17012	
Mean of log data	2.507747	
Standard Deviation of log data	2.676265	
Variance of log data	7.162396	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.735342	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	440.9558	
MLE Standard Deviation	15831.46	
MLE Coefficient of Variation	35.90261	
MLE Skewness	46386.09	
MLE Median	12.27724	
MLE 80% Quantile	117.8239	
MLE 90% Quantile	382.5072	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	1002.451	
MLE 99% Quantile	6202.698	
MVU Estimate of Median	10.74536	
MVU Estimate of Mean	277.3158	
MVU Estimate of Standard Deviation	2197.657	
MVU Estimate of SE of Mean	190.5579	
95% H-UCL	6246.728	
95% Chebyshev (MVUE) UCL	1107.938	
97.5% Chebyshev (MVUE) UCL	1467.349	
99% Chebyshev (MVUE) UCL	2173.343	
Non-parametric Statisitics		
95% CLT UCL	377.4372	
95% Adjusted-CLT UCL	403.5091	
95% Modified-t UCL	386.5328	
95% Jackknife UCL	382.4661	
95% Chebyshev (Mean, Sd) UCL	602.0543	
97.5% Chebyshev (Mean, Sd) UCL	758.1498	
99% Chebyshev (Mean, Sd) UCL	1064.769	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	374.2889	
95% Bootstrap-t UCL	424.2162	
95% Hall's Bootstrap UCL	384.4663	
95% Percentile Bootstrap UCL	381.9667	
95% BCA Bootstrap UCL	403.0259	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1064.769	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 4-Methylphenol

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	4-Methylphenol	
Raw Statistics		
Number of Observations	19	
Number of Missing Data	0	
Number of Valid Observations	19	
Number of Distinct Observations	8	
Minimum	2.5	
Maximum	120	
Mean	25.02632	
Standard Deviation	38.14063	
Variance	1454.708	
Coefficient of Variation	1.524021	
Skewness	1.466165	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.647877	
Shapiro-Wilk 5% Critical Value	0.901	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	40.19948	
Gamma Statistics		
k hat	0.527308	
k star (bias corrected)	0.479136	
Theta hat	47.46055	
Theta star	52.23214	
nu hat	20.03769	
nu star	18.20718	
5% Approximate Chi Square Value	9.539372	
Adjusted Level of Significance	0.03687	
Adjusted Chi Square Value	8.993484	
Anderson-Darling Test Statistic	2.805675	
Anderson-Darling 5% Critical Value	0.800176	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.344567	
Kolmogrov-Smirnov 5% Critical Value	0.209564	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	47.76611	
95% Adjusted Gamma UCL	50.66542	
Lognormal Statistics		
Minimum of log data	0.916291	
Maximum of log data	4.787492	
Mean of log data	2.025186	
Standard Deviation of log data	1.533387	
Variance of log data	2.351276	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.706478	
Shapiro-Wilk 5% Critical Value	0.901	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	24.55275	
MLE Standard Deviation	75.67251	
MLE Coefficient of Variation	3.082038	
MLE Skewness	38.52225	
MLE Median	7.577521	
MLE 80% Quantile	27.6852	
MLE 90% Quantile	54.35782	

Appendix P, Attachment 3
ProUCL Output - 4-Methylphenol
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	94.4063	
MLE 99% Quantile	268.2299	
MVU Estimate of Median	7.121494	
MVU Estimate of Mean	21.84689	
MVU Estimate of Standard Deviation	46.18708	
MVU Estimate of SE of Mean	9.144545	
95% H-UCL	85.97133	
95% Chebyshev (MVUE) UCL	61.70704	
97.5% Chebyshev (MVUE) UCL	78.95456	
99% Chebyshev (MVUE) UCL	112.834	
Non-parametric Statisitics		
95% CLT UCL	39.41888	
95% Adjusted-CLT UCL	42.56372	
95% Modified-t UCL	40.69001	
95% Jackknife UCL	40.19948	
95% Chebyshev (Mean, Sd) UCL	63.16695	
97.5% Chebyshev (Mean, Sd) UCL	79.67043	
99% Chebyshev (Mean, Sd) UCL	112.0883	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	39.16074	
95% Bootstrap-t UCL	47.96702	
95% Hall's Bootstrap UCL	38.69389	
95% Percentile Bootstrap UCL	40.39474	
95% BCA Bootstrap UCL	42.71053	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	112.0883	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Acenaphthene

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Acenaphthene	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	18	
Minimum	0.1	
Maximum	280	
Mean	65.15852	
Standard Deviation	94.41455	
Variance	8.91E+03	
Coefficient of Variation	1.448998	
Skewness	1.130529	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.690763	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	96.14974	
Gamma Statistics		
k hat	0.356157	
k star (bias corrected)	0.341276	
Theta hat	182.9487	
Theta star	190.9263	
nu hat	19.2325	
nu star	18.42889	
5% Approximate Chi Square Value	9.700131	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	9.295561	
Anderson-Darling Test Statistic	1.560685	
Anderson-Darling 5% Critical Value	0.840244	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.209177	
Kolmogrov-Smirnov 5% Critical Value	0.181349	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	123.7921	
95% Adjusted Gamma UCL	129.1798	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	5.63479	
Mean of log data	2.294142	
Standard Deviation of log data	2.439165	
Variance of log data	5.949524	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.891568	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	194.2031	
MLE Standard Deviation	3798.499	
MLE Coefficient of Variation	19.55942	
MLE Skewness	7541.538	
MLE Median	9.915929	
MLE 80% Quantile	77.88525	
MLE 90% Quantile	227.8002	

Appendix P, Attachment 3

ProUCL Output - Acenaphthene

Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	548.1606	
MLE 99% Quantile	2886.036	
MVU Estimate of Median	8.877573	
MVU Estimate of Mean	137.2624	
MVU Estimate of Standard Deviation	848.0521	
MVU Estimate of SE of Mean	86.20032	
95% H-UCL	1801.952	
95% Chebyshev (MVUE) UCL	513.0009	
97.5% Chebyshev (MVUE) UCL	675.5832	
99% Chebyshev (MVUE) UCL	994.9447	
Non-parametric Statisitics		
95% CLT UCL	95.04565	
95% Adjusted-CLT UCL	99.26979	
95% Modified-t UCL	96.80862	
95% Jackknife UCL	96.14974	
95% Chebyshev (Mean, Sd) UCL	144.3601	
97.5% Chebyshev (Mean, Sd) UCL	178.6307	
99% Chebyshev (Mean, Sd) UCL	245.9486	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	93.48801	
95% Bootstrap-t UCL	99.88265	
95% Hall's Bootstrap UCL	96.35683	
95% Percentile Bootstrap UCL	94.65852	
95% BCA Bootstrap UCL	98.40296	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	245.9486	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Arsenic

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	29	
Number of Missing Data	0	
Number of Valid Observations	29	
Number of Distinct Observations	29	
Minimum	1.00E+00	
Maximum	2.32E+04	
Mean	5.51E+03	
Standard Deviation	8.98E+03	
Variance	80689946	
Coefficient of Variation	1.629082	
Skewness	1.133994	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.614474	
Shapiro-Wilk 5% Critical Value	0.926	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	8.35E+03	
Gamma Statistics		
k hat	0.200904	
k star (bias corrected)	0.20311	
Theta hat	2.74E+04	
Theta star	2.71E+04	
nu hat	11.65244	
nu star	11.78035	
5% Approximate Chi Square Value	5.081721	
Adjusted Level of Significance	0.0407	
Adjusted Chi Square Value	4.820196	
Anderson-Darling Test Statistic	2.679581	
Anderson-Darling 5% Critical Value	0.897206	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.295338	
Kolmogrov-Smirnov 5% Critical Value	0.180129	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.28E+04	
95% Adjusted Gamma UCL	1.35E+04	
Lognormal Statistics		
Minimum of log data	0	
Maximum of log data	10.05191	
Mean of log data	4.954581	
Standard Deviation of log data	3.476464	
Variance of log data	12.0858	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.866286	
Shapiro-Wilk 5% Critical Value	0.926	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	5.97E+04	
MLE Standard Deviation	2.52E+07	
MLE Coefficient of Variation	4.21E+02	
MLE Skewness	7.47E+07	
MLE Median	1.42E+02	
MLE 80% Quantile	2.68E+03	
MLE 90% Quantile	1.24E+04	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	4.32E+04	
MLE 99% Quantile	4.61E+05	
MVU Estimate of Median	1.15E+02	
MVU Estimate of Mean	2.20E+04	
MVU Estimate of Standard Deviation	4.27E+05	
MVU Estimate of SE of Mean	1.84E+04	
95% H-UCL	3708838	
95% Chebyshev (MVUE) UCL	1.02E+05	
97.5% Chebyshev (MVUE) UCL	1.37E+05	
99% Chebyshev (MVUE) UCL	2.05E+05	
Non-parametric Statisitics		
95% CLT UCL	8.26E+03	
95% Adjusted-CLT UCL	8633.03	
95% Modified-t UCL	8410.124	
95% Jackknife UCL	8.35E+03	
95% Chebyshev (Mean, Sd) UCL	1.28E+04	
97.5% Chebyshev (Mean, Sd) UCL	1.59E+04	
99% Chebyshev (Mean, Sd) UCL	2.21E+04	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	8.20E+03	
95% Bootstrap-t UCL	9036.537	
95% Hall's Bootstrap UCL	8258.036	
95% Percentile Bootstrap UCL	8.24E+03	
95% BCA Bootstrap UCL	8.62E+03	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	8.26E+03	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Benzene

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Benzene	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	16	
Minimum	0.1	
Maximum	2.80E+03	
Mean	3.92E+02	
Standard Deviation	8.34E+02	
Variance	695483.6	
Coefficient of Variation	2.126335	
Skewness	2.140841	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.531439	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	6.66E+02	
Gamma Statistics		
k hat	0.181048	
k star (bias corrected)	0.185623	
Theta hat	2166.294	
Theta star	2112.904	
nu hat	9.776603	
nu star	10.02365	
5% Approximate Chi Square Value	3.955703	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	3.714311	
Anderson-Darling Test Statistic	2.246277	
Anderson-Darling 5% Critical Value	0.904785	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.280749	
Kolmogrov-Smirnov 5% Critical Value	0.187014	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	993.8339	
95% Adjusted Gamma UCL	1058.423	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	7.937375	
Mean of log data	1.844054	
Standard Deviation of log data	3.681515	
Variance of log data	13.55355	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.834103	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	5545.994	
MLE Standard Deviation	4865148	
MLE Coefficient of Variation	877.2363	
MLE Skewness	6.75E+08	
MLE Median	6.322117	
MLE 80% Quantile	141.8733	
MLE 90% Quantile	716.8031	

Appendix P, Attachment 3
ProUCL Output - Benzene
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	2697.678	
MLE 99% Quantile	33099.01	
MVU Estimate of Median	4.907481	
MVU Estimate of Mean	1574.521	
MVU Estimate of Standard Deviation	34080.03	
MVU Estimate of SE of Mean	1372.395	
95% H-UCL	729419.5	
95% Chebyshev (MVUE) UCL	7556.651	
97.5% Chebyshev (MVUE) UCL	10145.12	
99% Chebyshev (MVUE) UCL	15229.68	
Non-parametric Statisitics		
95% CLT UCL	6.56E+02	
95% Adjusted-CLT UCL	726.8498	
95% Modified-t UCL	676.9677	
95% Jackknife UCL	6.66E+02	
95% Chebyshev (Mean, Sd) UCL	1.09E+03	
97.5% Chebyshev (Mean, Sd) UCL	1.39E+03	
99% Chebyshev (Mean, Sd) UCL	1.99E+03	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	6.49E+02	
95% Bootstrap-t UCL	813.7094	
95% Hall's Bootstrap UCL	613.4825	
95% Percentile Bootstrap UCL	6.65E+02	
95% BCA Bootstrap UCL	7.35E+02	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	6.13E+02	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Benzo(a)anthracene

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	7	
Minimum	0.1	
Maximum	24	
Mean	2.596	
Standard Deviation	4.414653	
Variance	19.48916	
Coefficient of Variation	1.70056	
Skewness	4.676619	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.368331	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.045093	
Gamma Statistics		
k hat	0.718591	
k star (bias corrected)	0.663439	
Theta hat	3.612627	
Theta star	3.912947	
nu hat	38.80389	
nu star	35.82568	
5% Approximate Chi Square Value	23.12617	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	22.47325	
Anderson-Darling Test Statistic	3.686542	
Anderson-Darling 5% Critical Value	0.786877	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.346972	
Kolmogrov-Smirnov 5% Critical Value	0.175337	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	4.021568	
95% Adjusted Gamma UCL	4.138407	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	3.178054	
Mean of log data	0.116013	
Standard Deviation of log data	1.520644	
Variance of log data	2.312357	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.709554	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	3.568666	
MLE Standard Deviation	10.76425	
MLE Coefficient of Variation	3.016322	
MLE Skewness	36.49206	
MLE Median	1.123011	
MLE 80% Quantile	4.059084	
MLE 90% Quantile	7.925143	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	13.70105	
MLE 99% Quantile	38.59144	
MVU Estimate of Median	1.075866	
MVU Estimate of Mean	3.283722	
MVU Estimate of Standard Deviation	7.415509	
MVU Estimate of SE of Mean	1.200918	
95% H-UCL	9.270608	
95% Chebyshev (MVUE) UCL	8.518403	
97.5% Chebyshev (MVUE) UCL	10.78345	
99% Chebyshev (MVUE) UCL	15.23271	
Non-parametric Statisitics		
95% CLT UCL	3.993468	
95% Adjusted-CLT UCL	4.810512	
95% Modified-t UCL	4.172536	
95% Jackknife UCL	4.045093	
95% Chebyshev (Mean, Sd) UCL	6.299322	
97.5% Chebyshev (Mean, Sd) UCL	7.901752	
99% Chebyshev (Mean, Sd) UCL	11.04942	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	3.987668	
95% Bootstrap-t UCL	6.544285	
95% Hall's Bootstrap UCL	9.868225	
95% Percentile Bootstrap UCL	4.192815	
95% BCA Bootstrap UCL	5.073222	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	11.04942	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Carbazole

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	15	
Minimum	1	
Maximum	229	
Mean	36.74815	
Standard Deviation	62.04738	
Variance	3849.877	
Coefficient of Variation	1.688449	
Skewness	1.846398	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.64202	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	57.11497	
Gamma Statistics		
k hat	0.408369	
k star (bias corrected)	0.387686	
Theta hat	89.98759	
Theta star	94.78841	
nu hat	22.05193	
nu star	20.93505	
5% Approximate Chi Square Value	11.54177	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	11.0959	
Anderson-Darling Test Statistic	2.740701	
Anderson-Darling 5% Critical Value	0.828319	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.296645	
Kolmogrov-Smirnov 5% Critical Value	0.180094	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	66.65566	
95% Adjusted Gamma UCL	69.33411	
Lognormal Statistics		
Minimum of log data	0	
Maximum of log data	5.433722	
Mean of log data	1.998069	
Standard Deviation of log data	1.845669	
Variance of log data	3.406494	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.829229	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	40.50057	
MLE Standard Deviation	218.7006	
MLE Coefficient of Variation	5.399938	
MLE Skewness	173.6584	
MLE Median	7.3748	
MLE 80% Quantile	35.08098	
MLE 90% Quantile	79.02416	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	153.5758	
MLE 99% Quantile	539.7441	
MVU Estimate of Median	6.922955	
MVU Estimate of Mean	34.95027	
MVU Estimate of Standard Deviation	113.7409	
MVU Estimate of SE of Mean	16.13121	
95% H-UCL	154.4923	
95% Chebyshev (MVUE) UCL	105.2646	
97.5% Chebyshev (MVUE) UCL	135.6897	
99% Chebyshev (MVUE) UCL	195.4538	
Non-parametric Statisitics		
95% CLT UCL	56.38938	
95% Adjusted-CLT UCL	60.92322	
95% Modified-t UCL	57.82216	
95% Jackknife UCL	57.11497	
95% Chebyshev (Mean, Sd) UCL	88.79786	
97.5% Chebyshev (Mean, Sd) UCL	111.3198	
99% Chebyshev (Mean, Sd) UCL	155.5598	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	56.48117	
95% Bootstrap-t UCL	65.58986	
95% Hall's Bootstrap UCL	59.42015	
95% Percentile Bootstrap UCL	56.96667	
95% BCA Bootstrap UCL	59.97407	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	155.5598	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Chloroethane

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Chloroethane	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	10	
Minimum	0.1	
Maximum	25	
Mean	3.983333	
Standard Deviation	7.060957	
Variance	49.85712	
Coefficient of Variation	1.772625	
Skewness	2.266077	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.595964	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	6.301066	
Gamma Statistics		
k hat	0.462118	
k star (bias corrected)	0.435463	
Theta hat	8.619724	
Theta star	9.147346	
nu hat	24.95439	
nu star	23.51502	
5% Approximate Chi Square Value	13.47875	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	12.99279	
Anderson-Darling Test Statistic	2.108309	
Anderson-Darling 5% Critical Value	0.816042	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.295123	
Kolmogrov-Smirnov 5% Critical Value	0.178801	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	6.949321	
95% Adjusted Gamma UCL	7.209242	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	3.218876	
Mean of log data	-0.00942	
Standard Deviation of log data	1.691566	
Variance of log data	2.861394	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.883011	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	4.14239	
MLE Standard Deviation	16.81927	
MLE Coefficient of Variation	4.060281	
MLE Skewness	79.11816	
MLE Median	0.99062	
MLE 80% Quantile	4.136909	
MLE 90% Quantile	8.707961	

Appendix P, Attachment 3
ProUCL Output - Chloroethane
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	16.0098	
MLE 99% Quantile	50.66105	
MVU Estimate of Median	0.9394	
MVU Estimate of Mean	3.697476	
MVU Estimate of Standard Deviation	10.13666	
MVU Estimate of SE of Mean	1.538468	
95% H-UCL	13.05143	
95% Chebyshev (MVUE) UCL	10.4035	
97.5% Chebyshev (MVUE) UCL	13.3052	
99% Chebyshev (MVUE) UCL	19.00504	
Non-parametric Statisitics		
95% CLT UCL	6.218495	
95% Adjusted-CLT UCL	6.851715	
95% Modified-t UCL	6.399836	
95% Jackknife UCL	6.301066	
95% Chebyshev (Mean, Sd) UCL	9.906562	
97.5% Chebyshev (Mean, Sd) UCL	12.46955	
99% Chebyshev (Mean, Sd) UCL	17.50404	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	6.222768	
95% Bootstrap-t UCL	8.009418	
95% Hall's Bootstrap UCL	7.357552	
95% Percentile Bootstrap UCL	6.385185	
95% BCA Bootstrap UCL	6.827778	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	17.50404	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzofuran

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	16	
Minimum	1.3	
Maximum	150	
Mean	29.43333	
Standard Deviation	44.4046	
Variance	1971.768	
Coefficient of Variation	1.50865	
Skewness	1.543919	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.673361	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	44.00898	
Gamma Statistics		
k hat	0.508206	
k star (bias corrected)	0.47643	
Theta hat	57.91617	
Theta star	61.77895	
nu hat	27.44311	
nu star	25.72721	
5% Approximate Chi Square Value	15.16766	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	14.649	
Anderson-Darling Test Statistic	2.809779	
Anderson-Darling 5% Critical Value	0.80662	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.284695	
Kolmogrov-Smirnov 5% Critical Value	0.177794	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	49.92447	
95% Adjusted Gamma UCL	51.69209	
Lognormal Statistics		
Minimum of log data	0.262364	
Maximum of log data	5.010635	
Mean of log data	2.135423	
Standard Deviation of log data	1.610653	
Variance of log data	2.594203	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.80311	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	30.95468	
MLE Standard Deviation	108.9408	
MLE Coefficient of Variation	3.519363	
MLE Skewness	54.14862	
MLE Median	8.460622	
MLE 80% Quantile	32.99726	
MLE 90% Quantile	67.02809	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	119.695	
MLE 99% Quantile	358.4544	
MVU Estimate of Median	8.063108	
MVU Estimate of Mean	28.05492	
MVU Estimate of Standard Deviation	70.20646	
MVU Estimate of SE of Mean	11.00297	
95% H-UCL	88.79002	
95% Chebyshev (MVUE) UCL	76.01577	
97.5% Chebyshev (MVUE) UCL	96.76847	
99% Chebyshev (MVUE) UCL	137.5331	
Non-parametric Statisitics		
95% CLT UCL	43.48971	
95% Adjusted-CLT UCL	46.20283	
95% Modified-t UCL	44.43217	
95% Jackknife UCL	44.00898	
95% Chebyshev (Mean, Sd) UCL	66.68304	
97.5% Chebyshev (Mean, Sd) UCL	82.80102	
99% Chebyshev (Mean, Sd) UCL	114.4617	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	43.37211	
95% Bootstrap-t UCL	47.51707	
95% Hall's Bootstrap UCL	44.60083	
95% Percentile Bootstrap UCL	43.32963	
95% BCA Bootstrap UCL	46.54444	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	114.4617	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Ethylbenzene

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Ethylbenzene	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	18	
Minimum	0.25	
Maximum	550	
Mean	119.7056	
Standard Deviation	194.4821	
Variance	37823.29	
Coefficient of Variation	1.624671	
Skewness	1.415458	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.649007	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	183.5436	
Gamma Statistics		
k hat	0.23936	
k star (bias corrected)	0.237456	
Theta hat	500.1071	
Theta star	504.1175	
nu hat	12.92543	
nu star	12.8226	
5% Approximate Chi Square Value	5.772565	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	5.471488	
Anderson-Darling Test Statistic	2.176788	
Anderson-Darling 5% Critical Value	0.878915	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.253908	
Kolmogrov-Smirnov 5% Critical Value	0.184901	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	265.9021	
95% Adjusted Gamma UCL	280.5337	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	6.309918	
Mean of log data	1.796743	
Standard Deviation of log data	3.122412	
Variance of log data	9.749459	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.809399	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	789.5572	
MLE Standard Deviation	103380.6	
MLE Coefficient of Variation	130.9349	
MLE Skewness	2245135	
MLE Median	6.029974	
MLE 80% Quantile	84.36741	
MLE 90% Quantile	333.2999	

Appendix P, Attachment 3
ProUCL Output - Ethylbenzene
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	1025.68	
MLE 99% Quantile	8599.626	
MVU Estimate of Median	5.027958	
MVU Estimate of Mean	372.0831	
MVU Estimate of Standard Deviation	4655.616	
MVU Estimate of SE of Mean	291.237	
95% H-UCL	27578.5	
95% Chebyshev (MVUE) UCL	1641.556	
97.5% Chebyshev (MVUE) UCL	2190.858	
99% Chebyshev (MVUE) UCL	3269.855	
Non-parametric Statisitics		
95% CLT UCL	181.2693	
95% Adjusted-CLT UCL	192.1634	
95% Modified-t UCL	185.2428	
95% Jackknife UCL	183.5436	
95% Chebyshev (Mean, Sd) UCL	282.8508	
97.5% Chebyshev (Mean, Sd) UCL	353.4439	
99% Chebyshev (Mean, Sd) UCL	492.1104	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	178.8775	
95% Bootstrap-t UCL	198.7908	
95% Hall's Bootstrap UCL	180.8505	
95% Percentile Bootstrap UCL	185.75	
95% BCA Bootstrap UCL	191.4926	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	180.8505	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Fluorene

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Fluorene	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	17	
Minimum	0.1	
Maximum	110	
Mean	25.82704	
Standard Deviation	37.21325	
Variance	1384.826	
Coefficient of Variation	1.440864	
Skewness	1.301033	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.679183	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	38.04215	
Gamma Statistics		
k hat	0.451221	
k star (bias corrected)	0.425777	
Theta hat	57.23813	
Theta star	60.65867	
nu hat	24.36592	
nu star	22.99193	
5% Approximate Chi Square Value	13.08301	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	12.605	
Anderson-Darling Test Statistic	1.506015	
Anderson-Darling 5% Critical Value	0.818531	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.219772	
Kolmogrov-Smirnov 5% Critical Value	0.179063	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	45.38814	
95% Adjusted Gamma UCL	47.10936	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	4.70048	
Mean of log data	1.820888	
Standard Deviation of log data	2.048229	
Variance of log data	4.195242	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.884622	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	50.32534	
MLE Standard Deviation	406.8885	
MLE Coefficient of Variation	8.085161	
MLE Skewness	552.781	
MLE Median	6.177339	
MLE 80% Quantile	34.8705	
MLE 90% Quantile	85.87235	

Appendix P, Attachment 3
ProUCL Output - Fluorene
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	179.5088	
MLE 99% Quantile	724.2006	
MVU Estimate of Median	5.714351	
MVU Estimate of Mean	41.11284	
MVU Estimate of Standard Deviation	167.0279	
MVU Estimate of SE of Mean	21.39861	
95% H-UCL	253.0396	
95% Chebyshev (MVUE) UCL	134.3872	
97.5% Chebyshev (MVUE) UCL	174.7471	
99% Chebyshev (MVUE) UCL	254.0263	
Non-parametric Statisitics		
95% CLT UCL	37.60697	
95% Adjusted-CLT UCL	39.523	
95% Modified-t UCL	38.34101	
95% Jackknife UCL	38.04215	
95% Chebyshev (Mean, Sd) UCL	57.04413	
97.5% Chebyshev (Mean, Sd) UCL	70.55179	
99% Chebyshev (Mean, Sd) UCL	97.08498	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	37.24022	
95% Bootstrap-t UCL	41.65671	
95% Hall's Bootstrap UCL	37.80362	
95% Percentile Bootstrap UCL	37.45815	
95% BCA Bootstrap UCL	39.15667	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	97.08498	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Naphthalene

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	18	
Minimum	0.1	
Maximum	12000	
Mean	2120.353	
Standard Deviation	3907.16	
Variance	15265897	
Coefficient of Variation	1.842693	
Skewness	1.722393	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.599093	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	3402.863	
Gamma Statistics		
k hat	0.16962	
k star (bias corrected)	0.175464	
Theta hat	12500.62	
Theta star	12084.23	
nu hat	9.159468	
nu star	9.475082	
5% Approximate Chi Square Value	3.615617	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	3.386775	
Anderson-Darling Test Statistic	2.71934	
Anderson-Darling 5% Critical Value	0.910269	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.294909	
Kolmogrov-Smirnov 5% Critical Value	0.187427	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	5556.594	
95% Adjusted Gamma UCL	5932.05	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	9.392662	
Mean of log data	3.209754	
Standard Deviation of log data	3.91983	
Variance of log data	15.36507	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.846741	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	53760.14	
MLE Standard Deviation	1.17E+08	
MLE Coefficient of Variation	2170.111	
MLE Skewness	1.02E+10	
MLE Median	24.77299	
MLE 80% Quantile	679.9439	
MLE 90% Quantile	3815.151	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	15644.49	
MLE 99% Quantile	225771.4	
MVU Estimate of Median	18.58302	
MVU Estimate of Mean	11644.65	
MVU Estimate of Standard Deviation	315556.5	
MVU Estimate of SE of Mean	10477.02	
95% H-UCL	13294042	
95% Chebyshev (MVUE) UCL	57312.93	
97.5% Chebyshev (MVUE) UCL	77073.63	
99% Chebyshev (MVUE) UCL	115889.7	
Non-parametric Statisitics		
95% CLT UCL	3357.173	
95% Adjusted-CLT UCL	3623.497	
95% Modified-t UCL	3444.404	
95% Jackknife UCL	3402.863	
95% Chebyshev (Mean, Sd) UCL	5397.954	
97.5% Chebyshev (Mean, Sd) UCL	6816.174	
99% Chebyshev (Mean, Sd) UCL	9601.994	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	3313.779	
95% Bootstrap-t UCL	3928.68	
95% Hall's Bootstrap UCL	3294.07	
95% Percentile Bootstrap UCL	3378.774	
95% BCA Bootstrap UCL	3600.494	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	3294.07	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Toluene

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Toluene	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	16	
Minimum	0.1	
Maximum	2000	
Mean	322.6148	
Standard Deviation	625.5489	
Variance	391311.4	
Coefficient of Variation	1.938996	
Skewness	1.987815	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.566812	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	527.9489	
Gamma Statistics		
k hat	0.195035	
k star (bias corrected)	0.198055	
Theta hat	1654.142	
Theta star	1628.912	
nu hat	10.53187	
nu star	10.69499	
5% Approximate Chi Square Value	4.37977	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	4.123433	
Anderson-Darling Test Statistic	2.176961	
Anderson-Darling 5% Critical Value	0.898073	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.294656	
Kolmogrov-Smirnov 5% Critical Value	0.186509	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	787.7954	
95% Adjusted Gamma UCL	836.7695	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	7.600902	
Mean of log data	1.98839	
Standard Deviation of log data	3.688048	
Variance of log data	13.6017	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.805987	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	6563.228	
MLE Standard Deviation	5897771	
MLE Coefficient of Variation	898.6084	
MLE Skewness	7.26E+08	
MLE Median	7.303764	
MLE 80% Quantile	164.8095	
MLE 90% Quantile	835.083	

Appendix P, Attachment 3
ProUCL Output - Toluene
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	3150.222	
MLE 99% Quantile	38823.8	
MVU Estimate of Median	5.664329	
MVU Estimate of Mean	1850.386	
MVU Estimate of Standard Deviation	40301.43	
MVU Estimate of SE of Mean	1614.407	
95% H-UCL	877810.3	
95% Chebyshev (MVUE) UCL	8887.422	
97.5% Chebyshev (MVUE) UCL	11932.35	
99% Chebyshev (MVUE) UCL	17913.53	
Non-parametric Statisitics		
95% CLT UCL	520.6337	
95% Adjusted-CLT UCL	569.8438	
95% Modified-t UCL	535.6247	
95% Jackknife UCL	527.9489	
95% Chebyshev (Mean, Sd) UCL	847.3693	
97.5% Chebyshev (Mean, Sd) UCL	1074.431	
99% Chebyshev (Mean, Sd) UCL	1520.45	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	513.5778	
95% Bootstrap-t UCL	639.5905	
95% Hall's Bootstrap UCL	493.5501	
95% Percentile Bootstrap UCL	526.8833	
95% BCA Bootstrap UCL	569.2259	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	493.5501	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Trichloroethene

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Trichloroethene	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	9	
Minimum	2.50E-01	
Maximum	25	
Mean	3.780741	
Standard Deviation	7.0785	
Variance	50.10517	
Coefficient of Variation	1.872252	
Skewness	2.339546	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.557182	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	6.104232	
Gamma Statistics		
k hat	0.476089	
k star (bias corrected)	0.447882	
Theta hat	7.941242	
Theta star	8.441379	
nu hat	25.70882	
nu star	24.18562	
5% Approximate Chi Square Value	13.98818	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	13.49215	
Anderson-Darling Test Statistic	2.86465	
Anderson-Darling 5% Critical Value	0.812851	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.258916	
Kolmogrov-Smirnov 5% Critical Value	0.178465	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	6.536917	
95% Adjusted Gamma UCL	6.77724	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	3.218876	
Mean of log data	-0.01448	
Standard Deviation of log data	1.560052	
Variance of log data	2.433764	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.815084	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	3.328106	
MLE Standard Deviation	10.73371	
MLE Coefficient of Variation	3.225169	
MLE Skewness	43.2228	
MLE Median	0.985626	
MLE 80% Quantile	3.683141	
MLE 90% Quantile	7.316917	

Appendix P, Attachment 3
ProUCL Output - Trichloroethene
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	12.83028	
MLE 99% Quantile	37.12178	
MVU Estimate of Median	0.942122	
MVU Estimate of Mean	3.042826	
MVU Estimate of Standard Deviation	7.188688	
MVU Estimate of SE of Mean	1.14803	
95% H-UCL	9.022877	
95% Chebyshev (MVUE) UCL	8.046974	
97.5% Chebyshev (MVUE) UCL	10.21227	
99% Chebyshev (MVUE) UCL	14.46558	
Non-parametric Statisitics		
95% CLT UCL	6.021456	
95% Adjusted-CLT UCL	6.67683	
95% Modified-t UCL	6.206457	
95% Jackknife UCL	6.104232	
95% Chebyshev (Mean, Sd) UCL	9.718686	
97.5% Chebyshev (Mean, Sd) UCL	12.28804	
99% Chebyshev (Mean, Sd) UCL	17.33504	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	5.982162	
95% Bootstrap-t UCL	7.998442	
95% Hall's Bootstrap UCL	6.900232	
95% Percentile Bootstrap UCL	6.099259	
95% BCA Bootstrap UCL	6.852222	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	17.33504	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Xylene (Total)

Former Lever Brothers Property (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_new_LeverBros_GWshallow_030907.xls	
Variable:	Xylene (Total)	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	19	
Minimum	0.25	
Maximum	1600	
Mean	299.9667	
Standard Deviation	512.8604	
Variance	263025.8	
Coefficient of Variation	1.709725	
Skewness	1.871572	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.617027	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	468.3112	
Gamma Statistics		
k hat	0.242225	
k star (bias corrected)	0.240002	
Theta hat	1238.383	
Theta star	1249.85	
nu hat	13.08013	
nu star	12.96011	
5% Approximate Chi Square Value	5.864822	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	5.560977	
Anderson-Darling Test Statistic	1.277825	
Anderson-Darling 5% Critical Value	0.877694	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.187589	
Kolmogrov-Smirnov 5% Critical Value	0.184797	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	662.8677	
95% Adjusted Gamma UCL	699.086	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	7.377759	
Mean of log data	2.756357	
Standard Deviation of log data	3.392241	
Variance of log data	11.5073	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.848058	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	4964.197	
MLE Standard Deviation	1565399	
MLE Coefficient of Variation	315.3379	
MLE Skewness	31357509	
MLE Median	15.74239	
MLE 80% Quantile	276.6632	
MLE 90% Quantile	1230.76	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
Former Lever Brothers Property (Groundwater)

MLE 95% Quantile	4173.848	
MLE 99% Quantile	42054	
MVU Estimate of Median	12.70004	
MVU Estimate of Mean	1871.676	
MVU Estimate of Standard Deviation	30618.42	
MVU Estimate of SE of Mean	1553.207	
95% H-UCL	319971.9	
95% Chebyshev (MVUE) UCL	8641.947	
97.5% Chebyshev (MVUE) UCL	11571.45	
99% Chebyshev (MVUE) UCL	17325.89	
Non-parametric Statisitics		
95% CLT UCL	462.3138	
95% Adjusted-CLT UCL	500.2997	
95% Modified-t UCL	474.2362	
95% Jackknife UCL	468.3112	
95% Chebyshev (Mean, Sd) UCL	730.1902	
97.5% Chebyshev (Mean, Sd) UCL	916.3482	
99% Chebyshev (Mean, Sd) UCL	1282.02	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	459.8025	
95% Bootstrap-t UCL	551.4746	
95% Hall's Bootstrap UCL	449.8685	
95% Percentile Bootstrap UCL	460.9	
95% BCA Bootstrap UCL	492.5093	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	449.8685	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - 2-Methylnaphthalene

Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	15	
Minimum	5.45E-02	
Maximum	764	
Mean	63.625	
Standard Deviation	191.335	
Variance	36609.09	
Coefficient of Variation	3.00723	
Skewness	3.719418	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.376397	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	147.48	
Gamma Statistics		
k hat	0.244996	
k star (bias corrected)	0.240726	
Theta hat	259.6979	
Theta star	264.3046	
nu hat	7.839877	
nu star	7.703234	
5% Approximate Chi Square Value	2.563736	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	2.238593	
Anderson-Darling Test Statistic	1.315325	
Anderson-Darling 5% Critical Value	0.860111	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.259964	
Kolmogrov-Smirnov 5% Critical Value	0.235503	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	191.1734	
95% Adjusted Gamma UCL	218.9403	
Lognormal Statistics		
Minimum of log data	-2.90955	
Maximum of log data	6.638568	
Mean of log data	1.244361	
Standard Deviation of log data	2.608793	
Variance of log data	6.805803	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.968771	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	104.2991	
MLE Standard Deviation	3132.573	
MLE Coefficient of Variation	30.03452	
MLE Skewness	27183.41	
MLE Median	3.470717	
MLE 80% Quantile	31.46235	
MLE 90% Quantile	99.15265	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
Block 93 North (Surface Soil)

MLE 95% Quantile	253.6172	
MLE 99% Quantile	1498.792	
MVU Estimate of Median	2.798088	
MVU Estimate of Mean	55.06643	
MVU Estimate of Standard Deviation	277.2933	
MVU Estimate of SE of Mean	40.68054	
95% H-UCL	4787.257	
95% Chebyshev (MVUE) UCL	232.3888	
97.5% Chebyshev (MVUE) UCL	309.1163	
99% Chebyshev (MVUE) UCL	459.8327	
Non-parametric Statisitics		
95% CLT UCL	142.3045	
95% Adjusted-CLT UCL	189.8304	
95% Modified-t UCL	154.893	
95% Jackknife UCL	147.48	
95% Chebyshev (Mean, Sd) UCL	272.1275	
97.5% Chebyshev (Mean, Sd) UCL	362.3467	
99% Chebyshev (Mean, Sd) UCL	539.5648	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	138.3901	
95% Bootstrap-t UCL	1699.956	
95% Hall's Bootstrap UCL	938.8577	
95% Percentile Bootstrap UCL	151.8991	
95% BCA Bootstrap UCL	214.675	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	539.5648	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Acenaphthene	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	0.0595	
Maximum	949	
Mean	98.35509	
Standard Deviation	233.0409	
Variance	54308.08	
Coefficient of Variation	2.369384	
Skewness	3.45219	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.472498	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	197.0337	
Gamma Statistics		
k hat	0.310677	
k star (bias corrected)	0.295068	
Theta hat	316.5829	
Theta star	333.3308	
nu hat	10.56303	
nu star	10.0323	
5% Approximate Chi Square Value	3.961112	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	3.569645	
Anderson-Darling Test Statistic	0.704176	
Anderson-Darling 5% Critical Value	0.839439	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.178248	
Kolmogrov-Smirnov 5% Critical Value	0.226439	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	249.1036	
95% Adjusted Gamma UCL	276.4217	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	6.855409	
Mean of log data	2.381662	
Standard Deviation of log data	2.495316	
Variance of log data	6.226601	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.973839	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	243.4624	
MLE Standard Deviation	5471.312	
MLE Coefficient of Variation	22.47292	
MLE Skewness	11416.97	
MLE Median	10.82288	
MLE 80% Quantile	89.13963	
MLE 90% Quantile	267.2389	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
Block 93 North (Surface Soil)

MLE 95% Quantile	656.194	
MLE 99% Quantile	3589.494	
MVU Estimate of Median	8.99453	
MVU Estimate of Mean	142.6283	
MVU Estimate of Standard Deviation	686.2494	
MVU Estimate of SE of Mean	100.6469	
95% H-UCL	6924.254	
95% Chebyshev (MVUE) UCL	581.3382	
97.5% Chebyshev (MVUE) UCL	771.1683	
99% Chebyshev (MVUE) UCL	1144.053	
Non-parametric Statisitics		
95% CLT UCL	191.3234	
95% Adjusted-CLT UCL	241.8894	
95% Modified-t UCL	204.921	
95% Jackknife UCL	197.0337	
95% Chebyshev (Mean, Sd) UCL	344.7232	
97.5% Chebyshev (Mean, Sd) UCL	451.3269	
99% Chebyshev (Mean, Sd) UCL	660.7292	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	188.3396	
95% Bootstrap-t UCL	552.7295	
95% Hall's Bootstrap UCL	519.6783	
95% Percentile Bootstrap UCL	200.8323	
95% BCA Bootstrap UCL	265.0494	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	276.4217	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Aluminum
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Aluminum	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	13	
Minimum	4970	
Maximum	15700	
Mean	8747.692	
Standard Deviation	3879.27	
Variance	15048736	
Coefficient of Variation	0.443462	
Skewness	0.651867	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.857188	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	10665.28	
Gamma Statistics		
k hat	5.824978	
k star (bias corrected)	4.532034	
Theta hat	1501.755	
Theta star	1930.191	
nu hat	151.4494	
nu star	117.8329	
5% Approximate Chi Square Value	93.76441	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	90.70834	
Anderson-Darling Test Statistic	0.746974	
Anderson-Darling 5% Critical Value	0.735569	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.216296	
Kolmogrov-Smirnov 5% Critical Value	0.237318	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	10993.15	
95% Adjusted Gamma UCL	11363.52	
Lognormal Statistics		
Minimum of log data	8.511175	
Maximum of log data	9.661416	
Mean of log data	8.988259	
Standard Deviation of log data	0.433973	
Variance of log data	0.188333	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.870265	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	8799.282	
MLE Standard Deviation	4005.703	
MLE Coefficient of Variation	0.455231	
MLE Skewness	1.460032	
MLE Median	8008.503	
MLE 80% Quantile	11556.07	
MLE 90% Quantile	13987.43	

Appendix P, Attachment 3
ProUCL Output - Aluminum
Block 93 North (Surface Soil)

MLE 95% Quantile	16352.64	
MLE 99% Quantile	21975.43	
MVU Estimate of Median	7950.672	
MVU Estimate of Mean	8731.128	
MVU Estimate of Standard Deviation	3870.592	
MVU Estimate of SE of Mean	1072.034	
95% H-UCL	11364.86	
95% Chebyshev (MVUE) UCL	13404.02	
97.5% Chebyshev (MVUE) UCL	15425.98	
99% Chebyshev (MVUE) UCL	19397.73	
Non-parametric Statisitics		
95% CLT UCL	10517.42	
95% Adjusted-CLT UCL	10725.26	
95% Modified-t UCL	10697.7	
95% Jackknife UCL	10665.28	
95% Chebyshev (Mean, Sd) UCL	13437.5	
97.5% Chebyshev (Mean, Sd) UCL	15466.79	
99% Chebyshev (Mean, Sd) UCL	19452.92	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	10480.69	
95% Bootstrap-t UCL	10990.22	
95% Hall's Bootstrap UCL	10392.69	
95% Percentile Bootstrap UCL	10420	
95% BCA Bootstrap UCL	10666.15	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	10993.15	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Antimony
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Antimony	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	13	
Minimum	0.445	
Maximum	41	
Mean	7.949615	
Standard Deviation	12.16814	
Variance	148.0636	
Coefficient of Variation	1.530658	
Skewness	2.097132	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.674433	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	13.96454	
Gamma Statistics		
k hat	0.611053	
k star (bias corrected)	0.521323	
Theta hat	13.0097	
Theta star	15.24893	
nu hat	15.88738	
nu star	13.55439	
5% Approximate Chi Square Value	6.266322	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	5.574871	
Anderson-Darling Test Statistic	0.647624	
Anderson-Darling 5% Critical Value	0.781226	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.212662	
Kolmogrov-Smirnov 5% Critical Value	0.24806	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	17.19545	
95% Adjusted Gamma UCL	19.3282	
Lognormal Statistics		
Minimum of log data	-0.80968	
Maximum of log data	3.713572	
Mean of log data	1.064669	
Standard Deviation of log data	1.500472	
Variance of log data	2.251415	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.935136	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	8.938574	
MLE Standard Deviation	26.06199	
MLE Coefficient of Variation	2.915676	
MLE Skewness	33.53369	
MLE Median	2.899878	
MLE 80% Quantile	10.30436	
MLE 90% Quantile	19.94093	

Appendix P, Attachment 3
ProUCL Output - Antimony
Block 93 North (Surface Soil)

MLE 95% Quantile	34.22459	
MLE 99% Quantile	95.08445	
MVU Estimate of Median	2.657889	
MVU Estimate of Mean	7.672387	
MVU Estimate of Standard Deviation	14.2456	
MVU Estimate of SE of Mean	3.550651	
95% H-UCL	46.40121	
95% Chebyshev (MVUE) UCL	23.14931	
97.5% Chebyshev (MVUE) UCL	29.84619	
99% Chebyshev (MVUE) UCL	43.00091	
Non-parametric Statisitics		
95% CLT UCL	13.50072	
95% Adjusted-CLT UCL	15.59815	
95% Modified-t UCL	14.2917	
95% Jackknife UCL	13.96454	
95% Chebyshev (Mean, Sd) UCL	22.66018	
97.5% Chebyshev (Mean, Sd) UCL	29.02545	
99% Chebyshev (Mean, Sd) UCL	41.5288	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	13.31595	
95% Bootstrap-t UCL	21.60108	
95% Hall's Bootstrap UCL	19.654	
95% Percentile Bootstrap UCL	13.74808	
95% BCA Bootstrap UCL	15.47154	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	17.19545	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1254
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Aroclor-1254	
Raw Statistics		
Number of Observations	11	
Number of Missing Data	0	
Number of Valid Observations	11	
Number of Distinct Observations	11	
Minimum	0.0085	
Maximum	1.66	
Mean	0.240227	
Standard Deviation	0.479365	
Variance	2.30E-01	
Coefficient of Variation	1.995466	
Skewness	3.112312	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.508919	
Shapiro-Wilk 5% Critical Value	0.85	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.50219	
Gamma Statistics		
k hat	0.537363	
k star (bias corrected)	0.451415	
Theta hat	0.447048	
Theta star	0.532164	
nu hat	11.82198	
nu star	9.93114	
5% Approximate Chi Square Value	3.897932	
Adjusted Level of Significance	0.02783	
Adjusted Chi Square Value	3.305192	
Anderson-Darling Test Statistic	0.604445	
Anderson-Darling 5% Critical Value	0.778315	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.20044	
Kolmogrov-Smirnov 5% Critical Value	0.268444	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	0.61205	
95% Adjusted Gamma UCL	0.721813	
Lognormal Statistics		
Minimum of log data	-4.76769	
Maximum of log data	0.506818	
Mean of log data	-2.59518	
Standard Deviation of log data	1.588306	
Variance of log data	2.522717	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.957439	
Shapiro-Wilk 5% Critical Value	0.85	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.263469	
MLE Standard Deviation	0.892006	
MLE Coefficient of Variation	3.385618	
MLE Skewness	48.9642	
MLE Median	0.074633	
MLE 80% Quantile	0.28563	
MLE 90% Quantile	0.574529	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1254
Block 93 North (Surface Soil)

MLE 95% Quantile	1.017742	
MLE 99% Quantile	3.001833	
MVU Estimate of Median	0.066473	
MVU Estimate of Mean	0.214547	
MVU Estimate of Standard Deviation	0.409224	
MVU Estimate of SE of Mean	0.110543	
95% H-UCL	2.222904	
95% Chebyshev (MVUE) UCL	0.696392	
97.5% Chebyshev (MVUE) UCL	0.904887	
99% Chebyshev (MVUE) UCL	1.314435	
Non-parametric Statisitics		
95% CLT UCL	0.477965	
95% Adjusted-CLT UCL	0.622888	
95% Modified-t UCL	0.524795	
95% Jackknife UCL	0.50219	
95% Chebyshev (Mean, Sd) UCL	0.870237	
97.5% Chebyshev (Mean, Sd) UCL	1.142843	
99% Chebyshev (Mean, Sd) UCL	1.678324	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.472029	
95% Bootstrap-t UCL	1.449978	
95% Hall's Bootstrap UCL	1.409355	
95% Percentile Bootstrap UCL	0.524955	
95% BCA Bootstrap UCL	0.652045	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	0.61205	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1260
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Aroclor-1260	
Raw Statistics		
Number of Observations	11	
Number of Missing Data	0	
Number of Valid Observations	11	
Number of Distinct Observations	11	
Minimum	8.50E-03	
Maximum	3.58E+00	
Mean	4.67E-01	
Standard Deviation	1.05E+00	
Variance	1.100456	
Coefficient of Variation	2.244343	
Skewness	3.135323	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.486617	
Shapiro-Wilk 5% Critical Value	0.85	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.04E+00	
Gamma Statistics		
k hat	0.403978	
k star (bias corrected)	0.354408	
Theta hat	1.16E+00	
Theta star	1.32E+00	
nu hat	8.887508	
nu star	7.796975	
5% Approximate Chi Square Value	2.617357	
Adjusted Level of Significance	0.02783	
Adjusted Chi Square Value	2.154245	
Anderson-Darling Test Statistic	0.717507	
Anderson-Darling 5% Critical Value	0.799824	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.209153	
Kolmogrov-Smirnov 5% Critical Value	0.27233	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1.39E+00	
95% Adjusted Gamma UCL	1.69E+00	
Lognormal Statistics		
Minimum of log data	-4.76769	
Maximum of log data	1.275363	
Mean of log data	-2.38685	
Standard Deviation of log data	1.893696	
Variance of log data	3.586086	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.94417	
Shapiro-Wilk 5% Critical Value	0.85	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	5.52E-01	
MLE Standard Deviation	3.27E+00	
MLE Coefficient of Variation	5.92E+00	
MLE Skewness	2.26E+02	
MLE Median	9.19E-02	
MLE 80% Quantile	4.55E-01	
MLE 90% Quantile	1.05E+00	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1260
Block 93 North (Surface Soil)

MLE 95% Quantile	2.07E+00	
MLE 99% Quantile	7.52E+00	
MVU Estimate of Median	7.79E-02	
MVU Estimate of Mean	3.95E-01	
MVU Estimate of Standard Deviation	9.52E-01	
MVU Estimate of SE of Mean	2.40E-01	
95% H-UCL	10.60495	
95% Chebyshev (MVUE) UCL	1.44E+00	
97.5% Chebyshev (MVUE) UCL	1.89E+00	
99% Chebyshev (MVUE) UCL	2.78E+00	
Non-parametric Statisitics		
95% CLT UCL	9.88E-01	
95% Adjusted-CLT UCL	1.307155	
95% Modified-t UCL	1.090512	
95% Jackknife UCL	1.04E+00	
95% Chebyshev (Mean, Sd) UCL	1.85E+00	
97.5% Chebyshev (Mean, Sd) UCL	2.44E+00	
99% Chebyshev (Mean, Sd) UCL	3.61E+00	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	9.51E-01	
95% Bootstrap-t UCL	3.681651	
95% Hall's Bootstrap UCL	2.965639	
95% Percentile Bootstrap UCL	1.09E+00	
95% BCA Bootstrap UCL	1.40E+00	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	1.69E+00	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	15	
Number of Missing Data	0	
Number of Valid Observations	15	
Number of Distinct Observations	15	
Minimum	3.32	
Maximum	9.13E+02	
Mean	1.08E+02	
Standard Deviation	2.30E+02	
Variance	53109.64	
Coefficient of Variation	2.13791	
Skewness	3.474508	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.473173	
Shapiro-Wilk 5% Critical Value	0.881	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.13E+02	
Gamma Statistics		
k hat	0.551893	
k star (bias corrected)	0.485959	
Theta hat	195.3181	
Theta star	221.8186	
nu hat	16.55678	
nu star	14.57876	
5% Approximate Chi Square Value	6.968307	
Adjusted Level of Significance	0.03235	
Adjusted Chi Square Value	6.330002	
Anderson-Darling Test Statistic	1.126154	
Anderson-Darling 5% Critical Value	0.789279	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.24286	
Kolmogrov-Smirnov 5% Critical Value	0.233065	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	225.5228	
95% Adjusted Gamma UCL	248.2641	
Lognormal Statistics		
Minimum of log data	1.199965	
Maximum of log data	6.816736	
Mean of log data	3.546599	
Standard Deviation of log data	1.429572	
Variance of log data	2.043677	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.952386	
Shapiro-Wilk 5% Critical Value	0.881	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	96.39337	
MLE Standard Deviation	249.8605	
MLE Coefficient of Variation	2.592092	
MLE Skewness	25.19239	
MLE Median	34.69511	
MLE 80% Quantile	116.1157	
MLE 90% Quantile	217.8048	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Block 93 North (Surface Soil)

MLE 95% Quantile	364.3975	
MLE 99% Quantile	964.6682	
MVU Estimate of Median	32.4008	
MVU Estimate of Mean	85.65056	
MVU Estimate of Standard Deviation	154.1767	
MVU Estimate of SE of Mean	35.92688	
95% H-UCL	364.6671	
95% Chebyshev (MVUE) UCL	242.2522	
97.5% Chebyshev (MVUE) UCL	310.0139	
99% Chebyshev (MVUE) UCL	443.1185	
Non-parametric Statisitics		
95% CLT UCL	2.06E+02	
95% Adjusted-CLT UCL	262.7075	
95% Modified-t UCL	221.4953	
95% Jackknife UCL	2.13E+02	
95% Chebyshev (Mean, Sd) UCL	3.67E+02	
97.5% Chebyshev (Mean, Sd) UCL	4.79E+02	
99% Chebyshev (Mean, Sd) UCL	7.00E+02	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.01E+02	
95% Bootstrap-t UCL	594.8372	
95% Hall's Bootstrap UCL	559.2047	
95% Percentile Bootstrap UCL	2.20E+02	
95% BCA Bootstrap UCL	2.72E+02	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	2.42E+02	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzene
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Benzene	
Raw Statistics		
Number of Observations	15	
Number of Missing Data	0	
Number of Valid Observations	15	
Number of Distinct Observations	13	
Minimum	0.0008	
Maximum	13.9	
Mean	0.98832	
Standard Deviation	3.572863	
Variance	12.76535	
Coefficient of Variation	3.615088	
Skewness	3.869421	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.301562	
Shapiro-Wilk 5% Critical Value	0.881	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.613145	
Gamma Statistics		
k hat	0.206475	
k star (bias corrected)	0.209625	
Theta hat	4.786624	
Theta star	4.71471	
nu hat	6.194262	
nu star	6.288743	
5% Approximate Chi Square Value	1.788631	
Adjusted Level of Significance	0.03235	
Adjusted Chi Square Value	1.509825	
Anderson-Darling Test Statistic	1.980586	
Anderson-Darling 5% Critical Value	0.87408	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.335984	
Kolmogrov-Smirnov 5% Critical Value	0.244752	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.474887	
95% Adjusted Gamma UCL	4.116563	
Lognormal Statistics		
Minimum of log data	-7.1309	
Maximum of log data	2.631889	
Mean of log data	-3.55823	
Standard Deviation of log data	2.622339	
Variance of log data	6.876661	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.92214	
Shapiro-Wilk 5% Critical Value	0.881	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.887009	
MLE Standard Deviation	27.6027	
MLE Coefficient of Variation	31.11887	
MLE Skewness	30228.36	
MLE Median	0.028489	
MLE 80% Quantile	0.26123	
MLE 90% Quantile	0.828179	

Appendix P, Attachment 3
ProUCL Output - Benzene
Block 93 North (Surface Soil)

MLE 95% Quantile	2.128711	
MLE 99% Quantile	12.69654	
MVU Estimate of Median	0.022576	
MVU Estimate of Mean	0.449518	
MVU Estimate of Standard Deviation	2.179082	
MVU Estimate of SE of Mean	0.33674	
95% H-UCL	51.78686	
95% Chebyshev (MVUE) UCL	1.917334	
97.5% Chebyshev (MVUE) UCL	2.552459	
99% Chebyshev (MVUE) UCL	3.80004	
Non-parametric Statisitics		
95% CLT UCL	2.505713	
95% Adjusted-CLT UCL	3.490521	
95% Modified-t UCL	2.766755	
95% Jackknife UCL	2.613145	
95% Chebyshev (Mean, Sd) UCL	5.009445	
97.5% Chebyshev (Mean, Sd) UCL	6.749389	
99% Chebyshev (Mean, Sd) UCL	10.16717	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.423163	
95% Bootstrap-t UCL	58.24606	
95% Hall's Bootstrap UCL	32.22	
95% Percentile Bootstrap UCL	2.820633	
95% BCA Bootstrap UCL	3.742987	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	10.16717	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)anthracene

Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	16	
Minimum	0.0595	
Maximum	396	
Mean	109.4453	
Standard Deviation	121.1693	
Variance	14682	
Coefficient of Variation	1.107122	
Skewness	1.427691	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.810529	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	160.7531	
Gamma Statistics		
k hat	0.644973	
k star (bias corrected)	0.57037	
Theta hat	169.6897	
Theta star	191.8847	
nu hat	21.92908	
nu star	19.39258	
5% Approximate Chi Square Value	10.40315	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	9.717713	
Anderson-Darling Test Statistic	0.226727	
Anderson-Darling 5% Critical Value	0.785451	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.089916	
Kolmogrov-Smirnov 5% Critical Value	0.218802	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	204.0177	
95% Adjusted Gamma UCL	218.408	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	5.981414	
Mean of log data	3.747478	
Standard Deviation of log data	2.07051	
Variance of log data	4.287012	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.810509	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	361.7609	
MLE Standard Deviation	3064.282	
MLE Coefficient of Variation	8.470464	
MLE Skewness	633.1566	
MLE Median	42.41396	
MLE 80% Quantile	243.9732	
MLE 90% Quantile	606.7294	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Block 93 North (Surface Soil)

MLE 95% Quantile	1278.53	
MLE 99% Quantile	5236.894	
MVU Estimate of Median	37.35589	
MVU Estimate of Mean	266.1912	
MVU Estimate of Standard Deviation	898.174	
MVU Estimate of SE of Mean	158.5899	
95% H-UCL	3823.219	
95% Chebyshev (MVUE) UCL	957.4687	
97.5% Chebyshev (MVUE) UCL	1256.585	
99% Chebyshev (MVUE) UCL	1844.141	
Non-parametric Statisitics		
95% CLT UCL	157.784	
95% Adjusted-CLT UCL	168.6572	
95% Modified-t UCL	162.4491	
95% Jackknife UCL	160.7531	
95% Chebyshev (Mean, Sd) UCL	237.544	
97.5% Chebyshev (Mean, Sd) UCL	292.9725	
99% Chebyshev (Mean, Sd) UCL	401.8509	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	156.3379	
95% Bootstrap-t UCL	179.637	
95% Hall's Bootstrap UCL	184.8984	
95% Percentile Bootstrap UCL	158.7841	
95% BCA Bootstrap UCL	164.8459	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	204.0177	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Benzo(a)pyrene	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	0.0595	
Maximum	249	
Mean	92.91821	
Standard Deviation	80.58853	
Variance	6494.511	
Coefficient of Variation	0.867306	
Skewness	0.639974	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.906974	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	127.0425	
Gamma Statistics		
k hat	0.751398	
k star (bias corrected)	0.658014	
Theta hat	123.6605	
Theta star	141.2101	
nu hat	25.54752	
nu star	22.37247	
5% Approximate Chi Square Value	12.61628	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	11.85246	
Anderson-Darling Test Statistic	0.424304	
Anderson-Darling 5% Critical Value	0.776352	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.138602	
Kolmogrov-Smirnov 5% Critical Value	0.217248	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	164.772	
95% Adjusted Gamma UCL	175.3905	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	5.517453	
Mean of log data	3.735227	
Standard Deviation of log data	2.004356	
Variance of log data	4.017444	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.75376	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	312.2951	
MLE Standard Deviation	2306.736	
MLE Coefficient of Variation	7.3864	
MLE Skewness	425.153	
MLE Median	41.89752	
MLE 80% Quantile	227.9002	
MLE 90% Quantile	550.4985	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Block 93 North (Surface Soil)

MLE 95% Quantile	1132.737	
MLE 99% Quantile	4435.338	
MVU Estimate of Median	37.19887	
MVU Estimate of Mean	236.3219	
MVU Estimate of Standard Deviation	752.5911	
MVU Estimate of SE of Mean	136.3599	
95% H-UCL	2876.546	
95% Chebyshev (MVUE) UCL	830.7011	
97.5% Chebyshev (MVUE) UCL	1087.889	
99% Chebyshev (MVUE) UCL	1593.086	
Non-parametric Statisitics		
95% CLT UCL	125.0678	
95% Adjusted-CLT UCL	128.3095	
95% Modified-t UCL	127.5482	
95% Jackknife UCL	127.0425	
95% Chebyshev (Mean, Sd) UCL	178.1155	
97.5% Chebyshev (Mean, Sd) UCL	214.9804	
99% Chebyshev (Mean, Sd) UCL	287.3944	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	124.3365	
95% Bootstrap-t UCL	132.384	
95% Hall's Bootstrap UCL	128.5973	
95% Percentile Bootstrap UCL	123.6059	
95% BCA Bootstrap UCL	124.9035	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	127.0425	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(b)fluoranthene

Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Benzo(b)fluoranthene	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	16	
Minimum	0.0595	
Maximum	280	
Mean	96.71232	
Standard Deviation	84.31049	
Variance	7108.258	
Coefficient of Variation	0.871766	
Skewness	0.759305	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.910214	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	132.4127	
Gamma Statistics		
k hat	0.759871	
k star (bias corrected)	0.664992	
Theta hat	127.2746	
Theta star	145.4338	
nu hat	25.83562	
nu star	22.60973	
5% Approximate Chi Square Value	12.79479	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	12.02496	
Anderson-Darling Test Statistic	0.417093	
Anderson-Darling 5% Critical Value	0.775999	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.150546	
Kolmogrov-Smirnov 5% Critical Value	0.217174	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	170.9008	
95% Adjusted Gamma UCL	181.8418	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	5.63479	
Mean of log data	3.785323	
Standard Deviation of log data	2.004529	
Variance of log data	4.018136	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.748236	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	328.452	
MLE Standard Deviation	2426.934	
MLE Coefficient of Variation	7.389005	
MLE Skewness	425.5875	
MLE Median	44.04988	
MLE 80% Quantile	239.6428	
MLE 90% Quantile	578.9073	

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
Block 93 North (Surface Soil)

MLE 95% Quantile	1191.267	
MLE 99% Quantile	4665.065	
MVU Estimate of Median	39.10904	
MVU Estimate of Mean	248.5307	
MVU Estimate of Standard Deviation	791.5916	
MVU Estimate of SE of Mean	143.4169	
95% H-UCL	3026.436	
95% Chebyshev (MVUE) UCL	873.6703	
97.5% Chebyshev (MVUE) UCL	1144.169	
99% Chebyshev (MVUE) UCL	1675.51	
Non-parametric Statisitics		
95% CLT UCL	130.3468	
95% Adjusted-CLT UCL	134.3705	
95% Modified-t UCL	133.0403	
95% Jackknife UCL	132.4127	
95% Chebyshev (Mean, Sd) UCL	185.8444	
97.5% Chebyshev (Mean, Sd) UCL	224.4119	
99% Chebyshev (Mean, Sd) UCL	300.1703	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	130.4009	
95% Bootstrap-t UCL	139.7241	
95% Hall's Bootstrap UCL	131.9245	
95% Percentile Bootstrap UCL	131.1	
95% BCA Bootstrap UCL	131.6006	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	132.4127	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(k)fluoranthene

Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Benzo(k)fluoranthene	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	0.0595	
Maximum	185	
Mean	61.22821	
Standard Deviation	59.6062	
Variance	3552.899	
Coefficient of Variation	0.973509	
Skewness	1.039134	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.864345	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	86.46779	
Gamma Statistics		
k hat	0.709442	
k star (bias corrected)	0.623462	
Theta hat	86.30473	
Theta star	98.20678	
nu hat	24.12103	
nu star	21.19771	
5% Approximate Chi Square Value	11.73719	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	11.00364	
Anderson-Darling Test Statistic	0.252907	
Anderson-Darling 5% Critical Value	0.779901	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.135404	
Kolmogrov-Smirnov 5% Critical Value	0.217855	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	110.5799	
95% Adjusted Gamma UCL	117.9517	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	5.220356	
Mean of log data	3.264337	
Standard Deviation of log data	1.954131	
Variance of log data	3.818628	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.814098	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	176.5582	
MLE Standard Deviation	1178.342	
MLE Coefficient of Variation	6.673954	
MLE Skewness	317.2909	
MLE Median	26.16276	
MLE 80% Quantile	136.3981	
MLE 90% Quantile	322.2718	

Appendix P, Attachment 3
ProUCL Output - Benzo(k)fluoranthene
Block 93 North (Surface Soil)

MLE 95% Quantile	651.2426	
MLE 99% Quantile	2464.257	
MVU Estimate of Median	23.36672	
MVU Estimate of Mean	136.31	
MVU Estimate of Standard Deviation	415.2318	
MVU Estimate of SE of Mean	76.67546	
95% H-UCL	1469.163	
95% Chebyshev (MVUE) UCL	470.5306	
97.5% Chebyshev (MVUE) UCL	615.1481	
99% Chebyshev (MVUE) UCL	899.2212	
Non-parametric Statisitics		
95% CLT UCL	85.00724	
95% Adjusted-CLT UCL	88.90033	
95% Modified-t UCL	87.07504	
95% Jackknife UCL	86.46779	
95% Chebyshev (Mean, Sd) UCL	124.2432	
97.5% Chebyshev (Mean, Sd) UCL	151.5098	
99% Chebyshev (Mean, Sd) UCL	205.0698	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	84.41144	
95% Bootstrap-t UCL	94.3567	
95% Hall's Bootstrap UCL	90.29037	
95% Percentile Bootstrap UCL	84.65056	
95% BCA Bootstrap UCL	90.26821	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	110.5799	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	15	
Minimum	0.0595	
Maximum	311	
Mean	36.81834	
Standard Deviation	80.01103	
Variance	6401.765	
Coefficient of Variation	2.173129	
Skewness	3.136281	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.508386	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	71.88418	
Gamma Statistics		
k hat	0.362533	
k star (bias corrected)	0.336225	
Theta hat	101.5586	
Theta star	109.5052	
nu hat	11.60105	
nu star	10.75919	
5% Approximate Chi Square Value	4.420746	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	3.96788	
Anderson-Darling Test Statistic	0.534348	
Anderson-Darling 5% Critical Value	0.824864	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.17328	
Kolmogrov-Smirnov 5% Critical Value	0.231145	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	89.60829	
95% Adjusted Gamma UCL	99.83555	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	5.739793	
Mean of log data	1.761754	
Standard Deviation of log data	2.255146	
Variance of log data	5.085681	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.988333	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	74.03917	
MLE Standard Deviation	938.547	
MLE Coefficient of Variation	12.67636	
MLE Skewness	2074.994	
MLE Median	5.822639	
MLE 80% Quantile	39.14809	
MLE 90% Quantile	105.5955	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Block 93 North (Surface Soil)

MLE 95% Quantile	237.809	
MLE 99% Quantile	1104.582	
MVU Estimate of Median	4.959506	
MVU Estimate of Mean	48.9247	
MVU Estimate of Standard Deviation	186.7388	
MVU Estimate of SE of Mean	32.00788	
95% H-UCL	1349.48	
95% Chebyshev (MVUE) UCL	188.4438	
97.5% Chebyshev (MVUE) UCL	248.8139	
99% Chebyshev (MVUE) UCL	367.3991	
Non-parametric Statisitics		
95% CLT UCL	69.71995	
95% Adjusted-CLT UCL	86.47807	
95% Modified-t UCL	74.49811	
95% Jackknife UCL	71.88418	
95% Chebyshev (Mean, Sd) UCL	124.0083	
97.5% Chebyshev (Mean, Sd) UCL	161.7355	
99% Chebyshev (Mean, Sd) UCL	235.8433	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	68.46668	
95% Bootstrap-t UCL	231.5915	
95% Hall's Bootstrap UCL	214.4806	
95% Percentile Bootstrap UCL	72.69888	
95% BCA Bootstrap UCL	85.925	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	99.83555	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chromium
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Chromium	
Raw Statistics		
Number of Observations	15	
Number of Missing Data	0	
Number of Valid Observations	15	
Number of Distinct Observations	15	
Minimum	11.9	
Maximum	84.1	
Mean	31.97333	
Standard Deviation	22.13622	
Variance	490.0121	
Coefficient of Variation	0.692334	
Skewness	1.439956	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.808051	
Shapiro-Wilk 5% Critical Value	0.881	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	42.04018	
Gamma Statistics		
k hat	2.847417	
k star (bias corrected)	2.322378	
Theta hat	11.22889	
Theta star	13.76749	
nu hat	85.42252	
nu star	69.67135	
5% Approximate Chi Square Value	51.4531	
Adjusted Level of Significance	0.03235	
Adjusted Chi Square Value	49.5285	
Anderson-Darling Test Statistic	0.632199	
Anderson-Darling 5% Critical Value	0.744866	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.213378	
Kolmogrov-Smirnov 5% Critical Value	0.223445	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	43.29429	
95% Adjusted Gamma UCL	44.97664	
Lognormal Statistics		
Minimum of log data	2.476538	
Maximum of log data	4.432007	
Mean of log data	3.279146	
Standard Deviation of log data	0.606292	
Variance of log data	0.36759	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.9324	
Shapiro-Wilk 5% Critical Value	0.881	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	31.91071	
MLE Standard Deviation	21.26916	
MLE Coefficient of Variation	0.666521	
MLE Skewness	2.295666	
MLE Median	26.5531	
MLE 80% Quantile	44.32122	
MLE 90% Quantile	57.87191	

Appendix P, Attachment 3
ProUCL Output - Chromium
Block 93 North (Surface Soil)

MLE 95% Quantile	71.98786	
MLE 99% Quantile	108.786	
MVU Estimate of Median	26.22948	
MVU Estimate of Mean	31.4656	
MVU Estimate of Standard Deviation	19.98992	
MVU Estimate of SE of Mean	5.133672	
95% H-UCL	45.49329	
95% Chebyshev (MVUE) UCL	53.84275	
97.5% Chebyshev (MVUE) UCL	63.52537	
99% Chebyshev (MVUE) UCL	82.54499	
Non-parametric Statisitics		
95% CLT UCL	41.37457	
95% Adjusted-CLT UCL	43.64518	
95% Modified-t UCL	42.39435	
95% Jackknife UCL	42.04018	
95% Chebyshev (Mean, Sd) UCL	56.88682	
97.5% Chebyshev (Mean, Sd) UCL	67.66691	
99% Chebyshev (Mean, Sd) UCL	88.8423	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	40.86115	
95% Bootstrap-t UCL	46.86998	
95% Hall's Bootstrap UCL	45.0834	
95% Percentile Bootstrap UCL	41.68	
95% BCA Bootstrap UCL	43	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	43.29429	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chrysene
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Chrysene	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	16	
Minimum	0.0595	
Maximum	417	
Mean	107.327	
Standard Deviation	119.6246	
Variance	14310.05	
Coefficient of Variation	1.114581	
Skewness	1.539343	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.816745	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	157.9808	
Gamma Statistics		
k hat	0.646358	
k star (bias corrected)	0.57151	
Theta hat	166.0489	
Theta star	187.7954	
nu hat	21.97617	
nu star	19.43136	
5% Approximate Chi Square Value	10.43157	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	9.745085	
Anderson-Darling Test Statistic	0.181563	
Anderson-Darling 5% Critical Value	0.785332	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.087452	
Kolmogrov-Smirnov 5% Critical Value	0.218781	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	199.9228	
95% Adjusted Gamma UCL	214.0063	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	6.033086	
Mean of log data	3.730257	
Standard Deviation of log data	2.068044	
Variance of log data	4.276806	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.814997	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	353.7743	
MLE Standard Deviation	2981.166	
MLE Coefficient of Variation	8.426745	
MLE Skewness	623.6637	
MLE Median	41.6898	
MLE 80% Quantile	239.3085	
MLE 90% Quantile	594.4835	

Appendix P, Attachment 3
ProUCL Output - Chrysene
Block 93 North (Surface Soil)

MLE 95% Quantile	1251.613	
MLE 99% Quantile	5118.039	
MVU Estimate of Median	36.72927	
MVU Estimate of Mean	260.5954	
MVU Estimate of Standard Deviation	877.4113	
MVU Estimate of SE of Mean	155.0756	
95% H-UCL	3719.408	
95% Chebyshev (MVUE) UCL	936.5544	
97.5% Chebyshev (MVUE) UCL	1229.042	
99% Chebyshev (MVUE) UCL	1803.579	
Non-parametric Statisitics		
95% CLT UCL	155.0496	
95% Adjusted-CLT UCL	166.6237	
95% Modified-t UCL	159.7861	
95% Jackknife UCL	157.9808	
95% Chebyshev (Mean, Sd) UCL	233.7928	
97.5% Chebyshev (Mean, Sd) UCL	288.5146	
99% Chebyshev (Mean, Sd) UCL	396.0051	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	153.2559	
95% Bootstrap-t UCL	180.108	
95% Hall's Bootstrap UCL	193.0573	
95% Percentile Bootstrap UCL	153.2706	
95% BCA Bootstrap UCL	167.5471	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	199.9228	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Copper
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Copper	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	13	
Minimum	2.86E+01	
Maximum	472	
Mean	181.2	
Standard Deviation	120.6419	
Variance	14554.48	
Coefficient of Variation	0.665794	
Skewness	1.152718	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.916782	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	240.8354	
Gamma Statistics		
k hat	2.40618	
k star (bias corrected)	1.902189	
Theta hat	75.3061	
Theta star	95.25865	
nu hat	62.56067	
nu star	49.45692	
5% Approximate Chi Square Value	34.30841	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	32.51743	
Anderson-Darling Test Statistic	0.143045	
Anderson-Darling 5% Critical Value	0.741522	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.111135	
Kolmogrov-Smirnov 5% Critical Value	0.238925	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	261.2069	
95% Adjusted Gamma UCL	275.5936	
Lognormal Statistics		
Minimum of log data	3.353407	
Maximum of log data	6.156979	
Mean of log data	4.977641	
Standard Deviation of log data	0.738281	
Variance of log data	0.545059	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.972297	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	190.5988	
MLE Standard Deviation	162.2566	
MLE Coefficient of Variation	0.851299	
MLE Skewness	3.170844	
MLE Median	145.1316	
MLE 80% Quantile	270.8292	
MLE 90% Quantile	374.7774	

Appendix P, Attachment 3
ProUCL Output - Copper
Block 93 North (Surface Soil)

MLE 95% Quantile	488.8783	
MLE 99% Quantile	808.2595	
MVU Estimate of Median	142.1163	
MVU Estimate of Mean	185.8363	
MVU Estimate of Standard Deviation	145.5949	
MVU Estimate of SE of Mean	39.97491	
95% H-UCL	320.1757	
95% Chebyshev (MVUE) UCL	360.0829	
97.5% Chebyshev (MVUE) UCL	435.4795	
99% Chebyshev (MVUE) UCL	583.5816	
Non-parametric Statisitics		
95% CLT UCL	236.2369	
95% Adjusted-CLT UCL	247.6672	
95% Modified-t UCL	242.6183	
95% Jackknife UCL	240.8354	
95% Chebyshev (Mean, Sd) UCL	327.049	
97.5% Chebyshev (Mean, Sd) UCL	390.158	
99% Chebyshev (Mean, Sd) UCL	514.1233	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	234.5952	
95% Bootstrap-t UCL	254.8802	
95% Hall's Bootstrap UCL	266.7001	
95% Percentile Bootstrap UCL	238.8154	
95% BCA Bootstrap UCL	249.4846	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	240.8354	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzo(a,h)anthracene

Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Dibenzo(a,h)anthracene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	16	
Minimum	0.0595	
Maximum	49.9	
Mean	16.95122	
Standard Deviation	14.91154	
Variance	222.3539	
Coefficient of Variation	0.879673	
Skewness	0.854705	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.912236	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	23.48639	
Gamma Statistics		
k hat	0.854121	
k star (bias corrected)	0.73564	
Theta hat	19.84638	
Theta star	23.04281	
nu hat	27.33189	
nu star	23.54049	
5% Approximate Chi Square Value	13.49806	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	12.63755	
Anderson-Darling Test Statistic	0.25079	
Anderson-Darling 5% Critical Value	0.769847	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.109186	
Kolmogrov-Smirnov 5% Critical Value	0.222362	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	29.56277	
95% Adjusted Gamma UCL	31.57573	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	3.910021	
Mean of log data	2.141357	
Standard Deviation of log data	1.683494	
Variance of log data	2.834151	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.831957	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	35.10811	
MLE Standard Deviation	140.5024	
MLE Coefficient of Variation	4.001992	
MLE Skewness	76.10164	
MLE Median	8.510977	
MLE 80% Quantile	35.30091	
MLE 90% Quantile	74.043	

Appendix P, Attachment 3
ProUCL Output - Dibenzo(a,h)anthracene
Block 93 North (Surface Soil)

MLE 95% Quantile	135.7349	
MLE 99% Quantile	427.1618	
MVU Estimate of Median	7.785962	
MVU Estimate of Mean	29.42079	
MVU Estimate of Standard Deviation	68.60484	
MVU Estimate of SE of Mean	14.41999	
95% H-UCL	190.9887	
95% Chebyshev (MVUE) UCL	92.27608	
97.5% Chebyshev (MVUE) UCL	119.4736	
99% Chebyshev (MVUE) UCL	172.8979	
Non-parametric Statisitics		
95% CLT UCL	23.08304	
95% Adjusted-CLT UCL	23.93418	
95% Modified-t UCL	23.61915	
95% Jackknife UCL	23.48639	
95% Chebyshev (Mean, Sd) UCL	33.20069	
97.5% Chebyshev (Mean, Sd) UCL	40.23185	
99% Chebyshev (Mean, Sd) UCL	54.0432	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	22.75313	
95% Bootstrap-t UCL	24.65902	
95% Hall's Bootstrap UCL	24.1504	
95% Percentile Bootstrap UCL	23.26938	
95% BCA Bootstrap UCL	23.88931	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	23.48639	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	16	
Minimum	0.0595	
Maximum	688	
Mean	70.23841	
Standard Deviation	178.4303	
Variance	31837.37	
Coefficient of Variation	2.540352	
Skewness	3.240497	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.451117	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	148.4377	
Gamma Statistics		
k hat	0.274792	
k star (bias corrected)	0.264935	
Theta hat	255.6056	
Theta star	265.1153	
nu hat	8.793348	
nu star	8.477929	
5% Approximate Chi Square Value	3.014089	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	2.654763	
Anderson-Darling Test Statistic	0.945183	
Anderson-Darling 5% Critical Value	0.848047	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.222637	
Kolmogrov-Smirnov 5% Critical Value	0.234115	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	197.5642	
95% Adjusted Gamma UCL	224.3048	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	6.533789	
Mean of log data	1.706351	
Standard Deviation of log data	2.552458	
Variance of log data	6.51504	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.986194	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	143.1468	
MLE Standard Deviation	3716.916	
MLE Coefficient of Variation	25.96576	
MLE Skewness	17584.55	
MLE Median	5.508822	
MLE 80% Quantile	47.61641	
MLE 90% Quantile	146.3877	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Block 93 North (Surface Soil)

MLE 95% Quantile	366.9199	
MLE 99% Quantile	2086.759	
MVU Estimate of Median	4.482788	
MVU Estimate of Mean	78.67702	
MVU Estimate of Standard Deviation	379.5252	
MVU Estimate of SE of Mean	57.14229	
95% H-UCL	5622.064	
95% Chebyshev (MVUE) UCL	327.7545	
97.5% Chebyshev (MVUE) UCL	435.5305	
99% Chebyshev (MVUE) UCL	647.2356	
Non-parametric Statisitics		
95% CLT UCL	143.6113	
95% Adjusted-CLT UCL	182.225	
95% Modified-t UCL	154.4607	
95% Jackknife UCL	148.4377	
95% Chebyshev (Mean, Sd) UCL	264.6783	
97.5% Chebyshev (Mean, Sd) UCL	348.8126	
99% Chebyshev (Mean, Sd) UCL	514.0781	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	140.1542	
95% Bootstrap-t UCL	787.1901	
95% Hall's Bootstrap UCL	517.1993	
95% Percentile Bootstrap UCL	152.4503	
95% BCA Bootstrap UCL	193.8581	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	224.3048	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Fluoranthene	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	0.0595	
Maximum	2430	
Mean	361.2388	
Standard Deviation	622.2499	
Variance	387194.9	
Coefficient of Variation	1.722544	
Skewness	2.774839	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.600229	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	624.7236	
Gamma Statistics		
k hat	0.455863	
k star (bias corrected)	0.414632	
Theta hat	792.428	
Theta star	871.2265	
nu hat	15.49935	
nu star	14.0975	
5% Approximate Chi Square Value	6.637012	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	6.106716	
Anderson-Darling Test Statistic	0.318581	
Anderson-Darling 5% Critical Value	0.807607	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.122256	
Kolmogrov-Smirnov 5% Critical Value	0.222214	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	767.2979	
95% Adjusted Gamma UCL	833.9286	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	7.795647	
Mean of log data	4.475864	
Standard Deviation of log data	2.388232	
Variance of log data	5.70365	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.861105	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1521.861	
MLE Standard Deviation	26313.69	
MLE Coefficient of Variation	17.29047	
MLE Skewness	5221.036	
MLE Median	87.87049	
MLE 80% Quantile	661.1097	
MLE 90% Quantile	1890.774	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
Block 93 North (Surface Soil)

MLE 95% Quantile	4467.146	
MLE 99% Quantile	22717.5	
MVU Estimate of Median	74.18116	
MVU Estimate of Mean	952.1423	
MVU Estimate of Standard Deviation	4199.601	
MVU Estimate of SE of Mean	647.2976	
95% H-UCL	33131.44	
95% Chebyshev (MVUE) UCL	3773.647	
97.5% Chebyshev (MVUE) UCL	4994.515	
99% Chebyshev (MVUE) UCL	7392.672	
Non-parametric Statisitics		
95% CLT UCL	609.4764	
95% Adjusted-CLT UCL	718.0025	
95% Modified-t UCL	641.6515	
95% Jackknife UCL	624.7236	
95% Chebyshev (Mean, Sd) UCL	1019.074	
97.5% Chebyshev (Mean, Sd) UCL	1303.72	
99% Chebyshev (Mean, Sd) UCL	1862.852	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	605.0274	
95% Bootstrap-t UCL	1207.311	
95% Hall's Bootstrap UCL	1759.99	
95% Percentile Bootstrap UCL	616.4917	
95% BCA Bootstrap UCL	692.3153	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	833.9286	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Fluorene
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Fluorene	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	0.0595	
Maximum	1080	
Mean	115.7224	
Standard Deviation	271.3261	
Variance	73617.84	
Coefficient of Variation	2.344629	
Skewness	3.249177	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.487336	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	230.6124	
Gamma Statistics		
k hat	0.2961	
k star (bias corrected)	0.283063	
Theta hat	390.822	
Theta star	408.8224	
nu hat	10.0674	
nu star	9.624133	
5% Approximate Chi Square Value	3.707418	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	3.331197	
Anderson-Darling Test Statistic	0.698137	
Anderson-Darling 5% Critical Value	0.843374	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.194033	
Kolmogrov-Smirnov 5% Critical Value	0.226934	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	300.4052	
95% Adjusted Gamma UCL	334.3326	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	6.984716	
Mean of log data	2.417391	
Standard Deviation of log data	2.566935	
Variance of log data	6.589157	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.986921	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	302.4661	
MLE Standard Deviation	8150.702	
MLE Coefficient of Variation	26.94749	
MLE Skewness	19649.23	
MLE Median	11.21656	
MLE 80% Quantile	98.14551	
MLE 90% Quantile	303.6582	

Appendix P, Attachment 3
ProUCL Output - Fluorene
Block 93 North (Surface Soil)

MLE 95% Quantile	765.0945	
MLE 99% Quantile	4394.382	
MVU Estimate of Median	9.220689	
MVU Estimate of Mean	169.0095	
MVU Estimate of Standard Deviation	861.1439	
MVU Estimate of SE of Mean	122.0553	
95% H-UCL	10348.18	
95% Chebyshev (MVUE) UCL	701.0364	
97.5% Chebyshev (MVUE) UCL	931.2448	
99% Chebyshev (MVUE) UCL	1383.445	
Non-parametric Statisitics		
95% CLT UCL	223.964	
95% Adjusted-CLT UCL	279.3751	
95% Modified-t UCL	239.2554	
95% Jackknife UCL	230.6124	
95% Chebyshev (Mean, Sd) UCL	402.5651	
97.5% Chebyshev (Mean, Sd) UCL	526.6822	
99% Chebyshev (Mean, Sd) UCL	770.4862	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	223.3058	
95% Bootstrap-t UCL	698.7683	
95% Hall's Bootstrap UCL	642.0455	
95% Percentile Bootstrap UCL	231.9794	
95% BCA Bootstrap UCL	305.1823	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	334.3326	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Indeno(1,2,3-c,d)pyrene

Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Indeno(1,2,3-c,d)pyrene	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	0.0595	
Maximum	130	
Mean	51.7635	
Standard Deviation	42.64498	
Variance	1818.594	
Coefficient of Variation	0.823843	
Skewness	0.505066	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.919508	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	69.82105	
Gamma Statistics		
k hat	0.790647	
k star (bias corrected)	0.690337	
Theta hat	65.4698	
Theta star	74.98297	
nu hat	26.882	
nu star	23.47145	
5% Approximate Chi Square Value	13.44573	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	12.6543	
Anderson-Darling Test Statistic	0.511358	
Anderson-Darling 5% Critical Value	0.774716	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.17688	
Kolmogrov-Smirnov 5% Critical Value	0.216907	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	90.36059	
95% Adjusted Gamma UCL	96.01201	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	4.867534	
Mean of log data	3.194878	
Standard Deviation of log data	1.899549	
Variance of log data	3.608287	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.769035	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	148.2679	
MLE Standard Deviation	888.4054	
MLE Coefficient of Variation	5.991892	
MLE Skewness	233.1012	
MLE Median	24.40719	
MLE 80% Quantile	121.51	
MLE 90% Quantile	280.2825	

Appendix P, Attachment 3
ProUCL Output - Indeno(1,2,3-c,d)pyrene
Block 93 North (Surface Soil)

MLE 95% Quantile	555.3707	
MLE 99% Quantile	2024.805	
MVU Estimate of Median	21.93573	
MVU Estimate of Mean	116.8513	
MVU Estimate of Standard Deviation	338.9984	
MVU Estimate of SE of Mean	63.86116	
95% H-UCL	1108.06	
95% Chebyshev (MVUE) UCL	395.2156	
97.5% Chebyshev (MVUE) UCL	515.6641	
99% Chebyshev (MVUE) UCL	752.2617	
Non-parametric Statisitics		
95% CLT UCL	68.7761	
95% Adjusted-CLT UCL	70.12988	
95% Modified-t UCL	70.03221	
95% Jackknife UCL	69.82105	
95% Chebyshev (Mean, Sd) UCL	96.84727	
97.5% Chebyshev (Mean, Sd) UCL	116.3551	
99% Chebyshev (Mean, Sd) UCL	154.6743	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	68.28159	
95% Bootstrap-t UCL	71.41395	
95% Hall's Bootstrap UCL	69.49394	
95% Percentile Bootstrap UCL	68.89176	
95% BCA Bootstrap UCL	70.47997	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	69.82105	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Iron

Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Iron	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	12	
Minimum	16800	
Maximum	38300	
Mean	26000	
Standard Deviation	6624.072	
Variance	43878333	
Coefficient of Variation	0.254772	
Skewness	0.354253	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.954936	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	29274.4	
Gamma Statistics		
k hat	16.73618	
k star (bias corrected)	12.92527	
Theta hat	1553.52	
Theta star	2011.564	
nu hat	435.1408	
nu star	336.057	
5% Approximate Chi Square Value	294.5723	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	289.037	
Anderson-Darling Test Statistic	0.255074	
Anderson-Darling 5% Critical Value	0.733464	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.162626	
Kolmogrov-Smirnov 5% Critical Value	0.236303	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	29661.58	
95% Adjusted Gamma UCL	30229.63	
Lognormal Statistics		
Minimum of log data	9.729134	
Maximum of log data	10.55321	
Mean of log data	10.13568	
Standard Deviation of log data	0.256712	
Variance of log data	0.065901	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.962687	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	26072.32	
MLE Standard Deviation	6804.863	
MLE Coefficient of Variation	0.261	
MLE Skewness	0.800778	
MLE Median	25227.22	
MLE 80% Quantile	31338.43	
MLE 90% Quantile	35085.86	

Appendix P, Attachment 3
ProUCL Output - Iron
Block 93 North (Surface Soil)

MLE 95% Quantile	38482.91	
MLE 99% Quantile	45834.39	
MVU Estimate of Median	25163.35	
MVU Estimate of Mean	26004.61	
MVU Estimate of Standard Deviation	6726.263	
MVU Estimate of SE of Mean	1865.2	
95% H-UCL	29959.66	
95% Chebyshev (MVUE) UCL	34134.83	
97.5% Chebyshev (MVUE) UCL	37652.78	
99% Chebyshev (MVUE) UCL	44563.11	
Non-parametric Statisitics		
95% CLT UCL	29021.9	
95% Adjusted-CLT UCL	29214.78	
95% Modified-t UCL	29304.48	
95% Jackknife UCL	29274.4	
95% Chebyshev (Mean, Sd) UCL	34008.11	
97.5% Chebyshev (Mean, Sd) UCL	37473.23	
99% Chebyshev (Mean, Sd) UCL	44279.78	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	28921.55	
95% Bootstrap-t UCL	29416.67	
95% Hall's Bootstrap UCL	28961.9	
95% Percentile Bootstrap UCL	28953.85	
95% BCA Bootstrap UCL	28953.85	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	29274.4	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Lead

Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	15	
Number of Missing Data	0	
Number of Valid Observations	15	
Number of Distinct Observations	15	
Minimum	17.1	
Maximum	1960	
Mean	440.66	
Standard Deviation	478.695	
Variance	229148.9	
Coefficient of Variation	1.086314	
Skewness	2.534016	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.71537	
Shapiro-Wilk 5% Critical Value	0.881	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	658.3553	
Gamma Statistics		
k hat	1.197141	
k star (bias corrected)	1.002157	
Theta hat	368.0936	
Theta star	439.7113	
nu hat	35.91424	
nu star	30.06472	
5% Approximate Chi Square Value	18.54169	
Adjusted Level of Significance	0.03235	
Adjusted Chi Square Value	17.43321	
Anderson-Darling Test Statistic	0.320679	
Anderson-Darling 5% Critical Value	0.759387	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.14965	
Kolmogrov-Smirnov 5% Critical Value	0.22697	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	714.5154	
95% Adjusted Gamma UCL	759.9475	
Lognormal Statistics		
Minimum of log data	2.839078	
Maximum of log data	7.5807	
Mean of log data	5.615668	
Standard Deviation of log data	1.103253	
Variance of log data	1.217166	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.944806	
Shapiro-Wilk 5% Critical Value	0.881	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	504.845	
MLE Standard Deviation	778.4447	
MLE Coefficient of Variation	1.541948	
MLE Skewness	8.291985	
MLE Median	274.6969	
MLE 80% Quantile	697.7889	
MLE 90% Quantile	1133.82	

Appendix P, Attachment 3
ProUCL Output - Lead
Block 93 North (Surface Soil)

MLE 95% Quantile	1686.682	
MLE 99% Quantile	3575.406	
MVU Estimate of Median	263.7476	
MVU Estimate of Mean	475.8231	
MVU Estimate of Standard Deviation	606.8431	
MVU Estimate of SE of Mean	149.7863	
95% H-UCL	1191.246	
95% Chebyshev (MVUE) UCL	1128.726	
97.5% Chebyshev (MVUE) UCL	1411.238	
99% Chebyshev (MVUE) UCL	1966.178	
Non-parametric Statisitics		
95% CLT UCL	643.9615	
95% Adjusted-CLT UCL	730.3702	
95% Modified-t UCL	671.8333	
95% Jackknife UCL	658.3553	
95% Chebyshev (Mean, Sd) UCL	979.4134	
97.5% Chebyshev (Mean, Sd) UCL	1212.532	
99% Chebyshev (Mean, Sd) UCL	1670.45	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	638.4124	
95% Bootstrap-t UCL	869.8109	
95% Hall's Bootstrap UCL	1469.56	
95% Percentile Bootstrap UCL	657.4733	
95% BCA Bootstrap UCL	755.2667	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	714.5154	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Manganese
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Manganese	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	13	
Minimum	101	
Maximum	828	
Mean	269.1538	
Standard Deviation	189.7383	
Variance	3.60E+04	
Coefficient of Variation	0.704944	
Skewness	2.33364	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.744695	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	362.9449	
Gamma Statistics		
k hat	3.114022	
k star (bias corrected)	2.446684	
Theta hat	86.43286	
Theta star	110.0076	
nu hat	80.96458	
nu star	63.61378	
5% Approximate Chi Square Value	46.26189	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	44.15912	
Anderson-Darling Test Statistic	0.452756	
Anderson-Darling 5% Critical Value	0.738949	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.175573	
Kolmogrov-Smirnov 5% Critical Value	0.238166	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	370.108	
95% Adjusted Gamma UCL	387.7318	
Lognormal Statistics		
Minimum of log data	4.615121	
Maximum of log data	6.719013	
Mean of log data	5.42621	
Standard Deviation of log data	0.578556	
Variance of log data	0.334727	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.942818	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	268.6941	
MLE Standard Deviation	169.4176	
MLE Coefficient of Variation	0.630522	
MLE Skewness	2.14E+00	
MLE Median	227.2862	
MLE 80% Quantile	370.5875	
MLE 90% Quantile	478.0207	

Appendix P, Attachment 3
ProUCL Output - Manganese
Block 93 North (Surface Soil)

MLE 95% Quantile	588.7102	
MLE 99% Quantile	872.9956	
MVU Estimate of Median	224.3762	
MVU Estimate of Mean	264.8165	
MVU Estimate of Standard Deviation	159.0264	
MVU Estimate of SE of Mean	43.92515	
95% H-UCL	388.8519	
95% Chebyshev (MVUE) UCL	456.2818	
97.5% Chebyshev (MVUE) UCL	539.1289	
99% Chebyshev (MVUE) UCL	701.8662	
Non-parametric Statisitics		
95% CLT UCL	355.7125	
95% Adjusted-CLT UCL	392.1062	
95% Modified-t UCL	368.6215	
95% Jackknife UCL	362.9449	
95% Chebyshev (Mean, Sd) UCL	498.5363	
97.5% Chebyshev (Mean, Sd) UCL	597.7903	
99% Chebyshev (Mean, Sd) UCL	792.7555	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	353.005	
95% Bootstrap-t UCL	435.0117	
95% Hall's Bootstrap UCL	745.3271	
95% Percentile Bootstrap UCL	356.7692	
95% BCA Bootstrap UCL	396.0769	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	370.108	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Mercury
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Mercury	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	12	
Minimum	6.90E-02	
Maximum	10	
Mean	1.597615	
Standard Deviation	2.666422	
Variance	7.109807	
Coefficient of Variation	1.669001	
Skewness	3.018054	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.559054	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.915675	
Gamma Statistics		
k hat	0.753431	
k star (bias corrected)	0.630845	
Theta hat	2.120453	
Theta star	2.532502	
nu hat	19.58921	
nu star	16.40196	
5% Approximate Chi Square Value	8.24522	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	7.43435	
Anderson-Darling Test Statistic	0.805332	
Anderson-Darling 5% Critical Value	0.770133	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.281047	
Kolmogrov-Smirnov 5% Critical Value	0.245831	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.178086	
95% Adjusted Gamma UCL	3.524723	
Lognormal Statistics		
Minimum of log data	-2.67365	
Maximum of log data	2.302585	
Mean of log data	-0.32554	
Standard Deviation of log data	1.260254	
Variance of log data	1.58824	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.962918	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1.597723	
MLE Standard Deviation	3.153279	
MLE Coefficient of Variation	1.973608	
MLE Skewness	13.60828	
MLE Median	0.722137	
MLE 80% Quantile	2.094624	
MLE 90% Quantile	3.646931	

Appendix P, Attachment 3
ProUCL Output - Mercury
Block 93 North (Surface Soil)

MLE 95% Quantile	5.740679	
MLE 99% Quantile	13.5422	
MVU Estimate of Median	0.679162	
MVU Estimate of Mean	1.452337	
MVU Estimate of Standard Deviation	2.143416	
MVU Estimate of SE of Mean	0.558389	
95% H-UCL	5.371745	
95% Chebyshev (MVUE) UCL	3.886299	
97.5% Chebyshev (MVUE) UCL	4.939476	
99% Chebyshev (MVUE) UCL	7.008239	
Non-parametric Statisitics		
95% CLT UCL	2.814038	
95% Adjusted-CLT UCL	3.475482	
95% Modified-t UCL	3.018847	
95% Jackknife UCL	2.915675	
95% Chebyshev (Mean, Sd) UCL	4.821163	
97.5% Chebyshev (Mean, Sd) UCL	6.215994	
99% Chebyshev (Mean, Sd) UCL	8.95587	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.749938	
95% Bootstrap-t UCL	5.433874	
95% Hall's Bootstrap UCL	6.616892	
95% Percentile Bootstrap UCL	2.963077	
95% BCA Bootstrap UCL	3.85	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	3.886299	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	0.0595	
Maximum	1600	
Mean	192.4939	
Standard Deviation	456.3059	
Variance	208215.1	
Coefficient of Variation	2.370495	
Skewness	2.582339	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.490429	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	385.7116	
Gamma Statistics		
k hat	0.237552	
k star (bias corrected)	0.234847	
Theta hat	810.3221	
Theta star	819.6566	
nu hat	8.07678	
nu star	7.984799	
5% Approximate Chi Square Value	2.72554	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	2.413612	
Anderson-Darling Test Statistic	1.462382	
Anderson-Darling 5% Critical Value	0.867309	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.310278	
Kolmogrov-Smirnov 5% Critical Value	0.229704	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	563.9341	
95% Adjusted Gamma UCL	636.8153	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	7.377759	
Mean of log data	2.245372	
Standard Deviation of log data	2.77515	
Variance of log data	7.701458	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.957558	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	444.1228	
MLE Standard Deviation	20881.19	
MLE Coefficient of Variation	47.0167	
MLE Skewness	104074.7	
MLE Median	9.443929	
MLE 80% Quantile	98.53126	
MLE 90% Quantile	334.0999	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Block 93 North (Surface Soil)

MLE 95% Quantile	907.3189	
MLE 99% Quantile	6005.141	
MVU Estimate of Median	7.50762	
MVU Estimate of Mean	212.8925	
MVU Estimate of Standard Deviation	1276.638	
MVU Estimate of SE of Mean	163.2278	
95% H-UCL	26782.6	
95% Chebyshev (MVUE) UCL	924.3858	
97.5% Chebyshev (MVUE) UCL	1232.25	
99% Chebyshev (MVUE) UCL	1836.988	
Non-parametric Statisitics		
95% CLT UCL	374.5306	
95% Adjusted-CLT UCL	448.5935	
95% Modified-t UCL	397.2639	
95% Jackknife UCL	385.7116	
95% Chebyshev (Mean, Sd) UCL	674.8952	
97.5% Chebyshev (Mean, Sd) UCL	883.6306	
99% Chebyshev (Mean, Sd) UCL	1293.651	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	365.6357	
95% Bootstrap-t UCL	891.5302	
95% Hall's Bootstrap UCL	1112.852	
95% Percentile Bootstrap UCL	383.5085	
95% BCA Bootstrap UCL	467.9324	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	1836.988	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Nickel
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Nickel	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	13	
Minimum	17.7	
Maximum	173	
Mean	45.15385	
Standard Deviation	43.86834	
Variance	1924.431	
Coefficient of Variation	0.97153	
Skewness	2.410383	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.651648	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	66.83874	
Gamma Statistics		
k hat	1.954598	
k star (bias corrected)	1.554819	
Theta hat	23.10134	
Theta star	29.04122	
nu hat	50.81956	
nu star	40.4253	
5% Approximate Chi Square Value	26.85381	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	25.28547	
Anderson-Darling Test Statistic	1.300976	
Anderson-Darling 5% Critical Value	0.743784	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.30607	
Kolmogrov-Smirnov 5% Critical Value	0.239539	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	67.97389	
95% Adjusted Gamma UCL	72.19	
Lognormal Statistics		
Minimum of log data	2.873565	
Maximum of log data	5.153292	
Mean of log data	3.53297	
Standard Deviation of log data	0.696395	
Variance of log data	0.484966	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.819953	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	43.61724	
MLE Standard Deviation	34.45815	
MLE Coefficient of Variation	0.790012	
MLE Skewness	2.863098	
MLE Median	34.22545	
MLE 80% Quantile	61.64692	
MLE 90% Quantile	83.75006	

Appendix P, Attachment 3
ProUCL Output - Nickel
Block 93 North (Surface Soil)

MLE 95% Quantile	107.6127	
MLE 99% Quantile	172.9122	
MVU Estimate of Median	33.59214	
MVU Estimate of Mean	42.66372	
MVU Estimate of Standard Deviation	31.33292	
MVU Estimate of SE of Mean	8.619503	
95% H-UCL	70.27872	
95% Chebyshev (MVUE) UCL	80.23526	
97.5% Chebyshev (MVUE) UCL	96.4925	
99% Chebyshev (MVUE) UCL	128.4267	
Non-parametric Statisitics		
95% CLT UCL	65.1666	
95% Adjusted-CLT UCL	73.85768	
95% Modified-t UCL	68.19437	
95% Jackknife UCL	66.83874	
95% Chebyshev (Mean, Sd) UCL	98.18808	
97.5% Chebyshev (Mean, Sd) UCL	121.136	
99% Chebyshev (Mean, Sd) UCL	166.2129	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	64.52154	
95% Bootstrap-t UCL	90.31179	
95% Hall's Bootstrap UCL	121.432	
95% Percentile Bootstrap UCL	66.6	
95% BCA Bootstrap UCL	75.83846	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	98.18808	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Phenanthrene
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Phenanthrene	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	0.0595	
Maximum	3620	
Mean	438.4441	
Standard Deviation	932.927	
Variance	870352.7	
Coefficient of Variation	2.127813	
Skewness	2.997943	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.520528	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	833.4817	
Gamma Statistics		
k hat	0.340899	
k star (bias corrected)	0.319956	
Theta hat	1286.141	
Theta star	1370.326	
nu hat	11.59056	
nu star	10.8785	
5% Approximate Chi Square Value	4.497092	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	4.074873	
Anderson-Darling Test Statistic	0.525688	
Anderson-Darling 5% Critical Value	0.832813	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.145972	
Kolmogrov-Smirnov 5% Critical Value	0.22556	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	1060.6	
95% Adjusted Gamma UCL	1170.494	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	8.194229	
Mean of log data	4.102204	
Standard Deviation of log data	2.58488	
Variance of log data	6.681605	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.937336	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1707.877	
MLE Standard Deviation	48203.24	
MLE Coefficient of Variation	28.22407	
MLE Skewness	22567.92	
MLE Median	60.47341	
MLE 80% Quantile	537.2306	
MLE 90% Quantile	1675.346	

Appendix P, Attachment 3
ProUCL Output - Phenanthrene
Block 93 North (Surface Soil)

MLE 95% Quantile	4248.544	
MLE 99% Quantile	24701.89	
MVU Estimate of Median	49.57478	
MVU Estimate of Mean	942.669	
MVU Estimate of Standard Deviation	4872.079	
MVU Estimate of SE of Mean	684.5891	
95% H-UCL	61249.17	
95% Chebyshev (MVUE) UCL	3926.724	
97.5% Chebyshev (MVUE) UCL	5217.926	
99% Chebyshev (MVUE) UCL	7754.244	
Non-parametric Statisitics		
95% CLT UCL	810.6219	
95% Adjusted-CLT UCL	986.4153	
95% Modified-t UCL	860.9019	
95% Jackknife UCL	833.4817	
95% Chebyshev (Mean, Sd) UCL	1424.724	
97.5% Chebyshev (Mean, Sd) UCL	1851.487	
99% Chebyshev (Mean, Sd) UCL	2689.783	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	784.6712	
95% Bootstrap-t UCL	2470.815	
95% Hall's Bootstrap UCL	2520.692	
95% Percentile Bootstrap UCL	837.1047	
95% BCA Bootstrap UCL	1085.565	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	1170.494	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Pyrene
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Pyrene	
Raw Statistics		
Number of Observations	17	
Number of Missing Data	0	
Number of Valid Observations	17	
Number of Distinct Observations	17	
Minimum	0.0595	
Maximum	1530	
Mean	261.9153	
Standard Deviation	399.72	
Variance	159776.1	
Coefficient of Variation	1.526143	
Skewness	2.464112	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.662608	
Shapiro-Wilk 5% Critical Value	0.892	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	431.1723	
Gamma Statistics		
k hat	0.497666	
k star (bias corrected)	0.449058	
Theta hat	526.2872	
Theta star	583.2544	
nu hat	16.92065	
nu star	15.26798	
5% Approximate Chi Square Value	7.447119	
Adjusted Level of Significance	0.03461	
Adjusted Chi Square Value	6.880431	
Anderson-Darling Test Statistic	0.273451	
Anderson-Darling 5% Critical Value	0.798442	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.112048	
Kolmogrov-Smirnov 5% Critical Value	0.220998	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	536.9752	
95% Adjusted Gamma UCL	581.2017	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	7.333023	
Mean of log data	4.290773	
Standard Deviation of log data	2.308317	
Variance of log data	5.328328	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.8493	
Shapiro-Wilk 5% Critical Value	0.892	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1048.313	
MLE Standard Deviation	15012.97	
MLE Coefficient of Variation	14.32107	
MLE Skewness	2980.118	
MLE Median	73.02293	
MLE 80% Quantile	513.5264	
MLE 90% Quantile	1417.941	

Appendix P, Attachment 3
ProUCL Output - Pyrene
Block 93 North (Surface Soil)

MLE 95% Quantile	3255.025	
MLE 99% Quantile	15676.52	
MVU Estimate of Median	62.3438	
MVU Estimate of Mean	686.2699	
MVU Estimate of Standard Deviation	2833.749	
MVU Estimate of SE of Mean	452.7356	
95% H-UCL	18842.63	
95% Chebyshev (MVUE) UCL	2659.699	
97.5% Chebyshev (MVUE) UCL	3513.603	
99% Chebyshev (MVUE) UCL	5190.932	
Non-parametric Statisitics		
95% CLT UCL	421.3778	
95% Adjusted-CLT UCL	483.286	
95% Modified-t UCL	440.8287	
95% Jackknife UCL	431.1723	
95% Chebyshev (Mean, Sd) UCL	684.4946	
97.5% Chebyshev (Mean, Sd) UCL	867.345	
99% Chebyshev (Mean, Sd) UCL	1226.519	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	419.4392	
95% Bootstrap-t UCL	666.943	
95% Hall's Bootstrap UCL	1147.933	
95% Percentile Bootstrap UCL	422.4917	
95% BCA Bootstrap UCL	489.2706	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	581.2017	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Thallium
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Thallium	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	9	
Minimum	0.127	
Maximum	6.5	
Mean	1.72725	
Standard Deviation	2.00194	
Variance	4.007765	
Coefficient of Variation	1.159033	
Skewness	1.700731	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.738346	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.76511	
Gamma Statistics		
k hat	1.024469	
k star (bias corrected)	0.823907	
Theta hat	1.685995	
Theta star	2.096413	
nu hat	24.58726	
nu star	19.77378	
5% Approximate Chi Square Value	10.68306	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	9.67772	
Anderson-Darling Test Statistic	0.765982	
Anderson-Darling 5% Critical Value	0.75619	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.295063	
Kolmogrov-Smirnov 5% Critical Value	0.252212	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.197048	
95% Adjusted Gamma UCL	3.529164	
Lognormal Statistics		
Minimum of log data	-2.06357	
Maximum of log data	1.871802	
Mean of log data	-0.01531	
Standard Deviation of log data	1.118586	
Variance of log data	1.251234	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.91867	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1.840989	
MLE Standard Deviation	2.907744	
MLE Coefficient of Variation	1.579446	
MLE Skewness	8.678508	
MLE Median	0.984803	
MLE 80% Quantile	2.534233	
MLE 90% Quantile	4.145687	

Appendix P, Attachment 3
ProUCL Output - Thallium
Block 93 North (Surface Soil)

MLE 95% Quantile	6.201303	
MLE 99% Quantile	13.28341	
MVU Estimate of Median	0.934579	
MVU Estimate of Mean	1.707713	
MVU Estimate of Standard Deviation	2.144425	
MVU Estimate of SE of Mean	0.594711	
95% H-UCL	5.298227	
95% Chebyshev (MVUE) UCL	4.299996	
97.5% Chebyshev (MVUE) UCL	5.421679	
99% Chebyshev (MVUE) UCL	7.625008	
Non-parametric Statisitics		
95% CLT UCL	2.677828	
95% Adjusted-CLT UCL	2.980998	
95% Modified-t UCL	2.812399	
95% Jackknife UCL	2.76511	
95% Chebyshev (Mean, Sd) UCL	4.246303	
97.5% Chebyshev (Mean, Sd) UCL	5.336299	
99% Chebyshev (Mean, Sd) UCL	7.477386	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.645075	
95% Bootstrap-t UCL	4.034865	
95% Hall's Bootstrap UCL	4.761529	
95% Percentile Bootstrap UCL	2.71475	
95% BCA Bootstrap UCL	2.970833	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	4.299996	95% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Vanadium
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Vanadium	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	13	
Minimum	25.8	
Maximum	95.3	
Mean	41.92308	
Standard Deviation	17.65093	
Variance	311.5553	
Coefficient of Variation	0.421031	
Skewness	2.592054	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.690132	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	50.64824	
Gamma Statistics		
k hat	8.823491	
k star (bias corrected)	6.838583	
Theta hat	4.751303	
Theta star	6.130375	
nu hat	229.4108	
nu star	177.8032	
5% Approximate Chi Square Value	147.9572	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	144.0794	
Anderson-Darling Test Statistic	1.006644	
Anderson-Darling 5% Critical Value	0.734255	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.261401	
Kolmogrov-Smirnov 5% Critical Value	0.236874	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	50.37979	
95% Adjusted Gamma UCL	51.73574	
Lognormal Statistics		
Minimum of log data	3.250374	
Maximum of log data	4.55703	
Mean of log data	3.678101	
Standard Deviation of log data	0.327087	
Variance of log data	0.106986	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.843007	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	41.74557	
MLE Standard Deviation	14.02791	
MLE Coefficient of Variation	0.336033	
MLE Skewness	1.046045	
MLE Median	39.57116	
MLE 80% Quantile	52.16902	
MLE 90% Quantile	60.24425	

Appendix P, Attachment 3
ProUCL Output - Vanadium
Block 93 North (Surface Soil)

MLE 95% Quantile	67.77263	
MLE 99% Quantile	84.68212	
MVU Estimate of Median	39.40862	
MVU Estimate of Mean	41.56697	
MVU Estimate of Standard Deviation	13.76288	
MVU Estimate of SE of Mean	3.815387	
95% H-UCL	50.11977	
95% Chebyshev (MVUE) UCL	58.19785	
97.5% Chebyshev (MVUE) UCL	65.39405	
99% Chebyshev (MVUE) UCL	79.52959	
Non-parametric Statisitics		
95% CLT UCL	49.97544	
95% Adjusted-CLT UCL	53.73596	
95% Modified-t UCL	51.23481	
95% Jackknife UCL	50.64824	
95% Chebyshev (Mean, Sd) UCL	63.26201	
97.5% Chebyshev (Mean, Sd) UCL	72.49538	
99% Chebyshev (Mean, Sd) UCL	90.63255	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	49.91592	
95% Bootstrap-t UCL	59.92256	
95% Hall's Bootstrap UCL	81.28326	
95% Percentile Bootstrap UCL	50.65385	
95% BCA Bootstrap UCL	53.23846	
Recommendations		
Human Inspection Recommended?	YES	Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	50.64824	95% Student's-t UCL
2nd Recommended UCL	51.23481	95% Modified-t UCL
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
Block 93 North (Surface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Xylene (Total)	
Raw Statistics		
Number of Observations	15	
Number of Missing Data	0	
Number of Valid Observations	15	
Number of Distinct Observations	12	
Minimum	0.0025	
Maximum	270	
Mean	18.1311	
Standard Deviation	69.67779	
Variance	4854.994	
Coefficient of Variation	3.842998	
Skewness	3.872915	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.286155	
Shapiro-Wilk 5% Critical Value	0.881	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	49.81835	
Gamma Statistics		
k hat	0.142219	
k star (bias corrected)	0.158219	
Theta hat	127.4876	
Theta star	114.5948	
nu hat	4.266557	
nu star	4.746579	
5% Approximate Chi Square Value	1.036581	
Adjusted Level of Significance	0.03235	
Adjusted Chi Square Value	0.84309	
Anderson-Darling Test Statistic	3.189428	
Anderson-Darling 5% Critical Value	0.896696	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.421328	
Kolmogrov-Smirnov 5% Critical Value	0.247299	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	83.02358	
95% Adjusted Gamma UCL	102.0777	
Lognormal Statistics		
Minimum of log data	-5.99146	
Maximum of log data	5.598422	
Mean of log data	-2.54826	
Standard Deviation of log data	2.893349	
Variance of log data	8.371466	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.832542	
Shapiro-Wilk 5% Critical Value	0.881	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	5.142159	
MLE Standard Deviation	338.015	
MLE Coefficient of Variation	65.73405	
MLE Skewness	284231.8	
MLE Median	0.078218	
MLE 80% Quantile	0.901784	
MLE 90% Quantile	3.221004	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
Block 93 North (Surface Soil)

MLE 95% Quantile	9.127561	
MLE 99% Quantile	65.47503	
MVU Estimate of Median	0.058872	
MVU Estimate of Mean	2.071566	
MVU Estimate of Standard Deviation	12.16274	
MVU Estimate of SE of Mean	1.661621	
95% H-UCL	698.9207	
95% Chebyshev (MVUE) UCL	9.314405	
97.5% Chebyshev (MVUE) UCL	12.44839	
99% Chebyshev (MVUE) UCL	18.60449	
Non-parametric Statisitics		
95% CLT UCL	47.72321	
95% Adjusted-CLT UCL	66.94623	
95% Modified-t UCL	52.81675	
95% Jackknife UCL	49.81835	
95% Chebyshev (Mean, Sd) UCL	96.55086	
97.5% Chebyshev (Mean, Sd) UCL	130.4832	
99% Chebyshev (Mean, Sd) UCL	197.1366	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	46.42553	
95% Bootstrap-t UCL	16564.97	
95% Hall's Bootstrap UCL	7097.106	
95% Percentile Bootstrap UCL	54.0831	
95% BCA Bootstrap UCL	72.14617	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	197.1366	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	37	
Number of Missing Data	0	
Number of Valid Observations	37	
Number of Distinct Observations	35	
Minimum	5.25E-02	
Maximum	1400	
Mean	92.2693	
Standard Deviation	265.329	
Variance	70399.46	
Coefficient of Variation	2.875593	
Skewness	4.042614	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.40581	
Shapiro-Wilk 5% Critical Value	0.936	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	165.9125	
Gamma Statistics		
k hat	0.23233	
k star (bias corrected)	0.23151	
Theta hat	397.1479	
Theta star	398.5537	
nu hat	17.19241	
nu star	17.13176	
5% Approximate Chi Square Value	8.765113	
Adjusted Level of Significance	0.0431	
Adjusted Chi Square Value	8.504818	
Anderson-Darling Test Statistic	2.044959	
Anderson-Darling 5% Critical Value	0.886651	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.183796	
Kolmogrov-Smirnov 5% Critical Value	0.159535	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	180.344	
95% Adjusted Gamma UCL	185.8635	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	7.244228	
Mean of log data	1.431263	
Standard Deviation of log data	2.832532	
Variance of log data	8.023238	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.961189	
Shapiro-Wilk 5% Critical Value	0.936	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	231.1072	
MLE Standard Deviation	12763.4	
MLE Coefficient of Variation	55.22718	
MLE Skewness	168610.8	
MLE Median	4.183979	
MLE 80% Quantile	45.82145	
MLE 90% Quantile	159.3442	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	441.765	
MLE 99% Quantile	3040.364	
MVU Estimate of Median	3.752901	
MVU Estimate of Mean	150.1395	
MVU Estimate of Standard Deviation	1817.891	
MVU Estimate of SE of Mean	101.9667	
95% H-UCL	2440.903	
95% Chebyshev (MVUE) UCL	594.602	
97.5% Chebyshev (MVUE) UCL	786.9213	
99% Chebyshev (MVUE) UCL	1164.695	
Non-parametric Statisitics		
95% CLT UCL	164.0175	
95% Adjusted-CLT UCL	194.9935	
95% Modified-t UCL	170.7441	
95% Jackknife UCL	165.9125	
95% Chebyshev (Mean, Sd) UCL	282.4036	
97.5% Chebyshev (Mean, Sd) UCL	364.6749	
99% Chebyshev (Mean, Sd) UCL	526.2809	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	164.2641	
95% Bootstrap-t UCL	316.7831	
95% Hall's Bootstrap UCL	388.1592	
95% Percentile Bootstrap UCL	168.9727	
95% BCA Bootstrap UCL	199.1329	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	786.9213	97.5% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Acenaphthene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	39	
Minimum	0.0595	
Maximum	990	
Mean	113.3666	
Standard Deviation	232.2263	
Variance	53929.06	
Coefficient of Variation	2.048454	
Skewness	2.903508	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.544969	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	176.0605	
Gamma Statistics		
k hat	0.302403	
k star (bias corrected)	0.296235	
Theta hat	374.8864	
Theta star	382.6916	
nu hat	23.58741	
nu star	23.10632	
5% Approximate Chi Square Value	13.16943	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	12.87268	
Anderson-Darling Test Statistic	0.865657	
Anderson-Darling 5% Critical Value	0.8569	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.143415	
Kolmogrov-Smirnov 5% Critical Value	0.153369	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	198.9066	
95% Adjusted Gamma UCL	203.4919	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	6.897705	
Mean of log data	2.453304	
Standard Deviation of log data	2.660242	
Variance of log data	7.07689	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.962583	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	400.1139	
MLE Standard Deviation	13763.45	
MLE Coefficient of Variation	34.39883	
MLE Skewness	40806.61	
MLE Median	11.6267	
MLE 80% Quantile	110.0802	
MLE 90% Quantile	354.8574	

Appendix P, Attachment 3
ProUCL Output - Acenaphthene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	924.6388	
MLE 99% Quantile	5659.146	
MVU Estimate of Median	10.61606	
MVU Estimate of Mean	285.56	
MVU Estimate of Standard Deviation	2901.792	
MVU Estimate of SE of Mean	179.6359	
95% H-UCL	3024.753	
95% Chebyshev (MVUE) UCL	1068.575	
97.5% Chebyshev (MVUE) UCL	1407.386	
99% Chebyshev (MVUE) UCL	2072.915	
Non-parametric Statisitics		
95% CLT UCL	174.5321	
95% Adjusted-CLT UCL	193.0057	
95% Modified-t UCL	178.942	
95% Jackknife UCL	176.0605	
95% Chebyshev (Mean, Sd) UCL	275.4565	
97.5% Chebyshev (Mean, Sd) UCL	345.5929	
99% Chebyshev (Mean, Sd) UCL	483.3623	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	174.814	
95% Bootstrap-t UCL	233.8441	
95% Hall's Bootstrap UCL	233.4082	
95% Percentile Bootstrap UCL	176.5216	
95% BCA Bootstrap UCL	194.6329	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	203.4919	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Aluminum

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Aluminum	
Raw Statistics		
Number of Observations	31	
Number of Missing Data	0	
Number of Valid Observations	31	
Number of Distinct Observations	30	
Minimum	1150	
Maximum	15700	
Mean	7606.452	
Standard Deviation	4211.849	
Variance	17739670	
Coefficient of Variation	0.553721	
Skewness	0.321028	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.936449	
Shapiro-Wilk 5% Critical Value	0.929	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	8890.379	
Gamma Statistics		
k hat	2.819345	
k star (bias corrected)	2.56801	
Theta hat	2697.95	
Theta star	2962.002	
nu hat	174.7994	
nu star	159.2166	
5% Approximate Chi Square Value	131.0393	
Adjusted Level of Significance	0.0413	
Adjusted Chi Square Value	129.6199	
Anderson-Darling Test Statistic	0.493036	
Anderson-Darling 5% Critical Value	0.753781	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.149156	
Kolmogrov-Smirnov 5% Critical Value	0.15903	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	9242.063	
95% Adjusted Gamma UCL	9343.269	
Lognormal Statistics		
Minimum of log data	7.047517	
Maximum of log data	9.661416	
Mean of log data	8.749047	
Standard Deviation of log data	0.67778	
Variance of log data	0.459386	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.929286	
Shapiro-Wilk 5% Critical Value	0.929	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	7932.629	
MLE Standard Deviation	6057.442	
MLE Coefficient of Variation	0.763611	
MLE Skewness	2.736095	
MLE Median	6304.676	
MLE 80% Quantile	11178.76	
MLE 90% Quantile	15062.96	

Appendix P, Attachment 3
ProUCL Output - Aluminum
Block 93 North (Subsurface Soil)

MLE 95% Quantile	19225.55	
MLE 99% Quantile	30502.48	
MVU Estimate of Median	6258.124	
MVU Estimate of Mean	7862.128	
MVU Estimate of Standard Deviation	5809.498	
MVU Estimate of SE of Mean	1031.667	
95% H-UCL	10262.13	
95% Chebyshev (MVUE) UCL	12359.06	
97.5% Chebyshev (MVUE) UCL	14304.88	
99% Chebyshev (MVUE) UCL	18127.08	
Non-parametric Statisitics		
95% CLT UCL	8850.735	
95% Adjusted-CLT UCL	8897.34	
95% Modified-t UCL	8897.648	
95% Jackknife UCL	8890.379	
95% Chebyshev (Mean, Sd) UCL	10903.83	
97.5% Chebyshev (Mean, Sd) UCL	12330.61	
99% Chebyshev (Mean, Sd) UCL	15133.24	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	8837.519	
95% Bootstrap-t UCL	8891.09	
95% Hall's Bootstrap UCL	8910.136	
95% Percentile Bootstrap UCL	8858.387	
95% BCA Bootstrap UCL	8873.226	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	8890.379	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Antimony
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Antimony	
Raw Statistics		
Number of Observations	31	
Number of Missing Data	0	
Number of Valid Observations	31	
Number of Distinct Observations	29	
Minimum	0.445	
Maximum	41	
Mean	3.794032	
Standard Deviation	8.495227	
Variance	72.16888	
Coefficient of Variation	2.239102	
Skewness	3.542153	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.444134	
Shapiro-Wilk 5% Critical Value	0.929	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	6.383692	
Gamma Statistics		
k hat	0.585307	
k star (bias corrected)	0.550169	
Theta hat	6.482129	
Theta star	6.896117	
nu hat	36.289	
nu star	34.1105	
5% Approximate Chi Square Value	21.75054	
Adjusted Level of Significance	0.0413	
Adjusted Chi Square Value	21.20109	
Anderson-Darling Test Statistic	4.249144	
Anderson-Darling 5% Critical Value	0.802261	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.301659	
Kolmogrov-Smirnov 5% Critical Value	0.165806	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	5.950028	
95% Adjusted Gamma UCL	6.104231	
Lognormal Statistics		
Minimum of log data	-0.80968	
Maximum of log data	3.713572	
Mean of log data	0.2739	
Standard Deviation of log data	1.200078	
Variance of log data	1.440188	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.793729	
Shapiro-Wilk 5% Critical Value	0.929	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.702005	
MLE Standard Deviation	4.849695	
MLE Coefficient of Variation	1.794851	
MLE Skewness	11.16664	
MLE Median	1.315083	
MLE 80% Quantile	3.625406	
MLE 90% Quantile	6.147224	

Appendix P, Attachment 3
ProUCL Output - Antimony
Block 93 North (Subsurface Soil)

MLE 95% Quantile	9.469052	
MLE 99% Quantile	21.44051	
MVU Estimate of Median	1.284866	
MVU Estimate of Mean	2.602214	
MVU Estimate of Standard Deviation	4.079466	
MVU Estimate of SE of Mean	0.672464	
95% H-UCL	4.850849	
95% Chebyshev (MVUE) UCL	5.533417	
97.5% Chebyshev (MVUE) UCL	6.80175	
99% Chebyshev (MVUE) UCL	9.293146	
Non-parametric Statisitics		
95% CLT UCL	6.30373	
95% Adjusted-CLT UCL	7.340926	
95% Modified-t UCL	6.545473	
95% Jackknife UCL	6.383692	
95% Chebyshev (Mean, Sd) UCL	10.44479	
97.5% Chebyshev (Mean, Sd) UCL	13.32257	
99% Chebyshev (Mean, Sd) UCL	18.97543	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	6.269991	
95% Bootstrap-t UCL	10.00722	
95% Hall's Bootstrap UCL	12.67759	
95% Percentile Bootstrap UCL	6.537258	
95% BCA Bootstrap UCL	7.612258	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	18.97543	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1254
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Aroclor-1254	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	20	
Minimum	0.0075	
Maximum	1.66	
Mean	0.114222	
Standard Deviation	0.317744	
Variance	1.01E-01	
Coefficient of Variation	2.781806	
Skewness	4.76695	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.354156	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.218521	
Gamma Statistics		
k hat	0.473405	
k star (bias corrected)	0.445496	
Theta hat	0.241278	
Theta star	0.256394	
nu hat	25.56386	
nu star	24.05676	
5% Approximate Chi Square Value	13.89011	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	13.39601	
Anderson-Darling Test Statistic	2.780637	
Anderson-Darling 5% Critical Value	0.813464	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.222337	
Kolmogrov-Smirnov 5% Critical Value	0.17853	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.197825	
95% Adjusted Gamma UCL	0.205122	
Lognormal Statistics		
Minimum of log data	-4.89285	
Maximum of log data	0.506818	
Mean of log data	-3.52283	
Standard Deviation of log data	1.434972	
Variance of log data	2.059143	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.840018	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.08264	
MLE Standard Deviation	0.21612	
MLE Coefficient of Variation	2.615196	
MLE Skewness	25.73157	
MLE Median	0.029516	
MLE 80% Quantile	0.099233	
MLE 90% Quantile	0.18658	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1254
Block 93 North (Subsurface Soil)

MLE 95% Quantile	0.312765	
MLE 99% Quantile	0.831032	
MVU Estimate of Median	0.02841	
MVU Estimate of Mean	0.077017	
MVU Estimate of Standard Deviation	0.15751	
MVU Estimate of SE of Mean	0.026241	
95% H-UCL	0.196319	
95% Chebyshev (MVUE) UCL	0.191398	
97.5% Chebyshev (MVUE) UCL	0.240891	
99% Chebyshev (MVUE) UCL	0.338109	
Non-parametric Statisitics		
95% CLT UCL	0.214805	
95% Adjusted-CLT UCL	0.274747	
95% Modified-t UCL	0.22787	
95% Jackknife UCL	0.218521	
95% Chebyshev (Mean, Sd) UCL	0.380768	
97.5% Chebyshev (Mean, Sd) UCL	0.496103	
99% Chebyshev (Mean, Sd) UCL	0.722656	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.215369	
95% Bootstrap-t UCL	0.563219	
95% Hall's Bootstrap UCL	0.554247	
95% Percentile Bootstrap UCL	0.232259	
95% BCA Bootstrap UCL	0.293056	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	0.722656	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1260
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Aroclor-1260	
Raw Statistics		
Number of Observations	27	
Number of Missing Data	0	
Number of Valid Observations	27	
Number of Distinct Observations	20	
Minimum	7.50E-03	
Maximum	3.58E+00	
Mean	2.17E-01	
Standard Deviation	6.88E-01	
Variance	0.472937	
Coefficient of Variation	3.164823	
Skewness	4.844269	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.328241	
Shapiro-Wilk 5% Critical Value	0.923	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.43E-01	
Gamma Statistics		
k hat	0.364993	
k star (bias corrected)	0.34913	
Theta hat	5.95E-01	
Theta star	6.22E-01	
nu hat	19.70964	
nu star	18.85302	
5% Approximate Chi Square Value	10.0087	
Adjusted Level of Significance	0.0401	
Adjusted Chi Square Value	9.596956	
Anderson-Darling Test Statistic	3.188876	
Anderson-Darling 5% Critical Value	0.838226	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.270563	
Kolmogrov-Smirnov 5% Critical Value	0.181137	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	4.09E-01	
95% Adjusted Gamma UCL	4.27E-01	
Lognormal Statistics		
Minimum of log data	-4.89285	
Maximum of log data	1.275363	
Mean of log data	-3.35629	
Standard Deviation of log data	1.679413	
Variance of log data	2.820429	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.826645	
Shapiro-Wilk 5% Critical Value	0.923	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.43E-01	
MLE Standard Deviation	5.67E-01	
MLE Coefficient of Variation	3.97E+00	
MLE Skewness	7.46E+01	
MLE Median	3.49E-02	
MLE 80% Quantile	1.44E-01	
MLE 90% Quantile	3.02E-01	

Appendix P, Attachment 3
ProUCL Output - Aroclor-1260
Block 93 North (Subsurface Soil)

MLE 95% Quantile	5.52E-01	
MLE 99% Quantile	1.73E+00	
MVU Estimate of Median	3.31E-02	
MVU Estimate of Mean	1.28E-01	
MVU Estimate of Standard Deviation	3.46E-01	
MVU Estimate of SE of Mean	5.27E-02	
95% H-UCL	0.443594	
95% Chebyshev (MVUE) UCL	3.58E-01	
97.5% Chebyshev (MVUE) UCL	4.57E-01	
99% Chebyshev (MVUE) UCL	6.52E-01	
Non-parametric Statisitics		
95% CLT UCL	4.35E-01	
95% Adjusted-CLT UCL	0.566831	
95% Modified-t UCL	0.463597	
95% Jackknife UCL	4.43E-01	
95% Chebyshev (Mean, Sd) UCL	7.94E-01	
97.5% Chebyshev (Mean, Sd) UCL	1.04E+00	
99% Chebyshev (Mean, Sd) UCL	1.53E+00	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.33E-01	
95% Bootstrap-t UCL	1.27256	
95% Hall's Bootstrap UCL	1.164974	
95% Percentile Bootstrap UCL	4.65E-01	
95% BCA Bootstrap UCL	6.12E-01	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1.53E+00	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Arsenic

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	36	
Number of Missing Data	0	
Number of Valid Observations	36	
Number of Distinct Observations	35	
Minimum	0.595	
Maximum	9.13E+02	
Mean	5.24E+01	
Standard Deviation	1.53E+02	
Variance	23545.41	
Coefficient of Variation	2.931085	
Skewness	5.365068	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.322681	
Shapiro-Wilk 5% Critical Value	0.935	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	9.56E+01	
Gamma Statistics		
k hat	0.534737	
k star (bias corrected)	0.508694	
Theta hat	97.90045	
Theta star	102.9125	
nu hat	38.50105	
nu star	36.62596	
5% Approximate Chi Square Value	23.77083	
Adjusted Level of Significance	0.0428	
Adjusted Chi Square Value	23.29956	
Anderson-Darling Test Statistic	3.398378	
Anderson-Darling 5% Critical Value	0.809018	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.278225	
Kolmogrov-Smirnov 5% Critical Value	0.154863	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	80.66207	
95% Adjusted Gamma UCL	82.29362	
Lognormal Statistics		
Minimum of log data	-0.51919	
Maximum of log data	6.816736	
Mean of log data	2.782344	
Standard Deviation of log data	1.324235	
Variance of log data	1.753599	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.949827	
Shapiro-Wilk 5% Critical Value	0.935	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	38.82806	
MLE Standard Deviation	84.84931	
MLE Coefficient of Variation	2.185257	
MLE Skewness	16.99114	
MLE Median	16.15685	
MLE 80% Quantile	49.46783	
MLE 90% Quantile	88.58708	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Block 93 North (Subsurface Soil)

MLE 95% Quantile	142.6952	
MLE 99% Quantile	351.6073	
MVU Estimate of Median	15.76784	
MVU Estimate of Mean	37.19633	
MVU Estimate of Standard Deviation	69.44993	
MVU Estimate of SE of Mean	10.2134	
95% H-UCL	72.55432	
95% Chebyshev (MVUE) UCL	81.71549	
97.5% Chebyshev (MVUE) UCL	100.979	
99% Chebyshev (MVUE) UCL	138.8183	
Non-parametric Statisitics		
95% CLT UCL	9.44E+01	
95% Adjusted-CLT UCL	118.8514	
95% Modified-t UCL	99.37172	
95% Jackknife UCL	9.56E+01	
95% Chebyshev (Mean, Sd) UCL	1.64E+02	
97.5% Chebyshev (Mean, Sd) UCL	2.12E+02	
99% Chebyshev (Mean, Sd) UCL	3.07E+02	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	9.41E+01	
95% Bootstrap-t UCL	248.0458	
95% Hall's Bootstrap UCL	234.6045	
95% Percentile Bootstrap UCL	1.00E+02	
95% BCA Bootstrap UCL	1.33E+02	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	7.26E+01	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzene

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Benzene	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	52	
Minimum	0.0008	
Maximum	35.4	
Mean	2.473805	
Standard Deviation	6.972854	
Variance	48.62069	
Coefficient of Variation	2.818675	
Skewness	3.802956	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.399815	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.047323	
Gamma Statistics		
k hat	0.307187	
k star (bias corrected)	0.302553	
Theta hat	8.05308	
Theta star	8.176436	
nu hat	33.79062	
nu star	33.28083	
5% Approximate Chi Square Value	21.08822	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	20.82637	
Anderson-Darling Test Statistic	3.690164	
Anderson-Darling 5% Critical Value	0.861116	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.224042	
Kolmogrov-Smirnov 5% Critical Value	0.130134	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.904089	
95% Adjusted Gamma UCL	3.953176	
Lognormal Statistics		
Minimum of log data	-7.1309	
Maximum of log data	3.566712	
Mean of log data	-1.33036	
Standard Deviation of log data	2.368803	
Variance of log data	5.611228	
Lilliefors Test Statisitic	0.16633	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	4.372165	
MLE Standard Deviation	72.17117	
MLE Coefficient of Variation	16.50696	
MLE Skewness	4547.336	
MLE Median	0.264383	
MLE 80% Quantile	1.956746	
MLE 90% Quantile	5.548659	

Appendix P, Attachment 3
ProUCL Output - Benzene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	13.0179	
MLE 99% Quantile	65.33189	
MVU Estimate of Median	0.251223	
MVU Estimate of Mean	3.681903	
MVU Estimate of Standard Deviation	30.68436	
MVU Estimate of SE of Mean	1.832283	
95% H-UCL	15.89883	
95% Chebyshev (MVUE) UCL	11.66864	
97.5% Chebyshev (MVUE) UCL	15.1245	
99% Chebyshev (MVUE) UCL	21.91288	
Non-parametric Statisitics		
95% CLT UCL	4.020329	
95% Adjusted-CLT UCL	4.535498	
95% Modified-t UCL	4.127679	
95% Jackknife UCL	4.047323	
95% Chebyshev (Mean, Sd) UCL	6.572127	
97.5% Chebyshev (Mean, Sd) UCL	8.345474	
99% Chebyshev (Mean, Sd) UCL	11.82887	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.049443	
95% Bootstrap-t UCL	5.719747	
95% Hall's Bootstrap UCL	4.419155	
95% Percentile Bootstrap UCL	4.151051	
95% BCA Bootstrap UCL	4.69202	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	11.82887	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)anthracene

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	37	
Minimum	0.0595	
Maximum	1400	
Mean	145.145	
Standard Deviation	255.5169	
Variance	65288.87	
Coefficient of Variation	1.760425	
Skewness	3.502041	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.583714	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	214.1266	
Gamma Statistics		
k hat	0.453028	
k star (bias corrected)	0.435274	
Theta hat	320.3887	
Theta star	333.4569	
nu hat	35.33617	
nu star	33.95134	
5% Approximate Chi Square Value	21.62333	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	21.23433	
Anderson-Darling Test Statistic	0.485556	
Anderson-Darling 5% Critical Value	0.823393	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.104561	
Kolmogrov-Smirnov 5% Critical Value	0.150401	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	227.8959	
95% Adjusted Gamma UCL	232.0708	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	7.244228	
Mean of log data	3.553806	
Standard Deviation of log data	2.24098	
Variance of log data	5.021993	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.913956	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	430.4378	
MLE Standard Deviation	5284.286	
MLE Coefficient of Variation	12.27654	
MLE Skewness	1887.069	
MLE Median	34.94607	
MLE 80% Quantile	232.1618	
MLE 90% Quantile	622.3272	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	1394.399	
MLE 99% Quantile	6414.566	
MVU Estimate of Median	32.76358	
MVU Estimate of Mean	354.2732	
MVU Estimate of Standard Deviation	2118.993	
MVU Estimate of SE of Mean	183.43	
95% H-UCL	1879.325	
95% Chebyshev (MVUE) UCL	1153.826	
97.5% Chebyshev (MVUE) UCL	1499.793	
99% Chebyshev (MVUE) UCL	2179.379	
Non-parametric Statisitics		
95% CLT UCL	212.4449	
95% Adjusted-CLT UCL	236.9613	
95% Modified-t UCL	217.9506	
95% Jackknife UCL	214.1266	
95% Chebyshev (Mean, Sd) UCL	323.4913	
97.5% Chebyshev (Mean, Sd) UCL	400.6619	
99% Chebyshev (Mean, Sd) UCL	552.2485	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	211.3622	
95% Bootstrap-t UCL	262.896	
95% Hall's Bootstrap UCL	476.3685	
95% Percentile Bootstrap UCL	222.5219	
95% BCA Bootstrap UCL	245.7132	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	232.0708	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Benzo(a)pyrene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	38	
Minimum	0.0595	
Maximum	1200	
Mean	125.9154	
Standard Deviation	216.7505	
Variance	46980.77	
Coefficient of Variation	1.721397	
Skewness	3.603964	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.586753	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	184.4313	
Gamma Statistics		
k hat	0.473954	
k star (bias corrected)	0.45459	
Theta hat	265.6704	
Theta star	276.987	
nu hat	36.96837	
nu star	35.45799	
5% Approximate Chi Square Value	22.83056	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	22.42998	
Anderson-Darling Test Statistic	0.388721	
Anderson-Darling 5% Critical Value	0.818738	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.120305	
Kolmogrov-Smirnov 5% Critical Value	0.149989	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	195.5584	
95% Adjusted Gamma UCL	199.0509	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	7.090077	
Mean of log data	3.484201	
Standard Deviation of log data	2.220817	
Variance of log data	4.932028	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.900114	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	383.8359	
MLE Standard Deviation	4503.499	
MLE Coefficient of Variation	11.73288	
MLE Skewness	1650.351	
MLE Median	32.59638	
MLE 80% Quantile	212.8934	
MLE 90% Quantile	565.6361	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	1258.21	
MLE 99% Quantile	5709.127	
MVU Estimate of Median	30.59601	
MVU Estimate of Mean	317.6606	
MVU Estimate of Standard Deviation	1852.303	
MVU Estimate of SE of Mean	162.7036	
95% H-UCL	1636.043	
95% Chebyshev (MVUE) UCL	1026.869	
97.5% Chebyshev (MVUE) UCL	1333.744	
99% Chebyshev (MVUE) UCL	1936.541	
Non-parametric Statisitics		
95% CLT UCL	183.0048	
95% Adjusted-CLT UCL	204.4069	
95% Modified-t UCL	187.7696	
95% Jackknife UCL	184.4313	
95% Chebyshev (Mean, Sd) UCL	277.2034	
97.5% Chebyshev (Mean, Sd) UCL	342.6659	
99% Chebyshev (Mean, Sd) UCL	471.2542	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	179.6437	
95% Bootstrap-t UCL	229.6286	
95% Hall's Bootstrap UCL	406.1981	
95% Percentile Bootstrap UCL	185.5943	
95% BCA Bootstrap UCL	212.9273	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	199.0509	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(b)fluoranthene

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Benzo(b)fluoranthene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	37	
Minimum	0.0518	
Maximum	1400	
Mean	123.6087	
Standard Deviation	235.3337	
Variance	55381.94	
Coefficient of Variation	1.90386	
Skewness	4.476225	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.509402	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	187.1414	
Gamma Statistics		
k hat	0.465161	
k star (bias corrected)	0.446474	
Theta hat	265.7329	
Theta star	276.8554	
nu hat	36.28259	
nu star	34.82496	
5% Approximate Chi Square Value	22.32253	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	21.92678	
Anderson-Darling Test Statistic	0.488651	
Anderson-Darling 5% Critical Value	0.820694	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.136278	
Kolmogrov-Smirnov 5% Critical Value	0.150162	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	192.8396	
95% Adjusted Gamma UCL	196.3201	
Lognormal Statistics		
Minimum of log data	-2.96037	
Maximum of log data	7.244228	
Mean of log data	3.43611	
Standard Deviation of log data	2.272659	
Variance of log data	5.16498	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.883373	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	411.0029	
MLE Standard Deviation	5422.031	
MLE Coefficient of Variation	13.1922	
MLE Skewness	2335.468	
MLE Median	31.06588	
MLE 80% Quantile	211.9833	
MLE 90% Quantile	576.213	

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	1305.883	
MLE 99% Quantile	6138.378	
MVU Estimate of Median	29.0722	
MVU Estimate of Mean	335.2871	
MVU Estimate of Standard Deviation	2087.203	
MVU Estimate of SE of Mean	176.5245	
95% H-UCL	1864.375	
95% Chebyshev (MVUE) UCL	1104.739	
97.5% Chebyshev (MVUE) UCL	1437.682	
99% Chebyshev (MVUE) UCL	2091.683	
Non-parametric Statisitics		
95% CLT UCL	185.5926	
95% Adjusted-CLT UCL	214.4536	
95% Modified-t UCL	191.6432	
95% Jackknife UCL	187.1414	
95% Chebyshev (Mean, Sd) UCL	287.8675	
97.5% Chebyshev (Mean, Sd) UCL	358.9424	
99% Chebyshev (Mean, Sd) UCL	498.5552	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	185.2425	
95% Bootstrap-t UCL	265.797	
95% Hall's Bootstrap UCL	432.8787	
95% Percentile Bootstrap UCL	192.7023	
95% BCA Bootstrap UCL	216.0108	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	196.3201	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(g,h,i)perylene

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Benzo(g,h,i)perylene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	37	
Minimum	0.0417	
Maximum	590	
Mean	63.62985	
Standard Deviation	103.4315	
Variance	10698.08	
Coefficient of Variation	1.625519	
Skewness	3.766824	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.594309	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	91.55313	
Gamma Statistics		
k hat	0.514695	
k star (bias corrected)	0.492197	
Theta hat	123.6263	
Theta star	129.2771	
nu hat	40.14623	
nu star	38.39139	
5% Approximate Chi Square Value	25.19894	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	24.77647	
Anderson-Darling Test Statistic	0.366161	
Anderson-Darling 5% Critical Value	0.811526	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.118369	
Kolmogrov-Smirnov 5% Critical Value	0.149322	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	96.94211	
95% Adjusted Gamma UCL	98.59512	
Lognormal Statistics		
Minimum of log data	-3.17725	
Maximum of log data	6.380123	
Mean of log data	2.924504	
Standard Deviation of log data	2.128668	
Variance of log data	4.531226	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.891956	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	179.4896	
MLE Standard Deviation	1720.41	
MLE Coefficient of Variation	9.585009	
MLE Skewness	909.3528	
MLE Median	18.62499	
MLE 80% Quantile	112.531	
MLE 90% Quantile	287.1033	

Appendix P, Attachment 3
ProUCL Output - Benzo(g,h,i)perylene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	617.7987	
MLE 99% Quantile	2632.753	
MVU Estimate of Median	17.57235	
MVU Estimate of Mean	152.1101	
MVU Estimate of Standard Deviation	789.7562	
MVU Estimate of SE of Mean	74.0132	
95% H-UCL	687.3227	
95% Chebyshev (MVUE) UCL	474.7262	
97.5% Chebyshev (MVUE) UCL	614.3225	
99% Chebyshev (MVUE) UCL	888.5322	
Non-parametric Statisitics		
95% CLT UCL	90.87241	
95% Adjusted-CLT UCL	101.5468	
95% Modified-t UCL	93.21813	
95% Jackknife UCL	91.55313	
95% Chebyshev (Mean, Sd) UCL	135.8232	
97.5% Chebyshev (Mean, Sd) UCL	167.0614	
99% Chebyshev (Mean, Sd) UCL	228.4227	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	90.02948	
95% Bootstrap-t UCL	115.4801	
95% Hall's Bootstrap UCL	203.8372	
95% Percentile Bootstrap UCL	92.66561	
95% BCA Bootstrap UCL	108.9066	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	96.94211	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(k)fluoranthene

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Benzo(k)fluoranthene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	37	
Minimum	0.0595	
Maximum	660	
Mean	78.74174	
Standard Deviation	127.0854	
Variance	16150.69	
Coefficient of Variation	1.613952	
Skewness	3.030568	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.635234	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	113.0508	
Gamma Statistics		
k hat	0.479416	
k star (bias corrected)	0.459632	
Theta hat	164.2452	
Theta star	171.3149	
nu hat	37.39443	
nu star	35.85127	
5% Approximate Chi Square Value	23.14676	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	22.74318	
Anderson-Darling Test Statistic	0.316706	
Anderson-Darling 5% Critical Value	0.817523	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.10463	
Kolmogrov-Smirnov 5% Critical Value	0.149882	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	121.9606	
95% Adjusted Gamma UCL	124.1247	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	6.49224	
Mean of log data	3.032559	
Standard Deviation of log data	2.161418	
Variance of log data	4.671728	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.917631	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	214.5242	
MLE Standard Deviation	2207.435	
MLE Coefficient of Variation	10.28991	
MLE Skewness	1120.389	
MLE Median	20.75025	
MLE 80% Quantile	128.8897	
MLE 90% Quantile	333.6127	

Appendix P, Attachment 3
ProUCL Output - Benzo(k)fluoranthene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	726.393	
MLE 99% Quantile	3165.344	
MVU Estimate of Median	19.54217	
MVU Estimate of Mean	180.3221	
MVU Estimate of Standard Deviation	975.6435	
MVU Estimate of SE of Mean	89.38694	
95% H-UCL	852.9233	
95% Chebyshev (MVUE) UCL	569.9507	
97.5% Chebyshev (MVUE) UCL	738.5433	
99% Chebyshev (MVUE) UCL	1069.711	
Non-parametric Statisitics		
95% CLT UCL	112.2144	
95% Adjusted-CLT UCL	122.7664	
95% Modified-t UCL	114.6967	
95% Jackknife UCL	113.0508	
95% Chebyshev (Mean, Sd) UCL	167.4451	
97.5% Chebyshev (Mean, Sd) UCL	205.8271	
99% Chebyshev (Mean, Sd) UCL	281.2211	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	111.9334	
95% Bootstrap-t UCL	135.5061	
95% Hall's Bootstrap UCL	154.7134	
95% Percentile Bootstrap UCL	113.2476	
95% BCA Bootstrap UCL	124.0896	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	124.1247	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	37	
Number of Missing Data	0	
Number of Valid Observations	37	
Number of Distinct Observations	36	
Minimum	0.0541	
Maximum	390	
Mean	48.60361	
Standard Deviation	90.42609	
Variance	8176.877	
Coefficient of Variation	1.860481	
Skewness	2.498074	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.605655	
Shapiro-Wilk 5% Critical Value	0.936	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	73.70177	
Gamma Statistics		
k hat	0.321211	
k star (bias corrected)	0.313184	
Theta hat	151.3139	
Theta star	155.1916	
nu hat	23.76958	
nu star	23.17565	
5% Approximate Chi Square Value	13.22183	
Adjusted Level of Significance	0.0431	
Adjusted Chi Square Value	12.89461	
Anderson-Darling Test Statistic	0.810112	
Anderson-Darling 5% Critical Value	0.852239	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.122727	
Kolmogrov-Smirnov 5% Critical Value	0.156937	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	85.19394	
95% Adjusted Gamma UCL	87.35588	
Lognormal Statistics		
Minimum of log data	-2.91692	
Maximum of log data	5.966147	
Mean of log data	1.760735	
Standard Deviation of log data	2.555502	
Variance of log data	6.530593	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.956484	
Shapiro-Wilk 5% Critical Value	0.936	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	152.3273	
MLE Standard Deviation	3986.217	
MLE Coefficient of Variation	26.16877	
MLE Skewness	17999.01	
MLE Median	5.81671	
MLE 80% Quantile	50.40722	
MLE 90% Quantile	155.1753	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Block 93 North (Subsurface Soil)

MLE 95% Quantile	389.3724	
MLE 99% Quantile	2219.048	
MVU Estimate of Median	5.324279	
MVU Estimate of Mean	111.7475	
MVU Estimate of Standard Deviation	961.851	
MVU Estimate of SE of Mean	68.2184	
95% H-UCL	1064.552	
95% Chebyshev (MVUE) UCL	409.1046	
97.5% Chebyshev (MVUE) UCL	537.7712	
99% Chebyshev (MVUE) UCL	790.5119	
Non-parametric Statisitics		
95% CLT UCL	73.05593	
95% Adjusted-CLT UCL	79.57939	
95% Modified-t UCL	74.7193	
95% Jackknife UCL	73.70177	
95% Chebyshev (Mean, Sd) UCL	113.4028	
97.5% Chebyshev (Mean, Sd) UCL	141.4415	
99% Chebyshev (Mean, Sd) UCL	196.518	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	72.0142	
95% Bootstrap-t UCL	88.2056	
95% Hall's Bootstrap UCL	81.87486	
95% Percentile Bootstrap UCL	72.539	
95% BCA Bootstrap UCL	81.17154	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	87.35588	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chromium
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Chromium	
Raw Statistics		
Number of Observations	35	
Number of Missing Data	0	
Number of Valid Observations	35	
Number of Distinct Observations	34	
Minimum	5.28	
Maximum	84.1	
Mean	25.60971	
Standard Deviation	18.18508	
Variance	330.697	
Coefficient of Variation	0.710085	
Skewness	1.762235	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.815022	
Shapiro-Wilk 5% Critical Value	0.934	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	30.80734	
Gamma Statistics		
k hat	2.591625	
k star (bias corrected)	2.388533	
Theta hat	9.881721	
Theta star	10.72194	
nu hat	181.4137	
nu star	167.1973	
5% Approximate Chi Square Value	138.2922	
Adjusted Level of Significance	0.0425	
Adjusted Chi Square Value	137.0472	
Anderson-Darling Test Statistic	0.561092	
Anderson-Darling 5% Critical Value	0.756135	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.1251	
Kolmogrov-Smirnov 5% Critical Value	0.150062	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	30.96253	
95% Adjusted Gamma UCL	31.2438	
Lognormal Statistics		
Minimum of log data	1.663926	
Maximum of log data	4.432007	
Mean of log data	3.037809	
Standard Deviation of log data	0.646824	
Variance of log data	0.418382	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.977955	
Shapiro-Wilk 5% Critical Value	0.934	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	25.71307	
MLE Standard Deviation	18.53305	
MLE Coefficient of Variation	0.720764	
MLE Skewness	2.536729	
MLE Median	20.85948	
MLE 80% Quantile	36.03084	
MLE 90% Quantile	47.89341	

Appendix P, Attachment 3
ProUCL Output - Chromium
Block 93 North (Subsurface Soil)

MLE 95% Quantile	60.45109	
MLE 99% Quantile	93.9086	
MVU Estimate of Median	20.73516	
MVU Estimate of Mean	25.53095	
MVU Estimate of Standard Deviation	17.92117	
MVU Estimate of SE of Mean	2.999494	
95% H-UCL	32.2351	
95% Chebyshev (MVUE) UCL	38.60544	
97.5% Chebyshev (MVUE) UCL	44.26279	
99% Chebyshev (MVUE) UCL	55.37554	
Non-parametric Statisitics		
95% CLT UCL	30.66573	
95% Adjusted-CLT UCL	31.64407	
95% Modified-t UCL	30.95994	
95% Jackknife UCL	30.80734	
95% Chebyshev (Mean, Sd) UCL	39.00827	
97.5% Chebyshev (Mean, Sd) UCL	44.80583	
99% Chebyshev (Mean, Sd) UCL	56.19403	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	30.67202	
95% Bootstrap-t UCL	32.14895	
95% Hall's Bootstrap UCL	32.16747	
95% Percentile Bootstrap UCL	30.63543	
95% BCA Bootstrap UCL	31.512	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	30.96253	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Chrysene
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Chrysene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	37	
Minimum	5.95E-02	
Maximum	1300	
Mean	139.6983	
Standard Deviation	237.7569	
Variance	56528.36	
Coefficient of Variation	1.701931	
Skewness	3.436014	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.5976	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	203.8853	
Gamma Statistics		
k hat	0.470534	
k star (bias corrected)	0.451433	
Theta hat	296.8932	
Theta star	309.4553	
nu hat	36.70165	
nu star	35.21178	
5% Approximate Chi Square Value	22.63284	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	22.23413	
Anderson-Darling Test Statistic	0.408644	
Anderson-Darling 5% Critical Value	0.819499	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.107678	
Kolmogrov-Smirnov 5% Critical Value	0.150056	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	217.3403	
95% Adjusted Gamma UCL	221.2377	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	7.17012	
Mean of log data	3.576707	
Standard Deviation of log data	2.198113	
Variance of log data	4.831703	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.913264	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	400.4376	
MLE Standard Deviation	4466.708	
MLE Coefficient of Variation	11.15457	
MLE Skewness	1421.363	
MLE Median	35.75559	
MLE 80% Quantile	229.0895	
MLE 90% Quantile	602.6174	

Appendix P, Attachment 3
ProUCL Output - Chrysene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	1329.56	
MLE 99% Quantile	5940.322	
MVU Estimate of Median	33.60469	
MVU Estimate of Mean	333.4144	
MVU Estimate of Standard Deviation	1889.315	
MVU Estimate of SE of Mean	168.6758	
95% H-UCL	1661.648	
95% Chebyshev (MVUE) UCL	1068.655	
97.5% Chebyshev (MVUE) UCL	1386.794	
99% Chebyshev (MVUE) UCL	2011.717	
Non-parametric Statisitics		
95% CLT UCL	202.3205	
95% Adjusted-CLT UCL	224.7028	
95% Modified-t UCL	207.3765	
95% Jackknife UCL	203.8853	
95% Chebyshev (Mean, Sd) UCL	305.6485	
97.5% Chebyshev (Mean, Sd) UCL	377.4553	
99% Chebyshev (Mean, Sd) UCL	518.5058	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	201.1405	
95% Bootstrap-t UCL	248.904	
95% Hall's Bootstrap UCL	449.9596	
95% Percentile Bootstrap UCL	209.4945	
95% BCA Bootstrap UCL	229.1284	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	221.2377	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Copper
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Copper	
Raw Statistics		
Number of Observations	31	
Number of Missing Data	0	
Number of Valid Observations	31	
Number of Distinct Observations	31	
Minimum	1.715	
Maximum	472	
Mean	118.5102	
Standard Deviation	102.1671	
Variance	10438.13	
Coefficient of Variation	0.862096	
Skewness	1.641639	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.865336	
Shapiro-Wilk 5% Critical Value	0.929	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	149.6545	
Gamma Statistics		
k hat	1.264778	
k star (bias corrected)	1.163886	
Theta hat	93.70034	
Theta star	101.8228	
nu hat	78.41626	
nu star	72.16092	
5% Approximate Chi Square Value	53.59764	
Adjusted Level of Significance	0.0413	
Adjusted Chi Square Value	52.70797	
Anderson-Darling Test Statistic	0.175351	
Anderson-Darling 5% Critical Value	0.769283	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.096246	
Kolmogrov-Smirnov 5% Critical Value	0.161457	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	159.5556	
95% Adjusted Gamma UCL	162.2488	
Lognormal Statistics		
Minimum of log data	0.539413	
Maximum of log data	6.156979	
Mean of log data	4.330199	
Standard Deviation of log data	1.14594	
Variance of log data	1.313179	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.919753	
Shapiro-Wilk 5% Critical Value	0.929	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	146.4654	
MLE Standard Deviation	241.4669	
MLE Coefficient of Variation	1.648628	
MLE Skewness	9.426815	
MLE Median	75.95943	
MLE 80% Quantile	200.0403	
MLE 90% Quantile	331.2034	

Appendix P, Attachment 3
ProUCL Output - Copper
Block 93 North (Subsurface Soil)

MLE 95% Quantile	500.3316	
MLE 99% Quantile	1091.88	
MVU Estimate of Median	74.36645	
MVU Estimate of Mean	141.6814	
MVU Estimate of Standard Deviation	207.2468	
MVU Estimate of SE of Mean	34.58467	
95% H-UCL	252.3793	
95% Chebyshev (MVUE) UCL	292.4325	
97.5% Chebyshev (MVUE) UCL	357.6626	
99% Chebyshev (MVUE) UCL	485.7945	
Non-parametric Statisitics		
95% CLT UCL	148.6928	
95% Adjusted-CLT UCL	154.4739	
95% Modified-t UCL	150.5562	
95% Jackknife UCL	149.6545	
95% Chebyshev (Mean, Sd) UCL	198.4949	
97.5% Chebyshev (Mean, Sd) UCL	233.1044	
99% Chebyshev (Mean, Sd) UCL	301.088	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	147.8286	
95% Bootstrap-t UCL	159.2611	
95% Hall's Bootstrap UCL	162.4398	
95% Percentile Bootstrap UCL	150.365	
95% BCA Bootstrap UCL	156.2645	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	159.5556	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzo(a,h)anthracene

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Dibenzo(a,h)anthracene	
Raw Statistics		
Number of Observations	38	
Number of Missing Data	0	
Number of Valid Observations	38	
Number of Distinct Observations	36	
Minimum	0.0595	
Maximum	120	
Mean	19.9882	
Standard Deviation	25.75095	
Variance	663.1112	
Coefficient of Variation	1.288308	
Skewness	2.108506	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.745874	
Shapiro-Wilk 5% Critical Value	0.938	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	27.03578	
Gamma Statistics		
k hat	0.590564	
k star (bias corrected)	0.561484	
Theta hat	33.84596	
Theta star	35.59886	
nu hat	44.88285	
nu star	42.6728	
5% Approximate Chi Square Value	28.6935	
Adjusted Level of Significance	0.0434	
Adjusted Chi Square Value	28.21779	
Anderson-Darling Test Statistic	0.27913	
Anderson-Darling 5% Critical Value	0.803988	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.102622	
Kolmogrov-Smirnov 5% Critical Value	0.150447	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	29.72633	
95% Adjusted Gamma UCL	30.22747	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	4.787492	
Mean of log data	1.946438	
Standard Deviation of log data	1.895185	
Variance of log data	3.591728	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.907815	
Shapiro-Wilk 5% Critical Value	0.938	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	42.19501	
MLE Standard Deviation	250.685	
MLE Coefficient of Variation	5.941105	
MLE Skewness	227.5249	
MLE Median	7.003697	
MLE 80% Quantile	34.73924	
MLE 90% Quantile	79.97798	

Appendix P, Attachment 3
ProUCL Output - Dibenzo(a,h)anthracene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	158.225	
MLE 99% Quantile	575.1549	
MVU Estimate of Median	6.680021	
MVU Estimate of Mean	37.50186	
MVU Estimate of Standard Deviation	144.0894	
MVU Estimate of SE of Mean	15.93418	
95% H-UCL	127.9896	
95% Chebyshev (MVUE) UCL	106.9573	
97.5% Chebyshev (MVUE) UCL	137.0108	
99% Chebyshev (MVUE) UCL	196.0449	
Non-parametric Statisitics		
95% CLT UCL	26.85933	
95% Adjusted-CLT UCL	28.38607	
95% Modified-t UCL	27.27393	
95% Jackknife UCL	27.03578	
95% Chebyshev (Mean, Sd) UCL	38.19687	
97.5% Chebyshev (Mean, Sd) UCL	46.07577	
99% Chebyshev (Mean, Sd) UCL	61.55235	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	26.65931	
95% Bootstrap-t UCL	29.11822	
95% Hall's Bootstrap UCL	29.59248	
95% Percentile Bootstrap UCL	27.04258	
95% BCA Bootstrap UCL	28.51575	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	29.72633	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	37	
Number of Missing Data	0	
Number of Valid Observations	37	
Number of Distinct Observations	37	
Minimum	0.0487	
Maximum	870	
Mean	87.72068	
Standard Deviation	190.7618	
Variance	36390.07	
Coefficient of Variation	2.17465	
Skewness	3.013393	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.527944	
Shapiro-Wilk 5% Critical Value	0.936	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	140.6675	
Gamma Statistics		
k hat	0.268066	
k star (bias corrected)	0.264349	
Theta hat	327.2354	
Theta star	331.8367	
nu hat	19.83688	
nu star	19.56182	
5% Approximate Chi Square Value	10.5273	
Adjusted Level of Significance	0.0431	
Adjusted Chi Square Value	10.23891	
Anderson-Darling Test Statistic	1.096271	
Anderson-Darling 5% Critical Value	0.870962	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.161707	
Kolmogrov-Smirnov 5% Critical Value	0.158391	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	163.0025	
95% Adjusted Gamma UCL	167.5937	
Lognormal Statistics		
Minimum of log data	-3.02208	
Maximum of log data	6.768493	
Mean of log data	1.854218	
Standard Deviation of log data	2.864066	
Variance of log data	8.202873	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.952055	
Shapiro-Wilk 5% Critical Value	0.936	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	385.9295	
MLE Standard Deviation	23317.38	
MLE Coefficient of Variation	60.41875	
MLE Skewness	220735.4	
MLE Median	6.386704	
MLE 80% Quantile	71.83371	
MLE 90% Quantile	253.292	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Block 93 North (Subsurface Soil)

MLE 95% Quantile	710.2426	
MLE 99% Quantile	4994.214	
MVU Estimate of Median	5.714706	
MVU Estimate of Mean	246.8212	
MVU Estimate of Standard Deviation	3106.514	
MVU Estimate of SE of Mean	169.4547	
95% H-UCL	4283.96	
95% Chebyshev (MVUE) UCL	985.4569	
97.5% Chebyshev (MVUE) UCL	1305.065	
99% Chebyshev (MVUE) UCL	1932.874	
Non-parametric Statisitics		
95% CLT UCL	139.305	
95% Adjusted-CLT UCL	155.9057	
95% Modified-t UCL	143.2568	
95% Jackknife UCL	140.6675	
95% Chebyshev (Mean, Sd) UCL	224.4203	
97.5% Chebyshev (Mean, Sd) UCL	283.5704	
99% Chebyshev (Mean, Sd) UCL	399.7592	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	138.3493	
95% Bootstrap-t UCL	183.274	
95% Hall's Bootstrap UCL	219.8775	
95% Percentile Bootstrap UCL	144.655	
95% BCA Bootstrap UCL	155.0877	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	1305.065	97.5% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Fluoranthene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	38	
Minimum	0.0595	
Maximum	3500	
Mean	418.0353	
Standard Deviation	747.7728	
Variance	559164.2	
Coefficient of Variation	1.788779	
Skewness	2.70692	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.603308	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	619.9106	
Gamma Statistics		
k hat	0.397613	
k star (bias corrected)	0.384122	
Theta hat	1051.361	
Theta star	1088.289	
nu hat	31.01384	
nu star	29.9615	
5% Approximate Chi Square Value	18.46054	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	18.10352	
Anderson-Darling Test Statistic	0.568077	
Anderson-Darling 5% Critical Value	0.83572	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.139637	
Kolmogrov-Smirnov 5% Critical Value	0.151493	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	678.4723	
95% Adjusted Gamma UCL	691.8526	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	8.160518	
Mean of log data	4.379001	
Standard Deviation of log data	2.408437	
Variance of log data	5.800568	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.934105	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1449.95	
MLE Standard Deviation	26319.18	
MLE Coefficient of Variation	18.15178	
MLE Skewness	6035.234	
MLE Median	79.75829	
MLE 80% Quantile	610.4094	
MLE 90% Quantile	1761.361	

Appendix P, Attachment 3
ProUCL Output - Fluoranthene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	4191.774	
MLE 99% Quantile	21612.45	
MVU Estimate of Median	74.03186	
MVU Estimate of Mean	1134.863	
MVU Estimate of Standard Deviation	8386.368	
MVU Estimate of SE of Mean	639.3725	
95% H-UCL	7795.431	
95% Chebyshev (MVUE) UCL	3921.823	
97.5% Chebyshev (MVUE) UCL	5127.743	
99% Chebyshev (MVUE) UCL	7496.539	
Non-parametric Statisitics		
95% CLT UCL	614.9893	
95% Adjusted-CLT UCL	670.4468	
95% Modified-t UCL	628.5609	
95% Jackknife UCL	619.9106	
95% Chebyshev (Mean, Sd) UCL	939.9676	
97.5% Chebyshev (Mean, Sd) UCL	1165.808	
99% Chebyshev (Mean, Sd) UCL	1609.428	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	612.9492	
95% Bootstrap-t UCL	715.2747	
95% Hall's Bootstrap UCL	720.9494	
95% Percentile Bootstrap UCL	620.0192	
95% BCA Bootstrap UCL	695.6869	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	691.8526	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Fluorene

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Fluorene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	39	
Minimum	0.0525	
Maximum	1200	
Mean	128.0505	
Standard Deviation	270.4613	
Variance	73149.3	
Coefficient of Variation	2.112145	
Skewness	3.019954	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.533947	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	201.0666	
Gamma Statistics		
k hat	0.289632	
k star (bias corrected)	0.284447	
Theta hat	442.1143	
Theta star	450.1739	
nu hat	22.59131	
nu star	22.18685	
5% Approximate Chi Square Value	12.47684	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	12.18881	
Anderson-Darling Test Statistic	0.866921	
Anderson-Darling 5% Critical Value	0.862072	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.137863	
Kolmogrov-Smirnov 5% Critical Value	0.153733	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	227.7049	
95% Adjusted Gamma UCL	233.0857	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	7.090077	
Mean of log data	2.457898	
Standard Deviation of log data	2.761973	
Variance of log data	7.628494	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.961207	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	529.6125	
MLE Standard Deviation	24008.17	
MLE Coefficient of Variation	45.33158	
MLE Skewness	93290.24	
MLE Median	11.68024	
MLE 80% Quantile	120.514	
MLE 90% Quantile	406.2764	

Appendix P, Attachment 3
ProUCL Output - Fluorene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	1098.108	
MLE 99% Quantile	7202.961	
MVU Estimate of Median	10.58943	
MVU Estimate of Mean	361.9048	
MVU Estimate of Standard Deviation	4182.477	
MVU Estimate of SE of Mean	236.8003	
95% H-UCL	4638.478	
95% Chebyshev (MVUE) UCL	1394.093	
97.5% Chebyshev (MVUE) UCL	1840.722	
99% Chebyshev (MVUE) UCL	2718.038	
Non-parametric Statisitics		
95% CLT UCL	199.2866	
95% Adjusted-CLT UCL	221.6646	
95% Modified-t UCL	204.5572	
95% Jackknife UCL	201.0666	
95% Chebyshev (Mean, Sd) UCL	316.8278	
97.5% Chebyshev (Mean, Sd) UCL	398.5118	
99% Chebyshev (Mean, Sd) UCL	558.9643	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	197.9601	
95% Bootstrap-t UCL	267.8772	
95% Hall's Bootstrap UCL	294.0119	
95% Percentile Bootstrap UCL	203.5463	
95% BCA Bootstrap UCL	228.9253	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	233.0857	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Indeno(1,2,3-c,d)pyrene

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Indeno(1,2,3-c,d)pyrene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	38	
Minimum	0.0595	
Maximum	540	
Mean	60.78378	
Standard Deviation	96.31572	
Variance	9276.719	
Coefficient of Variation	1.584563	
Skewness	3.555227	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.614799	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	86.78602	
Gamma Statistics		
k hat	0.514864	
k star (bias corrected)	0.492353	
Theta hat	118.0579	
Theta star	123.4557	
nu hat	40.15939	
nu star	38.40354	
5% Approximate Chi Square Value	25.2088	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	24.78623	
Anderson-Darling Test Statistic	0.347143	
Anderson-Darling 5% Critical Value	0.811509	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.120797	
Kolmogrov-Smirnov 5% Critical Value	0.149321	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	92.59912	
95% Adjusted Gamma UCL	94.17779	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	6.291569	
Mean of log data	2.879209	
Standard Deviation of log data	2.11276	
Variance of log data	4.463754	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.895449	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	165.8504	
MLE Standard Deviation	1536.359	
MLE Coefficient of Variation	9.263521	
MLE Skewness	822.7193	
MLE Median	17.80019	
MLE 80% Quantile	106.1116	
MLE 90% Quantile	268.8371	

Appendix P, Attachment 3
ProUCL Output - Indeno(1,2,3-c,d)pyrene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	575.1893	
MLE 99% Quantile	2424.762	
MVU Estimate of Median	16.80875	
MVU Estimate of Mean	141.0955	
MVU Estimate of Standard Deviation	718.0488	
MVU Estimate of SE of Mean	68.02672	
95% H-UCL	623.7393	
95% Chebyshev (MVUE) UCL	437.6171	
97.5% Chebyshev (MVUE) UCL	565.9223	
99% Chebyshev (MVUE) UCL	817.9529	
Non-parametric Statisitics		
95% CLT UCL	86.15213	
95% Adjusted-CLT UCL	95.5338	
95% Modified-t UCL	88.24937	
95% Jackknife UCL	86.78602	
95% Chebyshev (Mean, Sd) UCL	128.0105	
97.5% Chebyshev (Mean, Sd) UCL	157.0995	
99% Chebyshev (Mean, Sd) UCL	214.2393	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	86.86599	
95% Bootstrap-t UCL	107.0288	
95% Hall's Bootstrap UCL	192.1278	
95% Percentile Bootstrap UCL	89.314	
95% BCA Bootstrap UCL	100.8293	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	92.59912	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Iron

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Iron	
Raw Statistics		
Number of Observations	31	
Number of Missing Data	0	
Number of Valid Observations	31	
Number of Distinct Observations	30	
Minimum	1340	
Maximum	100000	
Mean	25204.52	
Standard Deviation	20058.02	
Variance	4.02E+08	
Coefficient of Variation	0.795811	
Skewness	2.347995	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.765611	
Shapiro-Wilk 5% Critical Value	0.929	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	31318.94	
Gamma Statistics		
k hat	2.015453	
k star (bias corrected)	1.841914	
Theta hat	12505.64	
Theta star	13683.87	
nu hat	124.9581	
nu star	114.1987	
5% Approximate Chi Square Value	90.5235	
Adjusted Level of Significance	0.0413	
Adjusted Chi Square Value	89.35235	
Anderson-Darling Test Statistic	0.682853	
Anderson-Darling 5% Critical Value	0.758627	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.133585	
Kolmogrov-Smirnov 5% Critical Value	0.159829	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	31796.41	
95% Adjusted Gamma UCL	32213.17	
Lognormal Statistics		
Minimum of log data	7.200425	
Maximum of log data	11.51293	
Mean of log data	9.866637	
Standard Deviation of log data	0.808721	
Variance of log data	0.654029	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.922033	
Shapiro-Wilk 5% Critical Value	0.929	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	26732.94	
MLE Standard Deviation	25686.93	
MLE Coefficient of Variation	0.960872	
MLE Skewness	3.769765	
MLE Median	19276.4	
MLE 80% Quantile	38177.67	
MLE 90% Quantile	54493.86	

Appendix P, Attachment 3
ProUCL Output - Iron
Block 93 North (Subsurface Soil)

MLE 95% Quantile	72910.13	
MLE 99% Quantile	126465.1	
MVU Estimate of Median	19074.06	
MVU Estimate of Mean	26371.74	
MVU Estimate of Standard Deviation	24110.78	
MVU Estimate of SE of Mean	4237.572	
95% H-UCL	37053.72	
95% Chebyshev (MVUE) UCL	44842.89	
97.5% Chebyshev (MVUE) UCL	52835.37	
99% Chebyshev (MVUE) UCL	68535.05	
Non-parametric Statisitics		
95% CLT UCL	31130.15	
95% Adjusted-CLT UCL	32753.47	
95% Modified-t UCL	31572.15	
95% Jackknife UCL	31318.94	
95% Chebyshev (Mean, Sd) UCL	40907.57	
97.5% Chebyshev (Mean, Sd) UCL	47702.29	
99% Chebyshev (Mean, Sd) UCL	61049.21	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	30967.48	
95% Bootstrap-t UCL	35568.38	
95% Hall's Bootstrap UCL	59477.48	
95% Percentile Bootstrap UCL	31309.03	
95% BCA Bootstrap UCL	33023.23	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	31796.41	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Lead

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	36	
Number of Missing Data	0	
Number of Valid Observations	36	
Number of Distinct Observations	35	
Minimum	8.31	
Maximum	1960	
Mean	290.4336	
Standard Deviation	358.7661	
Variance	1.29E+05	
Coefficient of Variation	1.235277	
Skewness	3.150621	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.682193	
Shapiro-Wilk 5% Critical Value	0.935	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	391.4605	
Gamma Statistics		
k hat	0.970012	
k star (bias corrected)	0.907696	
Theta hat	299.4125	
Theta star	319.968	
nu hat	69.84084	
nu star	65.35411	
5% Approximate Chi Square Value	47.74921	
Adjusted Level of Significance	0.0428	
Adjusted Chi Square Value	47.06532	
Anderson-Darling Test Statistic	0.297473	
Anderson-Darling 5% Critical Value	0.777704	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.087045	
Kolmogrov-Smirnov 5% Critical Value	0.151329	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	397.515	
95% Adjusted Gamma UCL	403.2912	
Lognormal Statistics		
Minimum of log data	2.11746	
Maximum of log data	7.5807	
Mean of log data	5.074167	
Standard Deviation of log data	1.194137	
Variance of log data	1.425964	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.981208	
Shapiro-Wilk 5% Critical Value	0.935	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	326.0819	
MLE Standard Deviation	579.8272	
MLE Coefficient of Variation	1.778164	
MLE Skewness	1.10E+01	
MLE Median	159.8389	
MLE 80% Quantile	438.4355	
MLE 90% Quantile	741.4689	

Appendix P, Attachment 3
ProUCL Output - Lead
Block 93 North (Subsurface Soil)

MLE 95% Quantile	1139.703	
MLE 99% Quantile	2570.177	
MVU Estimate of Median	156.7028	
MVU Estimate of Mean	315.7454	
MVU Estimate of Standard Deviation	498.8644	
MVU Estimate of SE of Mean	76.06771	
95% H-UCL	554.0343	
95% Chebyshev (MVUE) UCL	647.3168	
97.5% Chebyshev (MVUE) UCL	790.7881	
99% Chebyshev (MVUE) UCL	1072.61	
Non-parametric Statisitics		
95% CLT UCL	388.7866	
95% Adjusted-CLT UCL	422.336	
95% Modified-t UCL	396.6935	
95% Jackknife UCL	391.4605	
95% Chebyshev (Mean, Sd) UCL	551.0711	
97.5% Chebyshev (Mean, Sd) UCL	663.8492	
99% Chebyshev (Mean, Sd) UCL	885.3799	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	387.2664	
95% Bootstrap-t UCL	452.3522	
95% Hall's Bootstrap UCL	819.4426	
95% Percentile Bootstrap UCL	391.5092	
95% BCA Bootstrap UCL	430.7833	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	397.515	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - m,p-Xylene
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	m,p-Xylene	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	11	
Minimum	6.50E-05	
Maximum	180	
Mean	18.30609	
Standard Deviation	51.89623	
Variance	2693.219	
Coefficient of Variation	2.834916	
Skewness	3.258681	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.415702	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	45.21051	
Gamma Statistics		
k hat	0.179315	
k star (bias corrected)	0.190041	
Theta hat	102.0893	
Theta star	96.32682	
nu hat	4.303549	
nu star	4.560995	
5% Approximate Chi Square Value	0.954692	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	0.732404	
Anderson-Darling Test Statistic	1.233611	
Anderson-Darling 5% Critical Value	0.872442	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.31417	
Kolmogrov-Smirnov 5% Critical Value	0.271917	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	87.45645	
95% Adjusted Gamma UCL	113.9998	
Lognormal Statistics		
Minimum of log data	-9.64112	
Maximum of log data	5.192957	
Mean of log data	-1.26652	
Standard Deviation of log data	3.695996	
Variance of log data	13.66038	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.908617	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	260.778	
MLE Standard Deviation	241315.7	
MLE Coefficient of Variation	925.3681	
MLE Skewness	7.92E+08	
MLE Median	0.28181	
MLE 80% Quantile	6.401893	
MLE 90% Quantile	32.55177	

Appendix P, Attachment 3
ProUCL Output - m,p-Xylene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	123.1484	
MLE 99% Quantile	1525.936	
MVU Estimate of Median	0.155124	
MVU Estimate of Mean	31.04658	
MVU Estimate of Standard Deviation	230.6376	
MVU Estimate of SE of Mean	28.57208	
95% H-UCL	4594036	
95% Chebyshev (MVUE) UCL	155.5894	
97.5% Chebyshev (MVUE) UCL	209.4792	
99% Chebyshev (MVUE) UCL	315.3352	
Non-parametric Statisitics		
95% CLT UCL	42.94789	
95% Adjusted-CLT UCL	58.00622	
95% Modified-t UCL	47.55931	
95% Jackknife UCL	45.21051	
95% Chebyshev (Mean, Sd) UCL	83.60742	
97.5% Chebyshev (Mean, Sd) UCL	111.8634	
99% Chebyshev (Mean, Sd) UCL	167.3667	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	42.23023	
95% Bootstrap-t UCL	1303.908	
95% Hall's Bootstrap UCL	1199.506	
95% Percentile Bootstrap UCL	48.06667	
95% BCA Bootstrap UCL	63.49884	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	1199.506	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Manganese

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Manganese	
Raw Statistics		
Number of Observations	31	
Number of Missing Data	0	
Number of Valid Observations	31	
Number of Distinct Observations	31	
Minimum	21	
Maximum	987	
Mean	267.2452	
Standard Deviation	231.9575	
Variance	53804.29	
Coefficient of Variation	0.867958	
Skewness	1.701431	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.820818	
Shapiro-Wilk 5% Critical Value	0.929	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	337.9544	
Gamma Statistics		
k hat	1.566983	
k star (bias corrected)	1.436845	
Theta hat	170.5476	
Theta star	185.9945	
nu hat	97.15294	
nu star	89.08438	
5% Approximate Chi Square Value	68.31925	
Adjusted Level of Significance	0.0413	
Adjusted Chi Square Value	67.30841	
Anderson-Darling Test Statistic	0.26386	
Anderson-Darling 5% Critical Value	0.763066	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.093707	
Kolmogrov-Smirnov 5% Critical Value	0.16049	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	348.4723	
95% Adjusted Gamma UCL	353.7057	
Lognormal Statistics		
Minimum of log data	3.044522	
Maximum of log data	6.89467	
Mean of log data	5.236329	
Standard Deviation of log data	0.904886	
Variance of log data	0.818819	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.974043	
Shapiro-Wilk 5% Critical Value	0.929	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	283.0825	
MLE Standard Deviation	318.7439	
MLE Coefficient of Variation	1.125975	
MLE Skewness	4.805461	
MLE Median	187.9787	
MLE 80% Quantile	403.8153	
MLE 90% Quantile	601.3082	

Appendix P, Attachment 3
ProUCL Output - Manganese
Block 93 North (Subsurface Soil)

MLE 95% Quantile	832.8609	
MLE 99% Quantile	1542.399	
MVU Estimate of Median	185.5114	
MVU Estimate of Mean	278.042	
MVU Estimate of Standard Deviation	293.2646	
MVU Estimate of SE of Mean	50.99041	
95% H-UCL	414.9939	
95% Chebyshev (MVUE) UCL	500.3041	
97.5% Chebyshev (MVUE) UCL	596.4771	
99% Chebyshev (MVUE) UCL	785.3903	
Non-parametric Statisitics		
95% CLT UCL	335.7711	
95% Adjusted-CLT UCL	349.3743	
95% Modified-t UCL	340.0762	
95% Jackknife UCL	337.9544	
95% Chebyshev (Mean, Sd) UCL	448.8404	
97.5% Chebyshev (Mean, Sd) UCL	527.4168	
99% Chebyshev (Mean, Sd) UCL	681.7649	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	335.6005	
95% Bootstrap-t UCL	358.709	
95% Hall's Bootstrap UCL	362.688	
95% Percentile Bootstrap UCL	336.1065	
95% BCA Bootstrap UCL	347.8032	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	348.4723	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Mercury

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Mercury	
Raw Statistics		
Number of Observations	31	
Number of Missing Data	0	
Number of Valid Observations	31	
Number of Distinct Observations	29	
Minimum	0.056	
Maximum	10	
Mean	0.945677	
Standard Deviation	1.824644	
Variance	3.329325	
Coefficient of Variation	1.929457	
Skewness	4.38853	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.460723	
Shapiro-Wilk 5% Critical Value	0.929	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.501896	
Gamma Statistics		
k hat	0.761037	
k star (bias corrected)	0.708894	
Theta hat	1.242617	
Theta star	1.334019	
nu hat	47.18429	
nu star	43.9514	
5% Approximate Chi Square Value	29.74493	
Adjusted Level of Significance	0.0413	
Adjusted Chi Square Value	29.09446	
Anderson-Darling Test Statistic	1.477699	
Anderson-Darling 5% Critical Value	0.787227	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.249179	
Kolmogrov-Smirnov 5% Critical Value	0.163875	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.397342	
95% Adjusted Gamma UCL	1.428583	
Lognormal Statistics		
Minimum of log data	-2.8824	
Maximum of log data	2.302585	
Mean of log data	-0.84091	
Standard Deviation of log data	1.176552	
Variance of log data	1.384274	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.968641	
Shapiro-Wilk 5% Critical Value	0.929	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.861769	
MLE Standard Deviation	1.490618	
MLE Coefficient of Variation	1.729719	
MLE Skewness	10.36435	
MLE Median	0.43132	
MLE 80% Quantile	1.165653	
MLE 90% Quantile	1.956122	

Appendix P, Attachment 3
ProUCL Output - Mercury
Block 93 North (Subsurface Soil)

MLE 95% Quantile	2.987756	
MLE 99% Quantile	6.657569	
MVU Estimate of Median	0.42179	
MVU Estimate of Mean	0.831581	
MVU Estimate of Standard Deviation	1.26518	
MVU Estimate of SE of Mean	0.209699	
95% H-UCL	1.519441	
95% Chebyshev (MVUE) UCL	1.745639	
97.5% Chebyshev (MVUE) UCL	2.141153	
99% Chebyshev (MVUE) UCL	2.918063	
Non-parametric Statisitics		
95% CLT UCL	1.484722	
95% Adjusted-CLT UCL	1.760726	
95% Modified-t UCL	1.544947	
95% Jackknife UCL	1.501896	
95% Chebyshev (Mean, Sd) UCL	2.374157	
97.5% Chebyshev (Mean, Sd) UCL	2.992261	
99% Chebyshev (Mean, Sd) UCL	4.206407	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.481578	
95% Bootstrap-t UCL	2.373921	
95% Hall's Bootstrap UCL	3.30665	
95% Percentile Bootstrap UCL	1.528968	
95% BCA Bootstrap UCL	1.87429	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	1.519441	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	39	
Minimum	0.0525	
Maximum	4400	
Mean	285.7689	
Standard Deviation	789.3352	
Variance	623050	
Coefficient of Variation	2.762145	
Skewness	4.211091	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.424541	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	498.8647	
Gamma Statistics		
k hat	0.229944	
k star (bias corrected)	0.22935	
Theta hat	1242.775	
Theta star	1245.993	
nu hat	17.93565	
nu star	17.88932	
5% Approximate Chi Square Value	9.309555	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	9.064811	
Anderson-Darling Test Statistic	1.948135	
Anderson-Darling 5% Critical Value	0.888773	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.217464	
Kolmogrov-Smirnov 5% Critical Value	0.155556	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	549.1359	
95% Adjusted Gamma UCL	563.9622	
Lognormal Statistics		
Minimum of log data	-2.94694	
Maximum of log data	8.38936	
Mean of log data	2.524484	
Standard Deviation of log data	2.957714	
Variance of log data	8.748073	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.972618	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	990.8073	
MLE Standard Deviation	78627.52	
MLE Coefficient of Variation	79.35703	
MLE Skewness	499991.9	
MLE Median	12.48445	
MLE 80% Quantile	151.9805	
MLE 90% Quantile	558.4395	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	1619.582	
MLE 99% Quantile	12138.37	
MVU Estimate of Median	11.15639	
MVU Estimate of Mean	616.0077	
MVU Estimate of Standard Deviation	9113.948	
MVU Estimate of SE of Mean	431.4767	
95% H-UCL	11701.55	
95% Chebyshev (MVUE) UCL	2496.771	
97.5% Chebyshev (MVUE) UCL	3310.579	
99% Chebyshev (MVUE) UCL	4909.147	
Non-parametric Statisitics		
95% CLT UCL	493.6698	
95% Adjusted-CLT UCL	584.7391	
95% Modified-t UCL	513.0697	
95% Jackknife UCL	498.8647	
95% Chebyshev (Mean, Sd) UCL	836.711	
97.5% Chebyshev (Mean, Sd) UCL	1075.104	
99% Chebyshev (Mean, Sd) UCL	1543.381	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	490.6284	
95% Bootstrap-t UCL	751.8968	
95% Hall's Bootstrap UCL	1129.538	
95% Percentile Bootstrap UCL	516.0069	
95% BCA Bootstrap UCL	654.7502	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	3310.579	97.5% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Nickel

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Nickel	
Raw Statistics		
Number of Observations	31	
Number of Missing Data	0	
Number of Valid Observations	31	
Number of Distinct Observations	30	
Minimum	4.01	
Maximum	173	
Mean	32.47548	
Standard Deviation	33.06923	
Variance	1093.574	
Coefficient of Variation	1.018283	
Skewness	2.954172	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.668289	
Shapiro-Wilk 5% Critical Value	0.929	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	42.55621	
Gamma Statistics		
k hat	1.697981	
k star (bias corrected)	1.555166	
Theta hat	19.12594	
Theta star	20.88233	
nu hat	105.2748	
nu star	96.42029	
5% Approximate Chi Square Value	74.7667	
Adjusted Level of Significance	0.0413	
Adjusted Chi Square Value	73.70693	
Anderson-Darling Test Statistic	1.084209	
Anderson-Darling 5% Critical Value	0.761751	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.20084	
Kolmogrov-Smirnov 5% Critical Value	0.160295	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	41.88089	
95% Adjusted Gamma UCL	42.48306	
Lognormal Statistics		
Minimum of log data	1.388791	
Maximum of log data	5.153292	
Mean of log data	3.157991	
Standard Deviation of log data	0.785959	
Variance of log data	0.617732	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.968488	
Shapiro-Wilk 5% Critical Value	0.929	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	32.03589	
MLE Standard Deviation	29.61747	
MLE Coefficient of Variation	0.924509	
MLE Skewness	3.563721	
MLE Median	23.52328	
MLE 80% Quantile	45.70129	
MLE 90% Quantile	64.58283	

Appendix P, Attachment 3
ProUCL Output - Nickel
Block 93 North (Subsurface Soil)

MLE 95% Quantile	85.70353	
MLE 99% Quantile	146.3692	
MVU Estimate of Median	23.29	
MVU Estimate of Mean	31.63186	
MVU Estimate of Standard Deviation	27.91677	
MVU Estimate of SE of Mean	4.916982	
95% H-UCL	43.84895	
95% Chebyshev (MVUE) UCL	53.06449	
97.5% Chebyshev (MVUE) UCL	62.33841	
99% Chebyshev (MVUE) UCL	80.55522	
Non-parametric Statisitics		
95% CLT UCL	42.24494	
95% Adjusted-CLT UCL	45.61222	
95% Modified-t UCL	43.08144	
95% Jackknife UCL	42.55621	
95% Chebyshev (Mean, Sd) UCL	58.36477	
97.5% Chebyshev (Mean, Sd) UCL	69.56708	
99% Chebyshev (Mean, Sd) UCL	91.57186	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	42.16672	
95% Bootstrap-t UCL	50.82226	
95% Hall's Bootstrap UCL	79.05992	
95% Percentile Bootstrap UCL	42.6429	
95% BCA Bootstrap UCL	46.51968	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	43.84895	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - o-Xylene

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	o-Xylene	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	12	
Minimum	0.027	
Maximum	90.4	
Mean	9.664017	
Standard Deviation	26.31817	
Variance	692.646	
Coefficient of Variation	2.723316	
Skewness	3.115017	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.436476	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	23.30807	
Gamma Statistics		
k hat	0.196105	
k star (bias corrected)	0.202635	
Theta hat	49.27972	
Theta star	47.69185	
nu hat	4.706529	
nu star	4.86323	
5% Approximate Chi Square Value	1.089141	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	0.845186	
Anderson-Darling Test Statistic	2.036651	
Anderson-Darling 5% Critical Value	0.866848	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.364331	
Kolmogrov-Smirnov 5% Critical Value	0.271197	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	43.15175	
95% Adjusted Gamma UCL	55.60707	
Lognormal Statistics		
Minimum of log data	-3.61192	
Maximum of log data	4.504244	
Mean of log data	-1.49577	
Standard Deviation of log data	2.724634	
Variance of log data	7.423629	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.762812	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	9.170942	
MLE Standard Deviation	375.2362	
MLE Coefficient of Variation	40.91578	
MLE Skewness	68619.89	
MLE Median	0.224075	
MLE 80% Quantile	2.240146	
MLE 90% Quantile	7.428916	

Appendix P, Attachment 3
ProUCL Output - o-Xylene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	19.81121	
MLE 99% Quantile	126.6875	
MVU Estimate of Median	0.163182	
MVU Estimate of Mean	3.772656	
MVU Estimate of Standard Deviation	16.48146	
MVU Estimate of SE of Mean	2.991292	
95% H-UCL	2024.423	
95% Chebyshev (MVUE) UCL	16.8114	
97.5% Chebyshev (MVUE) UCL	22.45327	
99% Chebyshev (MVUE) UCL	33.53564	
Non-parametric Statisitics		
95% CLT UCL	22.16063	
95% Adjusted-CLT UCL	29.4605	
95% Modified-t UCL	24.4467	
95% Jackknife UCL	23.30807	
95% Chebyshev (Mean, Sd) UCL	42.78032	
97.5% Chebyshev (Mean, Sd) UCL	57.10977	
99% Chebyshev (Mean, Sd) UCL	85.2572	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	21.48738	
95% Bootstrap-t UCL	869.0007	
95% Hall's Bootstrap UCL	868.3205	
95% Percentile Bootstrap UCL	24.62392	
95% BCA Bootstrap UCL	32.2295	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	85.2572	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Phenanthrene
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Phenanthrene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	37	
Minimum	0.0595	
Maximum	4900	
Mean	529.5009	
Standard Deviation	1057.337	
Variance	1117961	
Coefficient of Variation	1.996856	
Skewness	2.844757	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.564087	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	814.9488	
Gamma Statistics		
k hat	0.325779	
k star (bias corrected)	0.317813	
Theta hat	1625.337	
Theta star	1666.076	
nu hat	25.41077	
nu star	24.78943	
5% Approximate Chi Square Value	14.4488	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	14.13652	
Anderson-Darling Test Statistic	0.737032	
Anderson-Darling 5% Critical Value	0.851699	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.128603	
Kolmogrov-Smirnov 5% Critical Value	0.152908	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	908.4509	
95% Adjusted Gamma UCL	928.5186	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	8.49699	
Mean of log data	4.183564	
Standard Deviation of log data	2.607389	
Variance of log data	6.798476	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.969729	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	1964.124	
MLE Standard Deviation	58775.56	
MLE Coefficient of Variation	29.92457	
MLE Skewness	26886.62	
MLE Median	65.59921	
MLE 80% Quantile	593.9571	
MLE 90% Quantile	1870.681	

Appendix P, Attachment 3
ProUCL Output - Phenanthrene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	4782.497	
MLE 99% Quantile	28235.91	
MVU Estimate of Median	60.11219	
MVU Estimate of Mean	1431.73	
MVU Estimate of Standard Deviation	13607.84	
MVU Estimate of SE of Mean	881.4206	
95% H-UCL	13785.55	
95% Chebyshev (MVUE) UCL	5273.754	
97.5% Chebyshev (MVUE) UCL	6936.2	
99% Chebyshev (MVUE) UCL	10201.75	
Non-parametric Statisitics		
95% CLT UCL	807.9901	
95% Adjusted-CLT UCL	890.399	
95% Modified-t UCL	827.8029	
95% Jackknife UCL	814.9488	
95% Chebyshev (Mean, Sd) UCL	1267.503	
97.5% Chebyshev (Mean, Sd) UCL	1586.838	
99% Chebyshev (Mean, Sd) UCL	2214.108	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	812.5177	
95% Bootstrap-t UCL	990.5246	
95% Hall's Bootstrap UCL	1017.686	
95% Percentile Bootstrap UCL	820.8686	
95% BCA Bootstrap UCL	900.8777	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	928.5186	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Pyrene
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Pyrene	
Raw Statistics		
Number of Observations	39	
Number of Missing Data	0	
Number of Valid Observations	39	
Number of Distinct Observations	38	
Minimum	0.0595	
Maximum	3200	
Mean	331.1299	
Standard Deviation	614.5802	
Variance	377708.8	
Coefficient of Variation	1.856009	
Skewness	3.20531	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.579215	
Shapiro-Wilk 5% Critical Value	0.939	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	497.0474	
Gamma Statistics		
k hat	0.404787	
k star (bias corrected)	0.390743	
Theta hat	818.036	
Theta star	847.4364	
nu hat	31.57335	
nu star	30.47796	
5% Approximate Chi Square Value	18.86693	
Adjusted Level of Significance	0.0437	
Adjusted Chi Square Value	18.50565	
Anderson-Darling Test Statistic	0.60057	
Anderson-Darling 5% Critical Value	0.834124	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.143479	
Kolmogrov-Smirnov 5% Critical Value	0.151352	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	534.9131	
95% Adjusted Gamma UCL	545.3559	
Lognormal Statistics		
Minimum of log data	-2.82178	
Maximum of log data	8.070906	
Mean of log data	4.17998	
Standard Deviation of log data	2.361347	
Variance of log data	5.575959	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.933572	
Shapiro-Wilk 5% Critical Value	0.939	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1062.054	
MLE Standard Deviation	17223.7	
MLE Coefficient of Variation	16.21735	
MLE Skewness	4313.858	
MLE Median	65.36457	
MLE 80% Quantile	480.7361	
MLE 90% Quantile	1358.737	

Appendix P, Attachment 3
ProUCL Output - Pyrene
Block 93 North (Subsurface Soil)

MLE 95% Quantile	3179.235	
MLE 99% Quantile	15874.56	
MVU Estimate of Median	60.84717	
MVU Estimate of Mean	843.8132	
MVU Estimate of Standard Deviation	5875.299	
MVU Estimate of SE of Mean	464.68	
95% H-UCL	5377.086	
95% Chebyshev (MVUE) UCL	2869.306	
97.5% Chebyshev (MVUE) UCL	3745.739	
99% Chebyshev (MVUE) UCL	5467.321	
Non-parametric Statisitics		
95% CLT UCL	493.0026	
95% Adjusted-CLT UCL	546.9741	
95% Modified-t UCL	505.4658	
95% Jackknife UCL	497.0474	
95% Chebyshev (Mean, Sd) UCL	760.0961	
97.5% Chebyshev (Mean, Sd) UCL	945.7102	
99% Chebyshev (Mean, Sd) UCL	1310.313	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	491.1835	
95% Bootstrap-t UCL	613.3915	
95% Hall's Bootstrap UCL	657.1855	
95% Percentile Bootstrap UCL	505.6317	
95% BCA Bootstrap UCL	558.7774	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	545.3559	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Thallium

Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Thallium	
Raw Statistics		
Number of Observations	30	
Number of Missing Data	0	
Number of Valid Observations	30	
Number of Distinct Observations	22	
Minimum	0.0535	
Maximum	6.5	
Mean	0.940033	
Standard Deviation	1.412192	
Variance	1.994286	
Coefficient of Variation	1.502279	
Skewness	3.023209	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.568894	
Shapiro-Wilk 5% Critical Value	0.927	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.378119	
Gamma Statistics		
k hat	0.869922	
k star (bias corrected)	0.805152	
Theta hat	1.080595	
Theta star	1.167523	
nu hat	52.1953	
nu star	48.3091	
5% Approximate Chi Square Value	33.35245	
Adjusted Level of Significance	0.041	
Adjusted Chi Square Value	32.63518	
Anderson-Darling Test Statistic	1.555725	
Anderson-Darling 5% Critical Value	0.781885	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.257575	
Kolmogrov-Smirnov 5% Critical Value	0.16557	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	1.361584	
95% Adjusted Gamma UCL	1.391509	
Lognormal Statistics		
Minimum of log data	-2.92807	
Maximum of log data	1.871802	
Mean of log data	-0.73674	
Standard Deviation of log data	1.176294	
Variance of log data	1.383668	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.930476	
Shapiro-Wilk 5% Critical Value	0.927	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	0.956092	
MLE Standard Deviation	1.653101	
MLE Coefficient of Variation	1.729019	
MLE Skewness	10.35598	
MLE Median	0.478674	
MLE 80% Quantile	1.293346	
MLE 90% Quantile	2.170163	

Appendix P, Attachment 3
ProUCL Output - Thallium
Block 93 North (Subsurface Soil)

MLE 95% Quantile	3.314373	
MLE 99% Quantile	7.384068	
MVU Estimate of Median	0.467753	
MVU Estimate of Mean	0.921583	
MVU Estimate of Standard Deviation	1.396832	
MVU Estimate of SE of Mean	0.235594	
95% H-UCL	1.708278	
95% Chebyshev (MVUE) UCL	1.948512	
97.5% Chebyshev (MVUE) UCL	2.392865	
99% Chebyshev (MVUE) UCL	3.26571	
Non-parametric Statisitics		
95% CLT UCL	1.364126	
95% Adjusted-CLT UCL	1.516188	
95% Modified-t UCL	1.401837	
95% Jackknife UCL	1.378119	
95% Chebyshev (Mean, Sd) UCL	2.063887	
97.5% Chebyshev (Mean, Sd) UCL	2.55018	
99% Chebyshev (Mean, Sd) UCL	3.505408	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.356879	
95% Bootstrap-t UCL	2.008536	
95% Hall's Bootstrap UCL	2.981434	
95% Percentile Bootstrap UCL	1.4119	
95% BCA Bootstrap UCL	1.526767	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	1.708278	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Vanadium
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Vanadium	
Raw Statistics		
Number of Observations	31	
Number of Missing Data	0	
Number of Valid Observations	31	
Number of Distinct Observations	30	
Minimum	4.92	
Maximum	95.3	
Mean	31.13032	
Standard Deviation	17.98168	
Variance	323.3409	
Coefficient of Variation	0.577626	
Skewness	1.415798	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.90351	
Shapiro-Wilk 5% Critical Value	0.929	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	36.6118	
Gamma Statistics		
k hat	2.983469	
k star (bias corrected)	2.716251	
Theta hat	10.43427	
Theta star	11.46077	
nu hat	184.975	
nu star	168.4076	
5% Approximate Chi Square Value	139.3936	
Adjusted Level of Significance	0.0413	
Adjusted Chi Square Value	137.928	
Anderson-Darling Test Statistic	0.413698	
Anderson-Darling 5% Critical Value	0.752792	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.13332	
Kolmogrov-Smirnov 5% Critical Value	0.158866	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	37.60992	
95% Adjusted Gamma UCL	38.00955	
Lognormal Statistics		
Minimum of log data	1.593309	
Maximum of log data	4.55703	
Mean of log data	3.26133	
Standard Deviation of log data	0.652718	
Variance of log data	0.42604	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.940046	
Shapiro-Wilk 5% Critical Value	0.929	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	32.27685	
MLE Standard Deviation	23.5241	
MLE Coefficient of Variation	0.728823	
MLE Skewness	2.573606	
MLE Median	26.08421	
MLE 80% Quantile	45.2805	
MLE 90% Quantile	60.34465	

Appendix P, Attachment 3
ProUCL Output - Vanadium
Block 93 North (Subsurface Soil)

MLE 95% Quantile	76.32882	
MLE 99% Quantile	119.0509	
MVU Estimate of Median	25.90555	
MVU Estimate of Mean	32.01395	
MVU Estimate of Standard Deviation	22.63943	
MVU Estimate of SE of Mean	4.026347	
95% H-UCL	41.24426	
95% Chebyshev (MVUE) UCL	49.56439	
97.5% Chebyshev (MVUE) UCL	57.15848	
99% Chebyshev (MVUE) UCL	72.0756	
Non-parametric Statisitics		
95% CLT UCL	36.44255	
95% Adjusted-CLT UCL	37.32006	
95% Modified-t UCL	36.74868	
95% Jackknife UCL	36.6118	
95% Chebyshev (Mean, Sd) UCL	45.20785	
97.5% Chebyshev (Mean, Sd) UCL	51.2992	
99% Chebyshev (Mean, Sd) UCL	63.26449	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	36.49806	
95% Bootstrap-t UCL	37.49369	
95% Hall's Bootstrap UCL	39.06668	
95% Percentile Bootstrap UCL	36.5071	
95% BCA Bootstrap UCL	37.31032	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	37.60992	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
Block 93 North (Subsurface Soil)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_SO_Block93N_ALL.xls	
Variable:	Xylene (Total)	
Raw Statistics		
Number of Observations	55	
Number of Missing Data	0	
Number of Valid Observations	55	
Number of Distinct Observations	51	
Minimum	0.002	
Maximum	270	
Mean	7.060309	
Standard Deviation	37.01707	
Variance	1370.263	
Coefficient of Variation	5.242981	
Skewness	6.934896	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.439638	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	15.41371	
Gamma Statistics		
k hat	0.233012	
k star (bias corrected)	0.232423	
Theta hat	30.30024	
Theta star	30.37696	
nu hat	25.63128	
nu star	25.56654	
5% Approximate Chi Square Value	15.04421	
Adjusted Level of Significance	0.045636	
Adjusted Chi Square Value	14.82628	
Anderson-Darling Test Statistic	7.443898	
Anderson-Darling 5% Critical Value	0.893534	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.310951	
Kolmogrov-Smirnov 5% Critical Value	0.132124	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	11.99848	
95% Adjusted Gamma UCL	12.17485	
Lognormal Statistics		
Minimum of log data	-6.21461	
Maximum of log data	5.598422	
Mean of log data	-1.12846	
Standard Deviation of log data	2.264606	
Variance of log data	5.128441	
Lilliefors Test Statisitic	0.159397	
Lilliefors 5% Critical Value	0.119468	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	4.202826	
MLE Standard Deviation	54.43493	
MLE Coefficient of Variation	12.95198	
MLE Skewness	2211.601	
MLE Median	0.32353	
MLE 80% Quantile	2.192689	
MLE 90% Quantile	5.939087	

Appendix P, Attachment 3
ProUCL Output - Xylene (Total)
Block 93 North (Subsurface Soil)

MLE 95% Quantile	13.42091	
MLE 99% Quantile	62.74071	
MVU Estimate of Median	0.308781	
MVU Estimate of Mean	3.622978	
MVU Estimate of Standard Deviation	25.98159	
MVU Estimate of SE of Mean	1.702045	
95% H-UCL	13.81119	
95% Chebyshev (MVUE) UCL	11.04202	
97.5% Chebyshev (MVUE) UCL	14.25225	
99% Chebyshev (MVUE) UCL	20.55811	
Non-parametric Statisitics		
95% CLT UCL	15.2704	
95% Adjusted-CLT UCL	20.25763	
95% Modified-t UCL	16.19161	
95% Jackknife UCL	15.41371	
95% Chebyshev (Mean, Sd) UCL	28.81723	
97.5% Chebyshev (Mean, Sd) UCL	38.23147	
99% Chebyshev (Mean, Sd) UCL	56.72392	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	15.29704	
95% Bootstrap-t UCL	118.4429	
95% Hall's Bootstrap UCL	66.39038	
95% Percentile Bootstrap UCL	16.59214	
95% BCA Bootstrap UCL	24.06854	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	56.72392	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
Block 93 North (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Block93N_GWshallow.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	5	
Minimum	1	
Maximum	6	
Mean	2.258333	
Standard Deviation	1.365456	
Variance	1.86447	
Coefficient of Variation	0.60463	
Skewness	1.924822	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.725145	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.966223	
Gamma Statistics		
k hat	3.692864	
k star (bias corrected)	2.825203	
Theta hat	0.61154	
Theta star	0.799352	
nu hat	88.62873	
nu star	67.80488	
5% Approximate Chi Square Value	49.84938	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	47.50671	
Anderson-Darling Test Statistic	1.04134	
Anderson-Darling 5% Critical Value	0.736793	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.271717	
Kolmogrov-Smirnov 5% Critical Value	0.24671	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.071774	
95% Adjusted Gamma UCL	3.223251	
Lognormal Statistics		
Minimum of log data	0	
Maximum of log data	1.791759	
Mean of log data	0.673163	
Standard Deviation of log data	0.547696	
Variance of log data	0.299971	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.82657	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.277661	
MLE Standard Deviation	1.347136	
MLE Coefficient of Variation	0.591456	
MLE Skewness	1.98127	
MLE Median	1.960429	
MLE 80% Quantile	3.114183	
MLE 90% Quantile	3.962809	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
Block 93 North (Groundwater)

MLE 95% Quantile	4.826511	
MLE 99% Quantile	7.008369	
MVU Estimate of Median	1.936055	
MVU Estimate of Mean	2.246179	
MVU Estimate of Standard Deviation	1.268447	
MVU Estimate of SE of Mean	0.365017	
95% H-UCL	3.276045	
95% Chebyshev (MVUE) UCL	3.83725	
97.5% Chebyshev (MVUE) UCL	4.525707	
99% Chebyshev (MVUE) UCL	5.878049	
Non-parametric Statisitics		
95% CLT UCL	2.90669	
95% Adjusted-CLT UCL	3.140718	
95% Modified-t UCL	3.002726	
95% Jackknife UCL	2.966223	
95% Chebyshev (Mean, Sd) UCL	3.976494	
97.5% Chebyshev (Mean, Sd) UCL	4.719944	
99% Chebyshev (Mean, Sd) UCL	6.180307	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.884538	
95% Bootstrap-t UCL	3.286003	
95% Hall's Bootstrap UCL	6.01763	
95% Percentile Bootstrap UCL	2.958333	
95% BCA Bootstrap UCL	3.125	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	3.976494	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Block 93 North (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Block93N_GWshallow.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	13	
Number of Missing Data	0	
Number of Valid Observations	13	
Number of Distinct Observations	13	
Minimum	14	
Maximum	62100	
Mean	30615	
Standard Deviation	23852.56	
Variance	5.69E+08	
Coefficient of Variation	0.779114	
Skewness	-0.3091	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.860497	
Shapiro-Wilk 5% Critical Value	0.866	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	42405.74	
Gamma Statistics		
k hat	0.33676	
k star (bias corrected)	0.310328	
Theta hat	90910.53	
Theta star	98653.7	
nu hat	8.755752	
nu star	8.068527	
5% Approximate Chi Square Value	2.77408	
Adjusted Level of Significance	0.03009	
Adjusted Chi Square Value	2.351124	
Anderson-Darling Test Statistic	2.123909	
Anderson-Darling 5% Critical Value	0.822476	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.364201	
Kolmogrov-Smirnov 5% Critical Value	0.25514	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	89045	
95% Adjusted Gamma UCL	105063.8	
Lognormal Statistics		
Minimum of log data	2.639057	
Maximum of log data	11.0365	
Mean of log data	8.319868	
Standard Deviation of log data	3.649608	
Variance of log data	13.31964	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.67188	
Shapiro-Wilk 5% Critical Value	0.866	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	3203290	
MLE Standard Deviation	2.5E+09	
MLE Coefficient of Variation	780.4105	
MLE Skewness	4.75E+08	
MLE Median	4104.618	
MLE 80% Quantile	89660.64	
MLE 90% Quantile	446687.6	

Appendix P, Attachment 3
ProUCL Output - Arsenic
Block 93 North (Groundwater)

MLE 95% Quantile	1661903	
MLE 99% Quantile	19952344	
MVU Estimate of Median	2409.144	
MVU Estimate of Mean	451311.6	
MVU Estimate of Standard Deviation	3613266	
MVU Estimate of SE of Mean	411913.5	
95% H-UCL	2.26E+10	
95% Chebyshev (MVUE) UCL	2246801	
97.5% Chebyshev (MVUE) UCL	3023710	
99% Chebyshev (MVUE) UCL	4549799	
Non-parametric Statisitics		
95% CLT UCL	41496.55	
95% Adjusted-CLT UCL	40890.55	
95% Modified-t UCL	42311.22	
95% Jackknife UCL	42405.74	
95% Chebyshev (Mean, Sd) UCL	59451.34	
97.5% Chebyshev (Mean, Sd) UCL	71928.85	
99% Chebyshev (Mean, Sd) UCL	96438.49	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	40958.87	
95% Bootstrap-t UCL	42282.77	
95% Hall's Bootstrap UCL	40087.11	
95% Percentile Bootstrap UCL	40641.57	
95% BCA Bootstrap UCL	40957.12	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	40087.11	95% Hall's Bootstrap UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	PLEASE CHECK	Hall's Bootstrap/Bootstrap-t may yield erratic values,
Alternative UCL	NONE	in that case use 99% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Block 93 North (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Block93N_GWshallow.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	4	
Minimum	0.1	
Maximum	2.5	
Mean	1.963833	
Standard Deviation	0.977009	
Variance	0.954547	
Coefficient of Variation	0.497501	
Skewness	-1.382423	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.582913	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.470342	
Gamma Statistics		
k hat	1.756331	
k star (bias corrected)	1.372804	
Theta hat	1.118145	
Theta star	1.430527	
nu hat	42.15194	
nu star	32.94729	
5% Approximate Chi Square Value	20.82256	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	19.3625	
Anderson-Darling Test Statistic	2.555296	
Anderson-Darling 5% Critical Value	0.743464	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.469845	
Kolmogrov-Smirnov 5% Critical Value	0.249023	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.107351	
95% Adjusted Gamma UCL	3.341665	
Lognormal Statistics		
Minimum of log data	-2.302585	
Maximum of log data	0.916291	
Mean of log data	0.36397	
Standard Deviation of log data	1.076938	
Variance of log data	1.159795	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.598598	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.569902	
MLE Standard Deviation	3.802482	
MLE Coefficient of Variation	1.479622	
MLE Skewness	7.67817	
MLE Median	1.439031	
MLE 80% Quantile	3.575062	
MLE 90% Quantile	5.742159	
MLE 95% Quantile	8.461554	
MLE 99% Quantile	17.61811	
MVU Estimate of Median	1.370895	
MVU Estimate of Mean	2.400416	
MVU Estimate of Standard Deviation	2.880275	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Block 93 North (Groundwater)

MVU Estimate of SE of Mean	0.802558	
95% H-UCL	6.932389	
95% Chebyshev (MVUE) UCL	5.898686	
97.5% Chebyshev (MVUE) UCL	7.41239	
99% Chebyshev (MVUE) UCL	10.38577	
Non-parametric Statisitics		
95% CLT UCL	2.427745	
95% Adjusted-CLT UCL	2.30748	
95% Modified-t UCL	2.451583	
95% Jackknife UCL	2.470342	
95% Chebyshev (Mean, Sd) UCL	3.19321	
97.5% Chebyshev (Mean, Sd) UCL	3.725162	
99% Chebyshev (Mean, Sd) UCL	4.770079	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning
95% Bootstrap-t UCL	N/R	Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	4.770079	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Block 93 North (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Block93N_GWshallow.xls	
Variable:	Benzo(a)pyrene	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	4	
Minimum	0.1	
Maximum	2.5	
Mean	1.913833	
Standard Deviation	1.061069	
Variance	1.125867	
Coefficient of Variation	0.554421	
Skewness	-1.331478	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.560782	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.46392	
Gamma Statistics		
k hat	1.248334	
k star (bias corrected)	0.991806	
Theta hat	1.53311	
Theta star	1.929645	
nu hat	29.96002	
nu star	23.80335	
5% Approximate Chi Square Value	13.6975	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	12.54064	
Anderson-Darling Test Statistic	2.798578	
Anderson-Darling 5% Critical Value	0.751162	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.478398	
Kolmogrov-Smirnov 5% Critical Value	0.250944	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.325836	
95% Adjusted Gamma UCL	3.632641	
Lognormal Statistics		
Minimum of log data	-2.302585	
Maximum of log data	0.916291	
Mean of log data	0.197848	
Standard Deviation of log data	1.318303	
Variance of log data	1.737923	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.582062	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.906093	
MLE Standard Deviation	6.290548	
MLE Coefficient of Variation	2.164606	
MLE Skewness	16.63613	
MLE Median	1.218777	
MLE 80% Quantile	3.712904	
MLE 90% Quantile	6.631742	
MLE 95% Quantile	10.65955	
MLE 99% Quantile	26.15972	
MVU Estimate of Median	1.133178	
MVU Estimate of Mean	2.589482	
MVU Estimate of Standard Deviation	3.981573	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)pyrene
Block 93 North (Groundwater)

MVU Estimate of SE of Mean	1.074092	
95% H-UCL	11.79454	
95% Chebyshev (MVUE) UCL	7.271339	
97.5% Chebyshev (MVUE) UCL	9.297182	
99% Chebyshev (MVUE) UCL	13.27656	
Non-parametric Statisitics		
95% CLT UCL	2.417659	
95% Adjusted-CLT UCL	2.29186	
95% Modified-t UCL	2.444298	
95% Jackknife UCL	2.46392	
95% Chebyshev (Mean, Sd) UCL	3.248982	
97.5% Chebyshev (Mean, Sd) UCL	3.826703	
99% Chebyshev (Mean, Sd) UCL	4.961522	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning
95% Bootstrap-t UCL	N/R	Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	4.961522	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
Block 93 North (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Block93N_GWshallow.xls	
Variable:	Benzo(b)fluoranthene	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	4	
Minimum	0.1	
Maximum	2.5	
Mean	1.917583	
Standard Deviation	1.054738	
Variance	1.11E+00	
Coefficient of Variation	0.550035	
Skewness	-1.33483	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.562995	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.464388	
Gamma Statistics		
k hat	1.278032	
k star (bias corrected)	1.01408	
Theta hat	1.500419	
Theta star	1.89096	
nu hat	30.67277	
nu star	24.33791	
5% Approximate Chi Square Value	14.10418	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	12.92818	
Anderson-Darling Test Statistic	2.770554	
Anderson-Darling 5% Critical Value	0.750495	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.477673	
Kolmogrov-Smirnov 5% Critical Value	0.250776	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.308945	
95% Adjusted Gamma UCL	3.60994	
Lognormal Statistics		
Minimum of log data	-2.302585	
Maximum of log data	0.916291	
Mean of log data	0.211343	
Standard Deviation of log data	1.301601	
Variance of log data	1.694165	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.583567	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.881829	
MLE Standard Deviation	6.073829	
MLE Coefficient of Variation	2.107629	
MLE Skewness	15.68519	
MLE Median	1.235336	
MLE 80% Quantile	3.710607	
MLE 90% Quantile	6.579114	
MLE 95% Quantile	10.51157	
MLE 99% Quantile	25.5048	
MVU Estimate of Median	1.150693	
MVU Estimate of Mean	2.577736	
MVU Estimate of Standard Deviation	3.900336	

Appendix P, Attachment 3
ProUCL Output - Benzo(b)fluoranthene
Block 93 North (Groundwater)

MVU Estimate of SE of Mean	1.054952	
95% H-UCL	11.34115	
95% Chebyshev (MVUE) UCL	7.176165	
97.5% Chebyshev (MVUE) UCL	9.165908	
99% Chebyshev (MVUE) UCL	13.07437	
Non-parametric Statisitics		
95% CLT UCL	2.418403	
95% Adjusted-CLT UCL	2.29304	
95% Modified-t UCL	2.444834	
95% Jackknife UCL	2.464388	
95% Chebyshev (Mean, Sd) UCL	3.244766	
97.5% Chebyshev (Mean, Sd) UCL	3.819039	
99% Chebyshev (Mean, Sd) UCL	4.947087	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning
95% Bootstrap-t UCL	N/R	Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	4.947087	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3
ProUCL Output - Carbazole
Block 93 North (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Block93N_GWshallow.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	5	
Minimum	1.00E+00	
Maximum	6.00E+00	
Mean	2.71E+00	
Standard Deviation	1.30E+00	
Variance	1.702652	
Coefficient of Variation	0.481793	
Skewness	1.365566	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.792379	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	3.38E+00	
Gamma Statistics		
k hat	4.902509	
k star (bias corrected)	3.732437	
Theta hat	5.52E-01	
Theta star	7.26E-01	
nu hat	117.6602	
nu star	89.57849	
5% Approximate Chi Square Value	68.7524	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	65.97336	
Anderson-Darling Test Statistic	1.157589	
Anderson-Darling 5% Critical Value	0.732362	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.324271	
Kolmogrov-Smirnov 5% Critical Value	0.245976	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.53E+00	
95% Adjusted Gamma UCL	3.68E+00	
Lognormal Statistics		
Minimum of log data	0	
Maximum of log data	1.791759	
Mean of log data	0.890892	
Standard Deviation of log data	0.494702	
Variance of log data	0.24473	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.818863	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.75E+00	
MLE Standard Deviation	1.45E+00	
MLE Coefficient of Variation	5.27E-01	
MLE Skewness	1.73E+00	
MLE Median	2.44E+00	
MLE 80% Quantile	3.70E+00	
MLE 90% Quantile	4.60E+00	

Appendix P, Attachment 3
ProUCL Output - Carbazole
Block 93 North (Groundwater)

MLE 95% Quantile	5.50E+00	
MLE 99% Quantile	7.70E+00	
MVU Estimate of Median	2.41E+00	
MVU Estimate of Mean	2.72E+00	
MVU Estimate of Standard Deviation	1.38E+00	
MVU Estimate of SE of Mean	3.98E-01	
95% H-UCL	3.787232	
95% Chebyshev (MVUE) UCL	4.46E+00	
97.5% Chebyshev (MVUE) UCL	5.21E+00	
99% Chebyshev (MVUE) UCL	6.68E+00	
Non-parametric Statisitics		
95% CLT UCL	3.33E+00	
95% Adjusted-CLT UCL	3.486579	
95% Modified-t UCL	3.409555	
95% Jackknife UCL	3.38E+00	
95% Chebyshev (Mean, Sd) UCL	4.35E+00	
97.5% Chebyshev (Mean, Sd) UCL	5.06E+00	
99% Chebyshev (Mean, Sd) UCL	6.46E+00	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	3.30E+00	
95% Bootstrap-t UCL	3.654358	
95% Hall's Bootstrap UCL	7.694676	
95% Percentile Bootstrap UCL	3.29E+00	
95% BCA Bootstrap UCL	3.46E+00	
Recommendations		
Human Inspection Recommended?	YES	Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	3.38E+00	95% Student's-t UCL
2nd Recommended UCL	3.409555	95% Modified-t UCL
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - delta-BHC
Block 93 North (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Block93N_GWshallow.xls	
Variable:	delta-BHC	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	10	
Minimum	0.0044	
Maximum	4.00E-02	
Mean	9.98E-03	
Standard Deviation	9.79E-03	
Variance	9.59E-05	
Coefficient of Variation	0.981604	
Skewness	3.058394	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.557919	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.51E-02	
Gamma Statistics		
k hat	2.286165	
k star (bias corrected)	1.77018	
Theta hat	0.004363	
Theta star	0.005635	
nu hat	54.86797	
nu star	42.48431	
5% Approximate Chi Square Value	28.53879	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	26.80392	
Anderson-Darling Test Statistic	1.155117	
Anderson-Darling 5% Critical Value	0.740802	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.272027	
Kolmogrov-Smirnov 5% Critical Value	0.248224	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.014849	
95% Adjusted Gamma UCL	0.01581	
Lognormal Statistics		
Minimum of log data	-5.42615	
Maximum of log data	-3.21888	
Mean of log data	-4.84204	
Standard Deviation of log data	0.621237	
Variance of log data	0.385935	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.813581	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.00957	
MLE Standard Deviation	0.006568	
MLE Coefficient of Variation	0.686287	
MLE Skewness	2.382094	
MLE Median	0.007891	
MLE 80% Quantile	0.013339	
MLE 90% Quantile	0.017532	

Appendix P, Attachment 3
ProUCL Output - delta-BHC
Block 93 North (Groundwater)

MLE 95% Quantile	0.021925	
MLE 99% Quantile	0.033472	
MVU Estimate of Median	0.007765	
MVU Estimate of Mean	0.009396	
MVU Estimate of Standard Deviation	0.006069	
MVU Estimate of SE of Mean	0.001743	
95% H-UCL	0.014725	
95% Chebyshev (MVUE) UCL	0.016994	
97.5% Chebyshev (MVUE) UCL	0.020282	
99% Chebyshev (MVUE) UCL	0.02674	
Non-parametric Statisitics		
95% CLT UCL	1.46E-02	
95% Adjusted-CLT UCL	0.017291	
95% Modified-t UCL	0.015467	
95% Jackknife UCL	1.51E-02	
95% Chebyshev (Mean, Sd) UCL	2.23E-02	
97.5% Chebyshev (Mean, Sd) UCL	2.76E-02	
99% Chebyshev (Mean, Sd) UCL	3.81E-02	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.45E-02	
95% Bootstrap-t UCL	0.024234	
95% Hall's Bootstrap UCL	0.032155	
95% Percentile Bootstrap UCL	1.53E-02	
95% BCA Bootstrap UCL	1.78E-02	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	2.23E-02	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Block 93 North (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Block93N_GWshallow.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	7	
Minimum	0.8	
Maximum	10	
Mean	3.7	
Standard Deviation	2.583514	
Variance	6.674545	
Coefficient of Variation	0.698247	
Skewness	1.562365	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.792067	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	5.039364	
Gamma Statistics		
k hat	2.692524	
k star (bias corrected)	2.074948	
Theta hat	1.374175	
Theta star	1.783177	
nu hat	64.62057	
nu star	49.79876	
5% Approximate Chi Square Value	34.59355	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	32.66805	
Anderson-Darling Test Statistic	0.879639	
Anderson-Darling 5% Critical Value	0.739782	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.319673	
Kolmogrov-Smirnov 5% Critical Value	0.247761	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	5.326294	
95% Adjusted Gamma UCL	5.640234	
Lognormal Statistics		
Minimum of log data	-0.22314	
Maximum of log data	2.302585	
Mean of log data	1.111288	
Standard Deviation of log data	0.656671	
Variance of log data	0.431217	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.894488	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	3.769328	
MLE Standard Deviation	2.767646	
MLE Coefficient of Variation	0.734255	
MLE Skewness	2.598622	
MLE Median	3.038269	
MLE 80% Quantile	5.291889	
MLE 90% Quantile	7.064701	

Appendix P, Attachment 3
ProUCL Output - Dibenzofuran
Block 93 North (Groundwater)

MLE 95% Quantile	8.948736	
MLE 99% Quantile	13.99507	
MVU Estimate of Median	2.984093	
MVU Estimate of Mean	3.691473	
MVU Estimate of Standard Deviation	2.531428	
MVU Estimate of SE of Mean	0.72624	
95% H-UCL	6.003064	
95% Chebyshev (MVUE) UCL	6.857082	
97.5% Chebyshev (MVUE) UCL	8.226843	
99% Chebyshev (MVUE) UCL	10.91747	
Non-parametric Statisitics		
95% CLT UCL	4.926726	
95% Adjusted-CLT UCL	5.286138	
95% Modified-t UCL	5.095425	
95% Jackknife UCL	5.039364	
95% Chebyshev (Mean, Sd) UCL	6.950851	
97.5% Chebyshev (Mean, Sd) UCL	8.357496	
99% Chebyshev (Mean, Sd) UCL	11.12058	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.85222	
95% Bootstrap-t UCL	5.763302	
95% Hall's Bootstrap UCL	5.602116	
95% Percentile Bootstrap UCL	4.925	
95% BCA Bootstrap UCL	5.225	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	6.003064	95% H-UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Lead
Block 93 North (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Block93N_GWshallow.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	10	
Minimum	9.00E-02	
Maximum	2.40E+01	
Mean	4.03E+00	
Standard Deviation	6.60E+00	
Variance	43.53269	
Coefficient of Variation	1.63822	
Skewness	2.943255	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.583043	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	7.45E+00	
Gamma Statistics		
k hat	0.636461	
k star (bias corrected)	0.532901	
Theta hat	6.33E+00	
Theta star	7.56E+00	
nu hat	15.27506	
nu star	12.78963	
5% Approximate Chi Square Value	5.750479	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	5.04807	
Anderson-Darling Test Statistic	0.48166	
Anderson-Darling 5% Critical Value	0.774383	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.176132	
Kolmogrov-Smirnov 5% Critical Value	0.256568	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	8.96E+00	
95% Adjusted Gamma UCL	1.02E+01	
Lognormal Statistics		
Minimum of log data	-2.40795	
Maximum of log data	3.178054	
Mean of log data	0.430678	
Standard Deviation of log data	1.611446	
Variance of log data	2.596759	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.917703	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	5.64E+00	
MLE Standard Deviation	1.99E+01	
MLE Coefficient of Variation	3.52E+00	
MLE Skewness	5.43E+01	
MLE Median	1.54E+00	
MLE 80% Quantile	6.00E+00	
MLE 90% Quantile	1.22E+01	

Appendix P, Attachment 3
ProUCL Output - Lead
Block 93 North (Groundwater)

MLE 95% Quantile	2.18E+01	
MLE 99% Quantile	6.53E+01	
MVU Estimate of Median	1.38E+00	
MVU Estimate of Mean	4.62E+00	
MVU Estimate of Standard Deviation	9.23E+00	
MVU Estimate of SE of Mean	2.35E+00	
95% H-UCL	4.19E+01	
95% Chebyshev (MVUE) UCL	1.49E+01	
97.5% Chebyshev (MVUE) UCL	1.93E+01	
99% Chebyshev (MVUE) UCL	2.80E+01	
Non-parametric Statisitics		
95% CLT UCL	7.16E+00	
95% Adjusted-CLT UCL	8.889543	
95% Modified-t UCL	7.717761	
95% Jackknife UCL	7.45E+00	
95% Chebyshev (Mean, Sd) UCL	1.23E+01	
97.5% Chebyshev (Mean, Sd) UCL	1.59E+01	
99% Chebyshev (Mean, Sd) UCL	2.30E+01	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	6.90E+00	
95% Bootstrap-t UCL	14.16251	
95% Hall's Bootstrap UCL	17.54248	
95% Percentile Bootstrap UCL	7.66E+00	
95% BCA Bootstrap UCL	9.05E+00	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	8.96E+00	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Block 93 North (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Block93N_GWshallow.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	7	
Minimum	1.00E-01	
Maximum	140	
Mean	18.05083	
Standard Deviation	39.81666	
Variance	1585.366	
Coefficient of Variation	2.205807	
Skewness	3.082849	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.485304	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	38.69287	
Gamma Statistics		
k hat	0.433188	
k star (bias corrected)	0.380447	
Theta hat	41.66974	
Theta star	47.44643	
nu hat	10.39651	
nu star	9.130718	
5% Approximate Chi Square Value	3.40533	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	2.892863	
Anderson-Darling Test Statistic	1.631451	
Anderson-Darling 5% Critical Value	0.797945	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.388995	
Kolmogrov-Smirnov 5% Critical Value	0.260905	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	48.39974	
95% Adjusted Gamma UCL	56.97369	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	4.941642	
Mean of log data	1.39342	
Standard Deviation of log data	1.792147	
Variance of log data	3.21179	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.825015	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	20.07178	
MLE Standard Deviation	97.96897	
MLE Coefficient of Variation	4.88093	
MLE Skewness	130.9235	
MLE Median	4.03E+00	
MLE 80% Quantile	1.83E+01	
MLE 90% Quantile	4.03E+01	

Appendix P, Attachment 3
ProUCL Output - Naphthalene
Block 93 North (Groundwater)

MLE 95% Quantile	7.68E+01	
MLE 99% Quantile	2.60E+02	
MVU Estimate of Median	3.52E+00	
MVU Estimate of Mean	1.54E+01	
MVU Estimate of Standard Deviation	3.55E+01	
MVU Estimate of SE of Mean	8.68E+00	
95% H-UCL	229.8475	
95% Chebyshev (MVUE) UCL	5.32E+01	
97.5% Chebyshev (MVUE) UCL	6.96E+01	
99% Chebyshev (MVUE) UCL	1.02E+02	
Non-parametric Statisitics		
95% CLT UCL	36.95691	
95% Adjusted-CLT UCL	47.88681	
95% Modified-t UCL	40.39772	
95% Jackknife UCL	38.69287	
95% Chebyshev (Mean, Sd) UCL	68.15236	
97.5% Chebyshev (Mean, Sd) UCL	89.83133	
99% Chebyshev (Mean, Sd) UCL	132.4155	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	36.26826	
95% Bootstrap-t UCL	127.7911	
95% Hall's Bootstrap UCL	134.6411	
95% Percentile Bootstrap UCL	38.37583	
95% BCA Bootstrap UCL	49.77917	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	132.4155	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - Trichloroethene
Block 93 North (Groundwater)

Data File	P:\Honeywell\332898Quanta\Data\TBL3_Block93N_GWshallow.xls	
Variable:	Trichloroethene	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	4	
Minimum	0.1	
Maximum	0.5	
Mean	0.304167	
Standard Deviation	0.154417	
Variance	0.023845	
Coefficient of Variation	0.507673	
Skewness	0.328736	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.813977	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.384221	
Gamma Statistics		
k hat	3.825021	
k star (bias corrected)	2.924321	
Theta hat	0.07952	
Theta star	0.104013	
nu hat	91.80051	
nu star	70.18372	
5% Approximate Chi Square Value	51.89395	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	49.50051	
Anderson-Darling Test Statistic	0.879562	
Anderson-Darling 5% Critical Value	0.73637	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.244932	
Kolmogrov-Smirnov 5% Critical Value	0.246577	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.411369	
95% Adjusted Gamma UCL	0.431259	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	-0.69315	
Mean of log data	-1.32656	
Standard Deviation of log data	0.57271	
Variance of log data	0.327996	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.840392	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.312685	
MLE Standard Deviation	0.194817	
MLE Coefficient of Variation	0.623044	
MLE Skewness	2.110987	
MLE Median	0.26539	
MLE 80% Quantile	0.430583	
MLE 90% Quantile	0.553981	

Appendix P, Attachment 3
ProUCL Output - Trichloroethene
Block 93 North (Groundwater)

MLE 95% Quantile	0.680826	
MLE 99% Quantile	1.005582	
MVU Estimate of Median	0.261784	
MVU Estimate of Mean	0.307919	
MVU Estimate of Standard Deviation	0.182328	
MVU Estimate of SE of Mean	0.052438	
95% H-UCL	0.459881	
95% Chebyshev (MVUE) UCL	0.53649	
97.5% Chebyshev (MVUE) UCL	0.635393	
99% Chebyshev (MVUE) UCL	0.829668	
Non-parametric Statisitics		
95% CLT UCL	0.377488	
95% Adjusted-CLT UCL	0.382008	
95% Modified-t UCL	0.384926	
95% Jackknife UCL	0.384221	
95% Chebyshev (Mean, Sd) UCL	0.498471	
97.5% Chebyshev (Mean, Sd) UCL	0.582546	
99% Chebyshev (Mean, Sd) UCL	0.747697	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning
95% Bootstrap-t UCL	N/R	Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	0.411369	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 1,1'-Biphenyl

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	1,1'-Biphenyl	
Raw Statistics		
Number of Observations	135	
Number of Missing Data	0	
Number of Valid Observations	135	
Number of Distinct Observations	55	
Minimum	0.45	
Maximum	1100	
Mean	40.67963	
Standard Deviation	105.3668	
Variance	11102.17	
Coefficient of Variation	2.590162	
Skewness	7.8636	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.351303	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	55.69988	
Gamma Statistics		
k hat	0.384526	
k star (bias corrected)	0.380919	
Theta hat	105.7917	
Theta star	106.7934	
nu hat	103.822	
nu star	102.8481	
5% Approximate Chi Square Value	80.4436	
Adjusted Level of Significance	0.048222	
Adjusted Chi Square Value	80.23105	
Anderson-Darling Test Statistic	12.11034	
Anderson-Darling 5% Critical Value	0.84751	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.293929	
Kolmogrov-Smirnov 5% Critical Value	0.086351	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	52.00942	
95% Adjusted Gamma UCL	52.1472	
Lognormal Statistics		
Minimum of log data	-0.79851	
Maximum of log data	7.003065	
Mean of log data	1.983495	
Standard Deviation of log data	1.871405	
Variance of log data	3.502156	
Lilliefors Test Statisitic	0.263901	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	41.87017	
MLE Standard Deviation	237.5442	
MLE Coefficient of Variation	5.673353	
MLE Skewness	199.6279	
MLE Median	7.268104	
MLE 80% Quantile	35.33354	
MLE 90% Quantile	80.49948	
MLE 95% Quantile	157.8991	

Appendix P, Attachment 3

ProUCL Output - 1,1'-Biphenyl

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	564.75	
MVU Estimate of Median	7.17443	
MVU Estimate of Mean	40.45144	
MVU Estimate of Standard Deviation	196.9255	
MVU Estimate of SE of Mean	10.15727	
95% H-UCL	68.86832	
95% Chebyshev (MVUE) UCL	84.72597	
97.5% Chebyshev (MVUE) UCL	103.8836	
99% Chebyshev (MVUE) UCL	141.515	
Non-parametric Statisitics		
95% CLT UCL	55.59604	
95% Adjusted-CLT UCL	62.15405	
95% Modified-t UCL	56.7228	
95% Jackknife UCL	55.69988	
95% Chebyshev (Mean, Sd) UCL	80.20845	
97.5% Chebyshev (Mean, Sd) UCL	97.3126	
99% Chebyshev (Mean, Sd) UCL	130.9104	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	55.47677	
95% Bootstrap-t UCL	70.23635	
95% Hall's Bootstrap UCL	119.4884	
95% Percentile Bootstrap UCL	58.3743	
95% BCA Bootstrap UCL	65.64259	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	97.3126	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3
ProUCL Output - 2,4-Dimethylphenol
Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	2,4-Dimethylphenol	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	59	
Minimum	2.5	
Maximum	7400	
Mean	344.5882	
Standard Deviation	1108.064	
Variance	1227805	
Coefficient of Variation	3.215617	
Skewness	4.73215	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.389133	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	501.955	
Gamma Statistics		
k hat	0.245321	
k star (bias corrected)	0.244811	
Theta hat	1404.642	
Theta star	1407.566	
nu hat	66.72731	
nu star	66.58872	
5% Approximate Chi Square Value	48.80639	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	48.644	
Anderson-Darling Test Statistic	18.8051	
Anderson-Darling 5% Critical Value	0.892683	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.321506	
Kolmogrov-Smirnov 5% Critical Value	0.087988	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	470.137	
95% Adjusted Gamma UCL	471.7065	
Lognormal Statistics		
Minimum of log data	0.916291	
Maximum of log data	8.909235	
Mean of log data	2.938176	
Standard Deviation of log data	2.236904	
Variance of log data	5.003739	
Lilliefors Test Statisitic	0.312261	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	230.4526	
MLE Standard Deviation	2803.285	
MLE Coefficient of Variation	12.16426	
MLE Skewness	1836.428	
MLE Median	18.88137	
MLE 80% Quantile	125.0057	
MLE 90% Quantile	334.4868	
MLE 95% Quantile	748.3589	

Appendix P, Attachment 3
ProUCL Output - 2,4-Dimethylphenol
Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	3433.084	
MVU Estimate of Median	18.53716	
MVU Estimate of Mean	216.728	
MVU Estimate of Standard Deviation	1987.017	
MVU Estimate of SE of Mean	70.94171	
95% H-UCL	452.8209	
95% Chebyshev (MVUE) UCL	525.9558	
97.5% Chebyshev (MVUE) UCL	659.7589	
99% Chebyshev (MVUE) UCL	922.5891	
Non-parametric Statisitics		
95% CLT UCL	500.8751	
95% Adjusted-CLT UCL	542.072	
95% Modified-t UCL	508.3809	
95% Jackknife UCL	501.955	
95% Chebyshev (Mean, Sd) UCL	758.7519	
97.5% Chebyshev (Mean, Sd) UCL	937.9609	
99% Chebyshev (Mean, Sd) UCL	1289.982	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	499.7014	
95% Bootstrap-t UCL	589.4932	
95% Hall's Bootstrap UCL	530.0292	
95% Percentile Bootstrap UCL	521.9985	
95% BCA Bootstrap UCL	531.4684	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1289.982	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 2-Methylnaphthalene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	71	
Minimum	0.59	
Maximum	8400	
Mean	348.8378	
Standard Deviation	840.4089	
Variance	706287.1	
Coefficient of Variation	2.409168	
Skewness	6.837801	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.339298	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	468.1923	
Gamma Statistics		
k hat	0.255317	
k star (bias corrected)	0.254587	
Theta hat	1366.292	
Theta star	1370.21	
nu hat	69.44626	
nu star	69.24769	
5% Approximate Chi Square Value	51.08876	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	50.92242	
Anderson-Darling Test Statistic	11.112	
Anderson-Darling 5% Critical Value	0.888203	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.242135	
Kolmogrov-Smirnov 5% Critical Value	0.08781	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	472.8283	
95% Adjusted Gamma UCL	474.3728	
Lognormal Statistics		
Minimum of log data	-0.52763	
Maximum of log data	9.035987	
Mean of log data	3.082052	
Standard Deviation of log data	2.745784	
Variance of log data	7.539332	
Lilliefors Test Statisitic	0.235551	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	945.5043	
MLE Standard Deviation	40991.44	
MLE Coefficient of Variation	43.35405	
MLE Skewness	81617.2	
MLE Median	21.80311	
MLE 80% Quantile	221.903	
MLE 90% Quantile	742.7692	
MLE 95% Quantile	1995.935	

Appendix P, Attachment 3
ProUCL Output - 2-Methylnaphthalene
Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	12948.65	
MVU Estimate of Median	21.20694	
MVU Estimate of Mean	835.8725	
MVU Estimate of Standard Deviation	20292.51	
MVU Estimate of SE of Mean	370.7143	
95% H-UCL	2513.331	
95% Chebyshev (MVUE) UCL	2451.779	
97.5% Chebyshev (MVUE) UCL	3150.983	
99% Chebyshev (MVUE) UCL	4524.434	
Non-parametric Statisitics		
95% CLT UCL	467.3733	
95% Adjusted-CLT UCL	512.5223	
95% Modified-t UCL	475.2347	
95% Jackknife UCL	468.1923	
95% Chebyshev (Mean, Sd) UCL	662.9595	
97.5% Chebyshev (Mean, Sd) UCL	798.8803	
99% Chebyshev (Mean, Sd) UCL	1065.87	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	469.2917	
95% Bootstrap-t UCL	544.9115	
95% Hall's Bootstrap UCL	999.9117	
95% Percentile Bootstrap UCL	478.0739	
95% BCA Bootstrap UCL	523.4794	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1065.87	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 2-Methylphenol

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	2-Methylphenol	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	48	
Minimum	1	
Maximum	4200	
Mean	135.8349	
Standard Deviation	583.0569	
Variance	339955.3	
Coefficient of Variation	4.292393	
Skewness	5.63541	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.41	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	218.6404	
Gamma Statistics		
k hat	0.243408	
k star (bias corrected)	0.24294	
Theta hat	558.0552	
Theta star	559.1287	
nu hat	66.20689	
nu star	66.07978	
5% Approximate Chi Square Value	48.37039	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	48.20876	
Anderson-Darling Test Statistic	27.92883	
Anderson-Darling 5% Critical Value	0.89354	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.355876	
Kolmogrov-Smirnov 5% Critical Value	0.088021	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	185.5669	
95% Adjusted Gamma UCL	186.189	
Lognormal Statistics		
Minimum of log data	0	
Maximum of log data	8.34284	
Mean of log data	1.980748	
Standard Deviation of log data	1.882178	
Variance of log data	3.542594	
Lilliefors Test Statisitic	0.332442	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	42.60815	
MLE Standard Deviation	246.8202	
MLE Coefficient of Variation	5.792792	
MLE Skewness	211.7639	
MLE Median	7.248166	
MLE 80% Quantile	35.55884	
MLE 90% Quantile	81.39771	
MLE 95% Quantile	160.2814	

Appendix P, Attachment 3
ProUCL Output - 2-Methylphenol
Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	577.4919	
MVU Estimate of Median	7.154367	
MVU Estimate of Mean	41.1483	
MVU Estimate of Standard Deviation	204.1185	
MVU Estimate of SE of Mean	10.3875	
95% H-UCL	70.27804	
95% Chebyshev (MVUE) UCL	86.42639	
97.5% Chebyshev (MVUE) UCL	106.0183	
99% Chebyshev (MVUE) UCL	144.5027	
Non-parametric Statisitics		
95% CLT UCL	218.0722	
95% Adjusted-CLT UCL	243.8876	
95% Modified-t UCL	222.6671	
95% Jackknife UCL	218.6404	
95% Chebyshev (Mean, Sd) UCL	353.7656	
97.5% Chebyshev (Mean, Sd) UCL	448.0643	
99% Chebyshev (Mean, Sd) UCL	633.296	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	216.6698	
95% Bootstrap-t UCL	278.9984	
95% Hall's Bootstrap UCL	220.9353	
95% Percentile Bootstrap UCL	223.4813	
95% BCA Bootstrap UCL	256.9375	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	448.0643	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 3&4-Methylphenol

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	3&4-Methylphenol	
Raw Statistics		
Number of Observations	31	
Number of Missing Data	0	
Number of Valid Observations	31	
Number of Distinct Observations	12	
Minimum	2	
Maximum	68.6	
Mean	10.58871	
Standard Deviation	20.03919	
Variance	4.02E+02	
Coefficient of Variation	1.892505	
Skewness	2.397557	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.452249	
Shapiro-Wilk 5% Critical Value	0.929	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	16.6974	
Gamma Statistics		
k hat	0.66401	
k star (bias corrected)	0.621256	
Theta hat	15.94662	
Theta star	17.04404	
nu hat	41.16859	
nu star	38.51787	
5% Approximate Chi Square Value	25.30156	
Adjusted Level of Significance	0.0413	
Adjusted Chi Square Value	24.70529	
Anderson-Darling Test Statistic	7.515073	
Anderson-Darling 5% Critical Value	0.795335	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.460216	
Kolmogrov-Smirnov 5% Critical Value	0.164915	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	16.11974	
95% Adjusted Gamma UCL	16.50879	
Lognormal Statistics		
Minimum of log data	0.693147	
Maximum of log data	4.228293	
Mean of log data	1.442845	
Standard Deviation of log data	1.093317	
Variance of log data	1.195341	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.550415	
Shapiro-Wilk 5% Critical Value	0.929	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	7.69458	
MLE Standard Deviation	11.68129	
MLE Coefficient of Variation	1.518119	
MLE Skewness	8.053146	
MLE Median	4.232723	
MLE 80% Quantile	10.66213	
MLE 90% Quantile	17.24906	
MLE 95% Quantile	25.56825	

Appendix P, Attachment 3
ProUCL Output - 3&4-Methylphenol
Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	53.83373	
MVU Estimate of Median	4.15185	
MVU Estimate of Mean	7.472499	
MVU Estimate of Standard Deviation	10.20644	
MVU Estimate of SE of Mean	1.721742	
95% H-UCL	12.76261	
95% Chebyshev (MVUE) UCL	14.9774	
97.5% Chebyshev (MVUE) UCL	18.22477	
99% Chebyshev (MVUE) UCL	24.60361	
Non-parametric Statisitics		
95% CLT UCL	16.50878	
95% Adjusted-CLT UCL	18.1648	
95% Modified-t UCL	16.9557	
95% Jackknife UCL	16.6974	
95% Chebyshev (Mean, Sd) UCL	26.27702	
97.5% Chebyshev (Mean, Sd) UCL	33.06536	
99% Chebyshev (Mean, Sd) UCL	46.39975	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	16.62637	
95% Bootstrap-t UCL	20.26814	
95% Hall's Bootstrap UCL	15.34438	
95% Percentile Bootstrap UCL	16.67419	
95% BCA Bootstrap UCL	18.19032	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	46.39975	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 4-Methylphenol

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	4-Methylphenol	
Raw Statistics		
Number of Observations	105	
Number of Missing Data	0	
Number of Valid Observations	105	
Number of Distinct Observations	39	
Minimum	2	
Maximum	5800	
Mean	212.8333	
Standard Deviation	839.6597	
Variance	7.05E+05	
Coefficient of Variation	3.945151	
Skewness	5.098906	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.429732	
Lilliefors 5% Critical Value	0.086465	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	348.828	
Gamma Statistics		
k hat	0.230671	
k star (bias corrected)	0.23043	
Theta hat	922.6697	
Theta star	923.6363	
nu hat	48.44095	
nu star	48.39026	
5% Approximate Chi Square Value	33.41996	
Adjusted Level of Significance	0.047714	
Adjusted Chi Square Value	33.24714	
Anderson-Darling Test Statistic	19.59012	
Anderson-Darling 5% Critical Value	0.898693	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.307238	
Kolmogrov-Smirnov 5% Critical Value	0.097047	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	308.1709	
95% Adjusted Gamma UCL	309.7728	
Lognormal Statistics		
Minimum of log data	0.693147	
Maximum of log data	8.665613	
Mean of log data	2.241249	
Standard Deviation of log data	2.045562	
Variance of log data	4.184323	
Lilliefors Test Statisitic	0.312847	
Lilliefors 5% Critical Value	0.086465	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	76.2037	
MLE Standard Deviation	612.7129	
MLE Coefficient of Variation	8.040462	
MLE Skewness	543.9294	
MLE Median	9.405067	
MLE 80% Quantile	52.97119	
MLE 90% Quantile	130.2943	
MLE 95% Quantile	272.1076	

Appendix P, Attachment 3
ProUCL Output - 4-Methylphenol
Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	1095.784	
MVU Estimate of Median	9.219488	
MVU Estimate of Mean	71.87373	
MVU Estimate of Standard Deviation	446.8789	
MVU Estimate of SE of Mean	22.94419	
95% H-UCL	148.9461	
95% Chebyshev (MVUE) UCL	171.8851	
97.5% Chebyshev (MVUE) UCL	215.1601	
99% Chebyshev (MVUE) UCL	300.1655	
Non-parametric Statisitics		
95% CLT UCL	347.6166	
95% Adjusted-CLT UCL	391.185	
95% Modified-t UCL	355.6238	
95% Jackknife UCL	348.828	
95% Chebyshev (Mean, Sd) UCL	570.012	
97.5% Chebyshev (Mean, Sd) UCL	724.5635	
99% Chebyshev (Mean, Sd) UCL	1028.15	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	343.0604	
95% Bootstrap-t UCL	480.3654	
95% Hall's Bootstrap UCL	371.9556	
95% Percentile Bootstrap UCL	353.6762	
95% BCA Bootstrap UCL	399.8762	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1028.15	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Acenaphthene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Acenaphthene	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	80	
Minimum	0.1	
Maximum	3.30E+03	
Mean	1.11E+02	
Standard Deviation	2.97E+02	
Variance	88355.82	
Coefficient of Variation	2.678422	
Skewness	9.330945	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.354568	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	1.53E+02	
Gamma Statistics		
k hat	0.437047	
k star (bias corrected)	0.432308	
Theta hat	253.928	
Theta star	256.7114	
nu hat	118.8768	
nu star	117.5878	
5% Approximate Chi Square Value	93.54566	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	93.31747	
Anderson-Darling Test Statistic	2.397983	
Anderson-Darling 5% Critical Value	0.834699	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.114138	
Kolmogrov-Smirnov 5% Critical Value	0.085488	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	139.501	
95% Adjusted Gamma UCL	139.8421	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	8.101678	
Mean of log data	3.224905	
Standard Deviation of log data	2.019458	
Variance of log data	4.07821	
Lilliefors Test Statisitic	0.098438	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	193.2548	
MLE Standard Deviation	1472.288	
MLE Coefficient of Variation	7.618378	
MLE Skewness	465.0233	
MLE Median	25.15118	
MLE 80% Quantile	138.566	
MLE 90% Quantile	336.9411	
MLE 95% Quantile	697.0889	

Appendix P, Attachment 3

ProUCL Output - Acenaphthene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	2757.731	
MVU Estimate of Median	24.77685	
MVU Estimate of Mean	184.9736	
MVU Estimate of Standard Deviation	1156.293	
MVU Estimate of SE of Mean	51.90588	
95% H-UCL	339.9536	
95% Chebyshev (MVUE) UCL	411.2261	
97.5% Chebyshev (MVUE) UCL	509.1258	
99% Chebyshev (MVUE) UCL	701.4306	
Non-parametric Statisitics		
95% CLT UCL	1.53E+02	
95% Adjusted-CLT UCL	174.695	
95% Modified-t UCL	156.5924	
95% Jackknife UCL	1.53E+02	
95% Chebyshev (Mean, Sd) UCL	2.22E+02	
97.5% Chebyshev (Mean, Sd) UCL	2.70E+02	
99% Chebyshev (Mean, Sd) UCL	3.65E+02	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	1.52E+02	
95% Bootstrap-t UCL	210.3665	
95% Hall's Bootstrap UCL	318.2599	
95% Percentile Bootstrap UCL	1.58E+02	
95% BCA Bootstrap UCL	1.87E+02	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	3.65E+02	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Acenaphthylene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Acenaphthylene	
Raw Statistics		
Number of Observations	135	
Number of Missing Data	0	
Number of Valid Observations	135	
Number of Distinct Observations	48	
Minimum	0.1	
Maximum	550	
Mean	21.76963	
Standard Deviation	69.48955	
Variance	4828.797	
Coefficient of Variation	3.192041	
Skewness	5.854304	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.377581	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	31.6755	
Gamma Statistics		
k hat	0.345814	
k star (bias corrected)	0.343068	
Theta hat	62.9518	
Theta star	63.45578	
nu hat	93.36984	
nu star	92.62829	
5% Approximate Chi Square Value	71.42954	
Adjusted Level of Significance	0.048222	
Adjusted Chi Square Value	71.22977	
Anderson-Darling Test Statistic	12.38899	
Anderson-Darling 5% Critical Value	0.856968	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.316952	
Kolmogrov-Smirnov 5% Critical Value	0.086785	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	28.23039	
95% Adjusted Gamma UCL	28.30956	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	6.309918	
Mean of log data	1.132197	
Standard Deviation of log data	1.946485	
Variance of log data	3.788806	
Lilliefors Test Statisitic	0.218235	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	20.62698	
MLE Standard Deviation	135.5799	
MLE Coefficient of Variation	6.572943	
MLE Skewness	303.6935	
MLE Median	3.102465	
MLE 80% Quantile	16.07037	
MLE 90% Quantile	37.84242	
MLE 95% Quantile	76.2613	

Appendix P, Attachment 3

ProUCL Output - Acenaphthylene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	287.0689	
MVU Estimate of Median	3.059229	
MVU Estimate of Mean	19.8354	
MVU Estimate of Standard Deviation	109.4199	
MVU Estimate of SE of Mean	5.283311	
95% H-UCL	35.12293	
95% Chebyshev (MVUE) UCL	42.86482	
97.5% Chebyshev (MVUE) UCL	52.82967	
99% Chebyshev (MVUE) UCL	72.40368	
Non-parametric Statisitics		
95% CLT UCL	31.60702	
95% Adjusted-CLT UCL	34.82691	
95% Modified-t UCL	32.17774	
95% Jackknife UCL	31.6755	
95% Chebyshev (Mean, Sd) UCL	47.83893	
97.5% Chebyshev (Mean, Sd) UCL	59.11914	
99% Chebyshev (Mean, Sd) UCL	81.27692	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	31.75281	
95% Bootstrap-t UCL	41.12971	
95% Hall's Bootstrap UCL	73.38696	
95% Percentile Bootstrap UCL	32.59576	
95% BCA Bootstrap UCL	35.75406	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	59.11914	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Anthracene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Anthracene	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	58	
Minimum	1.00E-01	
Maximum	1.60E+03	
Mean	2.43E+01	
Standard Deviation	1.44E+02	
Variance	20635.87	
Coefficient of Variation	5.923639	
Skewness	10.23099	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.433245	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.47E+01	
Gamma Statistics		
k hat	0.369839	
k star (bias corrected)	0.366583	
Theta hat	6.56E+01	
Theta star	6.62E+01	
nu hat	100.5963	
nu star	99.71056	
5% Approximate Chi Square Value	77.66953	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	77.46239	
Anderson-Darling Test Statistic	13.37701	
Anderson-Darling 5% Critical Value	0.851117	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.205568	
Kolmogrov-Smirnov 5% Critical Value	0.086238	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.11E+01	
95% Adjusted Gamma UCL	3.12E+01	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	7.377759	
Mean of log data	1.386483	
Standard Deviation of log data	1.589797	
Variance of log data	2.527455	
Lilliefors Test Statisitic	0.133708	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.42E+01	
MLE Standard Deviation	4.81E+01	
MLE Coefficient of Variation	3.39E+00	
MLE Skewness	4.93E+01	
MLE Median	4.00E+00	
MLE 80% Quantile	1.53E+01	
MLE 90% Quantile	3.09E+01	
MLE 95% Quantile	5.47E+01	

Appendix P, Attachment 3

ProUCL Output - Anthracene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	1.61E+02	
MVU Estimate of Median	3.96E+00	
MVU Estimate of Mean	1.39E+01	
MVU Estimate of Standard Deviation	4.31E+01	
MVU Estimate of SE of Mean	2.73E+00	
95% H-UCL	2.07E+01	
95% Chebyshev (MVUE) UCL	2.58E+01	
97.5% Chebyshev (MVUE) UCL	3.09E+01	
99% Chebyshev (MVUE) UCL	4.10E+01	
Non-parametric Statisitics		
95% CLT UCL	4.45E+01	
95% Adjusted-CLT UCL	56.05904	
95% Modified-t UCL	46.4531	
95% Jackknife UCL	4.47E+01	
95% Chebyshev (Mean, Sd) UCL	7.79E+01	
97.5% Chebyshev (Mean, Sd) UCL	1.01E+02	
99% Chebyshev (Mean, Sd) UCL	1.47E+02	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.41E+01	
95% Bootstrap-t UCL	213.966	
95% Hall's Bootstrap UCL	128.1824	
95% Percentile Bootstrap UCL	4.84E+01	
95% BCA Bootstrap UCL	6.77E+01	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1.01E+02	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)anthracene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	135	
Number of Missing Data	0	
Number of Valid Observations	135	
Number of Distinct Observations	32	
Minimum	1.00E-01	
Maximum	1100	
Mean	15.44577	
Standard Deviation	99.15333	
Variance	9831.382	
Coefficient of Variation	6.419448	
Skewness	10.20507	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.438502	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	29.58027	
Gamma Statistics		
k hat	0.324223	
k star (bias corrected)	0.321956	
Theta hat	47.63936	
Theta star	47.97475	
nu hat	87.54018	
nu star	86.92818	
5% Approximate Chi Square Value	66.43113	
Adjusted Level of Significance	0.048222	
Adjusted Chi Square Value	66.23879	
Anderson-Darling Test Statistic	22.06206	
Anderson-Darling 5% Critical Value	0.862244	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.419757	
Kolmogrov-Smirnov 5% Critical Value	0.087026	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	20.2115	
95% Adjusted Gamma UCL	20.27019	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	7.003065	
Mean of log data	0.637299	
Standard Deviation of log data	1.602158	
Variance of log data	2.566911	
Lilliefors Test Statisitic	0.275324	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	6.826111	
MLE Standard Deviation	23.67148	
MLE Coefficient of Variation	3.467785	
MLE Skewness	52.10531	
MLE Median	1.89E+00	
MLE 80% Quantile	7.32E+00	
MLE 90% Quantile	1.48E+01	
MLE 95% Quantile	2.64E+01	

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ProUCL Output - Benzo(a)anthracene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	7.86E+01	
MVU Estimate of Median	1.87E+00	
MVU Estimate of Mean	6.68E+00	
MVU Estimate of Standard Deviation	2.12E+01	
MVU Estimate of SE of Mean	1.33E+00	
95% H-UCL	10.02318	
95% Chebyshev (MVUE) UCL	1.25E+01	
97.5% Chebyshev (MVUE) UCL	1.50E+01	
99% Chebyshev (MVUE) UCL	1.99E+01	
Non-parametric Statisitics		
95% CLT UCL	29.48256	
95% Adjusted-CLT UCL	37.4914	
95% Modified-t UCL	30.82949	
95% Jackknife UCL	29.58027	
95% Chebyshev (Mean, Sd) UCL	52.64357	
97.5% Chebyshev (Mean, Sd) UCL	68.73908	
99% Chebyshev (Mean, Sd) UCL	100.3556	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	29.46752	
95% Bootstrap-t UCL	129.89	
95% Hall's Bootstrap UCL	87.25104	
95% Percentile Bootstrap UCL	31.01024	
95% BCA Bootstrap UCL	45.80904	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	68.73908	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)pyrene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Benzo(a)pyrene	
Raw Statistics		
Number of Observations	135	
Number of Missing Data	0	
Number of Valid Observations	135	
Number of Distinct Observations	21	
Minimum	0.1	
Maximum	800	
Mean	12.26306	
Standard Deviation	72.03274	
Variance	5188.716	
Coefficient of Variation	5.873962	
Skewness	10.1809	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.432956	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	22.53147	
Gamma Statistics		
k hat	0.347021	
k star (bias corrected)	0.344248	
Theta hat	35.33806	
Theta star	35.62275	
nu hat	93.69576	
nu star	92.94696	
5% Approximate Chi Square Value	71.70963	
Adjusted Level of Significance	0.048222	
Adjusted Chi Square Value	71.50945	
Anderson-Darling Test Statistic	20.67167	
Anderson-Darling 5% Critical Value	0.856673	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.419827	
Kolmogrov-Smirnov 5% Critical Value	0.086771	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	15.89485	
95% Adjusted Gamma UCL	15.93935	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	6.684612	
Mean of log data	0.566152	
Standard Deviation of log data	1.699224	
Variance of log data	2.887361	
Lilliefors Test Statisitic	0.329775	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	7.462064	
MLE Standard Deviation	30.71786	
MLE Coefficient of Variation	4.116537	
MLE Skewness	82.10796	
MLE Median	1.761475	
MLE 80% Quantile	7.403816	
MLE 90% Quantile	15.63722	
MLE 95% Quantile	28.82879	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)pyrene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	91.70213	
MVU Estimate of Median	1.742737	
MVU Estimate of Mean	7.274986	
MVU Estimate of Standard Deviation	26.81834	
MVU Estimate of SE of Mean	1.582152	
95% H-UCL	11.3928	
95% Chebyshev (MVUE) UCL	14.17143	
97.5% Chebyshev (MVUE) UCL	17.15552	
99% Chebyshev (MVUE) UCL	23.0172	
Non-parametric Statisitics		
95% CLT UCL	22.46048	
95% Adjusted-CLT UCL	28.26495	
95% Modified-t UCL	23.43685	
95% Jackknife UCL	22.53147	
95% Chebyshev (Mean, Sd) UCL	39.28645	
97.5% Chebyshev (Mean, Sd) UCL	50.97949	
99% Chebyshev (Mean, Sd) UCL	73.94821	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	22.47574	
95% Bootstrap-t UCL	88.27627	
95% Hall's Bootstrap UCL	62.62611	
95% Percentile Bootstrap UCL	24.02773	
95% BCA Bootstrap UCL	33.46898	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	50.97949	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

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ProUCL Output - Benzo(b)fluoranthene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Benzo(b)fluoranthene	
Raw Statistics		
Number of Observations	135	
Number of Missing Data	0	
Number of Valid Observations	135	
Number of Distinct Observations	23	
Minimum	0.1	
Maximum	9.20E+02	
Mean	1.35E+01	
Standard Deviation	8.26E+01	
Variance	6.83E+03	
Coefficient of Variation	6.137357	
Skewness	10.25971	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.435761	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.52E+01	
Gamma Statistics		
k hat	0.334731	
k star (bias corrected)	0.332231	
Theta hat	40.21985	
Theta star	40.52253	
nu hat	90.3774	
nu star	89.70235	
5% Approximate Chi Square Value	68.86099	
Adjusted Level of Significance	0.048222	
Adjusted Chi Square Value	68.66501	
Anderson-Darling Test Statistic	21.10086	
Anderson-Darling 5% Critical Value	0.859676	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.420311	
Kolmogrov-Smirnov 5% Critical Value	0.086909	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	17.53748	
95% Adjusted Gamma UCL	17.58753	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	6.824374	
Mean of log data	0.576385	
Standard Deviation of log data	1.688554	
Variance of log data	2.851216	
Lilliefors Test Statisitic	0.313101	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	7.403795	
MLE Standard Deviation	29.89961	
MLE Coefficient of Variation	4.038417	
MLE Skewness	77.97702	
MLE Median	1.779593	
MLE 80% Quantile	7.412837	
MLE 90% Quantile	15.58295	
MLE 95% Quantile	28.61859	

Appendix P, Attachment 3

ProUCL Output - Benzo(b)fluoranthene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	90.3745	
MVU Estimate of Median	1.760898	
MVU Estimate of Mean	7.22175	
MVU Estimate of Standard Deviation	26.17699	
MVU Estimate of SE of Mean	1.556011	
95% H-UCL	11.25427	
95% Chebyshev (MVUE) UCL	14.00425	
97.5% Chebyshev (MVUE) UCL	16.93904	
99% Chebyshev (MVUE) UCL	22.70386	
Non-parametric Statisitics		
95% CLT UCL	2.52E+01	
95% Adjusted-CLT UCL	3.19E+01	
95% Modified-t UCL	2.63E+01	
95% Jackknife UCL	2.52E+01	
95% Chebyshev (Mean, Sd) UCL	4.45E+01	
97.5% Chebyshev (Mean, Sd) UCL	5.79E+01	
99% Chebyshev (Mean, Sd) UCL	8.42E+01	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.49E+01	
95% Bootstrap-t UCL	1.08E+02	
95% Hall's Bootstrap UCL	7.09E+01	
95% Percentile Bootstrap UCL	2.68E+01	
95% BCA Bootstrap UCL	3.49E+01	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	5.79E+01	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(g,h,i)perylene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Benzo(g,h,i)perylene	
Raw Statistics		
Number of Observations	135	
Number of Missing Data	0	
Number of Valid Observations	135	
Number of Distinct Observations	16	
Minimum	0.1	
Maximum	420	
Mean	8.037422	
Standard Deviation	37.70625	
Variance	1.42E+03	
Coefficient of Variation	4.691336	
Skewness	10.0825	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.434621	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	13.41252	
Gamma Statistics		
k hat	0.413098	
k star (bias corrected)	0.408856	
Theta hat	19.45646	
Theta star	19.65831	
nu hat	111.5364	
nu star	110.3912	
5% Approximate Chi Square Value	87.13485	
Adjusted Level of Significance	0.048222	
Adjusted Chi Square Value	86.91327	
Anderson-Darling Test Statistic	17.77623	
Anderson-Darling 5% Critical Value	0.840528	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.408351	
Kolmogrov-Smirnov 5% Critical Value	0.086031	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	10.18261	
95% Adjusted Gamma UCL	10.20857	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	6.040255	
Mean of log data	0.499407	
Standard Deviation of log data	1.690926	
Variance of log data	2.859231	
Lilliefors Test Statisitic	0.352924	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	6.882776	
MLE Standard Deviation	27.91397	
MLE Coefficient of Variation	4.055626	
MLE Skewness	78.87423	
MLE Median	1.647743	
MLE 80% Quantile	6.87739	
MLE 90% Quantile	14.47245	
MLE 95% Quantile	26.60183	

Appendix P, Attachment 3
ProUCL Output - Benzo(g,h,i)perylene
Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	84.14156	
MVU Estimate of Median	1.630385	
MVU Estimate of Mean	6.712808	
MVU Estimate of Standard Deviation	24.42349	
MVU Estimate of SE of Mean	1.449358	
95% H-UCL	1.05E+01	
95% Chebyshev (MVUE) UCL	13.03041	
97.5% Chebyshev (MVUE) UCL	15.76405	
99% Chebyshev (MVUE) UCL	21.13374	
Non-parametric Statisitics		
95% CLT UCL	13.37536	
95% Adjusted-CLT UCL	16.3844	
95% Modified-t UCL	13.88187	
95% Jackknife UCL	13.41252	
95% Chebyshev (Mean, Sd) UCL	22.18308	
97.5% Chebyshev (Mean, Sd) UCL	28.30392	
99% Chebyshev (Mean, Sd) UCL	40.32713	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	13.45112	
95% Bootstrap-t UCL	30.88785	
95% Hall's Bootstrap UCL	33.98034	
95% Percentile Bootstrap UCL	14.08333	
95% BCA Bootstrap UCL	19.18207	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	28.30392	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(k)fluoranthene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Benzo(k)fluoranthene	
Raw Statistics		
Number of Observations	135	
Number of Missing Data	0	
Number of Valid Observations	135	
Number of Distinct Observations	16	
Minimum	0.1	
Maximum	450	
Mean	8.375141	
Standard Deviation	40.42072	
Variance	1633.834	
Coefficient of Variation	4.826273	
Skewness	10.09188	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.434377	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	14.13719	
Gamma Statistics		
k hat	0.40506	
k star (bias corrected)	0.400997	
Theta hat	20.6763	
Theta star	20.8858	
nu hat	109.3662	
nu star	108.2691	
5% Approximate Chi Square Value	85.24941	
Adjusted Level of Significance	0.048222	
Adjusted Chi Square Value	85.03034	
Anderson-Darling Test Statistic	18.49557	
Anderson-Darling 5% Critical Value	0.842492	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.403699	
Kolmogrov-Smirnov 5% Critical Value	0.086121	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	10.63666	
95% Adjusted Gamma UCL	10.66407	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	6.109248	
Mean of log data	0.504009	
Standard Deviation of log data	1.697924	
Variance of log data	2.882946	
Lilliefors Test Statisitic	0.366296	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	6.997	
MLE Standard Deviation	28.73615	
MLE Coefficient of Variation	4.106924	
MLE Skewness	81.59155	
MLE Median	1.655344	
MLE 80% Quantile	6.950088	
MLE 90% Quantile	14.67053	
MLE 95% Quantile	27.03395	

Appendix P, Attachment 3
ProUCL Output - Benzo(k)fluoranthene
Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	85.91682	
MVU Estimate of Median	1.637761	
MVU Estimate of Mean	6.821995	
MVU Estimate of Standard Deviation	25.0968	
MVU Estimate of SE of Mean	1.481958	
95% H-UCL	10.67703	
95% Chebyshev (MVUE) UCL	13.2817	
97.5% Chebyshev (MVUE) UCL	16.07682	
99% Chebyshev (MVUE) UCL	21.56729	
Non-parametric Statisitics		
95% CLT UCL	14.09736	
95% Adjusted-CLT UCL	17.32602	
95% Modified-t UCL	14.6408	
95% Jackknife UCL	14.13719	
95% Chebyshev (Mean, Sd) UCL	23.53915	
97.5% Chebyshev (Mean, Sd) UCL	30.10062	
99% Chebyshev (Mean, Sd) UCL	42.98938	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	14.05729	
95% Bootstrap-t UCL	35.67964	
95% Hall's Bootstrap UCL	35.88388	
95% Percentile Bootstrap UCL	14.87968	
95% BCA Bootstrap UCL	19.61307	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	30.10062	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Carbazole

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	70	
Minimum	0.64	
Maximum	790	
Mean	75.52015	
Standard Deviation	123.7463	
Variance	15313.14	
Coefficient of Variation	1.638586	
Skewness	2.415644	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.292211	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	93.09454	
Gamma Statistics		
k hat	0.40096	
k star (bias corrected)	0.397017	
Theta hat	188.3482	
Theta star	190.2187	
nu hat	109.0612	
nu star	107.9888	
5% Approximate Chi Square Value	85.00045	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	84.78335	
Anderson-Darling Test Statistic	7.612357	
Anderson-Darling 5% Critical Value	0.843514	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.197482	
Kolmogrov-Smirnov 5% Critical Value	0.085891	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	95.94451	
95% Adjusted Gamma UCL	96.19019	
Lognormal Statistics		
Minimum of log data	-0.44629	
Maximum of log data	6.672033	
Mean of log data	2.683879	
Standard Deviation of log data	1.988243	
Variance of log data	3.953112	
Lilliefors Test Statisitic	0.169721	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	105.682	
MLE Standard Deviation	755.4397	
MLE Coefficient of Variation	7.148232	
MLE Skewness	386.6995	
MLE Median	14.64178	
MLE 80% Quantile	78.56645	
MLE 90% Quantile	188.4385	
MLE 95% Quantile	385.4993	

Appendix P, Attachment 3

ProUCL Output - Carbazole

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	1492.986	
MVU Estimate of Median	14.4305	
MVU Estimate of Mean	101.3731	
MVU Estimate of Standard Deviation	600.8114	
MVU Estimate of SE of Mean	27.78733	
95% H-UCL	183.1352	
95% Chebyshev (MVUE) UCL	222.4953	
97.5% Chebyshev (MVUE) UCL	274.905	
99% Chebyshev (MVUE) UCL	377.8536	
Non-parametric Statisitics		
95% CLT UCL	92.97394	
95% Adjusted-CLT UCL	95.32253	
95% Modified-t UCL	93.46087	
95% Jackknife UCL	93.09454	
95% Chebyshev (Mean, Sd) UCL	121.7731	
97.5% Chebyshev (Mean, Sd) UCL	141.7868	
99% Chebyshev (Mean, Sd) UCL	181.0998	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	92.76978	
95% Bootstrap-t UCL	96.83756	
95% Hall's Bootstrap UCL	95.94764	
95% Percentile Bootstrap UCL	93.23632	
95% BCA Bootstrap UCL	95.49544	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	141.7868	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Chrysene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Chrysene	
Raw Statistics		
Number of Observations	135	
Number of Missing Data	0	
Number of Valid Observations	135	
Number of Distinct Observations	28	
Minimum	1.00E-01	
Maximum	1000	
Mean	14.52482	
Standard Deviation	90.67701	
Variance	8222.321	
Coefficient of Variation	6.2429	
Skewness	10.07388	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.436803	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	27.45101	
Gamma Statistics		
k hat	0.329564	
k star (bias corrected)	0.327179	
Theta hat	44.07281	
Theta star	44.39413	
nu hat	88.98235	
nu star	88.3383	
5% Approximate Chi Square Value	67.66556	
Adjusted Level of Significance	0.048222	
Adjusted Chi Square Value	67.47136	
Anderson-Darling Test Statistic	21.54036	
Anderson-Darling 5% Critical Value	0.860939	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.415723	
Kolmogrov-Smirnov 5% Critical Value	0.086967	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	18.96235	
95% Adjusted Gamma UCL	19.01693	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	6.907755	
Mean of log data	0.615362	
Standard Deviation of log data	1.642132	
Variance of log data	2.696596	
Lilliefors Test Statisitic	0.271743	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	7.12536	
MLE Standard Deviation	26.4975	
MLE Coefficient of Variation	3.718759	
MLE Skewness	62.58364	
MLE Median	1.850327	
MLE 80% Quantile	7.410985	
MLE 90% Quantile	15.26406	
MLE 95% Quantile	27.56836	

Appendix P, Attachment 3

ProUCL Output - Chrysene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	84.34878	
MVU Estimate of Median	1.831937	
MVU Estimate of Mean	6.964544	
MVU Estimate of Standard Deviation	23.46991	
MVU Estimate of SE of Mean	1.440141	
95% H-UCL	10.6292	
95% Chebyshev (MVUE) UCL	13.24197	
97.5% Chebyshev (MVUE) UCL	15.95822	
99% Chebyshev (MVUE) UCL	21.29377	
Non-parametric Statisitics		
95% CLT UCL	27.36165	
95% Adjusted-CLT UCL	34.59169	
95% Modified-t UCL	28.57875	
95% Jackknife UCL	27.45101	
95% Chebyshev (Mean, Sd) UCL	48.54269	
97.5% Chebyshev (Mean, Sd) UCL	63.26225	
99% Chebyshev (Mean, Sd) UCL	92.17598	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	27.729	
95% Bootstrap-t UCL	124.1444	
95% Hall's Bootstrap UCL	78.9905	
95% Percentile Bootstrap UCL	28.75429	
95% BCA Bootstrap UCL	39.71982	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	63.26225	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzofuran

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	76	
Minimum	0.44	
Maximum	2200	
Mean	64.45647	
Standard Deviation	199.0104	
Variance	39605.15	
Coefficient of Variation	3.087517	
Skewness	9.400521	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.37385	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	92.71985	
Gamma Statistics		
k hat	0.420875	
k star (bias corrected)	0.416493	
Theta hat	153.1488	
Theta star	154.7601	
nu hat	114.478	
nu star	113.2861	
5% Approximate Chi Square Value	89.71062	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	89.48734	
Anderson-Darling Test Statistic	6.574589	
Anderson-Darling 5% Critical Value	0.838649	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.171054	
Kolmogrov-Smirnov 5% Critical Value	0.085669	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	81.39526	
95% Adjusted Gamma UCL	81.59835	
Lognormal Statistics		
Minimum of log data	-0.82098	
Maximum of log data	7.696213	
Mean of log data	2.615214	
Standard Deviation of log data	1.810947	
Variance of log data	3.279528	
Lilliefors Test Statisitic	0.181187	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	70.45526	
MLE Standard Deviation	356.2226	
MLE Coefficient of Variation	5.056011	
MLE Skewness	144.4161	
MLE Median	13.67014	
MLE 80% Quantile	63.1469	
MLE 90% Quantile	140.0893	
MLE 95% Quantile	268.8682	

Appendix P, Attachment 3

ProUCL Output - Dibenzofuran

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	922.8586	
MVU Estimate of Median	13.50629	
MVU Estimate of Mean	68.31715	
MVU Estimate of Standard Deviation	301.5103	
MVU Estimate of SE of Mean	16.27868	
95% H-UCL	112.5868	
95% Chebyshev (MVUE) UCL	139.2743	
97.5% Chebyshev (MVUE) UCL	169.9775	
99% Chebyshev (MVUE) UCL	230.2879	
Non-parametric Statisitics		
95% CLT UCL	92.5259	
95% Adjusted-CLT UCL	107.2243	
95% Modified-t UCL	95.0125	
95% Jackknife UCL	92.71985	
95% Chebyshev (Mean, Sd) UCL	138.8411	
97.5% Chebyshev (Mean, Sd) UCL	171.0274	
99% Chebyshev (Mean, Sd) UCL	234.2511	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	92.4559	
95% Bootstrap-t UCL	133.0872	
95% Hall's Bootstrap UCL	203.3605	
95% Percentile Bootstrap UCL	97.2775	
95% BCA Bootstrap UCL	118.0329	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	171.0274	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

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ProUCL Output - Fluoranthene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Fluoranthene	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	60	
Minimum	0.1	
Maximum	3400	
Mean	42.15569	
Standard Deviation	303.1211	
Variance	91882.37	
Coefficient of Variation	7.190513	
Skewness	10.44537	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.473968	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	85.20482	
Gamma Statistics		
k hat	0.30225	
k star (bias corrected)	0.300484	
Theta hat	139.4731	
Theta star	140.2925	
nu hat	82.21189	
nu star	81.73172	
5% Approximate Chi Square Value	61.89482	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	61.71085	
Anderson-Darling Test Statistic	22.83797	
Anderson-Darling 5% Critical Value	0.867628	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.311248	
Kolmogrov-Smirnov 5% Critical Value	0.086993	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	55.66633	
95% Adjusted Gamma UCL	55.83228	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	8.131531	
Mean of log data	1.462706	
Standard Deviation of log data	1.487711	
Variance of log data	2.213283	
Lilliefors Test Statisitic	0.14951	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	13.05729	
MLE Standard Deviation	37.26637	
MLE Coefficient of Variation	2.854065	
MLE Skewness	31.81052	
MLE Median	4.317625	
MLE 80% Quantile	15.1776	
MLE 90% Quantile	29.20715	
MLE 95% Quantile	49.89842	

Appendix P, Attachment 3

ProUCL Output - Fluoranthene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	137.4308	
MVU Estimate of Median	4.282633	
MVU Estimate of Mean	12.84021	
MVU Estimate of Standard Deviation	34.13736	
MVU Estimate of SE of Mean	2.291177	
95% H-UCL	18.33531	
95% Chebyshev (MVUE) UCL	22.82722	
97.5% Chebyshev (MVUE) UCL	27.14861	
99% Chebyshev (MVUE) UCL	35.63714	
Non-parametric Statisitics		
95% CLT UCL	84.90941	
95% Adjusted-CLT UCL	109.7855	
95% Modified-t UCL	89.08498	
95% Jackknife UCL	85.20482	
95% Chebyshev (Mean, Sd) UCL	155.454	
97.5% Chebyshev (Mean, Sd) UCL	204.4783	
99% Chebyshev (Mean, Sd) UCL	300.777	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	84.25375	
95% Bootstrap-t UCL	489.4175	
95% Hall's Bootstrap UCL	414.5511	
95% Percentile Bootstrap UCL	92.1642	
95% BCA Bootstrap UCL	133.5728	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	204.4783	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Fluorene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Fluorene	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	74	
Minimum	0.1	
Maximum	2800	
Mean	69.42571	
Standard Deviation	251.621	
Variance	63313.13	
Coefficient of Variation	3.62432	
Skewness	9.804793	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.39146	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	105.1608	
Gamma Statistics		
k hat	0.383013	
k star (bias corrected)	0.379467	
Theta hat	181.2618	
Theta star	182.9561	
nu hat	104.1796	
nu star	103.2149	
5% Approximate Chi Square Value	80.76822	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	80.55681	
Anderson-Darling Test Statistic	4.684339	
Anderson-Darling 5% Critical Value	0.847899	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.141794	
Kolmogrov-Smirnov 5% Critical Value	0.086091	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	88.72013	
95% Adjusted Gamma UCL	88.95296	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	7.937375	
Mean of log data	2.510122	
Standard Deviation of log data	2.04778	
Variance of log data	4.193401	
Lilliefors Test Statisitic	0.138308	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	100.1653	
MLE Standard Deviation	809.0962	
MLE Coefficient of Variation	8.077607	
MLE Skewness	551.2783	
MLE Median	12.30643	
MLE 80% Quantile	69.44224	
MLE 90% Quantile	170.9752	
MLE 95% Quantile	357.3512	

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ProUCL Output - Fluorene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	1441.237	
MVU Estimate of Median	12.11813	
MVU Estimate of Mean	95.67752	
MVU Estimate of Standard Deviation	627.9493	
MVU Estimate of SE of Mean	27.41733	
95% H-UCL	178.6476	
95% Chebyshev (MVUE) UCL	215.1869	
97.5% Chebyshev (MVUE) UCL	266.8987	
99% Chebyshev (MVUE) UCL	368.4765	
Non-parametric Statisitics		
95% CLT UCL	104.9156	
95% Adjusted-CLT UCL	124.2989	
95% Modified-t UCL	108.1842	
95% Jackknife UCL	105.1608	
95% Chebyshev (Mean, Sd) UCL	163.4747	
97.5% Chebyshev (Mean, Sd) UCL	204.1698	
99% Chebyshev (Mean, Sd) UCL	284.1074	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	104.9521	
95% Bootstrap-t UCL	192.1431	
95% Hall's Bootstrap UCL	251.4665	
95% Percentile Bootstrap UCL	110.0549	
95% BCA Bootstrap UCL	140.2111	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	284.1074	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Indeno(1,2,3-c,d)pyrene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Indeno(1,2,3-c,d)pyrene	
Raw Statistics		
Number of Observations	135	
Number of Missing Data	0	
Number of Valid Observations	135	
Number of Distinct Observations	16	
Minimum	0.1	
Maximum	390	
Mean	7.675378	
Standard Deviation	35.01507	
Variance	1226.055	
Coefficient of Variation	4.561999	
Skewness	10.05623	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.434592	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	12.66684	
Gamma Statistics		
k hat	0.42257	
k star (bias corrected)	0.418118	
Theta hat	18.16357	
Theta star	18.35697	
nu hat	114.0939	
nu star	112.8918	
5% Approximate Chi Square Value	89.35959	
Adjusted Level of Significance	0.048222	
Adjusted Chi Square Value	89.13509	
Anderson-Darling Test Statistic	17.61934	
Anderson-Darling 5% Critical Value	0.838214	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.405166	
Kolmogrov-Smirnov 5% Critical Value	0.085925	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	9.696635	
95% Adjusted Gamma UCL	9.721057	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	5.966147	
Mean of log data	0.494455	
Standard Deviation of log data	1.682102	
Variance of log data	2.829467	
Lilliefors Test Statisitic	0.354563	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	6.747612	
MLE Standard Deviation	26.93678	
MLE Coefficient of Variation	3.992047	
MLE Skewness	75.59513	
MLE Median	1.639605	
MLE 80% Quantile	6.792583	
MLE 90% Quantile	14.23859	
MLE 95% Quantile	26.08898	

Appendix P, Attachment 3

ProUCL Output - Indeno(1,2,3-c,d)pyrene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	82.02503	
MVU Estimate of Median	1.622511	
MVU Estimate of Mean	6.583648	
MVU Estimate of Standard Deviation	23.6224	
MVU Estimate of SE of Mean	1.410521	
95% H-UCL	10.22974	
95% Chebyshev (MVUE) UCL	12.73197	
97.5% Chebyshev (MVUE) UCL	15.39235	
99% Chebyshev (MVUE) UCL	20.61816	
Non-parametric Statisitics		
95% CLT UCL	12.63234	
95% Adjusted-CLT UCL	15.41934	
95% Modified-t UCL	13.10156	
95% Jackknife UCL	12.66684	
95% Chebyshev (Mean, Sd) UCL	20.81143	
97.5% Chebyshev (Mean, Sd) UCL	26.49541	
99% Chebyshev (Mean, Sd) UCL	37.66049	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	12.47348	
95% Bootstrap-t UCL	28.93437	
95% Hall's Bootstrap UCL	31.74057	
95% Percentile Bootstrap UCL	13.20019	
95% BCA Bootstrap UCL	16.63386	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	26.49541	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Naphthalene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	86	
Minimum	0.1	
Maximum	36000	
Mean	3250.117	
Standard Deviation	5517.329	
Variance	30440920	
Coefficient of Variation	1.697578	
Skewness	2.388902	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.295146	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4033.686	
Gamma Statistics		
k hat	0.209607	
k star (bias corrected)	0.209885	
Theta hat	15505.78	
Theta star	15485.22	
nu hat	57.01305	
nu star	57.08875	
5% Approximate Chi Square Value	40.71795	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	40.57036	
Anderson-Darling Test Statistic	6.648271	
Anderson-Darling 5% Critical Value	0.908689	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.188533	
Kolmogrov-Smirnov 5% Critical Value	0.088621	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	4556.839	
95% Adjusted Gamma UCL	4573.415	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	10.49127	
Mean of log data	4.601199	
Standard Deviation of log data	3.709798	
Variance of log data	13.7626	
Lilliefors Test Statisitic	0.151838	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	97003.31	
MLE Standard Deviation	94470801	
MLE Coefficient of Variation	973.8926	
MLE Skewness	9.24E+08	
MLE Median	99.60365	
MLE 80% Quantile	2289.247	
MLE 90% Quantile	11711.07	
MLE 95% Quantile	44525.48	

Appendix P, Attachment 3

ProUCL Output - Naphthalene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	556927	
MVU Estimate of Median	94.68753	
MVU Estimate of Mean	68135.07	
MVU Estimate of Standard Deviation	13118163	
MVU Estimate of SE of Mean	45150.16	
95% H-UCL	540146.6	
95% Chebyshev (MVUE) UCL	264940.1	
97.5% Chebyshev (MVUE) UCL	350097.8	
99% Chebyshev (MVUE) UCL	517373.5	
Non-parametric Statisitics		
95% CLT UCL	4028.309	
95% Adjusted-CLT UCL	4131.864	
95% Modified-t UCL	4049.839	
95% Jackknife UCL	4033.686	
95% Chebyshev (Mean, Sd) UCL	5312.343	
97.5% Chebyshev (Mean, Sd) UCL	6204.67	
99% Chebyshev (Mean, Sd) UCL	7957.473	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4017.144	
95% Bootstrap-t UCL	4182.409	
95% Hall's Bootstrap UCL	4230.74	
95% Percentile Bootstrap UCL	4053.194	
95% BCA Bootstrap UCL	4119.483	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	7957.473	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - o-Xylene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	o-Xylene	
Raw Statistics		
Number of Observations	31	
Number of Missing Data	0	
Number of Valid Observations	31	
Number of Distinct Observations	19	
Minimum	0.5	
Maximum	704	
Mean	63.44065	
Standard Deviation	151.0702	
Variance	22822.19	
Coefficient of Variation	2.381283	
Skewness	3.352868	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.484894	
Shapiro-Wilk 5% Critical Value	0.929	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	109.4924	
Gamma Statistics		
k hat	0.271127	
k star (bias corrected)	0.266394	
Theta hat	233.9889	
Theta star	238.1459	
nu hat	16.80986	
nu star	16.51643	
5% Approximate Chi Square Value	8.326455	
Adjusted Level of Significance	0.0413	
Adjusted Chi Square Value	8.003264	
Anderson-Darling Test Statistic	2.651549	
Anderson-Darling 5% Critical Value	0.866941	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.232561	
Kolmogrov-Smirnov 5% Critical Value	0.172178	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	125.8414	
95% Adjusted Gamma UCL	130.9232	
Lognormal Statistics		
Minimum of log data	-0.69315	
Maximum of log data	6.556778	
Mean of log data	1.564511	
Standard Deviation of log data	2.488713	
Variance of log data	6.193691	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.819655	
Shapiro-Wilk 5% Critical Value	0.929	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	105.7795	
MLE Standard Deviation	2338.302	
MLE Coefficient of Variation	22.10543	
MLE Skewness	10868.13	
MLE Median	4.780339	
MLE 80% Quantile	39.15287	
MLE 90% Quantile	117.039	
MLE 95% Quantile	286.7021	

Appendix P, Attachment 3

ProUCL Output - o-Xylene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	1561.274	
MVU Estimate of Median	4.32451	
MVU Estimate of Mean	76.04874	
MVU Estimate of Standard Deviation	540.6248	
MVU Estimate of SE of Mean	47.16908	
95% H-UCL	843.7823	
95% Chebyshev (MVUE) UCL	281.654	
97.5% Chebyshev (MVUE) UCL	370.6195	
99% Chebyshev (MVUE) UCL	545.3751	
Non-parametric Statisitics		
95% CLT UCL	108.0705	
95% Adjusted-CLT UCL	125.5292	
95% Modified-t UCL	112.2156	
95% Jackknife UCL	109.4924	
95% Chebyshev (Mean, Sd) UCL	181.7107	
97.5% Chebyshev (Mean, Sd) UCL	232.8862	
99% Chebyshev (Mean, Sd) UCL	333.4106	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	108.4693	
95% Bootstrap-t UCL	175.6632	
95% Hall's Bootstrap UCL	267.106	
95% Percentile Bootstrap UCL	112.0935	
95% BCA Bootstrap UCL	132.6581	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	333.4106	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Phenanthrene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Phenanthrene	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	73	
Minimum	0.1	
Maximum	8300	
Mean	120.5215	
Standard Deviation	734.7996	
Variance	539930.4	
Coefficient of Variation	6.096834	
Skewness	10.54141	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.434911	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	224.8774	
Gamma Statistics		
k hat	0.295414	
k star (bias corrected)	0.2938	
Theta hat	407.9748	
Theta star	410.2167	
nu hat	80.35264	
nu star	79.91349	
5% Approximate Chi Square Value	60.31253	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	60.13104	
Anderson-Darling Test Statistic	9.814274	
Anderson-Darling 5% Critical Value	0.870233	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.175554	
Kolmogrov-Smirnov 5% Critical Value	0.087099	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	159.6898	
95% Adjusted Gamma UCL	160.1718	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	9.024011	
Mean of log data	2.451722	
Standard Deviation of log data	2.079958	
Variance of log data	4.326226	
Lilliefors Test Statisitic	0.119901	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	100.9711	
MLE Standard Deviation	872.4407	
MLE Coefficient of Variation	8.640497	
MLE Skewness	671.0053	
MLE Median	11.60832	
MLE 80% Quantile	67.30849	
MLE 90% Quantile	168.0847	
MLE 95% Quantile	355.4032	

Appendix P, Attachment 3

ProUCL Output - Phenanthrene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	1465.137	
MVU Estimate of Median	11.42512	
MVU Estimate of Mean	96.21526	
MVU Estimate of Standard Deviation	667.6984	
MVU Estimate of SE of Mean	28.22666	
95% H-UCL	182.97	
95% Chebyshev (MVUE) UCL	219.2524	
97.5% Chebyshev (MVUE) UCL	272.4907	
99% Chebyshev (MVUE) UCL	377.067	
Non-parametric Statisitics		
95% CLT UCL	224.1613	
95% Adjusted-CLT UCL	285.0181	
95% Modified-t UCL	234.3699	
95% Jackknife UCL	224.8774	
95% Chebyshev (Mean, Sd) UCL	395.1694	
97.5% Chebyshev (Mean, Sd) UCL	514.0097	
99% Chebyshev (Mean, Sd) UCL	747.4486	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	226.2887	
95% Bootstrap-t UCL	952.8997	
95% Hall's Bootstrap UCL	614.5943	
95% Percentile Bootstrap UCL	238.9631	
95% BCA Bootstrap UCL	329.6392	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	747.4486	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

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ProUCL Output - Phenol

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Phenol	
Raw Statistics		
Number of Observations	135	
Number of Missing Data	0	
Number of Valid Observations	135	
Number of Distinct Observations	33	
Minimum	1	
Maximum	3100	
Mean	75.44556	
Standard Deviation	381.598	
Variance	1.46E+05	
Coefficient of Variation	5.057925	
Skewness	6.342197	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.473687	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	129.8431	
Gamma Statistics		
k hat	0.25388	
k star (bias corrected)	0.253177	
Theta hat	297.1696	
Theta star	297.9953	
nu hat	68.54773	
nu star	68.35778	
5% Approximate Chi Square Value	50.32407	
Adjusted Level of Significance	0.048222	
Adjusted Chi Square Value	50.1578	
Anderson-Darling Test Statistic	37.95398	
Anderson-Darling 5% Critical Value	0.88883	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.427242	
Kolmogrov-Smirnov 5% Critical Value	0.088118	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	102.4816	
95% Adjusted Gamma UCL	102.8213	
Lognormal Statistics		
Minimum of log data	0	
Maximum of log data	8.039157	
Mean of log data	1.532624	
Standard Deviation of log data	1.481883	
Variance of log data	2.195978	
Lilliefors Test Statisitic	0.390211	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	13.88228	
MLE Standard Deviation	39.2375	
MLE Coefficient of Variation	2.826444	
MLE Skewness	3.11E+01	
MLE Median	4.630313	
MLE 80% Quantile	16.19683	
MLE 90% Quantile	31.0887	
MLE 95% Quantile	53.00162	

Appendix P, Attachment 3

ProUCL Output - Phenol

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	145.3995	
MVU Estimate of Median	4.592804	
MVU Estimate of Mean	13.65254	
MVU Estimate of Standard Deviation	35.9605	
MVU Estimate of SE of Mean	2.430695	
95% H-UCL	19.47958	
95% Chebyshev (MVUE) UCL	24.24769	
97.5% Chebyshev (MVUE) UCL	28.83222	
99% Chebyshev (MVUE) UCL	37.83764	
Non-parametric Statisitics		
95% CLT UCL	129.467	
95% Adjusted-CLT UCL	148.6225	
95% Modified-t UCL	132.831	
95% Jackknife UCL	129.8431	
95% Chebyshev (Mean, Sd) UCL	218.6037	
97.5% Chebyshev (Mean, Sd) UCL	280.5483	
99% Chebyshev (Mean, Sd) UCL	402.2265	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	129.6623	
95% Bootstrap-t UCL	193.9619	
95% Hall's Bootstrap UCL	146.4284	
95% Percentile Bootstrap UCL	136.3574	
95% BCA Bootstrap UCL	156.63	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	280.5483	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

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ProUCL Output - Pyrene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Pyrene	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	54	
Minimum	1.00E-01	
Maximum	2800	
Mean	35.67532	
Standard Deviation	252.2239	
Variance	63616.91	
Coefficient of Variation	7.069984	
Skewness	10.2225	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.478535	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	71.49605	
Gamma Statistics		
k hat	0.302992	
k star (bias corrected)	0.30121	
Theta hat	117.7435	
Theta star	118.44	
nu hat	82.41374	
nu star	81.92912	
5% Approximate Chi Square Value	62.06676	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	61.88252	
Anderson-Darling Test Statistic	22.71782	
Anderson-Darling 5% Critical Value	0.867447	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.309649	
Kolmogrov-Smirnov 5% Critical Value	0.086985	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	47.09199	
95% Adjusted Gamma UCL	47.23219	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	7.937375	
Mean of log data	1.302285	
Standard Deviation of log data	1.512924	
Variance of log data	2.288938	
Lilliefors Test Statisitic	0.174495	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	11.5508	
MLE Standard Deviation	34.39048	
MLE Coefficient of Variation	2.977324	
MLE Skewness	35.32435	
MLE Median	3.677692	
MLE 80% Quantile	13.20646	
MLE 90% Quantile	25.69747	
MLE 95% Quantile	44.30268	

Appendix P, Attachment 3

ProUCL Output - Pyrene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	124.1321	
MVU Estimate of Median	3.646872	
MVU Estimate of Mean	11.34887	
MVU Estimate of Standard Deviation	31.35195	
MVU Estimate of SE of Mean	2.074905	
95% H-UCL	16.37068	
95% Chebyshev (MVUE) UCL	20.39317	
97.5% Chebyshev (MVUE) UCL	24.30665	
99% Chebyshev (MVUE) UCL	31.99391	
Non-parametric Statisitics		
95% CLT UCL	71.25025	
95% Adjusted-CLT UCL	91.50771	
95% Modified-t UCL	74.65581	
95% Jackknife UCL	71.49605	
95% Chebyshev (Mean, Sd) UCL	129.9497	
97.5% Chebyshev (Mean, Sd) UCL	170.7423	
99% Chebyshev (Mean, Sd) UCL	250.8714	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	70.89347	
95% Bootstrap-t UCL	418.554	
95% Hall's Bootstrap UCL	347.9983	
95% Percentile Bootstrap UCL	77.01825	
95% BCA Bootstrap UCL	110.5336	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	170.7423	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

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ProUCL Output - Xylene (Total)

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Xylene (Total)	
Raw Statistics		
Number of Observations	133	
Number of Missing Data	0	
Number of Valid Observations	133	
Number of Distinct Observations	86	
Minimum	0.1	
Maximum	3900	
Mean	458.1839	
Standard Deviation	851.8996	
Variance	725732.9	
Coefficient of Variation	1.859296	
Skewness	2.140848	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.315094	
Lilliefors 5% Critical Value	0.076826	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	580.5465	
Gamma Statistics		
k hat	0.219597	
k star (bias corrected)	0.219657	
Theta hat	2086.472	
Theta star	2085.909	
nu hat	58.41293	
nu star	58.42867	
5% Approximate Chi Square Value	41.85198	
Adjusted Level of Significance	0.048195	
Adjusted Chi Square Value	41.69881	
Anderson-Darling Test Statistic	6.213955	
Anderson-Darling 5% Critical Value	0.904156	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.194247	
Kolmogrov-Smirnov 5% Critical Value	0.089297	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	639.661	
95% Adjusted Gamma UCL	642.0106	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	8.268732	
Mean of log data	2.824961	
Standard Deviation of log data	3.34046	
Variance of log data	11.15868	
Lilliefors Test Statisitic	0.122488	
Lilliefors 5% Critical Value	0.076826	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	4466.224	
MLE Standard Deviation	1183077	
MLE Coefficient of Variation	264.8942	
MLE Skewness	18588144	
MLE Median	16.86028	
MLE 80% Quantile	283.6241	
MLE 90% Quantile	1233.304	
MLE 95% Quantile	4105.234	

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ProUCL Output - Xylene (Total)

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	39929.54	
MVU Estimate of Median	16.16741	
MVU Estimate of Mean	3481.36	
MVU Estimate of Standard Deviation	290191.9	
MVU Estimate of SE of Mean	2038.89	
95% H-UCL	18591.94	
95% Chebyshev (MVUE) UCL	12368.68	
97.5% Chebyshev (MVUE) UCL	16214.22	
99% Chebyshev (MVUE) UCL	23768.06	
Non-parametric Statisitics		
95% CLT UCL	579.6877	
95% Adjusted-CLT UCL	594.3399	
95% Modified-t UCL	582.8319	
95% Jackknife UCL	580.5465	
95% Chebyshev (Mean, Sd) UCL	780.1717	
97.5% Chebyshev (Mean, Sd) UCL	919.4961	
99% Chebyshev (Mean, Sd) UCL	1193.172	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	581.1506	
95% Bootstrap-t UCL	597.2838	
95% Hall's Bootstrap UCL	602.8138	
95% Percentile Bootstrap UCL	584.1982	
95% BCA Bootstrap UCL	585.265	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1193.172	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 1,1-Dichloroethane

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	1,1-Dichloroethane	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	20	
Minimum	0.1	
Maximum	120	
Mean	8.066544	
Standard Deviation	16.35391	
Variance	267.4502	
Coefficient of Variation	2.027374	
Skewness	3.835699	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.314619	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	10.38912	
Gamma Statistics		
k hat	0.403054	
k star (bias corrected)	0.399065	
Theta hat	20.01356	
Theta star	20.21361	
nu hat	109.6307	
nu star	108.5457	
5% Approximate Chi Square Value	85.49498	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	85.27722	
Anderson-Darling Test Statistic	9.841472	
Anderson-Darling 5% Critical Value	0.843003	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.239667	
Kolmogrov-Smirnov 5% Critical Value	0.085868	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	10.2414	
95% Adjusted Gamma UCL	10.26755	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	4.787492	
Mean of log data	0.457095	
Standard Deviation of log data	1.844233	
Variance of log data	3.401194	
Lilliefors Test Statisitic	0.226234	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	8.651145	
MLE Standard Deviation	46.58776	
MLE Coefficient of Variation	5.385155	
MLE Skewness	172.3244	
MLE Median	1.579479	
MLE 80% Quantile	7.504263	
MLE 90% Quantile	16.89358	
MLE 95% Quantile	32.81407	

Appendix P, Attachment 3
ProUCL Output - 1,1-Dichloroethane
Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	115.2127	
MVU Estimate of Median	1.559849	
MVU Estimate of Mean	8.373163	
MVU Estimate of Standard Deviation	39.01834	
MVU Estimate of SE of Mean	2.050227	
95% H-UCL	14.02847	
95% Chebyshev (MVUE) UCL	17.3099	
97.5% Chebyshev (MVUE) UCL	21.17683	
99% Chebyshev (MVUE) UCL	28.77267	
Non-parametric Statisitics		
95% CLT UCL	10.37318	
95% Adjusted-CLT UCL	10.86602	
95% Modified-t UCL	10.46599	
95% Jackknife UCL	10.38912	
95% Chebyshev (Mean, Sd) UCL	14.17918	
97.5% Chebyshev (Mean, Sd) UCL	16.82413	
99% Chebyshev (Mean, Sd) UCL	22.01961	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	10.35625	
95% Bootstrap-t UCL	10.84778	
95% Hall's Bootstrap UCL	11.29955	
95% Percentile Bootstrap UCL	10.51397	
95% BCA Bootstrap UCL	10.80404	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	16.82413	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - alpha-BHC

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	alpha-BHC	
Raw Statistics		
Number of Observations	37	
Number of Missing Data	0	
Number of Valid Observations	37	
Number of Distinct Observations	17	
Minimum	0.0047	
Maximum	0.24	
Mean	0.020136	
Standard Deviation	0.041393	
Variance	0.001713	
Coefficient of Variation	2.055631	
Skewness	4.5639	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.419921	
Shapiro-Wilk 5% Critical Value	0.936	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.031625	
Gamma Statistics		
k hat	0.803204	
k star (bias corrected)	0.756097	
Theta hat	0.02507	
Theta star	0.026632	
nu hat	59.4371	
nu star	55.95121	
5% Approximate Chi Square Value	39.75713	
Adjusted Level of Significance	0.0431	
Adjusted Chi Square Value	39.16383	
Anderson-Darling Test Statistic	4.838858	
Anderson-Darling 5% Critical Value	0.785836	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.297683	
Kolmogrov-Smirnov 5% Critical Value	0.150406	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.028339	
95% Adjusted Gamma UCL	0.028768	
Lognormal Statistics		
Minimum of log data	-5.36019	
Maximum of log data	-1.42712	
Mean of log data	-4.64374	
Standard Deviation of log data	1.005313	
Variance of log data	1.010653	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.74394	
Shapiro-Wilk 5% Critical Value	0.936	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.015948	
MLE Standard Deviation	0.021082	
MLE Coefficient of Variation	1.321891	
MLE Skewness	6.27554	
MLE Median	0.009622	
MLE 80% Quantile	0.0225	
MLE 90% Quantile	0.035017	
MLE 95% Quantile	0.050287	

Appendix P, Attachment 3

ProUCL Output - alpha-BHC

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	0.099721	
MVU Estimate of Median	0.009491	
MVU Estimate of Mean	0.015635	
MVU Estimate of Standard Deviation	0.01921	
MVU Estimate of SE of Mean	0.003005	
95% H-UCL	0.023818	
95% Chebyshev (MVUE) UCL	0.028732	
97.5% Chebyshev (MVUE) UCL	0.0344	
99% Chebyshev (MVUE) UCL	0.045532	
Non-parametric Statisitics		
95% CLT UCL	0.03133	
95% Adjusted-CLT UCL	0.036785	
95% Modified-t UCL	0.032476	
95% Jackknife UCL	0.031625	
95% Chebyshev (Mean, Sd) UCL	0.049799	
97.5% Chebyshev (Mean, Sd) UCL	0.062634	
99% Chebyshev (Mean, Sd) UCL	0.087845	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.031098	
95% Bootstrap-t UCL	0.053273	
95% Hall's Bootstrap UCL	0.073331	
95% Percentile Bootstrap UCL	0.03303	
95% BCA Bootstrap UCL	0.040542	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	0.087845	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Arsenic

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	151	
Number of Missing Data	0	
Number of Valid Observations	151	
Number of Distinct Observations	141	
Minimum	0.385	
Maximum	1590000	
Mean	17845.38	
Standard Deviation	129991.1	
Variance	1.69E+10	
Coefficient of Variation	7.284301	
Skewness	11.95643	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.445405	
Lilliefors 5% Critical Value	0.072102	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	35353.63	
Gamma Statistics		
k hat	0.156754	
k star (bias corrected)	0.158055	
Theta hat	113843	
Theta star	112906.2	
nu hat	47.33978	
nu star	47.73259	
5% Approximate Chi Square Value	32.87316	
Adjusted Level of Significance	0.048411	
Adjusted Chi Square Value	32.75465	
Anderson-Darling Test Statistic	10.35944	
Anderson-Darling 5% Critical Value	0.977632	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.207224	
Kolmogrov-Smirnov 5% Critical Value	0.086408	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	25911.9	
95% Adjusted Gamma UCL	26005.65	
Lognormal Statistics		
Minimum of log data	-0.95451	
Maximum of log data	14.27924	
Mean of log data	4.917887	
Standard Deviation of log data	3.733543	
Variance of log data	13.93934	
Lilliefors Test Statisitic	0.118488	
Lilliefors 5% Critical Value	0.072102	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	145445.8	
MLE Standard Deviation	1.55E+08	
MLE Coefficient of Variation	1063.873	
MLE Skewness	1.2E+09	
MLE Median	136.7134	
MLE 80% Quantile	3205.844	
MLE 90% Quantile	16572.33	
MLE 95% Quantile	63548.91	

Appendix P, Attachment 3

ProUCL Output - Arsenic

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	807830.8	
MVU Estimate of Median	130.5448	
MVU Estimate of Mean	104669.6	
MVU Estimate of Standard Deviation	23784146	
MVU Estimate of SE of Mean	67896.52	
95% H-UCL	745784.9	
95% Chebyshev (MVUE) UCL	400623.7	
97.5% Chebyshev (MVUE) UCL	528683.3	
99% Chebyshev (MVUE) UCL	780231.5	
Non-parametric Statisitics		
95% CLT UCL	35245.5	
95% Adjusted-CLT UCL	46243.63	
95% Modified-t UCL	37069.12	
95% Jackknife UCL	35353.63	
95% Chebyshev (Mean, Sd) UCL	63956.1	
97.5% Chebyshev (Mean, Sd) UCL	83908.24	
99% Chebyshev (Mean, Sd) UCL	123100.4	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	35257.4	
95% Bootstrap-t UCL	131981.5	
95% Hall's Bootstrap UCL	98046.1	
95% Percentile Bootstrap UCL	38301.03	
95% BCA Bootstrap UCL	51552.44	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	123100.4	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Chloroethane

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Chloroethane	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	21	
Minimum	0.1	
Maximum	50	
Mean	6.413971	
Standard Deviation	10.60457	
Variance	112.4569	
Coefficient of Variation	1.653355	
Skewness	2.197482	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.305732	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	7.920027	
Gamma Statistics		
k hat	0.445685	
k star (bias corrected)	0.440756	
Theta hat	14.39126	
Theta star	14.55221	
nu hat	121.2263	
nu star	119.8856	
5% Approximate Chi Square Value	95.59762	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	95.36685	
Anderson-Darling Test Statistic	8.220538	
Anderson-Darling 5% Critical Value	0.832589	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.235394	
Kolmogrov-Smirnov 5% Critical Value	0.085392	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	8.043531	
95% Adjusted Gamma UCL	8.062996	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	3.912023	
Mean of log data	0.407339	
Standard Deviation of log data	1.798539	
Variance of log data	3.234743	
Lilliefors Test Statisitic	0.214985	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	7.573918	
MLE Standard Deviation	37.41227	
MLE Coefficient of Variation	4.939619	
MLE Skewness	135.3447	
MLE Median	1.502814	
MLE 80% Quantile	6.869592	
MLE 90% Quantile	15.15699	
MLE 95% Quantile	28.96059	

Appendix P, Attachment 3

ProUCL Output - Chloroethane

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	98.56744	
MVU Estimate of Median	1.485046	
MVU Estimate of Mean	7.348966	
MVU Estimate of Standard Deviation	31.7869	
MVU Estimate of SE of Mean	1.733241	
95% H-UCL	12.03792	
95% Chebyshev (MVUE) UCL	14.90399	
97.5% Chebyshev (MVUE) UCL	18.17305	
99% Chebyshev (MVUE) UCL	24.59449	
Non-parametric Statisitics		
95% CLT UCL	7.909693	
95% Adjusted-CLT UCL	8.092781	
95% Modified-t UCL	7.948585	
95% Jackknife UCL	7.920027	
95% Chebyshev (Mean, Sd) UCL	10.37767	
97.5% Chebyshev (Mean, Sd) UCL	12.09276	
99% Chebyshev (Mean, Sd) UCL	15.46173	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	7.855003	
95% Bootstrap-t UCL	8.155823	
95% Hall's Bootstrap UCL	8.13242	
95% Percentile Bootstrap UCL	7.998897	
95% BCA Bootstrap UCL	8.172794	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	12.09276	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Chloromethane

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Chloromethane	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	28	
Minimum	0.1	
Maximum	50	
Mean	5.636397	
Standard Deviation	9.71639	
Variance	94.40824	
Coefficient of Variation	1.723865	
Skewness	2.288684	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.328061	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	7.016315	
Gamma Statistics		
k hat	0.438193	
k star (bias corrected)	0.433429	
Theta hat	12.86283	
Theta star	13.00421	
nu hat	119.1884	
nu star	117.8926	
5% Approximate Chi Square Value	93.81767	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	93.58914	
Anderson-Darling Test Statistic	10.40425	
Anderson-Darling 5% Critical Value	0.834419	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.260557	
Kolmogrov-Smirnov 5% Critical Value	0.085475	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	7.082773	
95% Adjusted Gamma UCL	7.100068	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	3.912023	
Mean of log data	0.249312	
Standard Deviation of log data	1.755081	
Variance of log data	3.080309	
Lilliefors Test Statisitic	0.233774	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	5.986257	
MLE Standard Deviation	27.27864	
MLE Coefficient of Variation	4.556877	
MLE Skewness	108.2948	
MLE Median	1.283142	
MLE 80% Quantile	5.653954	
MLE 90% Quantile	12.23855	
MLE 95% Quantile	23.0213	

Appendix P, Attachment 3

ProUCL Output - Chloromethane

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	76.06818	
MVU Estimate of Median	1.268692	
MVU Estimate of Mean	5.821523	
MVU Estimate of Standard Deviation	23.47565	
MVU Estimate of SE of Mean	1.323866	
95% H-UCL	9.339008	
95% Chebyshev (MVUE) UCL	11.59212	
97.5% Chebyshev (MVUE) UCL	14.08906	
99% Chebyshev (MVUE) UCL	18.99383	
Non-parametric Statisitics		
95% CLT UCL	7.006846	
95% Adjusted-CLT UCL	7.181561	
95% Modified-t UCL	7.043567	
95% Jackknife UCL	7.016315	
95% Chebyshev (Mean, Sd) UCL	9.268117	
97.5% Chebyshev (Mean, Sd) UCL	10.83956	
99% Chebyshev (Mean, Sd) UCL	13.92637	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	7.019226	
95% Bootstrap-t UCL	7.24006	
95% Hall's Bootstrap UCL	7.159773	
95% Percentile Bootstrap UCL	7.109191	
95% BCA Bootstrap UCL	7.246324	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	10.83956	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - cis-1,2-Dichloroethene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	cis-1,2-Dichloroethene	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	20	
Minimum	0.1	
Maximum	50	
Mean	6.338971	
Standard Deviation	10.61695	
Variance	112.7196	
Coefficient of Variation	1.674869	
Skewness	2.210293	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.317641	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	7.846785	
Gamma Statistics		
k hat	0.446819	
k star (bias corrected)	0.441864	
Theta hat	14.1869	
Theta star	14.34597	
nu hat	121.5347	
nu star	120.1871	
5% Approximate Chi Square Value	95.86706	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	95.63595	
Anderson-Darling Test Statistic	8.617603	
Anderson-Darling 5% Critical Value	0.832312	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.220081	
Kolmogrov-Smirnov 5% Critical Value	0.085379	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	7.947071	
95% Adjusted Gamma UCL	7.966276	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	3.912023	
Mean of log data	0.399842	
Standard Deviation of log data	1.774133	
Variance of log data	3.147547	
Lilliefors Test Statisitic	0.201664	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	7.196645	
MLE Standard Deviation	33.96853	
MLE Coefficient of Variation	4.720051	
MLE Skewness	119.3176	
MLE Median	1.491588	
MLE 80% Quantile	6.679103	
MLE 90% Quantile	14.57929	
MLE 95% Quantile	27.61309	

Appendix P, Attachment 3

ProUCL Output - cis-1,2-Dichloroethene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	92.43208	
MVU Estimate of Median	1.474426	
MVU Estimate of Mean	6.991828	
MVU Estimate of Standard Deviation	29.07217	
MVU Estimate of SE of Mean	1.615762	
95% H-UCL	11.31871	
95% Chebyshev (MVUE) UCL	14.03477	
97.5% Chebyshev (MVUE) UCL	17.08226	
99% Chebyshev (MVUE) UCL	23.06846	
Non-parametric Statisitics		
95% CLT UCL	7.836438	
95% Adjusted-CLT UCL	8.020809	
95% Modified-t UCL	7.875543	
95% Jackknife UCL	7.846785	
95% Chebyshev (Mean, Sd) UCL	10.30729	
97.5% Chebyshev (Mean, Sd) UCL	12.02439	
99% Chebyshev (Mean, Sd) UCL	15.39729	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	7.804605	
95% Bootstrap-t UCL	8.104636	
95% Hall's Bootstrap UCL	8.07953	
95% Percentile Bootstrap UCL	7.836397	
95% BCA Bootstrap UCL	8.056618	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	12.02439	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Benzene	
Raw Statistics		
Number of Observations	135	
Number of Missing Data	0	
Number of Valid Observations	135	
Number of Distinct Observations	93	
Minimum	0.1	
Maximum	11000	
Mean	529.3518	
Standard Deviation	1509.612	
Variance	2.28E+06	
Coefficient of Variation	2.851813	
Skewness	4.793578	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.362949	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	744.55	
Gamma Statistics		
k hat	0.209115	
k star (bias corrected)	0.209407	
Theta hat	2531.387	
Theta star	2527.866	
nu hat	56.46114	
nu star	56.53978	
5% Approximate Chi Square Value	40.25404	
Adjusted Level of Significance	0.048222	
Adjusted Chi Square Value	40.10625	
Anderson-Darling Test Statistic	5.573491	
Anderson-Darling 5% Critical Value	0.90889	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.136485	
Kolmogrov-Smirnov 5% Critical Value	0.088915	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	743.5137	
95% Adjusted Gamma UCL	746.2536	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	9.305651	
Mean of log data	2.776924	
Standard Deviation of log data	3.299925	
Variance of log data	10.8895	
Lilliefors Test Statisitic	0.142388	
Lilliefors 5% Critical Value	0.076255	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	3720.733	
MLE Standard Deviation	861490.2	
MLE Coefficient of Variation	231.5377	
MLE Skewness	12413371	
MLE Median	16.06951	
MLE 80% Quantile	261.2193	
MLE 90% Quantile	1115.8	
MLE 95% Quantile	3660.3	

Appendix P, Attachment 3

ProUCL Output - Benzene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	34632.55	
MVU Estimate of Median	15.43411	
MVU Estimate of Mean	2940.175	
MVU Estimate of Standard Deviation	227152	
MVU Estimate of SE of Mean	1686.873	
95% H-UCL	14816.1	
95% Chebyshev (MVUE) UCL	10293.08	
97.5% Chebyshev (MVUE) UCL	13474.69	
99% Chebyshev (MVUE) UCL	19724.35	
Non-parametric Statisitics		
95% CLT UCL	743.0623	
95% Adjusted-CLT UCL	800.3382	
95% Modified-t UCL	753.4839	
95% Jackknife UCL	744.55	
95% Chebyshev (Mean, Sd) UCL	1095.689	
97.5% Chebyshev (Mean, Sd) UCL	1340.744	
99% Chebyshev (Mean, Sd) UCL	1822.107	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	744.2033	
95% Bootstrap-t UCL	840.6152	
95% Hall's Bootstrap UCL	850.9862	
95% Percentile Bootstrap UCL	750.9337	
95% BCA Bootstrap UCL	822.881	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1822.107	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - delta-BHC

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	delta-BHC	
Raw Statistics		
Number of Observations	37	
Number of Missing Data	0	
Number of Valid Observations	37	
Number of Distinct Observations	23	
Minimum	0.0044	
Maximum	0.24	
Mean	0.023885	
Standard Deviation	0.043954	
Variance	0.001932	
Coefficient of Variation	1.840217	
Skewness	3.824979	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.479122	
Shapiro-Wilk 5% Critical Value	0.936	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.036085	
Gamma Statistics		
k hat	0.835652	
k star (bias corrected)	0.785914	
Theta hat	0.028583	
Theta star	0.030392	
nu hat	61.83824	
nu star	58.15767	
5% Approximate Chi Square Value	41.62242	
Adjusted Level of Significance	0.0431	
Adjusted Chi Square Value	41.01451	
Anderson-Darling Test Statistic	3.80831	
Anderson-Darling 5% Critical Value	0.784364	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.27455	
Kolmogrov-Smirnov 5% Critical Value	0.150222	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.033374	
95% Adjusted Gamma UCL	0.033869	
Lognormal Statistics		
Minimum of log data	-5.42615	
Maximum of log data	-1.42712	
Mean of log data	-4.44069	
Standard Deviation of log data	1.010359	
Variance of log data	1.020825	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.832998	
Shapiro-Wilk 5% Critical Value	0.936	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.019638	
MLE Standard Deviation	0.026167	
MLE Coefficient of Variation	1.332473	
MLE Skewness	6.363201	
MLE Median	0.011788	
MLE 80% Quantile	0.027683	
MLE 90% Quantile	0.04318	
MLE 95% Quantile	0.062122	

Appendix P, Attachment 3

ProUCL Output - delta-BHC

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	0.123614	
MVU Estimate of Median	0.011626	
MVU Estimate of Mean	0.019248	
MVU Estimate of Standard Deviation	0.023815	
MVU Estimate of SE of Mean	0.003722	
95% H-UCL	0.029416	
95% Chebyshev (MVUE) UCL	0.035471	
97.5% Chebyshev (MVUE) UCL	0.04249	
99% Chebyshev (MVUE) UCL	0.056279	
Non-parametric Statisitics		
95% CLT UCL	0.035771	
95% Adjusted-CLT UCL	0.040626	
95% Modified-t UCL	0.036842	
95% Jackknife UCL	0.036085	
95% Chebyshev (Mean, Sd) UCL	0.055382	
97.5% Chebyshev (Mean, Sd) UCL	0.069011	
99% Chebyshev (Mean, Sd) UCL	0.095783	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.036071	
95% Bootstrap-t UCL	0.049282	
95% Hall's Bootstrap UCL	0.049099	
95% Percentile Bootstrap UCL	0.036323	
95% BCA Bootstrap UCL	0.040907	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	0.095783	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Ethylbenzene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Ethylbenzene	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	78	
Minimum	0.1	
Maximum	1300	
Mean	215.0971	
Standard Deviation	342.1261	
Variance	117050.2	
Coefficient of Variation	1.590565	
Skewness	1.583955	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.279837	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	263.6857	
Gamma Statistics		
k hat	0.2428	
k star (bias corrected)	0.242346	
Theta hat	885.9038	
Theta star	887.5631	
nu hat	66.0415	
nu star	65.91804	
5% Approximate Chi Square Value	48.23189	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	48.07051	
Anderson-Darling Test Statistic	7.410824	
Anderson-Darling 5% Critical Value	0.893813	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.211668	
Kolmogrov-Smirnov 5% Critical Value	0.088032	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	293.9711	
95% Adjusted Gamma UCL	294.958	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	7.17012	
Mean of log data	2.431877	
Standard Deviation of log data	3.191849	
Variance of log data	10.1879	
Lilliefors Test Statisitic	0.153134	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1855.349	
MLE Standard Deviation	302476.8	
MLE Coefficient of Variation	163.0297	
MLE Skewness	4333600	
MLE Median	11.38022	
MLE 80% Quantile	168.8464	
MLE 90% Quantile	687.7348	
MLE 95% Quantile	2169.971	

Appendix P, Attachment 3

ProUCL Output - Ethylbenzene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	19074.7	
MVU Estimate of Median	10.96174	
MVU Estimate of Mean	1506.791	
MVU Estimate of Standard Deviation	92681.49	
MVU Estimate of SE of Mean	825.119	
95% H-UCL	6757.311	
95% Chebyshev (MVUE) UCL	5103.402	
97.5% Chebyshev (MVUE) UCL	6659.658	
99% Chebyshev (MVUE) UCL	9716.622	
Non-parametric Statisitics		
95% CLT UCL	263.3523	
95% Adjusted-CLT UCL	267.61	
95% Modified-t UCL	264.3498	
95% Jackknife UCL	263.6857	
95% Chebyshev (Mean, Sd) UCL	342.9744	
97.5% Chebyshev (Mean, Sd) UCL	398.3071	
99% Chebyshev (Mean, Sd) UCL	506.9973	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	263.4171	
95% Bootstrap-t UCL	265.5719	
95% Hall's Bootstrap UCL	266.7368	
95% Percentile Bootstrap UCL	263.486	
95% BCA Bootstrap UCL	264.7485	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	506.9973	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Heptachlor

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Heptachlor	
Raw Statistics		
Number of Observations	37	
Number of Missing Data	0	
Number of Valid Observations	37	
Number of Distinct Observations	20	
Minimum	0.0021	
Maximum	0.24	
Mean	0.017562	
Standard Deviation	0.040708	
Variance	0.001657	
Coefficient of Variation	2.317937	
Skewness	4.971755	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.357298	
Shapiro-Wilk 5% Critical Value	0.936	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.028861	
Gamma Statistics		
k hat	0.801637	
k star (bias corrected)	0.754658	
Theta hat	0.021908	
Theta star	0.023272	
nu hat	59.32116	
nu star	55.84467	
5% Approximate Chi Square Value	39.66724	
Adjusted Level of Significance	0.0431	
Adjusted Chi Square Value	39.07465	
Anderson-Darling Test Statistic	4.449565	
Anderson-Darling 5% Critical Value	0.785907	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.257856	
Kolmogrov-Smirnov 5% Critical Value	0.150414	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.024725	
95% Adjusted Gamma UCL	0.025099	
Lognormal Statistics		
Minimum of log data	-6.16582	
Maximum of log data	-1.42712	
Mean of log data	-4.78216	
Standard Deviation of log data	0.963948	
Variance of log data	0.929195	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.828279	
Shapiro-Wilk 5% Critical Value	0.936	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.013332	
MLE Standard Deviation	0.016505	
MLE Coefficient of Variation	1.23793	
MLE Skewness	5.610879	
MLE Median	0.008378	
MLE 80% Quantile	0.018918	
MLE 90% Quantile	0.028912	
MLE 95% Quantile	0.040907	

Appendix P, Attachment 3

ProUCL Output - Heptachlor

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	0.078865	
MVU Estimate of Median	0.008273	
MVU Estimate of Mean	0.013097	
MVU Estimate of Standard Deviation	0.015183	
MVU Estimate of SE of Mean	0.002391	
95% H-UCL	0.019442	
95% Chebyshev (MVUE) UCL	0.02352	
97.5% Chebyshev (MVUE) UCL	0.02803	
99% Chebyshev (MVUE) UCL	0.036888	
Non-parametric Statisitics		
95% CLT UCL	0.02857	
95% Adjusted-CLT UCL	0.034415	
95% Modified-t UCL	0.029773	
95% Jackknife UCL	0.028861	
95% Chebyshev (Mean, Sd) UCL	0.046733	
97.5% Chebyshev (Mean, Sd) UCL	0.059356	
99% Chebyshev (Mean, Sd) UCL	0.08415	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.02799	
95% Bootstrap-t UCL	0.071996	
95% Hall's Bootstrap UCL	0.075136	
95% Percentile Bootstrap UCL	0.029538	
95% BCA Bootstrap UCL	0.037336	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	0.046733	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

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ProUCL Output - Iron

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Iron	
Raw Statistics		
Number of Observations	12	
Number of Missing Data	0	
Number of Valid Observations	12	
Number of Distinct Observations	12	
Minimum	2410	
Maximum	401000	
Mean	111210.8	
Standard Deviation	141132	
Variance	1.99E+10	
Coefficient of Variation	1.269049	
Skewness	1.397304	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.768374	
Shapiro-Wilk 5% Critical Value	0.859	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	184377.5	
Gamma Statistics		
k hat	0.601847	
k star (bias corrected)	0.506941	
Theta hat	184782.6	
Theta star	219376.4	
nu hat	14.44432	
nu star	12.16658	
5% Approximate Chi Square Value	5.335929	
Adjusted Level of Significance	0.02896	
Adjusted Chi Square Value	4.663944	
Anderson-Darling Test Statistic	0.344378	
Anderson-Darling 5% Critical Value	0.777061	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.167283	
Kolmogrov-Smirnov 5% Critical Value	0.257103	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	253574.4	
95% Adjusted Gamma UCL	290109.6	
Lognormal Statistics		
Minimum of log data	7.787382	
Maximum of log data	12.90172	
Mean of log data	10.59301	
Standard Deviation of log data	1.697275	
Variance of log data	2.880744	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.94857	
Shapiro-Wilk 5% Critical Value	0.859	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	168280.3	
MLE Standard Deviation	690309.1	
MLE Coefficient of Variation	4.102137	
MLE Skewness	81.33526	
MLE Median	39855.46	
MLE 80% Quantile	167244.5	
MLE 90% Quantile	352926	
MLE 95% Quantile	650198.3	

Appendix P, Attachment 3

ProUCL Output - Iron

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	2065488	
MVU Estimate of Median	35307.51	
MVU Estimate of Mean	133736.3	
MVU Estimate of Standard Deviation	286756.8	
MVU Estimate of SE of Mean	71756.56	
95% H-UCL	1526910	
95% Chebyshev (MVUE) UCL	446515.9	
97.5% Chebyshev (MVUE) UCL	581855.9	
99% Chebyshev (MVUE) UCL	847705.1	
Non-parametric Statisitics		
95% CLT UCL	178224.3	
95% Adjusted-CLT UCL	195783.9	
95% Modified-t UCL	187116.5	
95% Jackknife UCL	184377.5	
95% Chebyshev (Mean, Sd) UCL	288798	
97.5% Chebyshev (Mean, Sd) UCL	365640.1	
99% Chebyshev (Mean, Sd) UCL	516581.6	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	177138.1	
95% Bootstrap-t UCL	254536.9	
95% Hall's Bootstrap UCL	244789.4	
95% Percentile Bootstrap UCL	178213.3	
95% BCA Bootstrap UCL	192818.3	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	253574.4	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Isopropylbenzene (Cumene)

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Isopropylbenzene (Cumene)	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	70	
Minimum	0.1	
Maximum	141	
Mean	20.60662	
Standard Deviation	31.45215	
Variance	989.2378	
Coefficient of Variation	1.526313	
Skewness	1.968499	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.273271	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	25.07344	
Gamma Statistics		
k hat	0.386404	
k star (bias corrected)	0.382782	
Theta hat	53.32918	
Theta star	53.83375	
nu hat	105.1019	
nu star	104.1168	
5% Approximate Chi Square Value	81.56688	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	81.35439	
Anderson-Darling Test Statistic	5.160076	
Anderson-Darling 5% Critical Value	0.84707	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.178021	
Kolmogrov-Smirnov 5% Critical Value	0.086054	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	26.30352	
95% Adjusted Gamma UCL	26.37222	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	4.94876	
Mean of log data	1.313102	
Standard Deviation of log data	2.17966	
Variance of log data	4.750919	
Lilliefors Test Statisitic	0.144223	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	39.98729	
MLE Standard Deviation	428.2385	
MLE Coefficient of Variation	10.70937	
MLE Skewness	1260.391	
MLE Median	3.71769	
MLE 80% Quantile	23.45105	
MLE 90% Quantile	61.1889	
MLE 95% Quantile	134.1077	

Appendix P, Attachment 3

ProUCL Output - Isopropylbenzene (Cumene)

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	591.6955	
MVU Estimate of Median	3.65331	
MVU Estimate of Mean	37.79734	
MVU Estimate of Standard Deviation	312.6748	
MVU Estimate of SE of Mean	11.8989	
95% H-UCL	76.23468	
95% Chebyshev (MVUE) UCL	89.66344	
97.5% Chebyshev (MVUE) UCL	112.106	
99% Chebyshev (MVUE) UCL	156.1899	
Non-parametric Statisitics		
95% CLT UCL	25.04279	
95% Adjusted-CLT UCL	25.52923	
95% Modified-t UCL	25.14931	
95% Jackknife UCL	25.07344	
95% Chebyshev (Mean, Sd) UCL	32.36257	
97.5% Chebyshev (Mean, Sd) UCL	37.44938	
99% Chebyshev (Mean, Sd) UCL	47.44143	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	25.15136	
95% Bootstrap-t UCL	25.71277	
95% Hall's Bootstrap UCL	25.61531	
95% Percentile Bootstrap UCL	25.17868	
95% BCA Bootstrap UCL	25.72316	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	47.44143	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Lead

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	78	
Minimum	0.0415	
Maximum	4100	
Mean	43.67078	
Standard Deviation	361.6182	
Variance	130767.7	
Coefficient of Variation	8.280553	
Skewness	10.72814	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.492279	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	95.02766	
Gamma Statistics		
k hat	0.214678	
k star (bias corrected)	0.214844	
Theta hat	203.4248	
Theta star	203.2672	
nu hat	58.39236	
nu star	58.43762	
5% Approximate Chi Square Value	41.85956	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	41.7098	
Anderson-Darling Test Statistic	29.05149	
Anderson-Darling 5% Critical Value	0.906416	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.388548	
Kolmogrov-Smirnov 5% Critical Value	0.088531	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	60.96617	
95% Adjusted Gamma UCL	61.18506	
Lognormal Statistics		
Minimum of log data	-3.18206	
Maximum of log data	8.318742	
Mean of log data	0.386557	
Standard Deviation of log data	1.669837	
Variance of log data	2.788357	
Lilliefors Test Statisitic	0.110647	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	5.93422	
MLE Standard Deviation	23.17713	
MLE Coefficient of Variation	3.905674	
MLE Skewness	71.2953	
MLE Median	1.471905	
MLE 80% Quantile	6.034964	
MLE 90% Quantile	12.58239	
MLE 95% Quantile	22.9528	

Appendix P, Attachment 3

ProUCL Output - Lead

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	71.56449	
MVU Estimate of Median	1.456892	
MVU Estimate of Mean	5.794229	
MVU Estimate of Standard Deviation	20.40646	
MVU Estimate of SE of Mean	1.223931	
95% H-UCL	8.936488	
95% Chebyshev (MVUE) UCL	11.12922	
97.5% Chebyshev (MVUE) UCL	13.43767	
99% Chebyshev (MVUE) UCL	17.97219	
Non-parametric Statisitics		
95% CLT UCL	94.67524	
95% Adjusted-CLT UCL	125.1553	
95% Modified-t UCL	99.78193	
95% Jackknife UCL	95.02766	
95% Chebyshev (Mean, Sd) UCL	178.8337	
97.5% Chebyshev (Mean, Sd) UCL	237.3189	
99% Chebyshev (Mean, Sd) UCL	352.2015	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	95.22631	
95% Bootstrap-t UCL	1736.873	
95% Hall's Bootstrap UCL	967.1264	
95% Percentile Bootstrap UCL	103.5544	
95% BCA Bootstrap UCL	157.0362	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	237.3189	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

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ProUCL Output - m,p-Xylene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	m,p-Xylene	
Raw Statistics		
Number of Observations	34	
Number of Missing Data	0	
Number of Valid Observations	34	
Number of Distinct Observations	22	
Minimum	0.25	
Maximum	1210	
Mean	109.7621	
Standard Deviation	272.6925	
Variance	74361.22	
Coefficient of Variation	2.484397	
Skewness	3.305398	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.463679	
Shapiro-Wilk 5% Critical Value	0.933	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	188.9076	
Gamma Statistics		
k hat	0.235579	
k star (bias corrected)	0.2344	
Theta hat	465.9246	
Theta star	468.2672	
nu hat	16.01937	
nu star	15.93923	
5% Approximate Chi Square Value	7.918068	
Adjusted Level of Significance	0.0422	
Adjusted Chi Square Value	7.63834	
Anderson-Darling Test Statistic	3.06556	
Anderson-Darling 5% Critical Value	0.883764	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.26768	
Kolmogrov-Smirnov 5% Critical Value	0.165966	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	220.9533	
95% Adjusted Gamma UCL	229.0449	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	7.098376	
Mean of log data	1.654304	
Standard Deviation of log data	2.739755	
Variance of log data	7.506256	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.834747	
Shapiro-Wilk 5% Critical Value	0.933	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	223.058	
MLE Standard Deviation	9511.767	
MLE Coefficient of Variation	42.64257	
MLE Skewness	77668.72	
MLE Median	5.229438	
MLE 80% Quantile	52.95256	
MLE 90% Quantile	176.7769	
MLE 95% Quantile	473.9967	

Appendix P, Attachment 3

ProUCL Output - m,p-Xylene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	3062.458	
MVU Estimate of Median	4.681257	
MVU Estimate of Mean	147.2659	
MVU Estimate of Standard Deviation	1491.898	
MVU Estimate of SE of Mean	98.58407	
95% H-UCL	2318.278	
95% Chebyshev (MVUE) UCL	576.9839	
97.5% Chebyshev (MVUE) UCL	762.9232	
99% Chebyshev (MVUE) UCL	1128.165	
Non-parametric Statisitics		
95% CLT UCL	186.6859	
95% Adjusted-CLT UCL	215.0128	
95% Modified-t UCL	193.326	
95% Jackknife UCL	188.9076	
95% Chebyshev (Mean, Sd) UCL	313.612	
97.5% Chebyshev (Mean, Sd) UCL	401.818	
99% Chebyshev (Mean, Sd) UCL	575.0817	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	186.5963	
95% Bootstrap-t UCL	320.7226	
95% Hall's Bootstrap UCL	463.5351	
95% Percentile Bootstrap UCL	190.5559	
95% BCA Bootstrap UCL	215.6647	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	575.0817	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

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ProUCL Output - Toluene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Toluene	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	74	
Minimum	0.1	
Maximum	4800	
Mean	345.1877	
Standard Deviation	864.2883	
Variance	746994.2	
Coefficient of Variation	2.503821	
Skewness	3.450063	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.368747	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	467.9336	
Gamma Statistics		
k hat	0.188136	
k star (bias corrected)	0.188888	
Theta hat	1834.776	
Theta star	1827.473	
nu hat	51.17303	
nu star	51.37754	
5% Approximate Chi Square Value	35.91296	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	35.77487	
Anderson-Darling Test Statistic	11.03645	
Anderson-Darling 5% Critical Value	0.929193	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.236765	
Kolmogrov-Smirnov 5% Critical Value	0.089299	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	493.83	
95% Adjusted Gamma UCL	495.7361	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	8.476371	
Mean of log data	1.895197	
Standard Deviation of log data	3.321323	
Variance of log data	11.03119	
Lilliefors Test Statisitic	0.194311	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1653.732	
MLE Standard Deviation	411010.8	
MLE Coefficient of Variation	248.5353	
MLE Skewness	15352723	
MLE Median	6.653857	
MLE 80% Quantile	110.1358	
MLE 90% Quantile	474.8964	
MLE 95% Quantile	1569.909	

Appendix P, Attachment 3

ProUCL Output - Toluene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	15072	
MVU Estimate of Median	6.389326	
MVU Estimate of Mean	1301.854	
MVU Estimate of Standard Deviation	105991.2	
MVU Estimate of SE of Mean	751.5154	
95% H-UCL	6657.659	
95% Chebyshev (MVUE) UCL	4577.633	
97.5% Chebyshev (MVUE) UCL	5995.066	
99% Chebyshev (MVUE) UCL	8779.337	
Non-parametric Statisitics		
95% CLT UCL	467.0913	
95% Adjusted-CLT UCL	490.5189	
95% Modified-t UCL	471.5878	
95% Jackknife UCL	467.9336	
95% Chebyshev (Mean, Sd) UCL	668.2349	
97.5% Chebyshev (Mean, Sd) UCL	808.0177	
99% Chebyshev (Mean, Sd) UCL	1082.594	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	468.4104	
95% Bootstrap-t UCL	503.3974	
95% Hall's Bootstrap UCL	496.9494	
95% Percentile Bootstrap UCL	465.1067	
95% BCA Bootstrap UCL	488.8192	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1082.594	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Trichloroethene

Groundwater (Wells Screened Above Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Trichloroethene	
Raw Statistics		
Number of Observations	136	
Number of Missing Data	0	
Number of Valid Observations	136	
Number of Distinct Observations	21	
Minimum	0.1	
Maximum	50	
Mean	6.345735	
Standard Deviation	10.60967	
Variance	1.13E+02	
Coefficient of Variation	1.671938	
Skewness	2.213867	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	0.310619	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	7.852517	
Gamma Statistics		
k hat	0.449854	
k star (bias corrected)	0.444833	
Theta hat	14.1062	
Theta star	14.26543	
nu hat	122.3604	
nu star	120.9946	
5% Approximate Chi Square Value	96.58888	
Adjusted Level of Significance	0.048235	
Adjusted Chi Square Value	96.35686	
Anderson-Darling Test Statistic	8.609439	
Anderson-Darling 5% Critical Value	0.83157	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.21464	
Kolmogrov-Smirnov 5% Critical Value	0.085345	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	7.949152	
95% Adjusted Gamma UCL	7.968293	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	3.912023	
Mean of log data	0.412214	
Standard Deviation of log data	1.767964	
Variance of log data	3.125697	
Lilliefors Test Statisitic	0.197321	
Lilliefors 5% Critical Value	0.075974	
Shapiro-Wilk Test Statisitic	N/A	
Shapiro-Wilk 5% Critical Value	N/A	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	7.207068	
MLE Standard Deviation	33.63142	
MLE Coefficient of Variation	4.66645	
MLE Skewness	115.6148	
MLE Median	1.510157	
MLE 80% Quantile	6.727096	
MLE 90% Quantile	14.64425	
MLE 95% Quantile	27.67459	

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ProUCL Output - Trichloroethene

Groundwater (Wells Screened Above Confining Unit)

MLE 99% Quantile	92.24961	
MVU Estimate of Median	1.492901	
MVU Estimate of Mean	7.00417	
MVU Estimate of Standard Deviation	28.83557	
MVU Estimate of SE of Mean	1.610241	
95% H-UCL	11.30528	
95% Chebyshev (MVUE) UCL	14.02305	
97.5% Chebyshev (MVUE) UCL	17.06012	
99% Chebyshev (MVUE) UCL	23.02586	
Non-parametric Statisitics		
95% CLT UCL	7.842177	
95% Adjusted-CLT UCL	8.026719	
95% Modified-t UCL	7.881302	
95% Jackknife UCL	7.852517	
95% Chebyshev (Mean, Sd) UCL	10.31134	
97.5% Chebyshev (Mean, Sd) UCL	12.02726	
99% Chebyshev (Mean, Sd) UCL	15.39785	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	7.85014	
95% Bootstrap-t UCL	8.067637	
95% Hall's Bootstrap UCL	8.059148	
95% Percentile Bootstrap UCL	7.772426	
95% BCA Bootstrap UCL	8.093676	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	12.02726	97.5% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

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ProUCL Output - 1,2-Dichloroethane

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	1,2-Dichloroethane	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	6	
Minimum	0.2	
Maximum	2.5	
Mean	0.571875	
Standard Deviation	0.614537	
Variance	0.377656	
Coefficient of Variation	1.074601	
Skewness	2.445487	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.636335	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.841204	
Gamma Statistics		
k hat	1.619224	
k star (bias corrected)	1.357286	
Theta hat	0.353178	
Theta star	0.421337	
nu hat	51.81517	
nu star	43.43316	
5% Approximate Chi Square Value	29.31836	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	28.00131	
Anderson-Darling Test Statistic	1.52607	
Anderson-Darling 5% Critical Value	0.753638	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.272637	
Kolmogrov-Smirnov 5% Critical Value	0.218654	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.847194	
95% Adjusted Gamma UCL	0.887042	
Lognormal Statistics		
Minimum of log data	-1.60944	
Maximum of log data	0.916291	
Mean of log data	-0.89836	
Standard Deviation of log data	0.764968	
Variance of log data	0.585176	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.824967	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.545653	
MLE Standard Deviation	0.486613	
MLE Coefficient of Variation	0.8918	
MLE Skewness	3.384654	
MLE Median	0.407237	
MLE 80% Quantile	0.777274	
MLE 90% Quantile	1.088307	
MLE 95% Quantile	1.433346	

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ProUCL Output - 1,2-Dichloroethane

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	2.413203	
MVU Estimate of Median	0.39985	
MVU Estimate of Mean	0.533486	
MVU Estimate of Standard Deviation	0.44082	
MVU Estimate of SE of Mean	0.108765	
95% H-UCL	0.871776	
95% Chebyshev (MVUE) UCL	1.00758	
97.5% Chebyshev (MVUE) UCL	1.212721	
99% Chebyshev (MVUE) UCL	1.615681	
Non-parametric Statisitics		
95% CLT UCL	0.824581	
95% Adjusted-CLT UCL	0.924944	
95% Modified-t UCL	0.856858	
95% Jackknife UCL	0.841204	
95% Chebyshev (Mean, Sd) UCL	1.241552	
97.5% Chebyshev (Mean, Sd) UCL	1.531321	
99% Chebyshev (Mean, Sd) UCL	2.100518	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.820783	
95% Bootstrap-t UCL	1.099399	
95% Hall's Bootstrap UCL	0.969535	
95% Percentile Bootstrap UCL	0.853125	
95% BCA Bootstrap UCL	0.915625	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1.241552	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - 2-Methylnaphthalene

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	2-Methylnaphthalene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	7	
Minimum	1	
Maximum	18	
Mean	3.853125	
Standard Deviation	4.684139	
Variance	21.94116	
Coefficient of Variation	1.215673	
Skewness	2.591371	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.537974	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	5.906008	
Gamma Statistics		
k hat	1.459953	
k star (bias corrected)	1.227878	
Theta hat	2.639212	
Theta star	3.138035	
nu hat	46.71849	
nu star	39.29211	
5% Approximate Chi Square Value	25.93057	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	24.69829	
Anderson-Darling Test Statistic	2.24174	
Anderson-Darling 5% Critical Value	0.75538	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.377595	
Kolmogrov-Smirnov 5% Critical Value	0.219081	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	5.838567	
95% Adjusted Gamma UCL	6.129875	
Lognormal Statistics		
Minimum of log data	0	
Maximum of log data	2.890372	
Mean of log data	0.968854	
Standard Deviation of log data	0.786056	
Variance of log data	0.617884	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.781778	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	3.588721	
MLE Standard Deviation	3.31835	
MLE Coefficient of Variation	0.924661	
MLE Skewness	3.564566	
MLE Median	2.634923	
MLE 80% Quantile	5.119574	
MLE 90% Quantile	7.235038	
MLE 95% Quantile	9.601465	

Appendix P, Attachment 3

ProUCL Output - 2-Methylnaphthalene

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	16.39899	
MVU Estimate of Median	2.584477	
MVU Estimate of Mean	3.503432	
MVU Estimate of Standard Deviation	2.986967	
MVU Estimate of SE of Mean	0.735986	
95% H-UCL	5.842176	
95% Chebyshev (MVUE) UCL	6.711522	
97.5% Chebyshev (MVUE) UCL	8.099665	
99% Chebyshev (MVUE) UCL	10.8264	
Non-parametric Statisitics		
95% CLT UCL	5.779306	
95% Adjusted-CLT UCL	6.58993	
95% Modified-t UCL	6.032449	
95% Jackknife UCL	5.906008	
95% Chebyshev (Mean, Sd) UCL	8.957547	
97.5% Chebyshev (Mean, Sd) UCL	11.16623	
99% Chebyshev (Mean, Sd) UCL	15.50477	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	5.645044	
95% Bootstrap-t UCL	15.46648	
95% Hall's Bootstrap UCL	22.05472	
95% Percentile Bootstrap UCL	5.846875	
95% BCA Bootstrap UCL	6.6625	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	8.957547	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Arsenic

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Arsenic	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	15	
Minimum	0.7	
Maximum	12.7	
Mean	3.62625	
Standard Deviation	3.432243	
Variance	11.78029	
Coefficient of Variation	0.946499	
Skewness	1.534623	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.808629	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	5.130473	
Gamma Statistics		
k hat	1.454775	
k star (bias corrected)	1.223671	
Theta hat	2.492654	
Theta star	2.963419	
nu hat	46.55279	
nu star	39.15748	
5% Approximate Chi Square Value	25.82109	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	24.59163	
Anderson-Darling Test Statistic	0.507739	
Anderson-Darling 5% Critical Value	0.755469	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.160207	
Kolmogrov-Smirnov 5% Critical Value	0.219104	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	5.499178	
95% Adjusted Gamma UCL	5.774111	
Lognormal Statistics		
Minimum of log data	-0.35667	
Maximum of log data	2.541602	
Mean of log data	0.906691	
Standard Deviation of log data	0.894211	
Variance of log data	0.799613	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.950957	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	3.693217	
MLE Standard Deviation	4.087108	
MLE Coefficient of Variation	1.106653	
MLE Skewness	4.675253	
MLE Median	2.476116	
MLE 80% Quantile	5.271419	
MLE 90% Quantile	7.812714	
MLE 95% Quantile	10.77974	

Appendix P, Attachment 3

ProUCL Output - Arsenic

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	19.8187	
MVU Estimate of Median	2.414921	
MVU Estimate of Mean	3.573884	
MVU Estimate of Standard Deviation	3.545339	
MVU Estimate of SE of Mean	0.86625	
95% H-UCL	6.660899	
95% Chebyshev (MVUE) UCL	7.349782	
97.5% Chebyshev (MVUE) UCL	8.983615	
99% Chebyshev (MVUE) UCL	12.19297	
Non-parametric Statisitics		
95% CLT UCL	5.037634	
95% Adjusted-CLT UCL	5.389389	
95% Modified-t UCL	5.18534	
95% Jackknife UCL	5.130473	
95% Chebyshev (Mean, Sd) UCL	7.36645	
97.5% Chebyshev (Mean, Sd) UCL	8.984838	
99% Chebyshev (Mean, Sd) UCL	12.16385	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.983935	
95% Bootstrap-t UCL	5.855439	
95% Hall's Bootstrap UCL	5.576882	
95% Percentile Bootstrap UCL	5.028125	
95% BCA Bootstrap UCL	5.45125	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	5.499178	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

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ProUCL Output - Benzene

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Benzene	
Raw Statistics		
Number of Observations	15	
Number of Missing Data	0	
Number of Valid Observations	15	
Number of Distinct Observations	9	
Minimum	0.2	
Maximum	10	
Mean	1.41	
Standard Deviation	2.516531	
Variance	6.332929	
Coefficient of Variation	1.784774	
Skewness	3.238606	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.516794	
Shapiro-Wilk 5% Critical Value	0.881	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.554439	
Gamma Statistics		
k hat	0.77143	
k star (bias corrected)	0.661589	
Theta hat	1.827774	
Theta star	2.131233	
nu hat	23.14291	
nu star	19.84766	
5% Approximate Chi Square Value	10.73743	
Adjusted Level of Significance	0.03235	
Adjusted Chi Square Value	9.920077	
Anderson-Darling Test Statistic	1.455777	
Anderson-Darling 5% Critical Value	0.774074	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.312105	
Kolmogrov-Smirnov 5% Critical Value	0.230023	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	2.606322	
95% Adjusted Gamma UCL	2.821067	
Lognormal Statistics		
Minimum of log data	-1.60944	
Maximum of log data	2.302585	
Mean of log data	-0.42948	
Standard Deviation of log data	1.121485	
Variance of log data	1.257728	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.861451	
Shapiro-Wilk 5% Critical Value	0.881	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.220657	
MLE Standard Deviation	1.936741	
MLE Coefficient of Variation	1.586639	
MLE Skewness	8.754155	
MLE Median	0.650851	
MLE 80% Quantile	1.678969	
MLE 90% Quantile	2.750088	
MLE 95% Quantile	4.118	

Appendix P, Attachment 3

ProUCL Output - Benzene

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	8.838338	
MVU Estimate of Median	0.624059	
MVU Estimate of Mean	1.147538	
MVU Estimate of Standard Deviation	1.494268	
MVU Estimate of SE of Mean	0.367905	
95% H-UCL	2.948185	
95% Chebyshev (MVUE) UCL	2.7512	
97.5% Chebyshev (MVUE) UCL	3.445105	
99% Chebyshev (MVUE) UCL	4.808149	
Non-parametric Statisitics		
95% CLT UCL	2.478769	
95% Adjusted-CLT UCL	3.059333	
95% Modified-t UCL	2.644995	
95% Jackknife UCL	2.554439	
95% Chebyshev (Mean, Sd) UCL	4.242262	
97.5% Chebyshev (Mean, Sd) UCL	5.467784	
99% Chebyshev (Mean, Sd) UCL	7.875085	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.470163	
95% Bootstrap-t UCL	5.012613	
95% Hall's Bootstrap UCL	5.767214	
95% Percentile Bootstrap UCL	2.56	
95% BCA Bootstrap UCL	3.276667	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	7.875085	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Benzo(a)anthracene

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Benzo(a)anthracene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	4	
Minimum	0.1	
Maximum	2.5	
Mean	1.90925	
Standard Deviation	1.057239	
Variance	1.12E+00	
Coefficient of Variation	0.553746	
Skewness	-1.28111	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.552816	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.372598	
Gamma Statistics		
k hat	1.18807	
k star (bias corrected)	1.006973	
Theta hat	1.607019	
Theta star	1.896029	
nu hat	38.01823	
nu star	32.22314	
5% Approximate Chi Square Value	20.24697	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	19.17026	
Anderson-Darling Test Statistic	3.790278	
Anderson-Darling 5% Critical Value	0.760061	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.479285	
Kolmogrov-Smirnov 5% Critical Value	0.22031	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.03858	
95% Adjusted Gamma UCL	3.209244	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	0.916291	
Mean of log data	0.170114	
Standard Deviation of log data	1.348994	
Variance of log data	1.819786	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.568013	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.944701	
MLE Standard Deviation	6.695901	
MLE Coefficient of Variation	2.273882	
MLE Skewness	18.57883	
MLE Median	1.18544	
MLE 80% Quantile	3.706228	
MLE 90% Quantile	6.70982	
MLE 95% Quantile	10.90488	
MLE 99% Quantile	27.327	
MVU Estimate of Median	1.119693	
MVU Estimate of Mean	2.677223	
MVU Estimate of Standard Deviation	4.506079	
MVU Estimate of SE of Mean	1.029943	
95% H-UCL	9.272548	

Appendix P, Attachment 3
ProUCL Output - Benzo(a)anthracene
Groundwater All (Wells Screened Within/Below Confining Unit)

95% Chebyshev (MVUE) UCL	7.166638	
97.5% Chebyshev (MVUE) UCL	9.109212	
99% Chebyshev (MVUE) UCL	12.92502	
Non-parametric Statisitics		
95% CLT UCL	2.344001	
95% Adjusted-CLT UCL	2.253548	
95% Modified-t UCL	2.358489	
95% Jackknife UCL	2.372598	
95% Chebyshev (Mean, Sd) UCL	3.061349	
97.5% Chebyshev (Mean, Sd) UCL	3.559863	
99% Chebyshev (Mean, Sd) UCL	4.539098	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	N/R	Not enough distinct data warning
95% Bootstrap-t UCL	N/R	Not enough distinct data warning
95% Hall's Bootstrap UCL	N/R	Not enough distinct data warning
95% Percentile Bootstrap UCL	N/R	Not enough distinct data warning
95% BCA Bootstrap UCL	N/R	Not enough distinct data warning
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	4.539098	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

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ProUCL Output - Carbazole

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Carbazole	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	6	
Minimum	0.73	
Maximum	6	
Mean	2.205	
Standard Deviation	1.240779	
Variance	1.54E+00	
Coefficient of Variation	0.562712	
Skewness	1.790038	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.723345	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	2.748787	
Gamma Statistics		
k hat	3.818268	
k star (bias corrected)	3.144009	
Theta hat	0.577487	
Theta star	0.701334	
nu hat	122.1846	
nu star	100.6083	
5% Approximate Chi Square Value	78.46267	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	76.23801	
Anderson-Darling Test Statistic	1.55824	
Anderson-Darling 5% Critical Value	0.742338	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.287886	
Kolmogrov-Smirnov 5% Critical Value	0.216226	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	2.827348	
95% Adjusted Gamma UCL	2.909851	
Lognormal Statistics		
Minimum of log data	-0.31471	
Maximum of log data	1.791759	
Mean of log data	0.6541	
Standard Deviation of log data	0.547907	
Variance of log data	0.300202	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.821304	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.23491	
MLE Standard Deviation	1.322438	
MLE Coefficient of Variation	0.591719	
MLE Skewness	1.982335	
MLE Median	1.923411	
MLE 80% Quantile	3.055922	
MLE 90% Quantile	3.889031	
MLE 95% Quantile	4.737012	

Appendix P, Attachment 3

ProUCL Output - Carbazole

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	6.879396	
MVU Estimate of Median	1.905441	
MVU Estimate of Mean	2.211514	
MVU Estimate of Standard Deviation	1.261677	
MVU Estimate of SE of Mean	0.314216	
95% H-UCL	3.010589	
95% Chebyshev (MVUE) UCL	3.581148	
97.5% Chebyshev (MVUE) UCL	4.17379	
99% Chebyshev (MVUE) UCL	5.33792	
Non-parametric Statisitics		
95% CLT UCL	2.715225	
95% Adjusted-CLT UCL	2.863551	
95% Modified-t UCL	2.771923	
95% Jackknife UCL	2.748787	
95% Chebyshev (Mean, Sd) UCL	3.557108	
97.5% Chebyshev (Mean, Sd) UCL	4.142166	
99% Chebyshev (Mean, Sd) UCL	5.2914	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	2.70178	
95% Bootstrap-t UCL	2.933525	
95% Hall's Bootstrap UCL	5.244283	
95% Percentile Bootstrap UCL	2.764375	
95% BCA Bootstrap UCL	2.8125	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	3.557108	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Chloroform

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Chloroform	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	9	
Minimum	0.1	
Maximum	1.25E+00	
Mean	6.16E-01	
Standard Deviation	3.53E-01	
Variance	0.12436	
Coefficient of Variation	0.572827	
Skewness	-0.00093	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.941948	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NORMAL	Data are normal at 5% significance level
95% Student's-t UCL	7.70E-01	
Gamma Statistics		
k hat	2.292545	
k star (bias corrected)	1.904359	
Theta hat	0.268533	
Theta star	0.323271	
nu hat	73.36143	
nu star	60.9395	
5% Approximate Chi Square Value	43.98328	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	42.34575	
Anderson-Darling Test Statistic	0.678287	
Anderson-Darling 5% Critical Value	0.748534	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.224675	
Kolmogrov-Smirnov 5% Critical Value	0.217516	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	0.852958	
95% Adjusted Gamma UCL	0.885942	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	0.223144	
Mean of log data	-0.71879	
Standard Deviation of log data	0.800503	
Variance of log data	0.640805	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.862924	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.6714	
MLE Standard Deviation	0.636241	
MLE Coefficient of Variation	0.947633	
MLE Skewness	3.69388	
MLE Median	0.48734	
MLE 80% Quantile	0.958517	
MLE 90% Quantile	1.363226	
MLE 95% Quantile	1.818541	

Appendix P, Attachment 3

ProUCL Output - Chloroform

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	3.136718	
MVU Estimate of Median	0.477667	
MVU Estimate of Mean	0.654744	
MVU Estimate of Standard Deviation	0.570121	
MVU Estimate of SE of Mean	0.14034	
95% H-UCL	1.107394	
95% Chebyshev (MVUE) UCL	1.266471	
97.5% Chebyshev (MVUE) UCL	1.531166	
99% Chebyshev (MVUE) UCL	2.051107	
Non-parametric Statisitics		
95% CLT UCL	7.61E-01	
95% Adjusted-CLT UCL	0.760616	
95% Modified-t UCL	0.770173	
95% Jackknife UCL	7.70E-01	
95% Chebyshev (Mean, Sd) UCL	1.00E+00	
97.5% Chebyshev (Mean, Sd) UCL	1.17E+00	
99% Chebyshev (Mean, Sd) UCL	1.49E+00	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	7.56E-01	
95% Bootstrap-t UCL	0.775583	
95% Hall's Bootstrap UCL	0.765161	
95% Percentile Bootstrap UCL	7.61E-01	
95% BCA Bootstrap UCL	7.55E-01	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NORMAL	
1st Recommended UCL	7.70E-01	95% Student's-t UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - cis-1,2-Dichloroethene

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	cis-1,2-Dichloroethene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	13	
Minimum	0.25	
Maximum	16	
Mean	4.4325	
Standard Deviation	5.672245	
Variance	32.17437	
Coefficient of Variation	1.279694	
Skewness	1.245756	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.729228	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	6.918433	
Gamma Statistics		
k hat	0.645569	
k star (bias corrected)	0.566192	
Theta hat	6.866033	
Theta star	7.82862	
nu hat	20.65822	
nu star	18.11814	
5% Approximate Chi Square Value	9.474911	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	8.769787	
Anderson-Darling Test Statistic	0.804581	
Anderson-Darling 5% Critical Value	0.783635	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.20239	
Kolmogrov-Smirnov 5% Critical Value	0.224883	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	8.475925	
95% Adjusted Gamma UCL	9.157421	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	2.772589	
Mean of log data	0.542018	
Standard Deviation of log data	1.513011	
Variance of log data	2.289202	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.903062	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	5.40119	
MLE Standard Deviation	16.08345	
MLE Coefficient of Variation	2.977761	
MLE Skewness	35.33727	
MLE Median	1.719474	
MLE 80% Quantile	6.175022	
MLE 90% Quantile	12.01598	
MLE 95% Quantile	20.71631	

Appendix P, Attachment 3

ProUCL Output - cis-1,2-Dichloroethene

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	58.04866	
MVU Estimate of Median	1.600277	
MVU Estimate of Mean	4.739386	
MVU Estimate of Standard Deviation	9.402609	
MVU Estimate of SE of Mean	2.0701	
95% H-UCL	21.91591	
95% Chebyshev (MVUE) UCL	13.76274	
97.5% Chebyshev (MVUE) UCL	17.66716	
99% Chebyshev (MVUE) UCL	25.33662	
Non-parametric Statisitics		
95% CLT UCL	6.765003	
95% Adjusted-CLT UCL	7.236901	
95% Modified-t UCL	6.992039	
95% Jackknife UCL	6.918433	
95% Chebyshev (Mean, Sd) UCL	10.61369	
97.5% Chebyshev (Mean, Sd) UCL	13.28829	
99% Chebyshev (Mean, Sd) UCL	18.54203	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	6.663362	
95% Bootstrap-t UCL	7.848609	
95% Hall's Bootstrap UCL	6.39924	
95% Percentile Bootstrap UCL	6.85	
95% BCA Bootstrap UCL	7.035625	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	8.475925	95% Approximate Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Dibenzofuran

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Dibenzofuran	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	6	
Minimum	1.30E+00	
Maximum	6.00E+00	
Mean	2.78E+00	
Standard Deviation	1.12E+00	
Variance	1.26499	
Coefficient of Variation	0.404848	
Skewness	2.167437	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.609634	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	3.27E+00	
Gamma Statistics		
k hat	8.692529	
k star (bias corrected)	7.104347	
Theta hat	3.20E-01	
Theta star	3.91E-01	
nu hat	278.1609	
nu star	227.3391	
5% Approximate Chi Square Value	193.432	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	189.873	
Anderson-Darling Test Statistic	2.83101	
Anderson-Darling 5% Critical Value	0.7396	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.388361	
Kolmogrov-Smirnov 5% Critical Value	0.215315	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	3.27E+00	
95% Adjusted Gamma UCL	3.33E+00	
Lognormal Statistics		
Minimum of log data	0.262364	
Maximum of log data	1.791759	
Mean of log data	0.963154	
Standard Deviation of log data	0.335913	
Variance of log data	0.112838	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.701193	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.77E+00	
MLE Standard Deviation	9.58E-01	
MLE Coefficient of Variation	3.46E-01	
MLE Skewness	1.08E+00	
MLE Median	2.62E+00	
MLE 80% Quantile	3.48E+00	
MLE 90% Quantile	4.03E+00	
MLE 95% Quantile	4.55E+00	

Appendix P, Attachment 3

ProUCL Output - Dibenzofuran

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	5.72E+00	
MVU Estimate of Median	2.61E+00	
MVU Estimate of Mean	2.76E+00	
MVU Estimate of Standard Deviation	9.42E-01	
MVU Estimate of SE of Mean	2.35E-01	
95% H-UCL	3.27E+00	
95% Chebyshev (MVUE) UCL	3.79E+00	
97.5% Chebyshev (MVUE) UCL	4.23E+00	
99% Chebyshev (MVUE) UCL	5.10E+00	
Non-parametric Statisitics		
95% CLT UCL	3.24E+00	
95% Adjusted-CLT UCL	3.403422	
95% Modified-t UCL	3.29644	
95% Jackknife UCL	3.27E+00	
95% Chebyshev (Mean, Sd) UCL	4.00E+00	
97.5% Chebyshev (Mean, Sd) UCL	4.53E+00	
99% Chebyshev (Mean, Sd) UCL	5.58E+00	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	3.23E+00	
95% Bootstrap-t UCL	4.102011	
95% Hall's Bootstrap UCL	7.165909	
95% Percentile Bootstrap UCL	3.26E+00	
95% BCA Bootstrap UCL	3.39E+00	
Recommendations		
Human Inspection Recommended?	YES	Users must select one of the recommended UCLS
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	3.27E+00	95% Student's-t UCL
2nd Recommended UCL	3.29644	95% Modified-t UCL
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Lead

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Lead	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	12	
Minimum	9.00E-02	
Maximum	20.2	
Mean	3.7225	
Standard Deviation	6.53756	
Variance	42.73969	
Coefficient of Variation	1.756228	
Skewness	2.026437	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.602112	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	6.587667	
Gamma Statistics		
k hat	0.441959	
k star (bias corrected)	0.400758	
Theta hat	8.422734	
Theta star	9.288646	
nu hat	14.14268	
nu star	12.82426	
5% Approximate Chi Square Value	5.773673	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	5.243558	
Anderson-Darling Test Statistic	1.039006	
Anderson-Darling 5% Critical Value	0.808384	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.22006	
Kolmogrov-Smirnov 5% Critical Value	0.228866	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	APPROX GAMMA	Data follow approximate gamma distribution at 5% significance level
95% Approximate Gamma UCL	8.268273	
95% Adjusted Gamma UCL	9.104182	
Lognormal Statistics		
Minimum of log data	-2.40795	
Maximum of log data	3.005683	
Mean of log data	-0.15093	
Standard Deviation of log data	1.826641	
Variance of log data	3.336617	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.911605	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	4.560248	
MLE Standard Deviation	23.75002	
MLE Coefficient of Variation	5.208054	
MLE Skewness	156.8865	
MLE Median	8.60E-01	
MLE 80% Quantile	4.03E+00	
MLE 90% Quantile	8.99E+00	
MLE 95% Quantile	1.74E+01	

Appendix P, Attachment 3

ProUCL Output - Lead

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	6.02E+01	
MVU Estimate of Median	7.74E-01	
MVU Estimate of Mean	3.65E+00	
MVU Estimate of Standard Deviation	9.68E+00	
MVU Estimate of SE of Mean	1.95E+00	
95% H-UCL	32.50307	
95% Chebyshev (MVUE) UCL	1.21E+01	
97.5% Chebyshev (MVUE) UCL	1.58E+01	
99% Chebyshev (MVUE) UCL	2.30E+01	
Non-parametric Statisitics		
95% CLT UCL	6.410832	
95% Adjusted-CLT UCL	7.295559	
95% Modified-t UCL	6.725667	
95% Jackknife UCL	6.587667	
95% Chebyshev (Mean, Sd) UCL	10.84664	
97.5% Chebyshev (Mean, Sd) UCL	13.92926	
99% Chebyshev (Mean, Sd) UCL	19.98447	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	6.294403	
95% Bootstrap-t UCL	10.08051	
95% Hall's Bootstrap UCL	7.032573	
95% Percentile Bootstrap UCL	6.48375	
95% BCA Bootstrap UCL	7.65375	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	9.104182	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Naphthalene

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Naphthalene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	11	
Minimum	0.1	
Maximum	200	
Mean	23.14938	
Standard Deviation	51.92918	
Variance	2696.64	
Coefficient of Variation	2.243222	
Skewness	3.094408	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.497084	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	45.90799	
Gamma Statistics		
k hat	0.372682	
k star (bias corrected)	0.344471	
Theta hat	62.11557	
Theta star	67.20267	
nu hat	11.92584	
nu star	11.02307	
5% Approximate Chi Square Value	4.589923	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	4.126832	
Anderson-Darling Test Statistic	1.166694	
Anderson-Darling 5% Critical Value	0.822758	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.288995	
Kolmogrov-Smirnov 5% Critical Value	0.230854	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	55.59511	
95% Adjusted Gamma UCL	61.8337	
Lognormal Statistics		
Minimum of log data	-2.30259	
Maximum of log data	5.298317	
Mean of log data	1.355976	
Standard Deviation of log data	2.059061	
Variance of log data	4.239733	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.933278	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	LOGNORMAL	Data are lognormal at 5% significance level
MLE Mean	32.32505	
MLE Standard Deviation	267.3211	
MLE Coefficient of Variation	8.269782	
MLE Skewness	590.374	
MLE Median	3.880547	
MLE 80% Quantile	22.10675	
MLE 90% Quantile	54.70033	
MLE 95% Quantile	114.7931	

Appendix P, Attachment 3

ProUCL Output - Naphthalene

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	466.544	
MVU Estimate of Median	3.395436	
MVU Estimate of Mean	23.54756	
MVU Estimate of Standard Deviation	76.44002	
MVU Estimate of SE of Mean	14.15852	
95% H-UCL	374.2372	
95% Chebyshev (MVUE) UCL	85.26312	
97.5% Chebyshev (MVUE) UCL	111.9675	
99% Chebyshev (MVUE) UCL	164.4231	
Non-parametric Statisitics		
95% CLT UCL	44.50335	
95% Adjusted-CLT UCL	55.23458	
95% Modified-t UCL	47.58185	
95% Jackknife UCL	45.90799	
95% Chebyshev (Mean, Sd) UCL	79.73789	
97.5% Chebyshev (Mean, Sd) UCL	104.2238	
99% Chebyshev (Mean, Sd) UCL	152.3216	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	42.44391	
95% Bootstrap-t UCL	149.0896	
95% Hall's Bootstrap UCL	132.0994	
95% Percentile Bootstrap UCL	46.87938	
95% BCA Bootstrap UCL	59.5875	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	LOGNORMAL	
1st Recommended UCL	164.4231	99% Chebyshev (MVUE) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Tetrachloroethene

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Tetrachloroethene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	10	
Minimum	0.25	
Maximum	9.60E+00	
Mean	2.54E+00	
Standard Deviation	3.58E+00	
Variance	1.28E+01	
Coefficient of Variation	1.412218	
Skewness	1.347931	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.646653	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	4.11E+00	
Gamma Statistics		
k hat	0.64028	
k star (bias corrected)	0.561894	
Theta hat	3.96311	
Theta star	4.515975	
nu hat	20.48896	
nu star	17.98061	
5% Approximate Chi Square Value	9.375479	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	8.674568	
Anderson-Darling Test Statistic	1.662432	
Anderson-Darling 5% Critical Value	0.784096	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.277955	
Kolmogrov-Smirnov 5% Critical Value	0.224967	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	4.866504	
95% Adjusted Gamma UCL	5.259721	
Lognormal Statistics		
Minimum of log data	-1.38629	
Maximum of log data	2.261763	
Mean of log data	-0.02472	
Standard Deviation of log data	1.389904	
Variance of log data	1.931833	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.822928	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	2.563043	
MLE Standard Deviation	6.226745	
MLE Coefficient of Variation	2.429435	
MLE Skewness	21.6272	
MLE Median	0.975581	
MLE 80% Quantile	3.157395	
MLE 90% Quantile	5.820029	
MLE 95% Quantile	9.599112	
MLE 99% Quantile	24.73441	
MVU Estimate of Median	0.91823	
MVU Estimate of Mean	2.311423	
MVU Estimate of Standard Deviation	4.057109	
MVU Estimate of SE of Mean	0.919313	
95% H-UCL	8.574248	

Appendix P, Attachment 3
ProUCL Output - Tetrachloroethene
Groundwater All (Wells Screened Within/Below Confining Unit)

95% Chebyshev (MVUE) UCL	6.318614	
97.5% Chebyshev (MVUE) UCL	8.052529	
99% Chebyshev (MVUE) UCL	11.45847	
Non-parametric Statisitics		
95% CLT UCL	4.01E+00	
95% Adjusted-CLT UCL	4.33E+00	
95% Modified-t UCL	4.16E+00	
95% Jackknife UCL	4.11E+00	
95% Chebyshev (Mean, Sd) UCL	6.44E+00	
97.5% Chebyshev (Mean, Sd) UCL	8.13E+00	
99% Chebyshev (Mean, Sd) UCL	1.15E+01	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	3.96E+00	
95% Bootstrap-t UCL	4.79E+00	
95% Hall's Bootstrap UCL	3.63E+00	
95% Percentile Bootstrap UCL	4.00E+00	
95% BCA Bootstrap UCL	4.28E+00	
Recommendations		
Human Inspection Recommended?	YES	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1.15E+01	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value	YES	Recommended UCL exceeds the maximum data value
Recommendation Warning!	NONE	
Alternative UCL	YES	Cosider using 95% or 97.5% Chebyshev (Mean, Sd) UCL

Appendix P, Attachment 3

ProUCL Output - Trichloroethene

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Trichloroethene	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	15	
Minimum	0.2	
Maximum	460	
Mean	135.6588	
Standard Deviation	172.9805	
Variance	2.99E+04	
Coefficient of Variation	1.275115	
Skewness	1.042946	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.751849	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	211.4696	
Gamma Statistics		
k hat	0.345794	
k star (bias corrected)	0.322624	
Theta hat	392.3114	
Theta star	420.4857	
nu hat	11.06539	
nu star	10.32397	
5% Approximate Chi Square Value	4.14438	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	3.708628	
Anderson-Darling Test Statistic	0.595364	
Anderson-Darling 5% Critical Value	0.828338	
Anderson-Darling 5% Gamma Test Result	AD GAMMA	Data follow gamma distribution at 5% signifcance level.
Kolmogrov-Smirnov Test Statistic	0.156505	
Kolmogrov-Smirnov 5% Critical Value	0.231626	
Kolmogrov-Smirnov 5% Gamma Test Result	KS GAMMA	Data follow gamma distribution at 5% signifcance level
5% Gamma Test Result	GAMMA	Data follow gamma distribution at 5% signifcance level
95% Approximate Gamma UCL	337.9362	
95% Adjusted Gamma UCL	377.6427	
Lognormal Statistics		
Minimum of log data	-1.60944	
Maximum of log data	6.131226	
Mean of log data	2.961688	
Standard Deviation of log data	2.896141	
Variance of log data	8.387631	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.860747	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1281.138	
MLE Standard Deviation	84897.96	
MLE Coefficient of Variation	66.26764	
MLE Skewness	291206.5	
MLE Median	19.33058	
MLE 80% Quantile	223.3918	
MLE 90% Quantile	798.8946	
MLE 95% Quantile	2266.155	

Appendix P, Attachment 3

ProUCL Output - Trichloroethene

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	16286.82	
MVU Estimate of Median	14.8111	
MVU Estimate of Mean	535.6986	
MVU Estimate of Standard Deviation	3337.327	
MVU Estimate of SE of Mean	426.5789	
95% H-UCL	1.37E+05	
95% Chebyshev (MVUE) UCL	2395.113	
97.5% Chebyshev (MVUE) UCL	3199.683	
99% Chebyshev (MVUE) UCL	4780.105	
Non-parametric Statisitics		
95% CLT UCL	206.7906	
95% Adjusted-CLT UCL	218.8388	
95% Modified-t UCL	213.3489	
95% Jackknife UCL	211.4696	
95% Chebyshev (Mean, Sd) UCL	324.1599	
97.5% Chebyshev (Mean, Sd) UCL	405.7244	
99% Chebyshev (Mean, Sd) UCL	565.9423	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	204.8555	
95% Bootstrap-t UCL	242.9545	
95% Hall's Bootstrap UCL	200.0539	
95% Percentile Bootstrap UCL	208.8525	
95% BCA Bootstrap UCL	220.5175	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	GAMMA	
1st Recommended UCL	377.6427	95% Adjusted Gamma UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Vinyl chloride

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Vinyl chloride	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	5	
Minimum	0.2	
Maximum	2.5	
Mean	0.590625	
Standard Deviation	0.60669	
Variance	0.368073	
Coefficient of Variation	1.0272	
Skewness	2.454684	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.63573	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	0.856515	
Gamma Statistics		
k hat	1.750915	
k star (bias corrected)	1.464285	
Theta hat	0.337324	
Theta star	0.403354	
nu hat	56.02929	
nu star	46.85713	
5% Approximate Chi Square Value	32.14649	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	30.76233	
Anderson-Darling Test Statistic	1.617472	
Anderson-Darling 5% Critical Value	0.752477	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.295336	
Kolmogrov-Smirnov 5% Critical Value	0.218383	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	0.860902	
95% Adjusted Gamma UCL	0.899639	
Lognormal Statistics		
Minimum of log data	-1.60944	
Maximum of log data	0.916291	
Mean of log data	-0.83854	
Standard Deviation of log data	0.736387	
Variance of log data	0.542267	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.812835	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	0.566993	
MLE Standard Deviation	0.481077	
MLE Coefficient of Variation	0.84847	
MLE Skewness	3.156223	
MLE Median	0.432341	
MLE 80% Quantile	0.805499	
MLE 90% Quantile	1.113732	
MLE 95% Quantile	1.451818	

Appendix P, Attachment 3

ProUCL Output - Vinyl chloride

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	2.397188	
MVU Estimate of Median	0.425069	
MVU Estimate of Mean	0.555423	
MVU Estimate of Standard Deviation	0.439406	
MVU Estimate of SE of Mean	0.1086	
95% H-UCL	0.883713	
95% Chebyshev (MVUE) UCL	1.028799	
97.5% Chebyshev (MVUE) UCL	1.23363	
99% Chebyshev (MVUE) UCL	1.635979	
Non-parametric Statisitics		
95% CLT UCL	0.840104	
95% Adjusted-CLT UCL	0.939558	
95% Modified-t UCL	0.872027	
95% Jackknife UCL	0.856515	
95% Chebyshev (Mean, Sd) UCL	1.25175	
97.5% Chebyshev (Mean, Sd) UCL	1.53782	
99% Chebyshev (Mean, Sd) UCL	2.099748	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	0.82935	
95% Bootstrap-t UCL	1.108148	
95% Hall's Bootstrap UCL	1.022199	
95% Percentile Bootstrap UCL	0.853125	
95% BCA Bootstrap UCL	0.921875	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	1.25175	95% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Appendix P, Attachment 3

ProUCL Output - Xylene (Total)

Groundwater All (Wells Screened Within/Below Confining Unit)

Data File	P:\Honeywell\332898Quanta\Data\Table3-Prep\Feb2007_Update\newGW_TBL3deliverables.xls	
Variable:	Xylene (Total)	
Raw Statistics		
Number of Observations	16	
Number of Missing Data	0	
Number of Valid Observations	16	
Number of Distinct Observations	9	
Minimum	0.2	
Maximum	24	
Mean	2.553125	
Standard Deviation	6.014274	
Variance	36.17149	
Coefficient of Variation	2.355652	
Skewness	3.460185	
Too Few Distinct Observations?	NO	
Normal Statistics		
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.442189	
Shapiro-Wilk 5% Critical Value	0.887	
5% Normality Test Result	NOT NORMAL	Data not normal at 5% significance level
95% Student's-t UCL	5.188956	
Gamma Statistics		
k hat	0.495657	
k star (bias corrected)	0.444388	
Theta hat	5.150993	
Theta star	5.745262	
nu hat	15.86102	
nu star	14.22041	
5% Approximate Chi Square Value	6.721376	
Adjusted Level of Significance	0.03348	
Adjusted Chi Square Value	6.142248	
Anderson-Darling Test Statistic	2.091511	
Anderson-Darling 5% Critical Value	0.797241	
Anderson-Darling 5% Gamma Test Result	NOT AD GAMMA	Data not gamma distributed at 5% significance level
Kolmogrov-Smirnov Test Statistic	0.280913	
Kolmogrov-Smirnov 5% Critical Value	0.227325	
Kolmogrov-Smirnov 5% Gamma Test Result	NOT KS GAMMA	Data not gamma distributed at 5% significance level
5% Gamma Test Result	NOT GAMMA	Data not gamma distributed at 5% significance level
95% Approximate Gamma UCL	5.401646	
95% Adjusted Gamma UCL	5.910945	
Lognormal Statistics		
Minimum of log data	-1.60944	
Maximum of log data	3.178054	
Mean of log data	-0.34591	
Standard Deviation of log data	1.389653	
Variance of log data	1.931135	
Lilliefors Test Statisitic	N/R	Shapiro Wilk method yields a more accurate result
Lilliefors 5% Critical Value	N/R	Shapiro Wilk method yields a more accurate result
Shapiro-Wilk Test Statisitic	0.813257	
Shapiro-Wilk 5% Critical Value	0.887	
5% Lognormality Test Result	NOT LOGNORMAL	Data not lognormal at 5% significance level
MLE Mean	1.858286	
MLE Standard Deviation	4.51274	
MLE Coefficient of Variation	2.428443	
MLE Skewness	21.60666	
MLE Median	0.707574	
MLE 80% Quantile	2.289523	
MLE 90% Quantile	4.219813	
MLE 95% Quantile	6.959209	

Appendix P, Attachment 3

ProUCL Output - Xylene (Total)

Groundwater All (Wells Screened Within/Below Confining Unit)

MLE 99% Quantile	17.929	
MVU Estimate of Median	0.665992	
MVU Estimate of Mean	1.675939	
MVU Estimate of Standard Deviation	2.940929	
MVU Estimate of SE of Mean	0.666431	
95% H-UCL	6.214252	
95% Chebyshev (MVUE) UCL	4.580843	
97.5% Chebyshev (MVUE) UCL	5.837797	
99% Chebyshev (MVUE) UCL	8.30684	
Non-parametric Statisitics		
95% CLT UCL	5.026275	
95% Adjusted-CLT UCL	6.416045	
95% Modified-t UCL	5.405732	
95% Jackknife UCL	5.188956	
95% Chebyshev (Mean, Sd) UCL	9.107028	
97.5% Chebyshev (Mean, Sd) UCL	11.94291	
99% Chebyshev (Mean, Sd) UCL	17.51344	
Bootstrap Statistics		
Number of Bootstrap Runs	2000	
95% Standard Bootstrap UCL	4.864581	
95% Bootstrap-t UCL	22.49452	
95% Hall's Bootstrap UCL	15.42366	
95% Percentile Bootstrap UCL	5.240625	
95% BCA Bootstrap UCL	6.978125	
Recommendations		
Human Inspection Recommended?	NO	
Appropriate Distribution	NON-PARAMETRIC	
1st Recommended UCL	17.51344	99% Chebyshev (Mean, Sd) UCL
2nd Recommended UCL		
3rd Recommended UCL		
Recommended UCL > Max Data Value		
Recommendation Warning!	NONE	
Alternative UCL	NONE	

Attachment 4
Samples Used in Arsenic Hotspot Analysis

CH2MHILL

Subsurface Soil Samples Used in Arsenic Hot Spot Analysis

Block 93 North
Edgewater, New Jersey

LEGEND

CURRENT PROPERTY BOUNDARY

Surface Soil Sample Location

Arsenic Hot Spot Analysis

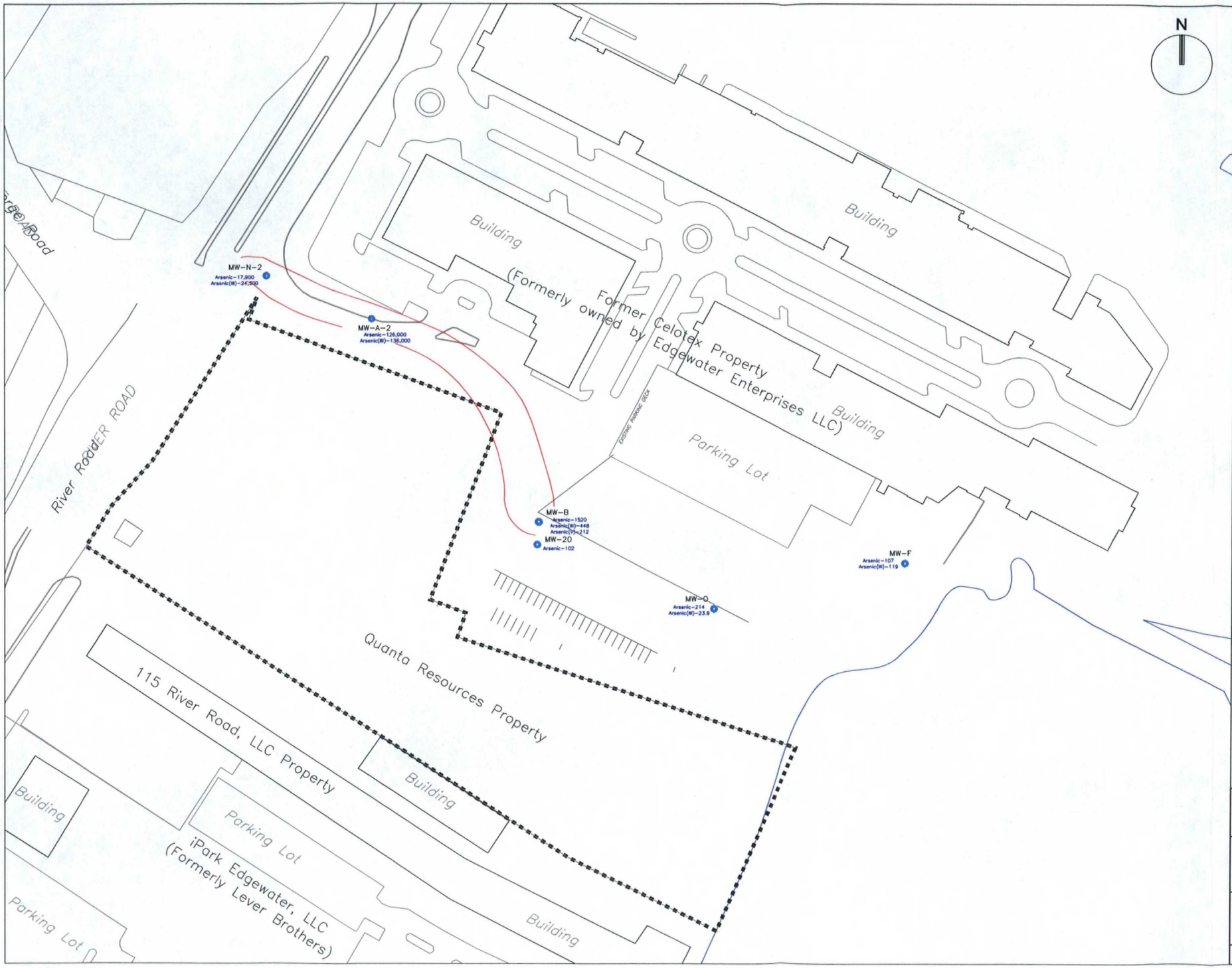
NOTE:
Arsenic Units are in mg/kg.

0 35 70

CH2MHILL

Surface Soil Samples Used in Arsenic Hot Spot Analysis

Block 93 North
Edgewater, New Jersey



LEGEND

- CURRENT PROPERTY BOUNDARY
- Groundwater Sample Location
- Arsenic Hot Spot Analysis

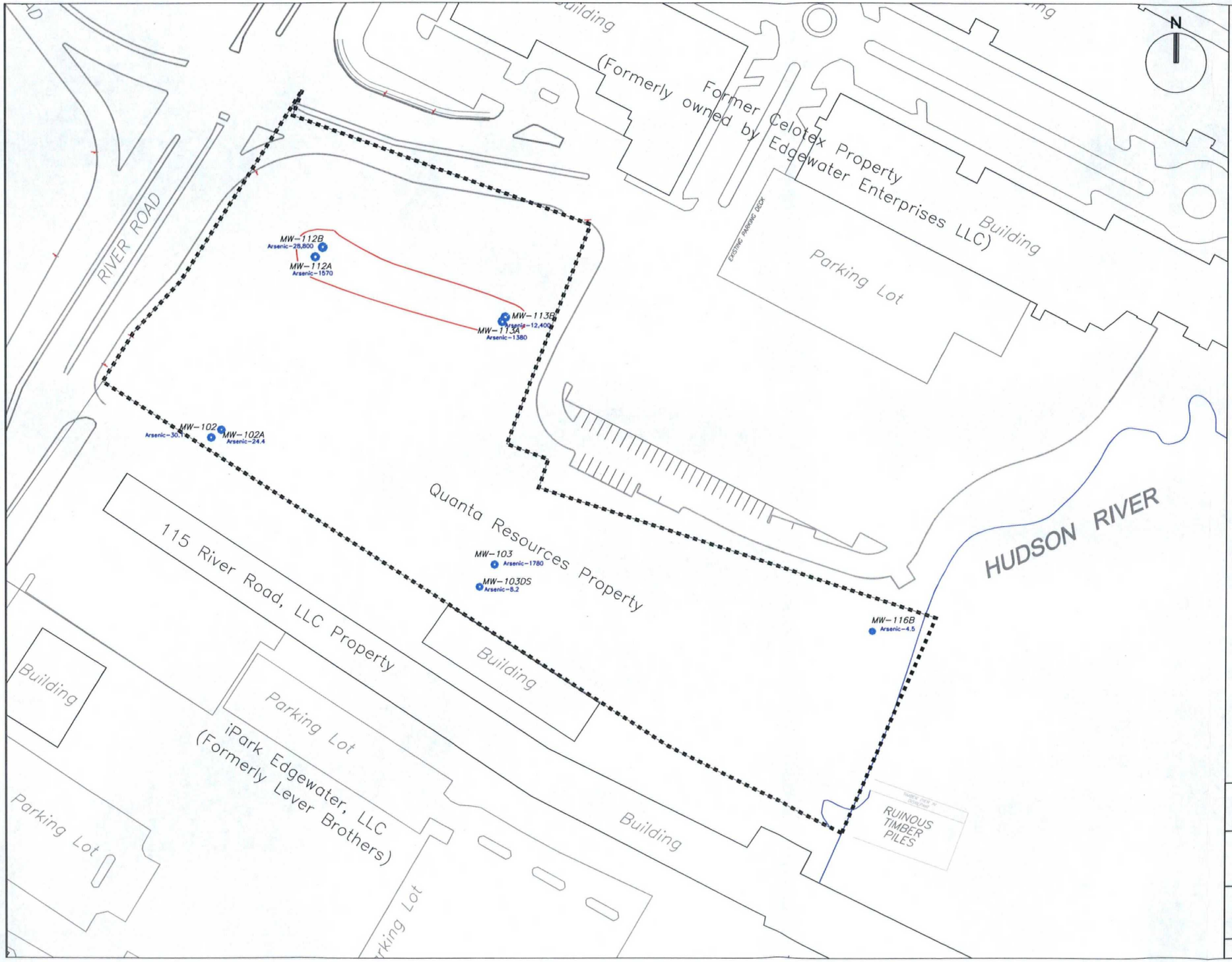
NOTE:
Arsenic Units are in mg/kg.

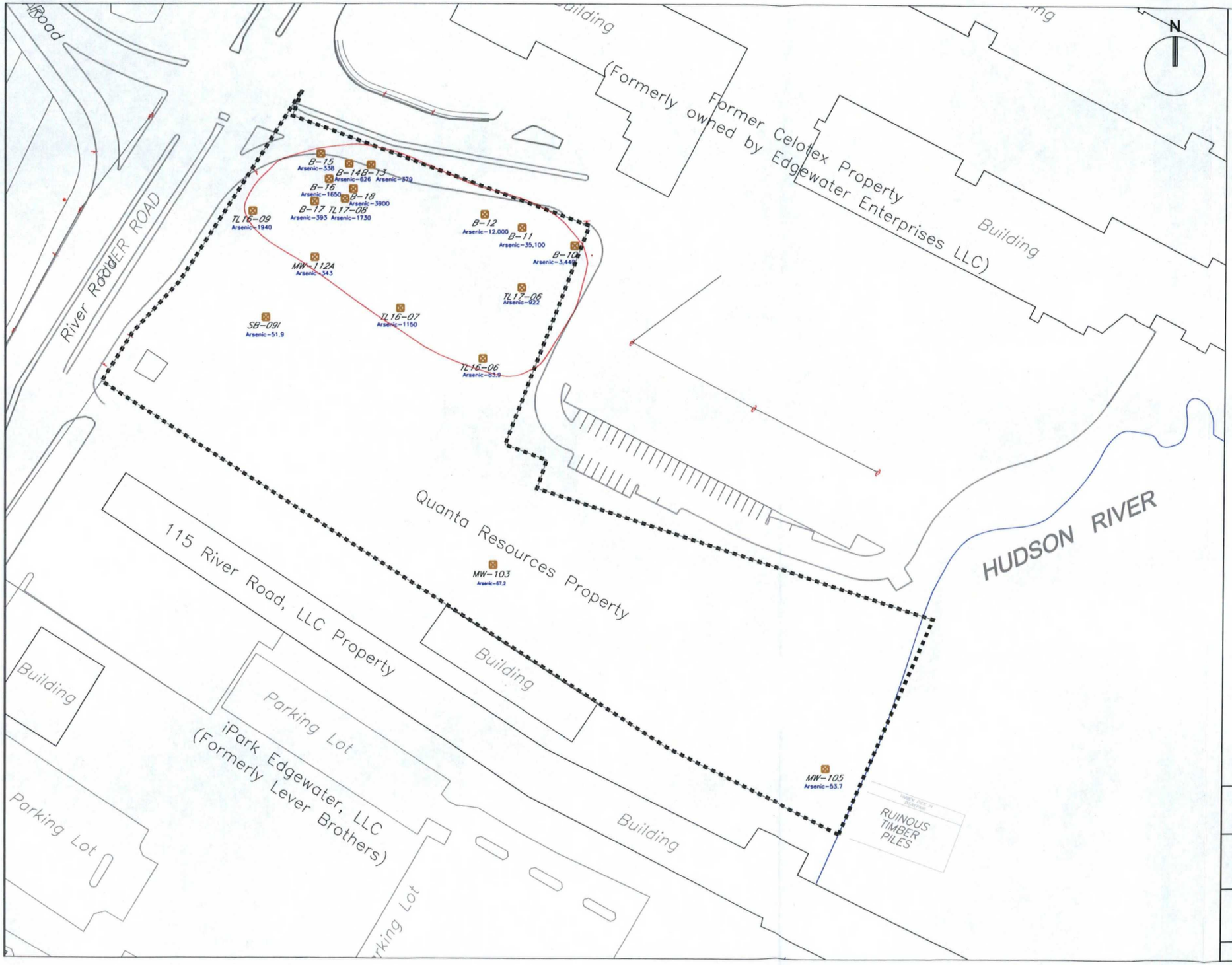
0 59 118

CH2MHILL

Groundwater Samples Used in Arsenic Hot Spot Analysis

Edgewater Enterprises
Edgewater, New Jersey


RIVER ROAD
MW-112B
Arsenic-28,800
MW-112A
Arsenic-1570
MW-113B
Arsenic-12,400
MW-113A
Arsenic-1380
MW-102
Arsenic-30.1
MW-102A
Arsenic-24.4
MW-103
Arsenic-1780
MW-103DS
Arsenic-8.2
MW-116B
Arsenic-4.5
Quanta Resources Property
115 River Road, LLC Property
iPark Edgewater, LLC
(Formerly Lever Brothers)
Former Celotex Property
(Formerly owned by Edgewater Enterprises LLC)
Building
Parking Lot
EXISTING PARKING DECK
HUDSON RIVER
RUINOUS TIMBER PILES
N
LEGEND
CURRENT PROPERTY BOUNDARY
Groundwater Sample Location
Arsenic Hot Spot Analysis
NOTE:
Arsenic Units are in mg/kg.
0
50
100
CH2MHILL
Groundwater Samples Used in Arsenic Hot Spot Analysis
Quanta Resources Site
Edgewater, New Jersey



LEGEND

CURRENT PROPERTY BOUNDARY

Surface Soil Sample Location

Arsenic Hot Spot Analysis

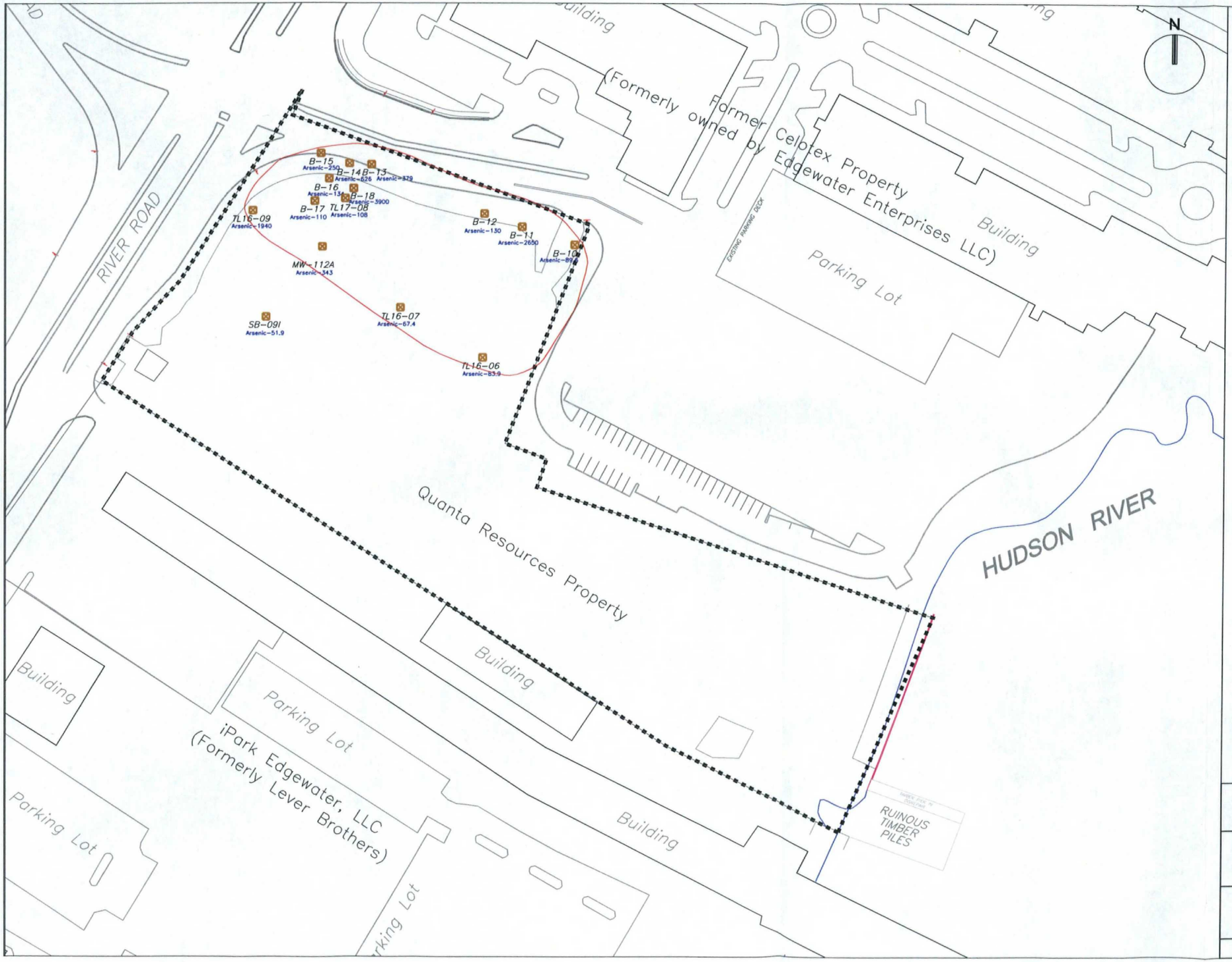
NOTE:
Arsenic Units are in mg/kg.

0 50 100

CH2MHILL

Subsurface Soil Samples Used in Arsenic Hot Spot Analysis

Quanta Resources Site
Edgewater, New Jersey


RIVER ROAD
(Formerly owned by Former Celotex Property
Edgewater Enterprises LLC)
Building
Parking Lot
EXISTING PARKING DECK
B-15
Arsenic-250
B-14
Arsenic-826
B-13
Arsenic-329
B-16
Arsenic-134
B-18
Arsenic-3900
B-17
Arsenic-110
TL17-08
Arsenic-108
TL16-09
Arsenic-1940
B-12
Arsenic-130
B-11
Arsenic-2650
B-10
Arsenic-894
MW-112A
Arsenic-343
SB-09I
Arsenic-51.9
TL16-07
Arsenic-67.4
TL16-06
Arsenic-83.9
Quanta Resources Property
Building
HUDSON RIVER
Building
Parking Lot
iPark Edgewater, LLC
(Formerly Lever Brothers)
Building
Parking Lot
Parking Lot
RUINOUS TIMBER PILES
N
LEGEND
CURRENT PROPERTY BOUNDARY
Surface Soil Sample Location
Arsenic Hot Spot Analysis
NOTE:
Arsenic Units are in mg/kg.
0
50
100
CH2MHILL
Surface Soil Samples Used in Arsenic Hot Spot Analysis
Quanta Resources Site
Edgewater, New Jersey

Final

Screening-Level Ecological Risk Assessment

Quanta Resources Superfund Site Operable Unit 1

Submitted to

U.S. Environmental Protection Agency

August 2007

CH2MHILL

Executive Summary

This Final Screening-Level Ecological Risk Assessment (SLERA) for the Quanta Resources Superfund Site* Operable Unit 1 (OU1) has been prepared in accordance with the requirements of the United States Environmental Protection Agency (EPA) Administrative Order on Consent (AOC) II-CERCLA-2003-2012 for the Uplands Area, OU1.

Consistent with the AOC, the approach presented in the EPA-approved Remedial Investigation (RI/FS) Work Plan (Parsons, 2005) and the Exposure Scenario Technical Memorandum (CH2M HILL, 2005), this SLERA was conducted to evaluate whether or not historical releases at OU1 represent a potential risk to exposed terrestrial flora and fauna. The overall objective of the SLERA is to evaluate whether constituents present at OU1 represent a potential risk to ecological receptors.

The methods and approaches used in this SLERA were developed from EPA Ecological Risk Assessment (ERA) guidance (EPA, 1997a, 1998). In particular, this SLERA consists of Steps 1, 2, and the first part of Step 3 of the 8-step ERA process (EPA, 1997a, 1998). Step 1 consists of problem formulation, Step 2 consists of analysis and risk characterization, and the first part of Step 3 consists of refinement of conservative screening assumptions and refined risk characterization.

The spatial extent of the ERA encompasses terrestrial habitat found on OU1. Potential impacts to aquatic habitat in the Hudson River (OU2) are not considered in this ERA. The SLERA evaluates potential risk to terrestrial receptors from exposure to compounds detected in surface soil samples collected at OU1. Risk was only evaluated for the Quanta property (Block 95, Lot 1) as neighboring properties are heavily-developed with no habitat. Observations of habitat on the Quanta property indicated a disturbed urban old field community with some shrubs and small trees. Portions of the Quanta property are paved and the overall quality of the habitat is low. No sensitive habitat and no state or federal listed threatened or endangered terrestrial species were identified within a one-mile radius of the property. Several birds typical of urban environments were noted on the property. No mammals were observed at OU1.

The potential for ecological risk was evaluated through direct exposure of receptors to soil and by modeling risk from exposure via ingestion of soil and contaminated food or prey items. Media-specific soil screening values (expressed as concentrations within a media) that are protective of plant and invertebrate communities were used to evaluate risk from direct exposure to chemicals in surface soil. Using conservative exposure scenarios potential risk was indicated for plant and invertebrate receptors from exposure to concentrations of metals, semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs) in soil.

* As defined in the Administrative Order on Consent (AOC) II-CERCLA-2003-2012, the Site includes the former Quanta Resources property, located on River Road in Edgewater, New Jersey, and any areas where contamination from the property has come to be located.

Risk to higher-order receptors was evaluated via the ingestion pathway using food chain models to estimate an exposure dose. The estimated dose was compared to reference toxicity values to evaluate potential risk. Higher order receptors that were evaluated via food chain exposure included several small mammals (shrew, vole, mouse, and weasel), raccoon, red-tailed hawk, and American robin. The SLERA food chain models indicated risk to one or more of the higher order receptors from exposure to metals, polychlorinated biphenyls (PCBs), and SVOCs in food or prey items.

At the completion of the SLERA (Step 2) several Constituents of Potential Concern (COPCs) were identified in soil that may pose risk via direct contact or food chain exposure to terrestrial receptors at OU1. As specified by EPA guidance the SLERA was completed using conservative assumptions. To provide additional perspective on the indicated risk the screening and food chain modeling was re-done using less conservative assumptions (Step 3 of the ERA process). For example, mean concentrations of constituents were used in the screening and modeling instead of maximum concentrations. Mean, median or midpoint exposure factors were used in the food chain models instead of maximum values (i.e. mean instead of maximum ingestion rate).

Using refined assumptions, direct exposure risk was indicated for plant and invertebrate receptors based on exposure to metals, SVOCs, and VOCs in soil. The list of direct exposure COPCs was reduced in number using the refined assumptions.

The refined food chain modeling indicated the potential for risk for the shrew, white footed mouse, and the meadow vole from exposure to PCBs and PAHs in food and prey items. Food chain risk was not indicated for the avian receptors and the raccoon using the less conservative model inputs.

The results of this SLERA and the Step 3 refinement work indicate the potential for risk but include many conservative assumptions and uncertainties. Uncertainties associated with this SLERA include a lack of site specific data such as chemical form and bioavailability, actual occurrence of selected receptors on site, and use of literature based toxicity values instead of site specific toxicity or tissue data. To address uncertainty additional studies and data collection could be completed at OU1. However, based on the location of this site in the center of a very urban area it is unlikely that many receptors actually inhabit OU1. The fact that OU1 will be remediated and most likely developed precludes the need for additional characterization of ecological risk, especially when ecological receptors may not permanently inhabit OU1 and little or no habitat is expected to exist after development.

Based on recent adjacent property redevelopment, community growth, community and land owner interests, redevelopment is expected, but no plans have been publicly announced to date. Potential ecological risk identified in this risk assessment will be considered in the future Feasibility Study (FS) process, as appropriate.

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6-3 PAHs in Surface Soil

Appendix

A Correspondence

Acronyms and Abbreviations

4,4'-DDD	4,4'-Dichlorodiphenyldichloroethane
4,4'-DDE	4,4'-Dichlorodiphenyldichloroethylene
4,4'-DDT	4,4'-Dichlorodiphenyltrichloroethane
AST	Aboveground Storage Tank
ATSDR	Agency for Toxic Substances and Disease Registry
AUF	Area Use Factor
BAF	Bioaccumulation Factor
BCF	Bioconcentration Factor
BERA	Baseline Ecological Risk Assessment
BTAG	Biological Technical Assistance Group
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
BW	Body Weight
COPC	Chemical of Potential Concern
DI	Dietary Intake for Chemical
EFH	Essential Fish Habitat
ERA	Ecological Risk Assessment
FC	Concentration of Chemical in Food Item
FIR	Food Ingestion Rate
GD	Gestation Days
HQ	Hazard Quotient
HSDB	Hazardous Substance Data Bank
kg	Kilogram
K_{ow}	Octanol-water partition coefficient
L	Liter
LD	Lactation Days
LOAEL	Lowest Observed Adverse Effect Level
mg	Milligram
µg	Micrograms
MSPE	Ministry of Housing, Spatial Planning and Environment
NJDEP	New Jersey Department of Environmental Protection
NOAA	National Oceanic and Atmospheric Administration

NOAEL	No Observed Adverse Effect Level
ORNL	Oak Ridge National Laboratory
OU1	Operable Unit 1
OU2	Operable Unit 2
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PDF	Proportion of Diet Composed of Food Item
PDS	Proportion of Diet Composed of Soil
ppt	Part Per Thousand
RDCSCC	Residential Direct Contact Soil Cleanup Criteria
RI/FS	Remedial Investigation/Feasibility Study
RSI	Removal Site Investigation
SC	Concentration of Chemical in Soil
SLERA	Screening-Level Ecological Risk Assessment
SMDP	Scientific Management Decision Point
SVOC	Semi-Volatile Organic Compound
TCLP	Toxicity Contaminant Leaching Procedure
TPH	Total Petroleum Hydrocarbon
USDA	U.S. Department of Agriculture
EPA	U.S. Environmental Protection Agency
USFW	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WC	Concentration of Chemical
WIR	Water Ingestion Rate

SECTION 1

Introduction

This Screening Level Ecological Risk Assessment (SLERA) for the Quanta Resources Superfund Site* (the "Site") Operable Unit 1 (OU1) has been prepared in accordance with the requirements of the United States Environmental Protection Agency (EPA) Administrative Order on Consent (AOC) II-CERCLA-2003-2012 for the Uplands Area, OU1, entered into by Honeywell International, Inc. (Honeywell) and the Edgewater Site Administrative Group (ESAG) on November 4, 2003. Surface water and sediment in the Hudson River adjacent to the OU1 comprise OU2, and are being investigated separately.

Consistent with the approach presented in the EPA-approved Remedial Investigation (RI/FS) Work Plan (Parsons, 2005) and the Exposure Scenario Technical Memorandum (CH2M HILL, 2005), this SLERA was conducted to evaluate whether or not historical constituent releases at OU1 represent a potential risk to exposed terrestrial flora and fauna. The overall objective of the SLERA is to evaluate whether constituents present at OU1 represent a potential risk to ecological receptors.

1.1 SLERA Approach

The methods and approaches used in this SLERA were developed from EPA ERA guidance (EPA 1997a, 1998). In particular, this SLERA consists of Steps 1, 2, and the first part of Step 3 of the 8-step ERA process (EPA, 1997a, 1998). Step 1 consists of problem formulation, Step 2 consists of analysis and risk characterization, and the first part of Step 3 consists of refinement of conservative screening assumptions and refined risk characterization. The spatial extent of the ERA encompasses terrestrial habitat found on OU1.

Step 1, screening-level problem formulation, involves: (1) compiling and reviewing existing information on the habitats and biota potentially present on OU1 and in OU1 vicinity; (2) compiling and reviewing available analytical data; (3) developing exposure scenarios; (4) developing an ecological conceptual model that identifies and evaluates potential source areas, transport pathways, fate and transport mechanisms, exposure media, exposure routes, and receptors; and (5) developing assessment and measurement endpoints for all complete exposure pathways.

Step 2, analysis and risk characterization, involves two components: analysis and risk characterization. The principal activity associated with the screening-level effects assessment is the development of chemical exposure levels that represent conservative thresholds for adverse ecological effects. The screening-level exposure assessment involves estimating potential exposures to ecological receptors for the exposure scenarios identified in the screening-level problem formulation using intentionally conservative assumptions.

* As defined in the Administrative Order on Consent (AOC) II-CERCLA-2003-2012, the Quanta Resources Superfund Site includes the former Quanta Resources property, located at 163 River Road in Bergen County, Edgewater, New Jersey, and any areas where contamination from the property has come to be located. The current extent of the Quanta Resources property (referred to herein as the "Quanta property") refers to Block 95, Lot 1 as defined on the Borough of Edgewater, New Jersey tax map.

The principal activity associated with the screening-level exposure assessment is the estimation of chemical concentrations in applicable media to which the receptors might be exposed based upon maximum (worst case) assumptions. The screening-level risk calculation represents the risk characterization portion of the SLERA and uses the information generated during Step 1 (problem formulation and analysis) to calculate potential risks to ecological receptors for the exposure scenarios evaluated. Also included is an evaluation of the uncertainties associated with the models, assumptions, and methods used in the SLERA, and their potential effects on the conclusions of the assessment.

At the conclusion of Step 2 is a Scientific Management Decision Point (SMDP), at which point four decisions are possible:

- There is enough information to conclude that no unacceptable ecological risks exist and therefore there is no need for further study or actions to address ecological risk;
- The available information is not adequate to estimate risk or the risk estimate is believed to be too conservative or uncertain for decision-making purposes. The ecological risk assessment process should proceed to the Baseline ERA (Step 3);
- The available information indicates a potential for adverse ecological effects, and a more thorough study is necessary to refine the risk estimates (proceed to Step 3); or
- There is adequate information to conclude that unacceptable ecological risks exist and remedial actions should be considered (presumptive remedy).

The first part of Step 3 refines the potential risk evaluation using more realistic assumptions than the conservative assumptions used in Steps 1 and 2. Based on the outcome of the SLERA, recommendations are made about the need for additional investigation. If the results of the SLERA suggest that further ecological risk evaluation or data collection is warranted for a particular site, the ERA process would proceed to the baseline ERA (BERA), which is a more detailed phase of the ERA process (Steps 3 through 7).

1.2 Background

Complete descriptions of the properties comprising OU1, including the Quanta property and adjacent properties, as well as a summary of previous investigations and environmental histories for the properties are provided in the Draft RI Report for OU1.

The Quanta property is vacant. Exposed tank and building foundations are visible at several locations. The property also includes the remains of a former oil-water separator, a wooden bulkhead along the edge of the Hudson River, and the remains of wooden docks. A chain-link fence is maintained around the portion of OU1 east of River Road, except for the boundary with the Hudson River. Warning signs are posted at locations around the Quanta property. An unpaved roadway runs primarily along the southern half of the property from River Road to the wooden bulkhead marking the boundary between OU1 and OU2. The property is inspected monthly to verify the integrity of these land-use controls and to make any necessary repairs. Oil-absorbent booms are maintained at OU2 to contain observed

sheens on surface water. The booms are inspected periodically, and oil-saturated booms are removed and containerized for off-site disposal.

The Quanta property is bordered on the north by the Promenade at City Place development on the former Celotex property. The Promenade at City Place complex includes residential and commercial space and a 122-room hotel. A large parking garage at ground level is constructed below the retail and residential buildings. An area north of the eastern portion of the Quanta property consists of a partially paved and unpaved sloping temporary parking lot. Further north of the temporary parking area lies an unfinished multilevel parking garage, surrounded by a fenced construction zone. The remaining portions of the property consist of landscaping and paved roadways.

Bordering the Quanta property to the south is the 115 River Road property (former Spencer-Kellogg property). The majority of this property is improved with a large multi-tenant building and a smaller parking/office building.

South of the 115 River Road property is the former Lever Brothers property. This property is currently owned by i.Park Enterprises, LLC and is in the early stages of redevelopment. There are several large, vacant buildings and structures on the former Lever Brothers property associated with its historical operations as well as several paved driveways and parking lots. A large grassy area occupies much of the central and northeastern portions of the property. A large parking lot exists on the northeastern portion of the property. The topography is very flat. The central portion of the property is currently undergoing redevelopment to be a future site for a Borough of Edgewater municipal building. The property is bordered to the east by the Hudson River (Figure 1-2).

This SLERA only evaluated risk on the vacant Quanta property as no habitat is present on adjacent properties. The properties immediately surrounding OU1 are zoned for mixed industrial, commercial, and residential uses. All land surfaces surrounding the Quanta property are paved or developed and/or covered by large buildings. It should be noted that while the Quanta property is undeveloped at this time, it is expected that the property will eventually be developed similar to the adjacent properties.

SECTION 2

Screening-Level Problem Formulation (Step 1)

This section describes the screening-level problem formulation and establishes the goals, scope, and focus of the SLERA. This section provides the following information:

- The environmental setting in terms of the habitats and biota known or expected to be present at OU1.
- The types and concentrations of chemicals present in ecologically relevant media.
- A preliminary conceptual model that describes potential sources, potential transport pathways, potential exposure pathways and routes, and potential receptors.
- The assessment and measurement endpoints selected to evaluate these receptors for which complete and potentially critical exposure pathways exist are described in this section.
- A summary of the fate, transport, and toxicological properties of the chemicals present.

2.1 Environmental Setting

The environmental setting of OU1 was characterized using information compiled from existing documents and observations made while completing site work. The characterization of the environmental setting is important in identifying potential receptors (habitats and biota) for the ERA, as well as in identifying potentially complete transport and exposure pathways from source areas to these receptors. The major components of the environmental setting are described in the following subsections.

2.1.1 Physiographic Features

The Site is located in the Piedmont physiographical province of New Jersey. This region, also called the Triassic Lowlands, is marked by the Watchung Mountains, low, north-south-trending hills (New Jersey Geological Survey, 2003). Elevations in this province range from near sea level at the Site to 771 feet farther west. The Triassic lowlands are underlain by rocks of the late Triassic Newark Supergroup, which is made up of both sedimentary and igneous rocks. According to the Bedrock Geology Map of Northern New Jersey (Drake et al., 1996), bedrock at the Site is composed of a fluvial/alluvial deposit of arkosic sandstone (*feldspathic arenite*), silty mudstone, argillaceous siltstone, shale, and conglomerate known as the Stockton Formation. The Stockton formation is part of the Newark Supergroup and consists of a narrow area of rock between the Palisades Diabase to the west and Hudson River Deposits to the east (Drake et al., 1996).

At OU1, the following stratigraphy is generally observed (listed in order encountered from ground surface):

- Historic Fill – up to approximately 22 feet of historic fill consisting of silt, sand, gravel, rock, building debris such as concrete and brick, wood, cinders, and slag
- Shallow Sand – up to approximately 20 feet of fine to medium/coarse sand with varying amounts of fines
- Peat/Clayey Peat - up to approximately 15 feet of organic peat or "meadow mat" with varying amounts of clay, fine sand, and silt – observed in less than half of all RI subsurface sampling locations, predominantly in the western half of OU1
- Silty Clay (confining unit) – up to approximately 25 feet of silty clay with varying amounts of fine sand
- Deep Sand – up to approximately 25 feet of fine to coarse sand, sand with varying amounts of silt and clay, and silt and clay with varying amounts of sand (classified as part of the "deep sand" unit if observed below a cleaner sand and the silty clay confining unit – i.e., MW-107DS)
- Bedrock – encountered at the Site 8.5 to 60 feet bgs.

The native estuarine and salt marsh deposits overlying bedrock at OU1 consist of 5 to 20 feet of fine to medium grained well-sorted sand and/or laminated clayey sand/sandy clay (deep sand unit observed at MW-107DS), followed by 10 to 20 feet of soft silt and clay that contains traces of roots and shell fragments (confining unit), overlain by 5 to 10 feet of medium to coarse poorly sorted sand (unconfined unit). There are discontinuous peat and sand layers of varying thicknesses observed above the confining unit in the western portion of OU1 (east and west of River Road). Non-native fill overlies the native soils throughout OU1. This material consists of a mixture of gravel, sand, and silt with cinder/slag material, brick, wood, and concrete fragments. The USDA (1995) classifies the soils in the vicinity of the Site as Urban Lands. A wooden bulkhead separates the upland OU1 portion of the Site from the Hudson River (OU2) portion of the Site.

2.1.2 Habitat

The limited urban habitat on the Quanta property is characterized as having low ecological resource value with no sensitive habitats. Approximately 30% percent of the Quanta Resource property is covered with pavement and asphalt. A road with small parking areas crosses the property from west to east. The remainder of the property consists of barren areas (approximately 20% of the property) covered with debris or old foundations and some areas covered by vegetation. The only viable habitat on the property consists of an urban old field community of plants with shrubs and small trees that covers approximately 50% of the property and is located on either side of the access road. The western end of the property is open near the property entrance but is increasingly vegetated moving east towards the river. The vegetation in this area is characterized by pioneer weed species typical of disturbed areas including common ragweed (*Ambrosia artemisfolia*), burdock (*Arctium minus*), bull thistle (*Cirsium vulgare*), daisy fleabane (*Erigeron annuus*), smartweed (*Polygonum sp.*), and goldenrod species (*Solidago sp.*). Several thick stands of common reed (*Phragmites australis*) are clustered in wet areas on OU1. A larger patch of common reed is located along the southern side of the property. Several small trees and shrubs are growing in patches within the old field community. The most common tree on the property is quaking aspen (*Populus tremuloides*). Larger trees are located on the borders of the property. The eastern side of the property is more heavily vegetated, however because of its small size

and industrialized/disturbed nature, the property generally provides poor quality habitat. Figure 2-1 presents an aerial photograph of OU1 showing the disturbed nature of this property.

There are no permanent aquatic habitats on the upland portion of OU1. Large puddles were noted on the western and northern sides of OU1 in October, 2005, following a period of heavy rain. These puddles were not present in the spring and summer of 2005.

2.1.3 Biota

The relatively small size and historically industrial nature of the Quanta property has resulted in conditions that do not support a diverse or extensive ecological community. The vegetated area of the property could provide cover and food for herbivorous and soil-invertebrate-eating small mammals. However, no signs of small mammals were observed at OU1 during the summer and fall of 2005 and the soils at OU1 appeared to be of poor quality. The nature of the soils and urban fill found at OU1 do not appear to support a healthy plant and soil invertebrate community, and therefore may not support small mammals. If small mammals were present they would provide food for higher-trophic-level predators. Small mammals that could potentially use the on-Site habitat include the short-tailed shrew (*Blarina brevicauda*), meadow vole (*Microtus pennsylvanicus*), white-footed mouse (*Peromyscus leucopus*), Norway rat (*Rattus norvegicus*), and raccoon (*Procyon lotor*). Raccoon tracks were observed on OU1. Birds observed on the property or likely to use this habitat include, American robin (*Turdus migratorius*), song sparrow (*Melospiza melodia*), mourning dove (*Zenaida macroura*), white-throated sparrow (*Zonotrichia albicollis*), house sparrow (*Passer domesticus*), red-winged blackbird (*Agelaius phoeniceus*), starling (*Sturnus vulgaris*), and possibly urban avian predators such as red-tailed hawks (*Buteo jamaicensis*). During a site visit in October 2005, Canada geese (*Branta canadensis*) were noted resting at OU1.

2.1.4 Threatened and Endangered Species

The occurrence of threatened and endangered species within a one mile radius of OU1 was evaluated by contacting the U.S. Fish and Wildlife Service (USFW), National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service, and the New Jersey DEP Natural Heritage Program. Information was requested for both terrestrial and aquatic species even though this ERA is only addressing terrestrial receptors. The response letters received from each agency are provided in Appendix A.

Information provided by the USFW indicated that other than an occasional transient bald eagle (*Haliaeetus leucocephalus*) no federally listed or proposed endangered or threatened flora or fauna are known to occur within the a one mile radius of the project site. The NJ Natural Heritage Database and the Landscape Project do not indicate the occurrence of any rare wildlife or plant species or ecological communities within a one mile radius of OU1.

The NOAA response indicated that endangered fish species may be present in the adjacent Hudson River and that the area is designated as Essential Fish Habitat (EFH). Aquatic receptors will be addressed as part of the OU2 investigation.

2.2 Summary of Available Analytical Data

Surface soil and surface water analytical data collected during the OU1 Remedial Investigation/Feasibility Study (RI/FS) were used to evaluate risk in this SLERA. While many sampling events have occurred at OU1, none of the historic data has been validated and was therefore not included in this ERA. All of the current RI data used in the SLERA was validated following the process outlined in the QAPP (CH2M HILL, 2005). The review of the analytical data was performed in accordance with EPA National Functional Guidelines and SW846 methodology.

2.2.1 Surface Soil

Twelve surface soil samples were collected on the Quanta property. These samples were spread throughout OU1 as shown in Figure 2-2. Surface soil samples were collected from depth intervals of 0.0 to 2 inches, 0.0 to 6 inches, or 0.0 to 12 inches. Soil samples were analyzed for the following: VOCs by EPA SW846 Method 8260B, SVOCs by SW846 Method 8270C, Pesticides by SW846 Method 8081B, PCBs by SW846 Method 8082, metals by SW846 Method 6010B, and hexavalent chromium by SW846 Method 7196A.

All soil samples collected from three depth ranges noted above were included as surface soil samples. Table 2-1 presents the summary statistics for the surface soil data set. All twelve samples were analyzed for metals. Arsenic, chromium, and lead were detected in all of the samples, with lead detected at the highest concentration (408 mg/kg). Hexavalent chromium was detected in two samples with a maximum concentration of 3.5 mg/kg.

Pesticides were analyzed in three of the 12 samples and detected in one sample. Including a duplicate sample a total of four samples were analyzed for pesticides. The pesticide 4,4-DDT and the breakdown product 4,4-DDD were detected in one sample at concentrations of 0.035 mg/kg and 0.029 mg/kg, respectively.

PCB Aroclor compounds were analyzed in all of the surface soil samples. Aroclor 1260 was detected in 8 of the samples with a maximum detected concentration of 1.10 mg/kg. Aroclors 1254 and 1242 were also detected in 3 of the samples. Maximum concentrations for Aroclor 1254 and 1242 were 0.50 mg/kg and 0.59 mg/kg, respectively.

VOC and SVOC analysis were completed on all of the surface soil samples. Thirteen VOCs were detected at varying frequency in the soil samples. Most of the detected VOCs were BTEX compounds with total xylenes detected at the highest concentration (21.0 mg/kg). Benzene was detected in nine samples with a maximum value of 2.1 mg/kg.

Twenty nine SVOCs were detected in the surface soil samples with nineteen of the SVOCs detected in every sample. As would be expected at a creosote site, the majority of the compounds detected were heavy and light molecular weight PAHs. Naphthalene was detected at the highest concentration in the surface soils (concentration up to 1,800 mg/kg). Several other PAHs, including phenanthrene, pyrene, fluoranthene, chrysene, benzo(a)anthracene, and acenaphthene were detected at high concentrations ranging from 200 mg/kg to 800 mg/kg. Benzo(a)pyrene was detected in all of the samples with a maximum value of 530 mg/kg.

2.2.2 Surface Water

In order to evaluate exposure from drinking water to upper-trophic level receptors in the SLERA, four samples were collected from puddles on the Quanta Resource property. Surface water samples were analyzed for the following: VOCs by SW846 Method 8260B, SVOCs by SW846 Method 8270C, Pesticides by SW846 Method 8081B, PCBs by SW846 Method 8082, metals by SW846 Method 6020, and ammonia by EPA Method 350.2.

Table 2-2 presents the summary statistics for the surface water data set. Five pesticides were detected at low concentration (< 0.5 µg/L) in the water samples. No PCB compounds were detected in the water samples. PAHs were detected in 3 of the 4 samples, with fluoranthene detected at the highest concentration (110 µg/L).

2.3 Fate and Transport

The media of concern for ecological receptors at OU1, is primarily soil as no permanent aquatic habitats are present in OU 1. This section will discuss fate and transport mechanisms for the main constituent groups detected in surface soil at OU1.

The Quanta property was operated as a tar processing facility manufacturing creosote, coal tar pitches, and refined tars for 44 years. In 1974 site operations changed and the site was used for the storage and recycling of waste oils. Coal tar (creosote) is composed of up to 300 compounds which is comprised of the following five chemical classes (Bol, 1998):

- 90% aromatic hydrocarbons including PAHs, alkylated PAHs, toluene, benzene, and total xylenes,
- 5-7.5% oxygen-containing heterocycles including dibenzofurans,
- 1-3% phenolics including phenols, cresols, xylenols, and naphthols,
- 1-3% nitrogen-containing heterocycles including pyridines, quinodines, acridines, indolines, and carbazoles, and
- 1-3% sulfur-containing heterocycles including benzothiophenes.

As would be expected, based on the past site history, the main classes of constituents detected in OU 1 media are metals, PCBs, PAHs, and VOCs. The fate and transport properties of these compounds are discussed below.

2.3.1 Metals

Arsenic, chromium, and lead were detected in soils at OU1. A variety of factors affect the fate of inorganics in soil, including: soil moisture, presence of complexing agents, pH and redox potential, temperature, and organic content of soil. Soil sorption constants for metals vary significantly with environmental conditions. In general, the metals detected on site (arsenic, chromium, and lead) will adsorb to soil or organic matter. Metals sorbed to soil particles are likely to be relatively immobile is soil, but they could be transported by erosion during rain and storm events. Depending on environmental conditions, some metals can be leached from soils at which point they become mobilized and migrate to groundwater or surface water.

Several metals are bioaccumulated by plants and other organisms. Bioavailability is dependent on environmental conditions in soil. Metals such as chromium and lead have a tendency to bioaccumulate to a greater degree than other metals (HSDB, 2002).

2.3.2 PCBs

PCBs are a group of manufactured organic chemicals that were banned in the United States in 1977 because of their proven adverse environmental effects. PCBs occur in a variety of different formulations consisting of mixtures of individual compounds such as Aroclor 1016, 1248, 1254, and Aroclor 1260. The Aroclor formulations vary in the percent chlorine, and generally, the higher the chlorine content the greater the toxicity. Two mechanisms allow PCB concentrations to change in the environment: degradation and weathering. Under normal environmental conditions, PCBs are slow to degrade. Microbial degradation depends on the position of the chlorine atom on the biphenyl molecule and the degree of chlorination. Higher chlorinated compounds (those with five or more chlorine atoms) are more persistent in the environment and are not readily transformed by bacteria. The number and position of the chlorine atoms on the biphenyl rings also influence how biological organisms incorporate and are affected by exposure to PCBs. PCBs are highly soluble in lipids and are known to biomagnify in upper trophic levels. Congeners with higher chlorine contents (and higher log K_{ow} values) tend to bioaccumulate the most and, depending on structure, metabolize the least. The toxicity is influenced by the presence or absence of chlorines bound to the phenyl ring. Since congeners tend to bioaccumulate and biomagnify, evaluations of potential adverse effects to ecological receptors are generally focused on upper-trophic level organisms.

2.3.3 PAHs

PAH compounds are the main chemical compounds in coal tar and creosote and are thus found in soil throughout OU1. The chemical and physical properties of coal tar and creosote vary due to the distillation process and the initial tar variants used. Coal tar and creosote are derived from a mixture of heavy residual oils and is most commonly made from the distillation of coal tar, but can be made from a variety of tars including wood-based, petroleum, and coal-based tars.

The size range of the PAH molecules that make up creosote affects their mobility and persistence in the environment. Lower molecular weight PAHs are more soluble and susceptible to degradation processes than higher weight PAHs (Bol, 1998), but the PAHs that make up creosote are typically immobile in the environment. PAHs are lipophilic, have low water solubilities, and a high affinity to adsorb to soil and geologic media. Migration of PAHs in the environment can occur, but it is primarily by transport of PAH molecules absorbed to soil, dust, or sediment particles. PAHs are also resistant to photolytic, oxidative, and hydrolytic degradation, which further increases their persistence in the environment. PAHs can be broken down by microbial degradation, but the rate and degree of biodegradation depends on the number of aromatic rings and the number of alkyl groups which affect the PAH molecule's solubility and thus bioavailability (Baker and Henson, 1994).

PAHs are metabolized and thus do not readily bioaccumulate in most terrestrial organisms. The rate that PAHs are metabolized is dependent on the molecular weight or size of the molecule. Higher molecular weight PAHs take longer to metabolize and thus some

bioaccumulation in organisms can occur. In fate studies, alkylated PAHs were found to bioaccumulate to a greater degree than non-alkylated PAHs. Plants have been shown to concentrate PAHs in certain areas, primarily in the roots (Thornburn, 1998). Even though some organisms may bioaccumulate PAHs, it is unlikely that PAHs will biomagnify through multiple levels of a food chain (Brandt, 2002).

2.3.4 VOCs

BTEX were the primary VOCs detected at OU1. These compounds are constituents of both creosote and oil. Aromatic petroleum hydrocarbons such as BTEX volatilize quickly and are fairly mobile in soils (Howard, 1991). Biodegradation of BTEX compounds occurs in soils, but often slowly when concentrations are high and possibly toxic to microorganisms. Biodegradation occurs more rapidly under aerobic conditions. Because BTEX compounds are fairly mobile and tend to volatilize or migrate to groundwater, they do not typically accumulate in soils. At OU1, volatiles were detected in surface soil samples.

2.4 Ecotoxicity

Ecotoxicological information for the constituents detected at the highest concentrations is provided in the following sections.

2.4.1 Metals

Arsenic

Arsenic can be absorbed through ingestion, inhalation, or dermal contact. Trivalent compounds of arsenic are the most toxic form. The primary toxic action of arsenic is caused by its effect on mitochondrial enzymes and tissue respiration. Arsenic inhibits energy functions in mitochondria (Goyer, 1993). Chronic toxicity caused by arsenic exposure includes neurotoxicity of the central and peripheral nervous system, liver damage (cirrhosis), and vascular disease (Goyer, 1993). Arsenic is a known carcinogen causing skin and lung cancer in humans (Goyer, 1993) but there is insufficient data linking it to cancer in animals (HSDB, 2003).

Chromium

Chromium occurs in the environment in two major valence states, trivalent chromium (III) and hexavalent chromium (VI). Chromium (III) is essential to normal glucose, protein, and fat metabolism and is thus an essential dietary element. The body has several systems for reducing chromium (VI) to chromium (III). This chromium (VI) detoxification leads to increased levels of chromium (III) (ATSDR, 2000). Chromium (VI) is far more toxic than chromium (III), for both acute (short-term) and chronic (long-term) exposures. Chronic exposure to high levels of chromium (VI) by inhalation or oral exposure may produce effects on the liver, kidney, gastrointestinal and immune systems, and possibly the blood. Animal studies have not reported reproductive effects from inhalation exposure to chromium (VI). Oral studies have reported severe developmental effects in mice such as gross abnormalities and reproductive effects including decreased litter size, reduced sperm count, and degeneration of the outer cellular layer of the seminiferous tubules (ATSDR, 2000).

Lead

Lead is the most common toxic metal and is detectable in all phases of the environment and biological systems. Toxicity to mammals is known to include increased mortality, reproductive effects, reduced growth, alterations of blood chemistry, and behavioral changes. Lead affects the nervous system, the blood system, gastrointestinal system, and reproductive system. It is known to be a powerful neurotoxin and acts by depressing neurotransmission through inhibition of cholinergic function, impairment of dopamine uptake, and the disruption of other neurotransmitters. Lead causes anemia by impairment of blood cell production and shortening of the life span for a blood cell (Goyer, 1993). Lead is a confirmed animal carcinogen causing tumors in multiple sites.

2.4.2 PCBs

The PCB Aroclor formulations vary in the percentage of chlorine and generally, the higher the chlorine content, the greater the toxicity. PCBs elicit a variety of biologic and toxic effects including death, birth defects, reproductive failure, liver damage, tumors, and a wasting syndrome (Eisler, 1986). These are known to bioaccumulate and to biomagnify within the food chain. Toxicity data for white-footed mice, oldfield mice, and mink show that reproductive systems and developing embryos for these organisms were adversely affected by both acute and chronic exposures (McCoy et al., 1995).

2.4.3 PAHs

PAHs are often considered as a group of similar acting chemicals and toxicity is often based on the mode of action of well known PAHs such as benzo(a)pyrene or the sum of all PAHs detected at a site. In reality, PAHs exhibit size and structural difference that effect their fate and toxicity (Sverdrup, 2001).

PAHs are toxic to receptors at low to moderate concentrations in environmental media and food (Brandt, 2002). The toxic mode of action of PAHs has been classified as nonspecific or narcotic. Narcotic chemicals act by dissolving into biological membranes and disrupting the membrane function and fluidity. These compounds do not bind to specific molecules (Sverdrup, 2002).

In general, the smaller PAHs are considered to be more acutely toxic, and the larger high molecular weight PAHs have carcinogenic, teratogenic, and mutagenic effects (Eisler, 1987 Carcinogenicity of the larger PAHs is related to the metabolism of these compounds. For all large PAHs, many animals can biotransform the compounds in the liver through the cytochrome P-450 enzyme system and the detoxified metabolites are excreted. However, it is confirmed that some of the metabolites formed during detoxification are carcinogens (Williams, 1993).

Studies of laboratory animals exposed to PAHs have indicated that tumors form in the kidneys, liver, and intestines. Rodents are very susceptible to skin cancer from exposure to PAHs (Williams, 1993)

2.5 Preliminary Ecological Conceptual Model

The conceptual model was designed to diagrammatically relate potentially exposed receptor populations with potential constituent source areas based on the physical nature of OU1

and potential exposure pathways. Important components of a preliminary conceptual model are the identification of potential sources of constituents, transport pathways, exposure media, potential exposure routes, and potential receptor groups. A complete exposure pathway has three components: (1) a source of chemicals that can be released to the environment; (2) a pathway of constituent transport through an environmental medium; and (3) an exposure or contact point for an ecological receptor.

2.5.1 Source Areas, Exposure Pathways and Routes, and Exposure Media

Figure 2-3 summarizes the pathways by which chemicals could be transported at OU1. As depicted in Figure 2-3, chemicals historically have been released to surface soil via direct releases from a surface spill, a surface leak, or surface disposal. Possible release pathways include infiltration into the soil and groundwater by the lighter and more mobile fractions of the creosote, oil, and tar products. These lighter coal tar fractions will move offsite with groundwater. Heavy PAH and oil compounds will absorb to soil particles as will metals and PCBs. Once bound to soil particles, these compounds can be transported by surface water runoff during storm events or by wind during dry conditions. During heavy flow soil particles on site may be transported offsite as surface water drains to the river. The volatile components of the creosotes and tar pitches such as naphthalene will volatilize.

Complete exposure pathways currently exist for terrestrial ecological receptors. Terrestrial animals may be exposed to chemicals in soil via direct contact with the soil, incidental ingestion of soil, and ingestion of contaminated food items. Terrestrial vegetation may be exposed to chemicals via direct contact of roots to soils. Exposure to chemicals present in the surface soil via dermal contact may occur but is unlikely to represent a major exposure pathway for upper trophic level receptors because fur or feathers minimize transfer of chemicals across dermal tissue. Direct contact is a potential exposure route for soil invertebrates. Exposure to chemicals through drinking water ingestion was considered in this ERA and samples, collected from the shallow puddles and low lying areas on OU1 were collected to quantify this potential exposure pathway. Surface water from the Hudson River was not considered as a potential source of drinking water for terrestrial receptors due to the waters high salinity which ranges from 18.0 to 30.0 parts per thousand (ppt) in this part of the river.

The relative importance of these exposure routes depends in part on the chemical being evaluated. For chemicals having the potential to bioaccumulate, such as PCBs, the greatest exposure to wildlife is likely to be from the ingestion of prey. For chemicals having a limited potential to bioaccumulate, the exposure of wildlife to chemicals is likely to be greatest through the direct ingestion of the contaminated soil.

Although some volatile chemicals may be present in soil, inhalation will not typically represent a significant exposure pathway because the concentrations of volatiles in surface soil are generally not very high and potential breathing zone exposures are expected to be low for most receptors. In addition, the chemical contribution from the inhalation pathway is generally insignificant for upper trophic level ecological receptors relative to the ingestion pathways. Hence, the air pathway is not considered for ecological receptors in this SLERA.

2.5.2 Receptor Species

Assessment and Measurement Endpoints

The conclusion of the problem formulation includes the selection of ecological endpoints, which are based upon the conceptual model. There are two types of endpoints in the ERA process: assessment endpoints and measurement endpoints (EPA, 1992, 1997a, 1998). An assessment endpoint is an explicit expression of the environmental component or value that is to be protected. A measurement endpoint is a measurable ecological characteristic that is related to the component or value chosen as the assessment endpoint. The considerations for selecting assessment and measurement endpoints are summarized in EPA (1992, 1997a) and discussed in detail in Suter (1989, 1990, 1993).

Endpoints in the ERA define ecological attributes that are to be protected (assessment endpoints) and a measurable characteristic of those attributes (measurement endpoints) that can be used to gauge the degree of impact that has or might occur. Assessment endpoints most often relate to attributes of biological populations or communities, and are intended to focus the risk assessment on particular components of the ecosystem that could be adversely affected by chemicals attributable to OU1 (EPA, 1997a). Assessment endpoints contain an entity (e.g., shrew population) and an attribute of that entity (e.g., survival rate). Individual assessment endpoints usually encompass a group of species or populations (the receptor) with some common characteristic, such as specific exposure route or constituent sensitivity, with the receptor then used to represent the assessment endpoint in the risk evaluation.

Assessment and measurement endpoints might involve ecological components from any level of biological organization, from individual organisms to the ecosystem itself (EPA, 1992). In most cases the ERA will evaluate effect to individual organisms as an indicator of effects to an entire population. Effects on individuals are important for some receptors, such as threatened and/or endangered species; but population- and community-level effects are typically more relevant to ecosystems. Threatened and endangered species were not identified for OU1. Population- and community-level effects are usually difficult to evaluate directly without long-term and extensive study. However, measurement endpoint evaluations at the individual level, such as an evaluation of the effects of chemical exposure on reproduction, can be used to predict effects on an assessment endpoint at the population or community level. In addition, use of criteria values designed to protect the majority (e.g., 95 percent) of the components of a community can be useful in evaluating potential community- and/or population-level effects for non-endangered taxa.

Because of the complexity of natural systems, it is generally not possible to directly assess the potential impacts to all ecological receptors present within an area. Therefore, specific receptor species (e.g., short-tailed shrew) or species groups (e.g., invertebrates) are often selected as surrogates to evaluate potential risks to larger components of the ecological community (guilds, such as carnivorous birds) used to represent the assessment endpoints (e.g., survival and reproduction of carnivorous birds). Selection criteria typically include those species that:

- Are known to occur, or are likely to occur, at OU1;
- Have a particular ecological, economic, or aesthetic value;

- Are representative of taxonomic groups, life history traits, and/or trophic levels in the habitats present at OU1 for which complete exposure pathways are likely to exist; and/or
- Can, because of toxicological sensitivity or potential exposure magnitude, be expected to represent potentially sensitive populations at OU1.

The following upper trophic level receptor species were chosen for exposure modeling based on the identification of potential exposure pathways, likelihood of occurrence on OU1, the general guidelines presented in EPA (1991), comments received from EPA Region II BTAG, and the assessment endpoints discussed in the following subsection:

- Short-tailed shrew (*Blarina brevicauda*) - terrestrial mammalian insectivore
- White-footed mouse (*Peromyscus leucopus*) - terrestrial mammalian omnivore
- Long-tailed weasel (*Mustela frenata*) - terrestrial mammalian carnivore
- Raccoon (*Procyon lotor*) - semi-aquatic mammalian omnivore
- Meadow vole (*Microtus pennsylvanicus*) - mammalian herbivore
- American robin (*Turdus migratorius*) - terrestrial avian insectivore/omnivore
- Red-tailed hawk (*Buteo jamaicensis*) - terrestrial avian carnivore

Lower trophic level receptor species were evaluated based upon those taxonomic groupings for which medium-specific screening values have been developed; these groupings and screening values are used in most ecological risk assessments. As such, specific species of terrestrial plants and soil invertebrates (earthworms are the standard surrogate) were evaluated using soil screening values developed specifically for these groups.

Upper trophic level receptor species quantitatively evaluated in the ERA were limited to birds and mammals (as shown in the preceding list), the taxonomic groups with the most available information regarding exposure and toxicological effects. Individual species of reptiles were not selected for evaluation because of the urban habitat and general lack of available toxicological information for these taxonomic groups from food web exposures. Table 2-3 summarizes the assessment and measurement endpoints selected for the ERA.

SECTION 3

Screening-Level Effects Assessment (Step 2)

3.1 Media-Specific Soil Screening Values

Media-specific soil screening values (expressed as concentrations within a media) used in this ERA are designed to be protective of plant and invertebrate communities from direct exposure to chemicals in surface soil. Soil screening values were based on EPA Soil Screening Levels (USEPA, 2005a and 2005b), Preliminary Remediation Goals for Ecological Endpoints (Efroymson et al., 1997), and alternate screening values from the scientific literature. Values taken from the scientific literature were selected based on protection of the ecological receptor populations being evaluated. The Oak Ridge National Laboratory (ORNL) soil values, for example, are designed to be protective of 90% of soil-associated organisms. A list of the soil screening values used in this SLERA is provided as Table 3-1.

3.2 Ingestion Screening Values

Ingestion screening values were derived for each upper trophic level receptor species. Toxicological information from the literature for wildlife species most closely related to the receptor species was used, where available, but was also supplemented by laboratory studies of non-wildlife species (e.g., laboratory mice) where necessary. The ingestion screening values were expressed as milligrams of the chemical per kilogram body weight of the receptor per day (mg/kg-BW/day).

Growth and reproduction were emphasized as toxicological endpoints since they are the most relevant, ecologically, to maintaining viable populations and because they are generally the most studied chronic toxicological endpoints for ecological receptors. If several chronic toxicity studies were available from the literature, the most appropriate study was selected for each receptor species based on consideration of study design, study methodology, study duration, study endpoint, and test species.

No Observed Adverse Effect Levels (NOAELs) based on growth and reproduction were utilized, where available, as the screening values. When chronic NOAEL values were unavailable, estimates were derived or extrapolated from chronic Lowest Observed Adverse Effect Levels (LOAELs) using an uncertainty factor or 10 (EPA, 1997a). In addition, when values for chronic toxicity were not available, a subchronic value was converted to a chronic value using an uncertainty factor of 10 (EPA, 1997a). Toxicity studies longer than 90 days or during a critical life stage were considered of chronic duration (EPA, 1997a). Ingestion-based screening values for mammals and birds are summarized in Tables 3-2 and 3-3, respectively.

SECTION 4

Screening-Level Exposure Assessment (Step 2)

4.1 Screening Exposure Point Concentrations

Maximum media concentrations were used as exposure point concentrations for direct exposure estimation and food web modeling in the screening portion of the ERA based on the following guidelines:

- For each data group, the maximum detected chemical concentrations in soil were used to conservatively estimate potential direct chemical exposures.
- For chemicals not detected, the maximum method reporting limit was used as the maximum detected chemical concentration to estimate the potential direct exposure.
- For samples with duplicate analyses, the higher of the two detected concentrations was used if both values are detects. In cases where one result was a detection and the other a non-detect, the detected value was used in screening.

Exposure point concentrations (concentrations in plants, soil invertebrates, and small mammal prey items) for terrestrial predators were estimated using bioaccumulation models and maximum measured media concentrations. The methodology and models used to derive these estimates are described below.

4.1.1 Terrestrial Plants

Tissue concentrations in the aboveground vegetative portion of terrestrial plants were estimated by multiplying the maximum surface soil concentration for each constituent by constituent-specific soil-to-plant BCFs obtained from the Bechtel Jacobs (1998) and EPA (2005c). For organic constituents without chemical specific BCFs identified in EPA (2005c), BCFs were estimated from the log K_{ow} using the equation provided in EPA (2005c). The log K_{ow} values used in these calculations were obtained from Jones et al. (1997), Sample et. al (1996), and EPA (1995a, 1996) and are listed in Table 4-1. The BCF values used were based on root uptake from soil and on the ratio between dry-weight soil and dry-weight plant tissue. Literature values based on the ratio between dry-weight soil and wet-weight plant tissue were converted to a dry-weight basis by dividing the wet-weight BCF by the estimated solids content for plants (15 percent [0.15]; Sample et al., 1997). The soil-to-plant BCFs used in the screening portion of the ERA are shown in Table 4-1.

4.1.2 Earthworms

Tissue concentrations in soil invertebrates (earthworms) were estimated by multiplying the maximum surface soil concentration for each constituent by constituent-specific bioconcentration factors (BCFs) or bioaccumulation factors (BAFs obtained from the literature. BCFs are calculated by dividing the concentration of a constituent in the tissues of an organism by the concentration of that same constituent in the surrounding

environmental medium (in this case, soil) without accounting for uptake via the diet. BAFs consider both direct exposure to soil and exposure via the diet. Because earthworms consume soil, BAFs are more appropriate values and are used in the food web models when available. BAFs based on depurated analyses (soil was purged from the gut of the earthworm prior to analysis) are given preference over undepurated analyses when selecting BAF values because direct ingestion of soil is accounted for separately in the food web model.

The BCF/BAF values used were based on the ratio between dry-weight soil and dry-weight earthworm tissue. Literature values based on the ratio between dry-weight soil and wet-weight earthworm tissue were converted to a dry-weight basis by dividing the wet-weight BCF/BAF by the estimated solids content for earthworms (16 percent [0.16]; EPA, 1993). For constituents without available measured BAFs or BCFs, an earthworm BAF of 1.0 was assumed. The soil-to-earthworm BCFs/BAFs used in the screening portion of the ERA are shown in Table 4-1.

4.1.3 Small Mammals

Whole-body tissue concentrations in small mammals (mice, shrews, and voles) were estimated using one of two methodologies. For constituents with literature-based soil-to-small mammal BAFs, the small mammal tissue concentration was calculated by multiplying the maximum surface soil concentration for each constituent by a constituent-specific soil-to-small mammal BAF obtained from the literature. The BAF values used were based on the ratio between dry-weight soil and whole-body dry-weight tissue. Literature values based on the ratio between dry-weight soil and wet-weight tissue were converted to a dry-weight basis by dividing the wet-weight BAF by the estimated solids content for small mammals (32 percent [0.32]; EPA, 1993). BAFs for shrews are those reported in Sample et al. (1998b) for insectivores (or for general small mammals if insectivore values were unavailable) and for voles are those reported for herbivores. The soil-to-small mammal BAFs are shown in Table 4-1.

For constituents without soil-to-small mammal BAF values, an alternate approach was used to estimate whole-body tissue concentrations. Because most constituent exposures for these small mammals is via the diet, it was assumed that the concentration of each constituent in the small mammal's tissues is equal to the constituent concentration in its diet, that is, a diet to whole-body BAF (wet-weight basis) of one was assumed. The use of a diet to whole-body BAF of one is likely to result in a conservative estimate of constituent concentrations for constituents that are not known to biomagnify in terrestrial food webs (e.g., PAHs) based on reported literature values for constituents that are known to biomagnify in food webs. For example, a maximum BAF (wet weight) value of 1.0 was reported by Simmons and McKee (1992) for PCBs based on laboratory studies with white-footed mice. Menzie et al. (1992) reported BAF values (wet-weight) for DDT of 0.3 for voles and 0.2 for short-tailed shrews. Reported BAF (wet-weight) values for dioxin were only slightly above one (1.4) for the deer mouse (EPA, 1990). Resulting tissue concentrations (wet-weight) were converted to a dry-weight basis using an estimated solids content of 32 percent (see above).

4.2 Dietary Intakes

Dietary intakes for each receptor species were calculated using the following formula (modified from EPA 1993):

$$DI_x = \frac{[[\sum_i (FIR)(FC_{xi})(PDF_i)] + [(FIR)(SC_x)(PDS)] + [(WIR)(WC_x)]]}{BW}$$

where:

DI_x	=	Dietary intake for chemical x (mg chemical/kg body weight/day)
FIR	=	Food ingestion rate (kg/day, dry weight)
FC_{xi}	=	Concentration of chemical x in food item i (mg/kg, dry weight)
PDF_i	=	Proportion of diet composed of food item i (dry weight basis)
SC_x	=	Concentration of chemical x in soil (mg/kg, dry weight)
PDS	=	Proportion of diet composed of soil (dry weight basis)
WIR	=	Water ingestion rate (L/day)
WC_x	=	Concentration of chemical x in water (mg/L)
BW	=	Body weight (kg, wet weight)

Receptor-specific values used as inputs to this equation for the screening portion of the ERA are provided in Table 4-2. Consistent with the conservative approach used for a SLERA, the minimum body weight and maximum food ingestion rate from the scientific literature were used for each receptor. It was assumed that constituents were 100 percent bioavailable to the receptor and it was also assumed that each receptor spent 100 percent of its time on OU1 (i.e., an area use factor [AUF] of 1.0 was assumed).

SECTION 5

Screening-Level Risk Calculation (Step 2)

The screening-level risk calculation is the final step in a SLERA. In this step, the maximum exposure concentrations in soil or exposure doses (upper trophic level receptor species) are compared with the corresponding screening values to derive screening risk estimates. The outcome of this step is a list of Constituents of Potential Concern (COPCs) for each medium-pathway-receptor combination evaluated or a conclusion of acceptable risk.

COPCs are selected using the Hazard Quotient (HQ) method. HQs are calculated by dividing the constituent concentration in the medium being evaluated by the corresponding medium-specific screening value or by dividing the exposure dose by the corresponding ingestion screening value. In accordance with the guidance followed for this SLERA, constituents with HQs greater than or equal to 1.0 are considered COPCs. If no suitable screening value was available for a chemical, the chemical was conservatively retained as a COPC and qualitatively assessed in the Uncertainties Section (Section 7.0).

HQs equaling or exceeding one indicate the potential for risk because the constituent concentration or dose (exposure) equals or exceeds the screening value (effect). However, screening values and exposure estimates are derived using intentionally conservative assumptions in the SLERA such that HQs greater than or equal to 1.0 do not necessarily indicate that risks are present or impacts are occurring. Rather, it identifies constituent-pathway-receptor combinations requiring further evaluation. HQs that are less than 1.0 indicate that risks are very unlikely, enabling a conclusion of no unacceptable risk to be reached with high confidence.

Two sets of risk calculations were performed, direct exposure (lower trophic level receptors) and food web exposure (upper trophic level receptors).

5.1 Direct Exposure

Screening statistics (including calculated HQs) of the direct exposure COPCs are presented in Table 5-1.

5.1.1 Inorganics

HQs are $\geq$ 1.0 for arsenic, chromium, and lead, and these exceedances are based on comparison of detected concentrations to screening values. Hexavalent chromium was also detected, but a screening value was not available and an HQ was not calculated.

5.1.2 Pesticides/PCBs

HQs are $\geq$ 1.0 for four pesticides (aldrin, alpha-BHC, dieldrin, and endrin) and four PCBs (Arcoclor-1016, Arcoclor-1221, Arcoclor 1232, and Arcoclor 1248). All exceedances are based on a comparison of reporting limits (i.e., non-detects) to screening values. Screening values were not available for 14 pesticides and HQs were not calculated for these chemicals.

5.1.3 SVOCs

HQs are ≥ 1.0 for 29 SVOCs. HQs range from 1.83 for 1,1'-biphenyl to 18,000 for naphthalene. Eleven of the exceedances are based on comparison of reporting limits (i.e., non-detects) to screening values. Thirty SVOCs did not have screening values, nine of which were detected in surface soil, and HQs were not calculated for these chemicals.

5.1.4 VOCs

HQs are ≥ 1.0 for 10 VOCs. HQs range from 1.18 for ethylbenzene to 440 for vinyl chloride. Six of the exceedances, including the vinyl chloride exceedance, are based on comparison of reporting limits (i.e., non-detects) to screening values. Thirty SVOCs did not have screening values, eight of which were detected, and HQs were not calculated for these chemicals.

5.2 Food Web Exposure

Hazard quotients for each upper trophic level receptor species are summarized in Table 5-2.

5.2.1 Inorganics

NOAEL-based HQs are ≥ 1.0 for arsenic (short-tailed shrew, white-footed mouse, meadow vole, the American robin) and lead (short-tailed shrew, white-footed mouse, meadow vole, raccoon, red-tailed hawk, and the American robin). HQs range from 1.18 for raccoon exposure to lead to 34.9 for vole exposure to arsenic. All exposure doses are based on detected concentrations.

5.2.2 Pesticides/PCBs

NOAEL-based HQs are ≥ 1.0 for five pesticides (4,4'-DDE, aldrin, dieldrin, endrin, heptachlor, heptachlor epoxide, and toxaphene) and six PCBs (Arcoclor-1016, Arcoclor-1221, Arcoclor-1232, Arcoclor-1242, Arcoclor-1248, Arcoclor-1254, and Arcoclor-1260) for one or more receptors. HQs range from 1.16 for robin exposure toAroclor-1242 to 1,022 for shrew exposure to Aroclor-1248. Only exposure doses of Aroclor-1242, Aroclor-1254, and Aroclor-1260 are based on detected concentrations.

5.2.3 SVOCs

NOAEL-based HQs are ≥ 1.0 for 14 individual SVOCs, 12 of which were individual PAHs, and total PAHs. HQs range from 1.14 for weasel exposure to pentachlorophenol to 365 for shrew exposure to total PAHs. Only exposure doses for PAHs are based on detected concentrations. Screening values were not available for 4-bromophenyl-phenylether, 4-chlorophenyl-phenylether, hexachlorocyclopentadiene (birds only), and hexachloroethane (birds only), and HQs were not calculated.

5.2.4 VOCs

The HQ for 1,1,2,2-tetrachloroethane, the only VOC identified as potentially bioaccumulative by EPA (2000), was less than 1.0 for mammals. Screening values were not available for 1,1,2,2-tetrachloroethane for avian receptors, but this chemical was not detected in any sample.

5.3 Scientific Management Decision Point

Upon completion of the SLERA, a number of COPCs were identified in surface soils. A summary of the COPCs identified in Step 2 is presented in Table 5-3. This point in the ERA process represents a Scientific Management Decision Point (SMDP) which determines whether the ERA provides enough information to indicate that no unacceptable ecological risks exist, whether the information is inadequate to make a decision on risk, or whether the potential for risk is indicated but additional data is required and the ERA will proceed to a more detailed study. The SLERA results indicate risk but because the risk estimate presented in the SLERA is based on conservative assumptions and has a high degree of uncertainty, these results should not be used for decision-making purposes. To put the identified risk in context the ecological risk assessment process proceeded to the first step of a BERA (Step 3), which involves refining the assumptions and methods used in the SLERA to be more realistic of actual ecological receptor exposure and potential effects conditions. Using realistic parameters and assumptions provides additional perspective on the conservative potential risk identified in the SLERA.

SECTION 6

Baseline Problem Formulation (Step 3)

The SLERA resulted in a set of COPCs for surface soil. This set of COPCs includes constituents with HQs greater than or equal to 1.0 (based upon maximum exposures) and detected constituents for which screening values were not available.

6.1 Refinement of Conservative Screening Assumptions

According to Superfund guidance (EPA, 1997a), Step 3 initiates the problem formulation phase of the BERA. In the initial step of the BERA, the COPCs from the SLERA are reexamined based upon more realistic exposure assumptions to determine the range of potential risks and to determine whether any of the COPCs should be eliminated from further consideration. In this initial refinement of the COPCs, the conservative assumptions employed in the SLERA are refined and risk estimates are recalculated using the same conceptual model for OU1.

The assumptions, parameter values, and methods that were modified for the Step 3 refinement included:

- Risk estimates based on maximum constituent concentrations were supplemented by risk estimates based on average (arithmetic mean) constituent concentrations.
- BAFs and BCFs were based upon, or modeled from, central tendency estimates (e.g., median or mean) from the literature as opposed to the maximum or "high-end" (e.g., 90th percentile) estimates used in the SLERA for many constituents. Revised BAF/BCF values used in the Step 3 refinement are provided in Table 6-1.

  In the BERA, using central tendency estimates (rather than high end or maximums) for exposure parameters such as BAFs provides a more representative estimate of potential exposures and risks to receptor populations (the focus of the assessment endpoints) of upper trophic level receptors. Because these upper trophic level species are highly mobile, they would be expected to effectively average their exposure over time as they forage within the area defining their home range (which will extend to uncontaminated off-site areas). Average prey concentrations are most appropriately estimated using central tendency estimates of media concentrations and accumulation factors. For example, the wildlife dietary exposure models contained in the *Wildlife Exposure Factors Handbook* (EPA, 1993) specify the calculation of an average daily dose. Increasing the representativeness of the exposure estimates relative to population-level effects is consistent with the intent of the Step 3 refinement. In cases where adequate spatial sampling coverage exists, mean concentrations are also appropriate for evaluating potential risks to populations of lower trophic level receptors because the members of the population are expected to be found throughout a site (where suitable habitat is present), rather than concentrated in one particular area.

- Central tendency estimates (e.g., mean, median, or midpoint) for body weight and ingestion rate (Table 6-2) were used to develop exposure estimates for upper trophic level receptors, rather than the minimum body weights and maximum ingestion rates used in the SLERA. Central tendency estimates for these exposure parameters are more relevant for a BERA because they better represent the characteristics of a greater proportion of the individuals in the population. Populations (rather than individual organisms) were the focus of the assessment endpoints for the ERA.
- In the SLERA, chemicals in the food web models were identified as COPCs if the estimated dose to wildlife exceeded the NOAEL for a chemical. The dose that is protective to wildlife, however, is expected to fall between the NOAEL and the LOAEL. Both the NOAEL and LOAEL were used for comparison in COPC Refinement. However, chemicals were eliminated as COPCs if estimated wildlife exposure doses did not exceed the LOAEL because this dose is expected to be protective of the overall population, which is the assessment endpoint being evaluated.

Only COPCs with screening values and receptors identified in the SLERA as requiring further evaluation were quantitatively addressed in the Step 3 refinement. Chemicals without screening values are discussed in the Uncertainties Section (Section 7.0).

Although some aspects of the estimation of exposure were modified in the Step 3 refinement (see above), the screening values (effects), except for the addition of LOAELs, were the same as the values used in the SLERA.

6.2 Refined Risk Characterization

6.2.1 Direct Exposure

The refined screening statistics for the direct exposure COPCs for surface soil are presented in Table 6-3. The results of these comparisons are summarized below by chemical group.

Inorganics

HQs are $\geq$ 1.0 for chromium (51.7) and lead (1.23), and both of these exceedances are based on comparison of detected concentrations to screening values. Hexavalent chromium was also detected, but a screening value was not available and an HQ was not calculated. Figure 6-1 depicts the distribution and concentration of the refined inorganic COPCs on the site property.

Pesticides/PCBs

HQs are $\geq$ 1.0 for four pesticides (aldrin, alpha-BHC, dieldrin, and endrin) and Arcoclor 1248. All exceedances are based on a comparison of reporting limits (i.e., non-detects) to screening values. HQs for these pesticides/PCBs range from 1.11 for Aroclor-1248 to 461 for endrin. As noted in Figure 6-1 pesticides were sampled at 3 locations (with an additional duplicate sample) and were not detected. PCBs were sampled at each location but were not detected.

SVOCs

HQs are ≥ 1.0 for 23 SVOCs. Nine of the exceedances are based on comparison of reporting limits (i.e., non-detects) to screening values. HQs for these SVOCs range from 1.12 for hexachlorocyclopentadiene to 3,080 for fluoranthene. Nine detected SVOCs did not have screening values and HQs were not calculated for these chemicals. The concentration and distribution of the refined non-PAH SVOC COPCs are provided in figure 6-2. Figure 6-3 presents PAH COPC concentrations and distribution in surface soil at the site.

VOCs

HQs are ≥ 1.0 for benzene, vinyl chloride, and total xylenes, and the exceedance for vinyl chloride is based on a comparison of reporting limits (i.e., non-detects) to a screening value. HQs for these VOCs range from 1.48 for total xylenes to 35.7 for vinyl chloride. Seven detected VOCs did not have screening values and HQs were not calculated for these chemicals. Figure 6-2 presents constituent concentrations for the detected VOC COPCs.

6.2.2 Food Web Exposure

Hazard quotients for the food-web exposures based on comparison to both NOAELs and LOAELs are presented in Table 6-4. As discussed in Section 6.1, although risks are presented for both the LOAEL and NOAEL to establish a range of risks based on toxicological endpoint, the primary focus of the COPC Refinement is on the comparison to the LOAEL.

Based on comparison to LOAELs, HQs are ≥ 1.0 for the short-tailed shrew from exposure to Aroclor-1248, Aroclor-1260, dieldrin, pyrene, and total PAHs, and for the white-footed mouse and meadow vole from exposure to total PAHs. Exposure doses for dieldrin and Aroclor-1248 exceedances are based on reporting limits (i.e., non-detects). HQs for these chemicals range from 1.14 for the white-footed mouse and total PAHs to 7.72 for the short-tailed shrew and total PAHs.

6.3 Summary of Risk Calculations and Risk Conclusions

The refined SLERA results indicate the presence of COPCs at OU1. The following sections summarize the risk results for each of the receptors identified for evaluation in the ERA. Results of the Step 3 risk calculations are the focus of this discussion since they provide the most accurate indication of potential risks to ecological receptors.

6.3.1 Terrestrial Plants and Soil Invertebrates (Direct Exposure to Chemicals in Soil)

Using less conservative and more realistic assumptions, potential risks were identified for fewer compounds as compared to the potential risks identified using very conservative assumptions in Step 2. Potential risks were indicated to terrestrial plants and soil invertebrates from direct exposure to a variety of chemicals in surface soils including inorganics, pesticides, PCBs, SVOCS, and VOCs. Four of the pesticide/PCBs, nine SVOCs, and one VOC were not detected at the site and indicate potential risk because the reporting limits for these compounds exceed screening criteria.

When interpreting these results, however, it is important to note that this site has been greatly disturbed by historic site activities, provides low quality habitat, and is surrounded

by commercial properties and the Hudson River. Approximately 30% percent of the Quanta property is covered with pavement and asphalt. Although the remainder of OU1 is heavily overgrown with shrubs and small trees, the vegetation is characterized by pioneer weed species typical of disturbed areas. The eastern side of the property provides better quality habitat, however the small size and industrial nature of the surrounding area limit the diversity. The property is bordered on all other sides by commercial areas and roads, and all surrounding land surfaces are paved or covered by large buildings. The potential for colonization of this area by native species capable of supporting a high quality community is therefore unlikely. In addition, the property has a high likelihood of being redeveloped and ecological habitat is not expected to exist under future conditions.

It is therefore concluded that, although there is the potential for adverse effects to terrestrial plants and soil invertebrates, the nature of the onsite habitat is likely to limit the diversity/abundance of terrestrial plants and soil invertebrates and the overall potential for adverse effects to these receptor communities.

6.3.2 Wildlife (Food Web Exposure to Chemicals in Soil and Surface Water)

Using less conservative and more realistic assumptions, potential risks were identified for fewer compounds and receptors, as compared to the more conservative scenario evaluated in Step 2. Potential risks were indicated to the short-tailed shrew (representative of mammalian insectivores) from exposure to Aroclor-1248, Aroclor-1260, dieldrin, pyrene, and total PAHs, and to white-footed mouse (representative of mammalian omnivores) and meadow vole (representative of mammalian herbivores) from exposure to total PAHs. Exposure doses for dieldrin and Aroclor-1248 exceedances are based on reporting limits as these compounds were not detected in the surface soils.

As for terrestrial plants and soil invertebrates, it is important to note that this site has been greatly disturbed by historic site activities, provides limited low quality habitat, is surrounding by commercial properties and the Hudson River, and will likely be developed. It is currently unknown whether shrews, mice, or voles are actually present on the property. Although small mammals could potentially use OU1, the on site habitat conditions would limit exposure, if any, to a small number of individuals until OU1 is developed. Additionally, the isolated nature of OU1 in a highly developed urban area prevents colonization by other species in the interim.

SECTION 7

Uncertainties

Uncertainties are present in all risk assessments because of the limited available data and the need to make certain assumptions and extrapolations based on incomplete information. The key uncertainties associated with the calculation of risk in this ERA are discussed in this section. Very conservative assumptions are used when calculating risks in the SLERA and, based on the conservative nature of this process; risks are likely to be overestimated. Although more realistic, the COPC refinement calculations still uses a generally conservative set of assumptions that, in most cases, are likely to overestimate rather than underestimate the likelihood and magnitude of risks to ecological receptors. The ERA results therefore should be interpreted in the context of the uncertainties discussed within this section. These primary uncertainties are attributable to the following:

- Non-detected Chemicals Exceeding Screening Values and Chemicals Without Screening Values—Non-detected chemicals with maximum-detection limits exceeding screening values and non-detected chemicals without screening values were considered COPCs, based on the conservative approach used in the SLERA. There is uncertainty associated with these chemicals. Non-detected chemicals with detection limits exceeding screening values may, for example, be present at a concentration below the detection limit but above the screening value, in which case they could have the potential to adversely affect ecological receptors. There is uncertainty associated with these chemicals and it cannot be definitively determined if they occur onsite at environmentally significant concentrations. Based on the number of samples collected at OU1 relative to the size of the site, it is unlikely that chemicals potentially posing a risk to ecological receptors would not have been detected. However, there remains some uncertainty associated with these chemicals.

  Chemicals detected but that did not have screening values also could not be quantitatively evaluated, present an uncertainty associated with the potential for ecological receptors to be adversely affected by these chemicals.

- Soil, Sediment, and Water Direct Exposure Screening Values—There is uncertainty associated with the form and bioavailability of inorganics (arsenic, chromium, and lead) in soil. In the absence of site-specific information, the form and bioavailability of the inorganics at this Site were assumed to be the same as the form and bioavailability of the inorganics used to develop the literature-based screening values. In many cases, however, the most bioavailable/toxic form of an inorganic was conservatively used to develop the literature-based screening value. Environmental factors (e.g., pH, moisture, temperature, and microbial activity) often act to make inorganics less bioavailable/toxic than those used to develop the screening values. The conservative approach used in developing the screening values is usually expected to overestimate risk.

- Ingestion Screening Values—Toxicity data for many chemicals were sparse or lacking for the selected receptor species, requiring the extrapolation of data from other wildlife species or from laboratory studies of non-wildlife species. This is a typical limitation

based on the absence of toxicity data for many wildlife species. The uncertainties associated with toxicity extrapolation were, however, minimized through the careful selection of representative surrogate test species. The factors considered in selecting a surrogate species to represent another receptor species (or group of species) were taxonomic relatedness, trophic level, foraging method, and similarity of diet.

Another uncertainty related to the derivation of ingestion-screening values applies to inorganics (arsenic, chromium, and lead). Most of the toxicological studies on which the ingestion-screening values for inorganics were based used forms of the metal (such as salts) that have high water solubility and bioavailability to receptors. Since the analytical samples on which site-specific exposure estimates were based measured total metal concentration (regardless of form), except for the hexavalent chromium, and the highly bioavailable forms are expected to compose only a fraction of the total metal concentration, potential risks to wildlife are likely to be overestimated for many metals. Because the mammal ingestion-screening value for chromium is based on the hexavalent form, this concentration was used to estimate potential risks (the bird screening value is based on trivalent chromium so the total chromium concentration was used).

A third source of uncertainty associated with the derivation of ingestion-screening values concerns the use of uncertainty factors. For example, LOAELs were extrapolated to NOAELs using an uncertainty factor of 10. This approach is likely to be conservative since Dourson and Stara (1983) determined that 96 percent of the chemicals included in a data review had LOAEL-to-NOAEL ratios of five or less. The use of an uncertainty factor of 10, although potentially conservative, also serves to counter some of the uncertainty associated with interspecies extrapolations, for which a specific uncertainty factor was not used.

- Chemical Mixtures – Information on the ecotoxicological effects of chemical interactions is generally lacking, which required (as is standard for ecological risk assessments) that chemicals be evaluated on a compound-by-compound basis during the comparison to screening value. This could result in an underestimation of risk (if there are additive or synergistic effects among chemicals) or an overestimation of risks (if there are antagonistic effects among chemicals).

- Food-Web Exposure Modeling – Chemical concentrations in terrestrial food items (e.g., plants and earthworms) were modeled from measured media concentrations and not directly measured. The use of generic, literature-derived exposure models and bioaccumulation factors introduces some uncertainty into the resulting estimates. Consistent with the ERA approach, and most notably the approach used in the SLERA, the selected values and employed methodology were intended to provide a conservative estimate of potential food-web exposure concentrations and risks are likely to have been overestimated by the food-web models used in this assessment.

  Another source of uncertainty is the use of default assumptions for exposure parameters such as BCFs and BAFs. Although BCFs or BAFs for many bioaccumulative chemicals were readily available from the literature and used in the ERA, a default factor of 1.0 was used to estimate the concentration of chemicals in potential prey items when literature-based values were not available. The assumption that the chemical body

burden in the potential prey item is the same as in the abiotic media is a conservative assumption for most chemicals.

Uncertainty is also introduced into the food-web exposure model for birds and mammals through the use of literature-derived exposure parameters. Because these parameters (e.g., body weight) may differ across the geographic range of a species or among individuals of the same species, the values used may not accurately represent individuals at OU1. However, this difference is expected to be minimal. Greater uncertainty results from the use of allometric models for estimating parameters such as food ingestion and water ingestion when measured data are lacking.

- Surface Soil Sample Depths - Surface soil data used in the ERA were collected at varying starting depths (0.0 to 2 inches, 0.0 to 6 inches, or 0.0 to 12 inches). Ecological receptors are typically exposed to surface soil from only 0 to 6 inches. Risks based on soil concentrations below 6 inches may overestimate or underestimate risk if subsurface concentrations are higher or lower, respectively, than surface concentrations.

SECTION 8

Ecological Risk Assessment Conclusions

The ERA results indicate the presence of COPCs at the Quanta property. Using more realistic assumptions, potential risks were indicated to terrestrial plants and soil invertebrates from direct exposure to a variety of chemicals in surface soils including VOCs, SVOCs, pesticides, PCBs, and inorganics. Potential risks were also indicated to small mammal receptors from exposure to Aroclor-1248, Aroclor-1260, dieldrin, pyrene, and total PAHs. As noted the property has been greatly disturbed by historic site activities, provides low quality habitat, is surrounded by commercial properties and the Hudson River, and is slated for redevelopment. Although ecological receptors could potentially use the Quanta property, these conditions would limit exposure to a small number of individual receptors that may not permanently inhabit OU1. Additionally, the isolated nature of the property prevents colonization by other species in the interim.

While the identified potential risk was developed using realistic assumptions, several areas of uncertainty still exist. At this stage the need for further risk characterization is not warranted based on the expectation of redevelopment of the property, although no specific plans for redevelopment have been made public. The potential risk identified in the SLERA will be considered during development of the FS and addressed in the remediation goals, as appropriate, if the future property use requires the consideration of ecological risks. If on the other hand, the future development plan eliminates all site habitats, potential receptors, and exposure pathways, ecological risk considerations would not be appropriate. This determination will be made as the project progresses in concert with the EPA and the NJDEP.

SECTION 9

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Tables

TABLE 2-1
Surface Soil Summary Statistics
Quanta Resources Site, New Jersey

Chemical	Range of Non-Detect Values	Method Detection Limit	Frequency of Detection	Arithmetic Mean [1]	Median [1]	Standard Deviation [1]	Maximum Detected Value	Sample ID of Maximum Detected Value	Geometric Mean [1]
Inorganics (mg/kg)									
Arsenic	NA - NA	9.12E-01	12 / 12	1.33E+01	9.30E+00	9.44E+00	3.88E+01	SB-113C-001	1.07E+01
Chromium	NA - NA	5.84E-01	12 / 12	2.07E+01	1.83E+01	8.08E+00	3.79E+01	SB-113C-001	1.94E+01
Hexavalent Chromium	1.60E+00 - 9.70E+00	5.00E-01	2 / 12	1.60E+00	1.65E+00	1.49E+00	3.50E+00	SB-081505-D1	1.20E+00
Lead	NA - NA	4.41E-01	12 / 12	1.47E+02	1.03E+02	1.21E+02	4.08E+02	SS-116B-001	1.04E+02
Pesticides/PCBs (ug/kg)									
1,2-Dibromo-3-chloropropane	5.00E+00 - 4.40E+03	2.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
4,4'-DDD	6.30E+01 - 1.80E+03	3.30E-01	1 / 4	4.65E+02	6.30E+01	5.02E+02	2.90E+01	SS-103DS-001	1.65E+02
4,4'-DDE	2.10E+01 - 1.80E+03	3.30E-01	0 / 4	4.61E+02	6.30E+01	5.08E+02	NA	NA	1.28E+02
4,4'-DDT	2.10E+01 - 1.80E+03	3.30E-01	1 / 4	5.40E+02	3.50E+02	4.38E+02	3.50E+02	SB-113C-001	2.34E+02
Aldrin	1.10E+01 - 8.90E+02	1.90E-01	0 / 4	2.24E+02	3.20E+01	2.46E+02	NA	NA	6.41E+01
alpha-BHC	1.10E+01 - 8.90E+02	3.30E-01	0 / 4	2.24E+02	3.20E+01	2.46E+02	NA	NA	6.41E+01
Alpha-Chlordane	1.10E+01 - 8.90E+02	1.70E-01	0 / 4	2.24E+02	3.20E+01	2.46E+02	NA	NA	6.41E+01
Aroclor-1016	1.80E+01 - 1.80E+04	3.30E+00	0 / 12	1.47E+03	3.70E+01	3.35E+03	NA	NA	7.26E+01
Aroclor-1221	1.80E+01 - 1.80E+04	5.20E+00	0 / 12	1.43E+03	3.70E+01	3.36E+03	NA	NA	6.40E+01
Aroclor-1232	1.80E+01 - 1.80E+04	3.30E+00	0 / 12	1.45E+03	3.70E+01	3.35E+03	NA	NA	6.79E+01
Aroclor-1242	1.80E+01 - 1.80E+04	3.30E+00	2 / 12	1.48E+03	7.40E+01	3.34E+03	5.90E+02	SS-102B-001	8.96E+01
Aroclor-1248	1.80E+01 - 3.50E+04	3.30E+00	0 / 12	2.78E+03	3.70E+01	6.43E+03	NA	NA	8.53E+01
Aroclor-1254	1.80E+01 - 1.80E+04	3.30E+00	3 / 12	1.48E+03	4.25E+01	3.34E+03	5.00E+02	SS-116B-001	9.36E+01
Aroclor-1260	2.00E+01 - 3.50E+04	3.30E+00	8 / 12	2.90E+03	1.34E+02	6.38E+03	1.10E+03	SS-116B-001	2.26E+02
beta-BHC	1.10E+01 - 8.90E+02	6.10E-01	0 / 4	2.24E+02	3.20E+01	2.46E+02	NA	NA	6.41E+01
beta-Chlordane	6.50E+01 - 3.20E+03	3.00E-03	0 / 4	8.19E+02	1.90E+02	8.73E+02	NA	NA	2.96E+02
delta-BHC	1.40E+01 - 8.90E+02	1.70E-01	0 / 4	2.26E+02	4.00E+01	2.45E+02	NA	NA	7.19E+01
Dieldrin	2.10E+01 - 1.80E+03	3.30E-01	0 / 4	4.61E+02	6.30E+01	5.08E+02	NA	NA	1.28E+02
Endosulfan I	1.10E+01 - 8.90E+02	2.20E-01	0 / 4	2.24E+02	3.20E+01	2.46E+02	NA	NA	6.41E+01
Endosulfan II	2.10E+01 - 1.80E+03	3.30E-01	0 / 4	4.61E+02	6.30E+01	5.08E+02	NA	NA	1.28E+02
Endosulfan Sulfate	2.10E+01 - 1.80E+03	3.30E-01	0 / 4	4.61E+02	6.30E+01	5.08E+02	NA	NA	1.28E+02
Endrin	2.10E+01 - 1.80E+03	3.30E-01	0 / 4	4.61E+02	6.30E+01	5.08E+02	NA	NA	1.28E+02
Endrin Aldehyde	2.10E+01 - 1.80E+03	3.30E-01	0 / 4	4.61E+02	6.30E+01	5.08E+02	NA	NA	1.28E+02
Endrin Ketone	2.10E+01 - 1.80E+03	3.30E-01	0 / 4	4.61E+02	6.30E+01	5.08E+02	NA	NA	1.28E+02
gamma-BHC (Lindane)	1.10E+01 - 8.90E+02	1.70E-01	0 / 4	2.24E+02	3.20E+01	2.46E+02	NA	NA	6.41E+01
Heptachlor	1.10E+01 - 8.90E+02	1.70E-01	0 / 4	2.24E+02	3.20E+01	2.46E+02	NA	NA	6.41E+01
Heptachlor Epoxide	1.10E+01 - 8.90E+02	1.70E-01	0 / 4	2.24E+02	3.20E+01	2.46E+02	NA	NA	6.41E+01
Methoxychlor	1.10E+02 - 8.90E+03	1.70E+00	0 / 4	2.24E+03	3.20E+02	2.46E+03	NA	NA	6.41E+02
Toxaphene	7.10E+02 - 3.50E+04	1.10E+01	0 / 4	8.98E+03	2.10E+03	9.56E+03	NA	NA	3.25E+03
SVOCs (ug/kg)									
1,1'-Biphenyl	2.20E+02 - 1.80E+04	3.33E+01	9 / 12	1.51E+04	5.35E+03	2.95E+04	1.10E+05	SB-118B-002/ SS-03C-001	4.17E+03
1,2,4-Trichlorobenzene	5.00E+00 - 4.40E+03	3.33E+01	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
1,2-Dichlorobenzene	5.00E+00 - 4.40E+03	3.33E+01	1 / 12	5.47E+02	1.70E+02	9.30E+02	2.90E+03	SS-102B-001	5.32E+01
1,3-Dichlorobenzene	5.00E+00 - 4.40E+03	3.33E+01	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01

TABLE 2-1
Surface Soil Summary Statistics
Quanta Resources Site, New Jersey

Chemical	Range of Non-Detect Values	Method Detection Limit	Frequency of Detection	Arithmetic Mean [1]	Median [1]	Standard Deviation [1]	Maximum Detected Value	Sample ID of Maximum Detected Value	Geometric Mean [1]
1,4-Dichlorobenzene	5.00E+00 - 4.40E+03	3.33E+01	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
2,2'-Oxybis(1-Chloropropane)	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
2,4,5-Trichlorophenol	1.90E+02 - 1.90E+04	6.66E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
2,4,6-Trichlorophenol	1.90E+02 - 1.90E+04	6.66E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
2,4-Dichlorophenol	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
2,4-Dimethylphenol	1.90E+02 - 1.90E+04	6.67E+01	3 / 12	4.18E+03	4.80E+03	3.36E+03	6.00E+03	SS-112A-001	2.29E+03
2,4-Dinitrophenol	2.20E+03 - 2.20E+05	6.67E+02	0 / 12	4.43E+04	5.10E+04	3.98E+04	NA	NA	2.33E+04
2,4-Dinitrotoluene	1.90E+02 - 1.90E+04	6.67E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
2,6-Dinitrotoluene	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
2-Chloronaphthalene	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
2-Chlorophenol	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
2-Methylnaphthalene	NA - NA	3.33E+01	12 / 12	9.09E+04	1.70E+04	2.28E+05	8.40E+05	SS-03C-001	1.34E+04
2-Methylphenol	1.90E+02 - 1.90E+04	6.67E+01	2 / 12	3.97E+03	4.20E+03	3.34E+03	3.70E+03	SS-112A-001	2.17E+03
2-Nitroaniline	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
2-Nitrophenol	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
3,3'-Dichlorobenzidine	3.70E+02 - 3.60E+04	1.00E+02	0 / 12	7.39E+03	8.45E+03	6.62E+03	NA	NA	3.87E+03
3-Nitroaniline	1.90E+02 - 1.90E+04	6.67E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
4,6-Dinitro-2-methylphenol	5.60E+02 - 5.50E+04	1.67E+02	0 / 12	1.12E+04	1.30E+04	1.00E+04	NA	NA	5.87E+03
4-Bromophenyl Phenyl Ether	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
4-Chloro-3-Methylphenol	1.90E+02 - 1.90E+04	6.67E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
4-Chloroaniline	1.90E+02 - 1.90E+04	6.67E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
4-Chlorophenyl Phenyl Ether	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
4-Methylphenol	1.90E+02 - 1.90E+04	6.67E+01	3 / 12	4.17E+03	4.25E+03	3.23E+03	4.00E+03	SS-112A-001	2.36E+03
4-Nitroaniline	1.90E+02 - 1.90E+04	6.67E+01	1 / 12	3.91E+03	4.20E+03	3.38E+03	3.60E+03	SS-112A-001	2.07E+03
4-Nitrophenol	5.60E+02 - 5.50E+04	1.67E+02	0 / 12	1.12E+04	1.30E+04	1.00E+04	NA	NA	5.87E+03
Acenaphthene	NA - NA	3.33E+01	12 / 12	5.83E+04	2.50E+04	6.00E+04	2.00E+05	SS-03C-001	2.30E+04
Acenaphthylene	NA - NA	3.33E+01	12 / 12	1.64E+04	9.45E+03	1.62E+04	5.30E+04	SS-102B-001	8.87E+03
Acetophenone	1.90E+02 - 1.90E+04	6.67E+01	1 / 12	3.83E+03	4.00E+03	3.41E+03	2.80E+03	SS-03C-001	2.01E+03
Anthracene	NA - NA	3.33E+01	12 / 12	9.21E+04	8.65E+04	6.75E+04	2.20E+05	SS-102B-001	5.14E+04
Atrazine	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Benzaldehyde	1.90E+02 - 1.90E+04	6.67E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Benzo(a)anthracene	NA - NA	3.33E+01	12 / 12	1.47E+05	8.25E+04	1.48E+05	4.60E+05	SS-118B-001	7.34E+04
Benzo(a)pyrene	NA - NA	3.33E+01	12 / 12	1.51E+05	7.35E+04	1.68E+05	5.30E+05	SS-118B-001	7.15E+04
Benzo(b)fluoranthene	NA - NA	3.33E+01	12 / 12	1.88E+05	9.50E+04	2.03E+05	6.60E+05	SS-118B-001	9.08E+04
Benzo(g,h,i)perylene	NA - NA	3.33E+01	12 / 12	8.78E+04	4.05E+04	9.59E+04	3.00E+05	SS-118B-001	4.22E+04
Benzo(k)fluoranthene	NA - NA	3.33E+01	12 / 12	7.93E+04	4.20E+04	8.14E+04	2.40E+05	SS-118B-001/ SB-117B-001	3.94E+04
Bis(2-chloroethoxy)methane	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Bis(2-chloroethyl)ether	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Bis(2-ethylhexyl)phthalate	6.90E+03 - 3.50E+04	6.67E+01	7 / 12	8.63E+03	7.45E+03	7.96E+03	2.60E+04	SS-116B-001	4.93E+03
Butylbenzylphthalate	1.90E+02 - 1.90E+04	6.67E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Caprolactam	1.90E+02 - 1.90E+04	3.33E+01	1 / 12	3.79E+03	4.20E+03	3.42E+03	1.20E+03	SS-102B-001	2.00E+03
Carbazole	NA - NA	3.33E+01	12 / 12	3.32E+04	2.45E+04	2.85E+04	1.00E+05	SS-102B-001	1.71E+04
Chrysene	NA - NA	3.33E+01	12 / 12	1.55E+05	8.80E+04	1.54E+05	4.90E+05	SS-118B-001	7.66E+04

TABLE 2-1
Surface Soil Summary Statistics
Quanta Resources Site, New Jersey

Chemical	Range of Non-Detect Values	Method Detection Limit	Frequency of Detection	Arithmetic Mean [1]	Median [1]	Standard Deviation [1]	Maximum Detected Value	Sample ID of Maximum Detected Value	Geometric Mean [1]
Di-n-butylphthalate	1.90E+02 - 1.90E+04	6.67E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Di-n-octylphthalate	1.90E+02 - 1.90E+04	6.67E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Dibenz(a,h)anthracene	NA - NA	3.33E+01	12 / 12	2.70E+04	1.25E+04	3.04E+04	1.00E+05	SS-118B-001	1.27E+04
Dibenzofuran	NA - NA	3.33E+01	12 / 12	4.03E+04	2.50E+04	4.26E+04	1.50E+05	SS-102B-001	1.69E+04
Diethylphthalate	1.90E+02 - 1.90E+04	6.67E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Dimethylphthalate	1.90E+02 - 1.90E+04	6.67E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Fluoranthene	NA - NA	3.33E+01	12 / 12	3.08E+05	2.15E+05	2.56E+05	7.30E+05	SB-117B-001	1.70E+05
Fluorene	NA - NA	3.33E+01	12 / 12	7.23E+04	4.30E+04	7.72E+04	2.50E+05	SS-03C-001	3.07E+04
Hexachlorobenzene	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Hexachlorobutadiene	1.90E+02 - 1.90E+04	6.67E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Hexachlorocyclopentadiene	5.60E+02 - 5.50E+04	1.67E+02	0 / 12	1.12E+04	1.30E+04	1.00E+04	NA	NA	5.87E+03
Hexachloroethane	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Indeno(1,2,3-cd)pyrene	NA - NA	3.33E+01	12 / 12	8.12E+04	3.50E+04	8.73E+04	2.70E+05	SS-118B-001	3.90E+04
Isophorone	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
N-Nitroso-di-n-propylamine	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
N-Nitrosodiphenylamine	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Naphthalene	NA - NA	3.33E+01	12 / 12	2.05E+05	3.00E+04	4.95E+05	1.80E+06	SS-03C-001	2.80E+04
Nitrobenzene	1.90E+02 - 1.90E+04	3.33E+01	0 / 12	3.76E+03	4.20E+03	3.44E+03	NA	NA	1.96E+03
Pentachlorophenol	5.60E+02 - 5.50E+04	1.67E+02	0 / 12	1.12E+04	1.30E+04	1.00E+04	NA	NA	5.87E+03
Phenanthrene	NA - NA	3.33E+01	12 / 12	3.05E+05	2.40E+05	2.46E+05	8.00E+05	SS-102B-001	1.58E+05
Phenol	1.90E+02 - 1.90E+04	3.33E+01	5 / 12	3.75E+03	3.20E+03	3.45E+03	2.90E+03	SS-102B-001	2.07E+03
Pyrene	NA - NA	3.33E+01	12 / 12	2.71E+05	1.90E+05	2.31E+05	7.30E+05	SS-118B-001	1.48E+05
VOCs (ug/kg)									
1,1,1-Trichloroethane	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
1,1,2,2-Tetrachloroethane	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
1,1,2-Trichloroethane	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
1,1,2-Trichlorotrifluoroethane	1.10E+01 - 8.80E+03	2.00E+00	0 / 12	7.09E+02	3.35E+02	1.21E+03	NA	NA	9.37E+01
1,1-Dichloroethane	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
1,1-Dichloroethene	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
1,2-Dibromo-3-Chloropropane	5.00E+00 - 4.40E+03	2.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
1,2-Dibromoethane	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
1,2-Dichloroethane	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
1,2-Dichloropropane	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
2-Butanone	1.10E+01 - 8.80E+03	4.00E+00	1 / 12	7.10E+02	3.35E+02	1.21E+03	1.50E+01	SS-116B-001	9.99E+01
2-Hexanone	1.10E+01 - 8.80E+03	3.00E+00	0 / 12	7.09E+02	3.35E+02	1.21E+03	NA	NA	9.37E+01
4-Methyl-2-pentanone	1.10E+01 - 8.80E+03	3.00E+00	0 / 12	7.09E+02	3.35E+02	1.21E+03	NA	NA	9.37E+01
Acetone	3.70E+01 - 1.80E+04	7.00E+00	5 / 12	1.44E+03	7.05E+02	2.46E+03	1.10E+02	SS-116B-001	2.68E+02
Benzene	6.00E+00 - 5.90E+02	5.00E-01	9 / 12	4.80E+02	4.55E+01	7.84E+02	2.10E+03	SS-03C-001	3.97E+01
Bromodichloromethane	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Bromoform	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Bromomethane	5.00E+00 - 4.40E+03	2.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Carbon Disulfide	9.00E+00 - 4.40E+03	1.00E+00	5 / 12	3.57E+02	1.70E+02	6.05E+02	4.00E+00	SS-07G-001	4.11E+01
Carbon Tetrachloride	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01

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Chlorobenzene	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Chlorodibromomethane	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Chloroethane	4.00E+00 - 3.50E+03	2.00E+00	0 / 12	2.98E+02	1.34E+02	4.81E+02	NA	NA	3.95E+01
Chloroform	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Chloromethane	5.00E+00 - 4.40E+03	2.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
cis-1,2-Dichloroethene	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
cis-1,3-Dichloropropene	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Cyclohexane	5.00E+00 - 4.40E+03	1.00E+00	1 / 12	3.57E+02	1.68E+02	6.05E+02	3.00E+00	SS-118B-001	4.45E+01
Dichlorodifluoromethane	5.00E+00 - 4.40E+03	2.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Ethylbenzene	5.00E+00 - 5.90E+02	1.00E+00	8 / 12	6.08E+02	4.50E+01	1.60E+03	5.90E+03	SS-03C-001	4.47E+01
Isopropylbenzene	5.00E+00 - 4.60E+02	1.00E+00	6 / 12	3.81E+02	1.20E+02	5.09E+02	1.30E+03	SS-03C-001	5.01E+01
Methyl Acetate	5.00E+00 - 4.40E+03	2.00E+00	2 / 12	4.33E+02	1.80E+02	6.34E+02	1.10E+03	SS-103DS-001	5.39E+01
Methyl tert-butyl Ether	5.00E+00 - 4.40E+03	5.00E-01	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Methylcyclohexane	5.00E+00 - 4.40E+03	1.00E+00	1 / 12	3.57E+02	1.68E+02	6.05E+02	6.00E+00	SS-118B-001	4.70E+01
Methylene Chloride	5.00E+00 - 4.40E+03	2.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Styrene	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Tetrachloroethene	6.00E+00 - 4.40E+03	1.00E+00	2 / 12	3.64E+02	1.70E+02	6.06E+02	5.20E+02	SS-102B-001	4.99E+01
Toluene	6.00E+00 - 5.90E+02	1.00E+00	9 / 12	9.37E+02	4.95E+01	1.62E+03	4.30E+03	SS-03C-001	6.49E+01
trans-1,2-Dichloroethene	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
trans-1,3-Dichloropropene	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Trichloroethene	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Trichlorofluoromethane	5.00E+00 - 4.40E+03	2.00E+00	1 / 12	1.25E+03	1.70E+02	3.29E+03	1.20E+04	SS-102B-001	5.93E+01
Vinyl Chloride	5.00E+00 - 4.40E+03	1.00E+00	0 / 12	3.57E+02	1.70E+02	6.05E+02	NA	NA	4.59E+01
Xylene (Total)	6.00E+00 - 5.90E+02	1.00E+00	9 / 12	3.71E+03	7.20E+01	6.45E+03	2.10E+04	SS-03C-001	1.06E+02
Soil Quality Parameters (mg/kg)									
Ammonia	2.64E+02 - 2.72E+02		0 / 2	1.34E+02	2.64E+02	2.83E+00	NA	NA	1.34E+02

[1] One-half of the reporting limit was used for non-detected samples in calculation

NA = Not applicable because the chemical was either detected in all samples or not detected in any sample

TABLE 2-2
Surface Water Summary Statistics
Quanta Resources Site, New Jersey

Chemical	Range of Non-Detect Values	Method Detection Limit	Frequency of Detection	Arithmetic Mean [1]	Median [1]	Standard Deviation [1]	Maximum Detected Value	Sample ID of Maximum Detected Value	Geometric Mean [1]
Pesticides/PCBs (ug/L)									
4,4'-DDD	1.90E-02 - 1.90E-01	4.00E-03	0 / 4	3.09E-02	9.50E-03	4.28E-02	NA	NA	1.69E-02
4,4'-DDE	1.90E-02 - 1.90E-02	5.00E-03	1 / 4	3.96E-02	9.50E-03	6.03E-02	1.30E-01	30916SW-D-111705	1.83E-02
4,4'-DDT	1.90E-02 - 1.90E-02	6.00E-03	1 / 4	1.22E-01	9.50E-03	2.25E-01	4.60E-01	30916SW-D-111705	2.51E-02
Aldrin	1.90E-02 - 1.90E-01	4.00E-03	0 / 4	3.09E-02	9.50E-03	4.28E-02	NA	NA	1.69E-02
alpha-BHC	9.60E-03 - 9.60E-02	3.30E-01	2 / 4	1.58E-02	5.35E-03	2.15E-02	5.90E-03	30916SW-A-111705	8.89E-03
alpha-Chlordane	9.60E-03 - 9.60E-02	1.70E-01	0 / 4	1.56E-02	4.80E-03	2.16E-02	NA	NA	8.54E-03
Aroclor-1016	4.80E-01 - 4.80E+00	1.00E-01	0 / 4	7.80E-01	2.40E-01	1.08E+00	NA	NA	4.27E-01
Aroclor-1221	4.80E-01 - 4.80E+00	1.00E-01	0 / 4	7.80E-01	2.40E-01	1.08E+00	NA	NA	4.27E-01
Aroclor-1232	4.80E-01 - 4.80E+00	1.00E-01	0 / 4	7.80E-01	2.40E-01	1.08E+00	NA	NA	4.27E-01
Aroclor-1242	4.80E-01 - 4.80E+00	1.00E-01	0 / 4	7.80E-01	2.40E-01	1.08E+00	NA	NA	4.27E-01
Aroclor-1248	4.80E-01 - 4.80E+00	1.00E-01	0 / 4	7.80E-01	2.40E-01	1.08E+00	NA	NA	4.27E-01
Aroclor-1254	4.80E-01 - 4.80E+00	1.00E-01	0 / 4	7.80E-01	2.40E-01	1.08E+00	NA	NA	4.27E-01
Aroclor-1260	4.80E-01 - 4.80E+00	1.00E-01	0 / 4	7.80E-01	2.40E-01	1.08E+00	NA	NA	4.27E-01
beta-BHC	3.80E-02 - 3.90E-01	6.10E-01	0 / 4	6.31E-02	1.93E-02	8.79E-02	NA	NA	3.42E-02
beta-Chlordane	9.60E-02 - 9.60E-01	1.70E-01	0 / 4	1.56E-01	4.80E-02	2.16E-01	NA	NA	8.54E-02
delta-BHC	9.60E-03 - 9.60E-02	1.70E-01	2 / 4	1.72E-02	7.90E-03	2.06E-02	8.00E-03	30916SW-A-111705	1.10E-02
Dieldrin	2.90E-02 - 2.90E-01	4.00E-03	0 / 4	4.71E-02	1.45E-02	6.53E-02	NA	NA	2.58E-02
Endosulfan I	9.60E-03 - 9.60E-02	3.00E-03	0 / 4	1.56E-02	4.80E-03	2.16E-02	NA	NA	8.54E-03
Endosulfan II	1.90E-02 - 1.90E-01	4.00E-03	0 / 4	3.09E-02	9.50E-03	4.28E-02	NA	NA	1.69E-02
Endosulfan Sulfate	1.90E-02 - 1.90E-01	1.20E-02	0 / 4	3.09E-02	9.50E-03	4.28E-02	NA	NA	1.69E-02
Endrin	1.90E-02 - 1.90E-01	4.00E-03	0 / 4	3.09E-02	9.50E-03	4.28E-02	NA	NA	1.69E-02
Endrin Aldehyde	9.60E-02 - 9.60E-01	2.00E-02	0 / 4	1.56E-01	4.80E-02	2.16E-01	NA	NA	8.54E-02
Endrin Ketone	1.90E-02 - 1.90E-01	1.30E-02	0 / 4	3.09E-02	9.50E-03	4.28E-02	NA	NA	1.69E-02
gamma-BHC (Lindane)	9.60E-02 - 9.60E-02	1.70E-01	3 / 4	1.51E-02	4.95E-03	2.20E-02	6.80E-03	30916SW-B-111705	7.02E-03
Heptachlor	9.60E-03 - 9.60E-02	3.00E-03	0 / 4	1.56E-02	4.80E-03	2.16E-02	NA	NA	8.54E-03
Heptachlor Epoxide	9.60E-03 - 9.60E-02	8.00E-03	0 / 4	1.56E-02	4.80E-03	2.16E-02	NA	NA	8.54E-03
Methoxychlor	9.60E-02 - 9.60E-01	3.00E-02	0 / 4	1.56E-01	4.80E-02	2.16E-01	NA	NA	8.54E-02
Toxaphene	9.60E-01 - 9.60E+00	3.00E-01	0 / 4	1.56E+00	4.80E-01	2.16E+00	NA	NA	8.54E-01
SVOCs (ug/L)									
1,1'-Biphenyl	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
1,2,4-Trichlorobenzene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
1,2-Dichlorobenzene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
1,3-Dichlorobenzene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
1,4-Dichlorobenzene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
2,2'-Oxybis(1-Chloropropane)	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
2,4,5-Trichlorophenol	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00

TABLE 2-2
Surface Water Summary Statistics
Quanta Resources Site, New Jersey

Chemical	Range of Non-Detect Values	Method Detection Limit	Frequency of Detection	Arithmetic Mean [1]	Median [1]	Standard Deviation [1]	Maximum Detected Value	Sample ID of Maximum Detected Value	Geometric Mean [1]
2,4,6-Trichlorophenol	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
2,4-Dichlorophenol	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
2,4-Dimethylphenol	1.00E+01 - 1.00E+01	3.00E+00	0 / 4	5.00E+00	5.00E+00	0.00E+00	NA	NA	5.00E+00
2,4-Dinitrophenol	5.70E+01 - 5.80E+01	2.00E+01	0 / 4	2.86E+01	2.85E+01	2.50E-01	NA	NA	2.86E+01
2,4-Dinitrotoluene	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
2,6-Dinitrotoluene	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
2-Chloronaphthalene	5.00E+00 - 5.00E+00	2.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
2-Chlorophenol	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
2-Methylnaphthalene	5.00E+00 - 5.00E+00	1.00E+00	1 / 4	2.13E+00	2.50E+00	7.50E-01	1.00E+00	30916SW-D-111705	1.99E+00
2-Methylphenol	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
2-Nitroaniline	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
2-Nitrophenol	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
3,3'-Dichlorobenzidine	5.00E+00 - 5.00E+00	2.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
3-Nitroaniline	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
4,6-Dinitro-2-Methylphenol	1.40E+01 - 1.40E+01	5.00E+00	0 / 4	7.00E+00	7.00E+00	0.00E+00	NA	NA	7.00E+00
4-Bromophenyl Phenyl Ether	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
4-Chloro-3-Methylphenol	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
4-Chloroaniline	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
4-Chlorophenyl Phenyl Ether	5.00E+00 - 5.00E+00	2.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
4-Methylphenol	5.00E+00 - 5.00E+00	2.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
4-Nitroaniline	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
4-Nitrophenol	2.90E+01 - 2.90E+01	1.00E+01	0 / 4	1.45E+01	1.45E+01	0.00E+00	NA	NA	1.45E+01
Acenaphthene	5.00E+00 - 5.00E+00	1.00E+00	1 / 4	3.38E+00	2.50E+00	1.75E+00	6.00E+00	30916SW-D-111705	3.11E+00
Acenaphthylene	5.00E+00 - 5.00E+00	1.00E+00	1 / 4	3.88E+00	2.50E+00	2.75E+00	8.00E+00	30916SW-D-111705	3.34E+00
Acetophenone	5.00E+00 - 5.00E+00	2.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Anthracene	5.00E+00 - 5.00E+00	1.00E+00	1 / 4	5.38E+00	2.50E+00	5.75E+00	1.40E+01	30916SW-D-111705	3.85E+00
Atrazine	5.00E+00 - 5.00E+00	2.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Benzaldehyde	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Benzo(a)anthracene	5.00E+00 - 5.00E+00	1.00E+00	2 / 4	1.40E+01	2.50E+00	2.40E+01	5.00E+01	30916SW-D-111705	4.20E+00
Benzo(a)pyrene	5.00E+00 - 5.00E+00	1.00E+00	3 / 4	1.66E+01	1.75E+00	3.03E+01	6.20E+01	30916SW-D-111705	3.53E+00
Benzo(b)fluoranthene	5.00E+00 - 5.00E+00	1.00E+00	3 / 4	2.49E+01	2.25E+00	4.61E+01	9.40E+01	30916SW-D-111705	4.66E+00
Benzo(g,h,i)perylene	5.00E+00 - 5.00E+00	1.00E+00	3 / 4	1.26E+01	1.75E+00	2.23E+01	4.60E+01	30916SW-D-111705	3.27E+00
Benzo(k)fluoranthene	5.00E+00 - 5.00E+00	1.00E+00	2 / 4	1.05E+01	2.50E+00	1.70E+01	3.60E+01	30916SW-D-111705	3.87E+00
Bis(2-chloroethoxy)methane	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Bis(2-chloroethyl)ether	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Bis(2-ethylhexyl)phthalate	5.00E+00 - 5.00E+00	2.00E+00	1 / 4	2.38E+00	2.50E+00	2.50E-01	2.00E+00	30916SW-D-111705	2.36E+00
Butylbenzyl Phthalate	5.00E+00 - 5.00E+00	2.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Caprolactam	1.40E+01 - 1.40E+01	5.00E+00	0 / 4	7.00E+00	7.00E+00	0.00E+00	NA	NA	7.00E+00
Carbazole	5.00E+00 - 5.00E+00	1.00E+00	1 / 4	3.88E+00	2.50E+00	2.75E+00	8.00E+00	30916SW-D-111705	3.34E+00

TABLE 2-2
Surface Water Summary Statistics
Quanta Resources Site, New Jersey

Chemical	Range of Non-Detect Values	Method Detection Limit	Frequency of Detection	Arithmetic Mean [1]	Median [1]	Standard Deviation [1]	Maximum Detected Value	Sample ID of Maximum Detected Value	Geometric Mean [1]
Chrysene	5.00E+00 - 5.00E+00	1.00E+00	3 / 4	1.81E+01	1.75E+00	3.33E+01	6.80E+01	30916SW-D-111705	3.61E+00
Dibenzo(a,h)anthracene	5.00E+00 - 5.00E+00	2.00E+00	1 / 4	4.88E+00	2.50E+00	4.75E+00	1.20E+01	30916SW-D-111705	3.70E+00
Dibenzofuran	5.00E+00 - 5.00E+00	2.00E+00	1 / 4	2.63E+00	2.50E+00	2.50E-01	3.00E+00	30916SW-D-111705	2.62E+00
Diethyl Phthalate	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Dimethyl Phthalate	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Di-n-butylphthalate	5.00E+00 - 5.00E+00	2.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Di-n-octylphthalate	5.00E+00 - 5.00E+00	2.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Fluoranthene	5.00E+00 - 5.00E+00	1.00E+00	3 / 4	2.89E+01	2.25E+00	5.41E+01	1.10E+02	30916SW-D-111705	4.84E+00
Fluorene	5.00E+00 - 5.00E+00	1.00E+00	1 / 4	3.13E+00	2.50E+00	1.25E+00	5.00E+00	30916SW-D-111705	2.97E+00
Hexachlorobenzene	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Hexachlorobutadiene	5.00E+00 - 5.00E+00	1.00E-01	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Hexachlorocyclopentadiene	1.40E+01 - 1.40E+01	5.00E+00	0 / 4	7.00E+00	7.00E+00	0.00E+00	NA	NA	7.00E+00
Hexachloroethane	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Indeno(1,2,3-cd)pyrene	5.00E+00 - 5.00E+00	1.00E+00	2 / 4	1.18E+01	2.50E+00	1.95E+01	4.10E+01	30916SW-D-111705	4.00E+00
Isophorone	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Naphthalene	5.00E+00 - 5.00E+00	1.00E-01	1 / 4	2.63E+00	2.50E+00	2.50E-01	3.00E+00	30916SW-D-111705	2.62E+00
Nitrobenzene	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
N-Nitroso-di-n-propylamine	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
N-Nitrosodiphenylamine	5.00E+00 - 5.00E+00	2.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Pentachlorophenol	1.40E+01 - 1.40E+01	3.00E+00	0 / 4	7.00E+00	7.00E+00	0.00E+00	NA	NA	7.00E+00
Phenanthrene	5.00E+00 - 5.00E+00	1.00E+00	1 / 4	1.59E+01	2.50E+00	2.68E+01	5.60E+01	30916SW-D-111705	5.44E+00
Phenol	5.00E+00 - 5.00E+00	1.00E+00	0 / 4	2.50E+00	2.50E+00	0.00E+00	NA	NA	2.50E+00
Pyrene	5.00E+00 - 5.00E+00	1.00E+00	3 / 4	2.64E+01	2.25E+00	4.91E+01	1.00E+02	30916SW-D-111705	4.73E+00
VOCs (ug/L)									
1,1,1-Trichloroethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
1,1,2,2-Tetrachloroethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
1,1,2-Trichloroethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
1,1,2-Trichlorotrifluoroethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
1,1-Dichloroethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
1,1-Dichloroethene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
1,2-Dibromo-3-Chloropropane	2.00E+00 - 1.00E+01	5.00E-01	0 / 4	3.00E+00	3.00E+00	2.31E+00	NA	NA	2.24E+00
1,2-Dibromoethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
1,2-Dichloroethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
1,2-Dichloropropane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
2-Butanone	5.00E+00 - 2.50E+01	1.00E+00	0 / 4	7.50E+00	7.50E+00	5.77E+00	NA	NA	5.59E+00
2-Hexanone	5.00E+00 - 2.50E+01	1.00E+00	0 / 4	7.50E+00	7.50E+00	5.77E+00	NA	NA	5.59E+00
4-Methyl-2-Pentanone	5.00E+00 - 2.50E+01	1.00E+00	0 / 4	7.50E+00	7.50E+00	5.77E+00	NA	NA	5.59E+00
Acetone	2.50E+01 - 2.50E+01	3.00E+00	2 / 4	8.88E+00	9.65E+00	4.37E+00	6.80E+00	30916SW-C-111705	7.92E+00

TABLE 2-2
Surface Water Summary Statistics
Quanta Resources Site, New Jersey

Chemical	Range of Non-Detect Values	Method Detection Limit	Frequency of Detection	Arithmetic Mean [1]	Median [1]	Standard Deviation [1]	Maximum Detected Value	Sample ID of Maximum Detected Value	Geometric Mean [1]
Benzene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Bromodichloromethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Bromoform	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Bromomethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Carbon Disulfide	5.00E-01 - 2.50E+00	1.00E-01	1 / 4	7.13E-01	7.50E-01	6.24E-01	1.00E-01	30916SW-C-111705	4.45E-01
Carbon Tetrachloride	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Chlorobenzene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Chlorodibromomethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Chloroethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Chloroform	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Chloromethane	5.00E-01 - 5.00E-01	1.00E-01	2 / 4	4.00E-01	3.75E-01	1.78E-01	6.00E-01	30916SW-D-111705	3.70E-01
cis-1,2-Dichloroethene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
cis-1,3-Dichloropropene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Cyclohexane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Dichlorodifluoromethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Ethylbenzene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Isopropylbenzene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Methyl Acetate	1.00E+00 - 5.00E+00	3.00E-01	0 / 4	1.50E+00	1.50E+00	1.15E+00	NA	NA	1.12E+00
Methyl tert-butyl Ether	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Methylcyclohexane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Methylene Chloride	5.00E-01 - 2.50E+00	2.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Styrene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Tetrachloroethene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Toluene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
trans-1,2-Dichloroethene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
trans-1,3-Dichloropropene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Trichloroethene	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Trichlorofluoromethane	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Vinyl Chloride	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01
Xylenes, Total	5.00E-01 - 2.50E+00	1.00E-01	0 / 4	7.50E-01	7.50E-01	5.77E-01	NA	NA	5.59E-01

TABLE 2-2
Surface Water Summary Statistics
Quanta Resources Site, New Jersey

Chemical	Range of Non-Detect Values	Method Detection Limit	Frequency of Detection	Arithmetic Mean [1]	Median [1]	Standard Deviation [1]	Maximum Detected Value	Sample ID of Maximum Detected Value	Geometric Mean [1]
Surface Water Quality Parameters (mg/L)									
Ammonia	5.00E-01 - 5.00E-01	2.00E-01	3 / 4	3.15E-01	3.15E-01	5.69E-02	3.80E-01	30916SW-A-111705	3.11E-01

[1] One-half of the reporting limit was used for non-detected samples in calculation
NA = Not applicable because the chemical was either detected in all samples or not detected in any sample

TABLE 2-3
Assessment and Measurement Endpoints
Quanta Resources Site, New Jersey

Assessment Endpoint	Measurement Endpoint	Receptor
Survival, growth, and reproduction of terrestrial soil invertebrate communities	Comparison of screening values for soil invertebrates with chemical concentrations in surface soil	Soil invertebrates (earthworms)
Survival, growth, and reproduction of terrestrial plant communities	Comparison of screening values for terrestrial plants with chemical concentrations in surface soil	Terrestrial plants
Survival, growth, and reproduction of avian terrestrial insectivores/omnivores	Comparison of chronic ingestion-based screening values for survival, growth, and/or reproductive effects with modeled dietary exposure doses based on surface soil concentrations	American robin
Survival, growth, and reproduction of avian terrestrial carnivores	Comparison of chronic ingestion-based screening values for survival, growth, and/or reproductive effects with modeled dietary exposure doses based on surface soil concentrations	Red-tailed hawk
Survival, growth, and reproduction of mammalian terrestrial omnivore	Comparison of chronic ingestion-based screening values for survival, growth, and/or reproductive effects with modeled dietary exposure doses based on surface soil and surface water concentrations	White-footed mouse
Survival, growth, and reproduction of mammalian terrestrial insectivores	Comparison of chronic ingestion-based screening values for survival, growth, and/or reproductive effects with modeled dietary exposure doses based on surface soil and surface water concentrations	Short-tailed shrew
Survival, growth, and reproduction of mammalian terrestrial herbivores	Comparison of chronic ingestion-based screening values for survival, growth, and/or reproductive effects with modeled dietary exposure doses based on surface soil and surface water concentrations	Meadow vole
Survival, growth, and reproduction of mammalian terrestrial carnivores	Comparison of chronic ingestion-based screening values for survival, growth, and/or reproductive effects with modeled dietary exposure doses based on surface soil and surface water concentrations	Long-tailed weasel
Survival, growth, and reproduction of mammalian semi-aquatic omnivores	Comparison of chronic ingestion-based screening values for survival, growth, and/or reproductive effects with modeled dietary exposure doses based on surface soil and surface water concentrations	Raccoon

TABLE 3-1
Surface Soil Screening Values - Step 2
Quanta Resources Site, New Jersey

Chemical	Screening Value	Reference	Comments
Inorganics (mg/kg)			
Arsenic	1.80E+01	USEPA 2005a	Lower of plant and soil invertebrate value
Chromium	4.00E-01	Efroymson et al. 1997	
Hexavalent Chromium	No Screening Value		
Lead	1.20E+02	USEPA 2005b	Lower of plant and soil invertebrate value
Pesticides/PCBs (ug/kg)			
4,4'-DDD	2.00E+03	MSPE 1994	Mean of target and intervention values; Value for sum of DDD, DDE, and DDT
4,4'-DDE	2.00E+03	MSPE 1994	Mean of target and intervention values; Value for sum of DDD, DDE, and DDT
4,4'-DDT	2.00E+03	MSPE 1994	Mean of target and intervention values; Value for sum of DDD, DDE, and DDT
Aldrin	2.50E+00	Friday 1998	
alpha-BHC	2.50E+00	Friday 1998	
alpha-Chlordane	No Screening Value		
Aroclor-1016	2.51E+03	USEPA 1999	Lower of plant and soil invertebrate value; Aroclor-1254 value used
Aroclor-1221	2.51E+03	USEPA 1999	Lower of plant and soil invertebrate value; Aroclor-1254 value used
Aroclor-1232	2.51E+03	USEPA 1999	Lower of plant and soil invertebrate value; Aroclor-1254 value used
Aroclor-1242	2.51E+03	USEPA 1999	Lower of plant and soil invertebrate value; Aroclor-1254 value used
Aroclor-1248	2.51E+03	USEPA 1999	Lower of plant and soil invertebrate value; Aroclor-1254 value used
Aroclor-1254	2.51E+03	USEPA 1999	Lower of plant and soil invertebrate value
Aroclor-1260	2.51E+03	USEPA 1999	Lower of plant and soil invertebrate value; Aroclor-1254 value used
beta-BHC	No Screening Value		
beta-Chlordane	No Screening Value		
delta-BHC	No Screening Value		
Dieldrin	5.00E-01	Friday 1998	
Endosulfan I	No Screening Value		
Endosulfan II	No Screening Value		
Endosulfan sulfate	No Screening Value		
Endrin	1.00E+00	Friday 1998	
Endrin aldehyde	No Screening Value		
Endrin ketone	No Screening Value		
gamma-BHC (Lindane)	No Screening Value		
Heptachlor	No Screening Value		
Heptachlor epoxide	No Screening Value		
Methoxychlor	No Screening Value		
Toxaphene	No Screening Value		
SVOCs (ug/kg)			
1,1'-Biphenyl	6.00E+04	Efroymson et al. 1997	
1,2,4-Trichlorobenzene	2.00E+04	Efroymson et al. 1997	
1,2-Dichlorobenzene	2.00E+04	Efroymson et al. 1997	Value for 1,4-Dichlorobenzene
1,3-Dichlorobenzene	2.00E+04	Efroymson et al. 1997	Value for 1,4-Dichlorobenzene
1,4-Dichlorobenzene	2.00E+04	Efroymson et al. 1997	
2,2'-oxybis(1-Chloropropane)	No Screening Value		

TABLE 3-1
Surface Soil Screening Values - Step 2
Quanta Resources Site, New Jersey

Chemical	Screening Value	Reference	Comments
2,4,5-Trichlorophenol	9.00E+03	Efroymson et al. 1997	
2,4,6-Trichlorophenol	4.00E+03	Efroymson et al. 1997	
2,4-Dichlorophenol	2.00E+04	Friday 1998	Value for 3,4-dichlorophenol
2,4-Dimethylphenol	No Screening Value		
2,4-Dinitrophenol	No Screening Value		
2,4-Dinitrotoluene	No Screening Value		
2,6-Dinitrotoluene	No Screening Value		
2-Chloronaphthalene	No Screening Value		
2-Chlorophenol	1.00E+01	Friday 1998	
2-Methylnaphthalene	No Screening Value		
2-Methylphenol	No Screening Value		
2-Nitroaniline	No Screening Value		
2-Nitrophenol	7.00E+03	Friday 1998	Value for 4-nitrophenol
3,3'-Dichlorobenzidine	No Screening Value		
3-Nitroaniline	No Screening Value		
4,6-Dinitro-2-methylphenol	No Screening Value		
4-Bromophenyl-phenylether	No Screening Value		
4-Chloro-3-methylphenol	No Screening Value		
4-Chloroaniline	No Screening Value		
4-Chlorophenyl-phenylether	No Screening Value		
4-Methylphenol	No Screening Value		
4-Nitroaniline	No Screening Value		
4-Nitrophenol	7.00E+03	Efroymson et al. 1997	
Acenaphthene	2.00E+04	Efroymson et al. 1997	
Acenaphthylene	2.00E+04	Efroymson et al. 1997	Value for Acenaphthene
Acetophenone	No Screening Value		
Anthracene	1.00E+02	Friday 1998	
Atrazine	6.00E+02	MHSPE 1994	Mean of target and intervention values
Benzaldehyde	No Screening Value		
Benzo(a)anthracene	1.00E+02	Friday 1998	Value for benzo(a)pyrene
Benzo(a)pyrene	1.00E+02	Friday 1998	
Benzo(b)fluoranthene	1.00E+02	Friday 1998	Value for benzo(a)pyrene
Benzo(g,h,i)perylene	1.00E+02	Friday 1998	Value for benzo(a)pyrene
Benzo(k)fluoranthene	1.00E+02	Friday 1998	Value for benzo(a)pyrene
bis(2-Chloroethoxy)methane	No Screening Value		
bis(2-Chloroethyl)ether	No Screening Value		
bis(2-Ethylhexyl)phthalate	3.01E+04	MHSPE 1994	Mean of target and intervention values; Value for total phthalates
Butylbenzylphthalate	3.01E+04	Friday 1998	Mean of target and intervention values; Value for total phthalates
Caprolactam	No Screening Value		
Carbazole	No Screening Value		
Chrysene	1.00E+02	Friday 1998	Value for benzo(a)pyrene
Di-n-butylphthalate	2.00E+05	Efroymson et al. 1997	
Di-n-octylphthalate	3.01E+04	MHSPE 1994	Mean of target and intervention values; Value for total phthalates
Dibenz(a,h)anthracene	1.00E+02	Friday 1998	Value for benzo(a)pyrene
Dibenzofuran	No Screening Value		
Diethylphthalate	1.00E+02	Friday 1998	
Dimethylphthalate	2.00E+02	Friday 1998	
Fluoranthene	1.00E+02	Friday 1998	
Fluorene	1.00E+02	Friday 1998	Value for benzo(a)pyrene

TABLE 3-1
Surface Soil Screening Values - Step 2
Quanta Resources Site, New Jersey

Chemical	Screening Value	Reference	Comments
Hexachlorobenzene	2.50E+00	Friday 1998	
Hexachlorobutadiene	No Screening Value		
Hexachlorocyclopentadiene	1.00E+04	Efroymson et al. 1997	
Hexachloroethane	No Screening Value		
Indeno(1,2,3-cd)pyrene	1.00E+02	Friday 1998	Value for benzo(a)pyrene
Isophorone	No Screening Value		
N-Nitroso-di-n-propylamine	No Screening Value		
N-Nitrosodiphenylamine	2.00E+04	Friday 1998	
Naphthalene	1.00E+02	Friday 1998	
Nitrobenzene	4.00E+04	Friday 1998	
Pentachlorophenol	3.00E+03	Efroymson et al. 1997	
Phenanthrene	1.00E+02	Friday 1998	
Phenol	3.00E+04	Efroymson et al. 1997	
Pyrene	3.00E+05	Efroymson et al. 1997	
Total PAHs	4.10E+03	MHSPE 1994	Mean of target and intervention values for 10 PAHs based on the minimum TOC of 2% for organic chemicals.
VOCs (ug/kg)			
1,1,1-Trichloroethane	No Screening Value		
1,1,2,2-Tetrachloroethane	No Screening Value		
1,1,2-Trichloroethane	No Screening Value		
1,1,2-Trichlorotrifluoroethane	No Screening Value		
1,1-Dichloroethane	4.00E+02	Friday 1998	1,2-Dichloroethane value used
1,1-Dichloroethene	No Screening Value		
1,2-Dibromo-3-Chloropropane	No Screening Value		
1,2-Dibromoethane	No Screening Value		
1,2-Dichloroethane	4.00E+02	Friday 1998	
1,2-Dichloropropane	No Screening Value		
2-Butanone	No Screening Value		
2-Hexanone	No Screening Value		
4-Methyl-2-Pentanone	No Screening Value		
Acetone	No Screening Value		
Benzene	1.05E+02	MHSPE 1994	Mean of target and intervention values
Bromodichloromethane	No Screening Value		
Bromoform	No Screening Value		
Bromomethane	No Screening Value		
Carbon Disulfide	No Screening Value		
Carbon Tetrachloride	1.00E+03	Efroymson et al. 1997	
Chlorobenzene	4.00E+04	Efroymson et al. 1997	
Chlorodibromomethane	No Screening Value		
Chloroethane	No Screening Value		
Chloroform	1.00E+03	MHSPE 1994	Mean of target and intervention values
Chloromethane	No Screening Value		
cis-1,2-Dichloroethene	No Screening Value		
cis-1,3-Dichloropropene	No Screening Value		
Cyclohexane	No Screening Value		
Dichlorodifluoromethane	No Screening Value		
Ethylbenzene	5.01E+03	MHSPE 1994	Mean of target and intervention values
Isopropylbenzene	No Screening Value		
Methyl Acetate	No Screening Value		
Methyl tert-butyl Ether	No Screening Value		
Methylcyclohexane	No Screening Value		

TABLE 3-1
Surface Soil Screening Values - Step 2
Quanta Resources Site, New Jersey

Chemical	Screening Value	Reference	Comments
Methylene Chloride	2.00E+03	Friday 1998	
Styrene	3.00E+05	Efroymson et al. 1997	
Tetrachloroethene	4.01E+02	MHSPE 1994	Mean of target and intervention values
Toluene	1.30E+04	MHSPE 1994	Mean of target and intervention values
trans-1,2-Dichloroethene	No Screening Value		
trans-1,3-Dichloropropene	No Screening Value		
Trichloroethene	6.00E+03	MHSPE 1994	Mean of target and intervention values
Trichlorofluoromethane	No Screening Value		
Vinyl Chloride	1.00E+01	Friday 1998	
Xylene (Total)	2.51E+03	MHSPE 1994	Mean of target and intervention values

TABLE 3-2
Ingestion Screening Values for Mammals - Step 2
Quanta Resources Site, New Jersey

Chemical	Test Organism	Body Weight (kg)	Duration	Exposure Route	Effect/Endpoint	LOAEL (mg/kg/d)	NOAEL (mg/kg/d)	Reference	Mouse	Shrew	Vole	Raccoon	Weasel
Inorganics													
Arsenic	mouse	3.00E-02	3 generations	oral in water	reproduction	1.26E+00	1.26E-01	Sample et al. 1996	X	X	X		
Arsenic	dog	1.00E+01	2 years	oral in diet	systemic	1.20E+01	1.20E+00	ATSDR 1993a				X	X
Chromium	rat	3.50E-01	3 months	oral in water	mortality	1.31E+02	1.31E+01	Sample et al. 1996	X	X	X	X	X
Lead	rat	3.50E-01	3 generations	oral in diet	reproduction	8.00E+01	8.00E+00	Sample et al. 1996	X	X	X	X	X
Pesticides/PCBs													
4,4'-DDD	rat	3.50E-01	2 years	oral in diet	reproduction	4.00E+00	8.00E-01	Sample et al. 1996	X	X	X		
4,4'-DDD	dog	1.00E+01	2 generations	oral in diet	reproduction	5.00E+00	1.00E+00	ATSDR 1994a				X	X
4,4'-DDE	rat	3.50E-01	2 years	oral in diet	reproduction	4.00E+00	8.00E-01	Sample et al. 1996	X	X	X		
4,4'-DDE	dog	1.00E+01	2 generations	oral in diet	reproduction	5.00E+00	1.00E+00	ATSDR 1994a				X	X
4,4'-DDT	rat	3.50E-01	2 years	oral in diet	reproduction	4.00E+00	8.00E-01	Sample et al. 1996	X	X	X		
4,4'-DDT	dog	1.00E+01	2 generations	oral in diet	reproduction	5.00E+00	1.00E+00	ATSDR 1994a				X	X
Aldrin	rat	3.50E-01	3 generations	oral in diet	reproduction	1.00E+00	2.00E-01	Sample et al. 1996	X	X	X	X	X
alpha-BHC	rat	3.50E-01	4 generations	oral in diet	reproduction	3.20E+00	1.60E+00	Sample et al. 1996	X	X	X	X	X
alpha-Chlordane	mouse	3.00E-02	6 generations	oral in diet	reproduction	9.16E+00	4.58E+00	Sample et al. 1996	X	X	X	X	X
Aroclor-1016	oldfield mouse	1.40E-02	12 months	oral in diet	reproduction	6.80E-01	6.80E-02	Sample et al. 1996	X	X	X		
Aroclor-1016	mink	1.00E+00	18 months	oral in diet	reproduction	3.43E+00	1.37E+00	Sample et al. 1996				X	X
Aroclor-1221	oldfield mouse	1.40E-02	12 months	oral in diet	reproduction	6.80E-01	6.80E-02	Sample et al. 1996	X	X	X		
Aroclor-1221	mink	1.00E+00	7 months	oral in diet	reproduction	6.90E-01	6.90E-02	Sample et al. 1996				X	X
Aroclor-1232	oldfield mouse	1.40E-02	12 months	oral in diet	reproduction	6.80E-01	6.80E-02	Sample et al. 1996	X	X	X		
Aroclor-1232	mink	1.00E+00	7 months	oral in diet	reproduction	6.90E-01	6.90E-02	Sample et al. 1996				X	X
Aroclor-1242	oldfield mouse	1.40E-02	12 months	oral in diet	reproduction	6.80E-01	6.80E-02	Sample et al. 1996	X	X	X		
Aroclor-1242	mink	1.00E+00	7 months	oral in diet	reproduction	6.90E-01	6.90E-02	Sample et al. 1996				X	X
Aroclor-1248	oldfield mouse	1.40E-02	12 months	oral in diet	reproduction	6.80E-01	6.80E-02	Sample et al. 1996	X	X	X		
Aroclor-1248	mink	1.00E+00	4.5 months	oral in diet	reproduction	6.90E-01	1.40E-01	Sample et al. 1996				X	X
Aroclor-1254	oldfield mouse	1.40E-02	12 months	oral in diet	reproduction	6.80E-01	6.80E-02	Sample et al. 1996	X	X	X		
Aroclor-1254	mink	1.00E+00	4.5 months	oral in diet	reproduction	6.90E-01	1.40E-01	Sample et al. 1996				X	X
Aroclor-1260	oldfield mouse	1.40E-02	12 months	oral in diet	reproduction	6.80E-01	6.80E-02	Sample et al. 1996	X	X	X		
Aroclor-1260	mink	1.00E+00	4.5 months	oral in diet	reproduction	6.90E-01	1.40E-01	Sample et al. 1996				X	X
beta-BHC	rat	3.50E-01	4 generations	oral in diet	reproduction	3.20E+00	1.60E+00	Sample et al. 1996	X	X	X	X	X
beta-Chlordane	mouse	3.00E-02	6 generations	oral in diet	reproduction	9.16E+00	4.58E+00	Sample et al. 1996	X	X	X	X	X
delta-BHC	rat	3.50E-01	4 generations	oral in diet	reproduction	3.20E+00	1.60E+00	Sample et al. 1996	X	X	X	X	X
Dieldrin	rat	3.50E-01	3 generations	oral in diet	reproduction	2.00E-01	2.00E-02	Sample et al. 1996	X	X	X	X	X
Dieldrin	dog	1.00E+01	15.7 months	oral in diet	systemic	1.40E-01	1.40E-02	ATSDR 1993b	X	X	X	X	X
Endosulfan I	rat	3.50E-01	30 days	oral (gavage)	fertility	1.50E+01	1.50E+00	Sample et al. 1996	X	X	X		
Endosulfan I	dog	1.00E+01	2 years	oral in diet	systemic	1.00E+01	1.00E+00	ATSDR 1993c				X	X
Endosulfan II	rat	3.50E-01	30 days	oral (gavage)	fertility	1.50E+01	1.50E+00	Sample et al. 1996	X	X	X		
Endosulfan II	dog	1.00E+01	2 years	oral in diet	systemic	1.00E+01	1.00E+00	ATSDR 1993c				X	X
Endrin	mouse	3.00E-02	120 days	oral in diet	reproduction	9.20E-01	9.20E-02	Sample et al. 1996	X	X	X	X	X
gamma-BHC (Lindane)	rat	3.50E-01	3 generations	oral in diet	reproduction	8.00E+01	8.00E+00	Sample et al. 1996	X	X	X	X	X
Heptachlor	mouse	3.00E-02	70 days	oral in diet	reproduction	6.50E-01	6.50E-02	ATSDR 1993d	X	X	X		
Heptachlor	mink	1.00E+00	181 days	oral in diet	reproduction	1.00E+00	1.00E-01	Sample et al. 1996				X	X
Heptachlor epoxide	mouse	3.00E-02	70 days	oral in diet	reproduction	6.50E-01	6.50E-02	ATSDR 1993d	X	X	X		
Heptachlor epoxide	mink	1.00E+00	181 days	oral in diet	reproduction	1.00E+00	1.00E-01	Sample et al. 1996				X	X
Methoxychlor	rat	3.50E-01	11 months	oral in diet	reproduction	8.00E+00	4.00E+00	Sample et al. 1996	X	X	X	X	X
Toxaphene	rat	3.50E-01	3 generations	oral in diet	reproduction	8.00E+01	8.00E+00	Sample et al. 1996	X	X	X	X	X

TABLE 3-2
Ingestion Screening Values for Mammals - Step 2
Quanta Resources Site, New Jersey

Chemical	Test Organism	Body Weight (kg)	Duration	Exposure Route	Effect/Endpoint	LOAEL (mg/kg/d)	NOAEL (mg/kg/d)	Reference	Mouse	Shrew	Vole	Raccoon	Weasel
SVOCs													
1,2,4-Trichlorobenzene	rat	3.50E-01	3 generations	oral in water	reproduction	1.06E+02	5.30E+01	Coulston and Kolbye 1994	X	X	X	X	X
1,2-Dichlorobenzene	rat	3.50E-01	chronic	oral (gavage)	liver/kidney	8.57E+02	8.57E+01	Coulston and Kolbye 1994	X	X	X	X	X
1,3-Dichlorobenzene	rat	3.50E-01	chronic	oral (gavage)	liver/kidney	8.57E+02	8.57E+01	Coulston and Kolbye 1994	X	X	X	X	X
1,4-Dichlorobenzene	rat	3.50E-01	GD 6-15	oral (gavage)	developmental	5.00E+02	2.50E+02	ATSDR 1998	X	X	X	X	X
4-Bromophenyl-phenylether	No Screening Value								X	X	X	X	X
4-Chlorophenyl-phenylether	No Screening Value								X	X	X	X	X
Acenaphthene	mouse	3.00E-02	13 weeks	oral (gavage)	reproduction	7.00E+02	3.50E+02	ATSDR 1995	X	X	X	X	X
Acenaphthylene	mouse	3.00E-02	13 weeks	oral (gavage)	reproduction	7.00E+02	3.50E+02	ATSDR 1995	X	X	X	X	X
Anthracene	mouse	3.00E-02	13 weeks	oral (gavage)	reproduction	1.00E+04	1.00E+03	ATSDR 1995	X	X	X	X	X
Benzo(a)anthracene	mouse	3.00E-02	GD 7-16	oral (gavage)	reproduction	1.00E+01	1.00E+00	Sample et al. 1996	X	X	X	X	X
Benzo(a)pyrene	mouse	3.00E-02	GD 7-16	oral (gavage)	reproduction	1.00E+01	1.00E+00	Sample et al. 1996	X	X	X	X	X
Benzo(b)fluoranthene	mouse	3.00E-02	GD 7-16	oral (gavage)	reproduction	1.00E+01	1.00E+00	Sample et al. 1996	X	X	X	X	X
Benzo(g,h,i)perylene	mouse	3.00E-02	GD 7-16	oral (gavage)	reproduction	1.00E+01	1.00E+00	Sample et al. 1996	X	X	X	X	X
Benzo(k)fluoranthene	mouse	3.00E-02	GD 7-16	oral (gavage)	reproduction	1.00E+01	1.00E+00	Sample et al. 1996	X	X	X	X	X
Chrysene	mouse	3.00E-02	GD 7-16	oral (gavage)	reproduction	1.00E+01	1.00E+00	Sample et al. 1996	X	X	X	X	X
Dibenz(a,h)anthracene	mouse	3.00E-02	GD 7-16	oral (gavage)	reproduction	1.00E+01	1.00E+00	Sample et al. 1996	X	X	X	X	X
Fluoranthene	mouse	3.00E-02	13 weeks	oral (gavage)	reproduction	5.00E+03	5.00E+02	ATSDR 1995	X	X	X	X	X
Fluorene	mouse	3.00E-02	13 weeks	oral (gavage)	reproduction	5.00E+03	5.00E+02	ATSDR 1995	X	X	X	X	X
Hexachlorobenzene	rat	3.50E-01	4 generations	oral in diet	reproduction	2.00E+00	1.00E+00	ATSDR 1996a	X	X	X		
Hexachlorobenzene	dog	1.00E+01	1 year	oral	systemic	1.20E+01	1.20E+00	ATSDR 1996a				X	X
Hexachlorobutadiene	rat	3.50E-01	GD 1-22; LD 1-21	oral in diet	developmental	2.00E+01	2.00E+00	ATSDR 1994b	X	X	X	X	X
Hexachlorocyclopentadiene	mouse	3.00E-02	GD 6-15	oral (gavage)	developmental	7.50E+02	7.50E+01	ATSDR 1999a	X	X	X	X	X
Hexachloroethane	rat	3.50E-01	GD 6-16	oral (gavage)	reproduction	5.00E+02	1.00E+02	ATSDR 1997	X	X	X	X	X
Indeno(1,2,3-cd)pyrene	mouse	3.00E-02	GD 7-16	oral (gavage)	reproduction	1.00E+01	1.00E+00	Sample et al. 1996	X	X	X	X	X
Pentachlorophenol	rat	3.50E-01	2 generations	oral in diet	developmental	2.50E+01	2.50E+00	ATSDR 1994c	X	X	X	X	X
Phenanthrene	mouse	3.00E-02	13 weeks	oral (gavage)	reproduction	5.00E+03	5.00E+02	ATSDR 1995	X	X	X	X	X
Pyrene	mouse	3.00E-02	GD 7-16	oral (gavage)	reproduction	1.00E+01	1.00E+00	Sample et al. 1996	X	X	X	X	X
Total PAHs	mouse	3.00E-02	GD 7-16	oral (gavage)	reproduction	1.00E+01	1.00E+00	Sample et al. 1996	X	X	X	X	X
VOCs													
1,1,2,2-Tetrachloroethane	rat	3.50E-01	78 weeks	oral (gavage)	reproduction	7.60E+02	7.60E+01	ATSDR 1996b	X	X	X	X	X

GD = Gestation Days
LD = Lactation Days
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level

TABLE 3-3
Ingestion Screening Values for Birds - Step 2
Quanta Resources Site, New Jersey

Chemical	Test Organism	Body Weight (kg)	Duration	Exposure Route	Effect/Endpoint	LOAEL (mg/kg/d)	NOAEL (mg/kg/d)	Reference	Robin	Hawk
Inorganics										
Arsenic	brown-headed cowbird	4.90E-02	7 months	oral in diet	survival	7.38E+00	2.46E+00	Sample et al. 1996	X	X
Chromium	American black duck	1.25E+00	10 months	oral in diet	reproduction	5.00E+00	1.00E+00	Sample et al. 1996	X	X
Lead	American kestrel	1.30E-01	7 months	oral in diet	reproduction	3.85E+01	3.85E+00	Sample et al. 1996	X	X
Pesticides/PCBs										
4,4'-DDD	Japanese quail	1.10E-01	3 generations	oral in diet	reproduction	5.00E+00	5.00E-01	USEPA 1995b	X	
4,4'-DDD	barn owl	4.70E-01	2 years	oral in diet	reproduction	8.00E-01	8.00E-02	Blus 1996		X
4,4'-DDE	Japanese quail	1.10E-01	3 generations	oral in diet	reproduction	5.00E+00	5.00E-01	USEPA 1995b	X	
4,4'-DDE	barn owl	4.70E-01	2 years	oral in diet	reproduction	8.00E-01	8.00E-02	Blus 1996		X
4,4'-DDT	Japanese quail	1.10E-01	3 generations	oral in diet	reproduction	5.00E+00	5.00E-01	USEPA 1995b	X	
4,4'-DDT	barn owl	4.70E-01	2 years	oral in diet	reproduction	8.00E-01	8.00E-02	Blus 1996	X	X
Aldrin	ring-necked pheasant	1.14E+00	5 days	oral in diet	survival	7.01E-01	7.01E-02	Hill et al. 1975	X	X
alpha-BHC	Japanese quail	1.50E-01	90 days	oral in diet	reproduction	2.25E+00	5.60E-01	Sample et al. 1996	X	X
alpha-Chlordane	red-winged blackbird	6.40E-02	84 days	oral in diet	survival	1.07E+01	2.14E+00	Sample et al. 1996	X	X
Aroclor-1016	screech owl	1.81E-01	2 generations	oral in diet	reproduction	4.10E+00	4.10E-01	Sample et al. 1996	X	X
Aroclor-1221	screech owl	1.81E-01	2 generations	oral in diet	reproduction	4.10E+00	4.10E-01	Sample et al. 1996	X	X
Aroclor-1232	screech owl	1.81E-01	2 generations	oral in diet	reproduction	4.10E+00	4.10E-01	Sample et al. 1996	X	X
Aroclor-1242	screech owl	1.81E-01	2 generations	oral in diet	reproduction	4.10E+00	4.10E-01	Sample et al. 1996	X	X
Aroclor-1248	screech owl	1.81E-01	2 generations	oral in diet	reproduction	4.10E+00	4.10E-01	Sample et al. 1996	X	X
Aroclor-1254	screech owl	1.81E-01	2 generations	oral in diet	reproduction	4.10E+00	4.10E-01	Sample et al. 1996	X	X
Aroclor-1260	screech owl	1.81E-01	2 generations	oral in diet	reproduction	4.10E+00	4.10E-01	Sample et al. 1996	X	X
beta-BHC	Japanese quail	1.50E-01	90 days	oral in diet	reproduction	2.25E+00	5.60E-01	Sample et al. 1996	X	X
beta-Chlordane	red-winged blackbird	6.40E-02	84 days	oral in diet	survival	1.07E+01	2.14E+00	Sample et al. 1996	X	X
delta-BHC	Japanese quail	1.50E-01	90 days	oral in diet	reproduction	2.25E+00	5.60E-01	Sample et al. 1996	X	X
Dieldrin	barn owl	4.66E-01	2 years	oral in diet	reproduction	7.70E-01	7.70E-02	Sample et al. 1996	X	X
Endosulfan I	gray partridge	4.00E-01	4 weeks	oral in diet	reproduction	1.00E+02	1.00E+01	Sample et al. 1996	X	X
Endosulfan II	gray partridge	4.00E-01	4 weeks	oral in diet	reproduction	1.00E+02	1.00E+01	Sample et al. 1996	X	X
Endrin	screech owl	1.81E-01	>83 days	oral in diet	reproduction	1.00E-01	1.00E-02	Sample et al. 1996	X	X
gamma-BHC (Lindane)	mallard	1.00E+00	8 weeks	oral (gavage)	reproduction	2.00E+01	2.00E+00	Sample et al. 1996	X	X
Heptachlor	ring-necked pheasant	1.14E+00	5 days	oral in diet	survival	2.75E+00	2.75E-01	Hill et al. 1975	X	X
Heptachlor epoxide	ring-necked pheasant	1.14E+00	5 days	oral in diet	survival	2.75E+00	2.75E-01	Hill et al. 1975	X	X
Methoxychlor	chicken	1.50E+00	16 weeks	oral in diet	reproduction	3.55E+03	3.55E+02	Wiemeyer 1996	X	X
Toxaphene	American black duck	1.00E+00	2 seasons	oral in diet	reproduction	5.00E+00	1.00E+00	Wiemeyer 1996	X	X

TABLE 3-3
Ingestion Screening Values for Birds - Step 2
Quanta Resources Site, New Jersey

Chemical	Test Organism	Body Weight (kg)	Duration	Exposure Route	Effect/Endpoint	LOAEL (mg/kg/d)	NOAEL (mg/kg/d)	Reference	Robin	Hawk
SVOCs										
1,2,4-Trichlorobenzene	northern bobwhite	1.90E-01	14 days	oral	survival	1.61E+02	1.61E+01	TERRETOX 2002	X	X
1,2-Dichlorobenzene	northern bobwhite	1.90E-01	14 days	oral	survival	1.61E+02	1.61E+01	TERRETOX 2002	X	X
1,3-Dichlorobenzene	northern bobwhite	1.90E-01	14 days	oral	survival	1.61E+02	1.61E+01	TERRETOX 2002	X	X
1,4-Dichlorobenzene	northern bobwhite	1.90E-01	14 days	oral	survival	1.61E+02	1.61E+01	TERRETOX 2002	X	X
4-Bromophenyl-phenylether	No Screening Value								X	X
4-Chlorophenyl-phenylether	No Screening Value								X	X
Acenaphthene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Acenaphthylene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Anthracene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Benzo(a)anthracene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Benzo(a)pyrene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Benzo(b)fluoranthene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Benzo(g,h,i)perylene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Benzo(k)fluoranthene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Chrysene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Dibenz(a,h)anthracene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Fluoranthene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Fluorene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Hexachlorobenzene	Japanese quail	1.50E-01	90 days	oral in diet	reproduction	5.65E-01	1.13E-01	Coulston and Kolbye 1994; TERRETOX 2002	X	X
Hexachlorobutadiene	Japanese quail	1.50E-01	90 days	oral in diet	reproduction	3.39E+01	3.39E+00	Coulston and Kolbye 1994; TERRETOX 2002	X	X
Hexachlorocyclopentadiene	--	--	--	--	--	NA	NA	--	X	X
Hexachloroethane	--	--	--	--	--	NA	NA	--	X	X
Indeno(1,2,3-cd)pyrene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Pentachlorophenol	chicken	1.50E+00	8 weeks	oral in diet	systemic/growth	8.52E+00	4.26E+00	Eisler 1989	X	X
Phenanthrene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Pyrene	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
Total PAHs	chicken	1.50E+00	35 days	oral in diet	reproduction	7.10E+01	7.10E+00	Rigdon and Neal 1963	X	X
VOCs										
1,1,2,2-Tetrachloroethane	No Screening Value								X	X

LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level

TABLE 4-1
Soil Bioconcentration Factors - Step 2
Quanta Resources Site, New Jersey

Chemical	K_{ow}		Soil-Plant BCF (dry weight)		Soil-Invertebrate BAF (dry weight)		Soil-Mouse BAF (dry weight)		Soil-Vole BAF (dry weight)		Soil-Shrew BAF (dry weight)	
	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference
Inorganics												
Arsenic	--	--	1.10E+00	90th Percentile; Bechtel Jacobs 1998	5.23E-01	90th Percentile; Sample et al. 1998a	1.40E-02	90th Percentile; Sample et al. 1998b	1.60E-02	90th Percentile; Sample et al. 1998b	1.49E-02	90th Percentile; Sample et al. 1998b
Chromium	--	--	8.39E-02	90th Percentile; Bechtel Jacobs 1998	3.16E+00	90th Percentile; Sample et al. 1998a	3.49E-01	90th Percentile; Sample et al. 1998b	3.09E-01	90th Percentile; Sample et al. 1998b	3.33E-01	90th Percentile; Sample et al. 1998b
Lead	--	--	4.68E-01	90th Percentile; Bechtel Jacobs 1998	1.52E+00	90th Percentile; Sample et al. 1998a	2.86E-01	90th Percentile; Sample et al. 1998b	1.87E-01	90th Percentile; Sample et al. 1998b	3.39E-01	90th Percentile; Sample et al. 1998b
Pesticides/PCBs												
4,4'-DDD	6.10E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	2.00E+00	Not specified; Menzie et al. 1992	--	see text	--	see text	--	see text
4,4'-DDE	6.76E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.06E+01	Not specified; Menzie et al. 1992	--	see text	--	see text	--	see text
4,4'-DDT	6.53E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	7.00E-01	Not specified; Menzie et al. 1992	--	see text	--	see text	--	see text
Aldrin	6.50E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	3.30E+00	Not specified; Edwards and Bohlen 1992	--	see text	--	see text	--	see text
alpha-BHC	3.80E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
alpha-Chlordane	6.32E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	4.00E+00	Not specified; Edwards and Bohlen 1992	--	see text	--	see text	--	see text
Aroclor-1016	5.60E+00	Sample et al. 1996	Regression Equation Based on K_{ow}	USEPA 2005c	1.59E+01	90th Percentile; Sample et al. 1998a	--	see text	--	see text	--	see text
Aroclor-1221	4.70E+00	Jones et al. 1997	Regression Equation Based on K_{ow}	USEPA 2005c	1.59E+01	90th Percentile; Sample et al. 1998a	--	see text	--	see text	--	see text
Aroclor-1232	5.10E+00	Jones et al. 1997	Regression Equation Based on K_{ow}	USEPA 2005c	1.59E+01	90th Percentile; Sample et al. 1998a	--	see text	--	see text	--	see text
Aroclor-1242	5.60E+00	Jones et al. 1997	Regression Equation Based on K_{ow}	USEPA 2005c	1.59E+01	90th Percentile; Sample et al. 1998a	--	see text	--	see text	--	see text
Aroclor-1248	6.20E+00	Jones et al. 1997	Regression Equation Based on K_{ow}	USEPA 2005c	1.59E+01	90th Percentile; Sample et al. 1998a	--	see text	--	see text	--	see text
Aroclor-1254	6.50E+00	Jones et al. 1997	Regression Equation Based on K_{ow}	USEPA 2005c	1.59E+01	90th Percentile; Sample et al. 1998a	--	see text	--	see text	--	see text
Aroclor-1260	6.80E+00	Jones et al. 1997	Regression Equation Based on K_{ow}	USEPA 2005c	1.59E+01	90th Percentile; Sample et al. 1998a	--	see text	--	see text	--	see text
beta-BHC	3.81E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
beta-Chlordane	6.32E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	4.00E+00	Not specified; Edwards and Bohlen 1992	--	see text	--	see text	--	see text
delta-BHC	4.10E+00	USEPA 1996	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
Dieldrin	5.37E+00	USEPA 1995a	4.10E-01	Median; USEPA 2005c	8.00E+00	Geometric mean; Beyer and Gish 1980	--	see text	--	see text	--	see text
Endosulfan I	3.83E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
Endosulfan II	4.52E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text

TABLE 4-1
Soil Bioconcentration Factors - Step 2
Quanta Resources Site, New Jersey

Chemical	K_{ow}		Soil-Plant BCF (dry weight)		Soil-Invertebrate BAF (dry weight)		Soil-Mouse BAF (dry weight)		Soil-Vole BAF (dry weight)		Soil-Shrew BAF (dry weight)	
	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference
Endrin	5.06E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	3.60E+00	Not specified; Edwards and Bohlen 1992	--	see text	--	see text	--	see text
gamma-BHC (Lindane)	3.73E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	--	--	see text	--	see text	--	see text
Heptachlor	6.26E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	3.00E+00	Not specified; Edwards and Bohlen 1992	--	see text	--	see text	--	see text
Heptachlor epoxide	5.00E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	8.39E+00	Single value; USEPA 1999	--	see text	--	see text	--	see text
Methoxychlor	5.08E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
Toxaphene	5.50E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
SVOCs												
1,2,4-Trichlorobenzene	4.01E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	5.60E-01	Mean; Beyer 1996	--	see text	--	see text	--	see text
1,2-Dichlorobenzene	3.43E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
1,3-Dichlorobenzene	3.50E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
1,4-Dichlorobenzene	3.42E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
4-Bromophenyl-phenylether	5.00E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
4-Chlorophenyl-phenylether	4.95E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
Acenaphthene	--	--	Regression Equation	USEPA 2005c	3.00E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Acenaphthylene	--	--	Regression Equation	USEPA 2005c	2.20E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Anthracene	--	--	Regression Equation	USEPA 2005c	3.20E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Benzo(a)anthracene	--	--	Regression Equation	USEPA 2005c	2.70E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Benzo(a)pyrene	--	--	Regression Equation	USEPA 2005c	3.40E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Benzo(b)fluoranthene	--	--	3.10E-01	Median; USEPA 2005c	2.10E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Benzo(g,h,i)perylene	--	--	6.09E-03	Median; USEPA 2005c	1.50E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Benzo(k)fluoranthene	--	--	Regression Equation	USEPA 2005c	2.10E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Chrysene	--	--	Regression Equation	USEPA 2005c	4.40E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Dibenz(a,h)anthracene	--	--	1.30E-01	Median; USEPA 2005c	4.90E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Fluoranthene	--	--	5.00E-01	Median; USEPA 2005c	3.70E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Fluorene	--	--	Regression Equation	USEPA 2005c	2.00E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Hexachlorobenzene	5.89E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.69E+00	Mean; Beyer 1996	--	see text	--	see text	--	see text
Hexachlorobutadiene	4.81E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text

TABLE 4-1
Soil Bioconcentration Factors - Step 2
Quanta Resources Site, New Jersey

Chemical	K_{ow}		Soil-Plant BCF (dry weight)		Soil-Invertebrate BAF (dry weight)		Soil-Mouse BAF (dry weight)		Soil-Vole BAF (dry weight)		Soil-Shrew BAF (dry weight)	
	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference
Hexachlorocyclopentadiene	5.39E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
Hexachloroethane	4.00E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text
Indeno(1,2,3-cd)pyrene	--	--	1.10E-01	Median; USEPA 2005c	4.10E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Pentachlorophenol	5.09E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	8.00E+00	Maximum; van Gestel and Ma 1988	--	see text	--	see text	--	see text
Phenanthrene	--	--	Regression Equation	USEPA 2005c	2.80E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Pyrene	--	--	7.20E-01	Median; USEPA 2005c	3.90E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
VOCs												
1,1,2,2-Tetrachloroethane	2.39E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	--	see text	--	see text	--	see text

BAF = Bioaccumulation Factor
BCF = Bioconcentration Factor
K_{ow} = Octanol-water partition coefficient

TABLE 4-2
Exposure Parameters for Mammals and Birds - Step 2
Quanta Resources Site, New Jersey

Receptor	Maximum Body Weight (kg)		Minimum Body Weight (kg)		Water Ingestion Rate (L/day)	
	Value	Reference	Value	Reference	Value	Reference
Mammals						
White-footed mouse	0.0305	max for M/F - MD; Silva and Downing 1995	0.0141	min for M/F - MD; Silva and Downing 1995	0.0092	30% of max BW; Sample and Suter 1994
Short-tailed shrew	0.02131	avg max for M/F - PA; USEPA 1993	0.013	avg min for M/F - PA; USEPA 1993	0.0048	22.3% of max BW; USEPA 1993
Meadow vole	0.0635	max for M/F - VA; Silva and Downing 1995	0.030	min for M/F - VA; Silva and Downing 1995	0.0133	21% of max BW; USEPA 1993
Raccoon	7.53	max for M/F - IN; Silva and Downing 1995	4.230	min for M/F - IN; Silva and Downing 1995	0.6092	allometric equation for mammals based on max BW; USEPA 1993
Long-tailed Weasel	0.297	highest mean for M/F - NV; Brown and Lasiewski, 1972	0.15	Lowest mean for M/F - NV; Brown and Lasiewski, 1972	0.0332	allometric equation for mammals based on max BW; USEPA 1993
Birds						
American robin	0.103	max for M/F - PA; USEPA 1993	0.064	min for M/F - PA; USEPA 1993	0.0129	allometric equation for birds based on max BW; USEPA 1993
Red-tailed hawk	1.235	highest mean; USEPA 1993	0.957	minimum; USEPA 1993	0.0680	allometric equation for birds based on max BW; USEPA 1993

BW = Body Weight
F = Female
M = Male

TABLE 4-2
Exposure Parameters for Mammals and Birds - Step 2
Quanta Resources Site, New Jersey

Receptor	Food Ingestion Rate (kg/day)		Dietary Composition (percent)						Soil/ Sediment Ingestion (percent)	
	Value (wet/ dry) [1]	Reference	Terr. Plant	Soil Invert.	Mouse	Vole	Shrew	Reference	Value	Reference
Mammals										
White-footed mouse	0.0047 /0.007	15.5% of max BW; Sample and Suter 1994	51	47	0	0	0	Martin et al. 1951; Sample and Suter 1994	2.0	Beyer et al. 1994
Short-tailed shrew	0.0118/ 0.0019	55.5% of max BW; USEPA 1993	0	87	0	0	0	Assumed	13	Sample and Suter 1994
Meadow vole	0.0206/ 00031	32.5% of max BW; USEPA 1993	98	0	0	0	0	Assumed	2.4	Beyer et al. 1994
Raccoon	0.7004/ 0.1085	9.3% of max BW; Conover 1989	45	45	0	0	0	Assumed	9.4	Beyer et al. 1994; Value for sediment based on aquatic diet
Long-tailed Weasel	0.0198/ 0.0063	Based on max mean metabolic rate (Brown and Lasiewski, 1972) and energy content of food (Golley, 1961)	0	0	32	32	32	Assumed	2.8	Beyer et al. 1994; Value is for red fox (diet assumed comparable)
Birds										
American robin	0.0476/ 0.0074	Weighted by diet; max BW; Levey and Karasov 1989	52	44	0	0	0	Martin et al. 1951	4.6	Sample and Suter 1994
Red-tailed hawk	0.1235/ 0.0395	10% of max BW; Sample and Suter 1994	0	0	34	33	33	Assumed	0	Sample and Suter 1994

[1] Food ingestion rates on a dry weight basis were calculated assuming the following percent solids in dietary items: terr. plants = 16%, soil invert. = 15%, small mammals = 32% (USEPA 1993)

TABLE 5-1
Surface Soil Direct Exposure Screening Statistics - Step 2
Quanta Resources Site, New Jersey

Chemical	Maximum Detected Concentration	Maximum Reporting Limit	Screening Value	Hazard Quotient [1]	Retained as Step 2 COPC?
Inorganics (mg/kg)					
Arsenic	3.88E+01	NA	1.80E+01	**2.16E+00**	**Yes**
Chromium	3.79E+01	NA	4.00E-01	**9.48E+01**	**Yes**
Hexavalent Chromium	3.50E+00	NA	No Screening Value		**Yes**
Lead	4.08E+02	NA	1.20E+02	**3.40E+00**	**Yes**
Pesticides/PCBs (ug/kg)					
4,4'-DDD	2.90E+01	NA	2.00E+03	1.45E-02	No
4,4'-DDE	NA	1.80E+03	2.00E+03	9.00E-01	No
4,4'-DDT	3.50E+02	NA	2.00E+03	1.75E-01	No
Aldrin	NA	8.90E+02	2.50E+00	**3.56E+02**	**Yes**
alpha-BHC	NA	8.90E+02	2.50E+00	**3.56E+02**	**Yes**
alpha-Chlordane	NA	8.90E+02	No Screening Value		**Yes**
Aroclor-1016	NA	1.80E+04	2.51E+03	**7.17E+00**	**Yes**
Aroclor-1221	NA	1.80E+04	2.51E+03	**7.17E+00**	**Yes**
Aroclor-1232	NA	1.80E+04	2.51E+03	**7.17E+00**	**Yes**
Aroclor-1242	5.90E+02	NA	2.51E+03	2.35E-01	No
Aroclor-1248	NA	3.50E+04	2.51E+03	**1.39E+01**	**Yes**
Aroclor-1254	5.00E+02	NA	2.51E+03	1.99E-01	No
Aroclor-1260	1.10E+03	NA	2.51E+03	4.38E-01	No
beta-BHC	NA	8.90E+02	No Screening Value		**Yes**
beta-Chlordane	NA	3.20E+03	No Screening Value		**Yes**
delta-BHC	NA	8.90E+02	No Screening Value		**Yes**
Dieldrin	NA	1.80E+03	5.00E-01	**3.60E+03**	**Yes**
Endosulfan I	NA	8.90E+02	No Screening Value		**Yes**
Endosulfan II	NA	1.80E+03	No Screening Value		**Yes**
Endosulfan sulfate	NA	1.80E+03	No Screening Value		**Yes**
Endrin	NA	1.80E+03	1.00E+00	**1.80E+03**	**Yes**
Endrin aldehyde	NA	1.80E+03	No Screening Value		**Yes**
Endrin ketone	NA	1.80E+03	No Screening Value		**Yes**
gamma-BHC (Lindane)	NA	8.90E+02	No Screening Value		**Yes**
Heptachlor	NA	8.90E+02	No Screening Value		**Yes**
Heptachlor epoxide	NA	8.90E+02	No Screening Value		**Yes**
Methoxychlor	NA	8.90E+03	No Screening Value		**Yes**
Toxaphene	NA	3.50E+04	No Screening Value		**Yes**
SVOCs (ug/kg)					
1,1'-Biphenyl	1.10E+05	NA	6.00E+04	**1.83E+00**	**Yes**
1,2,4-Trichlorobenzene	NA	4.40E+03	No Screening Value		**Yes**

TABLE 5-1
Surface Soil Direct Exposure Screening Statistics - Step 2
Quanta Resources Site, New Jersey

Chemical	Maximum Detected Concentration	Maximum Reporting Limit	Screening Value	Hazard Quotient [1]	Retained as Step 2 COPC?
1,2-Dichlorobenzene	2.90E+03	NA	2.00E+04	1.45E-01	No
1,3-Dichlorobenzene	NA	4.40E+03	2.00E+04	2.20E-01	No
1,4-Dichlorobenzene	NA	4.40E+03	2.00E+04	2.20E-01	No
2,2'-oxybis(1-Chloropropane)	NA	1.90E+04	No Screening Value		**Yes**
2,4,5-Trichlorophenol	NA	1.90E+04	9.00E+03	**2.11E+00**	**Yes**
2,4,6-Trichlorophenol	NA	1.90E+04	4.00E+03	**4.75E+00**	**Yes**
2,4-Dichlorophenol	NA	1.90E+04	2.00E+04	9.50E-01	No
2,4-Dimethylphenol	6.00E+03	NA	No Screening Value		**Yes**
2,4-Dinitrophenol	NA	2.20E+05	No Screening Value		**Yes**
2,4-Dinitrotoluene	NA	1.90E+04	No Screening Value		**Yes**
2,6-Dinitrotoluene	NA	1.90E+04	No Screening Value		**Yes**
2-Chloronaphthalene	NA	1.90E+04	No Screening Value		**Yes**
2-Chlorophenol	NA	1.90E+04	1.00E+01	**1.90E+03**	**Yes**
2-Methylnaphthalene	8.40E+05	NA	No Screening Value		**Yes**
2-Methylphenol	3.70E+03	NA	No Screening Value		**Yes**
2-Nitroaniline	NA	1.90E+04	No Screening Value		**Yes**
2-Nitrophenol	NA	1.90E+04	7.00E+03	**2.71E+00**	**Yes**
3,3'-Dichlorobenzidine	NA	3.60E+04	No Screening Value		**Yes**
3-Nitroaniline	NA	1.90E+04	No Screening Value		**Yes**
4,6-Dinitro-2-methylphenol	NA	5.50E+04	No Screening Value		**Yes**
4-Bromophenyl Phenyl Ether	NA	1.90E+04	No Screening Value		**Yes**
4-Chloro-3-methylphenol	NA	1.90E+04	No Screening Value		**Yes**
4-Chloroaniline	NA	1.90E+04	No Screening Value		**Yes**
4-Chlorophenyl phenyl ether	NA	1.90E+04	No Screening Value		**Yes**
4-Methylphenol	4.00E+03	NA	No Screening Value		**Yes**
4-Nitroaniline	3.60E+03	NA	No Screening Value		**Yes**
4-Nitrophenol	NA	5.50E+04	7.00E+03	**7.86E+00**	**Yes**
Acenaphthene	2.00E+05	NA	2.00E+04	**1.00E+01**	**Yes**
Acenaphthylene	5.30E+04	NA	2.00E+04	**2.65E+00**	**Yes**
Acetophenone	2.80E+03	NA	No Screening Value		**Yes**
Anthracene	2.20E+05	NA	1.00E+02	**2.20E+03**	**Yes**
Atrazine	NA	1.90E+04	6.00E+02	**3.17E+01**	**Yes**
Benzaldehyde	NA	1.90E+04	No Screening Value		**Yes**
Benzo(a)anthracene	4.60E+05	NA	1.00E+02	**4.60E+03**	**Yes**
Benzo(a)pyrene	5.30E+05	NA	1.00E+02	**5.30E+03**	**Yes**
Benzo(b)fluoranthene	6.60E+05	NA	1.00E+02	**6.60E+03**	**Yes**
Benzo(g,h,i)perylene	3.00E+05	NA	1.00E+02	**3.00E+03**	**Yes**
Benzo(k)fluoranthene	2.40E+05	NA	1.00E+02	**2.40E+03**	**Yes**
bis(2-Chloroethoxy)methane	NA	1.90E+04	No Screening Value		**Yes**
bis(2-Chloroethyl)ether	NA	1.90E+04	No Screening Value		**Yes**

TABLE 5-1
Surface Soil Direct Exposure Screening Statistics - Step 2
Quanta Resources Site, New Jersey

Chemical	Maximum Detected Concentration	Maximum Reporting Limit	Screening Value	Hazard Quotient [1]	Retained as Step 2 COPC?
bis(2-Ethylhexyl)phthalate	2.60E+04	NA	3.01E+04	8.65E-01	No
Butylbenzylphthalate	NA	1.90E+04	3.01E+04	6.32E-01	No
Caprolactam	1.20E+03	NA	No Screening Value		**Yes**
Carbazole	1.00E+05	NA	No Screening Value		**Yes**
Chrysene	4.90E+05	NA	1.00E+02	**4.90E+03**	**Yes**
Di-n-butylphthalate	NA	1.90E+04	2.00E+05	9.50E-02	No
Di-n-octylphthalate	NA	1.90E+04	3.01E+04	6.32E-01	No
Dibenz(a,h)anthracene	1.00E+05	NA	1.00E+02	**1.00E+03**	**Yes**
Dibenzofuran	1.50E+05	NA	No Screening Value		**Yes**
Diethylphthalate	NA	1.90E+04	1.00E+02	**1.90E+02**	**Yes**
Dimethylphthalate	NA	1.90E+04	2.00E+02	**9.50E+01**	**Yes**
Fluoranthene	7.30E+05	NA	1.00E+02	**7.30E+03**	**Yes**
Fluorene	2.50E+05	NA	1.00E+02	**2.50E+03**	**Yes**
Hexachlorobenzene	NA	1.90E+04	2.50E+00	**7.60E+03**	**Yes**
Hexachlorobutadiene	NA	1.90E+04	No Screening Value		**Yes**
Hexachlorocyclopentadiene	NA	5.50E+04	1.00E+04	**5.50E+00**	**Yes**
Hexachloroethane	NA	1.90E+04	No Screening Value		**Yes**
Indeno(1,2,3-cd)pyrene	2.70E+05	NA	1.00E+02	**2.70E+03**	**Yes**
Isophorone	NA	1.90E+04	No Screening Value		**Yes**
N-Nitroso-di-n-propylamine	NA	1.90E+04	No Screening Value		**Yes**
N-Nitrosodiphenylamine	NA	1.90E+04	2.00E+04	9.50E-01	No
Naphthalene	1.80E+06	NA	1.00E+02	**1.80E+04**	**Yes**
Nitrobenzene	NA	1.90E+04	4.00E+04	4.75E-01	No
Pentachlorophenol	NA	5.50E+04	3.00E+03	**1.83E+01**	**Yes**
Phenanthrene	8.00E+05	NA	1.00E+02	**8.00E+03**	**Yes**
Phenol	2.90E+03	NA	3.00E+04	9.67E-02	No
Pyrene	7.30E+05	NA	3.00E+05	**2.43E+00**	**Yes**
Total PAHs[2]	5.84E+06	NA	4.10E+03	**1.42E+03**	**Yes**
VOCs (ug/kg)					
1,1,1-Trichloroethane	NA	4.40E+03	No Screening Value		**Yes**
1,1,2,2-Tetrachloroethane	NA	4.40E+03	No Screening Value		**Yes**
1,1,2-Trichloroethane	NA	4.40E+03	No Screening Value		**Yes**
1,1,2-Trichlorotrifluoroethane	NA	8.80E+03	No Screening Value		**Yes**
1,1-Dichloroethane	NA	4.40E+03	4.00E+02	**1.10E+01**	**Yes**
1,1-Dichloroethene	NA	4.40E+03	No Screening Value		**Yes**
1,2-Dibromo-3-Chloropropane	NA	4.40E+03	No Screening Value		**Yes**
1,2-Dibromoethane	NA	4.40E+03	No Screening Value		**Yes**
1,2-Dichloroethane	NA	4.40E+03	4.00E+02	**1.10E+01**	**Yes**
1,2-Dichloropropane	NA	4.40E+03	No Screening Value		**Yes**

TABLE 5-1
Surface Soil Direct Exposure Screening Statistics - Step 2
Quanta Resources Site, New Jersey

Chemical	Maximum Detected Concentration	Maximum Reporting Limit	Screening Value	Hazard Quotient [1]	Retained as Step 2 COPC?
2-Butanone	1.50E+01	NA	No Screening Value		**Yes**
2-Hexanone	NA	8.80E+03	No Screening Value		**Yes**
4-Methyl-2-Pentanone	NA	8.80E+03	No Screening Value		**Yes**
Acetone	1.10E+02	NA	No Screening Value		**Yes**
Benzene	2.10E+03	NA	1.05E+02	**2.00E+01**	**Yes**
Bromodichloromethane	NA	4.40E+03	No Screening Value		**Yes**
Bromoform	NA	4.40E+03	No Screening Value		**Yes**
Bromomethane	NA	4.40E+03	No Screening Value		**Yes**
Carbon Disulfide	4.00E+00	NA	No Screening Value		**Yes**
Carbon Tetrachloride	NA	4.40E+03	1.00E+03	**4.40E+00**	**Yes**
Chlorobenzene	NA	4.40E+03	4.00E+04	1.10E-01	No
Chlorodibromomethane	NA	4.40E+03	No Screening Value		**Yes**
Chloroethane	NA	3.50E+03	No Screening Value		**Yes**
Chloroform	NA	4.40E+03	1.00E+03	**4.40E+00**	**Yes**
Chloromethane	NA	4.40E+03	No Screening Value		**Yes**
cis-1,2-Dichloroethene	NA	4.40E+03	No Screening Value		**Yes**
cis-1,3-Dichloropropene	NA	4.40E+03	No Screening Value		**Yes**
Cyclohexane	3.00E+00	NA	No Screening Value		**Yes**
Dichlorodifluoromethane	NA	4.40E+03	No Screening Value		**Yes**
Ethylbenzene	5.90E+03	NA	5.01E+03	**1.18E+00**	**Yes**
Isopropylbenzene	1.30E+03	NA	No Screening Value		**Yes**
Methyl Acetate	1.10E+03	NA	No Screening Value		**Yes**
Methyl tert-butyl Ether	NA	4.40E+03	No Screening Value		**Yes**
Methylcyclohexane	6.00E+00	NA	No Screening Value		**Yes**
Methylene Chloride	NA	4.40E+03	2.00E+03	**2.20E+00**	**Yes**
Styrene	NA	4.40E+03	3.00E+05	1.47E-02	No
Tetrachloroethene	5.20E+02	NA	4.01E+02	**1.30E+00**	**Yes**
Toluene	4.30E+03	NA	1.30E+04	3.31E-01	No
trans-1,2-Dichloroethene	NA	4.40E+03	No Screening Value		**Yes**
trans-1,3-Dichloropropene	NA	4.40E+03	No Screening Value		**Yes**
Trichloroethene	NA	4.40E+03	6.00E+03	7.33E-01	No
Trichlorofluoromethane	1.20E+04	NA	No Screening Value		**Yes**
Vinyl Chloride	NA	4.40E+03	1.00E+01	**4.40E+02**	**Yes**
Xylene (Total)	2.10E+04	NA	2.51E+03	**8.38E+00**	**Yes**

[1] Hazard Quotient based on maximum detected concentration or maximum reporting limit if chemical was not detected in any sample

[2] The total PAHs concentration used for direct exposure is the sum of 10 indivdual PAHs for which the screening value (MHSPE 1994) was derived

NA = Not applicable because not detected or maximum detected concentration used

TABLE 5-2
Bird and Mammal Ingestion Screening Statistics - Step 2
Quanta Resources Site, New Jersey

Chemical	Short-tailed shrew		White-footed mouse		Meadow vole		Raccoon		Long-tailed weasel		American robin		Red-tailed hawk	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Inorganics														
Arsenic	**2.56E+01**	**2.56E+00**	**1.32E+01**	**1.32E+00**	**3.50E+01**	**3.50E+00**	6.11E-01	6.11E-02	5.68E-02	<1.00E-02	**1.55E+00**	5.16E-01	<1.00E-02	<1.00E-02
Hexavalent Chromium	4.37E-01	4.37E-02	8.58E-02	<1.00E-02	1.17E-02	<1.00E-02	4.03E-02	<1.00E-02	1.54E-02	<1.00E-02	5.94E-01	1.19E-01	4.78E-02	<1.00E-02
Lead	**1.05E+01**	**1.05E+00**	**2.58E+00**	2.58E-01	**2.53E+00**	2.53E-01	**1.18E+00**	1.18E-01	6.13E-01	6.13E-02	**1.17E+01**	**1.17E+00**	**1.19E+00**	1.19E-01
Pesticides/PCBs														
4,4'-DDD	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02
4,4'-DDE	**2.99E+00**	5.98E-01	5.84E-01	1.17E-01	<1.00E-02	<1.00E-02	2.22E-01	4.44E-02	1.22E-01	2.44E-02	**1.94E+00**	1.94E-01	**1.53E+00**	1.53E-01
4,4'-DDT	4.62E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	2.86E-02	<1.00E-02	2.43E-02	<1.00E-02
Aldrin	**1.90E+00**	3.80E-01	3.63E-01	7.27E-02	1.15E-02	<1.00E-02	1.71E-01	3.42E-02	1.00E-01	2.01E-02	**2.18E+00**	2.18E-01	2.78E-01	2.78E-02
alpha-BHC	7.91E-02	3.95E-02	1.42E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	8.88E-02	2.21E-02	1.16E-02	<1.00E-02
alpha-Chlordane	9.97E-02	4.99E-02	1.92E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	8.61E-02	1.72E-02	1.09E-02	<1.00E-02
Aroclor-1016	**5.26E+02**	**5.26E+01**	**1.03E+02**	**1.03E+01**	6.89E-01	6.89E-02	**2.43E+00**	9.71E-01	**1.32E+00**	5.29E-01	**3.55E+01**	**3.55E+00**	**4.47E+00**	4.47E-01
Aroclor-1221	**5.26E+02**	**5.26E+01**	**1.03E+02**	**1.03E+01**	6.98E-01	6.98E-02	**4.83E+01**	**4.83E+00**	**2.63E+01**	**2.63E+00**	**3.55E+01**	**3.55E+00**	**4.47E+00**	4.47E-01
Aroclor-1232	**5.26E+02**	**5.26E+01**	**1.03E+02**	**1.03E+01**	6.92E-01	6.92E-02	**4.83E+01**	**4.83E+00**	**2.63E+01**	**2.63E+00**	**3.55E+01**	**3.55E+00**	**4.47E+00**	4.47E-01
Aroclor-1242	**1.73E+01**	**1.73E+00**	**3.42E+00**	3.42E-01	5.29E-02	<1.00E-02	**1.59E+00**	1.59E-01	8.80E-01	8.80E-02	**1.16E+00**	1.16E-01	1.48E-01	1.48E-02
Aroclor-1248	**1.02E+03**	**1.02E+02**	**2.00E+02**	**2.00E+01**	**1.31E+00**	1.31E-01	**4.62E+01**	**9.38E+00**	**2.52E+01**	**5.11E+00**	**6.89E+01**	**6.89E+00**	**8.69E+00**	8.69E-01
Aroclor-1254	**1.46E+01**	**1.46E+00**	**2.91E+00**	2.91E-01	4.96E-02	<1.00E-02	6.65E-01	1.35E-01	3.69E-01	7.49E-02	9.87E-01	9.87E-02	1.26E-01	1.26E-02
Aroclor-1260	**3.22E+01**	3.22E+00	**6.34E+00**	6.34E-01	7.15E-02	<1.00E-02	**1.46E+00**	2.96E-01	8.00E-01	1.62E-01	**2.17E+00**	2.17E-01	2.75E-01	2.75E-02
beta-BHC	7.92E-02	3.96E-02	1.43E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	8.89E-02	2.21E-02	1.17E-02	<1.00E-02
beta-Chlordane	3.59E-01	1.79E-01	6.90E-02	3.45E-02	<1.00E-02	<1.00E-02	3.25E-02	1.63E-02	1.88E-02	<1.00E-02	3.10E-01	6.19E-02	3.94E-02	<1.00E-02
delta-BHC	7.91E-02	3.95E-02	1.42E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	8.87E-02	2.21E-02	1.16E-02	<1.00E-02
Dieldrin	**9.07E+01**	**9.07E+00**	**1.86E+01**	**1.86E+00**	**3.95E+00**	3.95E-01	**1.26E+01**	**1.26E+00**	**6.93E+00**	6.93E-01	**1.01E+01**	**1.01E+00**	**1.26E+00**	1.26E-01
Endosulfan I	8.44E-02	<1.00E-02	1.52E-02	<1.00E-02	<1.00E-02	<1.00E-02	1.04E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02
Endosulfan II	1.71E-01	1.71E-02	3.06E-02	<1.00E-02	<1.00E-02	<1.00E-02	2.10E-02	<1.00E-02	1.49E-02	<1.00E-02	1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02
Endrin	**9.07E+00**	9.07E-01	**1.74E+00**	1.74E-01	4.98E-02	<1.00E-02	8.19E-01	8.19E-02	4.78E-01	4.78E-02	**3.36E+01**	**3.36E+00**	**4.28E+00**	4.28E-01
gamma-BHC (Lindane)	1.53E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	2.40E-02	<1.00E-02	<1.00E-02	<1.00E-02
Heptachlor	**5.33E+00**	5.33E-01	**1.02E+00**	1.02E-01	3.46E-02	<1.00E-02	3.11E-01	3.11E-02	1.84E-01	1.84E-02	5.06E-01	5.06E-02	6.45E-02	<1.00E-02
Heptachlor epoxide	**1.45E+01**	**1.45E+00**	**2.82E+00**	2.82E-01	3.49E-02	<1.00E-02	8.68E-01	8.68E-02	4.81E-01	4.81E-02	**1.38E+00**	1.38E-01	1.75E-01	1.75E-02
Methoxychlor	3.16E-01	1.58E-01	5.68E-02	2.84E-02	<1.00E-02	<1.00E-02	2.59E-02	1.30E-02	1.85E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02
Toxaphene	6.22E-01	6.22E-02	1.12E-01	1.12E-02	1.14E-02	<1.00E-02	5.10E-02	<1.00E-02	3.65E-02	<1.00E-02	**1.95E+00**	3.91E-01	2.56E-01	5.12E-02
SVOCs														
1,2,4-Trichlorobenzene	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02
1,2-Dichlorobenzene	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	1.01E-02	<1.00E-02	<1.00E-02	<1.00E-02
1,3-Dichlorobenzene	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	1.53E-02	<1.00E-02	<1.00E-02	<1.00E-02
1,4-Dichlorobenzene	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	1.53E-02	<1.00E-02	<1.00E-02	<1.00E-02
4-Bromophenyl-phenylether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl-phenylether	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	3.18E-02	1.59E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	5.76E-01	5.76E-02	8.01E-02	<1.00E-02
Acenaphthylene	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	1.85E-01	1.85E-02	2.32E-02	<1.00E-02
Anthracene	1.28E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	8.75E-01	8.75E-02	1.11E-01	1.11E-02
Benzo(a)anthracene	**2.39E+01**	**2.39E+00**	**3.61E+00**	3.61E-01	**1.42E+00**	1.42E-01	**1.48E+00**	1.48E-01	**1.75E+00**	1.75E-01	**1.25E+00**	1.25E-01	1.75E-01	1.75E-02
Benzo(a)pyrene	**3.21E+01**	**3.21E+00**	**6.51E+00**	6.51E-01	**7.15E+00**	7.15E-01	**2.77E+00**	2.77E-01	**2.54E+00**	2.54E-01	**2.17E+00**	2.17E-01	2.76E-01	2.76E-02
Benzo(b)fluoranthene	**2.94E+01**	**2.94E+00**	**9.54E+00**	9.54E-01	**2.23E+01**	**2.23E+00**	**4.00E+00**	4.00E-01	**3.34E+00**	3.34E-01	**3.22E+00**	3.22E-01	3.70E-01	3.70E-02
Benzo(g,h,i)perylene	**1.11E+01**	**1.11E+00**	**1.03E+01**	**1.03E+00**	**3.46E+01**	**3.46E+00**	**4.43E+00**	4.43E-01	**2.70E+00**	2.70E-01	**3.39E+00**	3.39E-01	3.38E-01	3.38E-02
Benzo(k)fluoranthene	**1.07E+01**	**1.07E+00**	**1.84E+00**	1.84E-01	**1.90E+00**	1.90E-01	7.40E-01	7.40E-02	8.89E-01	8.89E-02	6.48E-01	6.48E-02	8.72E-02	<1.00E-02
Chrysene	**3.57E+01**	**3.57E+00**	**5.88E+00**	5.88E-01	**1.51E+00**	1.51E-01	**2.55E+00**	2.55E-01	**2.39E+00**	2.39E-01	**1.92E+00**	1.92E-01	2.61E-01	2.61E-02

TABLE 5-2
Bird and Mammal Ingestion Screening Statistics - Step 2
Quanta Resources Site, New Jersey

Chemical	Short-tailed shrew		White-footed mouse		Meadow vole		Raccoon		Long-tailed weasel		American robin		Red-tailed hawk	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Dibenz(a,h)anthracene	**7.91E+00**	7.91E-01	**1.65E+00**	1.65E-01	**1.56E+00**	1.56E-01	7.22E-01	7.22E-02	5.84E-01	5.84E-02	5.34E-01	5.34E-02	6.72E-02	<1.00E-02
Fluoranthene	9.39E-02	<1.00E-02	3.42E-02	<1.00E-02	7.72E-02	<1.00E-02	1.48E-02	<1.00E-02	1.03E-02	<1.00E-02	**5.56E+00**	5.56E-01	6.20E-01	6.20E-02
Fluorene	2.16E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	5.43E-01	5.43E-02	7.78E-02	<1.00E-02
Hexachlorobenzene	**4.32E+00**	**2.16E+00**	8.06E-01	4.03E-01	4.94E-02	2.47E-02	3.12E-01	3.12E-02	2.00E-01	2.00E-02	**1.52E+01**	**3.05E+00**	**1.96E+00**	3.93E-01
Hexachlorobutadiene	**1.35E+00**	1.35E-01	2.43E-01	2.43E-02	2.50E-02	<1.00E-02	1.11E-01	1.11E-02	7.93E-02	<1.00E-02	3.13E-01	3.13E-02	4.10E-02	<1.00E-02
Hexachlorocyclopentadiene	1.04E-01	1.04E-02	1.88E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	NA	NA	NA	NA
Hexachloroethane	2.70E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	**1.87E+01**	**1.87E+00**	**3.79E+00**	3.79E-01	**3.68E+00**	3.68E-01	**1.64E+00**	1.64E-01	**1.42E+00**	1.42E-01	**1.24E+00**	1.24E-01	1.58E-01	1.58E-02
Pentachlorophenol	**2.22E+01**	**2.22E+00**	**4.32E+00**	4.32E-01	5.74E-02	<1.00E-02	**2.05E+00**	2.05E-01	**1.14E+00**	1.14E-01	**5.28E+00**	**2.64E+00**	6.67E-01	3.34E-01
Phenanthrene	8.50E-02	<1.00E-02	1.55E-02	<1.00E-02	1.48E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	**2.65E+00**	2.65E-01	3.48E-01	3.48E-02
Pyrene	**4.87E+01**	**4.87E+00**	**2.17E+01**	**2.17E+00**	**5.48E+01**	**5.48E+00**	**9.43E+00**	9.43E-01	**6.10E+00**	6.10E-01	**7.03E+00**	7.03E-01	7.56E-01	7.56E-02
Total PAHs [1]	**3.65E+02**	**3.65E+01**	**7.30E+01**	**7.30E+00**	**7.74E+01**	**7.74E+00**	**3.11E+01**	**3.11E+00**	**2.87E+01**	**2.87E+00**	**2.43E+01**	**2.43E+00**	**3.11E+00**	3.11E-01
VOCs														
1,1,2,2-Tetrachloroethane	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	<1.00E-02	NA	NA	NA	NA

[1] The total PAHs concentrations used for ingestion exposure is the sum of indivdual PAHs considered bioaccumulative (USEPA 2000)
NA = Not applicable because no screening value was available and a hazard quotient could not be calculated

TABLE 5-3
COPC Summary - Step 2
Quanta Resources Site, New Jersey

Chemical	Receptor (Exposure Media)							
	Terr. plant and soil invert. (soil)	**Meadow vole** (soil, terr. plant, water)	**White-footed mouse** (soil, terr. plant, soil invert., water)	**Short-tailed shrew** (soil, soil invert., water)	**Raccoon** (soil, terr. plant, soil invert., water)	**Long-tailed weasel** (soil, mouse, vole, shrew, water)	**American robin** (soil, terr. plant, soil invert., water)	**Red-tailed hawk** (soil, mouse, vole, shrew, water)
Inorganics (mg/kg)								
Arsenic	X	X	X	X			X	
Chromium	X							
Hexavalent Chromium	X							
Lead	X	X	X	X	X		X	X
Pesticides/PCBs (ug/kg)								
4,4'-DDE				X			X	X
Aldrin	X			X			X	
alpha-BHC	X							
alpha-Chlordane	X							
Aroclor-1016	X		X	X	X	X	X	X
Aroclor-1221	X		X	X	X	X	X	X
Aroclor-1232	X		X	X	X	X	X	X
Aroclor-1242			X	X	X		X	
Aroclor-1248	X	X	X	X	X	X	X	X
Aroclor-1254			X	X				
Aroclor-1260			X	X	X		X	
beta-BHC	X							
beta-Chlordane	X							
delta-BHC	X							
Dieldrin	X	X	X	X	X	X	X	X
Endosulfan I	X							
Endosulfan II	X							
Endosulfan sulfate	X							
Endrin	X		X	X			X	X
Endrin aldehyde	X							
Endrin ketone	X							
gamma-BHC (Lindane)	X							
Heptachlor	X		X	X				
Heptachlor epoxide	X		X	X			X	
Methoxychlor	X							
Toxaphene	X						X	
SVOCs (ug/kg)								
1,1'-Biphenyl	X							
1,2,4-Trichlorobenzene	X							
2,2'-oxybis(1-Chloropropane)	X							
2,4,5-Trichlorophenol	X							
2,4,6-Trichlorophenol	X							
2,4-Dimethylphenol	X							
2,4-Dinitrophenol	X							
2,4-Dinitrotoluene	X							
2,6-Dinitrotoluene	X							
2-Chloronaphthalene	X							
2-Chlorophenol	X							
2-Methylnaphthalene	X							
2-Methylphenol	X							
2-Nitroaniline	X							
2-Nitrophenol	X							
3,3'-Dichlorobenzidine	X							
3-Nitroaniline	X							
4,6-Dinitro-2-methylphenol	X							
4-Bromophenyl Phenyl Ether	X							
4-Chloro-3-methylphenol	X							
4-Chloroaniline	X							
4-Chlorophenyl phenyl ether	X							
4-Methylphenol	X							
4-Nitroaniline	X							
4-Nitrophenol	X							
Acenaphthene	X							
Acenaphthylene	X							

TABLE 5-3
COPC Summary - Step 2
Quanta Resources Site, New Jersey

Chemical	Receptor (Exposure Media)							
	Terr. plant and soil invert. (soil)	**Meadow vole** (soil, terr. plant, water)	**White-footed mouse** (soil, terr. plant, soil invert., water)	**Short-tailed shrew** (soil, soil invert., water)	**Raccoon** (soil, terr. plant, soil invert., water)	**Long-tailed weasel** (soil, mouse, vole, shrew, water)	**American robin** (soil, terr. plant, soil invert., water)	**Red-tailed hawk** (soil, mouse, vole, shrew, water)
Acetophenone	X							
Anthracene	X							
Atrazine	X							
Benzaldehyde	X							
Benzo(a)anthracene	X	X	X	X	X	X	X	
Benzo(a)pyrene	X	X	X	X	X	X	X	
Benzo(b)fluoranthene	X	X	X	X	X	X	X	
Benzo(g,h,i)perylene	X	X	X	X	X	X	X	
Benzo(k)fluoranthene	X	X	X	X				
bis(2-Chloroethoxy)methane	X							
bis(2-Chloroethyl)ether	X							
Caprolactam	X							
Carbazole	X							
Chrysene	X	X	X	X	X	X	X	
Dibenz(a,h)anthracene	X	X	X	X				
Dibenzofuran	X							
Diethylphthalate	X							
Dimethylphthalate	X							
Fluoranthene	X						X	
Fluorene	X							
Hexachlorobenzene	X			X			X	X
Hexachlorobutadiene	X			X				
Hexachlorocyclopentadiene	X							
Hexachloroethane	X							
Indeno(1,2,3-cd)pyrene	X	X	X	X	X	X	X	
Isophorone	X							
N-Nitroso-di-n-propylamine	X							
Naphthalene	X							
Pentachlorophenol	X		X	X	X	X	X	
Phenanthrene	X						X	
Pyrene	X	X	X	X	X	X	X	
Total PAHs[2]	X	X	X	X	X	X	X	X
VOCs (ug/kg)								
1,1,1-Trichloroethane	X							
1,1,2,2-Tetrachloroethane	X							
1,1,2-Trichloroethane	X							
1,1,2-Trichlorotrifluoroethane	X							
1,1-Dichloroethane	X							
1,1-Dichloroethene	X							
1,2-Dibromo-3-Chloropropane	X							
1,2-Dibromoethane	X							
1,2-Dichloroethane	X							
1,2-Dichloropropane	X							
2-Butanone	X							
2-Hexanone	X							
4-Methyl-2-Pentanone	X							
Acetone	X							
Benzene	X							
Bromodichloromethane	X							
Bromoform	X							
Bromomethane	X							
Carbon Disulfide	X							
Carbon Tetrachloride	X							
Chlorodibromomethane	X							
Chloroethane	X							
Chloroform	X							
Chloromethane	X							
cis-1,2-Dichloroethene	X							
cis-1,3-Dichloropropene	X							
Cyclohexane	X							
Dichlorodifluoromethane	X							

TABLE 5-3
COPC Summary - Step 2
Quanta Resources Site, New Jersey

Chemical	Receptor (Exposure Media)							
	Terr. plant and soil invert. (soil)	**Meadow vole** (soil, terr. plant, water)	**White-footed mouse** (soil, terr. plant, soil invert., water)	**Short-tailed shrew** (soil, soil invert., water)	**Raccoon** (soil, terr. plant, soil invert., water)	**Long-tailed weasel** (soil, mouse, vole, shrew, water)	**American robin** (soil, terr. plant, soil invert., water)	**Red-tailed hawk** (soil, mouse, vole, shrew, water)
Ethylbenzene	X							
Isopropylbenzene	X							
Methyl Acetate	X							
Methyl tert-butyl Ether	X							
Methylcyclohexane	X							
Methylene Chloride	X							
Tetrachloroethene	X							
trans-1,2-Dichloroethene	X							
trans-1,3-Dichloropropene	X							
Trichlorofluoromethane	X							
Vinyl Chloride	X							
Xylene (Total)	X							

TABLE 6-1
Soil Bioconcentration Factors - COPC Refinement
Quanta Resources Site, New Jersey

Chemical	K_{ow}		Soil-Plant BCF (dry weight)		Soil-Invertebrate BAF (dry weight)		Soil-Mouse BAF (dry weight)		Soil-Vole BAF (dry weight)		Soil-Shrew BAF (dry weight)	
	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference
Inorganics												
Arsenic	--	--	3.71E-02	Geometric mean; Bechtel Jacobs 1998	2.58E-01	Arithmetic mean; Sample et al 1998a	Not Applicable		Not Applicable		Not Applicable	
Lead	--	--	3.58E-01	Geometric mean; Bechtel Jacobs 1998	2.48E+00	Geometric mean; Sample et al 1998a	Not Applicable		Not Applicable		Not Applicable	
Pesticides/PCBs												
4,4'-DDE	6.76E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.06E+01	Not specified; Menzie et al. 1992	--	see text	--	see text	--	see text
Aldrin	6.50E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	3.30E+00	Not specified; Edwards and Bohlen 1992	Not Applicable		Not Applicable		Not Applicable	
Aroclor-1016	5.60E+00	Sample et al. 1996	Regression Equation Based on K_{ow}	USEPA 2005c	4.30E+00	Geometric mean; Sample et al 1998a	--	see text	--	see text	--	see text
Aroclor-1221	4.70E+00	Jones et al. 1997	Regression Equation Based on K_{ow}	USEPA 2005c	4.30E+00	Geometric mean; Sample et al 1998a	--	see text	--	see text	--	see text
Aroclor-1232	5.10E+00	Jones et al. 1997	Regression Equation Based on K_{ow}	USEPA 2005c	4.30E+00	Geometric mean; Sample et al 1998a	--	see text	--	see text	--	see text
Aroclor-1242	5.60E+00	Jones et al. 1997	Regression Equation Based on K_{ow}	USEPA 2005c	4.30E+00	Geometric mean; Sample et al 1998a	Not Applicable		Not Applicable		Not Applicable	
Aroclor-1248	--	--	3.31E-05	USEPA 2005c	4.30E+00	Geometric mean; Sample et al 1998a	--	see text	--	see text	--	see text
Aroclor-1254	--	--	2.01E-05	USEPA 2005c	4.30E+00	Geometric mean; Sample et al 1998a	Not Applicable		Not Applicable		Not Applicable	
Aroclor-1260	--	--	1.22E-05	USEPA 2005c	4.30E+00	Geometric mean; Sample et al 1998a	Not Applicable		Not Applicable		Not Applicable	
Dieldrin	--	--	4.10E-01	Median; USEPA 2005c	8.00E+00	Geometric mean; Beyer and Gish 1980	--	see text	--	see text	--	see text
Endrin	5.06E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	3.60E+00	Not specified; Edwards and Bohlen 1992	--	see text	--	see text	--	see text
Heptachlor	6.26E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	3.00E+00	Not specified; Edwards and Bohlen 1992	Not Applicable		Not Applicable		Not Applicable	
Heptachlor epoxide	5.00E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	8.39E+00	Single value; USEPA 1999	Not Applicable		Not Applicable		Not Applicable	
Toxaphene	5.50E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.00E+00	Assumed	Not Applicable		Not Applicable		Not Applicable	
SVOCs												
Benzo(a)anthracene	--	--	Regression Equation	USEPA 2005c	2.70E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Benzo(a)pyrene	--	--	Regression Equation	USEPA 2005c	3.40E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Benzo(b)fluoranthene	--	--	3.10E-01	USEPA 2005c	2.10E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Benzo(g,h,i)perylene	--	--	6.09E-03	USEPA 2005c	1.50E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Benzo(k)fluoranthene	--	--	Regression Equation	USEPA 2005c	2.10E-01	Median; Beyer and Stafford 1993	Not Applicable		Not Applicable		Not Applicable	
Chrysene	--	--	Regression Equation	USEPA 2005c	4.40E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Dibenz(a,h)anthracene	--	--	1.30E-01	USEPA 2005c	4.90E-01	Median; Beyer and Stafford 1993	Not Applicable		Not Applicable		Not Applicable	
Fluoranthene	--	--	5.00E-01	USEPA 2005c	3.70E-01	Median; Beyer and Stafford 1993	Not Applicable		Not Applicable		Not Applicable	

TABLE 6-1
Soil Bioconcentration Factors - COPC Refinement
Quanta Resources Site, New Jersey

Chemical	K_{ow}		Soil-Plant BCF (dry weight)		Soil-Invertebrate BAF (dry weight)		Soil-Mouse BAF (dry weight)		Soil-Vole BAF (dry weight)		Soil-Shrew BAF (dry weight)	
	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference	Value	Reference
Hexachlorobenzene	5.89E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	1.69E+00	Mean; Beyer 1996	--	see text	--	see text	--	see text
Hexachlorobutadiene	--	--	Not Applicable		1.00E+00	Assumed	Not Applicable		Not Applicable		Not Applicable	
Indeno(1,2,3-cd)pyrene	--	--	1.10E-01	USEPA 2005c	4.10E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text
Pentachlorophenol	5.09E+00	USEPA 1995a	Regression Equation Based on K_{ow}	USEPA 2005c	5.18E+00	Arithmetic average; van Gestel and Ma 1988	--	see text	--	see text	--	see text
Phenanthrene	--	--	Regression Equation	USEPA 2005c	2.80E-01	Median; Beyer and Stafford 1993	Not Applicable		Not Applicable		Not Applicable	
Pyrene	--	--	7.20E-01	USEPA 2005c	3.90E-01	Median; Beyer and Stafford 1993	--	see text	--	see text	--	see text

Not Applicable = Dietary item not part of constituent-receptor pathway retained from Step 2 (see Table 5-3)
BAF = Bioaccumulation Factor
BCF = Bioconcentration Factor
K_{ow} = Octanol-water partition coefficient

TABLE 6-2
Exposure Parameters for Upper Trophic Level Ecological Receptors - COPC Refinement
Quanta Resources Site, New Jersey

Receptor	Average Body Weight (kg)		Water Ingestion Rate (L/day)		Food Ingestion Rate (kg/day - dry)	
	Value	Reference	Value	Reference	Value	Reference
Mammals						
White-footed mouse	0.0208	mean for M/F - MD	0.0062	30% of mean BW; Sample and Suter 1994	0.0005	15.5% of mean BW; Sample and Suter 1994
Short-tailed shrew	0.017	avg mean for M/F - PA; USEPA 1993	0.0038	22.3% of mean BW; USEPA 1993	0.0015	55.5% of mean BW; USEPA 1993
Meadow vole	0.043	mean for M/F - MD; Silva and Downing 1995	0.0090	21% of mean BW; USEPA 1993	0.0021	32.5% of mean BW; USEPA 1993
Raccoon	5.94	mean for M/F - IN; Silva and Downing 1995	0.4921	allometric equation for mammals based on mean BW; USEPA 1993	0.0856	9.3% of mean BW; Conover 1989
Long-tailed Weasel	0.225	mean for M/F - NV; Brown and Lasiewski, 1972	0.0259	allometric equation for mammals based on mean BW; USEPA 1993	0.0051	Based on mean metabolic rate (Brown and Lasiewski, 1972) and energy content of food (Golley, 1961)
Birds						
American robin	0.077	avg for M/F - PA; USEPA 1993	0.0106	allometric equation for birds based on avg BW; USEPA 1993	0.0055	weighted by diet component; Levey and Karasov 1989
Red-tailed hawk	1.13	average; USEPA 1993	0.0639	allometric equation for birds based on avg BW; USEPA 1993	0.0360	10% of avg BW; Sample and Suter 1994

BW = Body Weight
F = Female
M = Male

TABLE 6-2
Exposure Parameters for Upper Trophic Level Ecological Receptors - COPC Refinement
Quanta Resources Site, New Jersey

Receptor	Dietary Composition (percent)						Soil Ingestion (percent)	
	Terr. Plants	Soil Invert.	Mouse	Vole	Shrew	Reference	Value	Reference
Mammals								
White-footed mouse	51	47	0	0	0	Martin et al. 1951; Sample and Suter 1994	2.0	Beyer et al. 1994
Short-tailed shrew	0	87	0	0	0	Assumed	13	Sample and Suter 1994
Meadow vole	98	0	0	0	0	Assumed	2.4	Beyer et al. 1994
Raccoon	45	45	0	0	0	Assumed	9.4	Beyer et al. 1994; Value for sediment based on aquatic diet
Long-tailed Weasel	0	0	32	32	32	Assumed	2.8	Beyer et al. 1994; Value is for red fox (diet assumed comparable)
Birds								
American robin	52	44	0	0	0	Martin et al. 1951	4.6	Sample and Suter 1994
Red-tailed hawk	0	0	34	33	33	USEPA 1993a; Sample and Suter 1994	0	Sample and Suter 1994

BW = Body Weight
F = Female
M = Male

TABLE 6-3
Surface Soil Direct Exposure Screening Statistics - COPC Refinement
Quanta Resources Site, New Jersey

Chemical	Average Concentration	Screening Value	Hazard Quotient	Hazard Quotient ≥ 1.0
Inorganics (mg/kg)				
Arsenic	1.33E+01	1.80E+01	7.40E-01	No
Chromium	2.07E+01	4.00E-01	**5.17E+01**	**Yes**
Hexavalent Chromium	1.60E+00	No Screening Value		
Lead	1.47E+02	1.20E+02	**1.23E+00**	**Yes**
Pesticides/PCBs (ug/kg)				
Aldrin	2.24E+02	2.50E+00	**8.97E+01**	**Yes**
alpha-BHC	2.24E+02	2.50E+00	**8.97E+01**	**Yes**
alpha-Chlordane	2.24E+02	No Screening Value		
Aroclor-1016	1.47E+03	2.51E+03	5.87E-01	No
Aroclor-1221	1.43E+03	2.51E+03	5.71E-01	No
Aroclor-1232	1.45E+03	2.51E+03	5.77E-01	No
Aroclor-1248	2.78E+03	2.51E+03	**1.11E+00**	**Yes**
beta-BHC	2.24E+02	No Screening Value		
beta-Chlordane	8.19E+02	No Screening Value		
delta-BHC	2.26E+02	No Screening Value		
Dieldrin	4.61E+02	5.00E-01	**9.21E+02**	**Yes**
Endosulfan I	2.24E+02	No Screening Value		
Endosulfan II	4.61E+02	No Screening Value		
Endosulfan sulfate	4.61E+02	No Screening Value		
Endrin	4.61E+02	1.00E+00	**4.61E+02**	**Yes**
Endrin aldehyde	4.61E+02	No Screening Value		
Endrin ketone	4.61E+02	No Screening Value		
gamma-BHC (Lindane)	2.24E+02	No Screening Value		
Heptachlor	2.24E+02	No Screening Value		
Heptachlor epoxide	2.24E+02	No Screening Value		
Methoxychlor	2.24E+03	No Screening Value		
Toxaphene	8.98E+03	No Screening Value		
SVOCs (ug/kg)				
1,1'-Biphenyl	1.51E+04	6.00E+04	2.51E-01	No
1,2,4-Trichlorobenzene	3.57E+02	No Screening Value		
2,2'-oxybis(1-Chloropropane)	3.76E+03	No Screening Value		
2,4,5-Trichlorophenol	3.76E+03	9.00E+03	4.18E-01	No
2,4,6-Trichlorophenol	3.76E+03	4.00E+03	9.40E-01	No
2,4-Dimethylphenol	4.18E+03	No Screening Value		
2,4-Dinitrophenol	4.43E+04	No Screening Value		
2,4-Dinitrotoluene	3.76E+03	No Screening Value		
2,6-Dinitrotoluene	3.76E+03	No Screening Value		
2-Chloronaphthalene	3.76E+03	No Screening Value		
2-Chlorophenol	3.76E+03	1.00E+01	**3.76E+02**	**Yes**
2-Methylnaphthalene	9.09E+04	No Screening Value		
2-Methylphenol	3.97E+03	No Screening Value		
2-Nitroaniline	3.76E+03	No Screening Value		
2-Nitrophenol	3.76E+03	7.00E+03	5.37E-01	No

TABLE 6-3
Surface Soil Direct Exposure Screening Statistics - COPC Refinement
Quanta Resources Site, New Jersey

Chemical	Average Concentration	Screening Value	Hazard Quotient	Hazard Quotient ≥ 1.0
3,3'-Dichlorobenzidine	7.39E+03	No Screening Value		
3-Nitroaniline	3.76E+03	No Screening Value		
4,6-Dinitro-2-methylphenol	1.12E+04	No Screening Value		
4-Bromophenyl Phenyl Ether	3.76E+03	No Screening Value		
4-Chloro-3-methylphenol	3.76E+03	No Screening Value		
4-Chloroaniline	3.76E+03	No Screening Value		
4-Chlorophenyl phenyl ether	3.76E+03	No Screening Value		
4-Methylphenol	4.17E+03	No Screening Value		
4-Nitroaniline	3.91E+03	No Screening Value		
4-Nitrophenol	1.12E+04	7.00E+03	**1.60E+00**	**Yes**
Acenaphthene	5.83E+04	2.00E+04	**2.92E+00**	**Yes**
Acenaphthylene	1.64E+04	2.00E+04	8.21E-01	No
Acetophenone	3.83E+03	No Screening Value		
Anthracene	9.21E+04	1.00E+02	**9.21E+02**	**Yes**
Atrazine	3.76E+03	6.00E+02	**6.27E+00**	**Yes**
Benzaldehyde	3.76E+03	No Screening Value		
Benzo(a)anthracene	1.47E+05	1.00E+02	**1.47E+03**	**Yes**
Benzo(a)pyrene	1.51E+05	1.00E+02	**1.51E+03**	**Yes**
Benzo(b)fluoranthene	1.88E+05	1.00E+02	**1.88E+03**	**Yes**
Benzo(g,h,i)perylene	8.78E+04	1.00E+02	**8.78E+02**	**Yes**
Benzo(k)fluoranthene	7.93E+04	1.00E+02	**7.93E+02**	**Yes**
bis(2-Chloroethoxy)methane	3.76E+03	No Screening Value		
bis(2-Chloroethyl)ether	3.76E+03	No Screening Value		
Caprolactam	3.79E+03	No Screening Value		
Carbazole	3.32E+04	No Screening Value		
Chrysene	1.55E+05	1.00E+02	**1.55E+03**	**Yes**
Dibenz(a,h)anthracene	2.70E+04	1.00E+02	**2.70E+02**	**Yes**
Dibenzofuran	1.55E+05	No Screening Value		
Diethylphthalate	3.76E+03	1.00E+02	**3.76E+01**	**Yes**
Dimethylphthalate	3.76E+03	2.00E+02	**1.88E+01**	**Yes**
Fluoranthene	3.08E+05	1.00E+02	**3.08E+03**	**Yes**
Fluorene	7.23E+04	1.00E+02	**7.23E+02**	**Yes**
Hexachlorobenzene	3.76E+03	2.50E+00	**1.50E+03**	**Yes**
Hexachlorobutadiene	3.76E+03	No Screening Value		
Hexachlorocyclopentadiene	1.12E+04	1.00E+04	**1.12E+00**	**Yes**
Hexachloroethane	3.76E+03	No Screening Value		
Indeno(1,2,3-cd)pyrene	8.12E+04	1.00E+02	**8.12E+02**	**Yes**
Isophorone	3.76E+03	No Screening Value		
Naphthalene	2.05E+05	1.00E+02	**2.05E+03**	**Yes**
N-Nitroso-di-n-propylamine	3.76E+03	No Screening Value		
Pentachlorophenol	1.12E+04	3.00E+03	**3.73E+00**	**Yes**
Phenanthrene	3.05E+05	1.00E+02	**3.05E+03**	**Yes**
Pyrene	2.71E+05	3.00E+05	9.05E-01	No
Total PAHs [1]	1.61E+06	4.10E+03	**3.93E+02**	**Yes**
VOCs (ug/kg)				
1,1,1-Trichloroethane	3.57E+02	No Screening Value		
1,1,2,2-Tetrachloroethane	3.57E+02	No Screening Value		
1,1,2-Trichloroethane	3.57E+02	No Screening Value		

TABLE 6-3

Surface Soil Direct Exposure Screening Statistics - COPC Refinement

Quanta Resources Site, New Jersey

Chemical	Average Concentration	Screening Value	Hazard Quotient	Hazard Quotient ≥ 1.0
1,1,2-Trichlorotrifluoroethane	7.09E+02	No Screening Value		
1,1-Dichloroethane	3.57E+02	4.00E+02	8.92E-01	No
1,1-Dichloroethene	3.57E+02	No Screening Value		
1,2-Dibromo-3-Chloropropane	3.57E+02	No Screening Value		
1,2-Dibromoethane	3.57E+02	No Screening Value		
1,2-Dichloroethane	3.57E+02	4.00E+02	8.92E-01	No
1,2-Dichloropropane	3.57E+02	No Screening Value		
2-Butanone	7.10E+02	No Screening Value		
2-Hexanone	7.09E+02	No Screening Value		
4-Methyl-2-Pentanone	7.09E+02	No Screening Value		
Acetone	1.44E+03	No Screening Value		
Benzene	4.80E+02	1.05E+02	**4.57E+00**	**Yes**
Bromodichloromethane	3.57E+02	No Screening Value		
Bromoform	3.57E+02	No Screening Value		
Bromomethane	3.57E+02	No Screening Value		
Carbon Disulfide	3.57E+02	No Screening Value		
Carbon Tetrachloride	3.57E+02	1.00E+03	3.57E-01	No
Chlorodibromomethane	3.57E+02	No Screening Value		
Chloroethane	2.98E+02	No Screening Value		
Chloroform	3.57E+02	1.00E+03	3.57E-01	No
Chloromethane	3.57E+02	No Screening Value		
cis-1,2-Dichloroethene	3.57E+02	No Screening Value		
cis-1,3-Dichloropropene	3.57E+02	No Screening Value		
Cyclohexane	3.57E+02	No Screening Value		
Dichlorodifluoromethane	3.57E+02	No Screening Value		
Ethylbenzene	6.08E+02	5.01E+03	1.22E-01	No
Isopropylbenzene	3.81E+02	No Screening Value		
Methyl Acetate	4.33E+02	No Screening Value		
Methyl tert-butyl Ether	3.57E+02	No Screening Value		
Methylcyclohexane	3.57E+02	No Screening Value		
Methylene Chloride	3.57E+02	2.00E+03	1.78E-01	No
Tetrachloroethene	3.64E+02	4.01E+02	9.08E-01	No
trans-1,2-Dichloroethene	3.57E+02	No Screening Value		
trans-1,3-Dichloropropene	3.57E+02	No Screening Value		
Trichlorofluoromethane	1.25E+03	No Screening Value		
Vinyl Chloride	3.57E+02	1.00E+01	**3.57E+01**	**Yes**
Xylene (Total)	3.71E+03	2.51E+03	**1.48E+00**	**Yes**

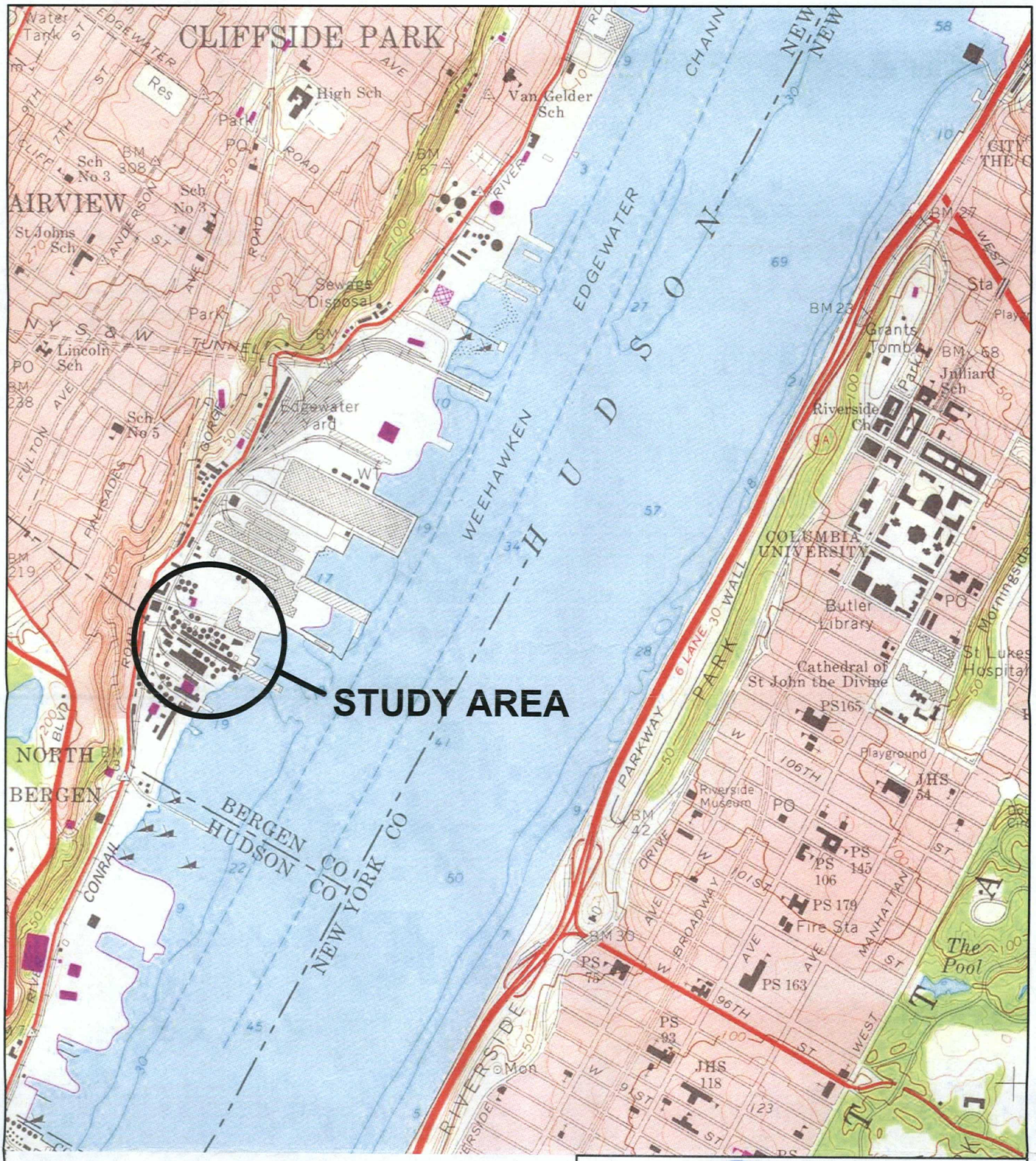
[1] The total PAHs concentration used for direct exposure is the sum of 10 indivdual PAHs

TABLE 6-4
Bird and Mammal Ingestion Screening Statistics - COPC Refinement
Quanta Resources Site, New Jersey

Chemical	Short-tailed shrew		White-footed mouse		Meadow vole		Raccoon		Long-tailed weasel		American robin		Red-tailed hawk	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Inorganics														
Arsenic	**3.33E+00**	3.33E-01	4.06E-01	4.06E-02	3.10E-01	3.10E-02	--	--	--	--	6.86E-02	2.29E-02	--	--
Lead	6.48E-01	6.48E-02	8.09E-02	<1.00E-02	5.45E-02	<1.00E-02	4.14E-02	<1.00E-02	--	--	5.44E-01	5.44E-02	9.88E-02	<1.00E-02
Pesticides/PCBs														
4,4'-DDE	4.78E-01	9.56E-02	--	--	--	--	--	--	--	--	3.06E-01	3.06E-02	1.82E-01	1.82E-02
Aldrin	2.99E-01	5.97E-02	--	--	--	--	--	--	--	--	3.39E-01	3.39E-02	--	--
Aroclor-1016	**7.45E+00**	7.45E-01	**1.06E+00**	1.06E-01	--	--	3.02E-02	1.21E-02	1.05E-02	<1.00E-02	4.92E-01	4.92E-02	4.70E-02	<1.00E-02
Aroclor-1221	**7.25E+00**	7.25E-01	**1.04E+00**	1.04E-01	--	--	5.84E-01	5.84E-02	2.03E-01	2.03E-02	4.79E-01	4.79E-02	4.58E-02	<1.00E-02
Aroclor-1232	**7.32E+00**	7.32E-01	**1.05E+00**	1.05E-01	--	--	5.90E-01	5.90E-02	2.05E-01	2.05E-02	4.84E-01	4.84E-02	4.62E-02	<1.00E-02
Aroclor-1242	**7.50E+00**	7.50E-01	**1.07E+00**	1.07E-01	--	--	6.04E-01	6.04E-02	--	--	4.95E-01	4.95E-02	--	--
Aroclor-1248	**1.40E+01**	**1.40E+00**	**2.00E+00**	2.00E-01	5.03E-02	<1.00E-02	5.58E-01	1.13E-01	1.93E-01	3.92E-02	9.28E-01	9.28E-02	8.85E-02	<1.00E-02
Aroclor-1254	**7.49E+00**	7.49E-01	**1.07E+00**	1.07E-01	--	--	--	--	--	--	--	--	--	--
Aroclor-1260	**1.46E+01**	**1.46E+00**	**2.09E+00**	2.09E-01	--	--	5.82E-01	1.18E-01	--	--	9.68E-01	9.68E-02	--	--
Dieldrin	**1.45E+01**	**1.45E+00**	**2.20E+00**	2.20E-01	4.77E-01	4.77E-02	**1.81E+00**	1.81E-01	5.86E-01	5.86E-02	**1.60E+00**	1.60E-01	1.48E-01	1.48E-02
Endrin	**1.45E+00**	1.45E-01	2.06E-01	2.06E-02	--	--	--	--	--	--	**5.31E+00**	5.31E-01	5.07E-01	5.07E-02
Heptachlor	8.39E-01	8.39E-02	1.18E-01	1.18E-02	--	--	--	--	--	--	--	--	--	--
Heptachlor epoxide	**2.27E+00**	2.27E-01	3.28E-01	3.28E-02	--	--	--	--	--	--	2.15E-01	2.15E-02	--	--
Toxaphene	--	--	--	--	--	--	--	--	--	--	3.09E-01	6.18E-02	--	--
SVOCs														
Benzo(a)anthracene	**4.78E+00**	4.78E-01	5.40E-01	5.40E-02	2.37E-01	2.37E-02	2.69E-01	2.69E-02	2.23E-01	2.23E-02	2.50E-01	2.50E-02	--	--
Benzo(a)pyrene	**5.73E+00**	5.73E-01	8.66E-01	8.66E-02	9.89E-01	9.89E-02	4.48E-01	4.48E-02	2.73E-01	2.73E-02	3.84E-01	3.84E-02	--	--
Benzo(b)fluoranthene	**5.23E+00**	5.23E-01	**1.26E+00**	1.26E-01	**3.00E+00**	3.00E-01	6.42E-01	6.42E-02	3.41E-01	3.41E-02	5.66E-01	5.66E-02	--	--
Benzo(g,h,i)perylene	**2.03E+00**	2.03E-01	**1.15E+00**	1.15E-01	**3.84E+00**	3.84E-01	5.99E-01	5.99E-02	2.19E-01	2.19E-02	5.08E-01	5.08E-02	--	--
Benzo(k)fluoranthene	**2.20E+00**	2.20E-01	2.90E-01	2.90E-02	3.31E-01	3.31E-02	--	--	--	--	--	--	--	--
Chrysene	**7.06E+00**	7.06E-01	8.65E-01	8.65E-02	2.49E-01	2.49E-02	4.55E-01	4.55E-02	2.89E-01	2.89E-02	3.77E-01	3.77E-02	--	--
Dibenz(a,h)anthracene	**1.33E+00**	1.33E-01	2.06E-01	2.06E-02	1.99E-01	1.99E-02	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--	--	--	--	**1.45E+00**	1.45E-01	--	--
Hexachlorobenzene	5.35E-01	2.68E-01	--	--	--	--	--	--	--	--	**1.86E+00**	3.72E-01	1.81E-01	3.63E-02
Hexachlorobutadiene	1.67E-01	1.67E-02	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	**3.51E+00**	3.51E-01	5.27E-01	5.27E-02	5.22E-01	5.22E-02	2.77E-01	2.77E-02	1.58E-01	1.58E-02	2.30E-01	2.30E-02	--	--
Pentachlorophenol	**1.84E+00**	1.84E-01	2.64E-01	2.64E-02	--	--	1.51E-01	1.51E-02	5.18E-02	<1.00E-02	4.31E-01	2.16E-01	--	--
Phenanthrene	--	--	--	--	--	--	--	--	--	--	6.68E-01	6.68E-02	--	--
Pyrene	**1.13E+01**	**1.13E+00**	**3.72E+00**	3.72E-01	**9.62E+00**	9.62E-01	**1.97E+00**	1.97E-01	7.43E-01	7.43E-02	**1.61E+00**	1.61E-01	--	--
Total PAHs [1]	**7.72E+01**	**7.72E+00**	**1.15E+01**	**1.15E+00**	**1.26E+01**	**1.26E+00**	**5.95E+00**	5.95E-01	**3.65E+00**	3.65E-01	**5.11E+00**	5.11E-01	4.74E-01	4.74E-02

[1] The total PAHs concentrations used for ingestion exposure is the sum of indivdual PAHs considered bioaccumulative (USEPA 2000)
NA = Not applicable because no screening value was available and a hazard quotient could not be calculated
-- = Hazard quotient not calculated because chemical not retained as Step 2 COPC for receptor

Figures



Map Source:
Central Park, NY-NJ,
U.S.G.S.
7.5 Min. Quad

N

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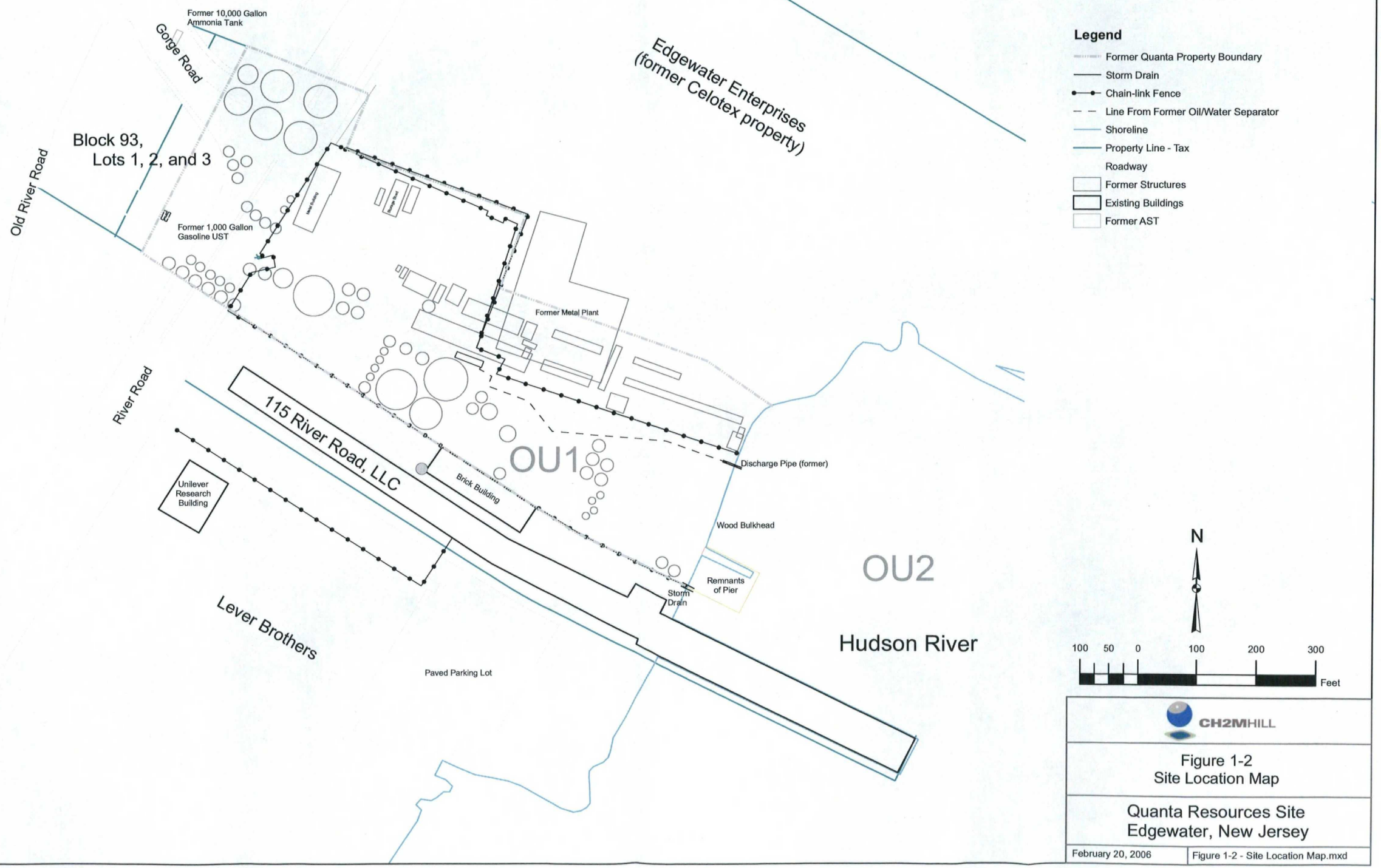
Figure 1-1
Study Area Location Map

Quanta Resources Site
Edgewater, New Jersey

February 7, 2006 | Fig1-01.mxd


Former 10,000 Gallon Ammonia Tank
Gorge Road
Block 93, Lots 1, 2, and 3
Old River Road
Former 1,000 Gallon Gasoline UST
Edgewater Enterprises (former Celotex property)
Former Metal Plant
River Road
115 River Road, LLC
OU1
Discharge Pipe (former)
Brick Building
Unilever Research Building
Wood Bulkhead
OU2
Remnants of Pier
Storm Drain
Lever Brothers
Hudson River
Paved Parking Lot
Legend
Former Quanta Property Boundary
Storm Drain
Chain-link Fence
Line From Former Oil/Water Separator
Shoreline
Property Line - Tax
Roadway
Former Structures
Existing Buildings
Former AST
N
100 50 0 100 200 300
Feet
CH2MHILL
Figure 1-2
Site Location Map
Quanta Resources Site
Edgewater, New Jersey
February 20, 2006
Figure 1-2 - Site Location Map.mxd

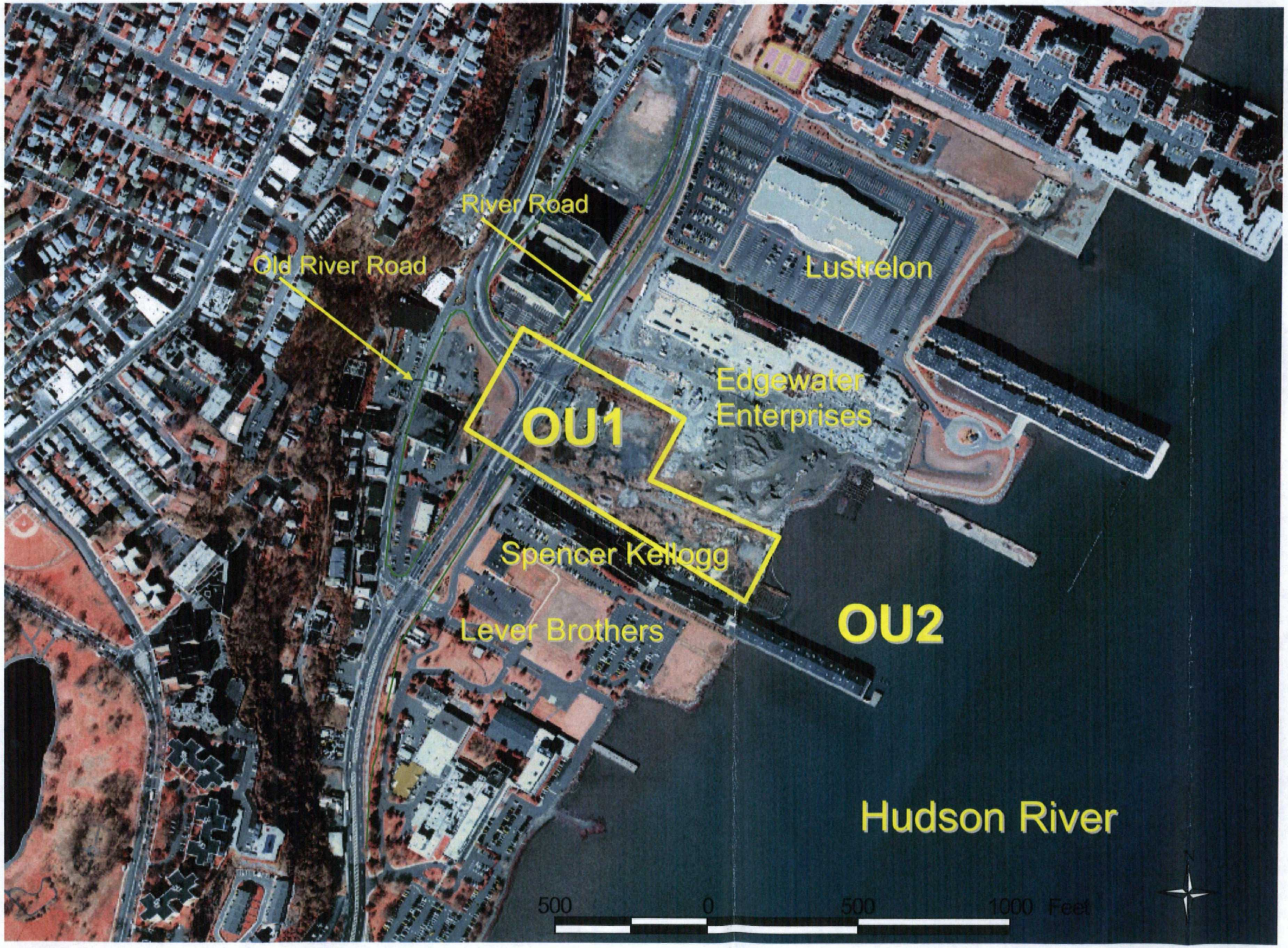


FIGURE 2-1
Aerial View of Site

Quanta Resources Site
Edgewater, New Jersey

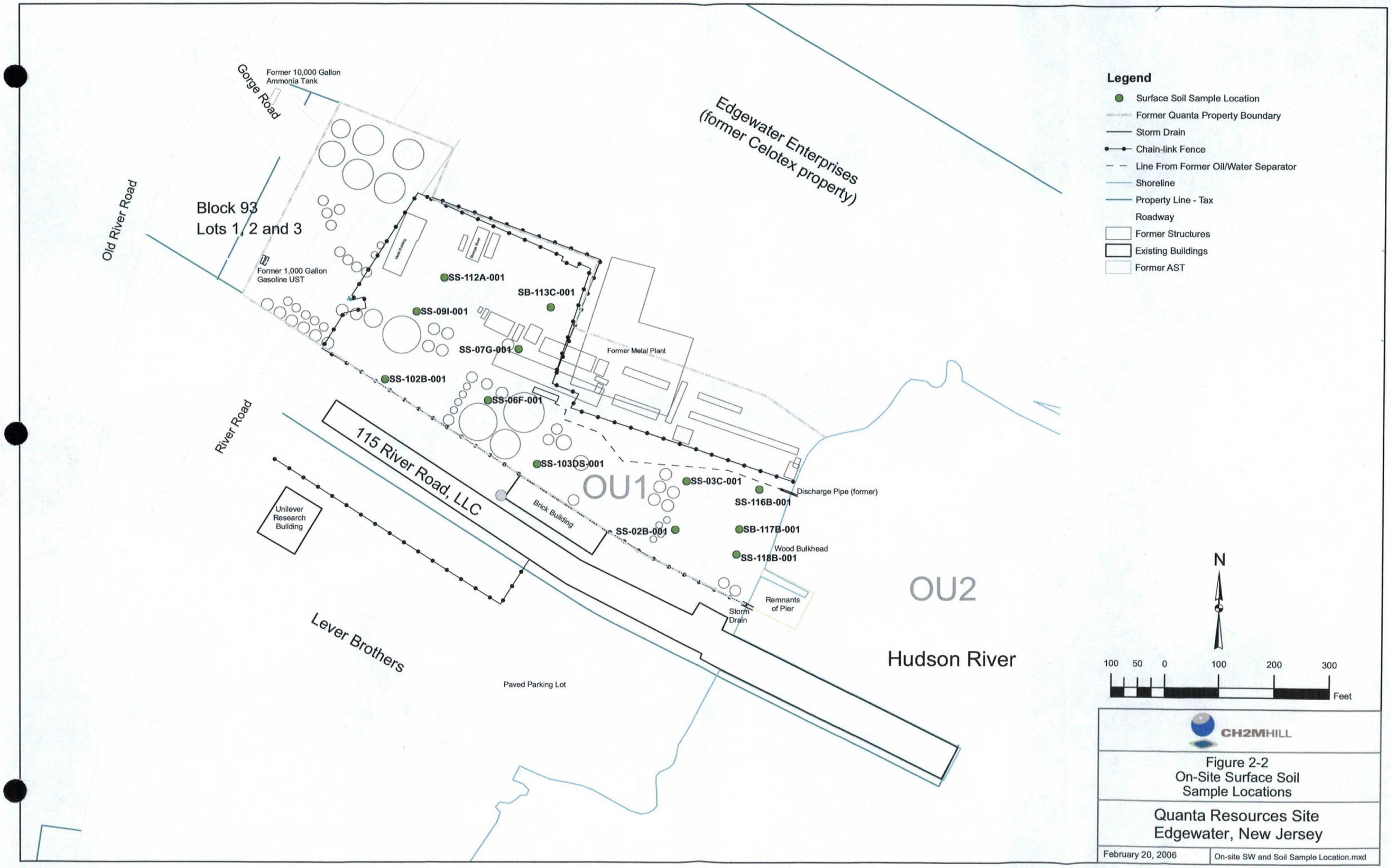


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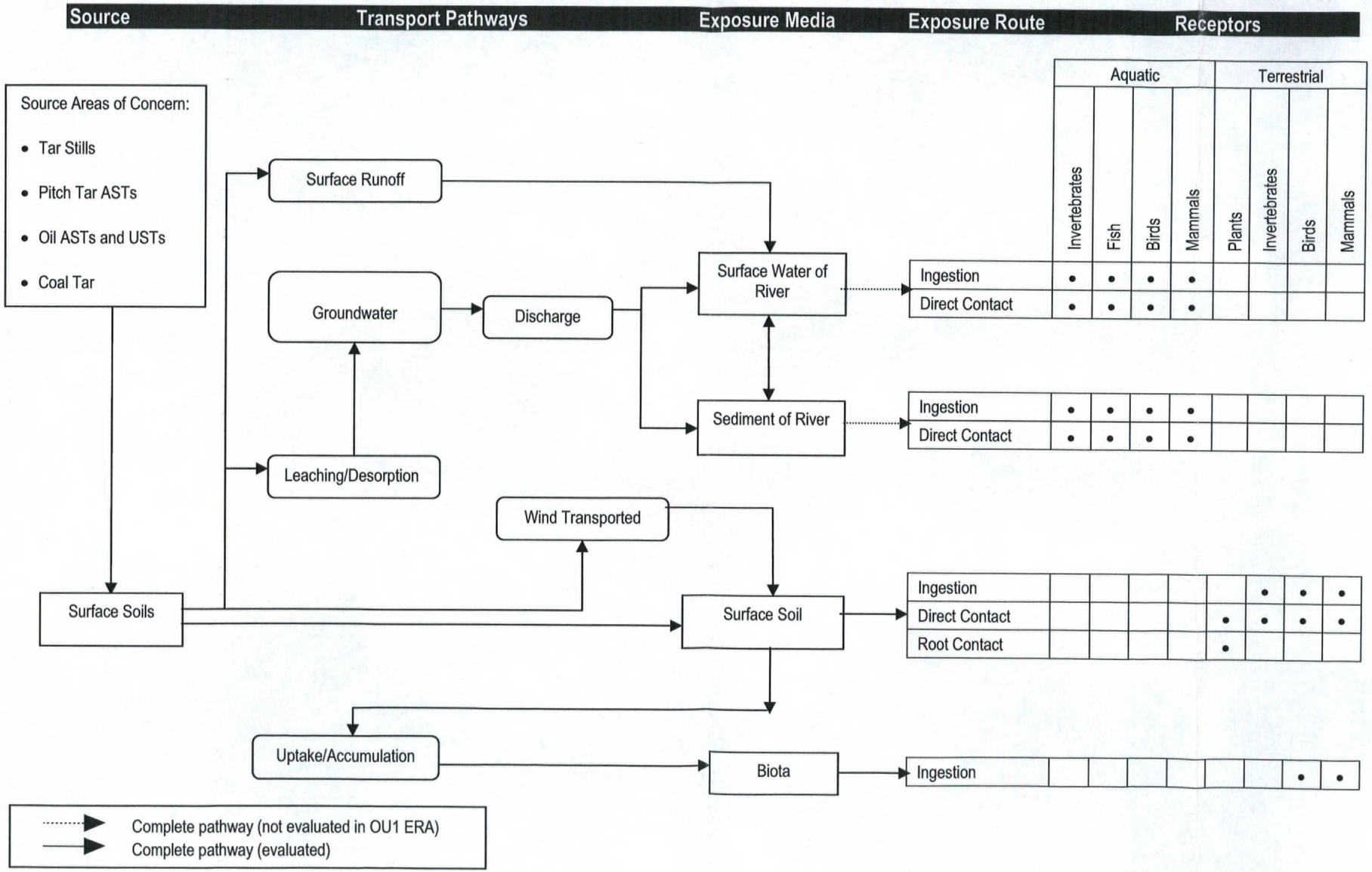
Figure 2-2
On-Site Surface Soil
Sample Locations

Quanta Resources Site
Edgewater, New Jersey

February 20, 2006 | On-site SW and Soil Sample Location.mxd

Figure 2-3
Ecological Conceptual Model for OU1
Quanta Resources Site, New Jersey



Constituent	Soil Concentration (mg/kg)
Metals	
Chromium	18.8
Lead	52.8
Pesticides	
Aldrin	ND
alpha-BHC	ND
Dieldrin	ND
Endrin	ND
PCBs	
Aroclor-1248	ND

Constituent	Soil Concentration (mg/kg)
Metals	
Chromium	37.9
Lead	323
Pesticides	
Aldrin	ND
alpha-BHC	ND
Dieldrin	ND
Endrin	ND
PCBs	
Aroclor-1248	ND

Constituent	Soil Concentration (mg/kg)
Metals	
Chromium	13.2 J
Lead	48.4 J
Pesticides	
Aldrin	NS
alpha-BHC	NS
Dieldrin	NS
Endrin	NS
PCBs	
Aroclor-1248	ND

Constituent	Soil Concentration (mg/kg)
Metals	
Chromium	11.7
Lead	22.8
Pesticides	
Aldrin	ND
alpha-BHC	ND
Dieldrin	ND
Endrin	ND
PCBs	
Aroclor-1248	ND

Constituent	Soil Concentration (mg/kg)
Metals	
Chromium	18
Lead	238
Pesticides	
Aldrin	NS
alpha-BHC	NS
Dieldrin	NS
Endrin	NS
PCBs	
Aroclor-1248	ND

Constituent	Soil Concentration (mg/kg)
Metals	
Chromium	13.4
Lead	96.4
Pesticides	
Aldrin	NS
alpha-BHC	NS
Dieldrin	NS
Endrin	NS
PCBs	
Aroclor-1248	ND

Constituent	Soil Concentration (mg/kg)
Metals	
Chromium	31.5
Lead	408
Pesticides	
Aldrin	NS
alpha-BHC	NS
Dieldrin	NS
Endrin	NS
PCBs	
Aroclor-1248	ND

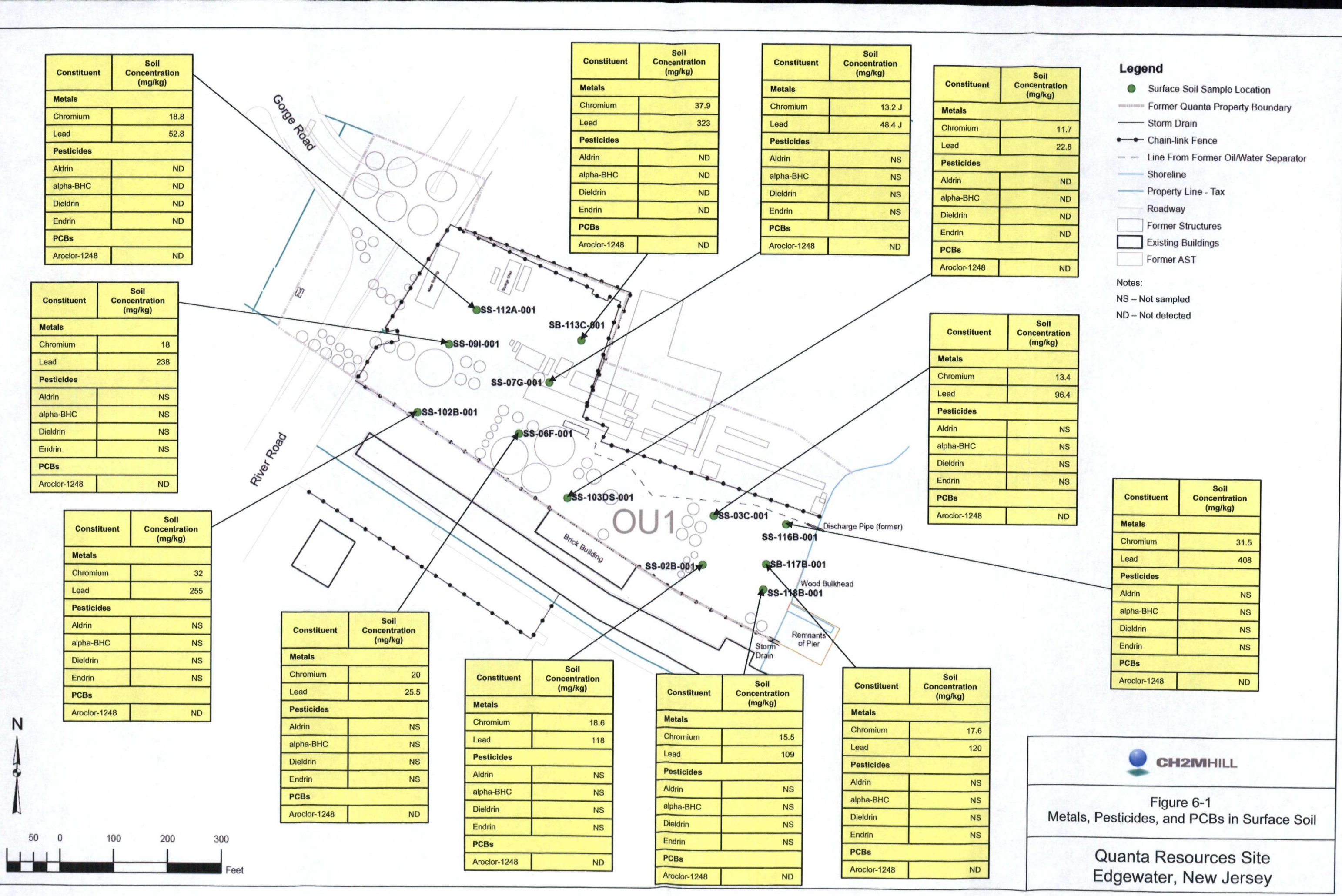
Constituent	Soil Concentration (mg/kg)
Metals	
Chromium	32
Lead	255
Pesticides	
Aldrin	NS
alpha-BHC	NS
Dieldrin	NS
Endrin	NS
PCBs	
Aroclor-1248	ND

Constituent	Soil Concentration (mg/kg)
Metals	
Chromium	20
Lead	25.5
Pesticides	
Aldrin	NS
alpha-BHC	NS
Dieldrin	NS
Endrin	NS
PCBs	
Aroclor-1248	ND

Constituent	Soil Concentration (mg/kg)
Metals	
Chromium	18.6
Lead	118
Pesticides	
Aldrin	NS
alpha-BHC	NS
Dieldrin	NS
Endrin	NS
PCBs	
Aroclor-1248	ND

Constituent	Soil Concentration (mg/kg)
Metals	
Chromium	15.5
Lead	109
Pesticides	
Aldrin	NS
alpha-BHC	NS
Dieldrin	NS
Endrin	NS
PCBs	
Aroclor-1248	ND

Constituent	Soil Concentration (mg/kg)
Metals	
Chromium	17.6
Lead	120
Pesticides	
Aldrin	NS
alpha-BHC	NS
Dieldrin	NS
Endrin	NS
PCBs	
Aroclor-1248	ND



Legend

- Surface Soil Sample Location
- Former Quanta Property Boundary
- Storm Drain
- Chain-link Fence
- Line From Former Oil/Water Separator
- Shoreline
- Property Line - Tax
- Roadway
- Former Structures
- Existing Buildings
- Former AST

Notes:

NS – Not sampled

ND – Not detected

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Figure 6-1
Metals, Pesticides, and PCBs in Surface Soil

Quanta Resources Site
Edgewater, New Jersey

Constituent	Soil Concentration (mg/kg)
VOCs	
Benzene	1.8
Vinyl Chloride	ND
Xylene (Total)	9.4
SVOCs (no PAHs)	
2-Chlorophenol	ND
4-Nitrophenol	ND
Atrazine	ND
Diethylphthalate	ND
Dimethylphthalate	ND
Hexachlorobenzene	ND
Hexachlorocyclopentadiene	ND
Pentachlorophenol	ND

Constituent	Soil Concentration (mg/kg)
VOCs	
Benzene	0.0007 J
Vinyl Chloride	ND
Xylene (Total)	ND
SVOCs (no PAHs)	
2-Chlorophenol	ND
4-Nitrophenol	ND
Atrazine	ND
Diethylphthalate	ND
Dimethylphthalate	ND
Hexachlorobenzene	ND
Hexachlorocyclopentadiene	ND
Pentachlorophenol	ND

Constituent	Soil Concentration (mg/kg)
VOCs	
Benzene	0.0007 J
Vinyl Chloride	ND
Xylene (Total)	ND
SVOCs (no PAHs)	
2-Chlorophenol	ND
4-Nitrophenol	ND
Atrazine	ND
Diethylphthalate	ND
Dimethylphthalate	ND
Hexachlorobenzene	ND
Hexachlorocyclopentadiene	ND
Pentachlorophenol	ND

Constituent	Soil Concentration (mg/kg)
VOCs	
Benzene	ND
Vinyl Chloride	ND
Xylene (Total)	ND
SVOCs (no PAHs)	
2-Chlorophenol	ND
4-Nitrophenol	ND
Atrazine	ND
Diethylphthalate	ND
Dimethylphthalate	ND
Hexachlorobenzene	ND
Hexachlorocyclopentadiene	ND
Pentachlorophenol	ND

Constituent	Soil Concentration (mg/kg)
VOCs	
Benzene	0.002 J
Vinyl Chloride	ND
Xylene (Total)	0.001 J
SVOCs (no PAHs)	
2-Chlorophenol	ND
4-Nitrophenol	ND
Atrazine	ND
Diethylphthalate	ND
Dimethylphthalate	ND
Hexachlorobenzene	ND
Hexachlorocyclopentadiene	ND
Pentachlorophenol	ND

Constituent	Soil Concentration (mg/kg)
VOCs	
Benzene	2.1 J
Vinyl Chloride	ND
Xylene (Total)	21
SVOCs (no PAHs)	
2-Chlorophenol	ND
4-Nitrophenol	ND
Atrazine	ND
Diethylphthalate	ND
Dimethylphthalate	ND
Hexachlorobenzene	ND
Hexachlorocyclopentadiene	ND
Pentachlorophenol	ND

Constituent	Soil Concentration (mg/kg)
VOCs	
Benzene	0.11 J
Vinyl Chloride	ND
Xylene (Total)	8.4
SVOCs (no PAHs)	
2-Chlorophenol	ND
4-Nitrophenol	ND
Atrazine	ND
Diethylphthalate	ND
Dimethylphthalate	ND
Hexachlorobenzene	ND
Hexachlorocyclopentadiene	ND
Pentachlorophenol	ND

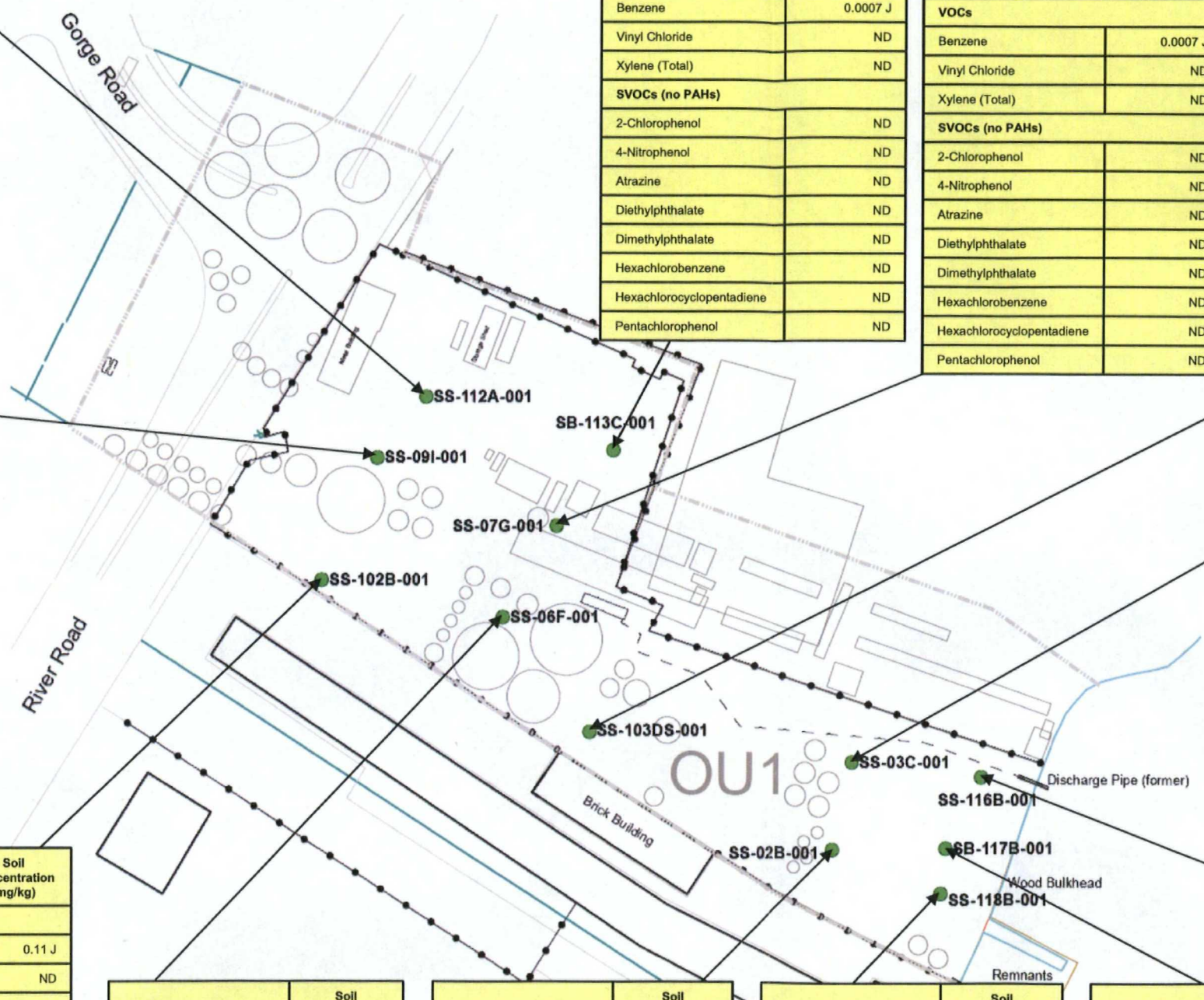
Constituent	Soil Concentration (mg/kg)
VOCs	
Benzene	ND
Vinyl Chloride	ND
Xylene (Total)	ND
SVOCs (no PAHs)	
2-Chlorophenol	ND
4-Nitrophenol	ND
Atrazine	ND
Diethylphthalate	ND
Dimethylphthalate	ND
Hexachlorobenzene	ND
Hexachlorocyclopentadiene	ND
Pentachlorophenol	ND

Constituent	Soil Concentration (mg/kg)
VOCs	
Benzene	0.069 J
Vinyl Chloride	ND
Xylene (Total)	0.13 J
SVOCs (no PAHs)	
2-Chlorophenol	ND
4-Nitrophenol	ND
Atrazine	ND
Diethylphthalate	ND
Dimethylphthalate	ND
Hexachlorobenzene	ND
Hexachlorocyclopentadiene	ND
Pentachlorophenol	ND

Constituent	Soil Concentration (mg/kg)
VOCs	
Benzene	0.003 J
Vinyl Chloride	ND
Xylene (Total)	0.014
SVOCs (no PAHs)	
2-Chlorophenol	ND
4-Nitrophenol	ND
Atrazine	ND
Diethylphthalate	ND
Dimethylphthalate	ND
Hexachlorobenzene	ND
Hexachlorocyclopentadiene	ND
Pentachlorophenol	ND

Constituent	Soil Concentration (mg/kg)
VOCs	
Benzene	ND
Vinyl Chloride	ND
Xylene (Total)	0.13 J
SVOCs (no PAHs)	
2-Chlorophenol	ND
4-Nitrophenol	ND
Atrazine	ND
Diethylphthalate	ND
Dimethylphthalate	ND
Hexachlorobenzene	ND
Hexachlorocyclopentadiene	ND
Pentachlorophenol	ND

Constituent	Soil Concentration (mg/kg)
VOCs	
Benzene	0.022
Vinyl Chloride	ND
Xylene (Total)	0.008
SVOCs (no PAHs)	
2-Chlorophenol	ND
4-Nitrophenol	ND
Atrazine	ND
Diethylphthalate	ND
Dimethylphthalate	ND
Hexachlorobenzene	ND
Hexachlorocyclopentadiene	ND
Pentachlorophenol	ND



Legend

- Surface Soil Sample Location
- Former Quanta Property Boundary
- Storm Drain
- Chain-link Fence
- Line From Former Oil/Water Separator
- Shoreline
- Property Line - Tax
- Roadway
- Former Structures
- Existing Buildings
- Former AST

Notes:

NS – Not sampled

ND – Not detected

N

50 0 100 200 300 Feet

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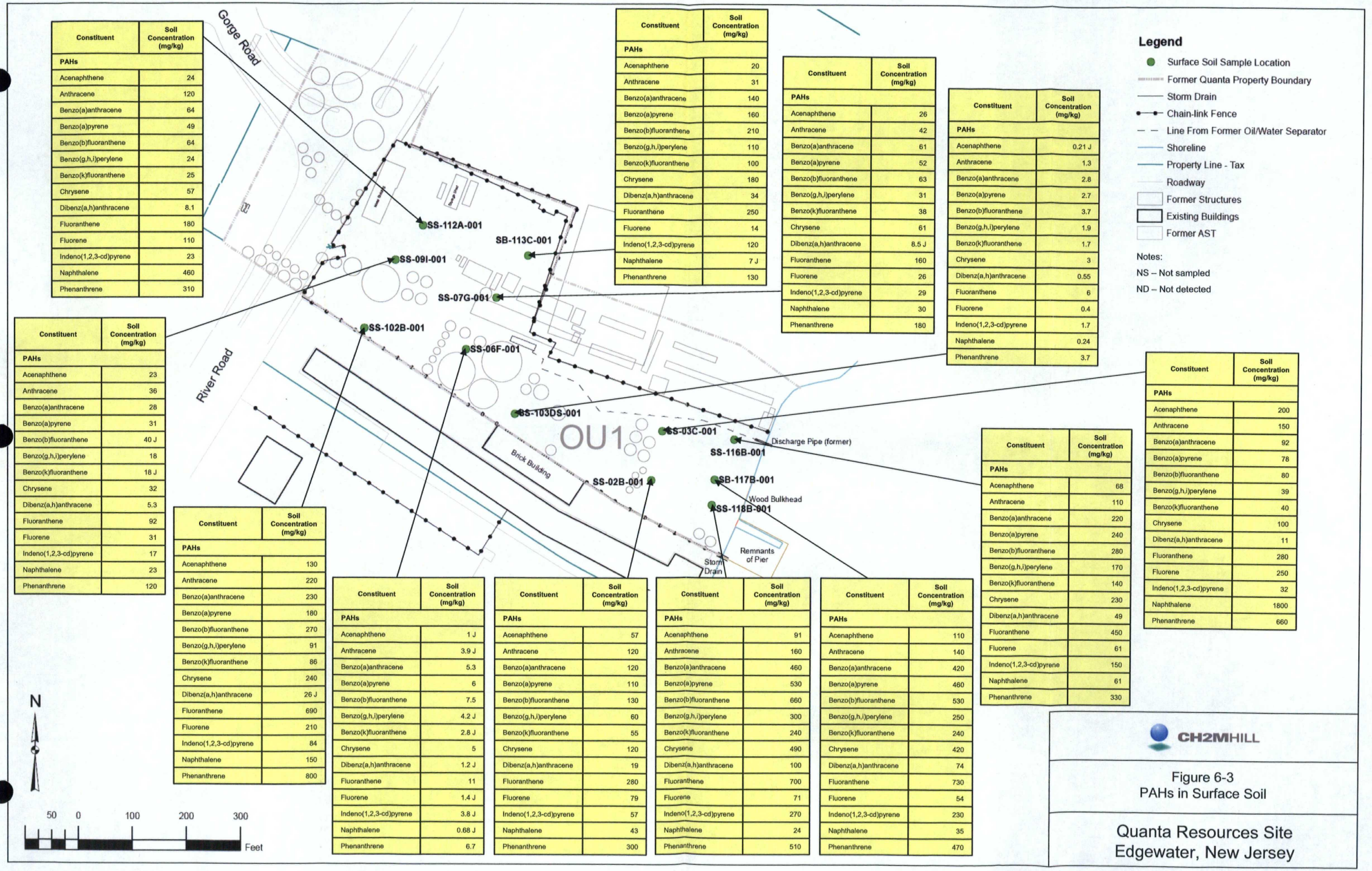
Figure 6-2
VOCs and Non-PAH SVOCs in Surface Soil

Quanta Resources Site
Edgewater, New Jersey



Constituent	Soil Concentration (mg/kg)
PAHs	
Acenaphthene	24
Anthracene	120
Benzo(a)anthracene	64
Benzo(a)pyrene	49
Benzo(b)fluoranthene	64
Benzo(g,h,i)perylene	24
Benzo(k)fluoranthene	25
Chrysene	57
Dibenz(a,h)anthracene	8.1
Fluoranthene	180
Fluorene	110
Indeno(1,2,3-cd)pyrene	23
Naphthalene	460
Phenanthrene	310

Constituent	Soil Concentration (mg/kg)
PAHs	
Acenaphthene	20
Anthracene	31
Benzo(a)anthracene	140
Benzo(a)pyrene	160
Benzo(b)fluoranthene	210
Benzo(g,h,i)perylene	110
Benzo(k)fluoranthene	100
Chrysene	180
Dibenz(a,h)anthracene	34
Fluoranthene	250
Fluorene	14
Indeno(1,2,3-cd)pyrene	120
Naphthalene	7 J
Phenanthrene	130

Constituent	Soil Concentration (mg/kg)
PAHs	
Acenaphthene	26
Anthracene	42
Benzo(a)anthracene	61
Benzo(a)pyrene	52
Benzo(b)fluoranthene	63
Benzo(g,h,i)perylene	31
Benzo(k)fluoranthene	38
Chrysene	61
Dibenz(a,h)anthracene	8.5 J
Fluoranthene	160
Fluorene	26
Indeno(1,2,3-cd)pyrene	29
Naphthalene	30
Phenanthrene	180

Constituent	Soil Concentration (mg/kg)
PAHs	
Acenaphthene	0.21 J
Anthracene	1.3
Benzo(a)anthracene	2.8
Benzo(a)pyrene	2.7
Benzo(b)fluoranthene	3.7
Benzo(g,h,i)perylene	1.9
Benzo(k)fluoranthene	1.7
Chrysene	3
Dibenz(a,h)anthracene	0.55
Fluoranthene	6
Fluorene	0.4
Indeno(1,2,3-cd)pyrene	1.7
Naphthalene	0.24
Phenanthrene	3.7

Constituent	Soil Concentration (mg/kg)
PAHs	
Acenaphthene	23
Anthracene	36
Benzo(a)anthracene	28
Benzo(a)pyrene	31
Benzo(b)fluoranthene	40 J
Benzo(g,h,i)perylene	18
Benzo(k)fluoranthene	18 J
Chrysene	32
Dibenz(a,h)anthracene	5.3
Fluoranthene	92
Fluorene	31
Indeno(1,2,3-cd)pyrene	17
Naphthalene	23
Phenanthrene	120

Constituent	Soil Concentration (mg/kg)
PAHs	
Acenaphthene	200
Anthracene	150
Benzo(a)anthracene	92
Benzo(a)pyrene	78
Benzo(b)fluoranthene	80
Benzo(g,h,i)perylene	39
Benzo(k)fluoranthene	40
Chrysene	100
Dibenz(a,h)anthracene	11
Fluoranthene	280
Fluorene	250
Indeno(1,2,3-cd)pyrene	32
Naphthalene	1800
Phenanthrene	660

Constituent	Soil Concentration (mg/kg)
PAHs	
Acenaphthene	68
Anthracene	110
Benzo(a)anthracene	220
Benzo(a)pyrene	240
Benzo(b)fluoranthene	280
Benzo(g,h,i)perylene	170
Benzo(k)fluoranthene	140
Chrysene	230
Dibenz(a,h)anthracene	49
Fluoranthene	450
Fluorene	61
Indeno(1,2,3-cd)pyrene	150
Naphthalene	61
Phenanthrene	330

Constituent	Soil Concentration (mg/kg)
PAHs	
Acenaphthene	130
Anthracene	220
Benzo(a)anthracene	230
Benzo(a)pyrene	180
Benzo(b)fluoranthene	270
Benzo(g,h,i)perylene	91
Benzo(k)fluoranthene	86
Chrysene	240
Dibenz(a,h)anthracene	26 J
Fluoranthene	690
Fluorene	210
Indeno(1,2,3-cd)pyrene	84
Naphthalene	150
Phenanthrene	800

Constituent	Soil Concentration (mg/kg)
PAHs	
Acenaphthene	1 J
Anthracene	3.9 J
Benzo(a)anthracene	5.3
Benzo(a)pyrene	6
Benzo(b)fluoranthene	7.5
Benzo(g,h,i)perylene	4.2 J
Benzo(k)fluoranthene	2.8 J
Chrysene	5
Dibenz(a,h)anthracene	1.2 J
Fluoranthene	11
Fluorene	1.4 J
Indeno(1,2,3-cd)pyrene	3.8 J
Naphthalene	0.68 J
Phenanthrene	6.7

Constituent	Soil Concentration (mg/kg)
PAHs	
Acenaphthene	57
Anthracene	120
Benzo(a)anthracene	120
Benzo(a)pyrene	110
Benzo(b)fluoranthene	130
Benzo(g,h,i)perylene	60
Benzo(k)fluoranthene	55
Chrysene	120
Dibenz(a,h)anthracene	19
Fluoranthene	280
Fluorene	79
Indeno(1,2,3-cd)pyrene	57
Naphthalene	43
Phenanthrene	300

Constituent	Soil Concentration (mg/kg)
PAHs	
Acenaphthene	91
Anthracene	160
Benzo(a)anthracene	460
Benzo(a)pyrene	530
Benzo(b)fluoranthene	660
Benzo(g,h,i)perylene	300
Benzo(k)fluoranthene	240
Chrysene	490
Dibenz(a,h)anthracene	100
Fluoranthene	700
Fluorene	71
Indeno(1,2,3-cd)pyrene	270
Naphthalene	24
Phenanthrene	510

Constituent	Soil Concentration (mg/kg)
PAHs	
Acenaphthene	110
Anthracene	140
Benzo(a)anthracene	420
Benzo(a)pyrene	460
Benzo(b)fluoranthene	530
Benzo(g,h,i)perylene	250
Benzo(k)fluoranthene	240
Chrysene	420
Dibenz(a,h)anthracene	74
Fluoranthene	730
Fluorene	54
Indeno(1,2,3-cd)pyrene	230
Naphthalene	35
Phenanthrene	470

CH2MHILL

Figure 6-3
PAHs in Surface Soil

Quanta Resources Site
Edgewater, New Jersey

Appendix A

Correspondence

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JON S. CORZINE
Governor

Division of Parks and Forestry
Office of Natural Lands Management
Natural Heritage Program
P.O. Box 404
Trenton, NJ 08625-0404
Tel. #609-984-1339
Fax. #609-984-1427

LISA P. JACKSON
Acting Commissioner

February 7, 2006

Andrew Hopton
CH2M Hill
1700 Market Street, Suite 1600
Philadelphia, PA 19103-3916

Re: Quanta Resources Corporation Superfund Site, CERCLIS ID NJ000606442

Dear Mr. Hopton:

Thank you for your data request regarding rare species information for the above referenced project site in Edgewater Borough, Bergen County.

Searches of the Natural Heritage Database and the Landscape Project (Version 2) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the topographic map(s) submitted with the Request for Data into our Geographic Information System. We do not typically verify that your project bounds are accurate, or check them against other sources.

Neither the Natural Heritage Database nor the Landscape Project has records for occurrences of any rare wildlife species on or within one mile of the referenced site.

We have also checked the Natural Heritage Database for occurrences of rare plant species or ecological communities. The Natural Heritage Database does not have any records for rare plants or ecological communities on or within one mile of the site.

Attached is a list of rare species and ecological communities that have been documented from Bergen County. If suitable habitat is present at the project site, these species have potential to be present.

Status and rank codes used in the tables and lists are defined in the attached EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS.

If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive I-Map-NJ website at the following URL, http://www.state.nj.us/dep/gis/depsplash.htm or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program.

PLEASE SEE THE ATTACHED 'CAUTIONS AND RESTRICTIONS ON NHP DATA'.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,

Herbert A. Lord

Herbert A. Lord
Data Request Specialist

cc: Robert J. Cartica
Lawrence Niles
NHP File No. 06-4007378

BERGEN COUNTY

RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN

THE NEW JERSEY NATURAL HERITAGE DATABASE

	NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK
*** Vertebrates							
	ACCIPITER COOPERII	COOPER'S HAWK		T/T		G5	S3B,S4N
	AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW		T/S		G5	S2B
	ASIO OTUS	LONG-EARED OWL		T/T		G5	S2B,S2N
	BARTRAMIA LONGICAUDA	UPLAND SANDPIPER		E		G5	S1B
	BUTEO LINEATUS	RED-SHOULDERED HAWK		E/T		G5	S1B,S2N
	CIRCUS CYANEUS	NORTHERN HARRIER		E/U		G5	S1B,S3N
	CISTOTHORUS PLATENSIS	SEDGE WREN		E		G5	S1B
	CLEMMYS INSCULPTA	WOOD TURTLE		T		G4	S3
	CLEMMYS MUHLENBERGII	BOG TURTLE	LT	E		G3	S2
	CROTALUS HORRIDUS HORRIDUS	TIMBER RATTLESNAKE		E		G4T4	S2
	EUMECES FASCIATUS	FIVE-LINED SKINK		U		G5	S3
	FALCO PEREGRINUS	PEREGRINE FALCON		E		G4	S1B,S?N
	FULICA AMERICANA	AMERICAN COOT		D		G5	S1B
	HALIAEETUS LEUCOCEPHALUS	BALD EAGLE	LT	E		G4	S1B,S2N
	IXOBRYCHUS EXILIS	LEAST BITTERN		D/S		G5	S3B
	LYNX RUFUS	BOBCAT		E		G5	S3
	MELANERPES ERYTHROCEPHALUS	RED-HEADED WOODPECKER		T/T		G5	S2B,S2N
	NEOTOMA MAGISTER	ALLEGHENY WOODRAT		E		G3G4	S1
	NYCTANASSA VIOLACEA	YELLOW-CROWNED NIGHT-HERON		T/T		G5	S2B
	NYCTICORAX NYCTICORAX	BLACK-CROWNED NIGHT-HERON		T/S		G5	S3B,S4N
	PASSERCULUS SANDWICHENSIS	SAVANNAH SPARROW		T/T		G5	S2B,S4N
	PODILYMBUS PODICEPS	PIED-BILLED GREBE		E/S		G5	S1B,S3N
	POOECETES GRAMINEUS	VESPER SPARROW		E		G5	S1B,S2N
	STERNA ANTILLARUM	LEAST TERN		E		G4	S1B
	STRIX VARIA	BARRED OWL		T/T		G5	S3B
*** Invertebrates							
	AESHNA CLEPSYDRA	MOTTLED DARNER				G4	S2S3
	AESHNA TUBERCULIFERA	BLACK-TIPPED DARNER				G4	S1S2

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BERGEN COUNTY

RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK
ALASMIDONTA HETERODON	DWARF WEDGEMUSSEL	LE	E		G1G2	S1
ALASMIDONTA UNDULATA	TRIANGLE FLOATER		T		G4	S3
AMBLYSCIRTES HEGON	PEPPER AND SALT SKIPPER				G5	S1S2
ARIGOMPHUS FURCIFER	LILYPAD CLUBTAIL				G5	S2
CHLOSYNE HARRISII	HARRIS' CHECKERSPOT				G4	S2S3
CORDULEGASTER ERRONEA	TIGER SPIKETAIL				G4	S2
ENALLAGMA LATERALE	NEW ENGLAND BLUET				G3	S1S2
GOMPHUS ROGERSI	SABLE CLUBTAIL				G4	S1S2
LAMPSILIS RADIATA	EASTERN LAMPMUSSEL		T		G5	S3
LANTHUS VERNALIS	SOUTHERN PYGMY CLUBTAIL				G4	S2S3
LESTES EURINUS	AMBER-WINGED SPREADWING				G4	S2
LYCAENA HYLLUS	BRONZE COPPER		E		G5	S2
NICROPHORUS AMERICANUS	AMERICAN BURYING BEETLE	LE	E		G2G3	SH
POLITES MYSTIC	LONG DASH				G5	S3?
PONTIA PROTODICE	CHECKERED WHITE		T		G4	S1
PYRGUS WYANDOT	APPALACHIAN GRIZZLED SKIPPER		E		G2	SH
SATYRIUM ACADICUM	ACADIAN HAIRSTREAK				G5	S2S3
SPEYERIA APHRODITE	APHRODITE FRITILLARY				G5	S2S3
SPEYERIA IDALIA	REGAL FRITILLARY				G3	SH
TACHOPTERYX THOREYI	GRAY PETALTAIL				G4	S1
WILLIAMSONIA LINTNERI	RINGED BOGHAUNTER				G3	SH

** Nonvascular plants

SPHAGNUM CONTORTUM	SPHAGNUM		E		G5	S1
SPHAGNUM MAJUS SSP NORVEGICUM	SPHAGNUM		E		G5?T?	S1.1

** Vascular plants

ADLUMIA FUNGOSA	CLIMBING FUMITORY				G4	S2
AGASTACHE NEPETOIDES	YELLOW GIANT-HYSSOP				G5	S2
AGASTACHE SCROPHULARIIFOLIA	PURPLE GIANT-HYSSOP				G4	S2

BERGEN COUNTY

RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK
ALOPECURUS AEQUALIS VAR AEQUALIS	SHORT-AWN MEADOW-FOXTAIL				G5T?	S2
AMELANCHIER HUMILIS	LOW SERVICE-BERRY				G5	S1
AMMANNIA LATIFOLIA	KOEHN'S TOOTHCUP		E		G5	S1
ANEMONE CANADENSIS	CANADA ANEMONE				G5	SX
APLECTRUM HYEMALE	PUTTYROOT		E		G5	S1
ARABIS HIRSUTA VAR PYCNOCARPA	WESTERN HAIRY ROCKCRESS				G5T5	S2
ASCLEPIAS VERTICILLATA	WHORLED MILKWEED				G5	S2
ATHYRIUM PYCNOCARPON	GLADE FERN		E		G5	S1
BOTRYCHIUM ONEIDENSE	BLUNT-LOBE GRAPE FERN				G4Q	S2
BOUTELOUA CURTIPENDULA	SIDE-OATS GRAMA GRASS		E		G5T5	S1
CALLITRICHE PALUSTRIS	MARSH WATER-STARWORT				G5	S2
CAREX DISPERMA	SOFT-LEAF SEDGE				G5	S1
CAREX HAYDENII	CLOUD SEDGE		E		G5	S1
CAREX PSEUDOCYPERUS	CYPERUS-LIKE SEDGE		E		G5	S1
CAREX TUCKERMANII	TUCKERMAN'S SEDGE		E		G4	S1
CAREX UTRICULATA	BOTTLE-SHAPED SEDGE				G5	S2
CASTILLEJA COCCINEA	SCARLET INDIAN-PAINTBRUSH				G5	S2
CERCIS CANADENSIS	REDBUD		E		G5T5	S1
CHENOPODIUM SIMPLEX	MAPLE-LEAF GOOSEFOOT				G5	S2
CORALLORHIZA WISTERIANA	SPRING CORALROOT				G5	SX
COREOPSIS ROSEA	ROSE-COLOR COREOPSIS			LP	G3	S2
CRATAEGUS CHRYSOCARPA VAR CHRYSOCARPA	FIREBERRY HAWTHORN				G5T?	S1
CRYPTOGRAMMA STELLERI	SLENDER ROCKBRAKE		E		G5	SH.1
CYPRIPEDIUM REGINAE	SHOWY LADY'S-SLIPPER		E		G4	S1
DIRCA PALUSTRIS	LEATHERWOOD				G4	S2
DOELLINGERIA INFIRMA	CORNEL-LEAF ASTER				G5	S2
DRYOPTERIS CELSA	LOG FERN				G4	SX
EQUISETUM PRATENSE	MEADOW HORSETAIL		E		G5	S1

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BERGEN COUNTY

RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN

THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK
ERIOPHORUM GRACILE	SLENDER COTTON-GRASS		E		G5T?	SH
GNAPHALIUM MACOUNII	WINGED CUDWEED		E		G5	SH
HEMICARPHA MICRANTHA	SMALL-FLOWER HALFCHAFF SEDGE		E		G4	S1
HOTTONIA INFLATA	FEATHERFOIL		E		G4	S1
HYPERICUM ADPRESSUM	BARTON'S ST. JOHN'S-WORT		E		G2G3	S2
HYPERICUM MAJUS	LARGER CANADIAN ST. JOHN'S WORT		E		G5	S1
ISOTRIA MEDEOLOIDES	SMALL WHORLED POGONIA	LT	E		G2	S1
LEMNA PERPUSILLA	MINUTE DUCKWEED		E		G5	S1
LEMNA VALDIVIANA	PALE DUCKWEED		E		G5	S1
LIMOSELLA SUBULATA	AWL-LEAF MUDWORT		E		G4G5	S1
LINUM SULCATUM	GROOVED YELLOW FLAX		E		G5T5	S1
LUZULA ACUMINATA	HAIRY WOOD-RUSH		E		G5T4T5	S2
MELANTHIUM VIRGINICUM	VIRGINIA BUNCHFLOWER		E		G5	S1
MIMULUS ALATUS	WINGED MONKEY-FLOWER				G5	S3
NUPHAR MICROPHYLLUM	SMALL YELLOW POND-LILY		E		G5T4T5	SH
PLATANTHERA HYPERBOREA VAR HYPERBOREA	LEAFY NORTHERN GREEN ORCHID				G5T5	SX
POA AUTUMNALIS	FLEXUOUS SPEAR GRASS		E		G5	SH.1
PRENANTHES RACEMOSA	SMOOTH RATTLESNAKE-ROOT		E		G5T?	SH
PYCNANTHEMUM TORREI	TORREY'S MOUNTAIN-MINT		E		G2	S1
SACCHARUM ALOPECUROIDUM	SILVER PLUME GRASS				G5	SH
SALIX LUCIDA SSP LUCIDA	SHINING WILLOW				G5T5	S1
SALIX PEDICELLARIS	BOG WILLOW		E		G5	S1
SCHOENOPLECTUS TORREYI	TORREY'S BULRUSH		E		G5?	S1
SCIRPUS MARITIMUS	SALTMARSH BULRUSH		E		G5	SH
SCLERIA PAUCIFLORA VAR CAROLINIANA	CAROLINA NUT-RUSH				G5T4T5	S2
SCLERIA VERTICILLATA	WHORLED NUT-RUSH		E		G5	S1
SCUTELLARIA LEONARDII	SMALL SKULLCAP		E		G4T4	S1

BERGEN COUNTY

RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN
THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK
SOLIDAGO RIGIDA	PRAIRIE GOLDENROD		E		G5T5	S1
STACHYS HYSSOPIFOLIA	HYSSOP HEDGE-NETTLE				G5	S2
THUJA OCCIDENTALIS	ARBORVITAE		E		G5	S1
TIARELLA CORDIFOLIA	FOAMFLOWER		E		G5T5	S1
TRIPHORA TRIANTHOPHORA	THREE BIRDS ORCHID		E		G3G4	S1
TROLLIUS LAXUS SSP LAXUS	SPREADING GLOBE FLOWER		E		G4T3	S1
VERBENA SIMPLEX	NARROW-LEAF VERVAIN		E		G5	S1
VIOLA CANADENSIS	CANADIAN VIOLET		E		G5T?	S1
VIOLA SEPTENTRIONALIS	NORTHERN BLUE VIOLET		E		G5	S1

117 Records Processed

EXPLANATIONS OF CODES USED IN NATURAL HERITAGE REPORTS

FEDERAL STATUS CODES

The following U.S. Fish and Wildlife Service categories and their definitions of endangered and threatened plants and animals have been modified from the U.S. Fish and Wildlife Service (F.R. Vol. 50 No. 188; Vol. 61, No. 40; F.R. 50 CFR Part 17). Federal Status codes reported for species follow the most recent listing.

LE	Taxa formally listed as endangered.
LT	Taxa formally listed as threatened.
PE	Taxa already proposed to be formally listed as endangered.
PT	Taxa already proposed to be formally listed as threatened.
C	Taxa for which the Service currently has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species.
S/A	Similarity of appearance species.

STATE STATUS CODES

Two animal lists provide state status codes after the Endangered and Nongame Species Conservation Act of 1973 (NSSA 23:2A-13 et. seq.): the list of endangered species (N.J.A.C. 7:25-4.13) and the list defining status of indigenous, nongame wildlife species of New Jersey (N.J.A.C. 7:25-4.17(a)). The status of animal species is determined by the Nongame and Endangered Species Program (ENSP). The state status codes and definitions provided reflect the most recent lists that were revised in the New Jersey Register, Monday, June 3, 1991.

D	Declining species-a species which has exhibited a continued decline in population numbers over the years.
E	Endangered species-an endangered species is one whose prospects for survival within the state are in immediate danger due to one or many factors - a loss of habitat, over exploitation, predation, competition, disease. An endangered species requires immediate assistance or extinction will probably follow.
EX	Extirpated species-a species that formerly occurred in New Jersey, but is not now known to exist within the state.
I	Introduced species-a species not native to New Jersey that could not have established itself here without the assistance of man.
INC	Increasing species-a species whose population has exhibited a significant increase, beyond the normal range of its life cycle, over a long term period.
T	Threatened species-a species that may become endangered if conditions surrounding the species begin to or continue to deteriorate.
P	Peripheral species-a species whose occurrence in New Jersey is at the extreme edge of its present natural range.
S	Stable species-a species whose population is not undergoing any long-term increase/decrease within its natural cycle.
U	Undetermined species-a species about which there is not enough information available to determine the status.

Status for animals separated by a slash(/) indicate a duel status. First status refers to the state breeding population, and the second status refers to the migratory or winter population.

Special Concern applies to animal species that warrant special attention because of some evidence of decline, inherent vulnerability to environmental deterioration, or habitat modification that would result in their becoming a Threatened species. This category would also be applied to species that meet the foregoing criteria and for which there is little understanding of their current population status in the state.

Plant taxa listed as endangered are from New Jersey's official Endangered Plant Species List N.J.S.A. 131B-15.151 et seq.

E Native New Jersey plant species whose survival in the State or nation is in jeopardy.

REGIONAL STATUS CODES FOR PLANTS AND ECOLOGICAL COMMUNITIES

LP Indicates taxa listed by the Pinelands Commission as endangered or threatened within their legal jurisdiction. Not all species currently tracked by the Pinelands Commission are tracked by the Natural Heritage Program. A complete list of endangered and threatened Pineland species is included in the New Jersey Pinelands Comprehensive Management Plan.

HL Indicates taxa or ecological communities protected by the Highlands Water Protection and Planning Act within the jurisdiction of the Highlands Preservation Area.

EXPLANATION OF GLOBAL AND STATE ELEMENT RANKS

The Nature Conservancy has developed a ranking system for use in identifying elements (rare species and natural communities) of natural diversity most endangered with extinction. Each element is ranked according to its global, national, and state (or subnational in other countries) rarity. These ranks are used to prioritize conservation work so that the most endangered elements receive attention first. Definitions for element ranks are after The Nature Conservancy (1982: Chapter 4, 4.1-1 through 4.4.1.3-3).

GLOBAL ELEMENT RANKS

G1 Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.

G2 Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.

G3 Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the East) or because of other factors making it vulnerable to extinction throughout it's range; with the number of occurrences in the range of 21 to 100.

G4 Apparently secure globally; although it may be quite rare in parts of its range, especially at the periphery.

G5 Demonstrably secure globally; although it may be quite rare in parts of its range, especially at the periphery.

GH Of historical occurrence throughout its range i.e., formerly part of the established biota, with the expectation that it may be rediscovered.

GU Possibly in peril range-wide but status uncertain; more information needed.

GX Believed to be extinct throughout range (e.g., passenger pigeon) with virtually no likelihood that it will be rediscovered.

G? Species has not yet been ranked.

GNR Species has not yet been ranked.

STATE ELEMENT RANKS

S1 Critically imperiled in New Jersey because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres). Elements so ranked are often restricted to very specialized conditions or habitats and/or restricted to an extremely small geographical area of the state. Also included are elements which were formerly more abundant, but because of habitat destruction or some other critical factor of its biology, they have been demonstrably reduced in abundance. In essence, these are elements for which, even with intensive searching, sizable additional occurrences are unlikely to be discovered.

S2 Imperiled in New Jersey because of rarity (6 to 20 occurrences). Historically many of these elements may have been more frequent but are now known from very few extant occurrences, primarily because of habitat destruction. Diligent searching may yield additional occurrences.

S3 Rare in state with 21 to 100 occurrences (plant species and ecological communities in this category have only 21 to 50 occurrences). Includes elements which are widely distributed in the state but with small populations/acreage or elements with restricted distribution, but locally abundant. Not yet imperiled in state but may soon be if current trends continue. Searching often yields additional occurrences.

S4 Apparently secure in state, with many occurrences.

S5 Demonstrably secure in state and essentially ineradicable under present conditions.

SA Accidental in state, including species (usually birds or butterflies) recorded once or twice or only at very great intervals, hundreds or even thousands of miles outside their usual range; a few of these species may even have bred on the one or two occasions they were recorded; examples include European strays or western birds on the East Coast and vice-versa.

SE Elements that are clearly exotic in New Jersey including those taxa not native to North America (introduced taxa) or taxa deliberately or accidentally introduced into the State from other parts of North America (adventive taxa). Taxa ranked SE are not a conservation priority (viable introduced occurrences of G1 or G2 elements may be exceptions).

SH Elements of historical occurrence in New Jersey. Despite some searching of historical occurrences and/or potential habitat, no extant occurrences are known. Since not all of the historical occurrences have been field surveyed, and unsearched potential habitat remains, historically ranked taxa are considered possibly extant, and remain a conservation priority for continued field work.

SP Element has potential to occur in New Jersey, but no occurrences have been reported.

SR Elements reported from New Jersey, but without persuasive documentation which would provide a basis for either accepting or rejecting the report. In some instances documentation may exist, but as of yet, its source or location has not been determined.

SRF Elements erroneously reported from New Jersey, but this error persists in the literature.

SU Elements believed to be in peril but the degree of rarity uncertain. Also included are rare taxa of uncertain taxonomical standing. More information is needed to resolve rank.

SX Elements that have been determined or are presumed to be extirpated from New Jersey. All historical occurrences have been searched and a reasonable search of potential habitat has been completed. Extirpated taxa are not a current conservation priority.

SXC Elements presumed extirpated from New Jersey, but native populations collected from the wild exist in cultivation.

SZ Not of practical conservation concern in New Jersey, because there are no definable occurrences, although the taxon is native and appears regularly in the state. An SZ rank will generally be used for long distance migrants whose occurrences during their migrations are too irregular (in terms of repeated visitation to the same locations), transitory, and dispersed to be reliably identified, mapped and protected. In other words, the migrant regularly passes through the state, but enduring, mappable element occurrences cannot be defined.

Typically, the SZ rank applies to a non-breeding population (N) in the state – for example, birds on migration. An SZ rank may in a few instances also apply to a breeding population (B), for example certain lepidoptera which regularly die out every year with no significant return migration.

Although the SZ rank typically applies to migrants, it should not be used indiscriminately. Just because a species is on migration does not mean it receives an SZ rank. SZ will only apply when the migrants occur in an irregular, transitory and dispersed manner.

B Refers to the breeding population of the element in the state.

N Refers to the non-breeding population of the element in the state.

T Element ranks containing a "T" indicate that the infraspecific taxon is being ranked differently than the full species. For example *Stachys palustris* var. *homotricha* is ranked "G5T? SH" meaning the full species is globally secure but the global rarity of the var. *homotricha* has not been determined; in New Jersey the variety is ranked historic.

Q Elements containing a "Q" in the global portion of its rank indicates that the taxon is of questionable, or uncertain taxonomical standing, e.g., some authors regard it as a full species, while others treat it at the subspecific level.

.1 Elements documented from a single location.

Note: To express uncertainty, the most likely rank is assigned and a question mark added (e.g., G2?). A range is indicated by combining two ranks (e.g., G1G2, S1S3).

IDENTIFICATION CODES

These codes refer to whether the identification of the species or community has been checked by a reliable individual and is indicative of significant habitat.

Y	Identification has been verified and is indicative of significant habitat.
BLANK	Identification has not been verified but there is no reason to believe it is not indicative of significant habitat.
?	Either it has not been determined if the record is indicative of significant habitat or the identification of the species or community may be confusing or disputed.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Service
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609-646-9310
Fax: 609-646-0352
http://njfieldoffice.fws.gov

IN REPLY REFER TO:
ES-06/NE 23

JAN 26 2006

CH2M Hill
Phila. PA

Attn: Andrew Hopton

Fax number: 267 675-4512

Threatened and endangered species review for:

Project identification: Honeywell International - Quanta Resources
Cooper Superfund Site

Township: Edgewater County: Bergen, New Jersey

The U.S. Fish and Wildlife Service (Service) has reviewed the above-referenced proposed project pursuant to Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) (ESA) to ensure the protection of federally listed endangered and threatened species. The following comments do not address all Service concerns for fish and wildlife resources and do not preclude separate review and comment by the Service as afforded by other applicable environmental legislation.

Except for an occasional transient bald eagle (*Haliaeetus leucocephalus*), no other federally listed or proposed endangered or threatened flora or fauna under Service jurisdiction are known to occur within the vicinity of the proposed project site. Therefore, no further consultation pursuant to Section 7 of the Endangered Species Act is required by the Service. This determination is based on the best available information. If additional information on federally listed species becomes available, or if project plans change, this determination may be reconsidered.

Please refer to this office's web site at http://www.fws.gov/northeast/njfieldoffice/Endangered/eslist.htm for a current list of federally listed species or candidate species in New Jersey. Candidate species are species under consideration by the Service for federal listing. Although candidate species receive no substantive or procedural protection under the ESA, the Service encourages you to consider candidate species in project planning. The above web site also provides contacts for obtaining the most up-to-date information on federal candidate species and State-listed plant species in New Jersey from the New Jersey Natural Heritage Program and information on State-listed wildlife species from the New Jersey Endangered and Nongame Species Program. If information from either of these sources reveals the presence of any federal candidate species within your project area, the Service should be contacted at the above address immediately to ensure that these species are not adversely affected by project activities.

Authorizing Supervisor: M. C. Gill

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Habitat Conservation Division
James J. Howard Marine
Sciences Laboratory
74 Magruder Road
Highlands, New Jersey 07732

January 26, 2006

TO: Andrew Hopton
CH2M HILL
1700 Market Street, Suite 1600
Philadelphia, PA 19103-3916

SUBJECT: Honeywell International Inc.
Quanta Resources Corporation Superfund Site
Edgewater, Bergen Co., NJ

Karen Greene
(Reviewing Biologist)

We have reviewed the information provided to us regarding the above subject project. We offer the following preliminary comments pursuant to the Endangered Species Act, the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act:

Endangered and Threatened Species

____ There are no endangered or threatened species in the project area.

__X__ Endangered shortnose sturgeon (*Acipenser brevirostrum*) may be present in the project area, please contact Endangered Species Coordinator, NOAA Fisheries Service's Protected Resources Division , One Blackburn Drive, Gloucester, MA 01930-2298 for additional information.

Fish and Wildlife Coordination Act

The following may be present in the project area: Anadromous and resident fish, forage and benthic species including striped bass, Atlantic tomcod, winter flounder, windowpane and summer flounder.

DEPENDING UPON THE PROJECT DETAILS POSSIBLE RECOMMENDATIONS INCLUDE:

Insufficient information on the proposed construction activities provided.

Essential Fish Habitat

___ No EFH presently designated in the project area.

_X_ The project area has been designated as Essential Fish Habitat (EFH) for one or more species. An EFH consultation by the federal action agency will be required. For a listing of EFH and further information, please go to our website at:

http://www.nero.noaa.gov/hcd
-If you wish to discuss this further, please call 732-872-3023-

Summary of MINTEQA2 Simulations

In order to further understand the state of iron and arsenic and thus the affects of arsenic adsorption to iron oxyhydroxides on mobility throughout the various geochemical zones that have been mapped at the Site the representative chemistry from each zone was evaluated using MINTEQA2 (EPA, 1992). MINTEQA2 is a thermodynamic equilibrium model packaged in a computer program that uses a sophisticated set of equations (Debye-Hückel, 1923; Davies, 1962) to simulate the chemical equilibrium of a solution under natural or laboratory conditions. MINTEQA2 has many applications in predicting natural chemical reactions but is applied to the Site data for the following objectives:

- Calculate speciation of iron and arsenic by solving a matrix of equations
- Calculate equilibrium activity coefficients and concentrations of selected chemical species
- Calculate the state of saturation for potential mineral species that occur in equilibrium for the sampled water chemistry in order to determine if they can influence the presence of arsenic in groundwater.

Consistent with the geochemical zones, input to MINTEQA2 included pH, Eh, iron, arsenic, and where data was available, sulfate, chloride and alkalinity. A representative monitoring well was selected from each zone to represent the water chemistry, and used for input to the model. A summary of these wells and their input parameters is provided in Table 5-3 of the Draft Remedial Investigation Report.

Zone 1A and 1B

MINTEQA2 simulations with chemistry for Zone 1A and 1B were performed using groundwater samples from monitoring well MW-107B and indicate that arsenic occurs in the arsenate species as $H_2AsO_4^-$ and $H_2AsO_4^{-2}$. Iron occurs entirely as the dissolved ferrous ion. Due to the lack of iron oxyhydroxides arsenic is not able to be controlled by the presence of these important receptor sites. Potential arsenic oxide minerals like claudetite and arsenolite exhibit negative saturation indices, and thus exhibit a tendency to dissolve. In addition, iron minerals goethite, ferrihydrite, and wustite also display negative saturation indices, indicating that the will not precipitate.

Zone 2

MINTEQA2 simulations were run from the chemistry of shallow groundwater collected at monitoring well MW-111B. Although groundwater is not highly reducing, arsenic occurs primarily as the reduced arsenite species. Iron occurs predominantly as the ferrous ion, but several hydroxide complexes could also occur. Arsenic oxide/hydroxide minerals including arsenolite and claudetite exhibit negative saturation indices, and would have a tendency to dissolve. The fate and transport of arsenic in Zone 2 is discussed in more detail below.

Zone 3

Chemistry of groundwater samples collected from monitoring well MW-114B was utilized for input to MINTEQA2. At equilibrium, almost all of the arsenic occurs in the arsenite species as H_3AsO_3, while dissolved iron occurs entirely as the ferrous iron. Similar to findings from Zones 1 and 2, arsenic minerals are undersaturated and thus exhibited a tendency to dissolve. Common iron bearing minerals also feature negative saturation indices.

Zone 4

Analysis of sulfate, alkalinity, and chloride were available for groundwater collected at MW-I, and were used for input into MINTEQA2. Arsenic species appeared mixed between arsenite and arsenate. Arsenate occurred mostly as $HAsO_4$-. Simulation results indicate iron occurred as the ferrous iron ion and aqueous ferrous sulfate. Given the pH range of groundwater samples, most of the carbonate occurred as bicarbonate with a small amount (less than 5 percent) of carbonic acid.

Similar to Zones 1 through 3, arsenic bearing minerals were undersaturated and would have a tendency to dissolve in groundwater. The iron carbonate mineral siderite, appeared to be in equilibrium with groundwater.

Ferric oxide and hydroxide minerals exhibited highly positive saturation indices, and would exhibit a tendency to precipitate. With the exception of ferrihydrite, none of the ferric oxide and hydroxide minerals displayed saturation indices close to equilibrium with the groundwater. The display of highly positive saturation indices (greater than +10) suggests that the mineral phase may not actually be present.

Zone 5

The chemistry from shallow groundwater collected from monitoring well MW-G was utilized for input to MINTEQA2. Similar to Zone 4, sulfate, chloride, and alkalinity data were available for groundwater collected at MW-G. At MW-G, arsenic occurred predominantly as arsenate as $HAsO_4^{-2}$. Dissolved iron occurred as the ferrous ion and aqueous ferrous sulfate. Dissolved carbonate species were split between bicarbonate and carbonic acid. Saturation indices for arsenic bearing minerals were negative indicating a tendency to dissolve. The iron carbonate mineral was in equilibrium with the representative groundwater chemistry of Zone 5.

Similar to Zone 4, ferric oxide and hydroxide minerals exhibited highly positive saturation indices, and would exhibit a tendency to precipitate. With the exception of ferrihydrite and lepidocrocite, none of the ferric oxide and hydroxide minerals displayed saturation indices close to equilibrium with the groundwater.

Limitations of Model

Limitations exists in all modeling programs, but it should be noted that when using MINTEQA2, that the chemical system considered is at or will reach equilibrium. It is understood that the assumption is important to remember because natural systems can be kinetically different from site to site based on geochemical contributors in the system. The equations used in minteqa2 to calculate the activities of the aqueous species apply only to aqueous systems with ionic strengths less than 0.5M. MINTEQA2 results are often expressed as (%) major and minor components included in the solutions. MINTEQA2 calculates species based on solutions containing constituents input into the model and does not include all constituents that could play a role in speciation of certain geochemical constituents. The results obtained are still very useful for identifying the probable speciation, but there is no guarantee all of the species are included or the quantitative results are exact.

References

Davies, C.W. 1962. "Ion Association." *Butterworths Pub.* Washington, DC. 190 pp.

Debye-Hückel. 1923. *as referenced in* A.H. Truesdell, and B.F. Jones. 1974. "WATEQ, A Computer Program for Calculating Chemical Equilibria in Natural Waters." *U.S. Geological Survey J. Res.* Washington, DC. 2:233-248.

United States Environmental Protection Agency (EPA). 1992c. *MINTEQA2 Exposure Assessment Model.* http://www.epa.gov/ceampubl/mmedia/minteq/index.htm. Accessed September 10, 2007.