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OU3: SCREENING LEVEL HUMAN HEALTH RISK EVALUATION
RESUBMITTED JANUARY 2016
NEW JERSEY ZINC/MOBIL CHEMICAL
0110300003 – BUREAU COUNTY

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Ref 21-12046E14

Dear Ms. Falco:

Enclosed, please find five hard copies and nine CDs (previously provided electronically) of the *Screening Level Human Health Risk Evaluation for Operable Unit 3* at the New Jersey Zinc/Mobil Chemical Site. The revised document is submitted to address comments provided by the Illinois Environmental Protection Agency on December 10, 2015. Due to the size of Attachments C1, C2, D, and E, they are provided in electronic form with Attachments D and E as Microsoft Excel workbook.

If you have any questions regarding the enclosed document, please feel free to contact us.

Sincerely,

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Screening Level Human Health Risk Evaluation for OU3

DePue Site
DePue, Illinois

Submitted to:
Illinois Environmental Protection Agency

On behalf of:
The DePue Group

Prepared by:
ENVIRON International Corporation
Chicago, Illinois

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ENVIRON

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Acronyms and Abbreviations

µg/dL:	micrograms per deciliter
ALM:	adult lead model
AOI:	area of investigation
B(a)P:	benzo(a)pyrene
bgs:	below ground surface
CBS:	CBS/Westinghouse of PA, Inc.
CDC:	Centers for Disease Control
CSF:	cancer slope factor
ENVIRON:	ENVIRON International Corporation
EPC:	exposure point concentration
ExxonMobil:	ExxonMobil Oil Corporation
FPSA:	former plant site area
gm/day:	grams per day
HHCOPC:	human health chemicals of potential concern
HI:	hazard indice
HQ:	hazard quotient
ICO:	Interim Consent Order
IEPA:	Illinois Environmental Protection Agency
IEUBK:	integrated exposure uptake biokinetic model
IRIS:	Integrated risk information system
IUR:	inhalation unit risk
IWTP:	interim water treatment plant
LOAEL:	lowest-observed-adverse-effect-level
mg/kg:	milligrams per kilogram
NCP:	National Contingency Plan
NOAEL:	no-observed-adverse-effect-level
NTP:	National Toxicology Program
O&M:	operations and management
ORNL:	Oak Ridge National Lab
OU:	operable unit
PAH:	polycyclic aromatic hydrocarbons
pCi/g:	picocuries per gram
PPE:	personal protective equipment
PPRTV:	provisional peer reviewed toxicity values
PRG:	preliminary remediation goal
RfC:	reference concentration
RfD:	reference dose
RI:	remedial investigation
RPD:	relative percent difference
RSL:	regional screening level
RSV:	risk-based screening value
SLHHRE:	screening level human health risk evaluation

STSC:	Superfund health risk technical support center
TACO:	Tiered Approach to Corrective Action Objectives
UCL:	upper confidence limit
UPSEA:	upland portion of the southeast area
USEPA:	United States Environmental Protection Agency
UWBZ:	upper water bearing zone
VF:	volatilization factor
VOC:	volatile organic chemical
VPCDA:	Vanadium Pentoxide Catalyst Disposal Area
ZCA:	Zinc Corporation of America

1 Introduction

This document presents the baseline Screening Level Human Health Risk Evaluation (SLHHRE) prepared by ENVIRON International Corporation (ENVIRON) on behalf of the DePue Group for Operable Unit 3 (OU3) at the New Jersey Zinc/Mobil Chemical site located in DePue, Illinois (the "site"). As called for by the 1994 National Contingency Plan (NCP) (United States Environmental Protection Agency [USEPA] 1994), a site-specific baseline risk assessment should be conducted to assist in the remedial investigation. As stated in the NCP, the baseline risk assessment was conducted to characterize the current and potential threats to human health and the environment. The information presented in the baseline risk assessment is intended to provide risk managers with an understanding of any actual or potential risks to human health and the environment posed by the site and any uncertainties associated with the assessment. This information can be used to determine whether a current or potential threat to human health or the environment exists that warrants remedial action.

The site location is shown on Figure 1-1 and the site layout is shown on Figure 1-2. The SLHHRE was performed in accordance with the May 1, 2014 Proposed Risk Assessment Approach Letter (ENVIRON 2014a) and the July 14, 2014 Addendum (ENVIRON 2014b) and was completed for the entirety of OU3 even though there are areas within OU3 that have been identified as requiring remediation (e.g., Slag Pile Area and Lithopone Ridges Area) that will have an impact on the baseline estimates. Potential risks from areas where remedial efforts are known to be required, i.e., North Ditch and settling ponds, were pre-determined prior to this SLHHRE; thereby eliminating the need to evaluate these areas during the SLHHRE. Samples obtained in the Slag Pile and Lithopone Ridge areas, including samples collected of the Slag Pile cover soil (e.g., Cover Samples) were included in the evaluation.

The primary purpose of the SLHHRE is to calculate the risk-based screening values (RSVs) for chemicals present in the soil for each of the identified Human Health Chemicals of Potential Concern (HHCOPCs). As requested by Illinois Environmental Protection Agency (IEPA), these RSVs will then be used to estimate the risk/hazard for each HHCOPC on a per sample/location basis for one or more of the receptors defined below with risk maps generated, as appropriate. For HHCOPCs identified as being the primary contributors to potential health effects, Thiessen Polygon maps have been created to show the potential risk or hazard level associated with exposure to the soil concentration within that polygon. For the remaining HHCOPCs, e.g., those having fewer exceedances of the chemical-specific RSVs, box maps showing the calculated risk or hazard at each exceeding sample point have been generated. Based upon the SLHHRE a subset of the evaluated HHCOPCs which are contributing the most to the risk/hazard effects and which should be the focus of any remedial efforts has been identified.

2 Areas of Investigation

The following three areas of investigation (AOIs) were evaluated in the SLHHRE and are shown in Figure 1-2:

- Bluff Area – The Bluff Area is a steeply sloped area between the former plant site area (FPSA) and State Highway 29 consisting of approximately 75 acres as shown in Figure 1-2. As shown on Figure 1-2, approximately 25-acres of the Bluff Area was formerly owned by the Zinc Corporation of America (ZCA), with a covenant that restricts the use of the property to activities related to remedial use only, and the remaining area is owned by ExxonMobil Oil Corporation (ExxonMobil). The current land use for the Bluff Area is undeveloped. The elevation difference between the top of the Bluff Area and the FPSA is approximately 170 feet in the western portion of the Bluff Area and 130 feet in the eastern portion of the Bluff Area. The land cover is predominantly upland forest, with non-tree vegetation in some areas. Surface water runoff drains from the Bluff Area through the Bluff Area stormwater diversion system and through various gullies either onto the FPSA or off-site. Two east-west trending natural gas pipelines are present in a utility corridor located in the northern portion of the Bluff Area. Based upon the topographic features of this area, the land use is expected to remain as is with no future development.
- FPSA – The FPSA is the approximately 136-acre fenced area located between the Bluff Area to the north and Marquette Street to the south with portions owned individually by CBS/Westinghouse of PA, Inc. (CBS) and ExxonMobil. The future land use for the FPSA will be limited to industrial/commercial use or undeveloped property. Much of the eastern portion of the FPSA contains known areas which will require remediation (i.e., Slag Pile Area and Lithopone Ridges Area) (Figure 1-2). As part of the Phase I Remedial Investigation (Phase I RI) data analysis, the FPSA was subdivided into subareas as defined below:
    - Slag Pile Area: Located in the southeast portion of the FPSA, the Slag Pile rises to an elevation roughly 50 feet above surrounding grade. The Slag Pile is approximately 14 acres in size, and overall covers approximately 23 acres (which includes adjacent areas where slag has been placed on and below grade). Cover soil has been placed on the top of the Slag Pile and vegetated.
    - Lithopone Ridges Area: The Lithopone Ridges consist of a series of narrow northwest-southeast trending parallel ridges approximately 1,000 feet in length located and encompassing about 10 acres. The above-grade ridges stand approximately 10 feet above grade. Waste was also disposed below grade in the Lithopone Ridges Area. The Lithopone Ridges Area is bounded by the toe of the Bluff Area to the north and the North Ditch to the south.
    - Western Area[1]: The Western Area includes portions of the former Roaster/Acid/Fertilizer Plant, Smelter and Material Storage Areas, and the

[1] The FPSA is divided into the Western and Eastern Areas based upon the upper water bearing zone. This designation is used for descriptive purposes with no implication of how the FPSA was previously used during operation or how the site may be divided, if at all, in the future. For the evaluation of risk, the FPSA is considered as one unit.

Former Lithopone Plant Area that are outside the area of the Upper Water Bearing Zone (UWBZ). The Western Area is bounded to the west and south by the Village of DePue, to the north and east by the Eastern Area and the Village of DePue.

- Eastern Area[2]: The Eastern Area includes the Former Railyard and portions of the Roaster/Acid/Fertilizer Plant and Smelter and Material Storage Areas that are within the area of the UWBZ.
- Vanadium Pentoxide Catalyst Disposal Area (VPCDA): The VPCDA is located northeast of the Slag Pile and southeast of the Lithopone Ridges Area. The work to close the VPCDA was completed in January 1995, and, in accordance with the requirements of the Interim Consent Order (ICO), a Closure Report for the VPCDA was submitted to IEPA on August 22, 1996.

- Upland Portion of the Southeast Area (UPSEA) – The UPSEA, approximately 25 acres in size, is located immediately south of Marquette Street and extends south to Lake DePue with land surface elevation greater than 450 feet above mean sea level. Portions of the UPSEA are owned individually by CBS and ExxonMobil and consists of fill areas containing site-related and non-site related material, including the Former Municipal Dump. The current land use for the UPSEA is undeveloped. The land use of the UPSEA is expected to remain as is with no future development.

[2] The FPSA is divided into the Western and Eastern Areas based upon the upper water bearing zone. This designation is used for descriptive purposes with no implication of how the FPSA was previously used during operation or how the site may be divided, if at all, in the future. For the evaluation of risk, the FPSA is considered as one unit.

3 Selection of Human Health Chemicals of Potential Concern in Soil

The purpose of the selection process is to identify site-related chemicals that are present in soil at concentrations that exceed regulatory screening comparison values[3], which could represent potential risks to human health in identified receptors at and near the site. Based on the current and expected future use of OU3, HHCOPCs were selected using screening levels applicable to an industrial scenario. The selected HHCOPCs do not consider the use of the site for residential or recreational activities, activities which will be prohibited by legally enforceable covenants, nor are the risks or hazard estimates presented in the SLHHRE applicable to such use. As requested by IEPA, the HHCOPCs were identified by comparing the maximum detected concentration of a chemical for any sample taken within the 0 to 10 feet below ground surface (bgs) soil horizon in either the FPSA, UPSEA, or the Bluff Area to the lower (more conservative) regulatory screening level considering the USEPA Regional Screening Levels (RSLs) for an Industrial Worker (USEPA 2015a) and the Illinois Tiered Approach to Corrective Action Objectives (TACO) Tier 1 remediation objectives for an Industrial Worker and a Construction Worker[4] (IEPA 2013).

The comparison of all chemicals included in the analytical analyses is presented in Table A-1 of Attachment A. A statistical summary of all the chemicals for which analytical data was collected in the AOIs is presented in Table A-2 of Attachment A. Table A-2 provides information on the number of samples obtained, including those with detected concentrations and those which were not detected at a specific reporting limit, the maximum and minimum detected and reporting limit values, and the number of detected concentrations and reporting limits exceeding the regulatory standard.

The reported detection limits of the chemicals for samples were also compared to their respective regulatory screening levels. As shown in Table A-2, benzo(a)anthracene (1 sample in the 0 to 3 foot soil interval), benzo(a)pyrene [B(a)P] (17 samples in the 0 to 3 foot soil interval and 23 samples in the 3 to 10 foot soil interval), benzo(b)fluoranthene (1 sample in the 0 to 3 foot soil interval), dibenz(a,h)anthracene (18 samples in the 0 to 3 foot soil interval and 26 samples in the 3 to 10 foot soil interval), and indeno(1,2,3-cd)pyrene (1 sample in the 0 to 3 foot soil interval) had at least one reported detection limit that was greater than their respective regulatory screening level. Detection limits for benzo(a)anthracene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene at sample E-6 (2.5-5) are the only ones to exceed their respective regulatory screening level. While several of the polycyclic aromatic hydrocarbons (PAHs) in sample E-6 (2.5-5), with the exception of 2-methylnaphthalene, had a reported detected concentration, all were j-flagged indicating that the result shown is an estimated concentration.

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[3] Background concentrations of the chemicals, with the exception of potassium 40 gamma, are not considered when selecting the HHCOPC nor during the risk assessment, as per IEPA direction, but discussions of the background concentration levels and their relationship to the calculated risks and hazards are presented, where applicable, within the screening risk assessment.

[4] No RSL was developed by the USEPA for the construction worker receptor. The USEPA does provide the USEPA RSL Calculator (http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search) which includes a construction worker scenario that can be used to derive RSLs for this receptor group. Regardless, the IEPA requested that the inputs and equations presented in TACO be used for the construction worker.

Sample E-6 is shown in Figure 3-1. For B(a)P and dibenz(a,h)anthracene their reported analytical concentration at 40 and 44 sample locations, respectively, have detection limits in excess of their respective regulatory screening level. These sample results were reviewed and it was determined that only four locations in the 0 to 3 feet bgs soil horizon and four in the 3 to 10 feet bgs soil horizon, had detected concentration(s) of another PAH when either B(a)P's or dibenz(a,h)anthracene's detection limit was greater than the regulatory screening level. Where detected concentrations were present for the other PAHs, they were generally j-flagged. Additionally, in no cases are any of the detected concentrations for these PAH samples greater than their respective regulatory screening level. Of the 40 and 44 samples with B(a)P and dibenz(a,h)anthracene, respectively, with reporting limits greater than the screening level, all but three of the samples are within a factor of two of the screening level of 0.29 milligrams per kilogram (mg/kg) which would result in a risk level of less than 2×10^{-6}.

As indicated in Table A-2, the arsenic results for 16 soil samples had detection limits (with a high of 15 mg/kg) greater than the USEPA RSL of 3 mg/kg with the results from only two soil samples greater than the site-specific background concentration of 11.6 mg/kg. For completeness, soil samples with HHCOPC concentrations at the reported detection limit were retained and the contribution of these samples to risks and hazards, are evaluated using the reported detection limit as presented in Sections 8 and 9.

As indicated in Table A-2 of Attachment A, the following radionuclides were evaluated in certain soil samples collected within the FPSA: lead 212 gamma, lead 214 gamma, potassium 40 gamma, radium-226, radium-228, thallium 208 gamma, and uranium 235 gamma. Screening levels for these radionuclides were estimated using the "Preliminary Remediation Goals [PRG] for Radionuclides PRG Calculator"[5] (USEPA 2015b). Concentrations for all radionuclides with the exception of potassium 40 gamma and radium-226 were below their estimated screening level.

One soil sample (SB-04-0.5-1) (Figure 3-1) detected radium-226 at a concentration of 5.63 picocuries per gram (pCi/g), which is greater than the PRG for radium-226 of 3.05 pCi/g. However, two additional duplicate soil samples reported concentrations of radium-226 of 1.74 pCi/g and 2.28 pCi/g, both below the PRG; therefore, radium-226 is not considered an HHCOPC in soil. The five soil samples that were analyzed for potassium 40 gamma detected potassium 40 gamma at concentrations greater than the PRG of 0.219 pCi/g with concentrations ranging from 11 to 19 pCi/g. These concentrations are within the range of background values of potassium 40 (1.89 pCi/g to 40.5 pCi/g for all rock) (Eisenbud and Gesell 1997). Eisenbud and Gesell (1997) also indicates background potassium 40 concentrations in soil at an average of 10.8 pCi/g and from continental crust at an average of 23 pCi/g. Therefore, potassium 40 is not considered an HHCOPC in soil. Based upon these results, no radionuclides were identified as HHCOPC in soil.

A summary of the HHCOPCs selected for further evaluation in the SLHHRE are presented in Table 3-1.

[5] PRG calculator for radionuclides was accessed in October 2015 at http://epa-prgs.ornl.gov/cgi-bin/radionuclides/rprg_search.

4 Toxicity Assessment

The objectives of the toxicity assessment are to evaluate the inherent toxicity of the chemicals in soil under investigation and to identify the level of exposure below which these toxic effects are not expected to occur and/or a target risk level is not expected to be exceeded. For the HHCOPCs identified in Section 3, ENVIRON reviewed the toxicity values available from the following hierarchy of sources presented in USEPA (2003):

- Tier 1 – USEPA's Integrated Risk Information Service (IRIS).
- Tier 2 – USEPA's Provisional Peer Reviewed Toxicity Values (PPRTVs) – The Office of Research and Development/National Center for Environmental Assessment/Superfund Health Risk Technical Support Center (STSC) develops PPRTVs on a chemical specific basis when requested by USEPA's Superfund program.
- Tier 3 – Other Toxicity Values – Tier 3 includes additional USEPA and non-USEPA sources of toxicity information. Priority should be given to those sources of information that are the most current, the basis for which is transparent and publicly available, and which have been peer reviewed.

Appropriate carcinogenic and noncarcinogenic toxicity values were selected for each of the HHCOPCs as presented in Table 4-1. For the majority of the chemicals, the toxicity factor used in the development of the USEPA RSL was selected. For certain receptors evaluated with shorter durations of exposure, subchronic toxicity values for evaluating noncarcinogenic effects were obtained. These subchronic noncarcinogenic toxicity values are provided in parentheses under the chronic noncarcinogenic toxicity value in Table 4-1. When a subchronic toxicity value was not available, the chronic toxicity value was used.

Lead is considered to be a special case because of the difficulty in identifying the classic "threshold" needed to develop a reference dose (RfD). USEPA, therefore, evaluates lead exposure by using blood-lead modeling, such as the Integrated Exposure-Uptake Biokinetic Model (IEUBK) (USEPA 2010) for children or the Adult Lead Model (ALM) (USEPA 2009a).

5 Receptors

As outlined in the Proposed Risk Approach Letter and Addendum (ENVIRON 2014a, 2014b), the receptors considered in this SLHHRE were a Current Environmental Worker, Future Industrial/Commercial Worker, Construction Worker, Future Utility Worker, and Adolescent Trespasser. The receptors were evaluated for exposure to soil via incidental ingestion, dermal contact, and inhalation of particulates (for naphthalene the volatile inhalation pathway was also considered). A discussion of each receptor and the AOIs (see Section 2) in which they were considered are provided in the sections below.

5.1 Current Environmental Worker

This site-specific receptor represents an adult individual who currently works as a fulltime environmental employee at the DePue site. This worker may be exposed to surface soil/subsurface soil combined (under the conservative assumption that the receptor could be exposed to subsurface soil down to a depth of 3 feet bgs). This receptor was evaluated for both the FPSA and UPSEA. Both CBS and ExxonMobil have current on-site environmental workers. ExxonMobil personnel use only office facilities in OU3 (the majority of the contractors' time outdoors is spent in OU2), but seasonally maintain limited areas of vegetation and perform limited area inspections within the FPSA and UPSEA. CBS has two contractors permanently stationed at the site. The majority of these contractors' time, and exposure, would take place within the interim water treatment plant (IWTP) building where they operate and maintain the IWTP. Potential exposure to impacted soil from the FPSA for these contractors would result from seasonal mowing, inspection and maintenance of the lift station, and performing monthly fence inspections. The exposure parameters applicable to this receptor are described in Table 5-1.

While exposure to soil to a depth of 3 feet bgs was considered for this receptor, based upon the activities currently being conducted and the long-term operations and management (O&M) to be performed by ExxonMobil contractors, the most applicable soil exposure depth over which exposure would be likely to occur is the upper 6 inches. The difference in exposure to soil to a depth of 3 feet bgs versus 6 inches bgs is discussed in Section 10.5 of the Uncertainty Section.

5.2 Future Industrial/Commercial Worker

A typical industrial/commercial worker who spends 250 days per year over a 25-year period working at an industrial facility does not currently exist at this site. However, portions of the FPSA or UPSEA may be identified as suitable for establishing an industrial facility in the future. To evaluate this receptor, the typical industrial/commercial worker receptor was considered for both the FPSA and UPSEA with exposure to soil down to a depth of 3 feet bgs (an environmental covenant will be placed on the property restricting exposure to soils below 3 feet for this receptor). As provided in Table 5-1, the exposure parameters used for these receptors are those typically assumed for an industrial/commercial worker by USEPA and state regulators and were identical to those currently used in establishing the USEPA RSLs for exposure of an industrial worker to chemicals present in the soil.

5.3 Construction Worker

This receptor represents an individual who may perform construction activities, as defined in IEPA (2013), which result in contact with soils deeper than 3 feet. For purposes of this screening assessment, this receptor could be exposed to surface soil and subsurface soil (down to 10 feet bgs) in limited areas. While this receptor is applicable to all areas of the FPSA, UPSEA, and the Bluff Area, expected exposure to the receptor may be different due to the physical location of the area and site imposed worker restrictions. This receptor was evaluated using the defaults provided in IEPA's TACO document (IEPA 2013), along with updated values (USEPA 2014a, 2002a). As the default exposure frequency for this receptor was only 30 days for the evaluation using TACO construction worker defaults subchronic toxicity values were used in the evaluation of noncarcinogenic chemicals.

While an unlikely or minimal exposure pathway, exposure to groundwater by the Construction Worker was considered in this assessment. When excavating soil, such as digging a trench or pit in the Eastern Area, the Slag Pile Area, the Lithopone Ridges Area, and the UPSEA, the possibility exists for shallow groundwater from the UWBZ (perched water) to pool at the bottom of the excavated area. Although the individuals working under such conditions are expected to wear the appropriate personnel protection equipment (PPE) to reduce or prevent exposure, it is possible that the Construction Worker could come into contact with the groundwater while performing certain tasks. As the chemicals identified as present in the groundwater (see Section 7) within 0 to 10 feet bgs are inorganics/metals, there is little to no potential for exposure through the inhalation pathway. Although dermal contact would be expected to be minimal, it was considered in this evaluation. Therefore, this assessment assumes that the potential exposure to groundwater by the Construction Worker is limited to incidental ingestion due to splashing and/or hand-to-mouth contact and through dermal contact with the hands without using PPE.

5.4 Future Utility Worker

This receptor represents an individual who may perform ground maintenance activities over a short period of time (e.g., repairing a leaking pipe) and which could potentially result in contact with soils deeper than 3 feet, which is the most likely scenario for future intrusive activities. Such a receptor may work on-site intermittently during the year for a small number of days. For purposes of this screening assessment, this receptor could be exposed to surface soil and subsurface soil (down to 10 feet bgs) in limited areas. As with the Construction Worker, this receptor is applicable to all areas of the FPSA, UPSEA, and the Bluff Area, though expected exposure to the receptor may be different due to the physical location of the area and site imposed worker restrictions. Site-specific information on the potential for exposure is not available for this receptor, therefore default values provided by the Oak Ridge National Laboratory (ORNL) were selected for use. It is anticipated that the use of these values would result in a conservative estimate of exposure. As the default exposure frequency for this receptor is only 20 days, subchronic toxicity values were used in the evaluation of noncarcinogenic chemicals.

As with the Construction Worker, potential exposure to groundwater by this receptor is expected to be minimal with individuals working under such conditions expected to wear the appropriate PPE to reduce or prevent exposure. This assessment assumes that the potential exposure to

groundwater by the Future Utility Worker is limited to incidental ingestion due to splashing and/or hand-to-mouth contact and dermal contact with the hands without using PPE.

5.5 Adolescent Trespasser

This receptor is representative of an individual that accesses the site without authorization. This receptor is assumed to contact affected media in soil at depths from 0 to 6 inches bgs in all three AOIs, the Bluff Area, FPSA, and UPSEA; however, the frequency of exposure is different in each area as described in Table 5-1.

The exposure parameters used as representative for the Adolescent Trespasser, with the exception of exposure frequency, were the same for each of the three AOIs. For the Adolescent Trespasser in the Bluff Area and UPSEA, an exposure frequency of 56 days per year was used (assuming 2 days per week exposure over 28 weeks of the year). As the FPSA is fenced to discourage unauthorized access, a potential exposure of two days per month over a six month period was conservatively considered for the Adolescent Trespasser.

6 Determination of Soil Risk-Based Screening Values

The regulatory screening levels (Section 3) used for identification of the HHCOPCs were calculated for specific receptors using default exposure assumptions provided by the regulatory agency deriving these screening levels. For this SLHHRE, site-specific receptors (Section 5), whose exposure assumptions differ from the default receptors used to obtain the regulator screening levels, were identified. Therefore, site-specific RSVs were determined for these site-specific receptors.

RSVs for the HHCOPCs were calculated using the equations presented below, the exposure parameter and chemical information presented in Table 5-1, and the toxicity information presented in Table 4-1. The resulting RSVs are presented in Table 6-1 with the calculations provided in Attachment B.

RSVs were calculated for the identified HHCOPCs for both noncarcinogenic and carcinogenic effects when applicable toxicity values were available. The equations used to calculate the RSVs, for all HHCOPCs other than lead, are typical equations used by the USEPA and a number of state regulatory agencies, including IEPA TACO calculations. RSVs were first estimated for each of the exposure pathways (incidental ingestion, inhalation of volatiles and particulates emitted from the soil, and dermal contact) with a combined RSV then estimated which is reflective of exposure to the pathways. Potential incidental ingestion of and dermal contact with groundwater was also evaluated for the Construction Worker and Future Utility Worker (Section 7).

The equations used for the noncarcinogenic evaluation are provided in Equations 1 through 4 below with Equations 5 through 8 used for the carcinogenic evaluation. Definition of the symbols and units used in the equations are presented in Table 5-1.

Incidental ingestion of soil for noncarcinogenic evaluation,

$$N_RSV_{Ing}^{Soil}\left(\frac{mg}{kg}\right) = \frac{THQ \times AT_{nc} \times BW}{EF \times ED \times IR \times \left[{}^{1}/_{RfD_0}\right] \times \left[10^{-6}\,{}^{kg}/_{mg}\right] \times RBAF} \quad (1)$$

Inhalation of volatiles and particulates emitted from soil for noncarcinogenic evaluation,

$$N_RSV_{Inhalation}^{Soil}\left(\frac{mg}{kg}\right) = \frac{THQ \times AT_{nc}}{EF \times ED \times ET \times \left[{}^{1}/_{RfC}\right] \times \left[{}^{1}/_{VF_s} + {}^{1}/_{PEF}\right]} \quad (2)$$

Dermal exposure for noncarcinogenic evaluation,

$$N_RSV_{Dermal}^{Soil}\left(\frac{mg}{kg}\right) = \frac{THQ \times AT_{nc} \times BW}{EF \times ED \times SA_{soil} \times AF \times ABS \times \left[{}^{1}/_{RfD_0 \times GIABS}\right] \times \left[10^{-6}\,{}^{kg}/_{mg}\right]} \quad (3)$$

Total noncarcinogenic RSV.

$$N_RSV_{Total}^{Soil}\left(\frac{mg}{kg}\right) = \frac{1}{\left[\frac{1}{N_RSV_{Ing}^{Soil}}\right] \times \left[\frac{1}{N_RSV_{Dermal}^{Soil}}\right] \times \left[\frac{1}{N_RSV_{Inhalation}^{Soil}}\right]} \quad (4)$$

Incidental ingestion of soil for carcinogenic evaluation,

$$C_RSV_{Ing}^{Soil}\left(\frac{mg}{kg}\right) = \frac{TR \times AT_c \times BW}{EF \times ED \times IR \times CSF \times \left[10^{-6}\,{}^{kg}/_{mg}\right] \times RBAF} \quad (5)$$

Inhalation of volatiles and particulates emitted from soil for carcinogenic evaluation,

$$C_RSV_{Inhalation}^{Soil}\left(\frac{mg}{kg}\right) = \frac{TR \times AT_c}{EF \times ED \times ET \times IUR \times \left[{}^{1}/_{VF_s} + {}^{1}/_{PEF}\right] \times \left[1{,}000\,{}^{\mu g}/_{mg}\right]} \quad (6)$$

Dermal exposure for carcinogenic evaluation,

$$C_RSV_{Dermal}^{Soil}\left(\frac{mg}{kg}\right) = \frac{TR \times AT_c \times BW}{EF \times ED \times SA_{soil} \times AF \times ABS \times \left[{}^{CSF}/_{GIABS}\right] \times \left[10^{-6}\,{}^{kg}/_{mg}\right]} \quad (7)$$

Total carcinogenic RSV[6].

$$C_RSV_{Total}^{Soil}\left(\frac{mg}{kg}\right) = \frac{1}{\left[\frac{1}{C_RSV_{Ing}^{Soil}}\right] \times \left[\frac{1}{C_RSV_{Dermal}^{Soil}}\right] \times \left[\frac{1}{C_RSV_{Inhalation}^{Soil}}\right]} \quad (8)$$

[6] As indicated in USEPA (2005a), a USEPA selected 3-fold adjustment will be applied for an age range between 2 to <16-years for carcinogenic PAHs. Therefore, the RSVs for the carcinogenic PAHs estimated for the Adolescent Trespasser were divided by a factor of 3 to account for mutagenic effects.

Only one of the HHCOPCs listed in Table 3-1, naphthalene, was identified as a volatile organic chemical (VOC). For this HHCOPC, the soil-to-air volatilization factor (VF_s) in units of cubic meter per kilogram, Equation 9, must be calculated while for the other HHCOPCs, no volatilization is anticipated to be occurring; therefore, the VF_s term is excluded from Equations 2 and 6.

$$VF_S = (Q / C_{vol}) \times \frac{(3.14 \times D_A \times T)^{1/2}}{(2 \times \rho_b \times D_A)} \times 10^{-4}\ m^2 / cm^2 \tag{9}$$

Calculation of the VFs requires the estimation of a chemical-specific apparent diffusivity for each of the HHCOPCs which can be performed using Equation 10.

$$D_A = \frac{\left[\left(\theta_a^{10/3} \cdot D_i \cdot H' + \theta_w^{10/3} \cdot D_w\right) / n^2\right]}{\rho_b \cdot K_d + \theta_w + \theta_a \cdot H'} \tag{10}$$

The default parameter values within Equations 9 and 10 and the chemical-specific values for naphthalene are presented below:

Q/C_{vol} (inverse of the mean concentration at the center of a square source) = 85.81 (g/m^2-s)/(kg/m) [IEPA 2013 default for industrial/commercial and construction worker]

ρ_b (dry soil bulk density) = 1.5 (g/cm^3)

T (exposure interval) = 7.90×10^8 seconds (Future Industrial Worker); 3.6×10^6 seconds (Construction Worker and Future Utility Worker); 7.88×10^8 seconds (Current Environmental Worker); and 3.15×10^8 seconds (Trespasser)

θ_a (air-filled soil porosity) = 0.28

θ_w (water-filled soil porosity) = 0.15

η (total soil porosity) = 0.43 (L_{pore} / L_{soil})

D_i (diffusivity in air) = 6.05×10^{-2} (cm^2/s)

D_w (diffusivity in water) = 8.38×10^{-6} (cm^2/s)

H' (unitless Henry's law constant) = 1.8×10^{-2}

K_d = 9.26 (K_{oc} [organic carbon partition coefficient] of 1,544 [L/kg] times a default foc [fraction of organic carbon] of 0.006)

Using these values, VFs of 5.77×10^4 m^3/kg, 5.77×10^3 m^3/kg (Industrial Worker VF divided by a factor of 10), 5.77×10^4 m^3/kg, and 3.65×10^4 m^3/kg for the Industrial Worker, Construction Worker/Future Utility Worker, Current Environmental Worker, and Trespasser receptors, respectively.

Calculation of RSVs for Lead

As discussed in Section 4, health risks associated with exposure to inorganic lead are not assessed using the traditional risk assessment methodology based on the use of toxicity values [e.g., RfD, reference concentration (RfC), cancer slope factor (CSF), or inhalation unit risk (IUR)] and the typical exposure equations presented in Equations 1 through 8. Rather lead exposure is assessed based upon an increase in the lead concentration in blood using either the IEUBK model for children (USEPA 2010) or the ALM for adult receptors (USEPA 2009a). For the SLHHRE conducted on OU3, no exposure to children is anticipated; therefore, only the ALM was used. As the ALM focus is on estimating fetal blood lead concentration in women exposed to lead, the adolescent trespasser considered for the evaluation of lead exposure was assumed to be between the ages of 13 to 17 years (which conservatively reflects the age when a teenager could become pregnant).

The current version of the ALM was downloaded from the USEPA website (USEPA 2009a) with all defaults retained except for the soil ingestion rate, exposure frequency, and averaging time. Receptor-specific soil ingestion rates of 0.05 grams per day (gm/day) for the Future Industrial Worker and Current Environmental Worker, 0.10 gm/day for the Construction Worker and 0.33 gm/day for the Future Utility Worker, and 0.05 gm/day for the Trespasser were used. Exposure frequencies of 250 days per year for the Future Industrial Worker, 29 days per year for the Current Environmental Worker, 30 days per year for the Construction Worker, 20 days per year for the Future Utility Worker, and 56 and 12 days per year for the Trespasser considering either 2 days per month over a six month period (FPSA) or 2 days per week (Bluff Area and UPSEA) over 28 weeks were also used in estimating the lead RSV for each receptor. For the Future Industrial Worker and Future Utility Worker, the default averaging time of 365 days per year was used. For the remaining receptors it is not expected that exposure will occur throughout the year; therefore, reduced average times were used as follows:

- 182 days per year for Current Environmental Worker (assuming one-half the year),
- 42 days per year for the Construction Worker (IEPA [2013] default), and
- 196 days per year for the Trespasser (28 weeks per year).

The resulting lead RSVs for these receptors are presented in Table 6-2.

7 Evaluation of Exposure to Groundwater

As described in Section 5.3, exposure to groundwater was evaluated only for the Construction Worker and Future Utility Worker receptors assuming potential exposure up to 10 feet bgs to perched water. The incidental ingestion pathway and dermal contact pathway were considered as the chemicals present in groundwater are metals/inorganics. RSVs were not estimated for the groundwater evaluation; rather the carcinogenic risk or noncarcinogenic hazard quotient (HQ) was calculated using the maximum concentration identified for each of the chemicals. The equation used to estimate the noncarcinogenic HQ for the incidental ingestion pathway is provided in Equation 11 with Equation 12 used to estimate the carcinogenic risk for the incidental ingestion pathway. The HQ and risk for the more infrequent dermal contact pathway was evaluated using Equation 13 and Equation 14, respectively. Definition of the symbols, units, and default values used in the equations are presented in Table 5-1.

$$HQ_{Ing}^{GW} = \frac{Conc_{GW} \times EF \times ED \times IR_{GW}}{RfD_0 \times AT_{nc} \times BW} \tag{11}$$

$$Risk_{Ing}^{GW} = \frac{Conc_{GW} \times EF \times ED \times IR_{GW} \times CSF}{AT_c \times BW} \tag{12}$$

$$HQ_{DC}^{GW} = \frac{Conc_{GW} \times K_p \times t_{event} \times EV \times EF \times ED \times SA_{GW}}{RfD_0 \times GIABS \times AT_{nc} \times BW} \tag{13}$$

$$Risk_{DC}^{GW} = \frac{Conc_{GW} \times K_p \times t_{event} \times EV \times EF \times ED \times SA_{GW} \times \left[{}^{CSF}/_{GIABS}\right]}{AT_c \times BW} \tag{14}$$

Summary statistics for the Construction Worker's potential exposure to groundwater are presented in Table 7-1 for those chemicals identified as having at least one concentration greater than its defined screening level[7] (more detailed statistics for all chemicals considered is presented in Table A-3 of Attachment A). The groundwater measurements obtained between the years 2007 to 2010 in the UWBZ were compared to an HHCOPC screening value of 10 times the groundwater standard conservatively selected as the TACO groundwater remediation objectives for Class II groundwater. As indicated in Table 7-1, a large number of chemicals were identified as having at least one detected concentration in excess of its screening standard; therefore, the potential noncarcinogenic hazard effects (no carcinogenic chemicals were identified as exceeding a screening standard; therefore, no evaluation of carcinogenic risk was required) associated with exposure to these chemicals was assessed using Equations 11 and 13. Exposure parameter values used in the assessment are presented in Table 5-1. As stated in Table 5-1, the rate of incidental ingestion of groundwater by the Construction Worker

[7] The screening level was defined as the most conservative of the TACO Class II or if unavailable the TACO Class I multiplied by a factor of 10 to account for only incidental groundwater ingestion (e.g., hand-to-mouth or splashing).

was assumed to be 1/100th of the potable ingestion rate since ingestion of groundwater is expected to occur only through hand-to-mouth contact or splashing effects.

The estimated HQs associated with the Construction Worker and Future Utility Worker's exposure to groundwater using Equations 11 and 13 are presented in Table 7-2. As the duration of exposure for the Construction Worker and Future Utility Worker is over a short-time period, subchronic noncarcinogenic toxicity values were used, when available (when not available the chronic toxicity value was used). The toxicity values used, along with the maximum detected concentration and calculated HQs and risk are presented in Table 7-2. For the noncarcinogenic evaluation the majority of the chemicals produced HQs below the target level of 1.0. For the incidental ingestion pathway, only four chemicals, cadmium with an HQ of 28, copper and manganese with HQs of 5, and zinc with an HQ of 10, were in excess of the target level of 1.0 for the Construction Worker. For the Future Utility Worker, only the noncarcinogenic hazard estimate for cadmium, with an HQ of 2, exceeds the target level of 1.0. As expected, the HQs estimated for exposure to groundwater through dermal contact were less than the exposure estimates for the incidental ingestion exposure route. The only chemicals reporting an HQ greater than 1.0 for the dermal contact pathway were cadmium (HQ of 12) and manganese (HQ of 3) for the Construction Worker receptor.

As an RfD or CSF is not available for lead, it cannot be evaluated for noncarcinogenic or carcinogenic effects. There are also no readily available models for estimating exposure to lead in water to an adult receptor; therefore, no additional evaluation was conducted.

Although cadmium in perched groundwater was identified as having an HQ above the target level of 1.0 for both the Construction Worker and Future Utility Worker and, copper, manganese, and zinc only for the Construction Worker and lead was greater than 1/100th of its action level, it is highly unlikely that exposure would occur in the manner described, e.g., exposure always at the maximum concentration and exposure to groundwater occurring for each of the days (or one-half of the days for the dermal pathway) the Construction Worker or Future Utility Worker is on-site. Additionally, as indicated above, this evaluation was conducted using the maximum detected concentration over all samples.

8 Summary Statistics for Receptor-Specific Risk-Based Screening Values

Summary statistics of the sampling data for the HHCOPCs identified in Section 3 within a specific-AOI and for a specific-receptor are presented in Tables 8-1 through 8-6 for the Future Industrial Worker, Current Environmental Worker, Construction Worker, Future Utility Worker, Trespasser applicable to the Bluff Area and UPSEA, and Trespasser applicable to the FPSA, respectively. Keeping with a conservative approach, HHCOPCs having at least one exceedance of the receptor-specific RSV are listed. Therefore, if one of the HHCOPCs is not listed then none of the sample concentrations for that HHCOPC were larger than the receptor-specific RSV.

8.1 Summary Statistics for Future Industrial Worker

As expected for the FPSA and UPSEA AOIs, the HHCOPCs resulting in the largest number of exceedances are arsenic and lead. For the Future Industrial Worker (Table 8-1), detected concentrations of arsenic exceeded the RSV of 3 mg/kg in approximately 87% of the samples in the FPSA and 93% of the samples in the UPSEA. When compared to the site-specific background concentration of 11.6 mg/kg, which is still conservative because it is significantly lower than the site-specific residential arsenic PRG, the number of exceedances dropped to 50% in the FPSA and 57% in the UPSEA. When considering the OU4 residential PRG only 40% of the detected concentrations in the FPSA and 39% in the UPSEA were identified as greater than the 21 mg/kg value. Concentrations of lead in soil was greater than its RSV of 1,962 mg/kg in 27% and 29% of the samples collected in the FPSA and the UPSEA, respectively. With the exception of B(a)P, the concentration of the other HHCOPCs are greater than their respective RSV in less than 5% of the samples collected. In the FPSA, 9% of the samples in which B(a)P was analyzed had concentrations greater than the RSV of 0.29 mg/kg while 25% (1 of 4 samples) in the UPSEA were greater than the RSV. Principal HHCOPC drivers based upon the analysis for the Future Industrial Worker are arsenic, B(a)P, and lead.

8.2 Summary Statistics for Current Environmental Worker

For the Current Environmental Worker (Table 8-2), arsenic and lead were the two primary HHCOPCs with sample results greater than the RSVs, though there were fewer exceedances than for the Future Industrial Worker. The number of samples having an arsenic concentration greater than the RSV of 25.8 mg/kg was 37% in the FPSA and 32% in the UPSEA. Lead concentrations in soil in the FPSA are greater than the RSV of 8,433 mg/kg in 7% of the samples and in only 1 of 28 samples (4%) in the UPSEA. The other HHCOPC, B(a)P, only had a single sample concentration in excess of its respective RSV. Principal HHCOPC drivers based upon the analysis of the Current Environmental Worker are arsenic and lead.

8.3 Summary Statistics for Construction Worker

Summary statistics for the Construction Worker for soil are presented in Table 8-3. This evaluation did not identify any chemicals in the soil in the Bluff area with an exceedance of the RSV.

Principal HHCOPCs in the FPSA, those with greater than 5% of the samples exceeding the applicable RSV, were arsenic, cadmium, copper, lead, and manganese (Table 8-3). For

arsenic, 6% of samples in the 0 to 3 feet bgs interval and 11% in the 3 to 10 feet bgs interval exceeded the carcinogenic RSV of 197 mg/kg. The noncarcinogenic chemicals, arsenic (RSV=143 mg/kg), cadmium (RSV=146 mg/kg), copper (RSV=3,392 mg/kg), and manganese (RSV=6,201 mg/kg) had reported exceedances of 11%, 15%, 9%, and 5% of their samples in the 0 to 3 feet bgs interval (14%, 8%, 13%, and 4% in 3 to 10 feet bgs interval), respectively. The lead RSV of 941 mg/kg was exceeded in 39% of the samples in the 0 to 3 feet bgs interval with 25% exceeding in the 3 to 10 feet bgs interval. Several additional noncarcinogenic HHCOPCs, barium, cobalt, and zinc, had less than 5% of their samples with concentrations in excess of their applicable RSV. In the UPSEA, arsenic is not a principal risk driver as no samples were identified as exceeding the arsenic carcinogenic RSV of 197 mg/kg nor the noncarcinogenic RSV of 143 mg/kg. Lead (RSV=941 mg/kg), and manganese (RSV=6,201 mg/kg) in this area had exceedances. In the 0 to 3 feet interval lead's RSV was exceeded in 39% of the samples while manganese's RSV was exceeded in 7%. In the 3 to 10 feet interval, the frequency of detects for cadmium (RSV=146 mg/kg), lead, and manganese were 15%, 39%, and 8%.

In summary, for the Construction Worker receptor, lead would be identified as the principal HHCOPC driver with arsenic, cadmium, copper, and manganese also considered.

8.4 Summary Statistics for Future Utility Worker

Summary statistics for the Future Utility Worker for soil are presented in Table 8-4. A smaller number of HHCOPCs were identified for the Future Utility Worker than the Construction Worker (Section 8.3). However, neither evaluation identified chemicals in the soil in the Bluff Area at concentrations greater than their respective RSVs. Lead is the only chemical that was detected greater than the screening value in more than 5% of the soil samples, to a much lesser degree than for the Construction Worker receptor. In the FPSA, the lead RSV of 3,716 mg/kg was exceeded in 16% of the samples in the 0 to 3 feet bgs interval and 13% of the samples in the 3 to 10 feet bgs interval. Percent exceedances of the lead RSV in the UPSEA were slightly less with 11% of the samples in the 0 to 3 feet bgs interval and 8% of the samples in the 3 to 10 feet bgs interval.

In summary, for the Future Utility Worker receptor, lead would be identified as the principal HHCOPC driver.

8.5 Summary Statistics for Adolescent Trespasser

The only HHCOPC identified as of potential concern for the Adolescent Trespasser receptor (Tables 8-5 and 8-6) was arsenic. In the UPSEA, arsenic had measured concentrations exceeding the RSV of 33.3 mg/kg in 25% (7 of 28) of the samples. In the FPSA AOI (Table 8-6), only 6% of the samples were identified as having an arsenic concentration in excess of the carcinogenic RSV of 155 mg/kg. An exceedance of an RSV for the HHCOPCs was not noted in the Bluff Area.

8.6 Conclusions

Results shown in Tables 8-3 for the Construction Worker receptor, Table 8-4 for the Future Utility Worker receptor, and Table 8-5 for the Adolescent Trespasser receptor indicate no potential adverse health effects from HHCOPCs present in the soil to either of these receptors in the Bluff Area. No risks greater than 1×10^{-6} or an HQ greater than 1 for the Construction Worker, Future Utility Worker, or the Adolescent Trespasser for any chemical were noted in the Bluff Area. As these are the only receptors applicable to the Bluff AOI, the Bluff Area can be excluded from any future human health evaluations.

Based upon a comparison of the results for the Current Environmental Worker receptor (Table 8-2) and the Trespasser receptor for the FPSA (Table 8-6), there is no reason to include both receptors in future evaluations as the Current Environmental Worker's RSVs are slightly more restrictive (less than) than the Trespasser's RSVs. As long as both of these receptors are being considered for the same exposure area, the RSV's for Current Environmental Worker will be protective of the Trespasser.

Under current conditions, using a point by point comparison of maximum detected concentrations, principal HHCOPC drivers based upon the analysis of the Future Industrial Worker and the Current Environmental Worker are arsenic and lead with B(a)P also considered for the Future Industrial Worker. For the Construction Worker and Future Utility Worker receptors, lead would be identified as the principal HHCOPC driver with arsenic, cadmium, copper, and manganese also considered for the Construction Worker receptor. For the Trespasser receptor in the FPSA and UPSEA AOIs, arsenic was the only principal HHCOPC driver. Based upon this review and the consideration of all receptors included in the evaluation, arsenic and lead would be considered as the principal HHCOPC drivers within OU3. Arsenic and lead were also identified as the principal and only HHCOPCs when estimating the risk using the 95% upper confidence limit (UCL), as discussed in Section 9.6.

9 Generation of Risk Maps

Risk maps were created for the receptor-specific HHCOPCs for both carcinogenic and noncarcinogenic effects, where applicable. The carcinogenic risk was estimated by dividing the HHCOPC concentration by the calculated carcinogenic-RSV and multiplying by 1×10^{-6} (this value was used since the RSVs were based upon a target risk level of 1×10^{-6}; if 1×10^{-5} had been used as the target risk level to develop the RSV then the ratio would be multiplied by that risk level). A noncarcinogenic HQ was estimated by dividing the HHCOPC concentration by the calculated noncarcinogenic-RSV. While the RSVs listed in Table 6-1 are shown to only two significant digits, the RSVs used in these calculations were retained at 16 significant digits to maximize the accuracy and minimize any rounding issue when estimating the risk and hazard. The risks and hazards estimated for each single sampling point and each specific receptor are presented in Attachment C1[8] with two significant figures. Risk maps were created for those chemicals identified as having a risk level greater than 1×10^{-6} or a HQ greater than 1 when rounding the estimated risk or HQ to one significant digit. In addition to presenting the risk and/or HQ for each chemical per sample location the hazard indice (HI) resulting from the sum of barium and cadmium (to address cumulative effects to the same target organ), the sum of risks for all carcinogenic PAHs, and the cumulative risk from arsenic and PAHs are presented in Attachment C1. Risk maps were produced showing the total PAH risk and cumulative risk from arsenic and PAHs. Since in no case did the sum of the barium and cadmium values result in the shading of polygon not already shaded due to barium or cadmium independently exceeding an additional figure was not generated.

As requested by IEPA, the risk maps (and the risks and hazards presented in Attachment C1) were generated to show the worst-case estimated potential risk or hazard effect at each individual sample point as opposed to averaging the samples in some manner over an exposure area. If multiple samples were obtained within the soil boring over the soil horizon being considered for the receptor under evaluation (e.g., 0 to 3 feet bgs for the construction worker) then the maximum detected concentration over the range was used to represent the sample. This should be considered a conservative[9] (worst case) estimate of risk associated with exposure to concentrations present at these locations. For the evaluation of certain HHCOPCs for the Future Industrial Worker and Construction Worker receptors, an analysis was performed to show the difference when using the maximum detected concentration over the soil horizon versus the average of all samples over the soil horizon (i.e., 0 to 3 feet bgs, 3 to 10 feet bgs,

[8] Estimation of the associated risk due to exposure to PAHs is also presented in Attachment C2 using the B(a)P equivalent method. In the B(a)p equivalent method, the concentrations are adjusted by a B(a)P equivalent factor (USEPA 2015c). The tables presented in Attachment C2 demonstrate that the results using the B(a)P equivalent method are identical to those produced by dividing the concentration by the cancer RSV multiplied by 1×10^{-6}. It should be noted that the toxicity factors used for the PAHs were adjusted by a similar B(a)P equivalent factor.

[9] This evaluation considers all of a receptor's exposure comes from a single sample point which would result in a conservative estimate of risk. A receptor's true exposure would be over the entire area that they traverse while performing their job related activities. The use of the 95% UCL or average (for lead) concentration for all samples within the exposure area would be more appropriate and would be more reflective of the actual risk. The results presented in this analysis should be considered a first step in identifying the chemical drivers for the AOIs and identifying potential areas which require further evaluation.

and 0 to 6 inches dependent upon the receptor under evaluation). For these two receptors, separate polygon maps are presented for risk and/or hazard estimates using the maximum detected concentration for the generation of one map and the average over the soil horizon for the other map.

Based upon the summary statistics for the receptor-specific RSVs described in Section 8 and presented in Tables 8-1 through 8-6, two separate types of risk maps were created.[10] For those HHCOPCs identified as primary drivers (e.g., any carcinogenic chemical or those noncarcinogenic chemicals having generally 5% or more of exceedances of the developed RSV), Thiessen Polygon maps were created. Each polygon defines a region represented by the soil concentration measured at the associated sample point. For carcinogens, the Thiessen polygons are color coded to indicate whether the estimated risk level was less than or equal to 1×10^{-6} (no shading), greater than 1×10^{-6} and less than or equal to 1×10^{-5} (shaded blue), greater than 1×10^{-5} and less than or equal to 1×10^{-4} (shaded purple), or greater than 1×10^{-4} (shaded magenta). The risk tables presented in Attachment C1 are similarly color coded to identify those samples having risks greater than 1×10^{-6} or HQs greater than 1. The calculated risk levels presented in the figures were rounded to one significant digit (e.g., a calculated value of 1.8×10^{-5} would be rounded to 2×10^{-5} while a value of 1.3×10^{-5} would be rounded to 1×10^{-5}) before comparison. Estimated values above 1×10^{-4} may be considered to represent a potential adverse risk to the evaluated receptor. The IEPA has indicated their target risk goal is 1×10^{-6} with both NCP (1994) and USEPA having acceptable exposure levels at concentration levels that represent an excess upper bound lifetime cancer risk to an individual between 1×10^{-4} and 1×10^{-6}.

For the noncarcinogenic chemicals the estimated HQ was also rounded to one significant digit. Thiessen polygon maps were produced for specific-HHCOPCs and receptors identified as having generally 5% or more of sample concentrations in excess of the developed RSVs. The polygons are color coded to indicate an HQ less than or equal to 1 (no shading), greater than 1 and less than or equal to 5 (shaded light green), greater than and less than or equal to 10 (shaded green), and greater than 10 (shaded brown). Estimated values above an HQ of 1 are considered to represent a potential adverse noncarcinogenic effect to the evaluated receptors. For the other HHCOPCs a risk-boxed map was generated which shows the carcinogenic risk or noncarcinogenic HQ for each of the HHCOPCs at each of the sampling points. A description of each polygon or box map for each receptor is presented in the section below.

9.1 Future Industrial Worker

Thiessen polygon maps for maximum detected concentrations of arsenic, lead, and PAHs[11] from 0 to 3 feet bgs are presented in Figures 9-1, 9-2, and 9-3. A risk-box map for the noncarcinogenic chemicals, arsenic, barium[12], cadmium, cobalt, and manganese is presented in

[10] Attachment D contains a listing of the samples and concentrations used to develop Figures 9-1 through 9-38.

[11] The risks attributable to each individual PAH can be seen in the tables presented in Attachments C1 and C2.

[12] HQs for barium are displayed in Figure 9-4 to demonstrate that the combined hazard posed by exposure to both barium and cadmium would not result in a significant increase than that posed by

Figure 9-4. As stated above, Thiessen polygon maps were also generated for this receptor using the average concentration of arsenic (Figure 9-5) and lead (Figure 9-6) over each 0 to 3 feet bgs soil boring. These maps can be compared to Figures 9-1 and 9-2, respectively, to evaluate the use of the maximum detected concentration versus the average concentration. The cumulative risk resulting from exposure to both arsenic and the PAHs is presented in Figure 9-7.

9.2 Current Environmental Worker

Thiessen polygon maps for arsenic, PAHs, and lead from 0 to 3 feet bgs for the Current Environmental Worker are presented in Figures 9-8, 9-9, and 9-10 with a risk-box map showing the noncarcinogenic hazards for arsenic presented in Figure 9-11. The cumulative risk resulting from exposure to both arsenic and the PAHs is presented in Figure 9-12.

9.3 Construction Worker

Thiessen polygon maps for the Construction Worker receptor for carcinogenic risk from exposure to arsenic in the soil are presented in Figures 9-13 (0 to 3 feet bgs) and 9-14 (3 to 10 feet bgs). The Thiessen polygon maps shown in Figures 9-15 (0 to 3 feet bgs) and 9-16 (3 to 10 feet bgs) presented for exposure to lead in soil. Thiessen polygons are also presented for the noncarcinogenic barium and cadmium[13] (Figures 9-17 for 0 to 3 feet bgs and 9-18 for 3 to 10 feet bgs), arsenic (Figures 9-19 for 0 to 3 feet bgs and 9-20 for 3 to 10 feet bgs), and copper (Figures 9-20 for 0 to 3 feet bgs and 9-21 for 3 to 10 feet bgs). Figures 9-23 (0 to 3 feet bgs) and 9-24 (3 to 10 feet bgs) are risk box maps of the other noncarcinogenic chemicals (i.e., cobalt, manganese, and zinc).

The carcinogenic risk from arsenic when using the average concentration over the soil boring for 0 to 3 feet bgs are shown in Figure 9-25. Noncarcinogenic hazards based on the average concentration over the 0 to 3 feet soil boring for lead, cadmium, and arsenic are presented in Figures 9-26, 9-27, and 9-28, respectively.

9.4 Future Utility Worker

Thiessen polygon maps for the Future Utility Worker receptor for carcinogenic risk from exposure to arsenic in the soil are presented Figure 9-29 (0 to 3 feet bgs) and 9-30 (3 to 10 feet bgs). The Thiessen polygon maps shown in Figure 9-31 (0 to 3 feet bgs) and 9-32 (3 to 10 feet bgs) are presented for exposure to lead in soil. Risk box maps for the chemicals, arsenic, barium (shown only to indicate its small contribution to any summed barium and cadmium value), cadmium, and manganese, are shown in Figures 9-33 (0 to 3 feet bgs) and 9-34 (3 to 10 feet bgs).

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cadmium alone. In no cases would the sum of barium and cadmium result in an exceedance of the target level of 1 where cadmium did not already exceed this value.

[13] In no case (e.g., for none of the polygons), would the sum of barium and cadmium result in a significant increase than that posed by the individual chemical alone. In no cases would the sum of barium and cadmium result in an exceedance of the target level of 1 where barium or cadmium did not already exceed this value.

9.5 Trespasser

A Thiessen polygon map of the carcinogenic risk for arsenic exposure for the trespasser in the FPSA is presented in Figure 9-35 and for the trespasser in the UPSEA in Figure 9-36. Risk-box maps showing arsenic and lead exposure in the FPSA is presented in Figure 9-37 while lead exposure is presented in Figure 9-38 for the UPSEA.

9.6 Exposure Concentration (Upper Confidence Limits)

For the majority of the risk and hazard estimates generated in this evaluation, the carcinogenic risks and HQs were estimated using the maximum detected concentration within each soil boring, for the depth range applicable to the receptor under consideration. Generation of risks and HQs in this manner results in the assumption that the receptor's entire exposure over their specified exposure duration and frequency occurs at a concentration equal to that maximum concentration. However, the receptor's true exposure would be over the entire area that they would traverse while performing their job related activities. Therefore, it is more appropriate to generate an exposure point concentration (EPC) representative of the average exposure contacted by the receptor over the exposure area during a specific time period of time (USEPA 2009b). This was accomplished, as requested by IEPA, by estimating a 95% UCL on the mean, or the average concentration for lead, for all receptors except the Construction Worker and Future Utility Worker, as representative of the EPC. USEPA promulgated software, such as ProUCL (USEPA 2013) was used for the calculations. The 95% UCLs were estimated for all chemicals identified in Table 8-1 (Industrial Worker receptor), Table 8-2 (Current Environmental receptor), and Tables 8-5 and 8-6 (Adolescent Trespasser receptors).

All data associated with the specific area and applicable depth of samples for the receptor were included. A Microsoft Excel spreadsheet is provided as Attachment E detailing the reduction of the data based upon splits and duplicates, the subsets of the data for each applicable area used as input into ProUCL, and the output returned by ProUCL (see short description in Attachment E). For this evaluation, sample duplicates and splits were combined in the following manner:

- If the chemical was not detected in both samples (e.g. the original sample and the duplicate or split) then the lowest reported detection limit was selected as the represented detection limit for the sample.
- If the chemical was detected in one of the samples, but not the other, the detected concentration was used.
- If the chemical was detected in both samples and the relative percent difference (RPD) was less than 25%, then the average of the two samples was used.
- If the chemical was detected in both samples and the RPD was greater than or equal to 25%, then the maximum detection concentration was used.

The RPD was calculated using Equation 15 where S represents the concentration in the original sample and D represents the concentration in the duplicate sample.

$$RPD = \frac{|S - D|}{[S + D/2]} \times 100 \qquad (15)$$

Non-detects were handled by ProUCL (USEPA 2013). As indicated in Section 4.6 of the ProUCL Technical Guidance (USEPA 2013), when the number of samples with non-detects is greater than 50% the use of the Kaplan-Meier method is not recommended. This effected the estimate of many of the PAHs as they were detected in less than 50% of the samples. In these cases, the maximum detected concentration (or one-half the detection limit in cases where none of the samples had detected concentrations) was used in the estimation of risks and HQs.

The areas over which the 95% UCLs were estimated included the Bluff Area, the UPSEA, and the subareas of the FPSA identified as the Lithopone Ridges Area, Slag Pile Area, and all other areas of the FPSA. The Adolescent Trespasser was evaluated for exposure to chemicals presented in the 0 to 0.5 foot bgs soil depths in all areas. For the Future Industrial Worker and Current Environmental Worker, 95% UCLs were estimated using samples within the 0 to 0.5 foot soil depth (surface soil) and the 0 to 3 foot soil depth (subsurface soil) in the UPSEA and FPSA areas. The 95% UCLs estimated using ProUCL are presented in Table 9-1 with the PAHs included such that the cumulative carcinogenic risk could be estimated.

The risk and HQ was calculated by dividing the carcinogenic/noncarcinogenic RSV by the 95% UCL and for risk multiplying by 1×10^{-6}. The resulting risks and hazards for the Adolescent Trespasser, Future Industrial Worker, and Current Environmental Worker are presented in Tables 9-2, 9-3, and 9-4, respectively. The risks and hazards generated using the 95% UCLs indicate that the principal HHCOPC drivers are arsenic and lead. The area showing the most exceedance of the target risk and target hazard is the Lithopone Ridge Area of the FPSA with the Other Areas showing less risk. From all areas and receptors evaluated using the 95% UCL, the Lithopone Ridge AOI was the only area identified as presenting a risk above the acceptable lower end of the range of 1×10^{-6} to 1×10^{-4}. As indicated in Table 9-3, total risk from exposure to PAHs for the Future Industrial Worker receptor ranged from 3×10^{-5} to 3×10^{-7} over the different areas and depths, which is within the acceptable risk range of 1×10^{-6} to 1×10^{-4} even though in most cases the maximum detected concentration for each PAH was used in the risk estimation.

The use of all sample points within a specific area for estimating the 95% UCL provides valuable information for identifying the chemical drivers for the AOIs and potential areas which require further evaluation. Step-wise removal of specific samples (e.g., remediation of specific areas) can be used to demonstrate how the resulting 95% UCL, and risks and hazards, would change. For example, the recalculation of the 95% UCL for arsenic following the removal of its highest detected concentration (87,900 mg/kg – next highest concentration is only 425 mg/kg in the 0 to 0.5 feet bgs soil depth and 826 mg/kg in the 0 to 3 feet bgs soil depth) in the Lithopone Ridge Area results in a decrease of the 95% UCL from 64,185 mg/kg to 419 mg/kg in the 0 to 0.5 feet bgs soil depth and from 23,572 mg/kg to 242 mg/kg in the 0 to 3 feet bgs soil depth. This would reduce the estimated risk to the Future Industrial Worker from 8×10^{-3} to 8×10^{-5} and 2×10^{-2} to 1×10^{-4} in the 0 to 3 feet bgs and 0 to 0.5 feet bgs soil depths, respectively. The risk associated with the Trespasser's exposure to arsenic drops from 4×10^{-4} to 3×10^{-6}. Similar, though less drastic, changes in the 95% UCLs for other HHCOPCs would also result due to the exclusion (e.g., remediation) of the higher samples.

10 Uncertainty Discussion

Inherent in every risk assessment, variability and uncertainty exist because of decisions made and data and assumptions used. Uncertainty represents a lack of knowledge about a factor affecting estimates of risk, such as the number of days a year a trespasser may cross a specific piece of property. Variability represents measurable differences among people, places, or time, such as variability in surface area across a heterogeneous population. To minimize the impact of variability, estimates of the central tendency value, e.g., the 50th percentile of a population distribution, have been used for some parameter values (e.g., surface area exposed during dermal contact and certain adherence factors). However, in many more instances upper end values have been applied in an effort to not underestimate risk, and in order to be consistent with risk assessment guidance from USEPA and IEPA. Formal quantitative analyses of variability or uncertainty were not conducted; however, the analysis attempted to identify the major sources of variability and uncertainty.

Uncertainty may occur in the selection of the HHCOPCs, the exposure factors, and the toxicity factors. Generally, the uncertainty is biased toward the selection of conservative assumptions as not to underestimate potential risk. The objective of this uncertainty analysis is to highlight the key assumptions that add the greatest uncertainty to the final results.

10.1 Selection of HHCOPCs

Routine, USEPA-recommended analytical procedures test for the presence of dozens of chemicals, many of which are not expected to be associated with the site under investigation. While it is possible to carry all of these through an investigation, doing so provides little additional information to make focused Risk Management decisions. The applied screening criteria used to select the final HHCOPCs are those typically used in USEPA assessments. The impact on the estimates of risk for these chemicals, if retained in the SLHHRE, would be expected to be negligible.

In some cases, the use of a conservative screening level to decide whether to include or exclude a chemical can lead to the inclusion of chemicals that have a negligible effect on the risk evaluation. While it may be more time consuming to evaluate these chemicals, their lack of contribution to risk should be demonstrated in the final risk evaluation results. Results of the analysis demonstrate this fact, particularly in the Bluff Area, where no chemicals resulting in adverse health effects to the receptors considered were identified.

10.2 Exposure Factors

Almost all of the exposure factors used in the SLHHRE for the different receptors are based upon USEPA default values and as such, provide a conservative estimate of potential risks and hazards. Some exposure factors presented by USEPA are based on actual studies while others are based on experimental or modeled data. For the latter, these exposure factors (e.g., absorption fractions used to evaluate dermal exposures to soil) may not accurately reflect “real-life” conditions and could lead to overestimation or underestimation of risks and hazards. Likewise, default USEPA exposure factors such as the exposed skin surface areas used to evaluate dermal exposures to soil may not accurately reflect site-specific conditions and could also lead to the overestimation or underestimation of risks and hazards. Site-specific factors

were used to reflect current conditions at the site, as appropriate, e.g., exposure frequencies for trespasser scenarios, but the majority of the exposure factors were the USEPA or IEPA TACO default values.

10.3 Toxicity Factors

Due to a lack of appropriate information on effects in humans (i.e., epidemiologic studies), the toxicity factors for most of the chemicals included in the SLHHRE were developed from animal studies. For noncarcinogenic effects, these laboratory animal-based toxicity factors are extrapolated to a human equivalence using uncertainty factors to account for factors such as:

- variation in sensitivity among members of the human population (i.e., intraspecies variability);
- the uncertainty in extrapolating animal data to humans (i.e., interspecies variability);
- the uncertainty in extrapolating from less-than-lifetime data to lifetime exposure;
- the uncertainty in extrapolating from a lowest observed adverse effect level (LOAEL) rather than a no observed adverse effect level (NOAEL); and
- the uncertainty associated with extrapolation from animal data when the database is incomplete (USEPA 2002b).

The application of these uncertainty factors is intended to not underestimate risks, and as such, often may overestimate risks.

A similar “margin of safety” is built into toxicity values for carcinogenic effects. This type of relationship assumes that regardless of the dose and associated risk, the estimated potency or cancer toxicity factor, which is estimated by the slope of the line, is the same regardless of what part of the dose-response curve is used (e.g., one in 10 or one in a million risk). Additionally, to account for the uncertainty in this extrapolation process, USEPA typically chooses to employ the upper 95th confidence limit of the slope as the slope factors; therefore, there is a 95 percent probability that the true cancer potency is lower than the value chosen for the slope factor (USEPA 2014b). Based on the above information, the toxicity values used in this SLHHRA are considered to be conservative and may overestimate potential risks and hazards.

Additionally, for assessing human cancer risk (USEPA 1996, 1999, 2005b), carcinogenic, unlike noncarcinogenic, effects are quantitatively evaluated assuming that the dose-response was linear and there was no threshold, that is, any dose no matter how small, was assumed to have some risk. Current thinking, supported by the scientific community and scientific evidence and included in the newest USEPA guidelines for assessment of potential carcinogens (USEPA 2005b), is that the way in which some chemicals may cause cancer in an animal model may occur by a non-linear, threshold mode of action. Unfortunately, only a small number of chemicals have undergone a rigorous re-evaluation using the new cancer guidelines.

10.4 Background Concentrations and Residential PRG

At the request of IEPA, background concentrations, with the exception of background concentrations for potassium 40 gamma (see Section 3) were not considered within the SLHHRE. As seen in Table A-2, the consideration of background concentration for arsenic, which is still conservative, could have an effect on the results of the SLHHRE. For arsenic using the HHCOPC screening level of 3 mg/kg results in the identification 501 samples with detected concentrations exceeding that value. Using the arsenic site-specific background concentration of 11.6 mg/kg reduces the samples identified with detects greater than the background to about 50% (248) of samples exceeding. Using the OU4 residential PRG of 21 mg/kg merely for comparison purposes (e.g., this PRG is not directly applicable to the industrial area and is much more conservative than that which should be used for the industrial area due to the exposure pathways and parameter values considered), 35% (185 of 530 samples with detected results) of the detected samples were identified as being greater than 21 mg/kg.

Figure 10-1 and 10-2 present the same information as presented in Figure 9-1 for the maximum detected concentration of arsenic in the 0 to 3 feet bgs soil horizon, but only provides shading for those polygons whose concentration was greater than the OU4 residential PRG of 21 mg/kg (Figure 10-1) and the background concentration for arsenic of 11.6 mg/kg (Figure 10-2). As can be seen by a comparison of Figure 9-1 to Figures 10-1 and 10-2 a large number of polygons shaded in Figure 9-1 are not shaded in Figure 10-1 and 10-2. As stated in the previous paragraph the comparison in Figure 10-1 is presented only for comparative purposes as the final PRG for the industrial area is expected to be larger than the PRG for the OU4 residential area.

10.5 Depth of Soil to Which Receptor is Exposed

For this evaluation, certain receptors were assumed to be exposed to soil at a depth greater than 6 inches. While there may be the potential for some exposure to soil greater than 6 inches, it would not be a typical occurrence and making the assumption that the receptor could be exposed to the soil at this depth throughout the AOI is highly conservative. Soil exposure to a depth of 3 feet bgs was considered for the Current Environmental Worker receptor even though the majority of his activities (i.e., seasonal mowing, inspection and maintenance of the lift station, and performing monthly fence inspections) would bring him into contact with only surface soil. To illustrate the conservatism of the depth to soil considered for exposure, the information presented for the Current Environmental Worker in Figure 9-8 was regenerated considering only samples between 0 to 6 inches bgs (Figure 10-3).

A comparison of Figures 9-8 and 10-3 indicates that the overall area indicated to have estimated risks greater than 1×10^{-6} appears to be slightly reduced when considering only those samples in the 0 to 6 inches bgs. Additionally, no polygons are identified in the 0 to 6 inches bgs evaluation as having a risk greater than 1×10^{-5} while four of the polygons in the 0 to 3 feet bgs were identified as having a risk greater than 1×10^{-5} and two additional having a risk greater than 1×10^{-4}. It should be noted that due to a different set of available samples in the 0 to 6 inches bgs and 0 to 3 feet bgs that the polygons presented in Figures 9-8 and 10-3 are not identical but they reflect differences based on different soil exposure scenarios.

10.6 Blood lead level

In its June 2012 monograph on Health Effects of Low-Level Lead, the National Toxicology Program (NTP) concluded there is sufficient evidence for adverse health effects in children and adults at blood lead levels both <10 micrograms per deciliter (µg/dL) and <5 µg/dL (NTP 2012). The Centers for Disease Control (CDC) has also adopted the 5 µg/dL as their reference value to identify children with elevated blood lead levels (CDC 2012). Currently, the USEPA has not modified the input to their children's lead model, IEUBK, nor to the adult lead model, ALM and IEPA has indicated that it will continue to use 10 µg/dL as the appropriate blood level for purposes of developing PRGs.

10.7 Exposure Point Concentrations Used

For the evaluation presented in Section 9, the maximum concentration for each specific location was used to determine the carcinogenic risk and noncarcinogenic hazards. To address the conservative nature of the evaluation using the maximum concentrations, 95% UCLs were generated over defined areas of the site (see Section 9.6). As discussed in Section 9.6, the calculated 95% UCLs may be the result of one or two sample concentrations being higher than the other concentrations. For example, the recalculation of the 95% UCL for arsenic following the removal of its highest detected concentration (87,900 mg/kg – next highest concentration is only 425 mg/kg in the 0 to 0.5 feet bgs soil depth and 826 mg/kg in the 0 to 3 feet bgs soil depth) in the Lithopone Ridge Area results in a decrease of the 95% UCL from 64,185 mg/kg to 419 mg/kg in the 0 to 0.5 feet bgs soil depth and from 23,572 mg/kg to 242 mg/kg in the 0 to 3 feet bgs soil depth. Therefore, the definition of the exposure area over which the receptor may be exposed, as well as, the defined data set for that area will have effect on the 95% UCL and the risks and hazards calculated using the 95% UCL.

Additionally, as discussed Section 9.6, when the number of samples with non-detects was greater than 50% the maximum detected concentration was used in the estimation of risks and HQs. This results in a conservative estimate of risk and hazard as the receptor is assumed to obtain all exposure from this single sampling point.

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Tables

Table 3-1. Summary of Selected Human Health Chemicals of Potential Concern in Soil [a]

HHCOPC	CAS Number	Maximum Detected Concentration (mg/kg)	Minimum Default Regulatory Screening Level (mg/kg)	Basis for Minimum Comparison Value
Arsenic	7440-38-2	87,900	3	USEPA RSL IW
Barium	7440-39-3	138,000	14,000	TACO ICW
Benzo(a)anthracene	56-55-3	4.6	2.9	USEPA RSL IW
Benzo(a)pyrene	50-32-8	4.8	0.29	USEPA RSL IW
Benzo(b)fluoranthene	205-99-2	8.9	2.9	USEPA RSL IW
Benzo(k)fluoranthene [b]	207-08-9	2.8	29	USEPA RSL IW
Cadmium	7440-43-9	8,320	200	TACO CW
Chrysene [b]	218-01-9	7.8	290	USEPA RSL IW
Cobalt	7440-48-4	1,600	350	USEPA RSL IW
Copper	7440-50-8	35,200	8,200	TACO ICW
Dibenz(a,h)anthracene	53-70-3	1.2	0.29	USEPA RSL IW
Indeno(1,2,3-cd)pyrene	193-39-5	3.6	2.9	USEPA RSL IW
Lead	7439-92-1	152,000	700	TACO CW
Manganese	7439-96-5	174,000	4,100	TACO CW
Mercury [c]	7439-97-6	83	61	TACO CW
Naphthalene	91-20-3	4.1	1.8	TACO CW
Zinc	7440-66-6	260,000	61,000	TACO CW

CW – construction worker; HHCOPC – human health chemical of potential concern; ICW – industrial/commercial worker; IW – industrial worker; RSL – regional screening level; TACO – Tiered Approach to Corrective Action Objectives; USEPA – United States Environmental Protection Agency.

[a] The chemicals listed in this table were identified as HHCOPCs based on a comparison of the maximum detected concentration for each chemical to its minimum comparison level (e.g., the smaller of the USEPA Regional Screen Level Industrial Worker standard [USEPA RSL IW] and the Illinois Environmental Protection Agency (IEPA) TACO standards for an Industrial/Commercial Worker [TACO ICW] and a Construction Worker [TACO CW]). See Attachment A, Tables A-1 and A-2.

[b] Although benzo(k)fluoranthene and chrysene had no concentrations above their respective regulatory screening level, they were retained in the analysis so that they can be included in the carcinogenic polycyclic aromatic hydrocarbon (PAH) risk evaluation.

[c] Screening level assumes mercuric chloride.

Table 4-1. Toxicity Data for the Selected Human Health Chemicals of Potential Concern in Soil

HHCOPC	CAS Number	CSF (per mg/kg/day)	Ref	IUR (per µg/m^3)	Ref	RfD (subchronic) (mg/kg/day)	Ref	RfC (subchronic) (mg/m^3)	Ref
Arsenic	7440-38-2	1.5	I	4.3E-03	I	3.0E-04 (3.0E-04)	I H	1.5E-05 (1.5E-05)	C EQ1
Barium	7440-39-3	-	-	-	-	2.0E-01 (2.0E-01)	I EQ1	5.0E-04 (5.0E-03)	H H
Benzo(a)anthracene	56-55-3	0.73	E	1.1E-04	C	-	-	-	-
Benzo(a)pyrene	50-32-8	7.3	I	1.1E-03	C	-	-	-	-
Benzo(b)fluoranthene	205-99-2	0.73	E	1.1E-04	C	-	-	-	-
Benzo(k)fluoranthene	207-08-9	0.073	E	1.1E-04	C	-	-	-	-
Cadmium	7440-43-9	-	-	1.8E-03	I	1.0E-03 (5.0E-04)	I AD	1.0E-05 (1.0E-05)	A A
Chrysene	218-01-9	0.0073	E	1.1E-05	C	-	-	-	-
Cobalt	7440-48-4	-	-	9.0E-03	P	3.0E-04 (3.0E-03)	P PC	6.0E-06 (2.0E-05)	P PC
Copper	7440-50-8	-	-	-	-	4.0E-02 (1.0E-02)	H AF	-	-
Dibenz(a,h)anthracene	53-70-3	7.3	E	1.2E-03	C	-	-	-	-
Indeno(1,2,3-cd)pyrene	193-39-5	0.73	E	1.1E-04	C	-	-	-	-
Lead	7439-92-1	No toxicity data for lead							
Manganese	7439-96-5	-	-	-	-	2.4E-02 (2.4E-02)	S EQ1	5.0E-05 (5.0E-05)	I EQ1
Mercury	7439-97-6	-	-	-	-	3.0E-04 (2.0E-03)	I	3.0E-04 (3.0E-04)	S EQ1
Naphthalene	91-20-3	-	-	3.4E-05	C	2.0E-02 (6.0E-01)	I AF	3.0E-03 (3.0E-03)	I EQ1
Zinc	7440-66-6	-	-	-	-	3.0E-01 (3.0E-01)	I EQ1	-	-

CSF – cancer slope factor; HHCOPC – human health chemical of potential concern; IUR – inhalation unit risk factor; Ref – Reference; RfD – reference dose; RfC – reference concentration.

Ref: A – Agency for Toxic Substances and Disease Registry (ATSDR); AD – ATSDR Draft; AF – ATSDR Final; C – California Environmental Protection Agency; E – Environmental Criteria and Assessment Office; EQ1 – no subchronic value identified, chronic value used; H – Health Effects Assessment Summary Tables (HEAST); I – Integrated Risk Information System (IRIS); P – Provisional Peer-Reviewed Toxicity Value (PPRTV); PC – PPRTV Current; S – regional screening level (RSL) user guidance.

Table 5-1. Exposure Parameters and Other Input Variables Used to Estimate the Risk-based Screening Values

Symbol	Definition (units)	Input Value	Source
Non-exposure Variables Specific for All Receptors			
CSF	Chemical-specific cancer slope factor (per mg/kg/day)	CS	See Table 4-1.
IUR	Chemical-specific inhalation unit risk factor (per $\mu g/m^3$)	CS	See Table 4-1.
RfC	Chemical-specific reference concentration (mg/m^3)	CS	See Table 4-1.
RfD	Chemical-specific reference dose (mg/kg/day)	CS	See Table 4-1.
Kp	Chemical-specific dermal permeability coefficient	CS	See Table 7-2.
THQ	Target hazard quotient (unitless)	1	Typical default value suggested by USEPA (USEPA 1989) and state regulatory agencies (IEPA 2013).
TR	Target risk (unitless)	1×10^{-6}	Typical default value suggested by USEPA (USEPA 1989) and state regulatory agencies (IEPA 2013). Note: For the generation of the risk maps, any target risk could have been utilized as long as the same risk used in estimating the RSV was used in calculating the risk by dividing the soil concentration by the RSV and multiplying by the target risk used.
RBAF	Relative bioavailability factor (unitless)	CS	The only HHCOPC with an RBAF other than 100% is arsenic with a value of 60% as provided by USEPA (2015a).
ABS	Dermal absorption value (unitless)	CS	Values as specified in USEPA (2015a): Arsenic (0.03); cadmium (0.001); and benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene (0.13). All other HHCOPCs assumed not to contribute through the dermal contact pathway.
GIABS	Gastrointestinal absorption value (unitless)	CS	Values as specified in USEPA (2015a): Barium (0.07), cadmium (0.025 for soil; 0.05 for water), manganese (0.04), and mercury (0.07). All other HHCOPCs had their GIABS value set to one.
Current Environmental Worker			
AF	Worker soil adherence factor (mg/cm^2)	0.12	USEPA 2014a. Based on information presented in Table-20 and Section 7.2.2 in USEPA (2011a); arithmetic mean of weighted average of body part-specific (hands, forearms, and face) mean adherence factors for adult commercial/industrial activities.
ATc	Averaging time for carcinogenic chemicals (days)	70 × 365	USEPA 2014a. Based on information from page 6-23 of USEPA (1989).

Table 5-1. Exposure Parameters and Other Input Variables Used to Estimate the Risk-based Screening Values

Symbol	Definition (units)	Input Value	Source
ATnc	Averaging time for noncarcinogenic chemicals (days)	ED × 365	Averaging time for noncarcinogenic chemicals assumed equivalent to the exposure duration (ED).
BW	Body weight (kg)	80	USEPA 2014a. Based on information presented in Table 8-3; weighted mean values for adults 21 to 78 in USEPA (2011a)
ED	Exposure duration (year)	25	USEPA 2014a. Based on information presented on page 15 of USEPA (1991). Information from USEPA (2011a) not used since only central tendency estimated provided.
EF	Exposure frequency (days/year)	29	Both CBS and ExxonMobil have current on-site workers. Activities performed by ExxonMobil personnel is limited to site inspections and vegetative control such as mowing the grass approximately 1 day per week over a 6 month period (exposure frequency would equal: 1 day/week × 26 weeks/year = 26 day/year). CBS has two contractors stationed at the site with the majority of their time, and exposure, spent operating and maintaining the IWTP. Exposure to impacted soil would result from mowing, which occurs approximately ½ days per week for 6 months out of the year; inspecting the lift station, which occurs for ¼ day per week for the entire year; and performing monthly fence inspection, which occurs ¼ day per month for the entire year. Exposure frequency would be: ([0.5 day/week × 26 weeks/year] + [0.25 day/week × 52 weeks/year] + [0.5 day/month × 12 months/year]) = 29 days/year.
ET	Exposure time (hours/day)	8	USEPA 2014a. Listed as 'the work day'.
IRs	Soil ingestion rate (mg/day)	100	USEPA 2014a. Assumed same exposure as adult resident receptor. Based on information presented on page 15 of USEPA (1991). Information not provided in USEPA (2011a).
PEF	Particulate emission factor (m^3/kg)	1.24×10^9	IEPA 2013
SA_{soil}	Skin surface area exposed to soil (cm^2)	3,527	USEPA 2014a. Based on information presented Table 7-2 of USEPA (2011a); weighted average of mean values for head, hands, and forearms (male and female, 21+ years). Assumptions for forearms similar to that in USEPA 2011b. Modified value presented in Frequently Asked Questions.
VFs	Volatilization factor (m^3/kg)	CS	Only HHCOPC identified as a volatile chemical was naphthalene. Calculation of the VFs for naphthalene is presented in Section 6.

Table 5-1. Exposure Parameters and Other Input Variables Used to Estimate the Risk-based Screening Values

Symbol	Definition (units)	Input Value	Source
Future Industrial Worker			
AF	Worker soil adherence factor (mg/cm^2)	0.12	USEPA 2014a. Based on information presented in Table-20 and Section 7.2.2 in USEPA (2011a); arithmetic mean of weighted average of body part-specific (hands, forearms, and face) mean adherence factors for adult commercial/industrial activities.
ATc	Averaging time for carcinogenic chemicals (days)	70 × 365	USEPA 2014a. Based on information from page 6-23 of USEPA (1989).
ATnc	Averaging time for noncarcinogenic chemicals (days)	ED × 365	Averaging time for noncarcinogenic chemicals assumed equivalent to the exposure duration (ED).
BW	Body weight (kg)	80	USEPA 2014a. Based on information presented in Table 8-3; weighted mean values for adults 21 to 78 in USEPA (2011a)
ED	Exposure duration (year)	25	USEPA 2014a. Based on information presented on page 15 of USEPA (1991). Information from USEPA (2011a) not used since only central tendency estimated provided.
EF	Exposure frequency (days/year)	250	USEPA 2014a. Based on information presented on page 15 of USEPA (1991). Information not provided in USEPA (2011a).
ET	Exposure time (hours/day)	8	USEPA 2014a. Listed as 'the work day'.
IRs	Soil ingestion rate (mg/day)	100	USEPA 2014a. Assumed same exposure as adult resident receptor. Based on information presented on page 15 of USEPA (1991). Information not provided in USEPA (2011a).
PEF	Particulate emission factor (m^3/kg)	1.24×10^9	IEPA 2013
SA_{soil}	Skin surface area (cm^2)	3,527	USEPA 2014a. Based on information presented Table 7-2 of USEPA (2011a); weighted average of mean values for head, hands, and forearms (male and female, 21+ years). Assumptions for forearms similar to that in USEPA 2011b. Modified value presented in Frequently Asked Questions.
VFs	Volatilization factor (m^3/kg)	CS	Only HHCOPC identified as a volatile chemical was naphthalene. Calculation of the VFs for naphthalene is presented in Section 6.
Construction Worker			
AF	Worker soil adherence factor (mg/cm^2)	0.3	USEPA 2002a. (Soil Screening Guidance)
ATc	Averaging time for carcinogenic chemicals (days)	70 × 365	USEPA 2014a. Based on information from page 6-23 of USEPA (1989).
ATnc	Averaging time for noncarcinogenic chemicals (days)	0.115 × 365	IEPA 2013
BW	Body weight (kg)	80	USEPA 2014a. Based on information presented in Table 8-3; weighted mean values for adults 21 to 78 in USEPA (2011a)
ED	Exposure duration (year)	1	IEPA 2013

Table 5-1. Exposure Parameters and Other Input Variables Used to Estimate the Risk-based Screening Values

Symbol	Definition (units)	Input Value	Source
EF_{soil}	Exposure frequency to soil (days/year)	30	IEPA 2013
ET	Exposure time (hours/day)	8	Assumed equivalent to work day of industrial worker.
IRs	Soil ingestion rate (mg/day)	330	USEPA 2002a. (Soil Screening Guidance)
PEF	Particulate emission factor (m^3/kg)	1.24×10^8	IEPA 2013
SA_{soil}	Skin surface area exposed to soil (cm^2)	3,527	Assumed equivalent to skin surface area exposed for the industrial worker.
VFs	Volatilization factor (m^3/kg)	CS	Only HHCOPC identified as a volatile chemical was naphthalene. Calculation of the VFs for naphthalene is presented in Section 6.
IRw	Incidental ingestion rate of groundwater (liter/day)	0.025	Professional judgment. Assumed a construction worker would incidentally ingest groundwater through splashing and hand-to-mouth contact at 1/100 of potable ingestion amount (2.5 liter day; USEPA 2014a). This is consistent with a value used by the Florida Department of Environmental Protection (FDEP 2007).
t_{event}	Event duration (hr/event)	1	Professional judgement. Exposure to groundwater via dermal contact assumed to occur one hour during the working day.
EV	Event frequency (events/day)	1	Professional judgement. Exposure to groundwater via dermal contact assumed to occur one time during the working day.
EF_{GW}	Exposure frequency to groundwater (days/year)	15	Professional judgement. Assumed to occur 50% of time spent onsite.
SA_{GW}	Skin surface area exposed to groundwater (cm^2)	1,070	USEPA 2011a Table 7-2; mean surface area of hands for an adult male worker.
Future Utility Worker			
AF	Worker soil adherence factor (mg/cm^2)	0.3	ORNL 2015; USEPA 2002a. (Exhibit 1-2)
ATc	Averaging time for carcinogenic chemicals (days)	70 × 365	USEPA 2014a. Based on information from page 6-23 of USEPA (1989).
ATnc	Averaging time for noncarcinogenic chemicals (days)	ED × 365	Averaging time for noncarcinogenic chemicals assumed equivalent to the exposure duration (ED).
BW	Body weight (kg)	80	ORNL 2015; USEPA 2014a. Based on information presented in Table 8-3; weighted mean values for adults 21 to 78 in USEPA (2011a)
ED	Exposure duration (year)	1	ORNL 2015; USEPA 1991a (pg. 15)
EF_{soil}	Exposure frequency to soil (days/year)	20	ORNL 2015; USEPA 1991a (pg. 15)
ET	Exposure time (hours/day)	8	ORNL 2015; USEPA 1991a (pg. 10)
IRs	Soil ingestion rate (mg/day)	330	ORNL 2015; USEPA 1991a (pg. 15)
PEF	Particulate emission factor (m^3/kg)	1.24×10^8	IEPA 2013
SA_{soil}	Skin surface area exposed to soil (cm^2)	3,470	ORNL 2015; USEPA 2011, Table 7-2; weighted average of mean values for head, hands, and forearms (male and female), 21+ years

Table 5-1. Exposure Parameters and Other Input Variables Used to Estimate the Risk-based Screening Values

Symbol	Definition (units)	Input Value	Source
VFs	Volatilization factor (m^3/kg)	CS	Only HHCOPC identified as a volatile chemical was naphthalene. Calculation of the VFs for naphthalene is presented in Section 6.
IRw	Incidental ingestion rate of groundwater (liter/day)	0.025	Professional judgment. Assumed a utility worker would incidentally ingest groundwater through splashing and hand-to-mouth contact at 1/100 of potable ingestion amount (2.5 liter day; USEPA 2014a). This is consistent with a value used by the Florida Department of Environmental Protection (FDEP 2007).
t_{event}	Event duration (hr/event)	1	Professional judgement. Exposure to groundwater via dermal contact assumed to occur one hour during the working day.
EV	Event frequency (events/day)	1	Professional judgement. Exposure to groundwater via dermal contact assumed to occur one time during the working day.
EF_{GW}	Exposure frequency to groundwater (days/year)	10	Professional judgement. Assumed to occur 50% of time spent onsite.
SA_{GW}	Skin surface area exposed to groundwater (cm^2)	1,070	USEPA 2011a Table 7-2; mean surface area of hands for an adult male worker.
Trespasser			
AF	Adult resident soil adherence factor (mg/cm^2)	0.07	The geometric mean for residential gardeners (0.07) as specified in USEPA 2002a.
ATc	Averaging time for carcinogenic chemicals (days)	70 × 365	USEPA 2014a. Based on information from page 6-23 of USEPA (1989).
ATnc	Averaging time for noncarcinogenic chemicals (days)	ED × 365	Averaging time for noncarcinogenic chemicals assumed equivalent to the exposure duration (ED).
BW	Body weight (kg)	45	USEPA 2014c – Page 4-2. Body weight for an adolescent between 7 and 16 (10 year exposure duration).
ED	Exposure duration (year)	10	USEPA 2014c. Trespasser assumed to be an adolescent between the ages of 7 to 16 years of age.
EF	Exposure frequency (days/year)	56	Assuming trespassing in the Bluff and UPSEA areas occurs 2 times per week over a 28 week (approximately 7 month) period.
		12	Assuming trespassing within the facility boundaries occurs twice a month over a six month period.
ET	Exposure time (hours/day)	2	Conservative assumption of time trespasser spends on-site.
IRs	Soil ingestion rate (mg/day)	50	Using the 100 mg/day for adult residential and outdoor worker exposure in USEPA (1989) and USEPA (2002a) but assuming only 50 % of exposure occurs from site.
PEF	Particulate emission factor (m^3/kg)	1.32×10^9	IEPA 2013
SA_{soil}	Skin surface area exposed to soil (cm^2)	5,300	Value estimated from data in USEPA (2011) for age range of 7 to 16 years assuming head, arms, lower legs, and feet are exposed.

Table 5-1. Exposure Parameters and Other Input Variables Used to Estimate the Risk-based Screening Values

Symbol	Definition (units)	Input Value	Source
VFs	Volatilization factor (m^3/kg)	CS	Only HHCOPC identified as a volatile chemical was naphthalene. Calculation of the VFs for naphthalene is presented in Section 6.

CS – chemical-specific value; FDEP – Florida Department of Environmental Protection; HHCOPC – human health chemical of potential concern; IEPA – Illinois Environmental Protection Agency; IWTP – interim water treatment plant; ORNL – Oak Ridge National Laboratory; RBAF – relative bioavailability factor; RSV – risk-based screening value; USEPA – United States Environmental Protection Agency.

Table 6-1. Calculated Risk Screening Values for Soil for Specific Receptors

		Future Industrial Worker			Current Environmental Worker			Construction Worker		
HHCOPC	**CAS**	**NC**	**Car**	**Min**	**NC**	**Car**	**Min**	**NC**	**Car**	**Min**
Arsenic	7440-38-2	4.8E+02	3.0E+00	3.0E+00	4.1E+03	2.6E+01	2.6E+01	1.4E+02	2.0E+02	1.4E+02
Barium	7440-39-3	2.2E+05	-	2.2E+05	1.9E+06	-	1.0E+06	6.6E+04	-	6.6E+04
Benzo(a)anthracene	56-55-3	-	2.9E+00	2.9E+00	-	2.5E+01	2.5E+01	-	2.0E+02	2.0E+02
Benzo(a)pyrene	50-32-8	-	2.9E-01	2.9E-01	-	2.5E+00	2.5E+00	-	2.0E+01	2.0E+01
Benzo(b)fluoranthene	205-99-2	-	2.9E+00	2.9E+00	-	2.5E+01	2.5E+01	-	2.0E+02	2.0E+02
Benzo(k)fluoranthene	207-08-9	-	2.9E+01	2.9E+01	-	2.5E+02	2.5E+02	-	2.0E+03	2.0E+03
Cadmium	7440-43-9	9.8E+02	8.4E+03	9.8E+02	8.5E+03	7.3E+04	8.5E+03	1.5E+02	1.8E+05	2.8E+02
Chrysene	218-01-9	-	2.9E+02	2.9E+02	-	2.5E+03	2.5E+03	-	2.0E+04	2.0E+04
Cobalt	7440-48-4	3.5E+02	1.7E+03	3.5E+02	3.0E+03	1.5E+04	3.0E+03	9.3E+02	3.5E+04	9.3E+02
Copper	7440-50-8	4.7E+04	-	4.7E+04	4.0E+05	-	4.0E+05	3.4E+03	-	1.4E+04
Dibenz(a,h)anthracene	53-70-3	-	2.9E-01	2.9E-01	-	2.5E+00	2.5E+00	-	2.0E+01	2.0E+01
Indeno(1,2,3-cd)pyrene	193-39-5	-	2.9E+00	2.9E+00	-	2.5E+01	2.5E+01	-	2.0E+02	2.0E+02
Lead	7439-92-1	See Table 6-2								
Manganese	7439-96-5	2.5E+04	-	2.5E+04	2.2E+05	-	2.2E+05	6.2E+03	-	6.2E+03
Mercury	7439-97-6	3.5E+02	-	3.5E+02	3.0E+03	-	3.0E+03	6.8E+02	-	6.8E+02
Naphthalene	91-20-3	7.2E+02	2.1E+01	2.1E+01	6.2E+03	1.8E+02	1.8E+02	7.3E+01	4.3E+02	7.3E+01
Zinc	7440-66-6	3.5E+05	-	3.5E+05	3.0E+06	-	1.0E+06	1.0E+05	-	1.0E+05

Table 6-1. Calculated Risk Screening Values for Soil for Specific Receptors

HHCOPC	CAS	Future Utility Worker			Trespasser (Bluff and UPSEA) [a]			Trespasser (FPSA) [a]		
		NC	Car	Min	NC	Car	Min	NC	Car	Min
Arsenic	7440-38-2	1.9E+03	3.0E+02	3.0E+02	2.1E+03	3.3E+01	3.3E+01	1.0E+04	1.6E+02	1.6E+02
Barium	7440-39-3	8.6E+05	-	8.6E+05	1.1E+06	-	1.0E+06	5.4E+06	-	1.0E+06
Benzo(a)anthracene	56-55-3	-	3.0E+02	3.0E+02	-	9.5E+00	9.5E+00	-	4.5E+01	4.5E+01
Benzo(a)pyrene	50-32-8	-	3.0E+01	3.0E+01	-	9.5E-01	9.5E-01	-	4.5E+00	4.5E+00
Benzo(b)fluoranthene	205-99-2	-	3.0E+02	3.0E+02	-	9.5E+00	9.5E+00	-	4.5E+01	4.5E+01
Benzo(b)fluoranthene	207-08-9	-	3.0E+03	3.0E+03	-	9.5E+01	9.5E+01	-	4.5E+02	4.5E+02
Cadmium	7440-43-9	1.9E+03	2.6E+05	3.7E+03	4.5E+03	4.0E+05	4.5E+03	2.1E+04	1.9E+06	2.1E+04
Chrysene	218-01-9	-	3.0E+04	3.0E+04	-	9.5E+02	9.5E+02	-	4.5E+03	4.5E+03
Cobalt	7440-48-4	1.2E+04	5.3E+04	1.2E+04	1.8E+03	8.0E+04	1.8E+03	8.2E+03	3.7E+05	8.2E+03
Copper	7440-50-8	4.4E+04	-	1.8E+05	2.3E+05	-	2.3E+05	1.1E+06	-	1.0E+06
Dibenz(a,h)anthracene	53-70-3	-	3.0E+01	3.0E+01	-	9.5E-01	9.5E-01	-	4.5E+00	4.5E+00
Indeno(1,2,3-cd)pyrene	193-39-5	-	3.0E+02	3.0E+02	-	9.5E+00	9.5E+00	-	4.5E+01	4.5E+01
Lead	7439-92-1	See Table 6-2								
Manganese	7439-96-5	8.1E+04	-	8.1E+04	1.4E+05	-	1.4E+05	6.4E+05	-	6.4E+05
Mercury	7439-97-6	8.8E+03	-	8.8E+03	1.8E+03	-	1.8E+03	8.2E+03	-	8.2E+03
Naphthalene	91-20-3	9.5E+02	6.5E+02	6.5E+02	2.5E+03	2.0E+02	2.0E+02	1.2E+04	9.1E+02	9.1E+02
Zinc	7440-66-6	1.3E+06	-	1.0E+06	1.8E+06	-	1.0E+06	8.2E+06	-	1.0E+06

Units of mg chemical/kg soil.

FPSA – former plant site area; HHCOPC – human health chemical of potential concern; UPSEA – upland portion of the southeast area.

NC – noncarcinogenic; Car – carcinogenic; Min – most restrictive (smaller) of NC and Car.

See tables in Attachment B for spreadsheet of calculated values.

[a] Carcinogenic RSVs for the polycyclic aromatic hydrocarbons for the Trespasser receptors have been adjusted (divided) by a factor of three to account for mutagenicity.

Table 6-2. Estimated Risk Screening Values for Lead Using Adult Lead Model (ALM)

Variable	Description of Variable	Units	Future Industrial Worker	Current Environ-mental Worker	Construc-tion Worker	Future Utility Worker	Trespasser	
							Bluff and UPSEA	FPSA
$PbB_{fetal,0.95}$	95th percentile PbB in fetus	µg/dL	10	10	10	10	10	10
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4	0.4	0.4	0.4	0.4
GSD_i [a]	Geometric standard deviation PbB	--	1.8	1.8	1.8	1.8	1.8	1.8
PbB_0 [a]	Baseline PbB	µg/dL	1	1	1	1	1	1
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.05	0.05	0.1	0.33	0.05	0.05
$AF_{S, D}$	Absorption fraction (same for soil and dust)	--	0.12	0.12	0.12	0.12	0.12	0.12
$EF_{S, D}$	Exposure frequency (same for soil and dust)	days/yr	250	29	30	20	56	12
$AT_{S, D}$	Averaging time (same for soil and dust)	days/yr	365	182	42	365	196	196
	Risk Screening Value (RSV)	mg/kg	1,962	8,433	941	3,716	4,703	21,948

FPSA – former plant site area; PbB – blood lead; UPSEA – upland portion of southeast area.

[a] GSDi and PbBo values from analysis of NHANES 1999-2004 as specified in the Adult Lead Model (USEPA 2009a).

Table 7-1. Summary of Chemicals of Potential Concern in Shallow Groundwater (Construction Worker and Future Utility Worker only)

HHCOPC	CAS Number	Groundwater Screening Level [a]	Maximum Concentration	Detections - Number of Exceedances
General Chemistry (mg/L)				
Ammonia	7664-41-7	350	506	2
Fluoride	16984-48-8	40	74	2
Sulfate	14808-79-8	4,000	28,000	39
Total Phosphorus	7723-14-0	100	158	3
Metals (mg/L)				
Aluminum	7429-90-5	50	101	4
Cadmium	7440-43-9	0.5	63	80
Cobalt	7440-48-4	10	10	1
Copper	7440-50-8	6.5	244	44
Iron	7439-89-6	50	251	12
Lead	7439-92-1	1	3.1	19
Manganese	7439-96-5	100	583	28
Zinc	7440-66-6	100	14,100	77

HHCOPC – human health chemical of potential concern.

[a] Identified as the Tiered Approach to Corrective Action Objectives (TACO) Class II multiplied by a factor of 10 to account for the use of incidental groundwater ingestion.

Table 7-2. Estimated Hazard Quotients from Construction Worker and Future Utility Worker Exposure to Groundwater

HHCOPC	CAS Number	Maximum Detected Concentration (mg/L) [a]	Dermal permeability coefficient (Kp) (cm/hr)	Subchronic Oral RfD [b] (mg/kg-day)	Subchronic Oral RfD [b] Ref	Hazard Quotient (HQ) Future Utility Worker Ingestion	Hazard Quotient (HQ) Future Utility Worker Dermal Contact	Hazard Quotient (HQ) Construction Worker Ingestion	Hazard Quotient (HQ) Construction Worker Dermal Contact
General Chemistry (mg/L)									
Ammonia	7664-41-7	506	1.0E-03	3.4E+01	HEAST	0.00025	0.0000055	0.0033	0.000071
Fluoride	16984-48-8	74	1.0E-03	4.0E-02 [c]	CalEPA	0.032	0.00068	0.41	0.0088
Sulfate	14808-79-8	28,000	-	-	-	-	-	-	-
Total Phosphorus	7723-14-0	158	-	-	-	-	-	-	-
Metals (mg/L)									
Aluminum	7429-90-5	101	1.0E-03	1.0E+00	ATSDR Final	0.0017	0.000037	0.023	0.00048
Cadmium	7440-43-9	63	1.0E-03	5.0E-04	ATSDR Draft	2.2	0.92	28	12
Cobalt	7440-48-4	10	4.0E-04	3.0E-03	PPRTV Current	0.059	0.0005	0.77	0.0066
Copper	7440-50-8	244	1.0E-03	1.0E-02	ATSDR Final	0.42	0.0089	5.4	0.12
Iron	7439-89-6	251	1.0E-03	7.0E-01	PPRTV Current	0.0061	0.00013	0.080	0.0017
Lead	7439-92-1	3	See discussion in Section 7						
Manganese	7439-96-5	583	1.0E-03	2.4E-02 [c]	IRIS (Surrogate)	0.42	0.22	5.4	2.9
Zinc	7440-66-6	14,100	6.0E-04	3.0E-01	ATSDR Final	0.80	0.010	10	0.13

ATSDR – Agency for Toxic Substances and Disease Registry; CalEPA – California Environmental Protection Agency; HEAST – Health Effects Summary Tables; IRIS – Integrated Risk Information System; PPRTV – Provisional Peer-Reviewed Toxicity Value; RfD – reference dose.

[a] Maximum detected concentration from samples taken within 0 to 10 feet bgs between 2007 to 2010.

[b] Subchronic oral RfDs obtained from Oak Ridge National Laboratory (ORNL 2015).

[c] Based on chronic RfD.

Table 8-1. Comparison of Risk-Based Soil Screening Levels to Selected Analytes and Statistical Summary for a Future Industrial Worker

Parameter Name	Number of Samples		Frequency of Exceedance (%)	Screening Value	Maximum Concentration	Minimum Concentration	Average Concentration[b]
	Exceedances[a]	Total					
Former Plant Site Area and Upland Portion of the Southeast Area Combined							
Carcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	231	263	87.8	3.00	87,900	0.70	419
Benzo(a)anthracene	1	69	1.4	2.89	4.6	0.02	0.34
Benzo(a)pyrene	7	69	10.1	0.29	4.8	0.02	0.29
Benzo(b)fluoranthene	2	69	2.9	2.89	8.9	0.02	0.45
Dibenz(a,h)anthracene	3	65	4.6	0.29	2.5	0.02	0.15
Noncarcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	4	263	1.5	479	87,900	0.70	419
Cadmium	6	266	2.3	981	8,320	0.04	164
Cobalt	2	114	1.8	347	1,600	0.35	61
Lead	73	266	27.4	1,962	152,000	3.2	4,219
Manganese	4	263	1.5	25,409	153,000	56	3,340
Former Plant Site Area							
Carcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	205	235	87.2	3.00	87,900	0.70	463
Benzo(a)anthracene	1	65	1.5	2.89	4.6	0.02	0.35
Benzo(a)pyrene	6	65	9.2	0.29	4.8	0.02	0.29
Benzo(b)fluoranthene	2	65	3.1	2.89	8.9	0.02	0.46
Dibenz(a,h)anthracene	3	62	4.8	0.29	2.5	0.02	0.15
Noncarcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	4	235	1.7	479	87,900	0.70	463
Cadmium	6	238	2.5	981	8,320	0.04	177
Cobalt	2	106	1.9	347	1,600	0.35	63
Lead	65	238	27.3	1,962	152,000	3.2	4,464
Manganese	3	235	1.3	25,409	153,000	56	3,251
Upland Portion of the Southeast Area							
Carcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	26	28	92.9	3.00	190	1.2	51
Benzo(a)pyrene	1	4	25.0	0.29	0.44	0.02	0.20
Noncarcinogenic (mg/kg), 0-3 ft bgs							
Lead	8	28	28.6	1,962	13,000	11	2,129
Manganese	1	28	3.6	25,409	40,400	391	4,086

bgs – below ground surface; ft – feet; HHCOPC – human health chemical of potential concern; mg/kg – milligrams per kilogram.

[a] Number of detected concentrations exceeding the RSV.

[b] Average concentration estimated assuming any non-detect observations were present at one-half the reported detection limit.

Table 8-2. Comparison of Risk-Based Soil Screening Levels to Selected Analytes and Statistical Summary for a Current Environmental Worker

Parameter Name	Number of Samples		Frequency of Exceedance (%)	Screening Value	Maximum Concentration	Minimum Concentration	Average Concentration[b]
	Exceedances[a]	Total					
Former Plant Site Area and Upland Portion of the Southeast Area Combined							
Carcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	96	263	36.5	25.8	87,900	0.70	419
Benzo(a)pyrene	1	69	1.4	2.5	4.8	0.02	0.29
Noncarcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	1	263	0.4	4,131	87,900	0.70	419
Lead	18	266	6.8	8,433	152,000	3.2	4,219
Former Plant Site Area							
Carcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	87	235	37.0	25.8	87,900	0.70	463
Benzo(a)pyrene	1	65	1.5	2.5	4.8	0.02	0.29
Noncarcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	1	235	0.4	4,131	87,900	0.70	463
Lead	17	238	7.1	8,433	152,000	3.2	4,464
Upland Portion of the Southeast Area							
Carcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	9	28	32.1	25.8	190	1.2	51
Noncarcinogenic (mg/kg), 0-3 ft bgs							
Lead	1	28	3.6	8,433	13,000	11	2,129

bgs – below ground surface; ft – feet; HHCOPC – human health chemical of potential concern; mg/kg – milligrams per kilogram.

[a] Number of detected concentrations exceeding the RSV.

[b] Average concentration estimated assuming any non-detect observations were present at one-half the reported detection limit.

Table 8-3. Comparison of Risk-Based Soil Screening Levels to Selected Analytes and Statistical Summary for a Future Construction Worker

Parameter Name	Number of Samples		Frequency of Exceedance (%)	Screening Value	Maximum Concentration	Minimum Concentration	Average Concentration[b]
	Exceedances[a]	Total					
Former Plant Site Area, Upland Portion of the Southeast Area, and Bluff Area Combined							
Carcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	15	381	3.9	197	87,900	0.70	292
Carcinogenic (mg/kg), 3-10 ft bgs							
Arsenic	15	174	8.6	197	524	1.2	62
Noncarcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	25	381	6.6	143	87,900	0.70	292
Barium	4	384	1.0	66,115	138,000	16	2,868
Cadmium	36	384	9.4	146	8,320	0.04	119
Cobalt	2	225	0.9	927	1,600	0.35	35
Copper	22	381	5.8	3,392	35,200	6.7	1,299
Lead	103	384	26.8	941	152,000	3.2	2,944
Manganese	14	381	3.7	6,201	153,000	56	2,461
Zinc	6	384	1.6	101,758	260,000	19	14,169
Noncarcinogenic (mg/kg), 3-10 ft bgs							
Arsenic	19	174	10.9	143	524	1.2	62
Barium	2	190	1.1	66,115	131,000	8.1	2,979
Cadmium	17	190	8.9	146	3,960	0.03	122
Copper	18	174	10.3	3,392	28,800	3.0	1,892
Lead	49	190	25.8	941	59,900	2.5	2,412
Manganese	7	174	4.0	6,201	174,000	17	2,451
Zinc	1	190	0.5	101,758	185,000	19	12,827
Former Plant Site Area							
Carcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	15	235	6.4	197	87,900	0.70	463
Carcinogenic (mg/kg), 3-10 ft bgs							
Arsenic	15	141	10.6	197	524	1.2	67
Noncarcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	25	235	10.6	143	87,900	0.70	463
Barium	4	238	1.7	66,115	138,000	16	4,205
Cadmium	35	238	14.7	146	8,320	0.04	177
Cobalt	2	106	1.9	927	1,600	0.35	63
Copper	22	235	9.4	3,392	35,200	6.7	2,019
Lead	92	238	38.7	941	152,000	3.2	4,464
Manganese	12	235	5.1	6,201	153,000	56	3,251
Zinc	6	238	2.5	101,758	260,000	34	20,712

Table 8-3. Comparison of Risk-Based Soil Screening Levels to Selected Analytes and Statistical Summary for a Future Construction Worker

Parameter Name	Number of Samples		Frequency of Exceedance (%)	Screening Value	Maximum Concentration	Minimum Concentration	Average Concentration[b]
	Exceedances[a]	Total					
Noncarcinogenic (mg/kg), 3-10 ft bgs							
Arsenic	19	141	13.5	143	524	1.2	67
Barium	2	157	1.3	66,115	131,000	8.1	3,239
Cadmium	13	157	8.3	146	3,960	0.03	132
Copper	18	141	12.8	3,392	28,800	3.0	2,209
Lead	39	157	24.8	941	59,900	2.5	2,566
Manganese	5	141	3.5	6,201	174,000	17	2,639
Zinc	1	157	0.6	101,758	185,000	19	13,038
Upland Portion of the Southeast Area							
Noncarcinogenic (mg/kg), 0-3 ft bgs							
Cadmium	1	28	3.6	146	286	2	49
Lead	11	28	39.3	941	13,000	11	2,129
Manganese	2	28	7.1	6,201	40,400	391	4,086
Noncarcinogenic (mg/kg), 3-10 ft bgs							
Cadmium	4	26	15.4	146	459	0.30	91
Lead	10	26	38.5	941	16,000	7.7	2,124
Manganese	2	26	7.7	6,201	16,000	113	2,016
Bluff Area - No Exceedances							

bgs – below ground surface; ft – feet; HHCOPC – human health chemical of potential concern; mg/kg – milligrams per kilogram.

[a] Number of detected concentrations exceeding the RSV.

[b] Average concentration estimated assuming any non-detect observations were present at one-half the reported detection limit.

Table 8-4. Comparison of Risk-Based Soil Screening Levels to Selected Analytes and Statistical Summary for a Future Utility Worker

Parameter Name	Number of Samples		Frequency of Exceedance (%)	Screening Value	Maximum Concentration	Minimum Concentration	Average Concentration[b]
	Exceedances[a]	Total					
Former Plant Site Area, Upland Portion of the Southeast Area, and Bluff Area Combined							
Carcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	5	381	1.3	296	87,900	0.70	292
Carcinogenic (mg/kg), 3-10 ft bgs							
Arsenic	1	174	0.6	296	524	1.2	62
Noncarcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	2	381	0.5	1,871	87,900	0.70	292
Cadmium	2	384	0.5	1,909	8,320	0.04	119
Lead	41	384	10.7	3,716	152,000	3.2	2,944
Manganese	1	381	0.3	80,882	153,000	56	2,461
Noncarcinogenic (mg/kg), 3-10 ft bgs							
Cadmium	1	190	0.5	1,909	3,960	0.0	2,412
Lead	23	190	12.1	3,716	59,900	2.5	2,451
Manganese	1	174	0.6	80,882	174,000	17	2,451
Former Plant Site Area							
Carcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	5	235	2.1	296	87,900	0.70	463
Carcinogenic (mg/kg), 3-10 ft bgs							
Arsenic	1	141	0.7	296	524	1.2	67
Noncarcinogenic (mg/kg), 0-3 ft bgs							
Arsenic	2	235	0.9	1,871	87,900	0.70	463
Cadmium	2	238	0.8	1,909	8,320	0.04	177
Lead	38	238	16.0	3,716	152,000	3.2	4,464
Manganese	1	235	0.4	80,882	153,000	56	3,251
Noncarcinogenic (mg/kg), 3-10 ft bgs							
Cadmium	1	157	0.6	1,909	3,960	0.0	132
Lead	21	157	13.4	3,716	59,900	2.5	2,566
Manganese	1	141	0.7	80,882	174,000	17	2,639
Upland Portion of the Southeast Area							
Noncarcinogenic (mg/kg), 0-3 ft bgs							
Lead	3	28	10.7	3,716	13,000	11	2,129
Noncarcinogenic (mg/kg), 3-10 ft bgs							
Lead	2	26	7.7	3,716	16,000	7.7	2,124
Bluff Area - No Exceedances							

bgs – below ground surface; ft – feet; HHCOPC – human health chemical of potential concern; mg/kg – milligrams per kilogram.

[a] Number of detected concentrations exceeding the RSV.

[b] Average concentration estimated assuming any non-detect observations were present at one-half the reported detection limit.

Table 8-5. Comparison of Risk-Based Soil Screening Levels to Selected Analytes and Statistical Summary for an Adolescent Trespasser in the Bluff Area and UPSEA

Parameter Name	Number of Samples		Frequency of Exceedance (%)	Screening Value	Maximum Concentration	Minimum Concentration	Average Concentration[b]
	Exceedances[a]	Total					
Upland Portion of the Southeast Area and Bluff Area Combined							
Carcinogenic (mg/kg), 0-0.5 ft bgs							
Arsenic	7	62	11.3	33.3	190	1.2	23
Noncarcinogenic (mg/kg), 0-0.5 ft bgs							
Lead	1	62	1.6	4,703	13,000	7.5	850
Upland Portion of the Southeast Area							
Carcinogenic (mg/kg), 0-0.5 ft bgs							
Arsenic	7	28	25.0	33.3	190	1.2	52
Noncarcinogenic (mg/kg), 0-0.5 ft bgs							
Lead	1	28	3.6	4,703	13,000	25	2,384
Bluff Area - No Exceedances							

bgs – below ground surface; ft – feet; HHCOPC – human health chemical of potential concern; mg/kg – milligrams per kilogram.

[a] Number of detected concentrations exceeding the RSV.

[b] Average concentration estimated assuming any non-detect observations were present at one-half the reported detection limit.

Table 8-6. Comparison of Risk-Based Soil Screening Levels to Selected Analytes and Statistical Summary for an Adolescent Trespasser in the Former Plant Site Area

Parameter Name	Number of Samples		Frequency of Exceedance (%)	Screening Value	Maximum Concentration	Minimum Concentration	Average Concentration[b]
	Exceedances[a]	Total					
Former Plant Site Area							
Carcinogenic (mg/kg), 0-0.5 ft bgs							
Arsenic	7	127	5.5	155	87,900	1.3	759
Noncarcinogenic (mg/kg), 0-0.5 ft bgs							
Arsenic	1	127	0.8	9,969	87,900	1.3	759
Lead	1	128	0.8	21,948	90,000	8.4	2,925

bgs – below ground surface; ft – feet; HHCOPC – human health chemical of potential concern; mg/kg – milligrams per kilogram.

[a] Number of detected concentrations exceeding the RSV.

[b] Average concentration estimated assuming any non-detect observations were present at one-half the reported detection limit.

Table 9-1. Estimated 95% Upper Confidence Limits for Specific Areas and Depths		
HHCOPC	**95% UCL / Average**	**95% UCL Basis / Discussion**
Bluff Area (0 to 0.5' bgs)		
Arsenic	10	95% Student's-t UCL
Lead	123	Average
FPSA Lithopone Ridges Area (0 to 0.5' bgs)[a]		
Arsenic	64,185	99% Chebyshev (Mean, Sd) UCL
Cadmium	6,135	99% Chebyshev (Mean, Sd) UCL
Cobalt	11	Maximum (only one sample available)
Lead	9,652	Average
Manganese	12,545	95% Chebyshev (Mean, Sd) UCL
FPSA Slag Pile Area (0 to 0.5' bgs)[b]		
Arsenic	93	95% Adjusted Gamma UCL
Cadmium	254	97.5% KM (Chebyshev) UCL
Cobalt	47	Maximum (only seven samples available)
Lead	1,613	Average
Manganese	10,566	95% Chebyshev (Mean, Sd) UCL
Benzo(a)anthracene	0.041	Maximum detected
Benzo(a)pyrene	0.047	Maximum detected
Benzo(b)fluoranthene	0.09	Maximum detected
Benzo(k)fluoranthene	0.026	One-half maximum detection limit
Chrysene	0.062	Maximum detected
Dibenz(a,h)anthracene	0.026	One-half maximum detection limit
Indeno(1,2,3-cd)pyrene	0.042	Maximum detected
Naphthalene	0.29	Maximum detected
FPSA Other Area (0 to 0.5' bgs)		
Arsenic	159	95% KM (Chebyshev) UCL
Cadmium	202	95% KM (Chebyshev) UCL
Cobalt	76	95% Chebyshev (Mean, Sd) UCL
Lead	2,194	Average
Manganese	3,493	95% Chebyshev (Mean, Sd) UCL
Benzo(a)anthracene	2.55	97.5% KM (Chebyshev) UCL
Benzo(a)pyrene	2.63	97.5% KM (Chebyshev) UCL
Benzo(b)fluoranthene	4.87	97.5% KM (Chebyshev) UCL
Benzo(k)fluoranthene	1.56	97.5% KM (Chebyshev) UCL
Chrysene	4.30	97.5% KM (Chebyshev) UCL
Dibenz(a,h)anthracene	1.20	Maximum detected[c]
Indeno(1,2,3-cd)pyrene	3.60	Maximum detected[c]
Naphthalene	0.38	Maximum detected[c]

Table 9-1. Estimated 95% Upper Confidence Limits for Specific Areas and Depths		
HHCOPC	**95% UCL / Average**	**95% UCL Basis / Discussion**
UPSEA (0 to 0.5' bgs)[d]		
Arsenic	145	97.5% KM (Chebyshev) UCL
Lead	2,515	Average
Manganese	12,890	95% Chebyshev (Mean, Sd) UCL
Benzo(a)anthracene	0.56	Maximum detected
Benzo(a)pyrene	0.44	Maximum detected
Benzo(b)fluoranthene	0.74	Maximum detected
Benzo(k)fluoranthene	0.28	Maximum detected
Chrysene	0.68	Maximum detected
Dibenz(a,h)anthracene	0.11	Maximum detected
Indeno(1,2,3-cd)pyrene	0.27	Maximum detected
Naphthalene	0.11	one-half maximum detection limit
FPSA Lithopone Ridges Area (0 to 3' bgs)		
Arsenic	23,572	99% KM (Chebyshev) UCL
Cadmium	1,894	97.5% Chebyshev (Mean, Sd) UCL
Cobalt	706	95% KM (Chebyshev) UCL
Lead	13,973	Average
Manganese	28,646	95% Chebyshev (Mean, Sd) UCL
Benzo(a)anthracene	1.60	Maximum detected[c]
Benzo(a)pyrene	0.59	Maximum detected[c]
Benzo(b)fluoranthene	1.40	Maximum detected[c]
Benzo(k)fluoranthene	0.40	Maximum detected[c]
Chrysene	2.20	Maximum detected[c]
Dibenz(a,h)anthracene	0.25	Maximum detected[c]
Indeno(1,2,3-cd)pyrene	0.48	Maximum detected[c]
Naphthalene	1.20	Maximum detected[c]
FPSA Slag Pile Area (0 to 3' bgs)		
Arsenic	140	95% Adjusted Gamma UCL
Cadmium	399	97.5% KM (Chebyshev) UCL
Cobalt	38	95% Student's-t UCL
Lead	3,089	Average
Manganese	6,836	95% Chebyshev (Mean, Sd) UCL
Benzo(a)anthracene	0.25	Maximum detected[c]
Benzo(a)pyrene	0.20	Maximum detected[c]
Benzo(b)fluoranthene	0.36	Maximum detected[c]
Benzo(k)fluoranthene	0.15	Maximum detected[c]
Chrysene	0.42	Maximum detected[c]
Dibenz(a,h)anthracene	0.053	Maximum detected[c]
Indeno(1,2,3-cd)pyrene	0.16	Maximum detected[c]
Naphthalene	0.43	95% KM (BCA) UCL

Table 9-1. Estimated 95% Upper Confidence Limits for Specific Areas and Depths

HHCOPC	95% UCL / Average	95% UCL Basis / Discussion
FPSA Other Area (0 to 3' bgs)		
Arsenic	297	97.5% KM (Chebyshev) UCL
Cadmium	195	95% KM (Chebyshev) UCL
Cobalt	45	95% KM (Chebyshev) UCL
Lead	2,383	Average
Manganese	3,183	95% KM (Chebyshev) UCL
Benzo(a)anthracene	4.60	Maximum detected[c]
Benzo(a)pyrene	4.80	Maximum detected[c]
Benzo(b)fluoranthene	8.90	Maximum detected[c]
Benzo(k)fluoranthene	2.80	Maximum detected[c]
Chrysene	1.26	95% Adjusted Gamma KM-UCL
Dibenz(a,h)anthracene	1.20	Maximum detected[c]
Indeno(1,2,3-cd)pyrene	3.60	Maximum detected[c]
Naphthalene	3.70	Maximum detected[c]
UPSEA (0 to 3' bgs)[e]		
Arsenic	122	97.5% KM (Chebyshev) UCL
Lead	2,187	Average
Manganese	9,403	95% Chebyshev (Mean, Sd) UCL
Benzo(a)anthracene	0.56	Maximum detected
Benzo(a)pyrene	0.44	Maximum detected
Benzo(b)fluoranthene	0.74	Maximum detected
Benzo(k)fluoranthene	0.28	Maximum detected
Chrysene	0.68	Maximum detected
Dibenz(a,h)anthracene	0.19	one-half maximum detection limit
Indeno(1,2,3-cd)pyrene	0.13	Maximum detected
Naphthalene	0.19	one-half maximum detection limit

BCA – bias-corrected accelerated bootstrap method; bgs – below ground surface; FPSA – former plant site area; HHCOPC – human health chemical of potential concern; KM – Kaplan-Meier; ND – UCL could not be determined; Sd – standard deviation; UCL – upper confidence limit; UPSEA – upland portion of the southeast area.

[a] No polycyclic aromatic hydrocarbons (PAHs) were sampled for in the 0 to 0.5 foot bgs soil depth in the Lithopone Ridges area.

[b] Only four PAH samples were collected in the 0 to 0.5 foot bgs soil depth in the Slag Pile area.

[c] Fifty percent (50%) or more of the samples collected reported no detected concentration (e.g., reporting limit provided); therefore maximum detected value used.

[d] Only two PAH samples were collected in the 0 to 0.5 foot bgs soil depth in the UPSEA.

[e] Only four PAH samples were collected in the 0 to 3 foot bgs soil depth in the UPSEA.

Table 9-2. Estimated Risks and Hazards for the Adolescent Trespasser Using 95% Upper Confidence Limits

HPCOPC	RSV Car	RSV NC	95% UCL/ Avg (Lead)	Risk	HQ
Bluff Area					
Arsenic	3.3E+01	2.1E+03	10.0	3.0E-07	4.7E-03
Lead	-	4.7E+03	123	-	2.6E-02
FPSA - Lithopone Ridge					
Arsenic	1.6E+02	1.0E+04	64,185	4.1E-04	6.4E+00
Lead	-	2.2E+04	9,652	-	4.4E-01
FPSA - Slag Pile					
Arsenic	1.6E+02	1.0E+04	93	6.0E-07	9.3E-03
Lead	-	2.2E+04	1,613	-	7.3E-02
FPSA - Other Areas					
Arsenic	1.6E+02	1.0E+04	159	1.0E-06	1.6E-02
Lead	-	2.2E+04	2,194	-	1.0E-01
UPSEA					
Arsenic	3.3E+01	2.1E+03	145	4.4E-06	6.8E-02
Lead	-	4.7E+03	2,515	-	5.3E-01

Avg – average; Car – carcinogenic; FPSA – former plant site area; HHCOPC – human health chemical of potential concern; HQ – hazard quotient; NC – noncarcinogenic; RSV – risk-based screening value; UCL – upper confidence limit; UPSEA – upland portion of the southeast area.

Table 9-3. Estimated Risks and Hazards for the Future Industrial Worker Using 95% Upper Confidence Limits

	RSV		95% UCL / Average (Lead)				Risk				Hazard Quotient			
			Former Plant Site Area				Former Plant Site Area				Former Plant Site Area			
HHCOPC	Car	NC	Lith. Ridge	Slag Pile	Other Areas	UPSEA	Lith. Ridge	Slag Pile	Other Areas	UPSEA	Lith. Ridge	Slag Pile	Other Areas	UPSEA
0 to 0.5 feet bgs														
Arsenic	3.0E+00	4.8E+02	64,185	93	159	145	2.1E-02 [a]	3.1E-05	5.3E-05	4.8E-05	1.3E+02	1.9E-01	3.3E-01	3.0E-01
Cadmium	8.4E+03	9.8E+02	6,135	254	202	-	7.3E-07	3.0E-08	2.4E-08	-	6.3E+00	2.6E-01	2.1E-01	-
Cobalt	1.7E+03	3.5E+02	11	47	76	-	6.5E-09	2.8E-08	4.5E-08	-	3.2E-02	1.4E-01	2.2E-01	-
Lead		2.0E+03	9,652	1,613	2,194	2,515	-	-	-	-	4.9E+00	8.2E-01	1.1E+00	1.3E+00
Manganese	-	2.5E+04	12,545	10,566	3,493	12,890	-	-	-	-	4.9E-01	4.2E-01	1.4E-01	5.1E-01
Benzo(a)anthracene	2.9E+00	-	-	0.041	2.55	0.56	-	1.4E-08	8.8E-07	1.9E-07	-	-	-	-
Benzo(a)pyrene	2.9E-01	-	-	0.047	2.63	0.44	-	1.6E-07	9.1E-06	1.5E-06	-	-	-	-
Benzo(b)fluoranthene	2.9E+00	-	-	0.09	4.87	0.74	-	3.1E-08	1.7E-06	2.6E-07	-	-	-	-
Benzo(k)fluoranthene	2.9E+01	-	-	0.026	1.56	0.28	-	8.8E-10	5.4E-08	9.7E-09	-	-	-	-
Chrysene	2.9E+02	-	-	0.062	4.30	0.68	-	2.1E-10	1.5E-08	2.4E-09	-	-	-	-
Dibenz(a,h)anthracene	2.9E-01	-	-	0.026	1.20	0.11	-	8.8E-08	4.2E-06	3.8E-07	-	-	-	-
Indeno(1,2,3-cd)pyrene	2.9E+00	-	-	0.042	3.60	0.27	-	1.5E-08	1.2E-06	9.3E-08	-	-	-	-
Naphthalene	2.1E+01	7.2E+02	-	0.29	0.38	0.11	-	1.4E-08	1.8E-08	5.0E-09	-	4.0E-04	5.3E-04	1.5E-04
						Total PAH Risk	-	3.3E-07	1.7E-05	2.5E-06	-	-	-	-
0 to 3 feet bgs														
Arsenic	3.0E+00	4.8E+02	23,572	140	297	122	7.9E-03	4.7E-05	9.9E-05	4.1E-05	4.9E+01	2.9E-01	6.2E-01	2.5E-01
Cadmium	8.4E+03	9.8E+02	1,894	399	195	-	2.2E-07	4.7E-08	2.3E-08	-	1.9E+00	4.1E-01	2.0E-01	-
Cobalt	1.7E+03	3.5E+02	706	38	45	-	4.2E-07	2.2E-08	2.7E-08	-	2.0E+00	1.1E-01	1.3E-01	-
Lead		2.0E+03	13,973	3,089	2,383	2,187	-	-	-	-	7.1E+00	1.6E+00	1.2E+00	1.1E+00
Manganese	-	2.5E+04	28,646	6,836	3,183	9,403	-	-	-	-	1.1E+00	2.7E-01	1.3E-01	3.7E-01
Benzo(a)anthracene	2.9E+00	-	1.60	0.25	4.60	0.56	5.5E-07	8.7E-08	1.6E-06	1.9E-07	-	-	-	-
Benzo(a)pyrene	2.9E-01	-	0.59	0.20	4.80	0.44	2.0E-06	6.9E-07	1.7E-05	1.5E-06	-	-	-	-
Benzo(b)fluoranthene	2.9E+00	-	1.40	0.36	8.90	0.74	4.8E-07	1.2E-07	3.1E-06	2.6E-07	-	-	-	-
Benzo(k)fluoranthene	2.9E+01	-	0.40	0.15	2.80	0.28	1.4E-08	5.2E-09	9.7E-08	9.7E-09	-	-	-	-
Chrysene	2.9E+02	-	2.20	0.42	1.26	0.68	7.6E-09	1.5E-09	4.4E-09	2.4E-09	-	-	-	-
Dibenz(a,h)anthracene	2.9E-01	-	0.25	0.053	1.20	0.19	8.7E-07	1.8E-07	4.2E-06	6.6E-07	-	-	-	-
Indeno(1,2,3-cd)pyrene	2.9E+00	-	0.48	0.16	3.60	0.13	1.7E-07	5.5E-08	1.2E-06	4.5E-08	-	-	-	-
Naphthalene	2.1E+01	7.2E+02	1.20	0.43	3.70	0.19	5.8E-08	2.1E-08	1.8E-07	9.1E-09	1.7E-03	5.9E-04	5.1E-03	2.6E-04
						Total PAH Risk	4.2E-06	1.2E-06	2.7E-05	2.7E-06	-	-	-	-

Car – carcinogenic; HHCOPC – human health chemical of potential concern; NC – noncarcinogenic; PAH – polycyclic aromatic hydrocarbons; RSV – risk-based screening value; UCL – upper confidence limit; UPSEA – upland portion of the southeast area.

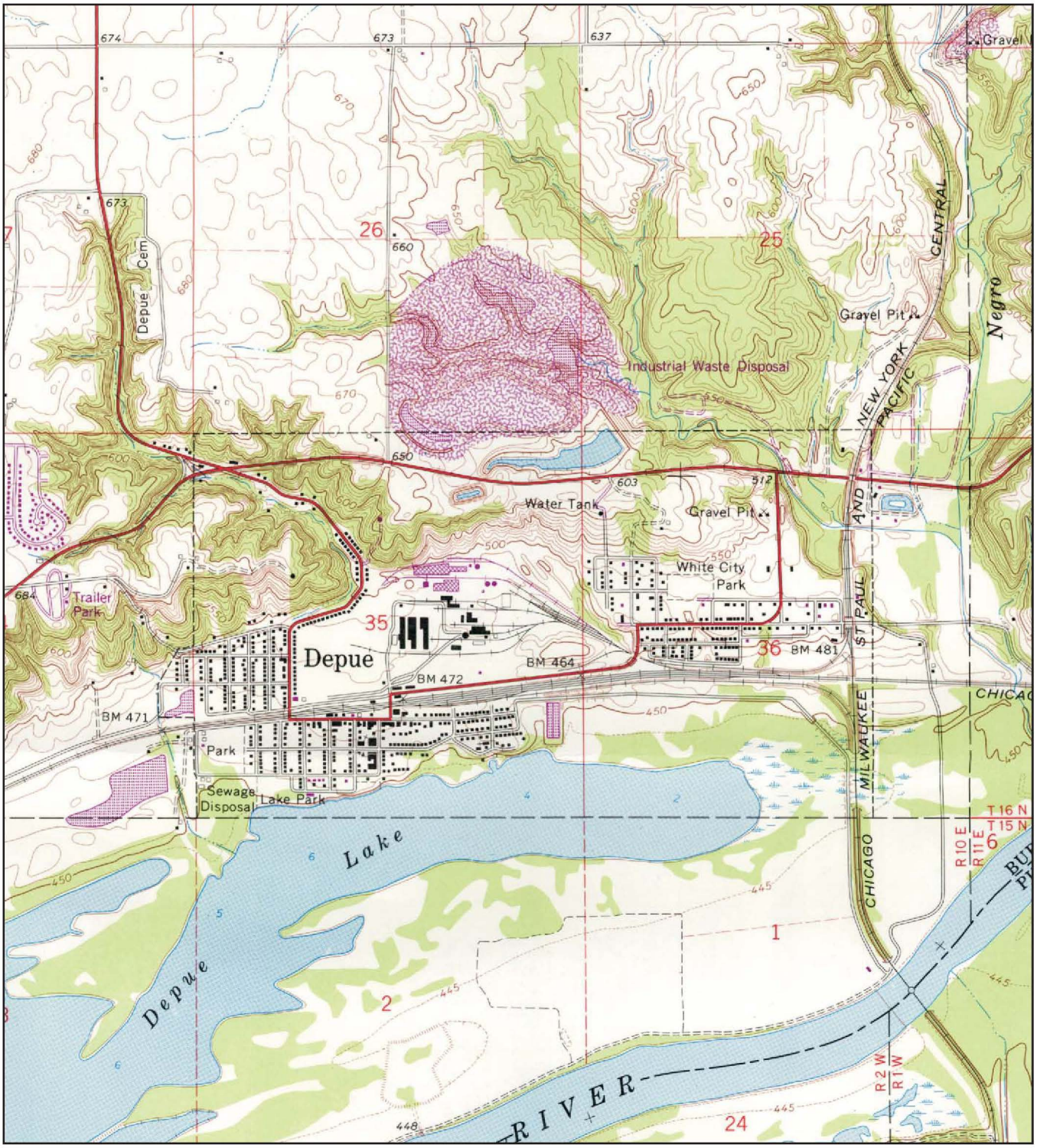
[a] A risk value of 2.1E-02 for arsenic in the Lithopone Ridge was also calculated using the one-hit equation specified in USEPA (1989).

Table 9-4. Estimated Risks and Hazards for the Current Environmental Worker Using 95% Upper Confidence Limits

	RSV		95% UCL / Average (Lead)				Risk				Hazard Quotient			
			Former Plant Site				Former Plant Site				Former Plant Site			
HHCOPC	Car	NC	Lith. Ridge	Slag Pile	Other Areas	UPSEA	Lith. Ridge	Slag Pile	Other Areas	UPSEA	Lith. Ridge	Slag Pile	Other Areas	UPSEA
0 to 0.5 feet bgs														
Arsenic	2.6E+01	4.1E+03	64,185	93	159	145	2.5E-03	3.6E-06	6.2E-06	5.6E-06	1.6E+01	2.2E-02	3.8E-02	3.5.E-02
Cadmium	7.3E+04	8.5E+03	6,135	254	202	-	8.4E-08	3.5E-09	2.8E-09	-	7.3E-01	3.0E-02	2.4E-02	-
Cobalt	1.5E+04	3.0E+03	11	47	76	-	7.6E-10	3.2E-09	5.2E-09	-	3.7E-03	1.6E-02	2.5E-02	-
Lead		8.4E+03	9,652	1,613	2,194	2,515	-	-	-	-	1.1E+00	1.9E-01	2.6E-01	3.0.E-01
Manganese	-	2.2E+05	12,545	10,566	3,493	12,890	-	-	-	-	5.7E-02	4.8E-02	1.6E-02	5.9.E-02
Benzo(a)anthracene	2.5E+01	-	-	0.041	2.55	0.56	-	1.6E-09	1.0E-07	2.2E-08	-	-	-	-
Benzo(a)pyrene	2.5E+00	-	-	0.047	2.63	0.44	-	1.9E-08	1.1E-06	1.8E-07	-	-	-	-
Benzo(b)fluoranthene	2.5E+01	-	-	0.09	4.87	0.74	-	3.6E-09	2.0E-07	3.0E-08	-	-	-	-
Benzo(k)fluoranthene	2.5E+02	-	-	0.026	1.56	0.28	-	1.0E-10	6.3E-09	1.1E-09	-	-	-	-
Chrysene	2.5E+03	-	-	0.062	4.30	0.68	-	2.5E-11	1.7E-09	2.7E-10	-	-	-	-
Dibenz(a,h)anthracene	2.5E+00	-	-	0.026	1.20	0.11	-	1.0E-08	4.8E-07	4.4E-08	-	-	-	-
Indeno(1,2,3-cd)pyrene	2.5E+01	-	-	0.042	3.60	0.27	-	1.7E-09	1.4E-07	1.1E-08	-	-	-	-
Naphthalene	1.8E+02	6.2E+03	-	0.29	0.38	0.11	-	1.6E-09	2.1E-09	5.9E-10	-	4.7E-05	6.1E-05	1.7.E-05
						Total PAH Risk	-	3.8E-08	2.0E-06	2.9E-07	-	-	-	-
0 to 3 feet bgs														
Arsenic	2.6E+01	4.1E+03	23,572	140	297	122	9.1E-04	5.4E-06	1.1E-05	4.7E-06	5.7E+00	3.4E-02	7.2E-02	3.0.E-02
Cadmium	7.3E+04	8.5E+03	1,894	399	195	-	2.6E-08	5.5E-09	2.7E-09	-	2.2E-01	4.7E-02	2.3E-02	-
Cobalt	1.5E+04	3.0E+03	706	38	45	-	4.8E-08	2.6E-09	3.1E-09	-	2.4E-01	1.3E-02	1.5E-02	-
Lead		8.4E+03	13,973	3,089	2,383	2,187	-	-	-	-	1.7E+00	3.7E-01	2.8E-01	2.6.E-01
Manganese	-	2.2E+05	28,646	6,836	3,183	9,403	-	-	-	-	1.3E-01	3.1E-02	1.5E-02	4.3.E-02
Benzo(a)anthracene	2.5E+01	-	1.60	0.25	4.60	0.56	6.4E-08	1.0E-08	1.8E-07	2.2E-08	-	-	-	-
Benzo(a)pyrene	2.5E+00	-	0.59	0.20	4.80	0.44	2.4E-07	8.0E-08	1.9E-06	1.8E-07	-	-	-	-
Benzo(b)fluoranthene	2.5E+01	-	1.40	0.36	8.90	0.74	5.6E-08	1.4E-08	3.6E-07	3.0E-08	-	-	-	-
Benzo(k)fluoranthene	2.5E+02	-	0.40	0.15	2.80	0.28	1.6E-09	6.0E-10	1.1E-08	1.1E-09	-	-	-	-
Chrysene	2.5E+03	-	2.20	0.42	1.26	0.68	8.8E-10	1.7E-10	5.1E-10	2.7E-10	-	-	-	-
Dibenz(a,h)anthracene	2.5E+00	-	0.25	0.053	1.20	0.19	1.0E-07	2.1E-08	4.8E-07	7.6E-08	-	-	-	-
Indeno(1,2,3-cd)pyrene	2.5E+01	-	0.48	0.16	3.60	0.13	1.9E-08	6.4E-09	1.4E-07	5.2E-09	-	-	-	-
Naphthalene	1.8E+02	6.2E+03	1.20	0.43	3.70	0.19	6.7E-09	2.4E-09	2.1E-08	1.1E-09	1.9E-04	6.9E-05	5.9E-04	3.1.E-05
						Total PAH Risk	4.9E-07	1.4E-07	3.1E-06	3.1E-07	-	-	-	-

Car – carcinogenic; HHCOPC – human health chemical of potential concern; NC – noncarcinogenic; PAH – polycyclic aromatic hydrocarbons; RSV – risk-based screening value; UCL – upper confidence limit; UPSEA – upland portion of the southeast area.

Figures



REFERENCE: Base Map Source: USGS 7.5 Minute Quad. Series "Depue, Illinois" (1966, Photorevised 1979).

2000' 0 2000'

Approximate Scale: 1" = 2000'

Area Location

03/13/06 SYR-D85-DJH
85572001/85572N02.cdr

DEPUE AREA VICINITY

SCREENING LEVEL
HUMAN HEALTH RISK EVALUATION
DEPUE SITE
DEPUE, ILLINOIS

ENVIRON

FIGURE
1-1

DRAFTED BY: CKL/APR	DATE: 11/17/14	21-12046E13

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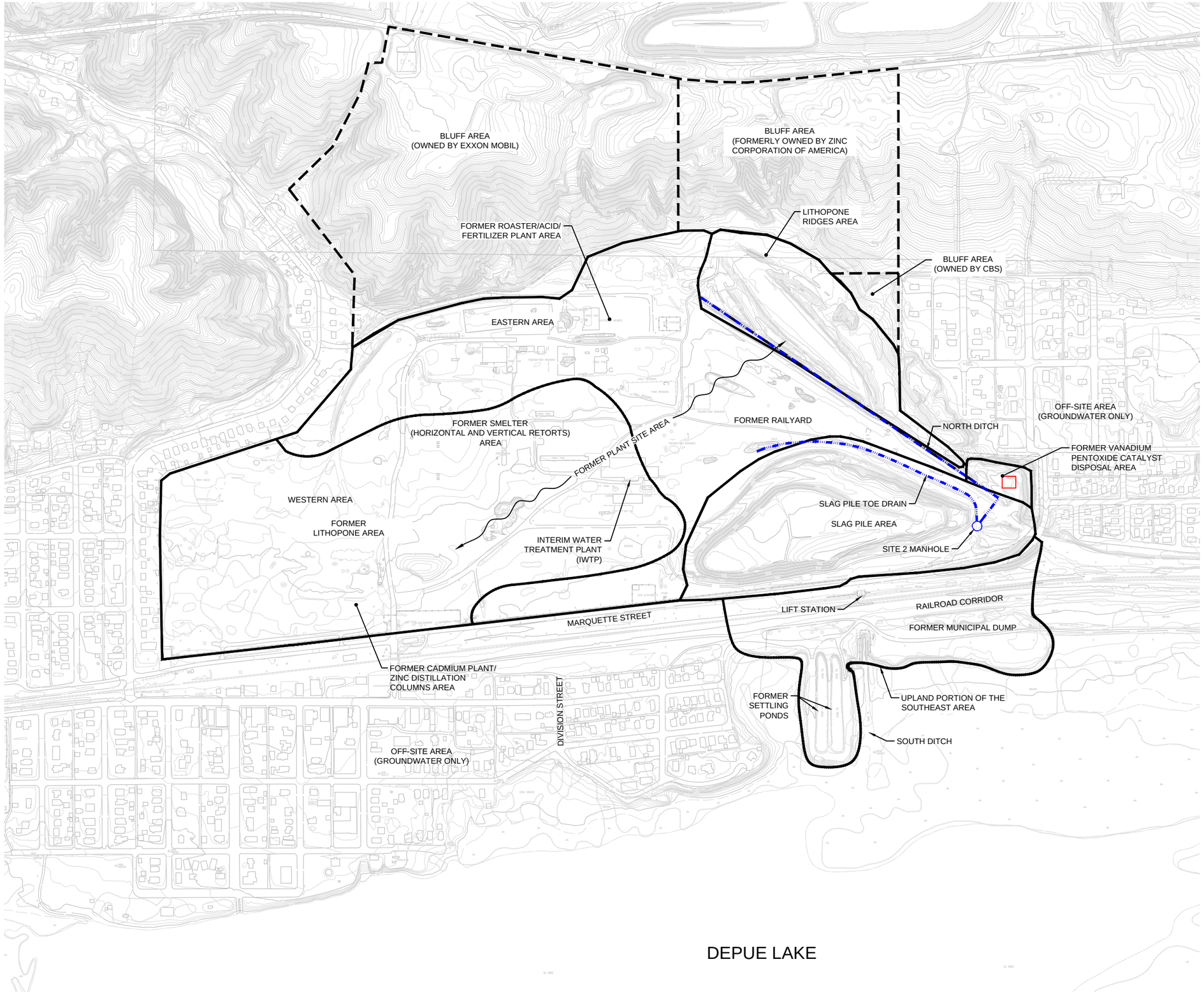

LEGEND:

APPROXIMATE AREA OF HISTORICAL ACTIVITIES

APPROXIMATE EXTENT OF BLUFF AREA

NOTES:

1. THE OU3 STUDY AREA INCLUDES: THE FORMER PLANT SITE AREA, THE UPLAND PORTION OF THE SOUTHEAST AREA, THE BLUFF AREA, GROUNDWATER, AND OFF-SITE GROUNDWATER (SOILS IN THE OFF-SITE AREA ARE BEING ADDRESSED AS A PART OF OU4).

2. BASE MAP PREPARED FROM ELECTRONIC FILE OF DRAWING NO. 95-13562, AT A SCALE OF 1"=50', DATED 6/19/03 BY "FRANK AND WEST ENVIRONMENTAL ENGINEERS, INC.". ALL LOCATIONS ARE APPROXIMATE.

SCALE IN FEET

500 250 0 500

LAYOUT OF THE OU3 STUDY AREA

SCREENING LEVEL
HUMAN HEALTH RISK EVALUATION
DEPUE SITE
DEPUE, ILLINOIS

ENVIRON

FIGURE
1-2

DRAFTED BY: CKL/APR | DATE: 12/16/14 | 21-12046E13

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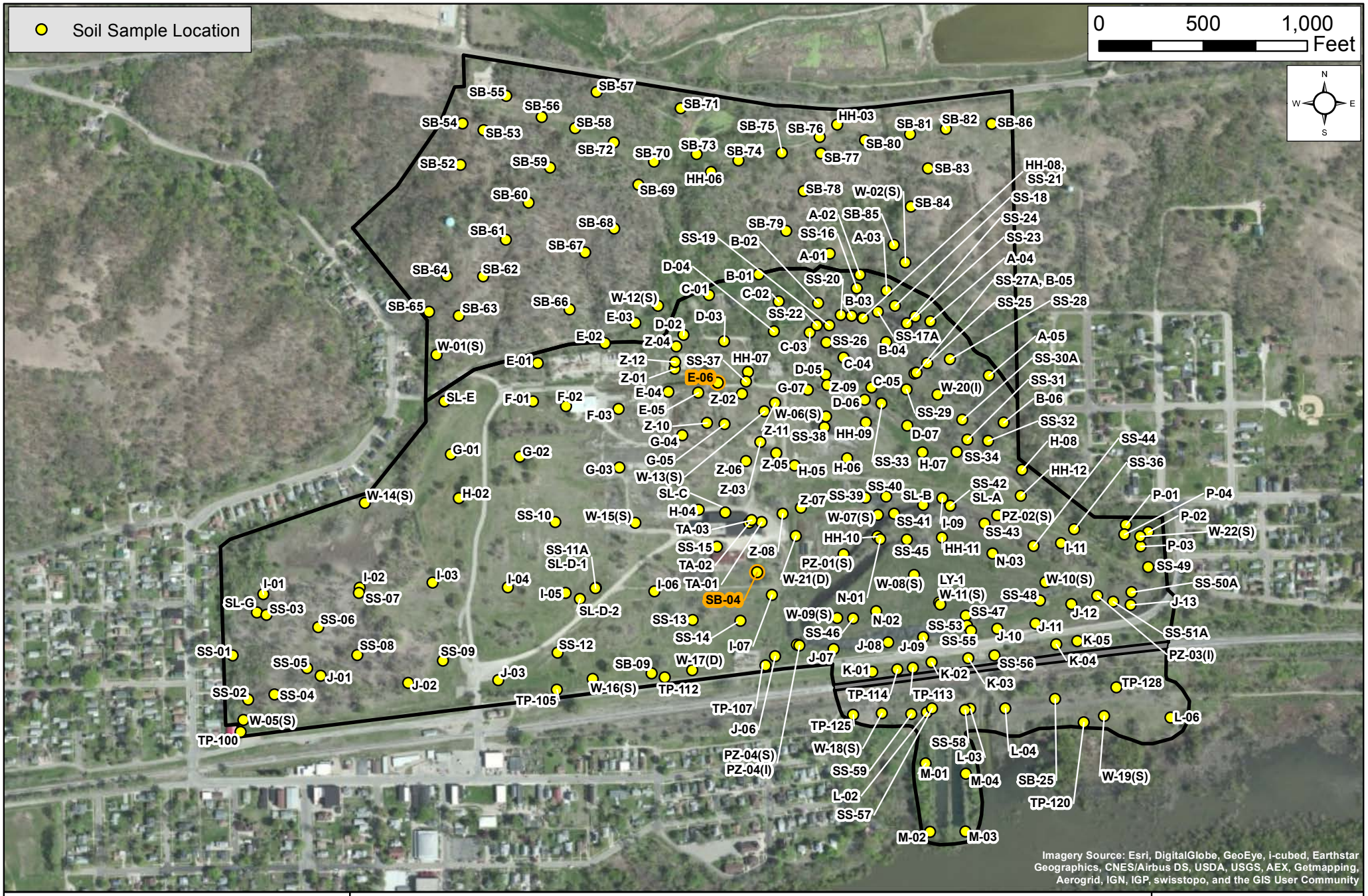

ENVIRON

Soil Sample Locations

Operable Unit 3, DePue, Illinois

Figure 3-1

12/17/2014

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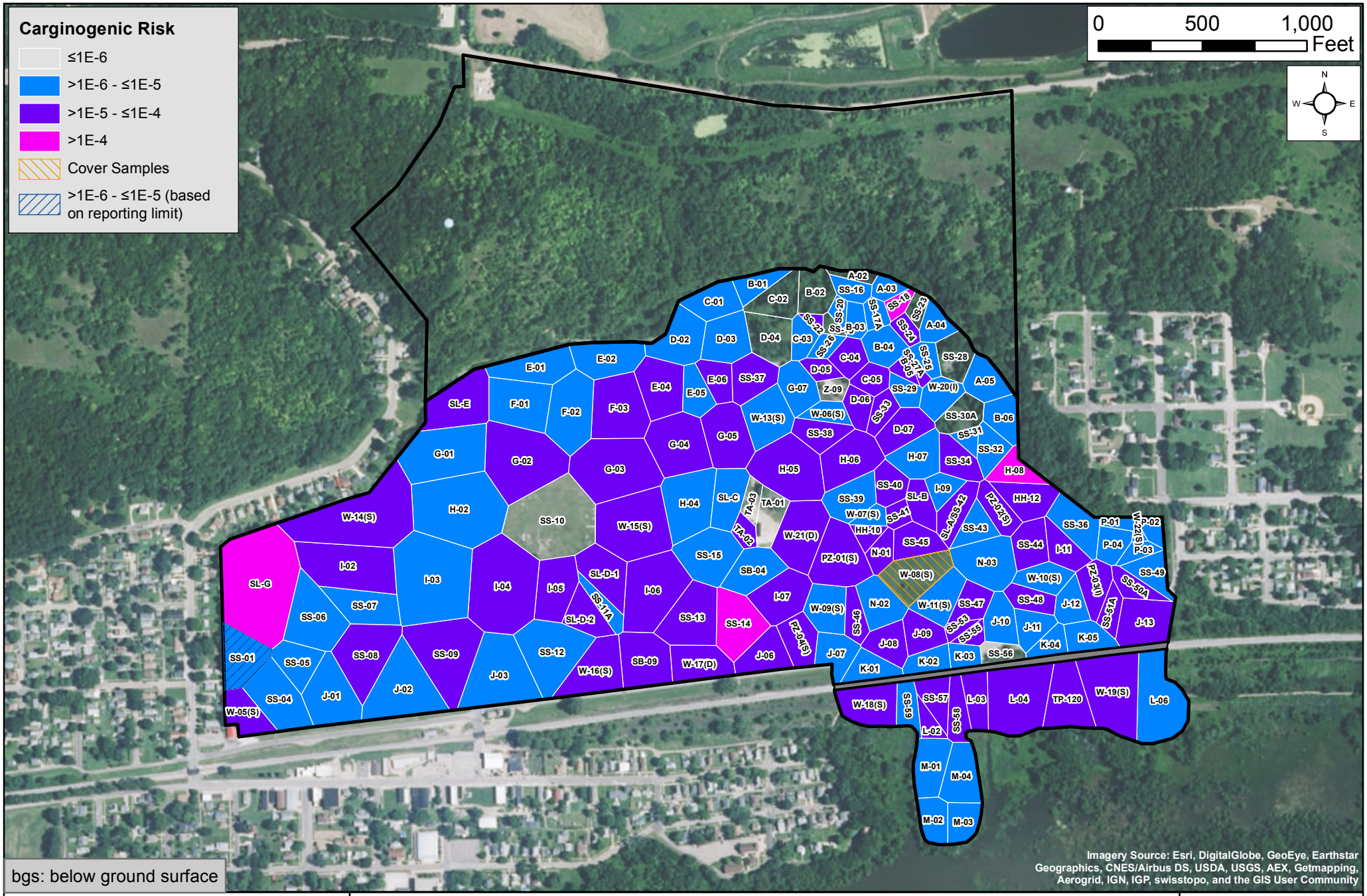

RAMBOLL ENVIRON

Thiessen Polygons Showing Future Industrial Worker Carcinogenic Risk for Maximum Concentrations of Arsenic (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-1

8/17/2015

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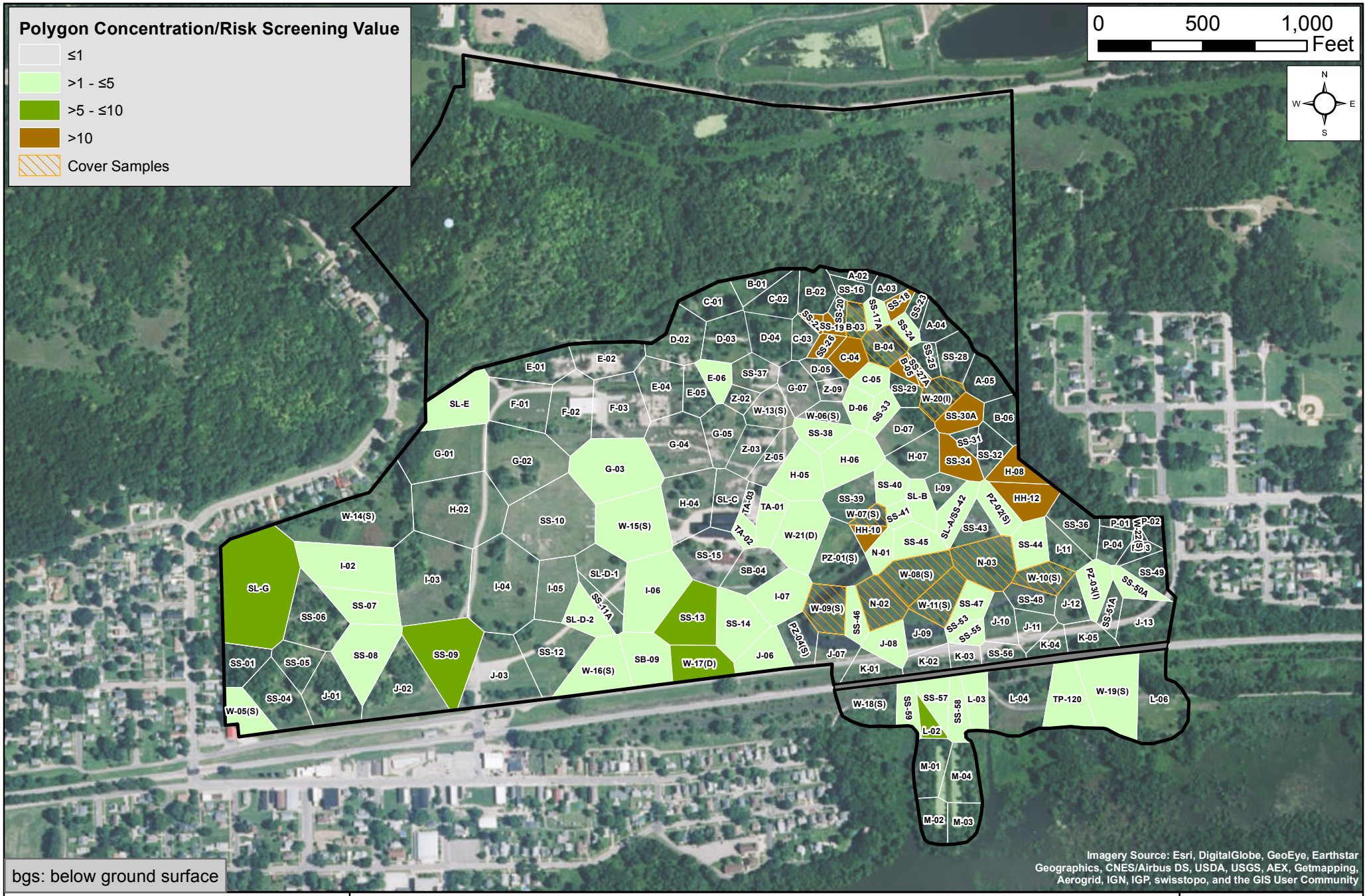


RAMBOLL ENVIRON

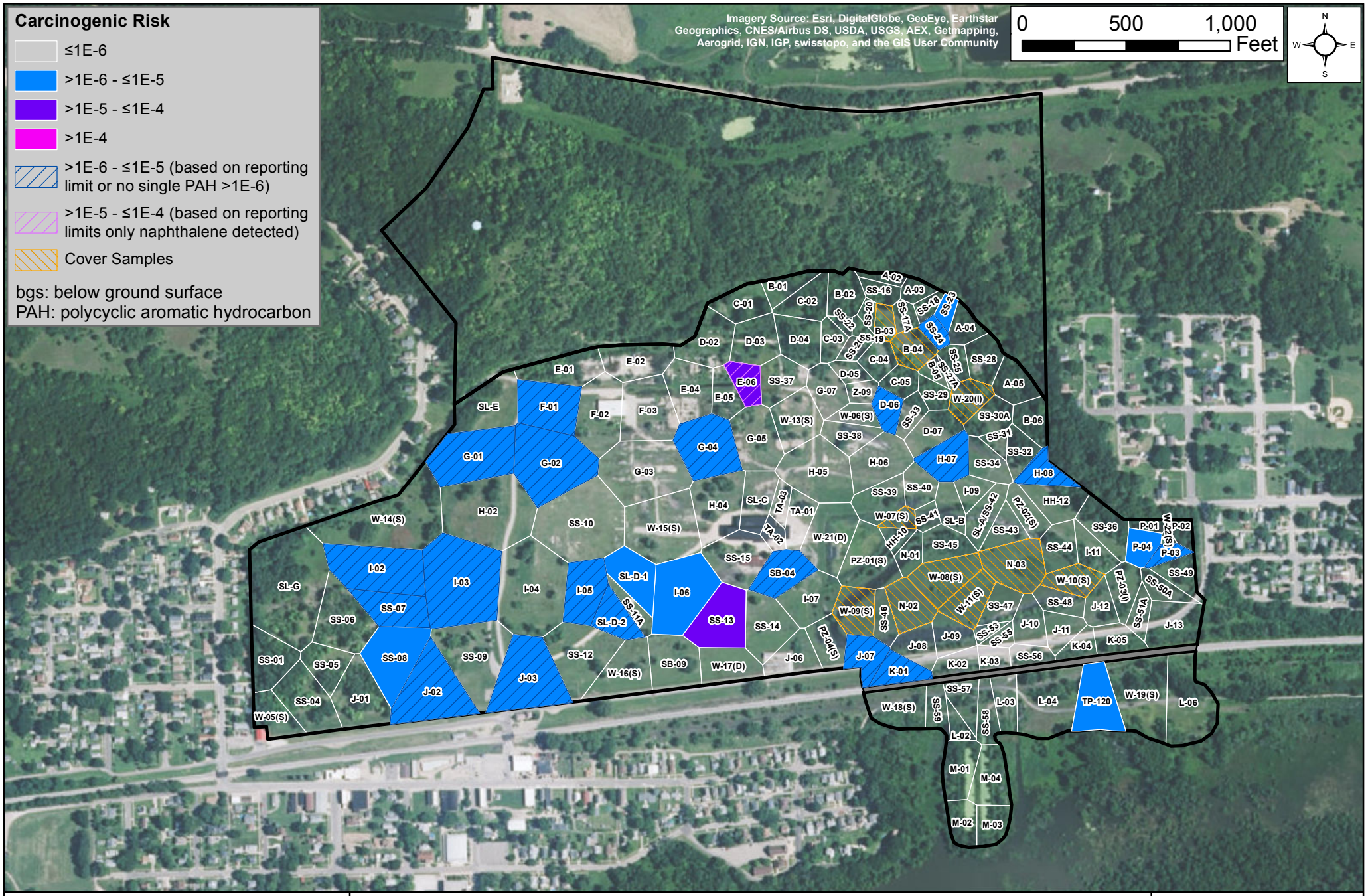
Thiessen Polygons Showing Future Industrial Worker Noncarcinogenic Hazards for Maximum Detected Concentrations of Lead (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-2

10/8/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-2 08202015.mxd



RAMBOLL ENVIRON

Thiessen Polygons Showing Future Industrial Worker Carcinogenic Risk for Maximum Detected Concentrations of PAHs (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-3

8/18/2015

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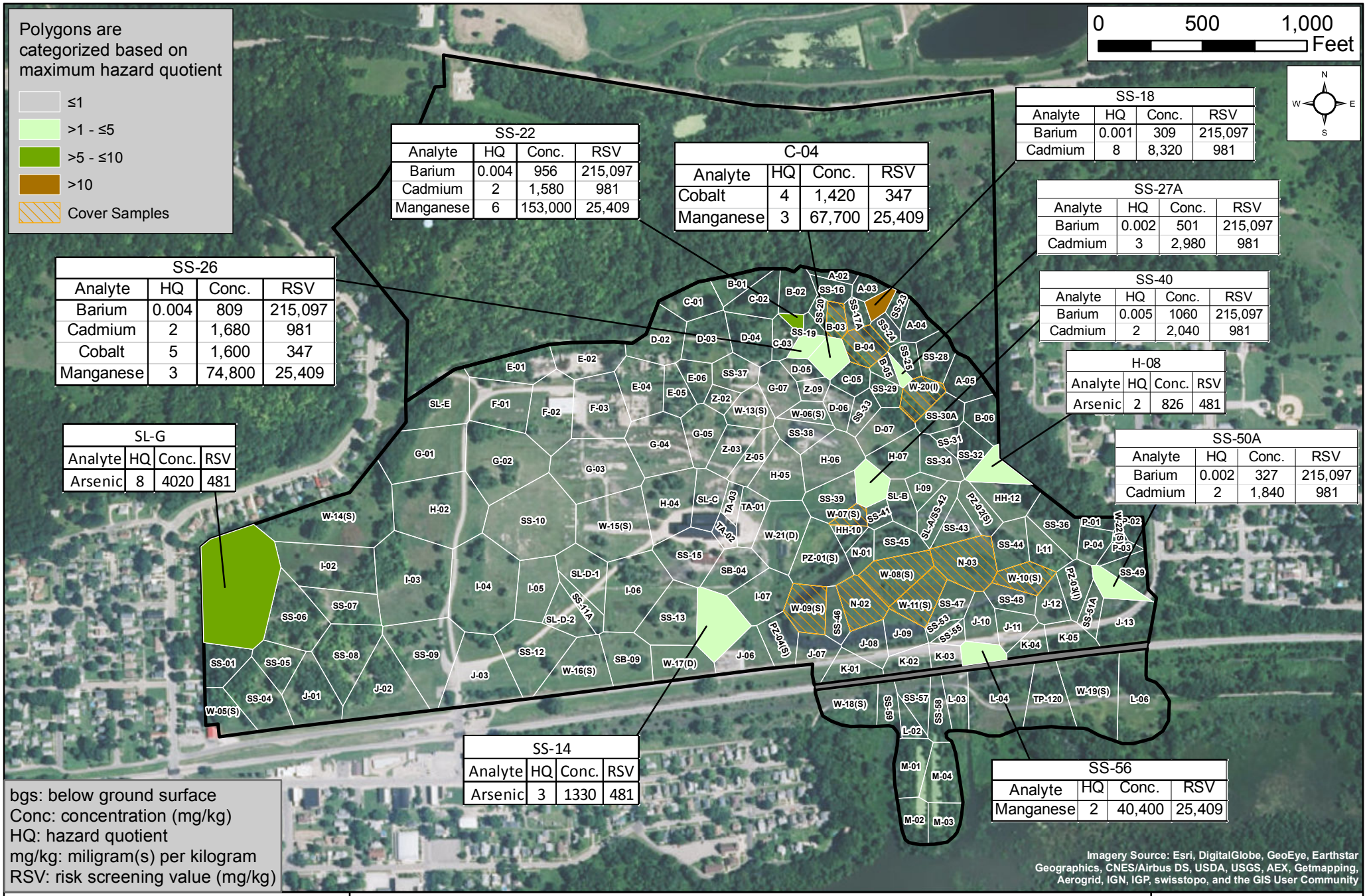

RAMBOLL ENVIRON

Thiessen Polygons Showing Future Industrial Worker Noncarcinogenic Hazards for Select Analytes (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-4

10/8/2015

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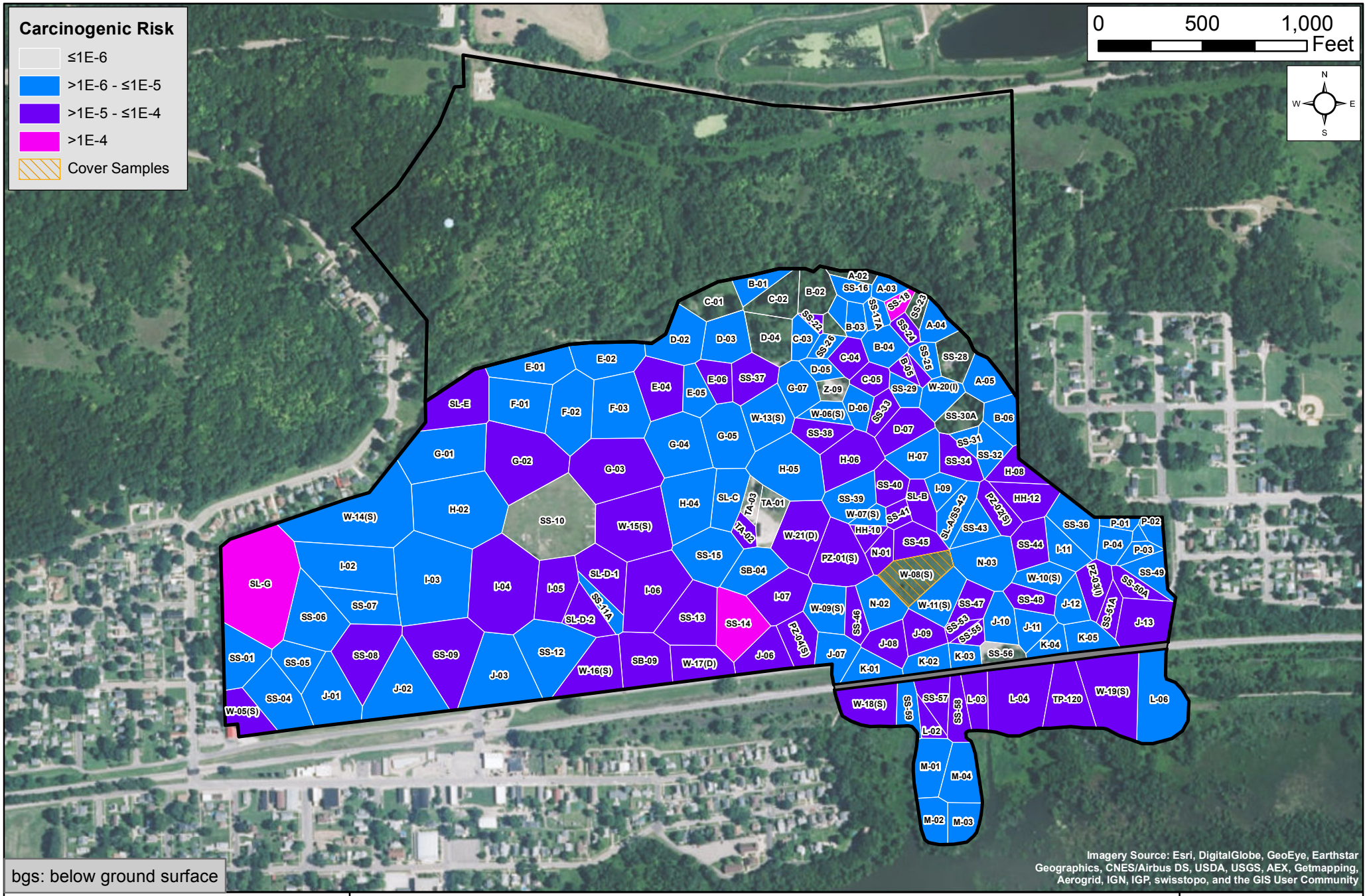

bgs: below ground surface

RAMBOLL ENVIRON

Thiessen Polygons Showing Future Industrial Worker Carcinogenic Risk for Average Detected Arsenic (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-5

8/19/2015

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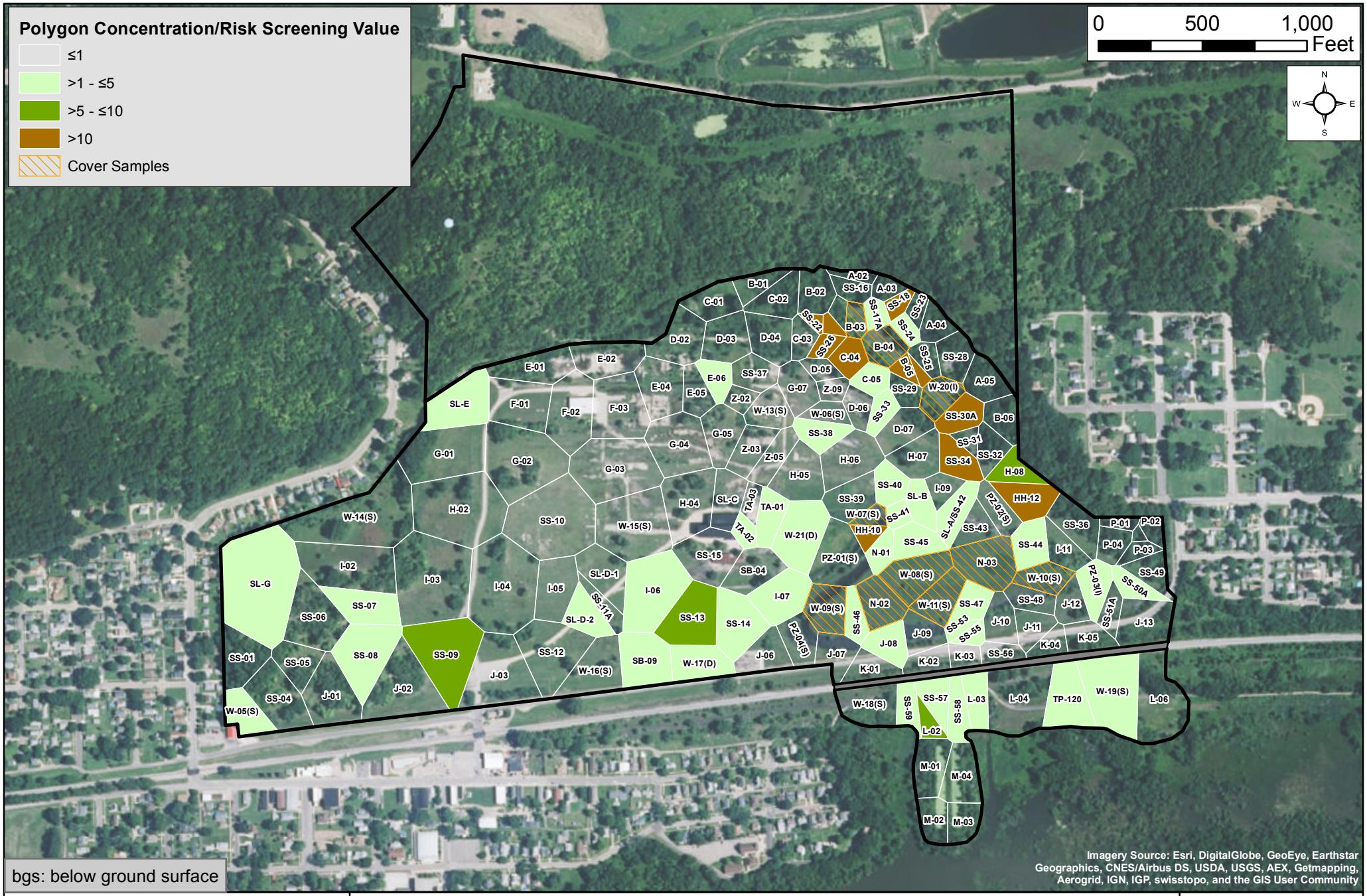

RAMBOLL ENVIRON

Thiessen Polygons Showing Future Industrial Worker Noncarcinogenic Hazards for Average Detected Lead (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-6

8/20/2015

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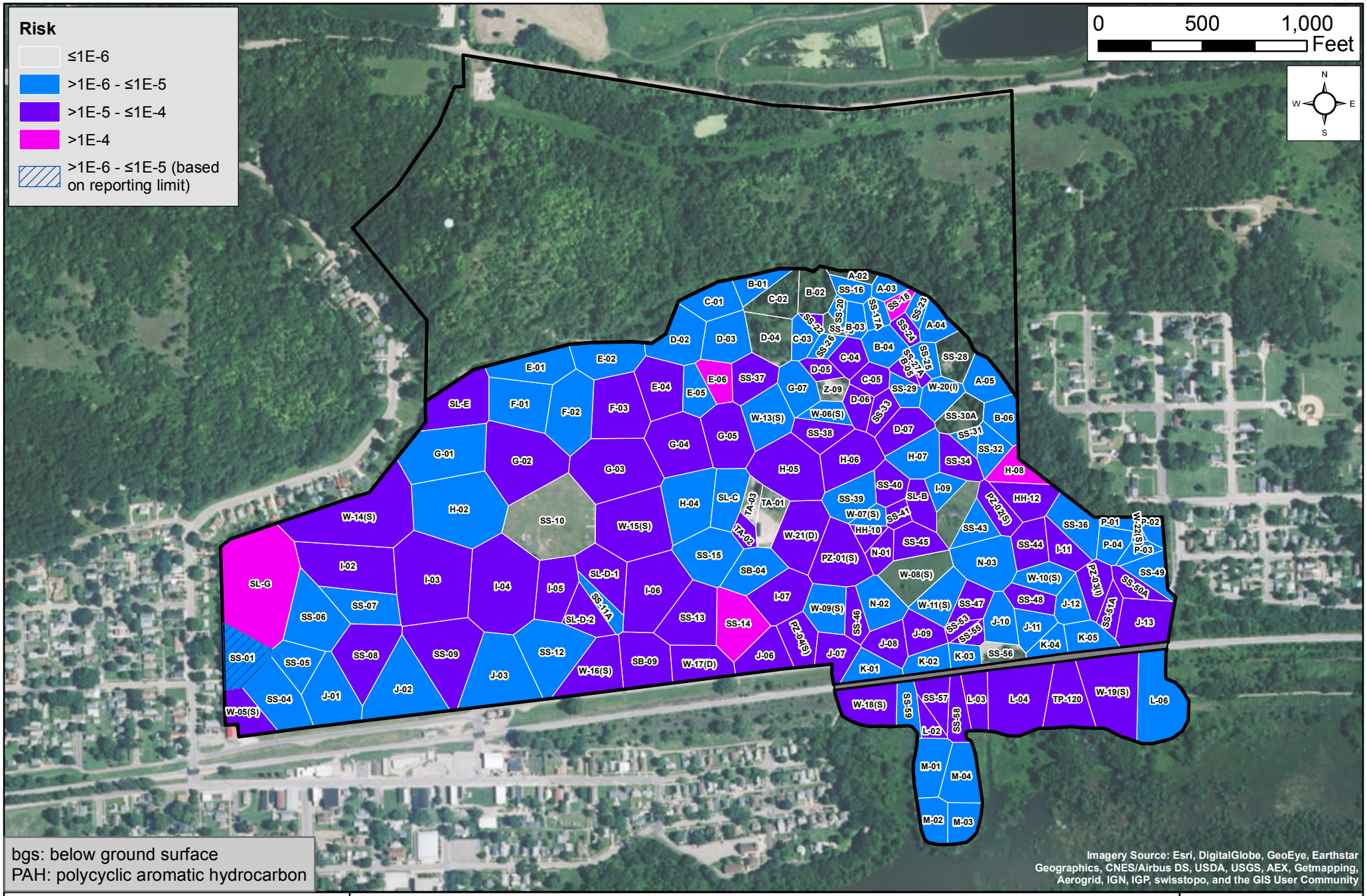

RAMBOLL ENVIRON

Thiessen Polygons Showing Future Industrial Worker Carcinogenic Cumulative Risk for Maximum Detected Concentrations of PAHs and Arsenic (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-7

8/19/2015

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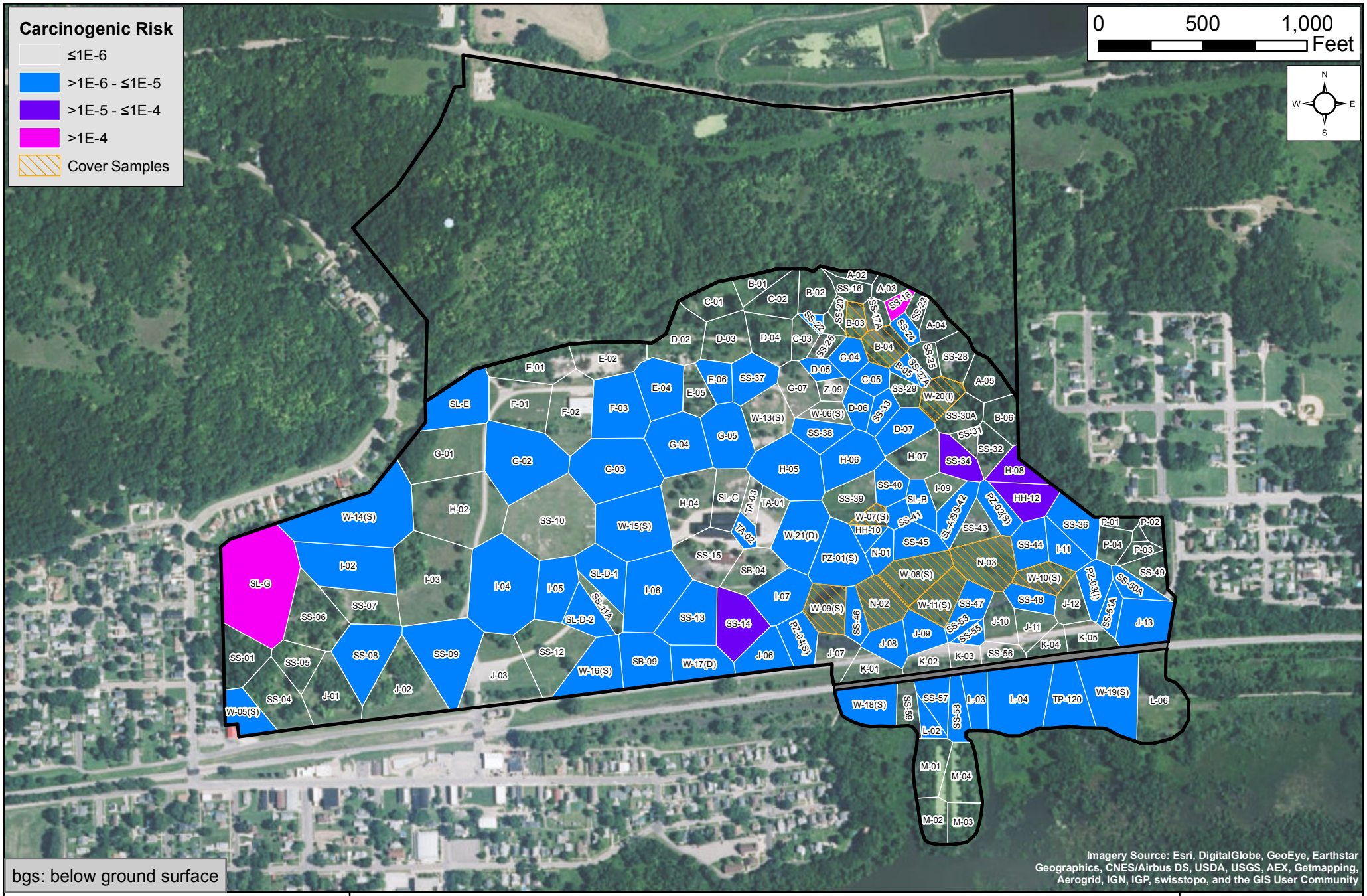


RAMBOLL ENVIRON

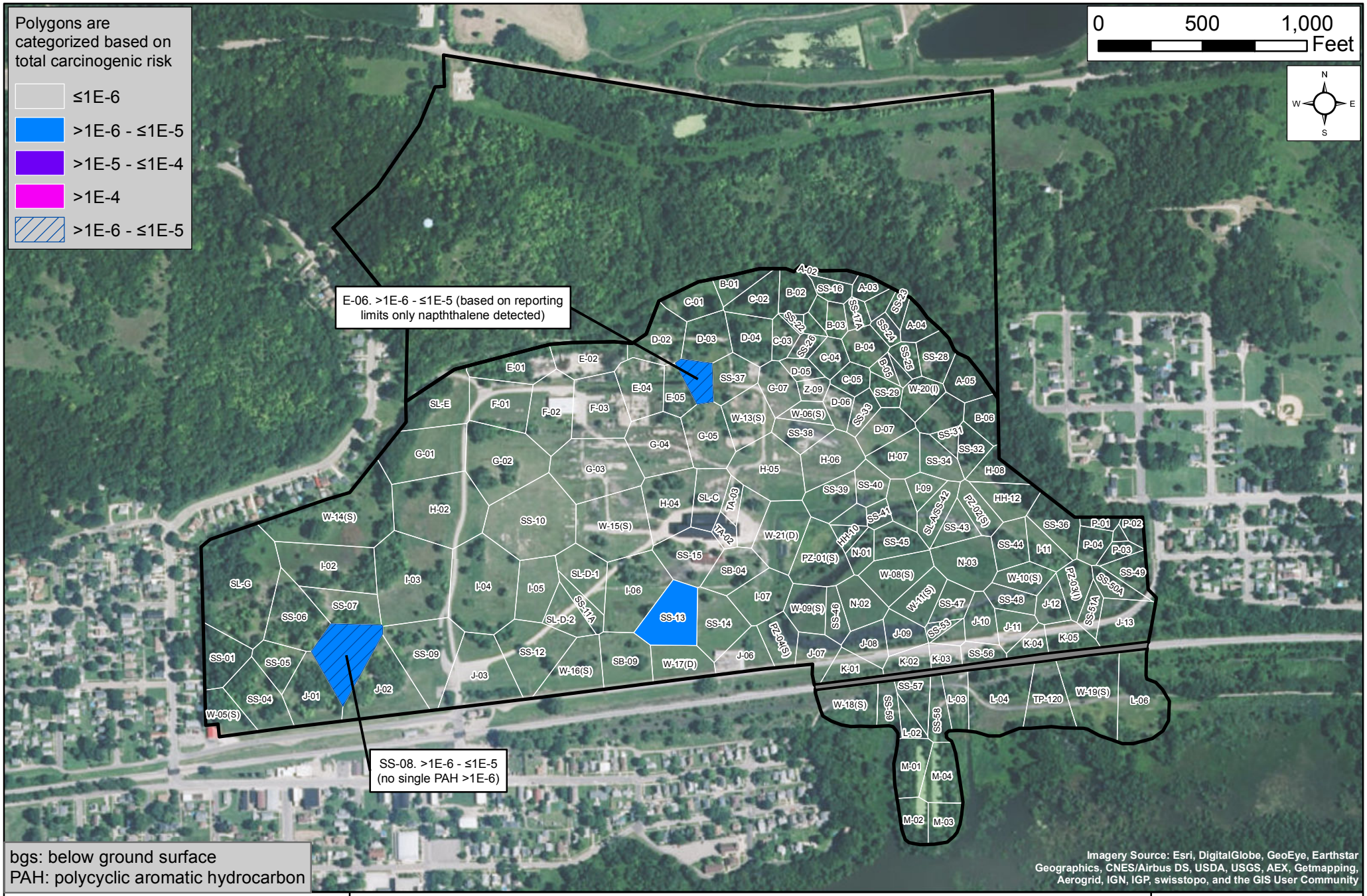
Thiessen Polygons Showing Current Environmental Worker Carcinogenic Risk for Maximum Detected Concentrations of Arsenic (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-8

10/8/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-7 08202015.mxd



RAMBOLL ENVIRON

Thiessen Polygons Showing Current Environmental Worker Carcinogenic Risk for Maximum Detected Concentrations of PAHs (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-9

8/19/2015

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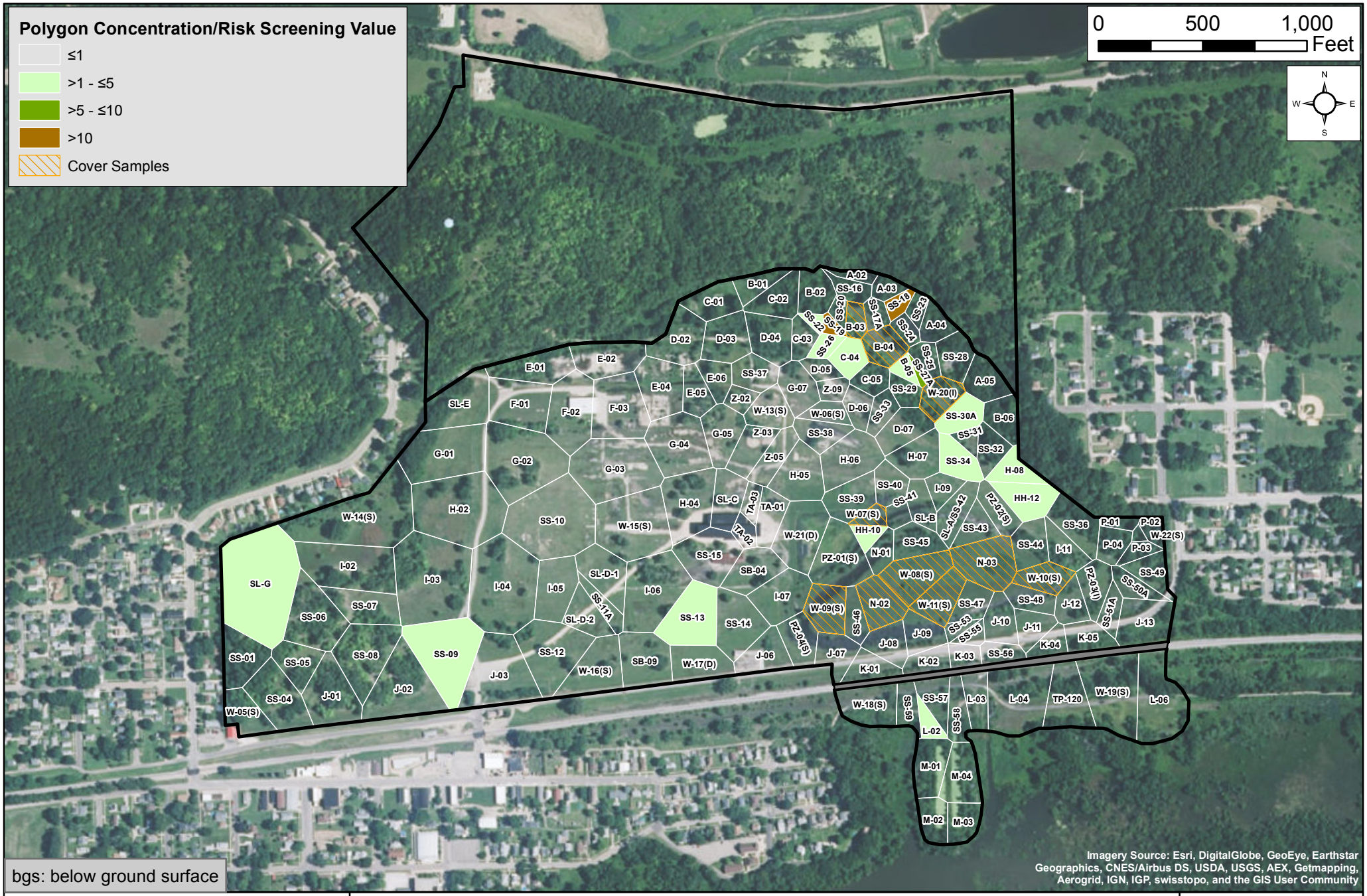

RAMBOLL ENVIRON

Thiessen Polygons Showing Current Environmental Worker Noncarcinogenic Hazards for Maximum Detected Concentrations of Lead (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-10

10/8/2015

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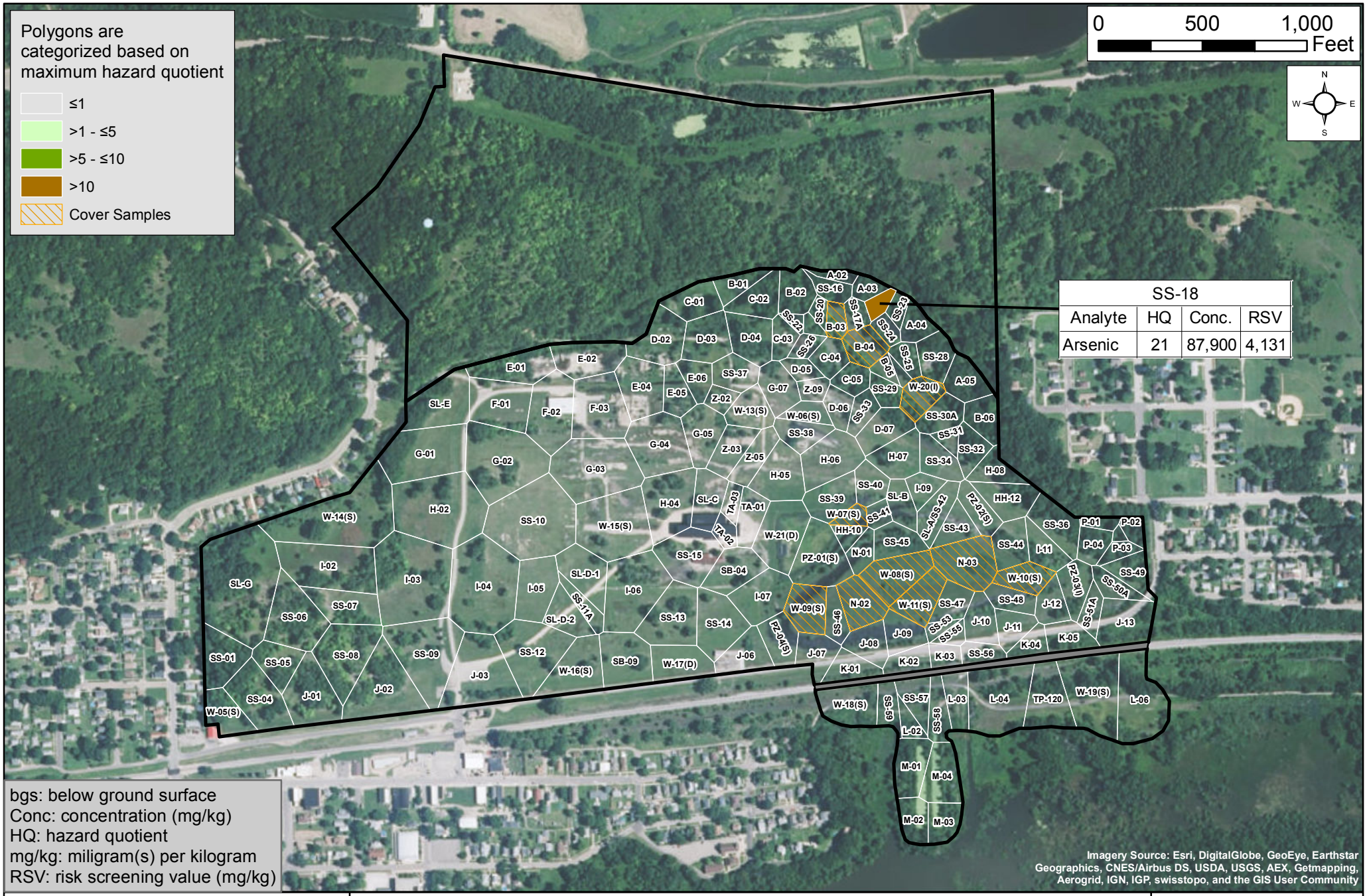

RAMBOLL ENVIRON

Thiessen Polygons Showing Current Environmental Worker Noncarcinogenic Hazards for Arsenic (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-11

8/20/2015

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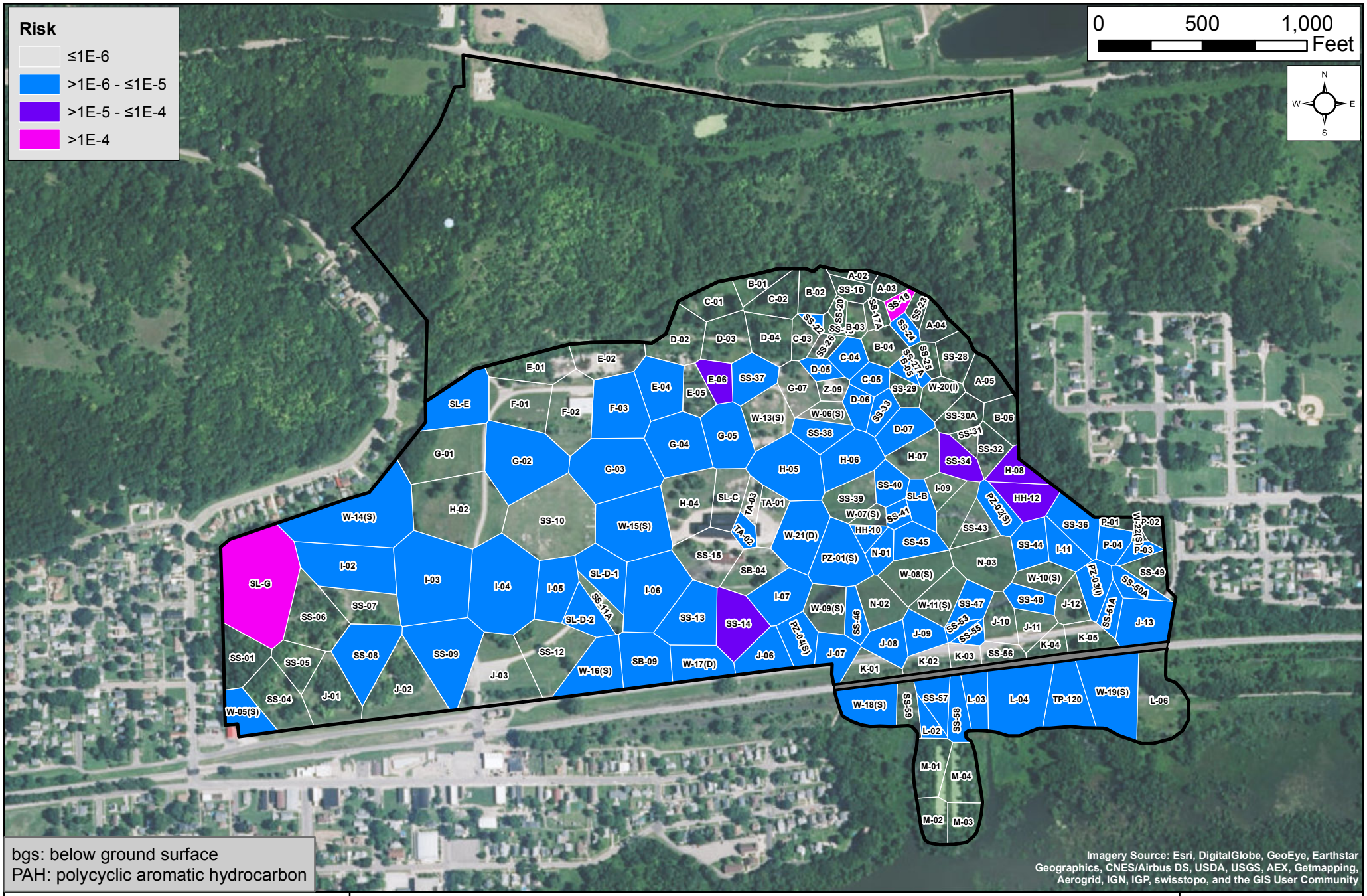

RAMBOLL ENVIRON

Thiessen Polygons Showing Current Environmental Worker Carcinogenic Cumulative Risk for Maximum Detected Concentrations of PAHs and Arsenic (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-12

8/20/2015

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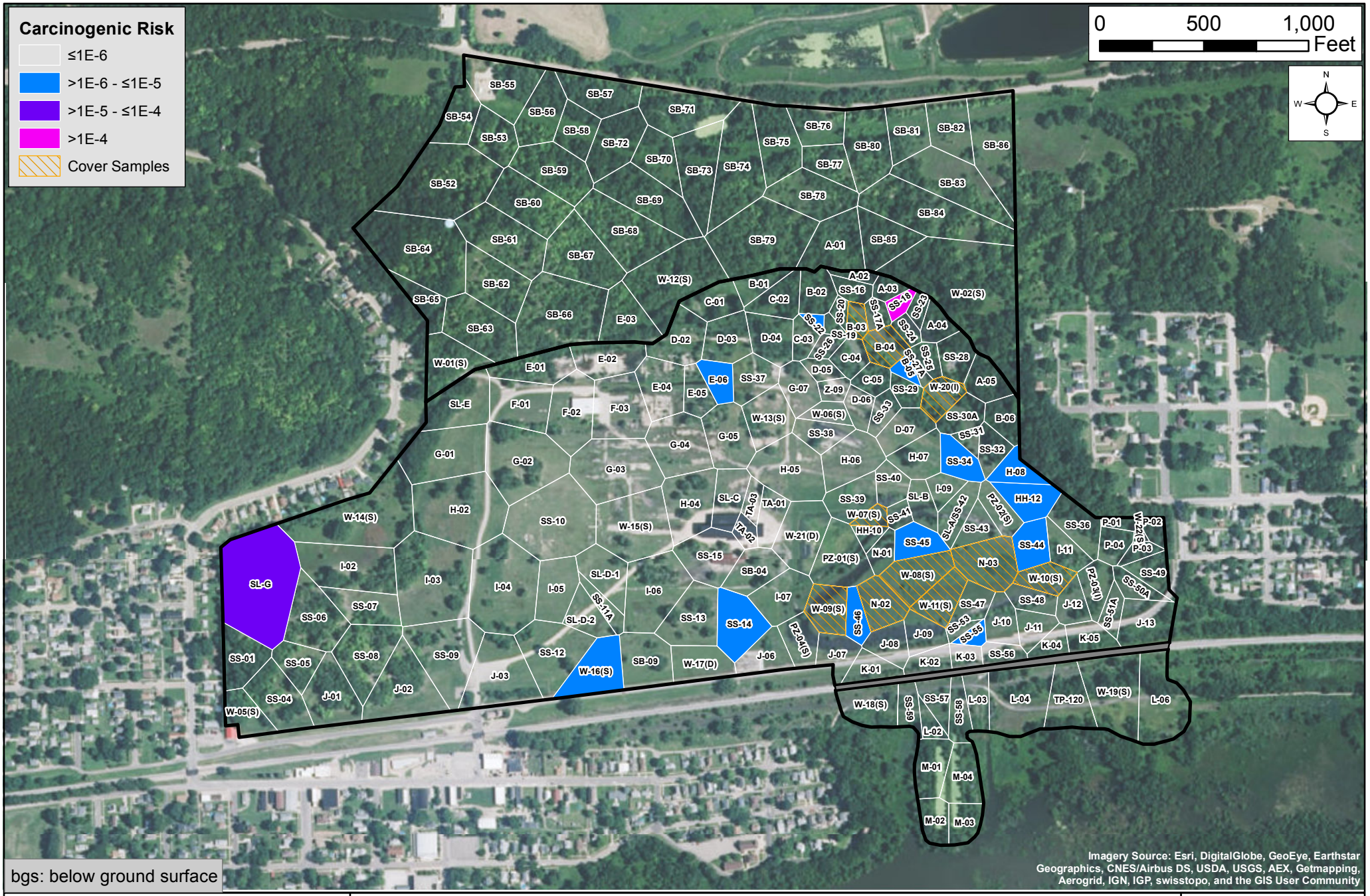

RAMBOLL ENVIRON

Thiessen Polygons Showing Future Construction Worker Carcinogenic Risk for Maximum Detected Concentrations of Arsenic (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-13

8/20/2015

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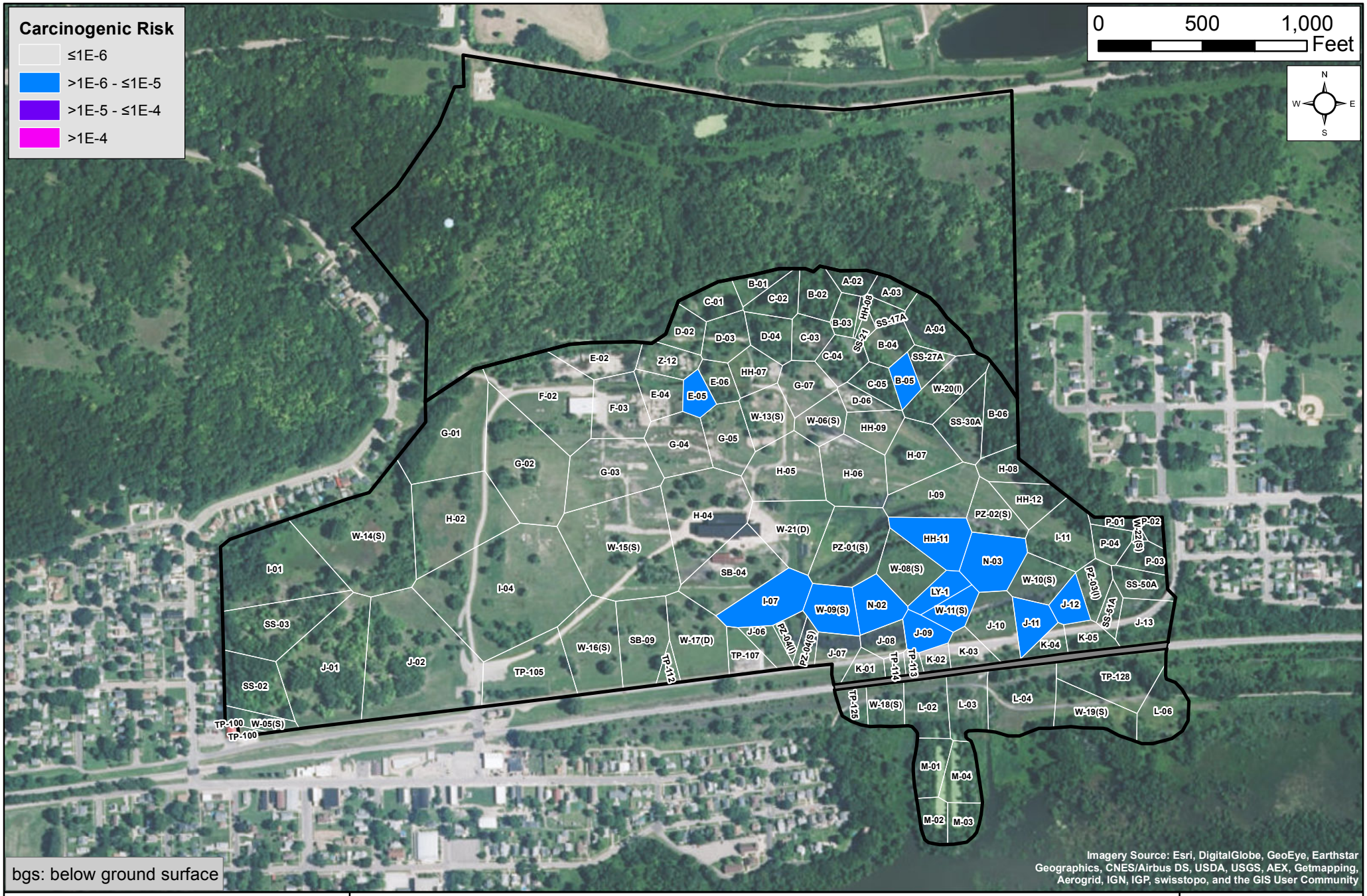

RAMBOLL ENVIRON

Thiessen Polygons Showing Future Construction Worker Carcinogenic Risk for Maximum Detected Concentrations of Arsenic (3-10 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-14

8/20/2015

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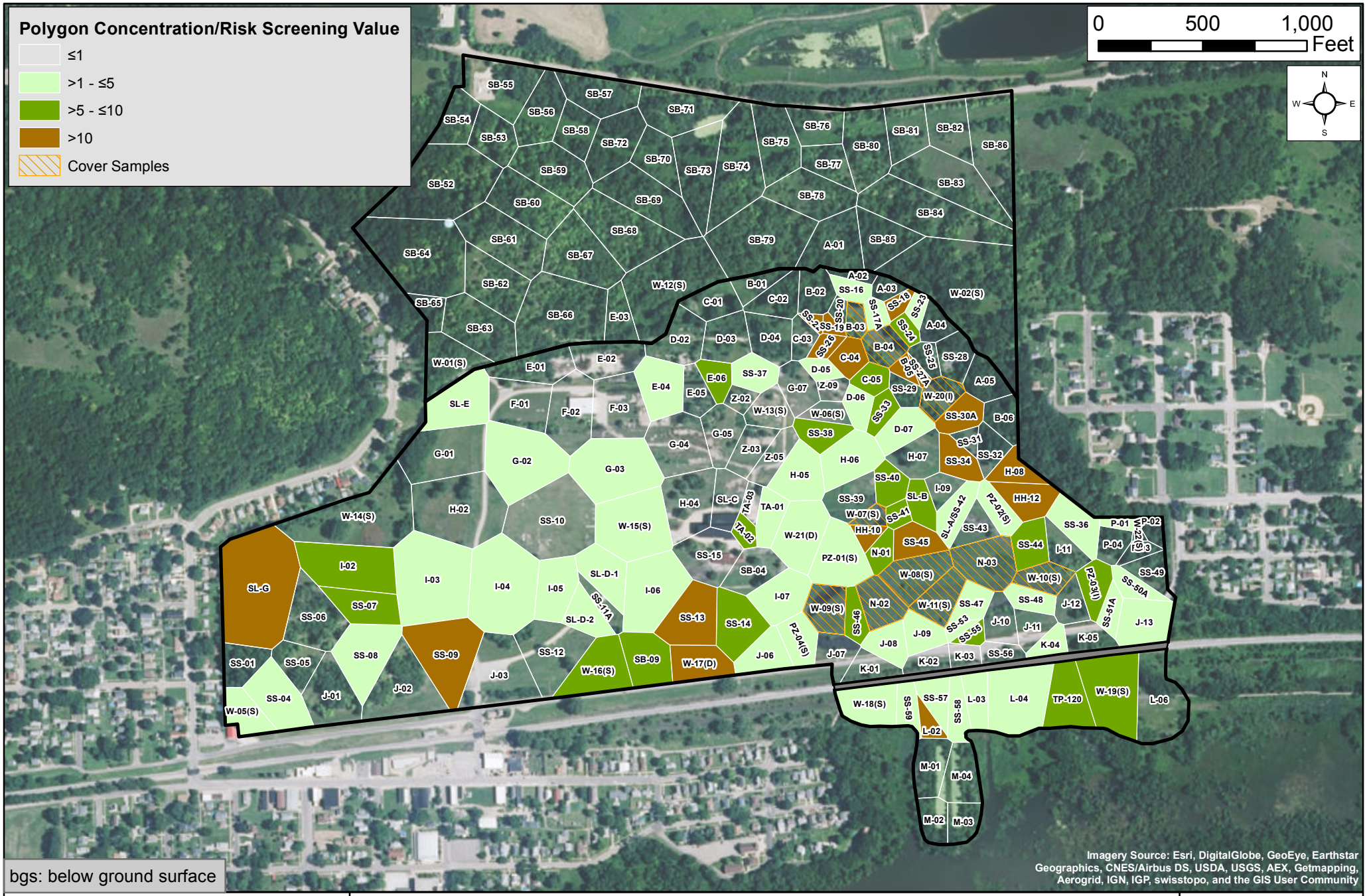

RAMBOLL ENVIRON

Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Maximum Detected Concentrations of Lead (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-15

10/8/2015

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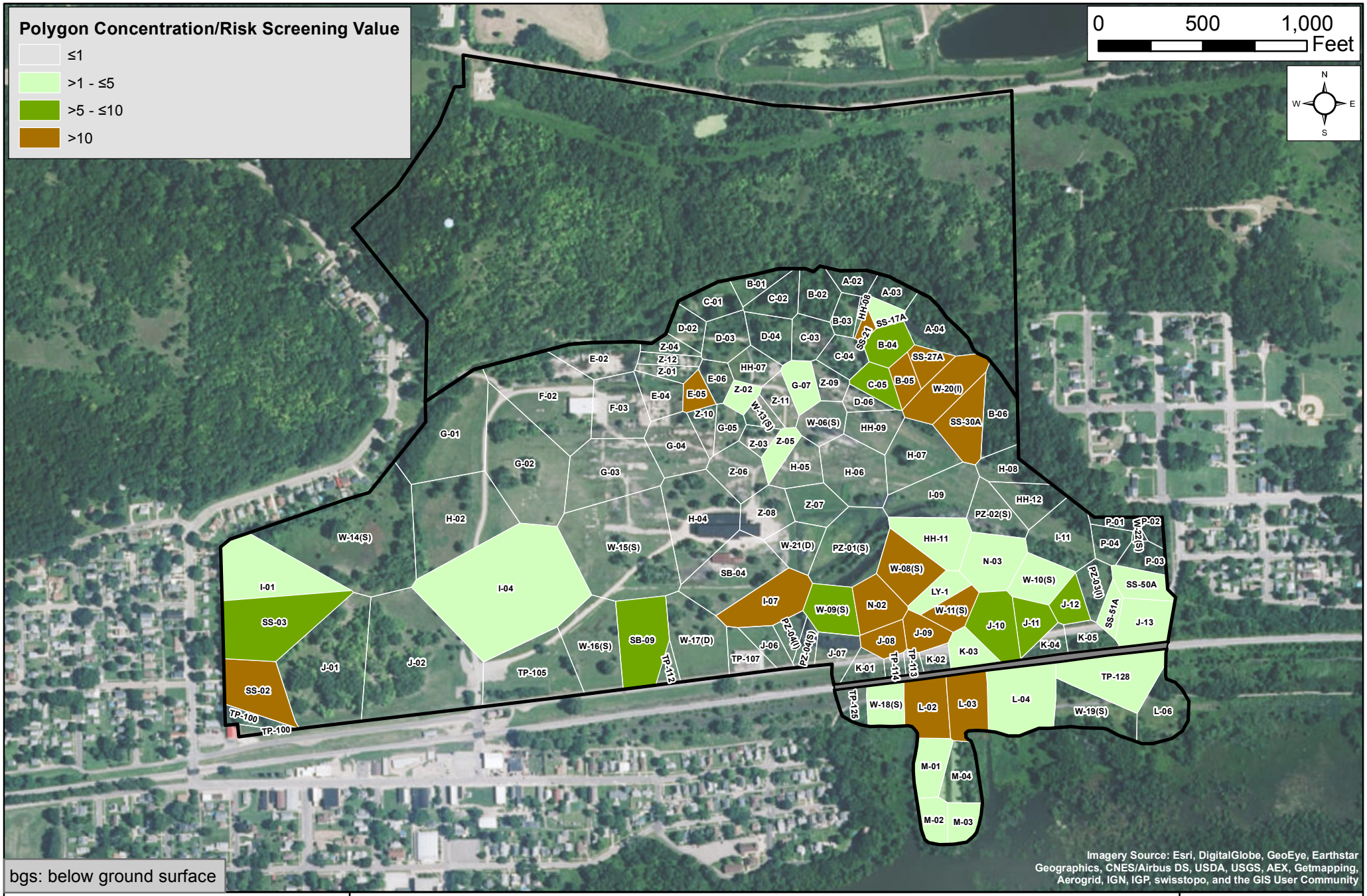


bgs: below ground surface

RAMBOLL ENVIRON

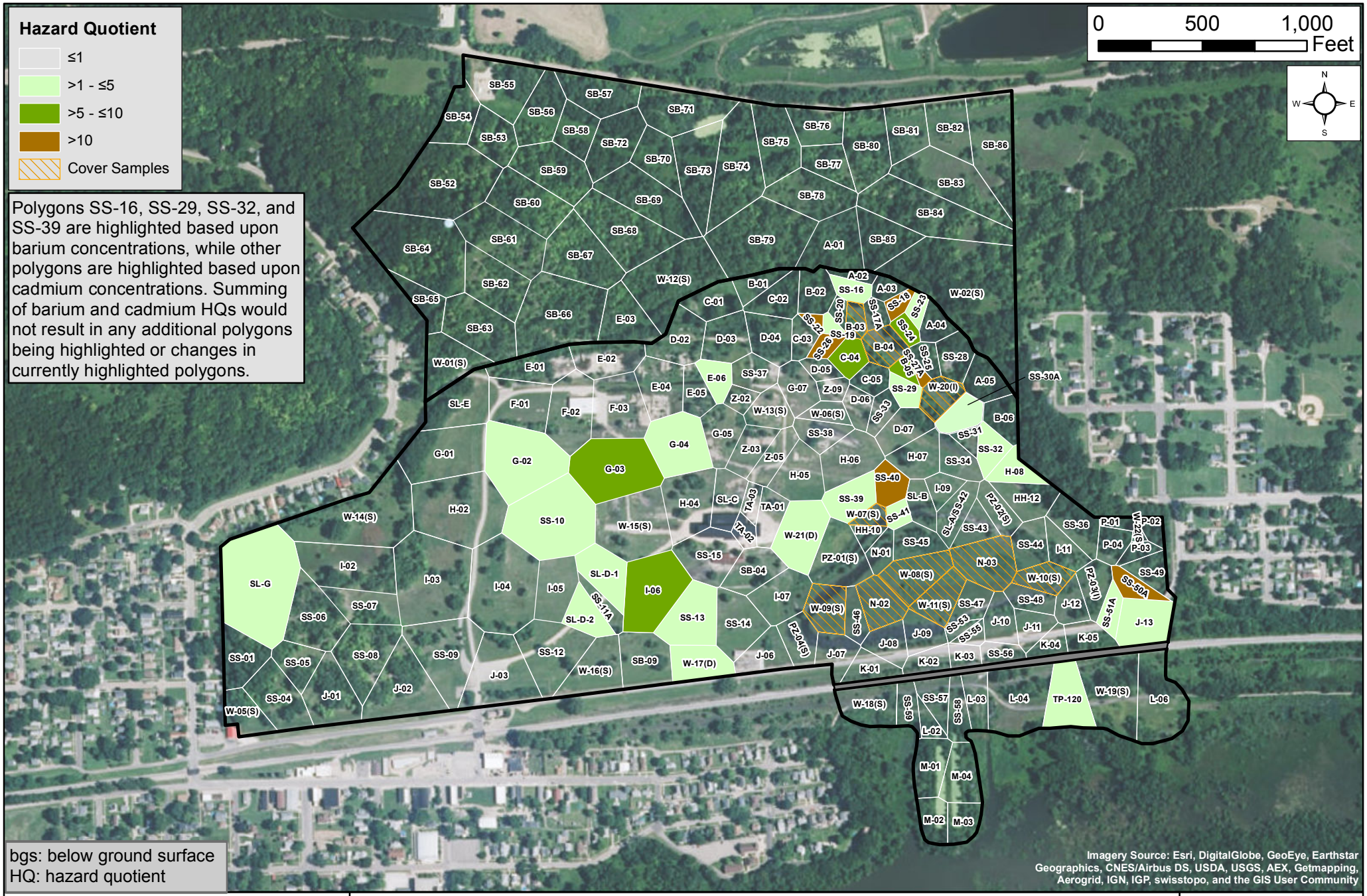
Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Maximum Detected Concentrations of Lead (3-10 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-16

10/8/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-16 08202015.mxd



RAMBOLL ENVIRON

Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Maximum Detected Concentrations of Barium and Cadmium (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-17

10/19/2015

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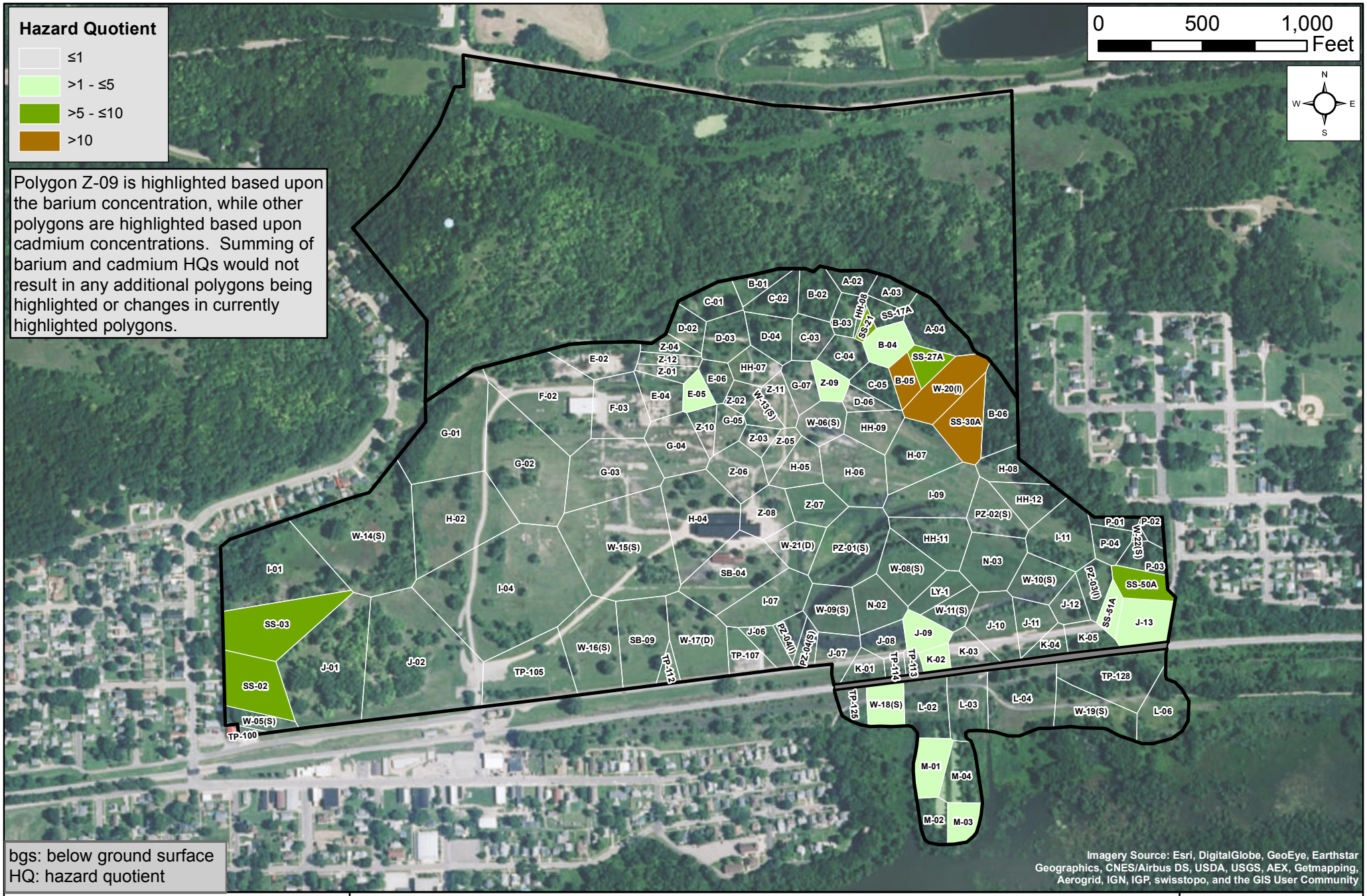


RAMBOLL ENVIRON

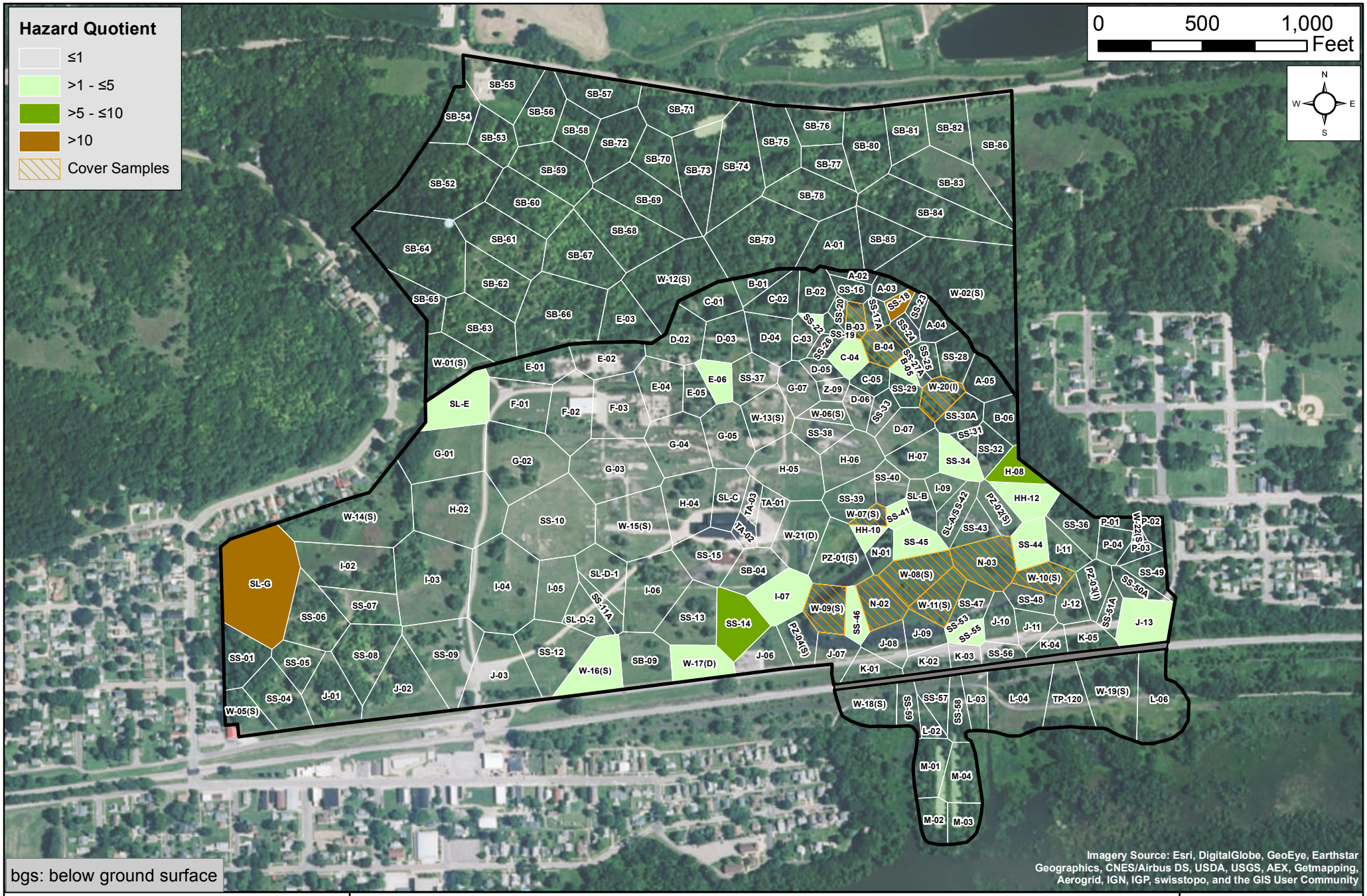
Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Maximum Detected Concentrations of Barium and Cadmium (3-10 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-18

10/19/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-20 08052015.mxd



RAMBOLL ENVIRON

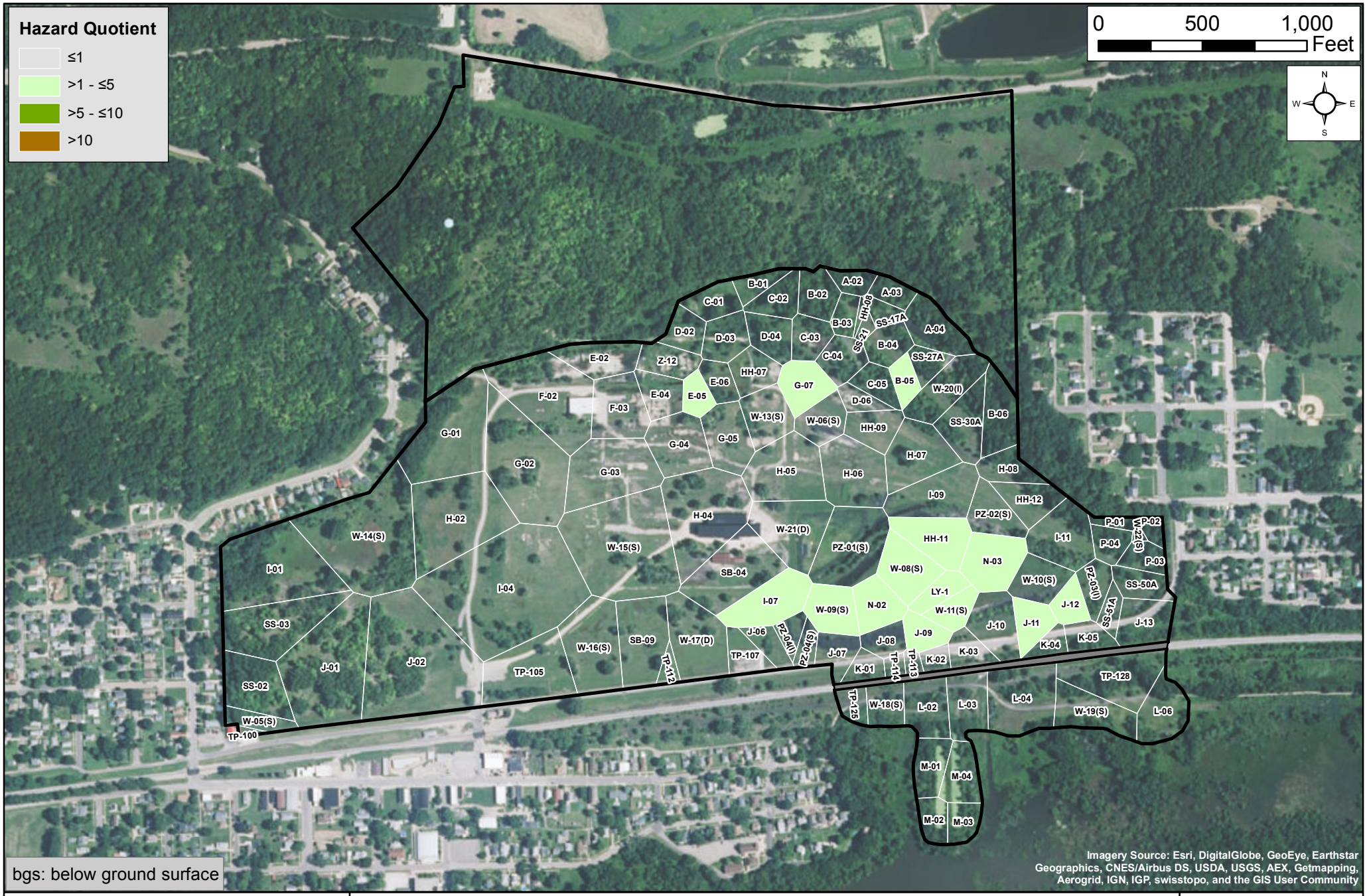
Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Maximum Detected Concentrations of Arsenic (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-19

8/18/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-21 08052015.mxd



RAMBOLL ENVIRON

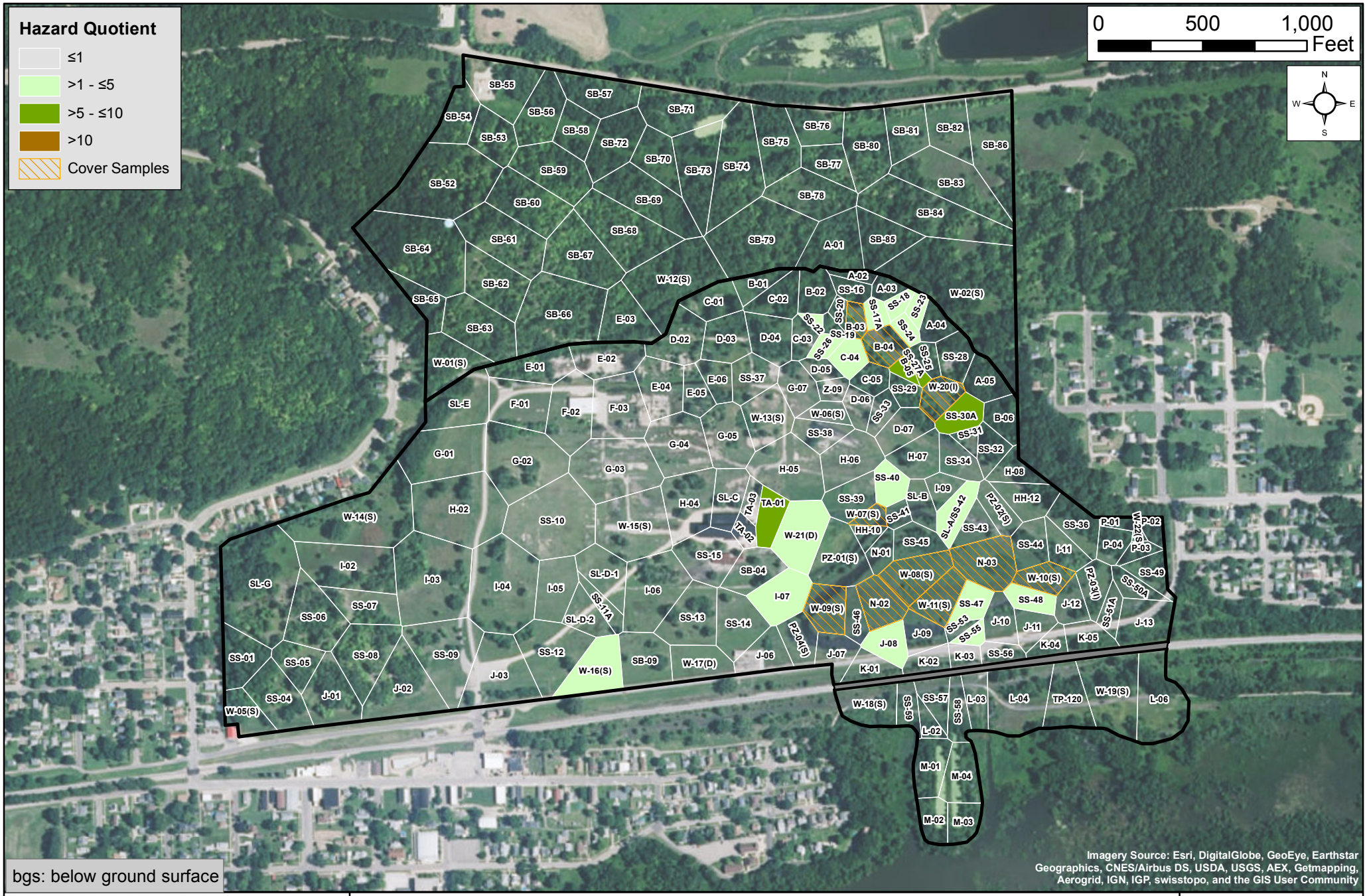
Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Maximum Detected Concentrations of Arsenic (3-10 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-20

8/20/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-22 08052015.mxd



RAMBOLL ENVIRON

Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Maximum Detected Concentrations of Copper (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-21

10/9/2015

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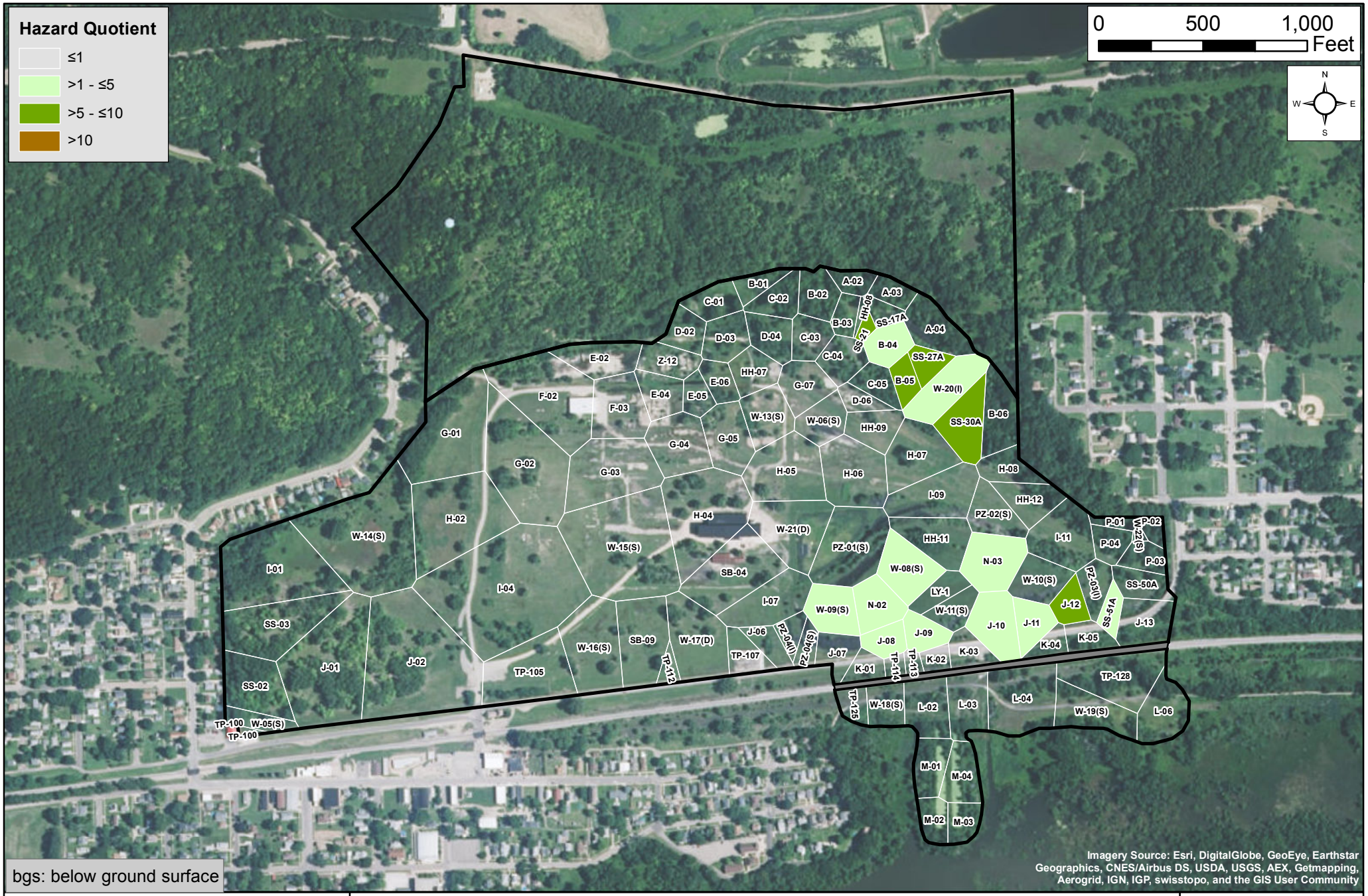

RAMBOLL ENVIRON

Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Maximum Detected Concentrations of Copper (3-10 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-22

10/9/2015

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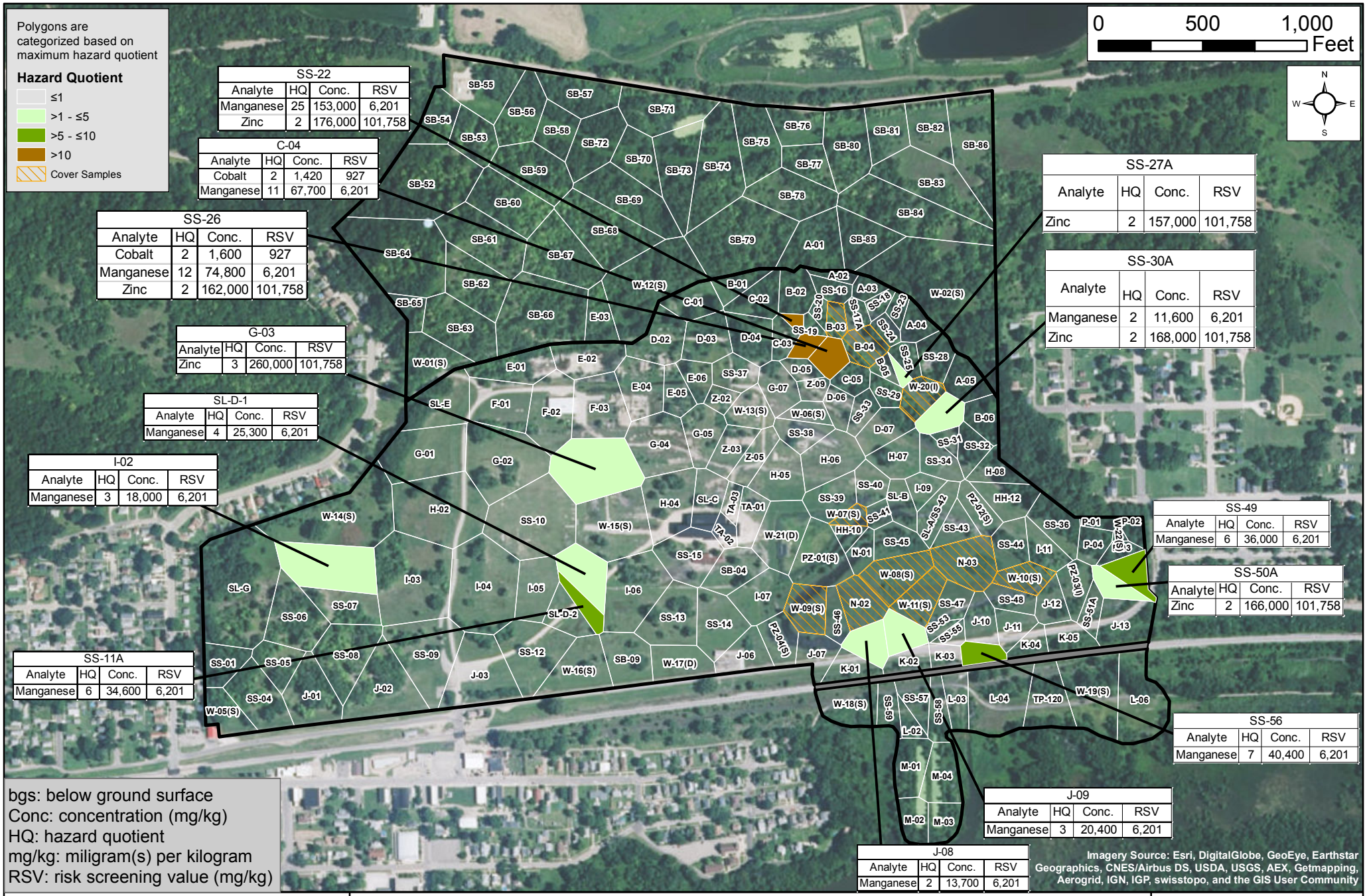


RAMBOLL ENVIRON

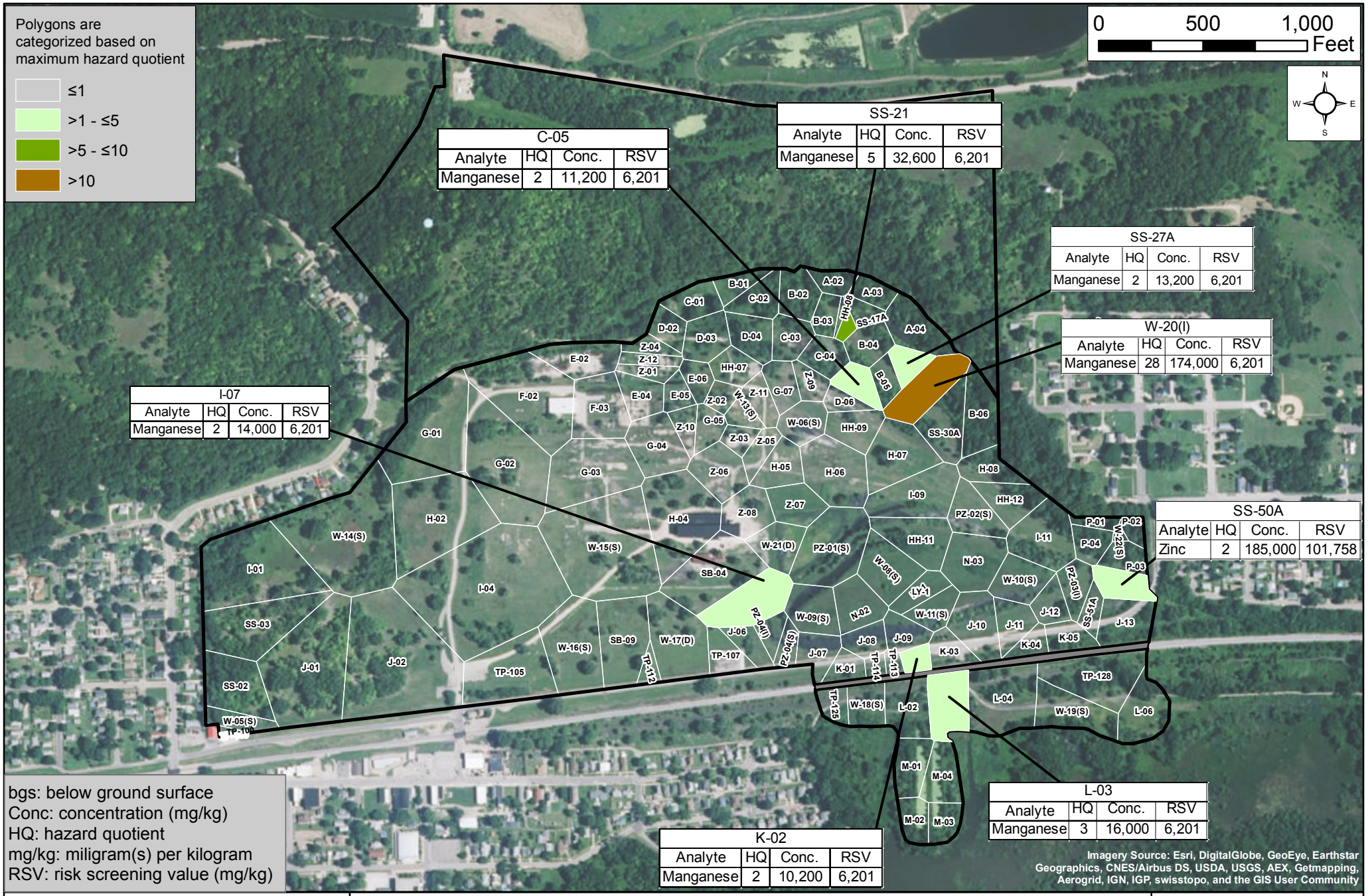
Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Select Analytes (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-23

10/8/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-23 08192015.mxd



RAMBOLL ENVIRON

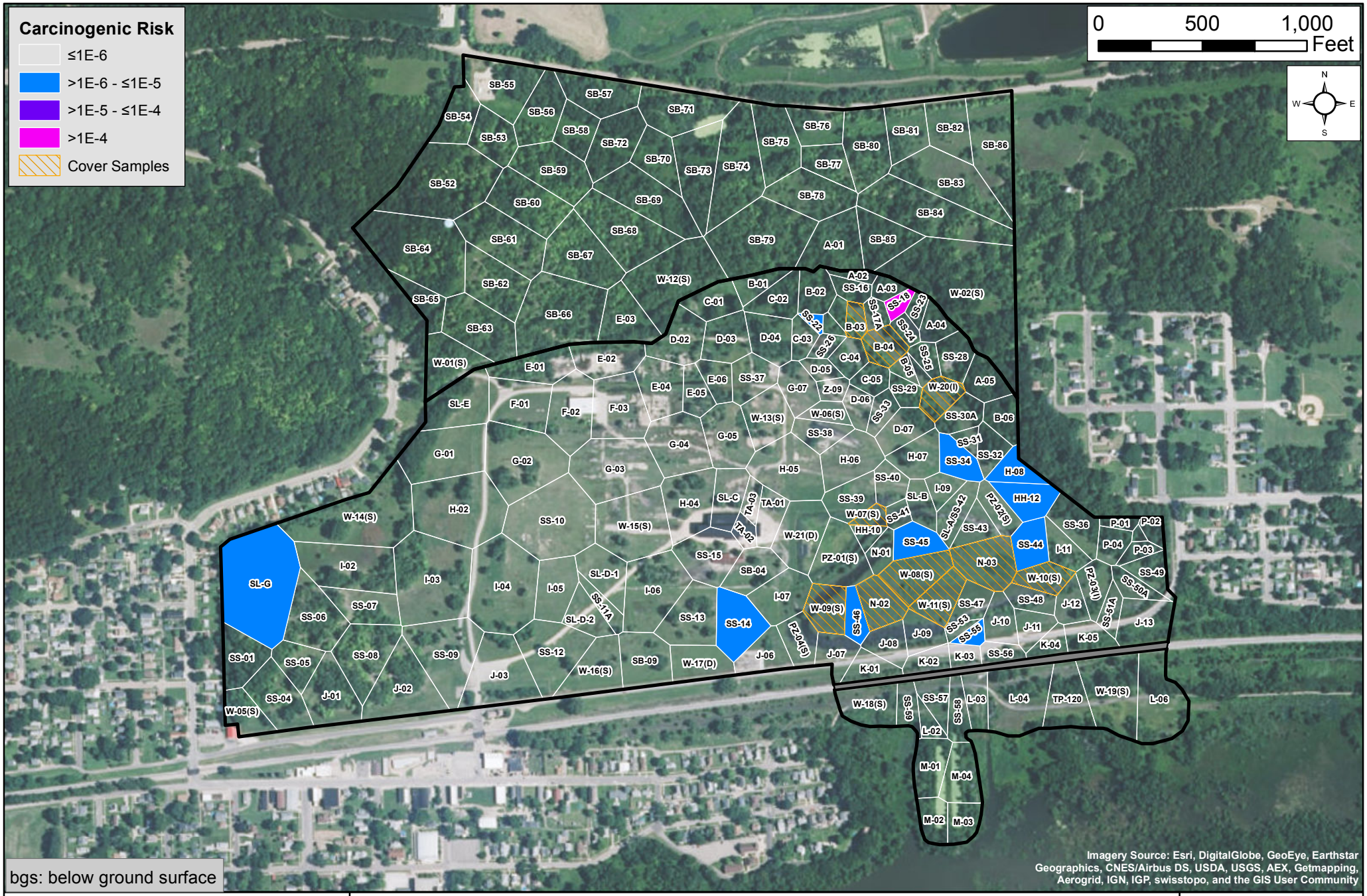
Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Select Analytes (3-10 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-24

10/8/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-24 08192015.mxd



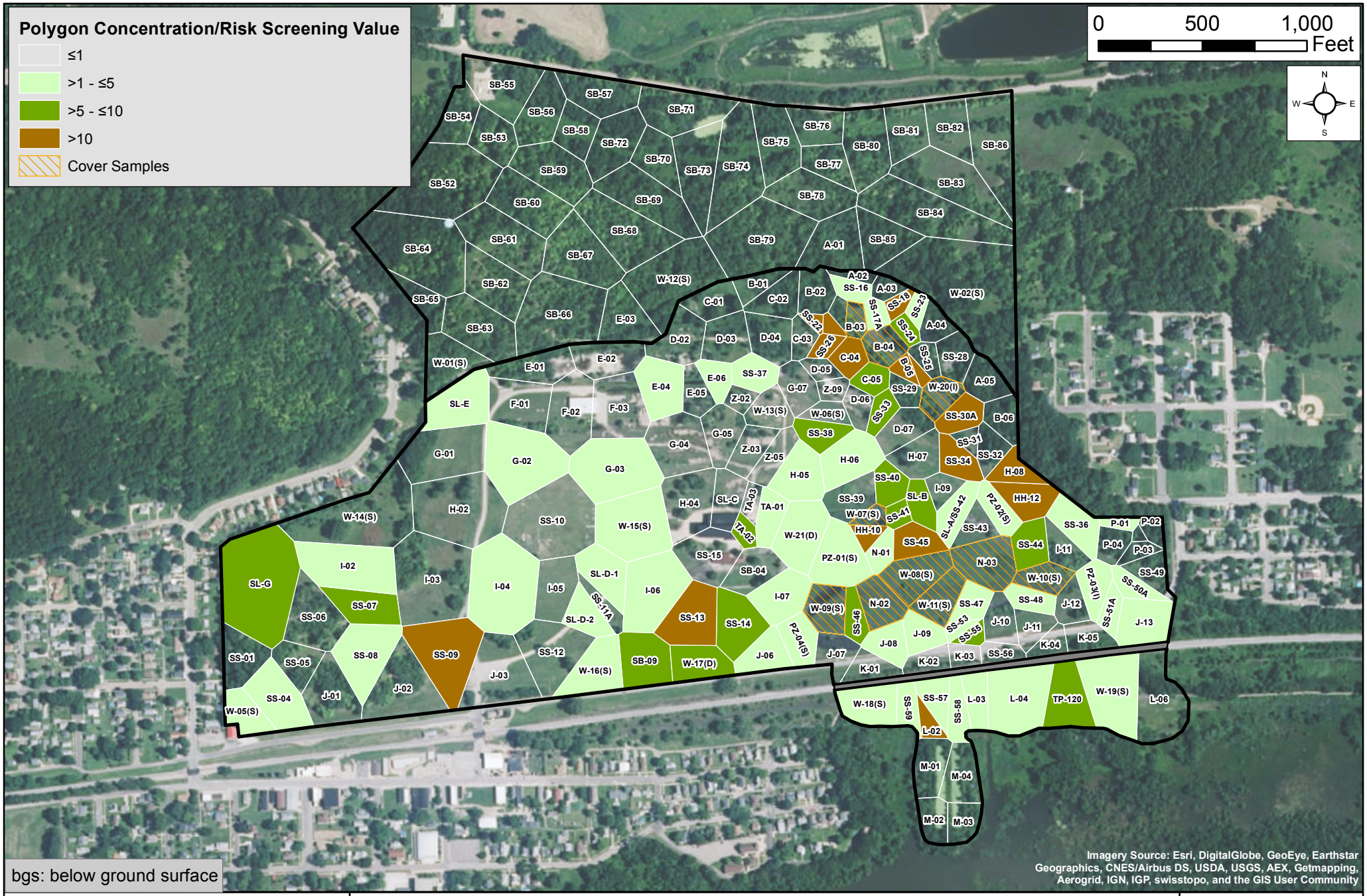
RAMBOLL ENVIRON

Thiessen Polygons Showing Future Construction Worker Carcinogenic Risk for Average Detected Arsenic
(0-3 feet bgs)
Operable Unit 3, DePue, Illinois

Figure 9-25

8/20/2015

Document Path: M:\Depue\GIS\MXD\HH_Tpolygons08202015.mxd



RAMBOLL ENVIRON

Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Average Detected Lead
(0-3 feet bgs)
Operable Unit 3, DePue, Illinois

Figure 9-26

8/20/2015

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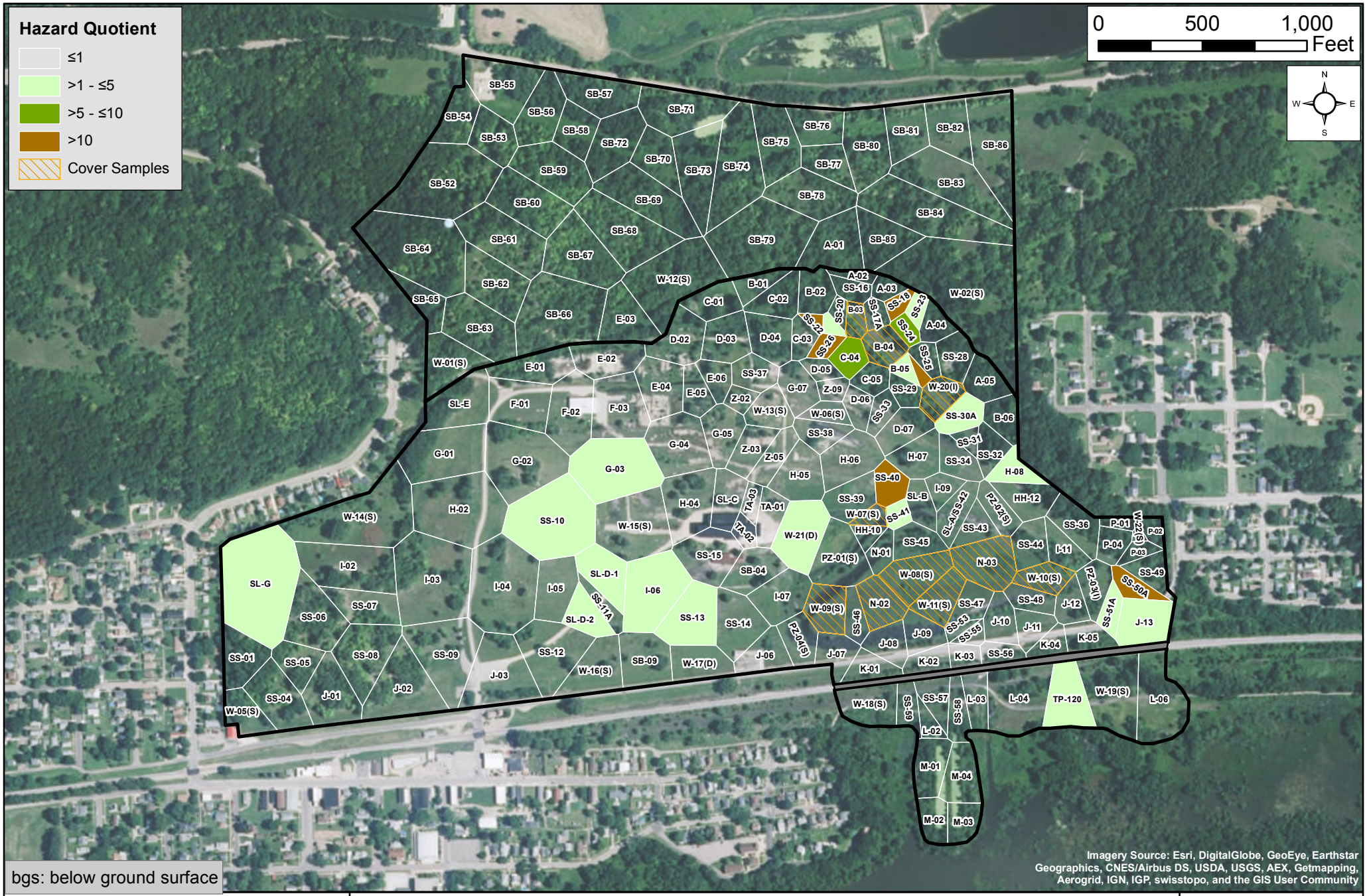


RAMBOLL ENVIRON

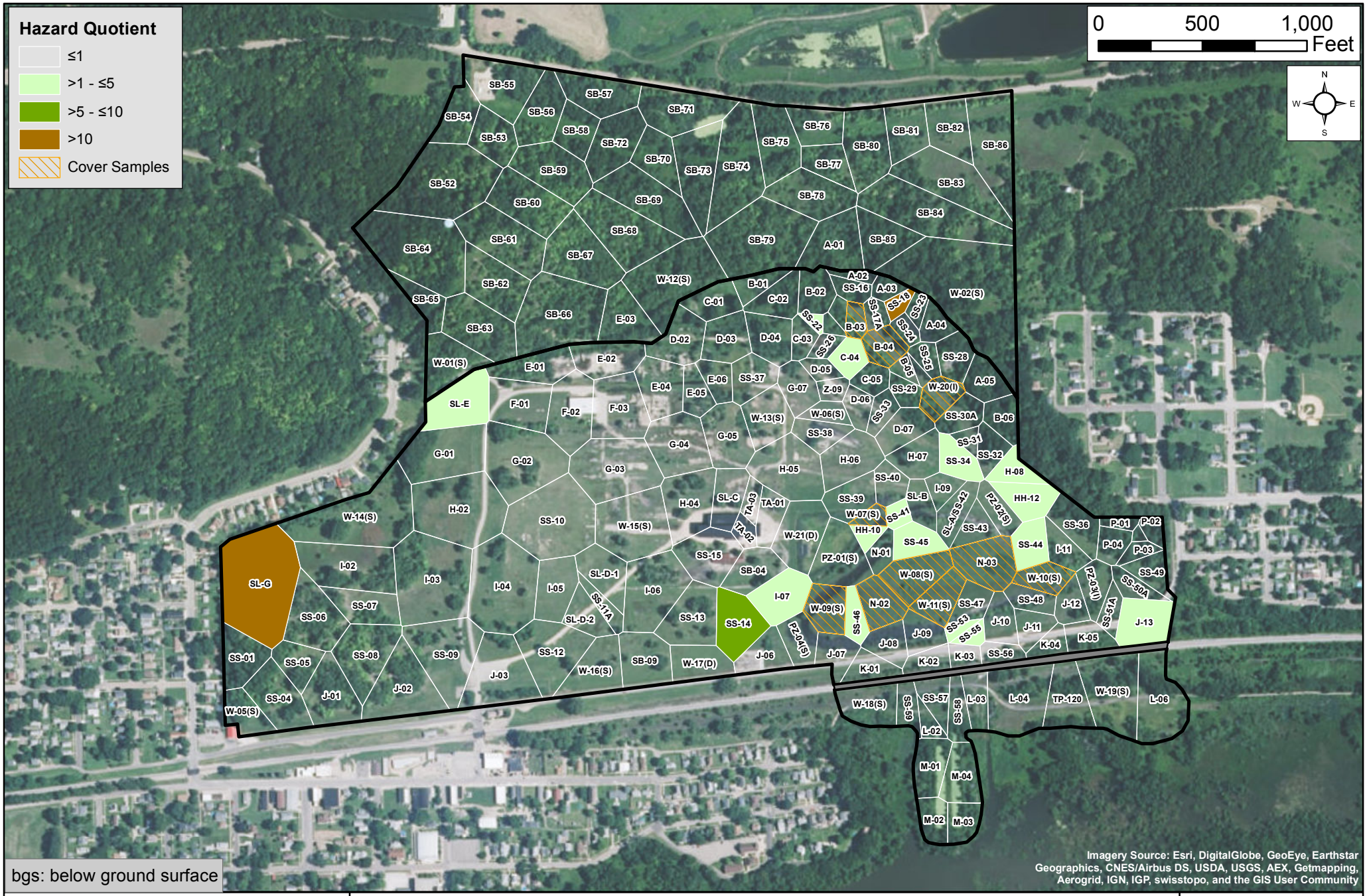
Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Average Detected Cadmium (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-27

10/9/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-29 08112015.mxd



bgs: below ground surface

RAMBOLL ENVIRON

Thiessen Polygons Showing Future Construction Worker Noncarcinogenic Hazards for Average Detected Arsenic (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-28

8/19/2015

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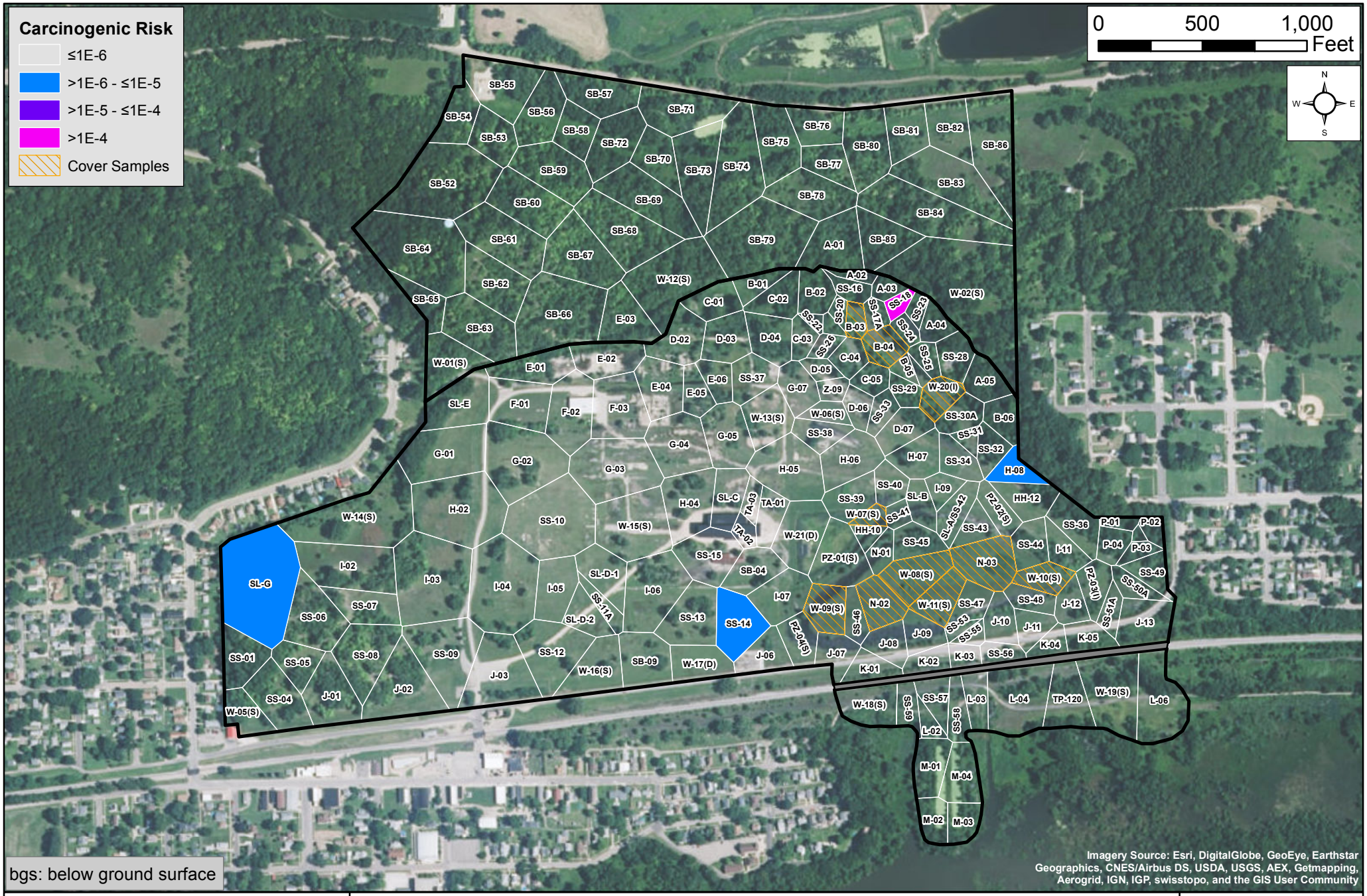

RAMBOLL ENVIRON

Thiessen Polygons Showing Future Utility Worker Carcinogenic Risk for Maximum Detected Concentrations of Arsenic (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-29

8/20/2015

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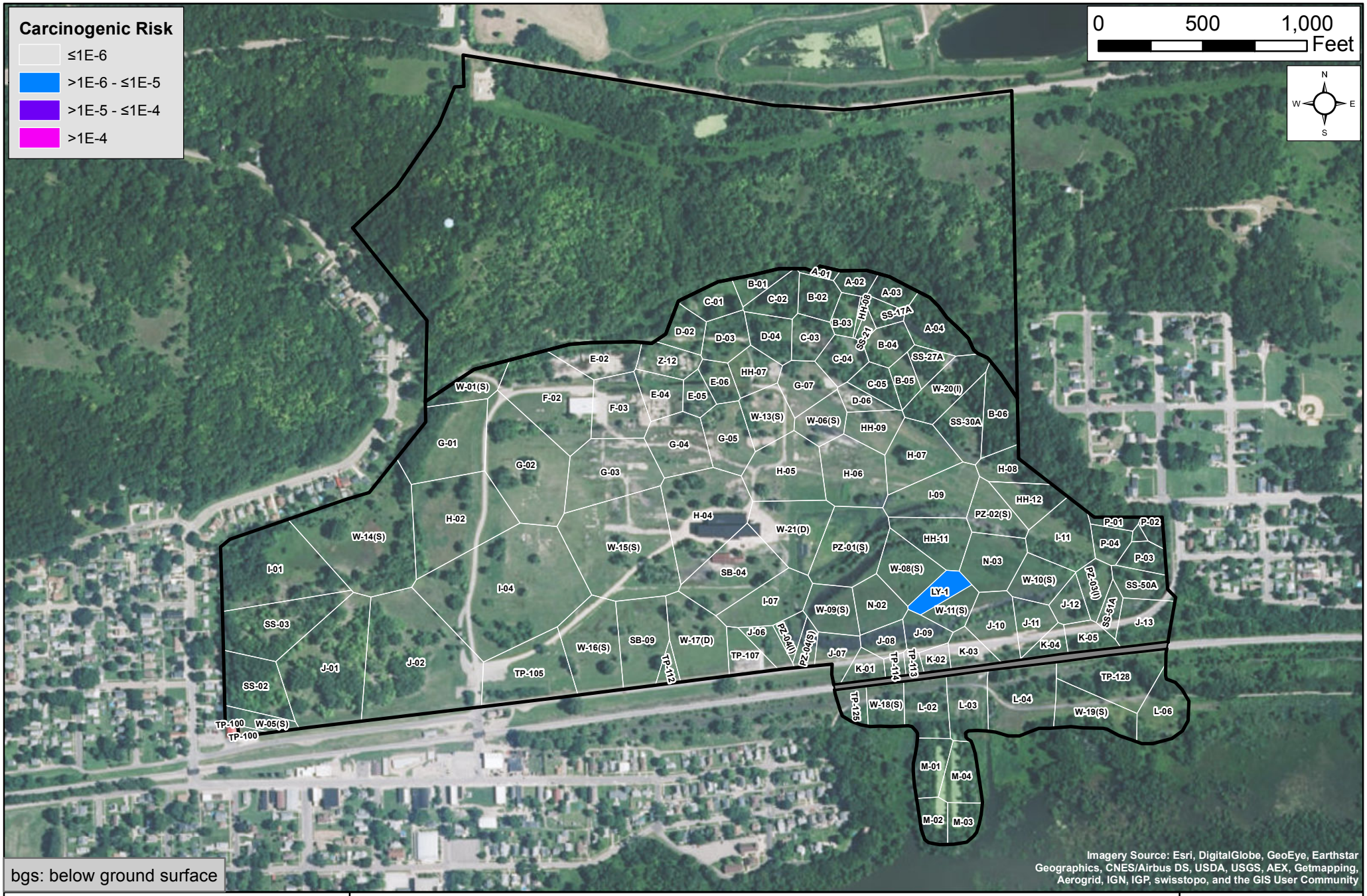

bgs: below ground surface

RAMBOLL ENVIRON

Thiessen Polygons Showing Future Utility Worker Carcinogenic Risk for Maximum Detected Concentrations of Arsenic (3-10 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-30

10/8/2015

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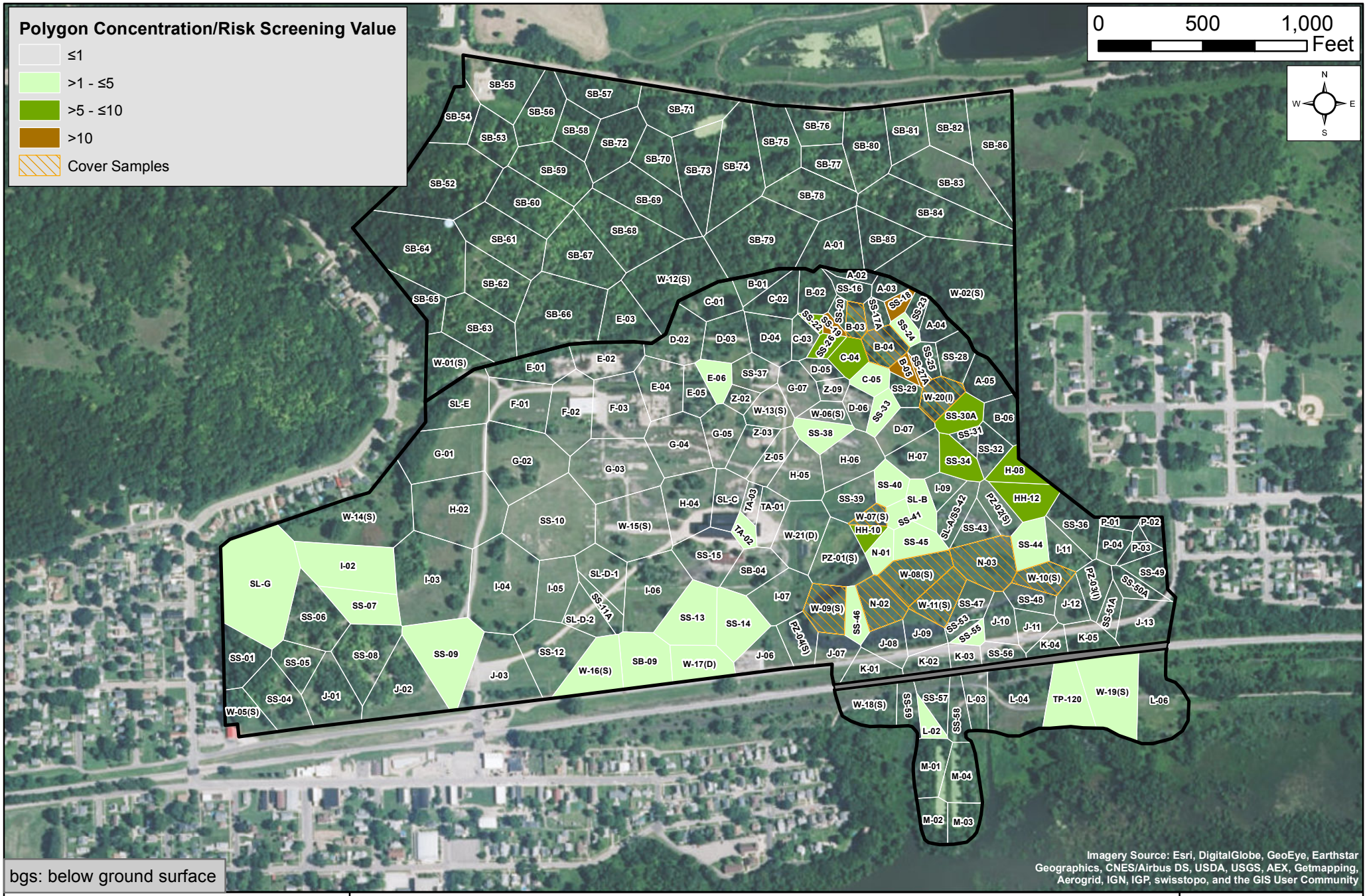


RAMBOLL ENVIRON

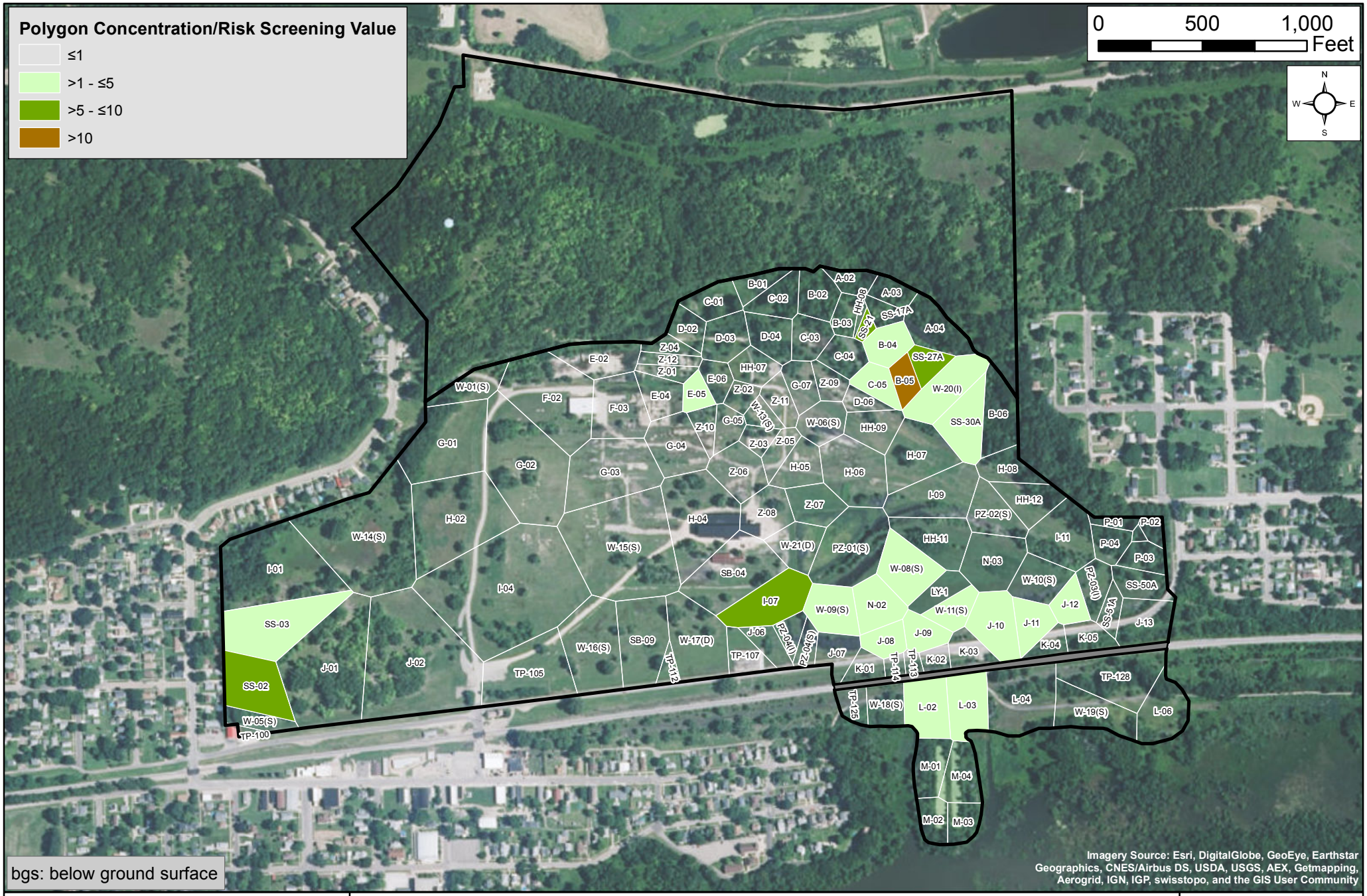
Thiessen Polygons Showing Future Utility Worker Noncarcinogenic Hazards for Maximum Detected Concentrations of Lead (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-31

10/8/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-17 08202015.mxd



RAMBOLL ENVIRON

Thiessen Polygons Showing Future Utility Worker Noncarcinogenic Hazards for Maximum Detected Concentrations of Lead (3-10 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-32

8/20/2015

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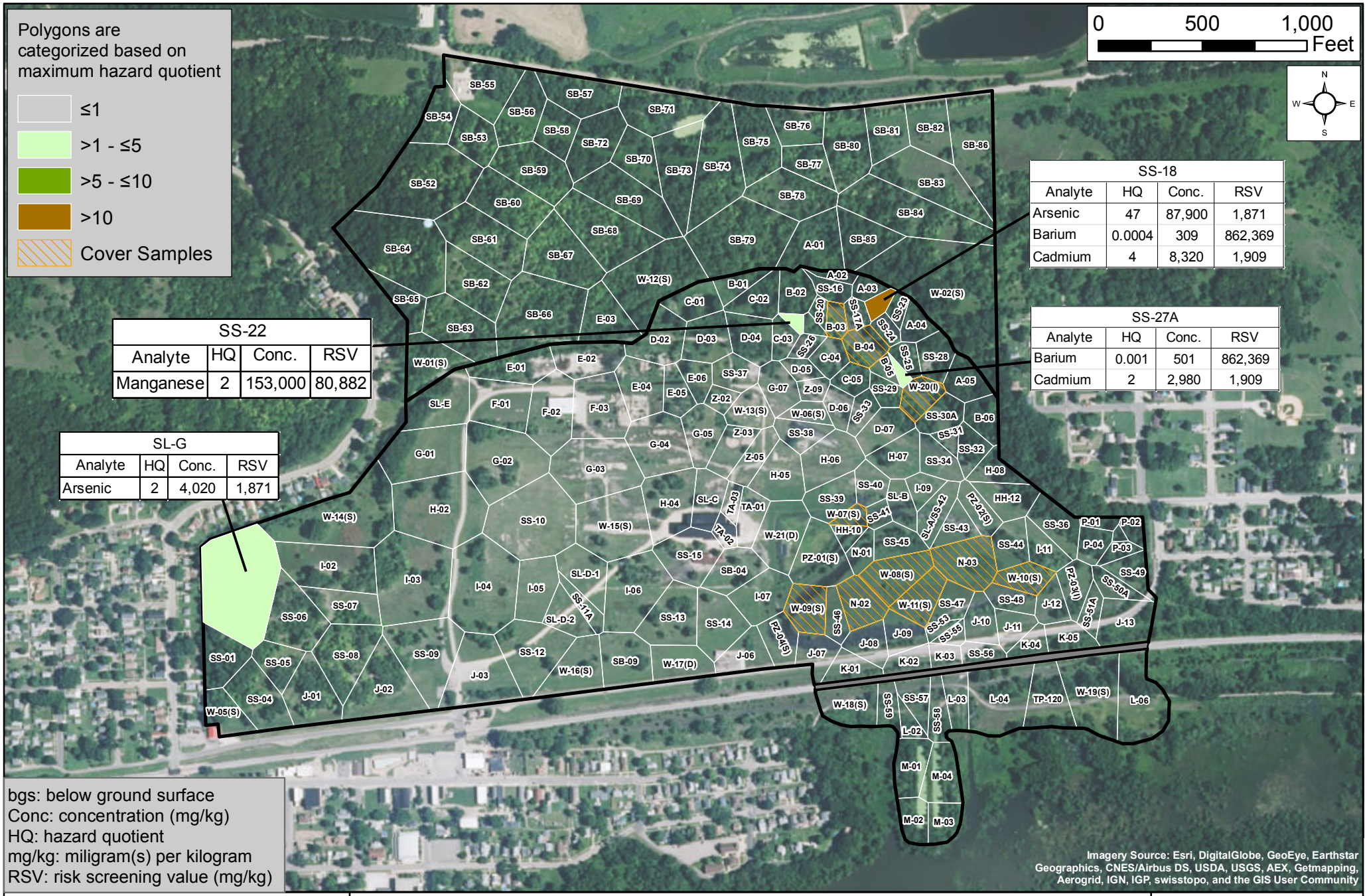


RAMBOLL ENVIRON

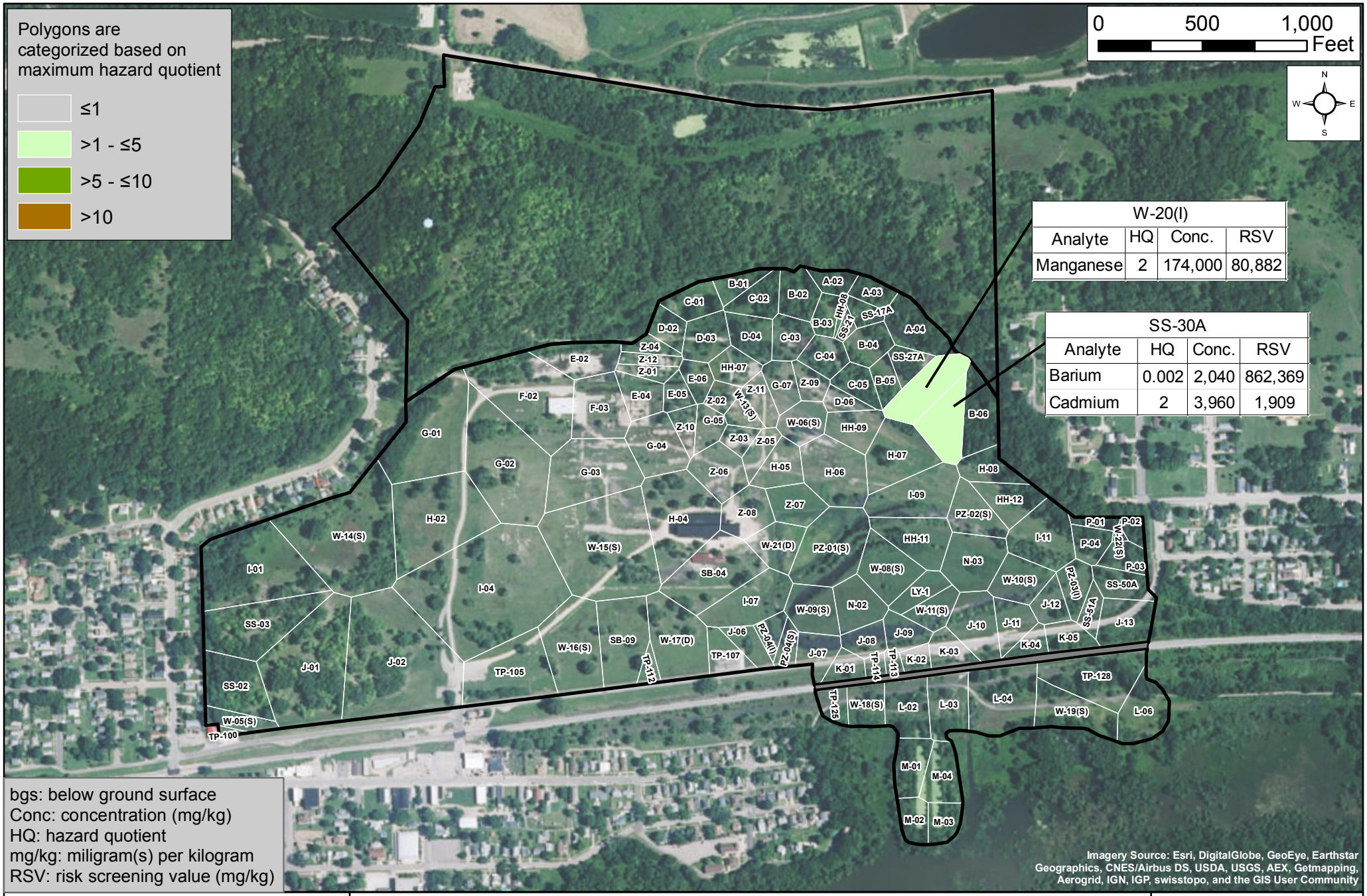
Thiessen Polygons Showing Future Utility Worker Noncarcinogenic Hazards for Select Analytes (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-33

10/8/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-25 08192015.mxd



RAMBOLL ENVIRON

Thiessen Polygons Showing Future Utility Worker Noncarcinogenic Hazards for Select Analytes (3-10 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-34

10/8/2015

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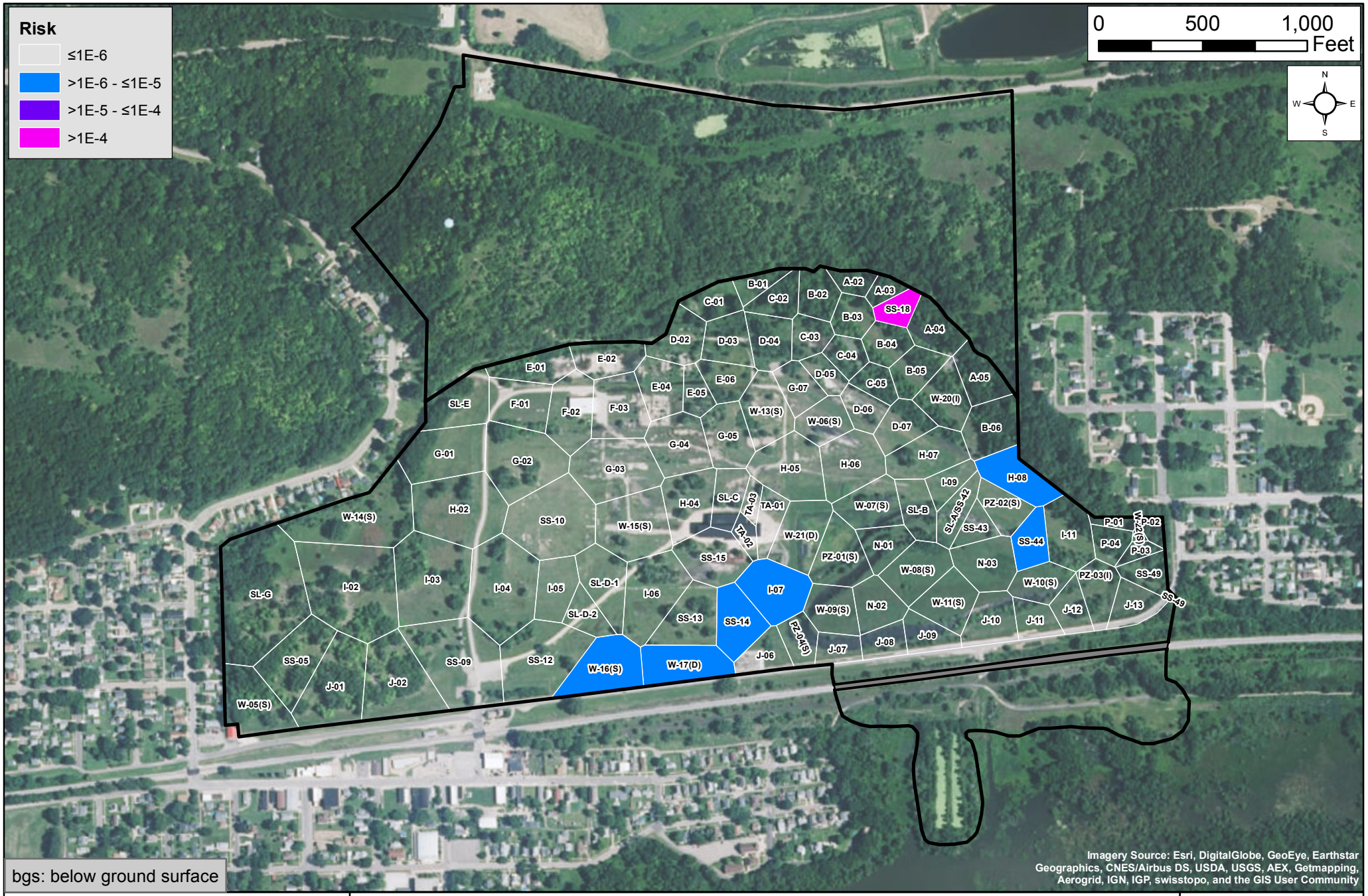

RAMBOLL ENVIRON

Thiessen Polygons Showing Adolescent Trespasser Carcinogenic Risk in Former Plant Site Area for Maximum Detected Concentrations of Arsenic (0-0.5 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-35

8/20/2015

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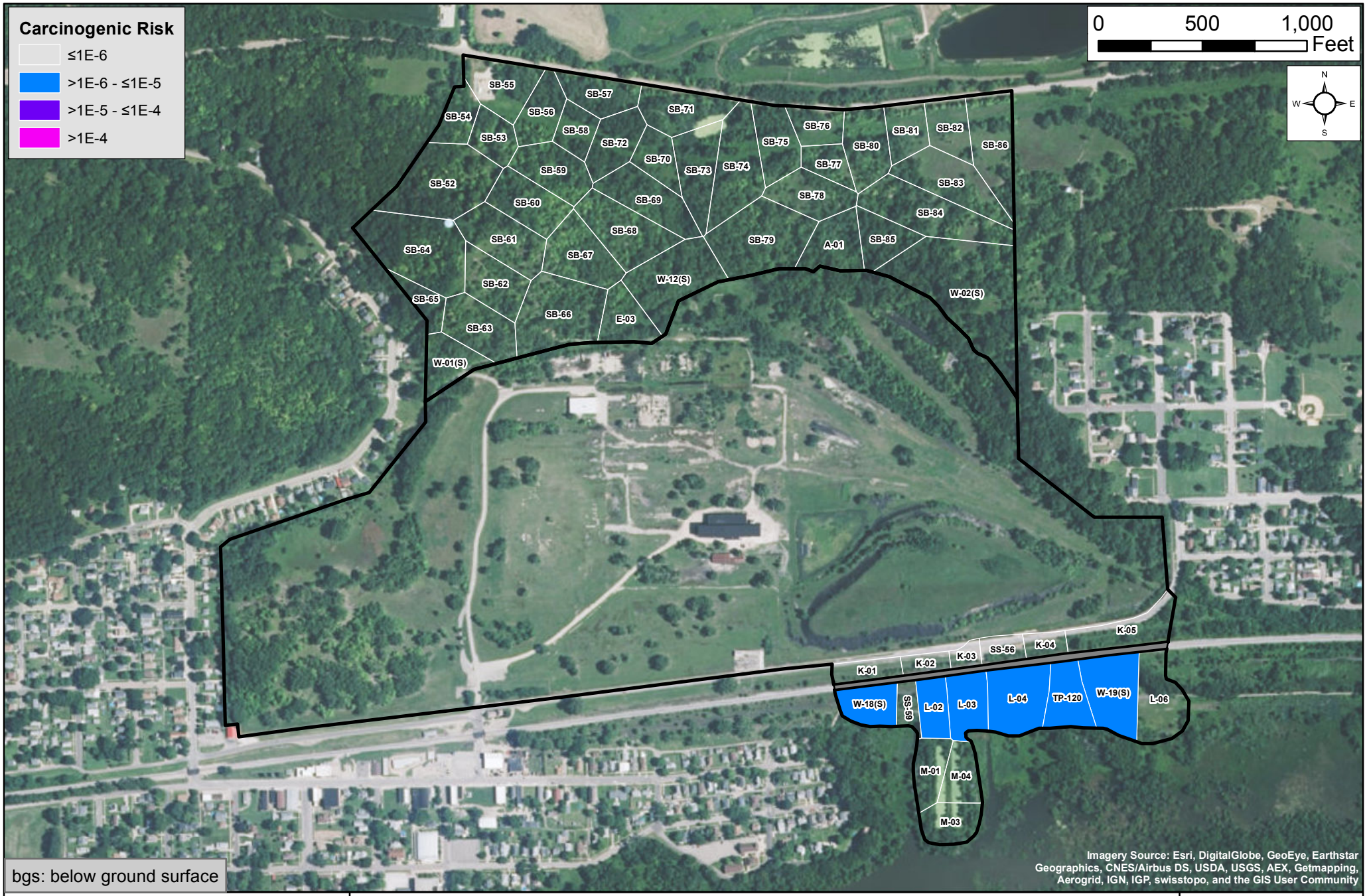


RAMBOLL ENVIRON

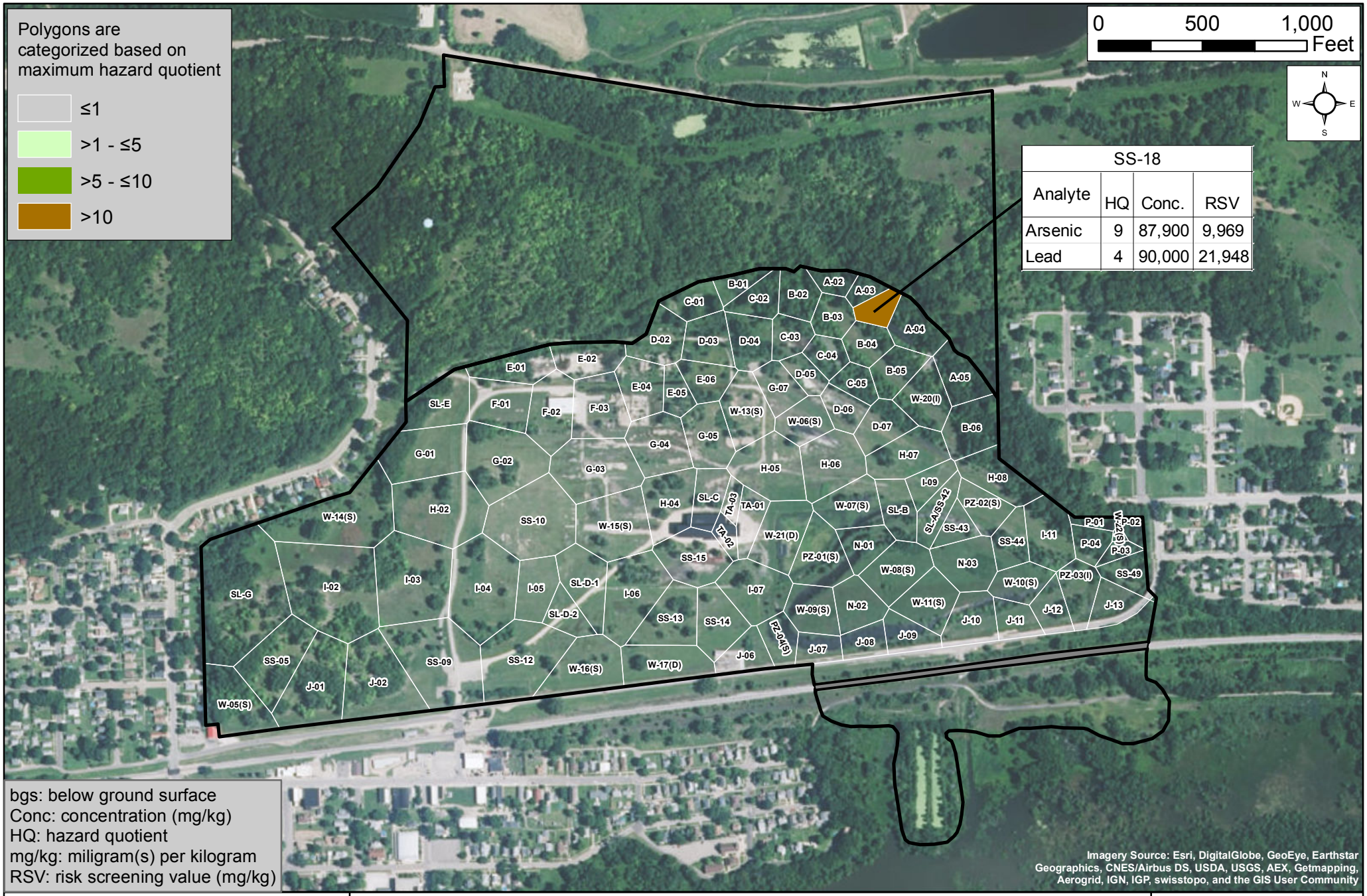
Thiessen Polygons Showing Adolescent Trespasser Carcinogenic Risk in the Bluff and Upland Portion of the Southeast Area for Maximum Detected Concentrations of Arsenic (0-0.5 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-36

8/20/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-32 08202015.mxd



bgs: below ground surface
Conc: concentration (mg/kg)
HQ: hazard quotient
mg/kg: miligram(s) per kilogram
RSV: risk screening value (mg/kg)

RAMBOLL ENVIRON

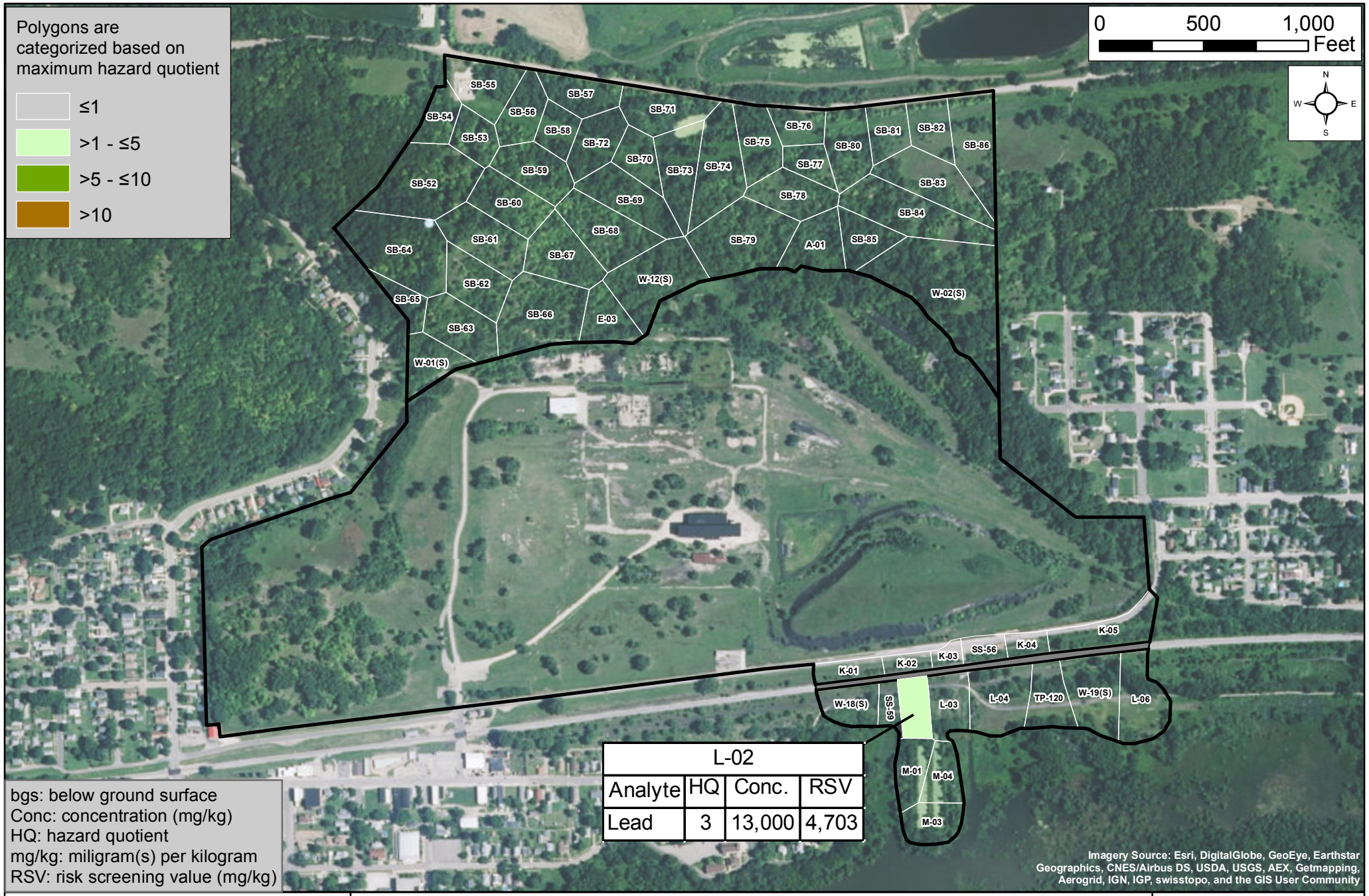
Thiessen Polygons Showing Adolescent Trespasser Noncarcinogenic Hazards in Former Plant Site Area for Arsenic and Lead (0-0.5 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-37

8/20/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-33 08202015.mxd



L-02			
Analyte	HQ	Conc.	RSV
Lead	3	13,000	4,703

RAMBOLL ENVIRON

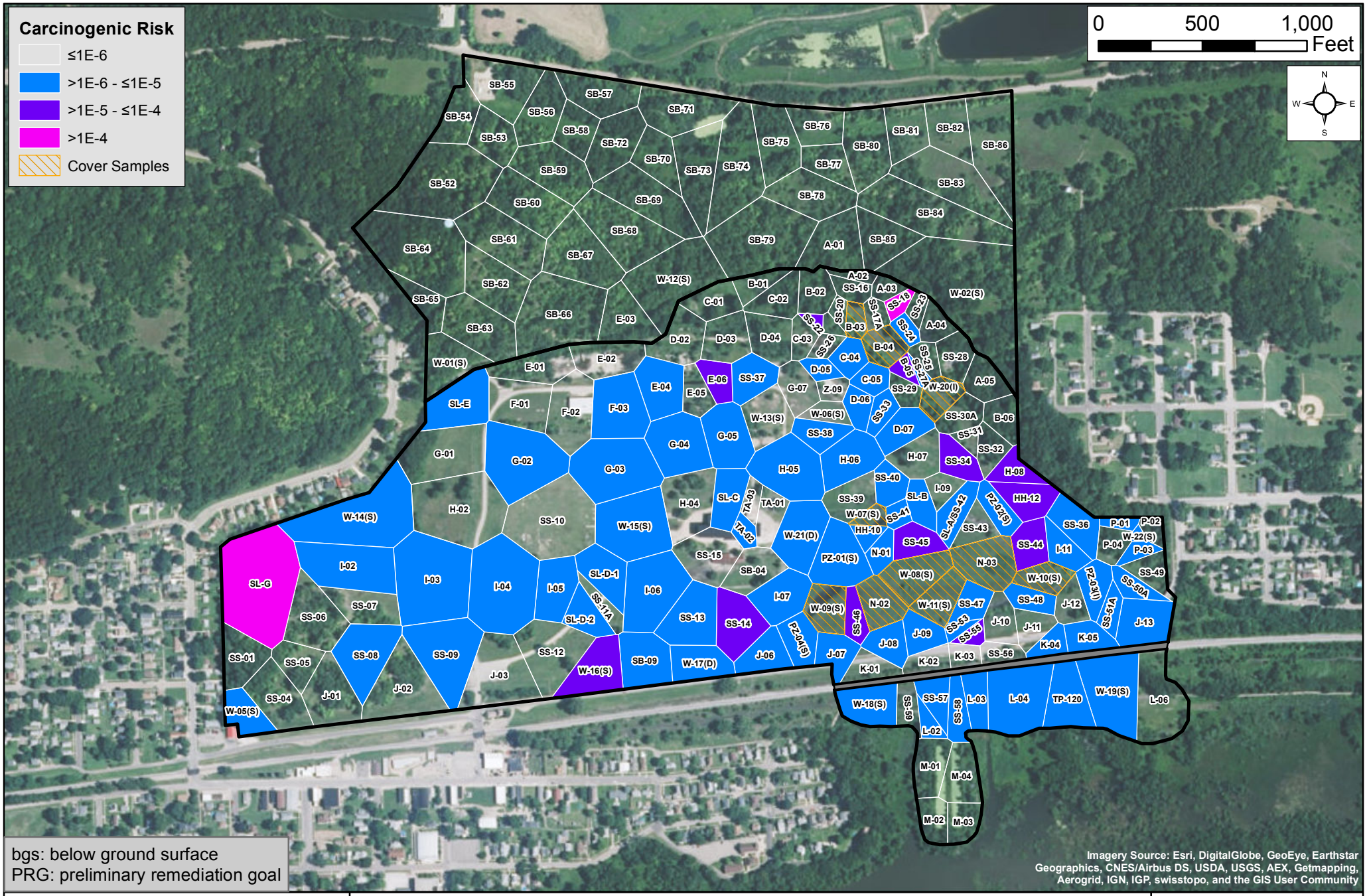
Thiessen Polygons Showing Adolescent Trespasser Noncarcinogenic Hazards in the Bluff and Upland Portion of the Southeast Area for Lead (0-0.5 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 9-38

8/20/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 9-34 08202015.mxd



RAMBOLL ENVIRON

Thiessen Polygons Showing Carcinogenic Risk for Maximum Detected Concentrations of Arsenic Greater than OU4 Residential PRG of 21 mg/kg (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 10-1

10/26/2015

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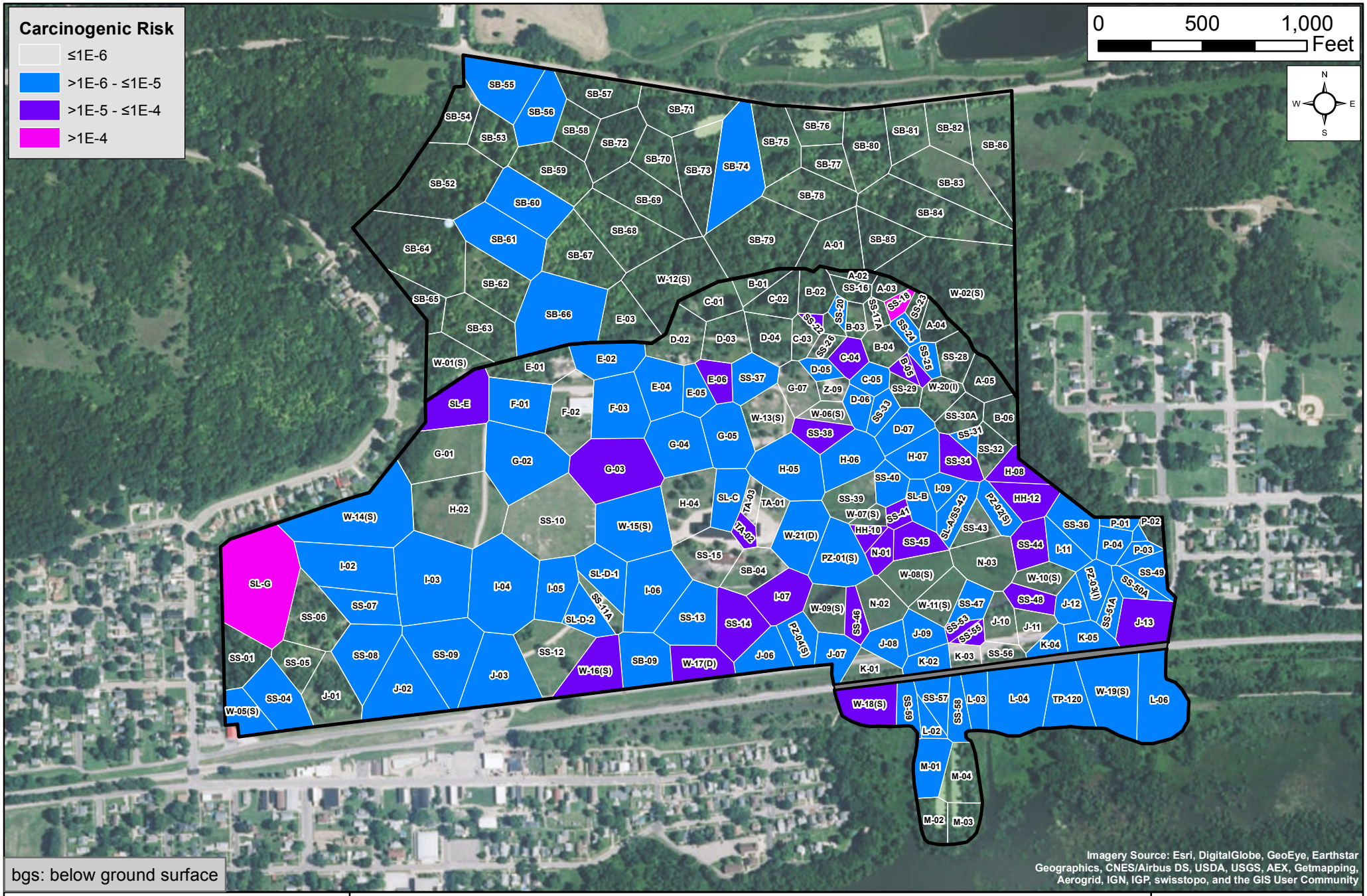


RAMBOLL ENVIRON

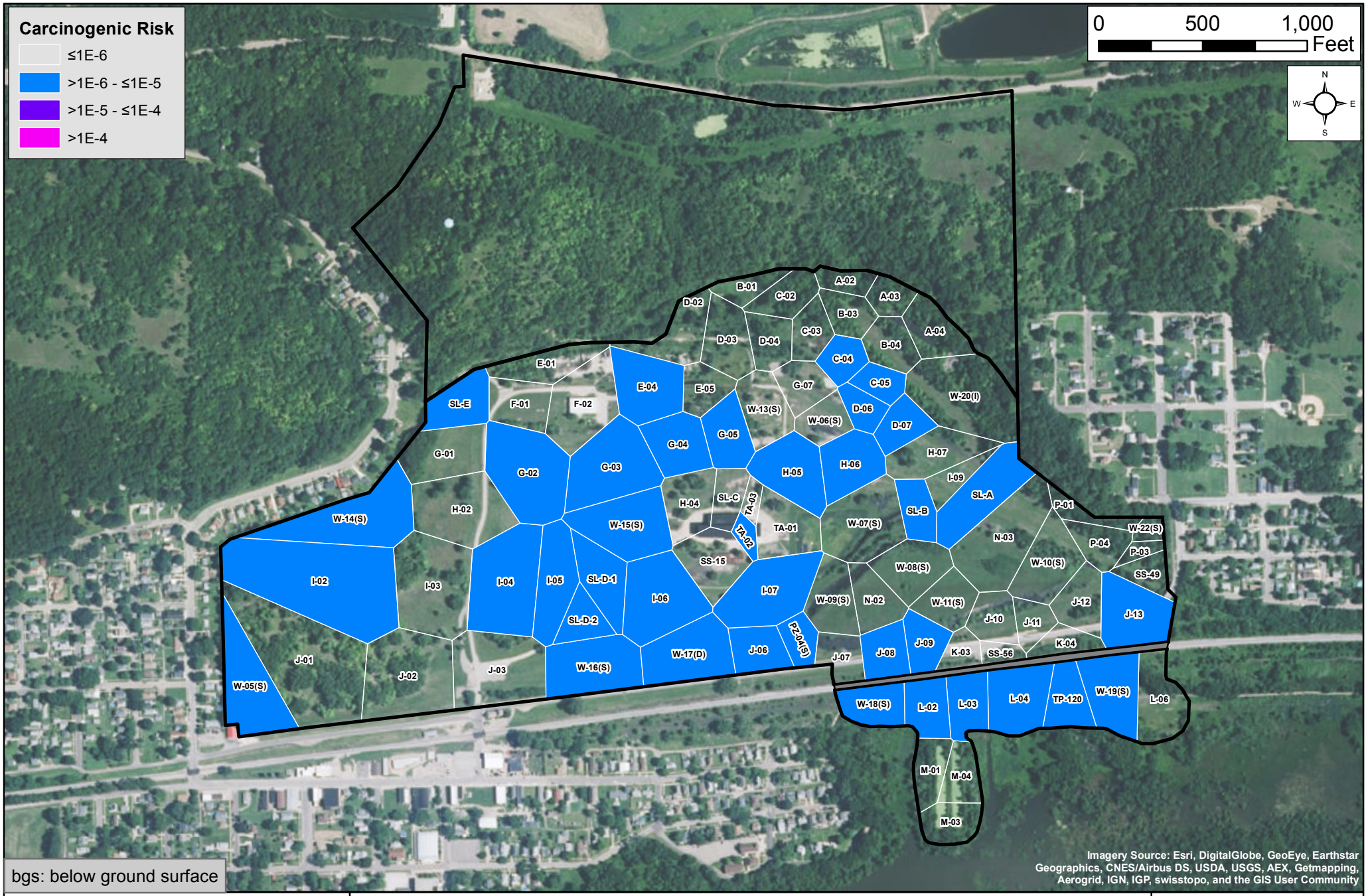
Thiessen Polygons Showing Carcinogenic Risk for Maximum Detected Concentrations of Arsenic Greater than the Site-Specific Background Concentration of 11.6 mg/kg (0-3 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 10-2

8/25/2015

Document Path: M:\Depue\GIS\MXD\HH TPolygons Revised\Figure 10-1.mxd



bgs: below ground surface

RAMBOLL ENVIRON

Thiessen Polygons Showing Current Environmental Worker Carcinogenic Risk for Maximum Detected Concentrations of Arsenic (0-0.5 feet bgs)

Operable Unit 3, DePue, Illinois

Figure 10-3

8/25/2015

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Attachment A

HHCOPC Supporting Tables

TABLE A-1. Selection of Regulatory Screening Levels for Detected Analytes in Soil

Parameter Name	Maximum Observed Concentration	TACO Background [1]	USEPA Regional Screening Level [2]	TACO Industrial-Commercial Worker Soil Remediation Objective [3]	TACO Construction Worker Soil Remediation Objective [3]	Regulatory Screening Level [4]	Identified as a Preliminary HHCOPC	Basis of Regulatory Screening Level
Volatile Organic Compounds (mg/kg)								
1,1-Dichloroethene	0.015	NA	1,000	470	3	3	No	TACO Construction Worker Soil Remediation Objective
1,4-Dioxane [A]	0.0084	NA	24	16	22	16	No	TACO Industrial-Commercial Soil Remediation Objective
2-Butanone [A]	0.02	NA	190,000	25,000	730	730	No	TACO Construction Worker Soil Remediation Objective
2-Hexanone [A]	0.009	NA	1,300	720	47	47	No	TACO Construction Worker Soil Remediation Objective
Acetone	0.084	NA	670,000	100,000	100,000	100,000	No	TACO Industrial-Commercial Soil Remediation Objective
Benzene	0.13	NA	5.1	1.6	2.2	1.6	No	TACO Industrial-Commercial Soil Remediation Objective
Chlorobenzene	0.011	NA	1,300	210	1.3	1.3	No	TACO Construction Worker Soil Remediation Objective
Cyclohexane [A]	0.005	NA	27,000	280	280	280	No	TACO Industrial-Commercial Soil Remediation Objective
Methylene Chloride	0.019	NA	1,000	24	34	24	No	TACO Industrial-Commercial Soil Remediation Objective
Toluene	0.011	NA	47,000	650	42	42	No	TACO Construction Worker Soil Remediation Objective
Trichloroethene	0.011	NA	6	8.9	12	6	No	USEPA Regional Screening Level
Xylene (Total)	0.087	NA	2,500	320	5.6	5.6	No	TACO Construction Worker Soil Remediation Objective
Semi-volatile Organic Compound (mg/kg)								
1,4-Dichlorobenzene	0.00077	NA	11	17,000	340	11	No	USEPA Regional Screening Level
2,4-Dimethylphenol	0.56	NA	16,000	41,000	41,000	16,000	No	USEPA Regional Screening Level
2-Methylnaphthalene [A]	9	NA	3,000	8,200	820	820	No	TACO Construction Worker Soil Remediation Objective
Acenaphthene	2	NA	45,000	120,000	120,000	45,000	No	USEPA Regional Screening Level
Anthracene	1.3	NA	230,000	610,000	610,000	230,000	No	USEPA Regional Screening Level
Benzo(a)anthracene	4.6	NA	2.9	8	170	2.9	Yes	USEPA Regional Screening Level
Benzo(a)pyrene	4.8	NA	0.29	0.8	17	0.29	Yes	USEPA Regional Screening Level
Benzo(b)fluoranthene	8.9	NA	2.9	8	170	2.9	Yes	USEPA Regional Screening Level
Benzo(k)fluoranthene	2.8	NA	29	78	1,700	29	No	USEPA Regional Screening Level
Bis(2-ethylhexyl)phthalate	0.8	NA	160	410	4,100	160	No	USEPA Regional Screening Level
Carbazole	0.071	NA	NA	290	6,200	290	No	TACO Industrial-Commercial Soil Remediation Objective
Chrysene	7.8	NA	290	780	17,000	290	No	USEPA Regional Screening Level
Dibenz(a,h)anthracene	1.2	NA	0.29	0.8	17	0.29	Yes	USEPA Regional Screening Level
Dibenzofuran [A]	1.1	NA	1,000	2,000	820	820	No	TACO Construction Worker Soil Remediation Objective
Di-n-butylphthalate	0.5	NA	82,000	2,300	2,300	2,300	No	TACO Industrial-Commercial Soil Remediation Objective
Fluoranthene	9.1	NA	30,000	82,000	82,000	30,000	No	USEPA Regional Screening Level
Fluorene	2	NA	30,000	82,000	82,000	30,000	No	USEPA Regional Screening Level
Indeno(1,2,3-c,d)pyrene	3.6	NA	2.9	8	170	2.9	Yes	USEPA Regional Screening Level
Naphthalene	4.1	NA	17	270	1.8	1.8	Yes	TACO Construction Worker Soil Remediation Objective
Phenols	0.00917	NA	250,000	610,000	61,000	61,000	No	TACO Construction Worker Soil Remediation Objective
Pyrene	9.5	NA	23,000	61,000	61,000	23,000	No	USEPA Regional Screening Level
Pesticides and Polychlorinated Biphenyls (PCBs) (mg/kg)								
4,4'-DDD	0.0011	NA	9.6	24	520	9.6	No	USEPA Regional Screening Level
4,4'-DDE	0.0093	NA	9.3	17	370	9.3	No	USEPA Regional Screening Level
4,4'-DDT	0.03	NA	8.5	17	100	8.5	No	USEPA Regional Screening Level
Aldrin	0.0012	NA	0.18	0.3	6.1	0.18	No	USEPA Regional Screening Level
alpha-BHC	0.0057	NA	0.36	0.9	2.1	0.36	No	USEPA Regional Screening Level
Aroclor 1254	0.135	NA	0.97	NA	NA	0.97	No	USEPA Regional Screening Level

TABLE A-1. Selection of Regulatory Screening Levels for Detected Analytes in Soil

Parameter Name	Maximum Observed Concentration	TACO Background [1]	USEPA Regional Screening Level [2]	TACO Industrial-Commercial Worker Soil Remediation Objective [3]	TACO Construction Worker Soil Remediation Objective [3]	Regulatory Screening Level [4]	Identified as a Preliminary HHCOPC	Basis of Regulatory Screening Level
Aroclor 1260	0.076	NA	0.99	NA	NA	0.99	No	USEPA Regional Screening Level
beta-BHC	0.0018	NA	1.3	NA	NA	1.3	No	USEPA Regional Screening Level
Dieldrin	0.027	NA	0.14	0.4	3.1	0.14	No	USEPA Regional Screening Level
Endrin	0.0028	NA	250	610	61	61	No	TACO Construction Worker Soil Remediation Objective
gamma-BHC (Lindane)	0.0006	NA	2.5	4	96	2.5	No	USEPA Regional Screening Level
Heptachlor	0.015	NA	0.63	1	16	0.63	No	USEPA Regional Screening Level
Heptachlor epoxide	0.0022	NA	0.33	0.6	2.7	0.33	No	USEPA Regional Screening Level
Methoxychlor	0.021	NA	4,100	10,000	1,000	1,000	No	TACO Construction Worker Soil Remediation Objective
General Chemistry (mg/kg)								
Fluoride (soluble)	25,200	NA	47,000	NA	NA	47,000	No	USEPA Regional Screening Level
Nitrate as N	263	NA	1,900,000	1,000,000	330,000	330,000	No	TACO Construction Worker Soil Remediation Objective
Nitrite as N	4.9	NA	120,000	NA	NA	120,000	No	USEPA Regional Screening Level
Metals (mg/kg)								
Antimony	42	3.3	470	820	82	82	No	TACO Construction Worker Soil Remediation Objective
Arsenic	87,900	11.3	3	1,200	61	3	Yes	USEPA Regional Screening Level
Barium	138,000	122	220,000	140,000	14,000	14,000	Yes	TACO Construction Worker Soil Remediation Objective
Beryllium	3.4	0.56	2,300	2,100	410	410	No	TACO Construction Worker Soil Remediation Objective
Cadmium	8,320	0.5	980	2,000	200	200	Yes	TACO Construction Worker Soil Remediation Objective
Chromium[5]	1,010	13	1,800,000	1,000,000	310,000	310,000	No	TACO Construction Worker Soil Remediation Objective
Cobalt	1,600	8.9	350	120,000	12,000	350	Yes	USEPA Regional Screening Level
Copper	35,200	12	47,000	82,000	8,200	8,200	Yes	TACO Construction Worker Soil Remediation Objective
Cyanide	26.9	0.5	150	41,000	4,100	150	No	USEPA Regional Screening Level
Iron	373,000	NA	820,000	NA	NA	820,000	No	USEPA Regional Screening Level
Lead	152,000	20.9	800	800	700	700	Yes	TACO Construction Worker Soil Remediation Objective
Magnesium	63,000	2,700	NA	NA	730,000	730,000	No	TACO Construction Worker Soil Remediation Objective
Manganese	174,000	630	26,000	41,000	4,100	4,100	Yes	TACO Construction Worker Soil Remediation Objective
Mercury[6]	83	0.05	350	610	61	61	Yes	TACO Construction Worker Soil Remediation Objective
Nickel	736	13	22,000	21,000	4,100	4,100	No	TACO Construction Worker Soil Remediation Objective
Selenium	330	0.37	5,800	10,000	1,000	1,000	No	TACO Construction Worker Soil Remediation Objective
Silver	290	0.5	5,800	10,000	1,000	1,000	No	TACO Construction Worker Soil Remediation Objective
Thallium[7]	67.1	0.42	NA	160	160	160	No	TACO Industrial-Commercial Soil Remediation Objective
Vanadium	328	25	5,800	14,000	1,400	1,400	No	TACO Construction Worker Soil Remediation Objective
Zinc	260,000	60.2	350,000	610,000	61,000	61,000	Yes	TACO Construction Worker Soil Remediation Objective
Radionuclides (pCi/g)								
Lead 212 Gamma	0.69	NA	5,020	NA	NA	5,020	No	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker
Lead 214 Gamma	0.72	NA	59,900	NA	Na	59,900	No	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker
Potassium 40 Gamma	19	NA	0.219	NA	NA	0.219	Yes	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker
Radium-226	5.63	NA	3.05	NA	NA	3.05	Yes	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker

TABLE A-1. Selection of Regulatory Screening Levels for Detected Analytes in Soil

Parameter Name	Maximum Observed Concentration	TACO Background [1]	USEPA Regional Screening Level [2]	TACO Industrial-Commercial Worker Soil Remediation Objective [3]	TACO Construction Worker Soil Remediation Objective [3]	Regulatory Screening Level [4]	Identified as a Preliminary HHCOPC	Basis of Regulatory Screening Level
Radium-228	2.78	NA	7.5	NA	NA	7.5	No	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker
Thallium 208 Gamma	0.32	NA	29,800	NA	NA	29,800	No	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker
Uranium 235 Gamma	0.17	NA	0.315	NA	NA	0.315	No	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker

HHCOPC – Human Health Chemical of Potential Concern; mg/kg – milligrams per kilogram; NA – not applicable; pCi/g – picocuries per gram; PRG -–Preliminary remediation goal; RSL – Regional Screening Level; TACO – Tiered Approach to Corrective Action Objectives; USEPA – United States Environmental Protection Agency.

Notes

[1] Source: Part 742, Tiered Approach to Corrective Action Objectives (TACO) (Illinois Pollution Control Board, 1997), Appendix A, Table G: Concentrations of Inorganic Chemicals in Background Soils, Counties Outside Metropolitan Statistical Areas. For the HCOPC screening process, maximum concentrations are first compared to background concentrations.

[2] Source: U.S. Environmental Protection Agency (USEPA) Regional Screening Levels for industrial soil (November 2015 update).

[3] Source: Part 742, Tiered Approach to Corrective Action Objectives (TACO) (Illinois Pollution Control Board, 1997), Appendix B, Table B: Tier 1 Soil Remediation Objectives for Industrial/Commercial Properties. Values not available in TACO tables were taken from other sources (see notes below). Values represent the most conservative value between the ingestion and inhalation exposure routes for industrial-commercial and construction worker exposures.

(A) Taken from IEPA's Chemicals Not in TACO Tier I Tables. Dated April 2003.

[4] The most conservative (i.e., lowest) criteria between the USEPA RSLs and TACO Remediation Objectives are used for the COPC screening process.

[5] Screening level assumes Trivalent Chromium. Evaluation conducted in ENVIRON (2015b) indicated that total chromium detected in soil at the DePue Site is primarily present in the trivalent form.

[6] Screening level assumes Mercuric Chloride

[7] For Thallium the industrial-commercial worker and the construction worker Soil Remediation Objectives (SROs) included in Table B in Appendix B of IEPAs TACO regulation (35 IAC Part 742) was used.

Table A-2. Comparison of Regulatory Soil Screening Levels to Detected Analytes and Statistical Summary

Parameter Name	CAS Number	Regulatory Screening Level [1]	Basis of Regulatory Screening Level	Number of Samples			Detections		Non-Detections		Comparison to Regulatory Screening Levels			
				Detects	Non-Detects	Total	Minimum Concentration	Maximum Concentration	Minimum Concentration	Maximum Concentration	Detections - Number of Exceedances	Detections - Frequency of Exceedance (%)	Non-Detections - Number of Exceedances	Non-Detections - Frequency of Exceedance (%)
Volatile Organic Compounds (mg/kg)														
1,1-Dichloroethene	75-35-4	3	TACO Construction Worker Soil Remediation Objective	7	43	50	0.002	0.015	0.0045	0.076	0	0	0	0
1,4-Dioxane	123-91-1	16	TACO Industrial-Commercial Soil Remediation Objective	1	2	3	0.0084	0.0084	0.12	0.15	0	0	0	0
2-Butanone	78-93-3	730	TACO Construction Worker Soil Remediation Objective	7	43	50	0.0091	0.02	0.01	0.076	0	0	0	0
2-Hexanone	591-78-6	47	TACO Construction Worker Soil Remediation Objective	1	48	49	0.009	0.009	0.0091	0.076	0	0	0	0
Acetone	67-64-1	100,000	TACO Industrial-Commercial Soil Remediation Objective	17	33	50	0.002	0.084	0.0047	0.19	0	0	0	0
Benzene	71-43-2	1.6	TACO Industrial-Commercial Soil Remediation Objective	6	82	88	0.000032	0.13	0.0044	0.076	0	0	0	0
Chlorobenzene	108-90-7	1.3	TACO Construction Worker Soil Remediation Objective	1	87	88	0.011	0.011	0.0044	0.076	0	0	0	0
Cyclohexane	110-82-7	280	TACO Industrial-Commercial Soil Remediation Objective	1	17	18	0.005	0.005	0.0045	0.024	0	0	0	0
Methylene Chloride	75-09-2	24	TACO Industrial-Commercial Soil Remediation Objective	9	41	50	0.003	0.019	0.00036	0.024	0	0	0	0
Toluene	108-88-3	42	TACO Construction Worker Soil Remediation Objective	10	78	88	0.00079	0.011	0.0044	0.076	0	0	0	0
Trichloroethene	79-01-6	6	USEPA Regional Screening Level	5	45	50	0.0018	0.011	0.0045	0.076	0	0	0	0
Xylene (Total)	1330-20-7	5.6	TACO Construction Worker Soil Remediation Objective	2	78	80	0.019	0.087	0.01	0.076	0	0	0	0
Semi-volatile Organic Compounds (mg/kg)														
1,4-Dichlorobenzene	106-46-7	11	USEPA Regional Screening Level	1	82	83	0.00077	0.00077	0.0044	5	0	0	0	0
2,4-Dimethylphenol	105-67-9	16,000	USEPA Regional Screening Level	1	46	47	0.56	0.56	0.2	1.6	0	0	0	0
2-Methylnaphthalene	91-57-6	820	TACO Construction Worker Soil Remediation Objective	2	45	47	0.14	9	0.2	1.6	0	0	0	0
Acenaphthene	83-32-9	45,000	USEPA Regional Screening Level	13	111	124	0.033	2	0.035	1.6	0	0	0	0
Anthracene	120-12-7	230,000	USEPA Regional Screening Level	28	96	124	0.041	1.3	0.035	1.6	0	0	0	0
Benzo(a)anthracene	56-55-3	2.9	USEPA Regional Screening Level	45	79	124	0.041	4.6	0.035	5	1	2.2	1	1.3
Benzo(a)pyrene	50-32-8	0.29	USEPA Regional Screening Level	43	81	124	0.047	4.8	0.035	5	16	37.2	40	49.4
Benzo(b)fluoranthene	205-99-2	2.9	USEPA Regional Screening Level	45	79	124	0.053	8.9	0.035	5	2	4.4	1	1.3
Benzo(k)fluoranthene	207-08-9	29	USEPA Regional Screening Level	36	88	124	0.038	2.8	0.035	5	0	0	0	0
Bis(2-ethylhexyl)phthalate	117-81-7	160	USEPA Regional Screening Level	4	43	47	0.12	0.8	0.2	5	0	0	0	0
Carbazole	86-74-8	290	TACO Industrial-Commercial Soil Remediation Objective	1	46	47	0.071	0.071	0.2	5	0	0	0	0
Chrysene	218-01-9	290	USEPA Regional Screening Level	48	76	124	0.05	7.8	0.035	5	0	0	0	0
Dibenz(a,h)anthracene	53-70-3	0.29	USEPA Regional Screening Level	21	103	124	0.032	1.2	0.035	5	3	14.3	44	42.7
Dibenzofuran	132-64-9	820	TACO Construction Worker Soil Remediation Objective	2	45	47	0.03	1.1	0.2	1.6	0	0	0	0
Di-n-butylphthalate	84-74-2	2,300	TACO Industrial-Commercial Soil Remediation Objective	2	45	47	0.3	0.5	0.2	5	0	0	0	0
Fluoranthene	206-44-0	30,000	USEPA Regional Screening Level	53	71	124	0.04	9.1	0.035	5	0	0	0	0
Fluorene	86-73-7	30,000	USEPA Regional Screening Level	15	109	124	0.052	2	0.035	1.6	0	0	0	0
Indeno(1,2,3-c,d)pyrene	193-39-5	2.9	USEPA Regional Screening Level	36	88	124	0.042	3.6	0.035	5	1	2.8	1	1.1
Naphthalene	91-20-3	1.8	TACO Construction Worker Soil Remediation Objective	40	85	125	0.032	4.1	0.035	1.6	2	5.0	0	0
Phenols	108-95-2	61,000	TACO Construction Worker Soil Remediation Objective	1	47	48	0.00917	0.00917	0.2	5	0	0	0	0.0
Pyrene	129-00-0	23,000	USEPA Regional Screening Level	52	72	124	0.047	9.5	0.035	5	0	0	0	0
Pesticides and Polychlorinated Biphenyls (PCBs) (mg/kg)														
4,4'-DDD	72-54-8	9.6	USEPA Regional Screening Level	7	44	51	0.00015	0.0011	0.0035	0.023	0	0	0	0
4,4'-DDE	72-55-9	9.3	USEPA Regional Screening Level	13	38	51	0.000048	0.0093	0.0035	0.016	0	0	0	0
4,4'-DDT	50-29-3	8.5	USEPA Regional Screening Level	17	34	51	0.000061	0.03	0.0035	0.016	0	0	0	0
Aldrin	309-00-2	0.18	USEPA Regional Screening Level	4	47	51	0.0000077	0.0012	0.0018	0.012	0	0	0	0
alpha-BHC	319-84-6	0.36	USEPA Regional Screening Level	8	43	51	0.00006	0.0057	0.0002	0.012	0	0	0	0
Aroclor 1254	11097-69-1	0.97	USEPA Regional Screening Level	3	44	47	0.059	0.135	0.035	0.16	0	0	0	0
Aroclor 1260	11096-82-5	0.99	USEPA Regional Screening Level	4	43	47	0.028	0.076	0.035	0.16	0	0	0	0
beta-BHC	319-85-7	1.3	USEPA Regional Screening Level	10	41	51	0.0002	0.0018	0.0018	0.012	0	0	0	0
Dieldrin	60-57-1	0.14	USEPA Regional Screening Level	12	39	51	0.00017	0.027	0.0035	0.016	0	0	0	0
Endrin	72-20-8	61	TACO Construction Worker Soil Remediation Objective	10	41	51	0.00023	0.0028	0.0035	0.019	0	0	0	0
gamma-BHC (Lindane)	58-89-9	2.5	USEPA Regional Screening Level	4	47	51	0.000086	0.0006	0.0018	0.012	0	0	0	0
Heptachlor	76-44-8	0.63	USEPA Regional Screening Level	1	50	51	0.015	0.015	0.0002	0.012	0	0	0	0
Heptachlor epoxide	1024-57-3	0.33	USEPA Regional Screening Level	4	47	51	0.00025	0.0022	0.00024	0.026	0	0	0	0
Methoxychlor	72-43-5	1,000	TACO Construction Worker Soil Remediation Objective	8	43	51	0.0015	0.021	0.018	0.1	0	0	0	0
General Chemistry (mg/kg)														
Fluoride (soluble)	16984-48-8	47,000	USEPA Regional Screening Level	249	41	290	0.37	25,200	0.5	10	0	0	0	0
Nitrate as N	14797-55-8	330,000	TACO Construction Worker Soil Remediation Objective	313	87	400	0.2	263	0.84	36	0	0	0	0
Nitrite as N	14797-65-0	120,000	USEPA Regional Screening Level	27	377	404	0.05	4.9	0.05	36	0	0	0	0

Table A-2. Comparison of Regulatory Soil Screening Levels to Detected Analytes and Statistical Summary

Parameter Name	CAS Number	Regulatory Screening Level [1]	Basis of Regulatory Screening Level	Number of Samples			Detections		Non-Detections		Comparison to Regulatory Screening Levels			
				Detects	Non-Detects	Total	Minimum Concentration	Maximum Concentration	Minimum Concentration	Maximum Concentration	Detections - Number of Exceedances	Detections - Frequency of Exceedance (%)	Non-Detections - Number of Exceedances	Non-Detections - Frequency of Exceedance (%)
Metals (mg/kg)														
Antimony	7440-36-0	82	TACO Construction Worker Soil Remediation Objective	35	191	226	0.31	42	0.5	15	0	0	0	0
Arsenic	7440-38-2	3	USEPA Regional Screening Level	530	25	555	0.7	87,900	2.3	15	501	94.5	16	64.0
		11.6	Site-Specific Soil Background Level								248	46.8	2	8.0
Barium	7440-39-3	14,000	TACO Construction Worker Soil Remediation Objective	580	0	580	8.14	138,000	NA	NA	14	2.4	0	0
Beryllium	7440-41-7	410	TACO Construction Worker Soil Remediation Objective	207	35	242	0.14	3.4	0.16	1.2	0	0	0	0
Cadmium	7440-43-9	200	TACO Construction Worker Soil Remediation Objective	545	35	580	0.066	8,320	0.069	12	55	10.1	0	0
Chromium	7440-47-3	310,000	TACO Construction Worker Soil Remediation Objective	240	2	242	2.4	1,010	2	2.3	0	0.0	0	0
Cobalt	7440-48-4	350	USEPA Regional Screening Level	311	10	321	0.43	1,600	0.69	6	6	1.9	0	0
Copper	7440-50-8	8,200	TACO Construction Worker Soil Remediation Objective	558	3	561	3	35,200	6.9	11.1	25	4.5	0	0
Cyanide	57-12-5	150	USEPA Regional Screening Level	134	205	339	0.055	26.9	0.062	3.3	0	0.0	0	0
Iron	7439-89-6	820,000	USEPA Regional Screening Level	340	0	340	1500	373,000	NA	NA	0	0	0	0
Lead	7439-92-1	700	TACO Construction Worker Soil Remediation Objective	575	5	580	3.2	152,000	5	20	190	33.0	0	0
Magnesium	7439-95-4	730,000	TACO Construction Worker Soil Remediation Objective	207	3	210	24.2	63,000	7.3	100	0	0	0	0
Manganese	7439-96-5	4,100	TACO Construction Worker Soil Remediation Objective	559	2	561	17	174,000	3.1	290	37	6.6	0	0
Mercury	7439-97-6	61	TACO Construction Worker Soil Remediation Objective	251	71	322	0.0075	83	0.0033	0.18	1	0.4	0	0
Nickel	7440-02-0	4,100	TACO Construction Worker Soil Remediation Objective	315	7	322	1.8	736	1	10	0	0	0	0
Selenium	7782-49-2	1,000	TACO Construction Worker Soil Remediation Objective	112	210	322	0.2	330	0.1	42.8	0	0	0	0
Silver	7440-22-4	1,000	TACO Construction Worker Soil Remediation Objective	175	147	322	0.18	290	0.096	23.6	0	0	0	0
Thallium	7440-28-0	160	TACO Industrial-Commercial Soil Remediation Objective	63	164	227	0.084	67.1	0.69	6.1	0	0	0	0
Vanadium	7440-62-2	1,400	TACO Construction Worker Soil Remediation Objective	255	0	255	0.67	328	NA	NA	0	0	0	0
Zinc	7440-66-6	61,000	TACO Construction Worker Soil Remediation Objective	578	0	578	18.9	260,000	NA	NA	34	5.9	0	0
Radionuclides (pCi/g)														
Lead 212 Gamma	15092-94-1	5,020	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker	5	0	5	0.31	0.69	NA	NA	0	0	0	0
Lead 214 Gamma	01-00002	59,900	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker	5	0	5	0.29	0.72	NA	NA	0	0	0	0
Potassium 40 Gamma	13966-00-2	0.219	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker	5	0	5	11	19	NA	NA	5	100	0	0
Radium-226	13982-63-3	3.05	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker	17	4	21	0.42	5.63	0.17	2.5	1	5.9	0	0
Radium-228	15262-20-1	7.5	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker	12	5	17	0.486	2.78	0.23	0.56	0	0	0	0
Thallium 208 Gamma	01-00004	29,800	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker	3	0	3	0.14	0.32	NA	NA	0	0	0	0
Uranium 235 Gamma	15117-96-1	0.315	Preliminary Remediation Goals for Radionuclides PRG Calculator assuming Composite Worker	1	0	1	0.17	0.17	NA	NA	0	0	0	0

mg/kg – milligrams per kilogram; NA – not applicable; pCi/g – picocuries per gram; PRG – Preliminary remediation goal; TACO – Tiered Approach to Corrective Action Objectives; USEPA – United States Environmental Protection Agency.

Notes

[1] The most conservative (i.e., lowest) criteria between the USEPA Regional Screening Levels and TACO Remediation Objectives are used for the Human Health Chemical of Potential Concern (HHCOPC) screening process.

TABLE A-3. Comparison of Modified Groundwater Screening Levels to Detected Analytes and Statistical Summary for Data Collected from 2007 - 2010 in the UWBZ and Aquitard

Parameter Name	Screening Value[1]	Number of Samples			Detections		Non-Detections		Comparison to Regulatory Screening Levels			
		Detects	Non-Detects	Total	Minimum Concentration	Maximum Concentration	Minimum Concentration	Maximum Concentration	Detections - Number of Exceedances	Detections - Frequency of Exceedance (%)	Non-Detections - Number of Exceedances	Non-Detections - Frequency of Exceedance (%)
General Chemistry (mg/L)												
Ammonia	350	88	38	126	0.087	506	0.1	18	2	2.3	0	0.0
Fluoride	40	130	24	154	0.05	74	0.02	20	2	1.5	0	0.0
Nitrate/Nitrite	1,000	135	17	152	0.018	240	0.0091	1.1	0	0.0	0	0.0
Nitrite-N	10	54	112	166	0.0036	37	0.0082	0.15	0	0.0	0	0.0
Sulfate	4,000	193	2	195	12	28,000	5	5	39	20.2	0	0.0
Total Phosphorus	100	72	54	126	0.037	158	0.0095	1.63	3	4.2	0	0.0
Metals (mg/L)												
Aluminum	50	99	93	192	0.028	101	0.0147	0.411	4	4.0	0	0.0
Arsenic	2	63	86	149	0.0034	0.20	0.0032	0.032	0	0.0	0	0.0
Barium	20	111	1	112	0.004	2.1	0.2	0.2	0	0.0	0	0.0
Beryllium	5	25	105	130	0.00056	0.0475	0.00018	0.009	0	0.0	0	0.0
Cadmium	0.5	145	36	181	0.00082	63	0.0003	0.0257	80	55.2	0	0.0
Chromium	10	34	75	109	0.0012	0.037	0.0005	0.01	0	0.0	0	0.0
Cobalt	10	92	50	142	0.0026	10	0.0007	1.25	1	1.1	0	0.0
Copper	6.5	94	45	139	0.0014	244	0.00062	0.025	44	46.8	0	0.0
Iron	50	108	44	152	0.0667	251	0.0098	0.231	12	11.1	0	0.0
Lead	1	99	54	153	0.00059	3.1	0.001	0.015	19	19.2	0	0.0
Manganese	100	204	4	208	0.007	583	0.00018	0.015	28	13.7	0	0.0
Mercury	0.1	1	107	108	0.00013	0.00013	0.0001	0.0002	0	0.0	0	0.0
Nickel	20	128	41	169	0.0015	4.8	0.00076	0.04	0	0.0	0	0.0
Selenium	0.5	42	94	136	0.0024	0.136	0.0023	1.4	0	0.0	1	1.1
Silver	0.5	54	67	121	0.00072	0.0578	0.0005	0.05	0	0.0	0	0.0
Thallium	0.2	56	124	180	0.000099	0.0246	0.000007	0.0026	0	0.0	0	0.0
Vanadium	1	20	92	112	0.0007	0.0449	0.0004	0.046	0	0.0	0	0.0
Zinc	100	169	16	185	0.0359	14,100	0.002	0.0812	77	45.6	0	0.0
Radionuclides (pCi/L)												
Radium-228	50	168	32	200	-0.513	2.76	-0.87	1.42	0	0.0	0	0.0

mg/L – milligrams per liter; pCi/L – picocuries per liter; UWBZ - upper water bearing zone.

Notes:

[1] Represents the IEPA TACO Class II Groundwater Ingestion Exposure Values multiplied by a factor of 10 to account for incidental ingestion.

Attachment B

Receptor RSV Calculations

TABLE B-1. Calculation of Risk-based Screening Values for Future Industrial Worker

Parameter	Value	Units	Description
THQ	1	unitless	Target Hazard Quotient
TR	1.00E-06	unitless	Target Risk Level
Atc	70	yr	Averaging Time Carcinogens
Atnc	25	yr	Averaging Time Non-carcinogens
ED	25	yr	Exposure Duration
BW	80	kg	Body Weight
EF	250	d/yr	Exposure Frequency
IR	100	mg/d	Ingestion Rate
SA	3,527	cm^2/d	Surface Area
AF	0.12	mg/cm^2	Adherence Factor
PEF	1.24E+09	m^3/kg	Particulate Emission Factor
ET	8	hr/d	Exposure Time

										Noncarcinogenic RSV (mg/kg)				Carcinogenic RSV (mg/kg)			
HHCOPC	CAS	CSF	IUR	RfDo	RfCi	RBAF	GIABS	ABS	VF	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total
Arsenic	7440-38-2	1.5E+00	4.3E-03	3.0E-04	1.5E-05	6.0E-01	1.0E+00	3.0E-02	-	5.8E+02	2.8E+03	8.1E+04	4.8E+02	3.6E+00	1.7E+01	3.5E+03	3.0E+00
Barium	7440-39-3	-	-	2.0E-01	5.0E-04	1.0E+00	7.0E-02	-	-	2.3E+05	-	2.7E+06	2.2E+05	-	-	-	-
Cadmium	7440-43-9	-	1.8E-03	1.0E-03	1.0E-05	1.0E+00	2.5E-02	1.0E-03	-	1.2E+03	6.9E+03	5.4E+04	9.8E+02	-	-	8.4E+03	8.4E+03
Cobalt	7440-48-4	-	9.0E-03	3.0E-04	6.0E-06	1.0E+00	1.0E+00	-	-	3.5E+02	-	3.3E+04	3.5E+02	-	-	1.7E+03	1.7E+03
Copper	7440-50-8	-	-	4.0E-02	-	1.0E+00	1.0E+00	-	-	4.7E+04	-	-	4.7E+04	-	-	-	-
Lead	7439-92-1	-	-	-	-	1.0E+00	0.0E+00	-	-	-	-	-	-	-	-	-	-
Manganese	7439-96-5	-	-	2.4E-02	5.0E-05	1.0E+00	4.0E-02	-	-	2.8E+04	-	2.7E+05	2.5E+04	-	-	-	-
Mercury	7439-97-6	-	-	3.0E-04	3.0E-04	1.0E+00	7.0E-02	-	-	3.5E+02	-	1.6E+06	3.5E+02	-	-	-	-
Zinc	7440-66-6	-	-	3.0E-01	-	1.0E+00	1.0E+00	-	-	3.5E+05	-	-	3.5E+05	-	-	-	-
Benzo(a)anthracene	56-55-3	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.5E+00	8.1E+00	1.4E+05	2.9E+00
Benzo(a)pyrene	50-32-8	7.3E+00	1.1E-03	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.5E-01	8.1E-01	1.4E+04	2.9E-01
Benzo(b)fluoranthene	205-99-2	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.5E+00	8.1E+00	1.4E+05	2.9E+00
Benzo(k)fluoranthene	207-08-9	7.3E-02	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.5E+01	8.1E+01	1.4E+05	2.9E+01
Chrysene	218-01-9	7.3E-03	1.1E-05	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.5E+02	8.1E+02	1.4E+06	2.9E+02
Dibenz(a,h)anthracene	53-70-3	7.3E+00	1.2E-03	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.5E-01	8.1E-01	1.3E+04	2.9E-01
Indeno(1,2,3-cd)pyrene	193-39-5	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.5E+00	8.1E+00	1.4E+05	2.9E+00
Naphthalene	91-20-3	-	3.4E-05	2.0E-02	3.0E-03	1.0E+00	1.0E+00	1.3E-01	5.8E+04	2.3E+04	4.2E+04	7.6E+02	7.2E+02	-	-	2.1E+01	2.1E+01

ABS - dermal absorption factor; CSF - cancer slope factor (per mg/kg/day); GIABS - gastrointestinal absorption factor; HHCOPC - human health chemical of potential concern; IUR - Inhalation unit risk factor (per $\mu g/m^3$); RBAF - relative bioavailability factor; RfCi - reference concentration (mg/m3); RfDo - reference dose (mg/kg/day); RSV - risk-based screening value; VF - volatilization factor

TABLE B-2. Calculation of Risk-based Screening Values for Current Environmental Worker

Parameter	Value	Units	Description
THQ	1	unitless	Target Hazard Quotient
TR	1.00E-06	unitless	Target Risk Level
Atc	70	yr	Averaging Time Carcinogens
Atnc	25	yr	Averaging Time Non-carcinogens
ED	25	yr	Exposure Duration
BW	80	kg	Body Weight
EF	29	d/yr	Exposure Frequency
IR	100	mg/d	Ingestion Rate
SA	3,527	cm^2/d	Surface Area
AF	0.12	mg/cm^2	Adherence Factor
PEF	1.24E+09	m^3/kg	Particulate Emission Factor
ET	8	hr/d	Exposure Time

										Noncarcinogenic RSV (mg/kg)				Carcinogenic RSV (mg/kg)			
HHCOPC	CAS	CSF	IUR	RfDo	RfCi	RBAF	GIABS	ABS	VF	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total
Arsenic	7440-38-2	1.5E+00	4.3E-03	3.0E-04	1.5E-05	6.0E-01	1.0E+00	3.0E-02	-	5.0E+03	2.4E+04	7.0E+05	4.1E+03	3.1E+01	1.5E+02	3.0E+04	2.6E+01
Barium	7440-39-3	-	-	2.0E-01	5.0E-04	1.0E+00	7.0E-02	-	-	2.0E+06	-	2.3E+07	1.9E+06	-	-	-	-
Cadmium	7440-43-9	-	1.8E-03	1.0E-03	1.0E-05	1.0E+00	2.5E-02	1.0E-03	-	1.0E+04	5.9E+04	4.7E+05	8.5E+03	-	-	7.3E+04	7.3E+04
Cobalt	7440-48-4	-	9.0E-03	3.0E-04	6.0E-06	1.0E+00	1.0E+00	-	-	3.0E+03	-	2.8E+05	3.0E+03	-	-	1.5E+04	1.5E+04
Copper	7440-50-8	-	-	4.0E-02	-	1.0E+00	1.0E+00	-	-	4.0E+05	-	-	4.0E+05	-	-	-	-
Lead	7439-92-1	-	-	-	-	1.0E+00	0.0E+00	-	-	-	-	-	-	-	-	-	-
Manganese	7439-96-5	-	-	2.4E-02	5.0E-05	1.0E+00	4.0E-02	-	-	2.4E+05	-	2.3E+06	2.2E+05	-	-	-	-
Mercury	7439-97-6	-	-	3.0E-04	3.0E-04	1.0E+00	7.0E-02	-	-	3.0E+03	-	1.4E+07	3.0E+03	-	-	-	-
Zinc	7440-66-6	-	-	3.0E-01	-	1.0E+00	1.0E+00	-	-	3.0E+06	-	-	3.0E+06	-	-	-	-
Benzo(a)anthracene	56-55-3	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	3.9E+01	7.0E+01	1.2E+06	2.5E+01
Benzo(a)pyrene	50-32-8	7.3E+00	1.1E-03	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	3.9E+00	7.0E+00	1.2E+05	2.5E+00
Benzo(b)fluoranthene	205-99-2	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	3.9E+01	7.0E+01	1.2E+06	2.5E+01
Benzo(k)fluoranthene	207-08-9	7.3E-02	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	3.9E+02	7.0E+02	1.2E+06	2.5E+02
Chrysene	218-01-9	7.3E-03	1.1E-05	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	3.9E+03	7.0E+03	1.2E+07	2.5E+03
Dibenz(a,h)anthracene	53-70-3	7.3E+00	1.2E-03	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	3.9E+00	7.0E+00	1.1E+05	2.5E+00
Indeno(1,2,3-cd)pyrene	193-39-5	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	3.9E+01	7.0E+01	1.2E+06	2.5E+01
Naphthalene	91-20-3	-	3.4E-05	2.0E-02	3.0E-03	1.0E+00	1.0E+00	1.3E-01	5.8E+04	2.0E+05	3.7E+05	6.5E+03	6.2E+03	-	-	1.8E+02	1.8E+02

ABS - dermal absorption factor; CSF - cancer slope factor (per mg/kg/day); GIABS - gastrointestinal absorption factor; HHCOPC - human health chemical of potential concern; IUR - Inhalation unit risk factor (per $\mu g/m^3$); RBAF - relative bioavailability factor; RfCi - reference concentration (mg/m3); RfDo - reference dose (mg/kg/day); RSV - risk-based screening value; VF - volatilization factor

TABLE B-3. Calculation of Risk-based Screening Values for Future Construction Worker

Parameter	Value	Units	Description
THQ	1	unitless	Target Hazard Quotient
TR	1.00E-06	unitless	Target Risk Level
Atc	70	yr	Averaging Time Carcinogens
Atnc	0.115	yr	Averaging Time Non-carcinogens
ED	1	yr	Exposure Duration
BW	80	kg	Body Weight
EF	30	d/yr	Exposure Frequency
IR	330	mg/d	Ingestion Rate
SA	3,527	cm^2/d	Surface Area
AF	0.3	mg/cm^2	Adherence Factor
PEF	1.24E+08	m^3/kg	Particulate Emission Factor
ET	8	hr/d	Exposure Time

										Noncarcinogenic RSV (mg/kg)				Carcinogenic RSV (mg/kg)			
HHCOPC	CAS	CSF	IUR	RfDo	RfCi	RBAF	GIABS	ABS	VF	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total
Arsenic	7440-38-2	1.5E+00	4.3E-03	3.0E-04	1.5E-05	6.0E-01	1.0E+00	3.0E-02	-	1.7E+02	1.1E+03	7.8E+03	1.4E+02	2.3E+02	1.4E+03	7.4E+04	2.0E+02
Barium	7440-39-3	-	-	2.0E-01	5.0E-03	1.0E+00	7.0E-02	-	-	6.8E+04	-	2.6E+06	6.6E+04	-	-	-	-
Cadmium	7440-43-9	-	1.8E-03	5.0E-04	1.0E-05	1.0E+00	2.5E-02	1.0E-03	-	1.7E+02	1.3E+03	5.2E+03	1.5E+02	-	-	1.8E+05	1.8E+05
Cobalt	7440-48-4	-	9.0E-03	3.0E-03	2.0E-05	1.0E+00	1.0E+00	-	-	1.0E+03	-	1.0E+04	9.3E+02	-	-	3.5E+04	3.5E+04
Copper	7440-50-8	-	-	1.0E-02	-	1.0E+00	1.0E+00	-	-	3.4E+03	-	-	3.4E+03	-	-	-	-
Lead	7439-92-1	-	-	-	-	1.0E+00	0.0E+00	-	-	-	-	-	-	-	-	-	-
Manganese	7439-96-5	-	-	2.4E-02	5.0E-05	1.0E+00	4.0E-02	-	-	8.1E+03	-	2.6E+04	6.2E+03	-	-	-	-
Mercury	7439-97-6	-	-	2.0E-03	3.0E-04	1.0E+00	7.0E-02	-	-	6.8E+02	-	1.6E+05	6.8E+02	-	-	-	-
Zinc	7440-66-6	-	-	3.0E-01	-	1.0E+00	1.0E+00	-	-	1.0E+05	-	-	1.0E+05	-	-	-	-
Benzo(a)anthracene	56-55-3	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	2.8E+02	6.8E+02	2.9E+06	2.0E+02
Benzo(a)pyrene	50-32-8	7.3E+00	1.1E-03	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	2.8E+01	6.8E+01	2.9E+05	2.0E+01
Benzo(b)fluoranthene	205-99-2	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	2.8E+02	6.8E+02	2.9E+06	2.0E+02
Benzo(k)fluoranthene	207-08-9	7.3E-02	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	2.8E+03	6.8E+03	2.9E+06	2.0E+03
Chrysene	218-01-9	7.3E-03	1.1E-05	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	2.8E+04	6.8E+04	2.9E+07	2.0E+04
Dibenz(a,h)anthracene	53-70-3	7.3E+00	1.2E-03	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	2.8E+01	6.8E+01	2.6E+05	2.0E+01
Indeno(1,2,3-cd)pyrene	193-39-5	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	2.8E+02	6.8E+02	2.9E+06	2.0E+02
Naphthalene	91-20-3	-	3.4E-05	6.0E-01	3.0E-03	1.0E+00	1.0E+00	1.3E-01	5.8E+03	2.0E+05	4.9E+05	7.3E+01	7.3E+01	-	-	4.3E+02	4.3E+02

ABS - dermal absorption factor; CSF - cancer slope factor (per mg/kg/day); GIABS - gastrointestinal absorption factor; HHCOPC - human health chemical of potential concern; IUR - Inhalation unit risk factor (per $\mu g/m^3$); RBAF - relative bioavailability factor; RfCi - reference concentration (mg/m3); RfDo - reference dose (mg/kg/day); RSV - risk-based screening value; VF - volatilization factor

TABLE B-4. Calculation of Risk-based Screening Values for Future Utility Worker

Parameter	Value	Units	Description
THQ	1	unitless	Target Hazard Quotient
TR	1.00E-06	unitless	Target Risk Level
Atc	70	yr	Averaging Time Carcinogens
Atnc	1	yr	Averaging Time Non-carcinogens
ED	1	yr	Exposure Duration
BW	80	kg	Body Weight
EF	20	d/yr	Exposure Frequency
IR	330	mg/d	Ingestion Rate
SA	3,470	cm^2/d	Surface Area
AF	0.3	mg/cm^2	Adherence Factor
PEF	1.24E+08	m^3/kg	Particulate Emission Factor
ET	8	hr/d	Exposure Time

										Noncarcinogenic RSV (mg/kg)				Carcinogenic RSV (mg/kg)			
HHCOPC	CAS	CSF	IUR	RfDo	RfCi	RBAF	GIABS	ABS	VF	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total
Arsenic	7440-38-2	1.5E+00	4.3E-03	3.0E-04	1.5E-05	6.0E-01	1.0E+00	3.0E-02	-	2.2E+03	1.4E+04	1.0E+05	1.9E+03	3.4E+02	2.2E+03	1.1E+05	3.0E+02
Barium	7440-39-3	-	-	2.0E-01	5.0E-03	1.0E+00	7.0E-02	-	-	8.8E+05	-	3.4E+07	8.6E+05	-	-	-	-
Cadmium	7440-43-9	-	1.8E-03	5.0E-04	1.0E-05	1.0E+00	2.5E-02	1.0E-03	-	2.2E+03	1.8E+04	6.8E+04	1.9E+03	-	-	2.6E+05	2.6E+05
Cobalt	7440-48-4	-	9.0E-03	3.0E-03	2.0E-05	1.0E+00	1.0E+00	-	-	1.3E+04	-	1.4E+05	1.2E+04	-	-	5.3E+04	5.3E+04
Copper	7440-50-8	-	-	1.0E-02	-	1.0E+00	1.0E+00	-	-	4.4E+04	-	-	4.4E+04	-	-	-	-
Lead	7439-92-1	-	-	-	-	1.0E+00	0.0E+00	-	-	-	-	-	-	-	-	-	-
Manganese	7439-96-5	-	-	2.4E-02	5.0E-05	1.0E+00	4.0E-02	-	-	1.1E+05	-	3.4E+05	8.1E+04	-	-	-	-
Mercury	7439-97-6	-	-	2.0E-03	3.0E-04	1.0E+00	7.0E-02	-	-	8.8E+03	-	2.0E+06	8.8E+03	-	-	-	-
Zinc	7440-66-6	-	-	3.0E-01	-	1.0E+00	1.0E+00	-	-	1.3E+06	-	-	1.3E+06	-	-	-	-
Benzo(a)anthracene	56-55-3	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.2E+02	1.0E+03	4.3E+06	3.0E+02
Benzo(a)pyrene	50-32-8	7.3E+00	1.1E-03	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.2E+01	1.0E+02	4.3E+05	3.0E+01
Benzo(b)fluoranthene	205-99-2	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.2E+02	1.0E+03	4.3E+06	3.0E+02
Benzo(k)fluoranthene	207-08-9	7.3E-02	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.2E+03	1.0E+04	4.3E+06	3.0E+03
Chrysene	218-01-9	7.3E-03	1.1E-05	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.2E+04	1.0E+05	4.3E+07	3.0E+04
Dibenz(a,h)anthracene	53-70-3	7.3E+00	1.2E-03	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.2E+01	1.0E+02	4.0E+05	3.0E+01
Indeno(1,2,3-cd)pyrene	193-39-5	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	4.2E+02	1.0E+03	4.3E+06	3.0E+02
Naphthalene	91-20-3	-	3.4E-05	6.0E-01	3.0E-03	1.0E+00	1.0E+00	1.3E-01	5.8E+03	2.7E+06	6.5E+06	9.5E+02	9.5E+02	-	-	6.5E+02	6.5E+02

ABS - dermal absorption factor; CSF - cancer slope factor (per mg/kg/day); GIABS - gastrointestinal absorption factor; HHCOPC - human health chemical of potential concern; IUR - Inhalation unit risk factor (per $\mu g/m^3$); RBAF - relative bioavailability factor; RfCi - reference concentration (mg/m3); RfDo - reference dose (mg/kg/day); RSV - risk-based screening value; VF - volatilization factor

TABLE B-5. Calculation of Risk-based Screening Values for Adolescent Trespasser in Bluff Area and UPSEA

Parameter	Value	Units	Description
THQ	1	unitless	Target Hazard Quotient
TR	1.00E-06	unitless	Target Risk Level
Atc	70	yr	Averaging Time Carcinogens
Atnc	10	yr	Averaging Time Non-carcinogens
ED	10	yr	Exposure Duration
BW	45	kg	Body Weight (age 7-16)
EF	56	d/yr	Exposure Frequency
IR	50	mg/d	Ingestion Rate
SA	5,300	cm^2/d	Surface Area
AF	0.07	mg/cm^2	Adherence Factor
PEF	1.32E+09	m^3/kg	Particulate Emission Factor
ET	2	hr/d	Exposure Time

HHCOPC	CAS	CSF	IUR	RfDo	RfCi	RBAF	GIABS	ABS	VF	Noncarcinogenic RSV (mg/kg)				Carcinogenic RSV (mg/kg)			
										Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total
Arsenic	7440-38-2	1.5E+00	4.3E-03	3.0E-04	1.5E-05	6.0E-01	1.0E+00	3.0E-02	-	2.9E+03	7.9E+03	1.5E+06	2.1E+03	4.6E+01	1.2E+02	1.7E+05	3.3E+01
Barium	7440-39-3	-	-	2.0E-01	5.0E-04	1.0E+00	7.0E-02	-	-	1.2E+06	-	5.2E+07	1.1E+06	-	-	-	-
Cadmium	7440-43-9	-	1.8E-03	1.0E-03	1.0E-05	1.0E+00	2.5E-02	1.0E-03	-	5.9E+03	2.0E+04	1.0E+06	4.5E+03	-	-	4.0E+05	4.0E+05
Cobalt	7440-48-4	-	9.0E-03	3.0E-04	6.0E-06	1.0E+00	1.0E+00	-	-	1.8E+03	-	6.2E+05	1.8E+03	-	-	8.0E+04	8.0E+04
Copper	7440-50-8	-	-	4.0E-02	-	1.0E+00	1.0E+00	-	-	2.3E+05	-	-	2.3E+05	-	-	-	-
Lead	7439-92-1	-	-	-	-	1.0E+00	0.0E+00	-	-	-	-	-	-	-	-	-	-
Manganese	7439-96-5	-	-	2.4E-02	5.0E-05	1.0E+00	4.0E-02	-	-	1.4E+05	-	5.2E+06	1.4E+05	-	-	-	-
Mercury	7439-97-6	-	-	3.0E-04	3.0E-04	1.0E+00	7.0E-02	-	-	1.8E+03	-	3.1E+07	1.8E+03	-	-	-	-
Zinc	7440-66-6	-	-	3.0E-01	-	1.0E+00	1.0E+00	-	-	1.8E+06	-	-	1.8E+06	-	-	-	-
Benzo(a)anthracene [a]	56-55-3	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	1.9E+01	1.9E+01	2.2E+06	9.5E+00
Benzo(a)pyrene [a]	50-32-8	7.3E+00	1.1E-03	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	1.9E+00	1.9E+00	2.2E+05	9.5E-01
Benzo(b)fluoranthene [a]	205-99-2	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	1.9E+01	1.9E+01	2.2E+06	9.5E+00
Benzo(k)fluoranthene a	207-08-9	7.3E-02	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	1.9E+02	1.9E+02	2.2E+06	9.5E+01
Chrysene [a]	218-01-9	7.3E-03	1.1E-05	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	1.9E+03	1.9E+03	2.2E+07	9.5E+02
Dibenz(a,h)anthracene [a]	53-70-3	7.3E+00	1.2E-03	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	1.9E+00	1.9E+00	2.0E+05	9.5E-01
Indeno(1,2,3-cd)pyrene [a]	193-39-5	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	1.9E+01	1.9E+01	2.2E+06	9.5E+00
Naphthalene [a]	91-20-3	-	3.4E-05	2.0E-02	3.0E-03	1.0E+00	1.0E+00	1.3E-01	3.6E+04	3.9E+04	4.1E+04	2.9E+03	2.5E+03	-	-	2.0E+02	2.0E+02

ABS - dermal absorption factor; CSF - cancer slope factor (per mg/kg/day); GIABS - gastrointestinal absorption factor; HHCOPC - human health chemical of potential concern; IUR - Inhalation unit risk factor (per $\mu g/m^3$); RBAF - relative bioavailability factor; RfCi - reference concentration (mg/m3); RfDo - reference dose (mg/kg/day); RSV - risk-based screening value; VF - volatilization factor

[a] Carcinogenic RSVs for the polycyclic aromatic hydrocarbons have been adjusted (divided) by a factor of three to account for mutagenicity.

TABLE B-6. Calculation of Risk-based Screening Values for Adolescent Trespasser in the Former Plant Site Area

Parameter	Value	Units	Description
THQ	1	unitless	Target Hazard Quotient
TR	1.00E-06	unitless	Target Risk Level
Atc	70	yr	Averaging Time Carcinogens
Atnc	10	yr	Averaging Time Non-carcinogens
ED	10	yr	Exposure Duration
BW	45	kg	Body Weight (age 7-16)
EF	12	d/yr	Exposure Frequency
IR	50	mg/d	Ingestion Rate
SA	5,300	cm^2/d	Surface Area
AF	0.07	mg/cm^2	Adherence Factor
PEF	1.32E+09	m^3/kg	Particulate Emission Factor
ET	2	hr/d	Exposure Time

										Noncarcinogenic RSV (mg/kg)				Carcinogenic RSV (mg/kg)			
HHCOPC	CAS	CSF	IUR	RfDo	RfCi	RBAF	GIABS	ABS	VF	Ingestion	Dermal	Inhalation	Total	Ingestion	Dermal	Inhalation	Total
Arsenic	7440-38-2	1.5E+00	4.3E-03	3.0E-04	1.5E-05	6.0E-01	1.0E+00	3.0E-02	-	1.4E+04	3.7E+04	7.2E+06	1.0E+04	2.1E+02	5.7E+02	7.8E+05	1.6E+02
Barium	7440-39-3	-	-	2.0E-01	5.0E-04	1.0E+00	7.0E-02	-	-	5.5E+06	-	2.4E+08	5.4E+06	-	-	-	-
Cadmium	7440-43-9	-	1.8E-03	1.0E-03	1.0E-05	1.0E+00	2.5E-02	1.0E-03	-	2.7E+04	9.2E+04	4.8E+06	2.1E+04	-	-	1.9E+06	1.9E+06
Cobalt	7440-48-4	-	9.0E-03	3.0E-04	6.0E-06	1.0E+00	1.0E+00	-	-	8.2E+03	-	2.9E+06	8.2E+03	-	-	3.7E+05	3.7E+05
Copper	7440-50-8	-	-	4.0E-02	-	1.0E+00	1.0E+00	-	-	1.1E+06	-	-	1.1E+06	-	-	-	-
Lead	7439-92-1	-	-	-	-	1.0E+00	0.0E+00	-	-	-	-	-	-	-	-	-	-
Manganese	7439-96-5	-	-	2.4E-02	5.0E-05	1.0E+00	4.0E-02	-	-	6.6E+05	-	2.4E+07	6.4E+05	-	-	-	-
Mercury	7439-97-6	-	-	3.0E-04	3.0E-04	1.0E+00	7.0E-02	-	-	8.2E+03	-	1.4E+08	8.2E+03	-	-	-	-
Zinc	7440-66-6	-	-	3.0E-01	-	1.0E+00	1.0E+00	-	-	8.2E+06	-	-	8.2E+06	-	-	-	-
Benzo(a)anthracene [a]	56-55-3	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	8.8E+01	9.1E+01	1.0E+07	4.5E+01
Benzo(a)pyrene [a]	50-32-8	7.3E+00	1.1E-03	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	8.8E+00	9.1E+00	1.0E+06	4.5E+00
Benzo(b)fluoranthene [a]	205-99-2	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	8.8E+01	9.1E+01	1.0E+07	4.5E+01
Benzo(k)fluoranthene a	207-08-9	7.3E-02	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	8.8E+02	9.1E+02	1.0E+07	4.5E+02
Chrysene [a]	218-01-9	7.3E-03	1.1E-05	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	8.8E+03	9.1E+03	1.0E+08	4.5E+03
Dibenz(a,h)anthracene [a]	53-70-3	7.3E+00	1.2E-03	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	8.8E+00	9.1E+00	9.4E+05	4.5E+00
Indeno(1,2,3-cd)pyrene [a]	193-39-5	7.3E-01	1.1E-04	-	-	1.0E+00	1.0E+00	1.3E-01	-	-	-	-	-	8.8E+01	9.1E+01	1.0E+07	4.5E+01
Naphthalene [a]	91-20-3	-	3.4E-05	2.0E-02	3.0E-03	1.0E+00	1.0E+00	1.3E-01	3.6E+04	1.8E+05	1.9E+05	1.3E+04	1.2E+04	-	-	9.1E+02	9.1E+02

ABS - dermal absorption factor; CSF - cancer slope factor (per mg/kg/day); GIABS - gastrointestinal absorption factor; HHCOPC - human health chemical of potential concern; IUR - Inhalation unit risk factor (per $\mu g/m^3$); RBAF - relative bioavailability factor; RfCi - reference concentration (mg/m3); RfDo - reference dose (mg/kg/day); RSV - risk-based screening value; VF - volatilization factor

[a] Carcinogenic RSVs for the polycyclic aromatic hydrocarbons where adjusted (divided) by a factor of three to account for mutagenicity.

Attachment C1

Risk and Hazard Calculation Tables

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		A-02			A-03			A-04			A-05			B-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	4.3	9.0E-03	1.4E-06	6.3	1.3E-02	*2.1E-06*	7	1.5E-02	*2.3E-06*	9.1	1.9E-02	*3.0E-06*	4.6	9.6E-03	*1.5E-06*
Barium	2.2E+05	-	54 J	2.5E-04	-	189	8.8E-04	-	379	1.8E-03	-	720	3.3E-03	-	36	1.7E-04	-
Cadmium	9.8E+02	8.4E+03	4.2 J	4.3E-03	5.0E-10	11.7 J	1.2E-02	1.4E-09	16.9 J	1.7E-02	2.0E-09	18.9	1.9E-02	2.2E-09	1.47 J	1.5E-03	1.7E-10
Cobalt	3.5E+02	1.7E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.7E+04	-	12	2.6E-04	-	21.9 J	4.7E-04	-	34.5	7.4E-04	-	36.3 J	7.8E-04	-	9.1	1.9E-04	-
Lead	2.0E+03	-	20 J	1.0E-02	-	49.6	2.5E-02	-	81.7	4.2E-02	-	325	1.7E-01	-	10.1 J	5.1E-03	-
Manganese	2.5E+04	-	350 J	1.4E-02	-	413	1.6E-02	-	512	2.0E-02	-	736	2.9E-02	-	278	1.1E-02	-
Mercury	3.5E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	3.5E+05	-	290	8.3E-04	-	828	2.4E-03	-	1,320	3.8E-03	-	1,840	5.3E-03	-	115	3.3E-04	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.5E-03	-	-	1.3E-02	-	-	1.9E-02	-	-	2.3E-02	-	-	1.7E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.4E-06	-	-	*2.1E-06*	-	-	*2.3E-06*	-	-	*3.0E-06*	-	-	*1.5E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
* = Duplicate analysis not within control limits.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		B-02			B-03			B-04			B-05			B-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	3.4 J	7.1E-03	1.1E-06	13.3	2.8E-02	*4.4E-06*	8.4	1.8E-02	*2.8E-06*	367	7.7E-01	*1.2E-04*	15 J	3.1E-02	*5.0E-06*
Barium	2.2E+05	-	42 J	2.0E-04	-	190	8.8E-04	-	117	5.4E-04	-	2,110	9.8E-03	-	1,410 J	6.6E-03	-
Cadmium	9.8E+02	8.4E+03	1.5 B	1.5E-03	1.8E-10	29.3	3.0E-02	3.5E-09	28.7	2.9E-02	3.4E-09	834	8.5E-01	9.9E-08	49.8	5.1E-02	5.9E-09
Cobalt	3.5E+02	1.7E+03	NA	-	-	NA	-	-	NA	-	-	208	6.0E-01	1.2E-07	NA	-	-
Copper	4.7E+04	-	8.9 J	1.9E-04	-	440	9.4E-03	-	173	3.7E-03	-	24,400	5.2E-01	-	274 J	5.9E-03	-
Lead	2.0E+03	-	17 J	8.7E-03	-	767	3.9E-01	-	262	1.3E-01	-	44,500	**2.3E+01**	-	403 J	2.1E-01	-
Manganese	2.5E+04	-	290 J	1.1E-02	-	601	2.4E-02	-	501	2.0E-02	-	6,660	2.6E-01	-	845 J	3.3E-02	-
Mercury	3.5E+02	-	NA	-	-	NA	-	-	NA	-	-	9.6	2.7E-02	-	NA	-	-
Zinc	3.5E+05	-	110	3.1E-04	-	2,450	7.0E-03	-	1,560	4.5E-03	-	106,000	3.0E-01	-	3,980 J	1.1E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.7E-03	-	-	3.1E-02	-	-	3.0E-02	-	-	8.6E-01	-	-	5.7E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.1E-06	-	-	*4.4E-06*	-	-	*2.8E-06*	-	-	*1.2E-04*	-	-	*5.0E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		C-01			C-02			C-03			C-04			C-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	4.8	1.0E-02	*1.6E-06*	3.2	6.7E-03	1.1E-06	13.7	2.9E-02	*4.6E-06*	230	4.8E-01	*7.7E-05*	96	2.0E-01	*3.2E-05*
Barium	2.2E+05	-	65 J	3.0E-04	-	57	2.6E-04	-	7,150	3.3E-02	-	2,500	1.2E-02	-	8,730	4.1E-02	-
Cadmium	9.8E+02	8.4E+03	3.9 J	4.0E-03	4.6E-10	1.5 J	1.5E-03	1.8E-10	38.9	4.0E-02	4.6E-09	1,180	1.2E+00	1.4E-07	49.3	5.0E-02	5.8E-09
Cobalt	3.5E+02	1.7E+03	NA	-	-	NA	-	-	NA	-	-	1,420	**4.1E+00**	8.4E-07	NA	-	-
Copper	4.7E+04	-	17	3.6E-04	-	16.9	3.6E-04	-	286	6.1E-03	-	14,600	3.1E-01	-	802	1.7E-02	-
Lead	2.0E+03	-	21 J	1.1E-02	-	19.9	1.0E-02	-	593	3.0E-01	-	29,700	**1.5E+01**	-	8,730	**4.4E+00**	-
Manganese	2.5E+04	-	390 J	1.5E-02	-	245	9.6E-03	-	743	2.9E-02	-	67,700	**2.7E+00**	-	4,230	1.7E-01	-
Mercury	3.5E+02	-	NA	-	-	NA	-	-	NA	-	-	5.1	1.5E-02	-	NA	-	-
Zinc	3.5E+05	-	280	8.0E-04	-	196 J	5.6E-04	-	4,650 J	1.3E-02	-	110,000	3.1E-01	-	8,760	2.5E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.3E-03	-	-	1.8E-03	-	-	7.3E-02	-	-	1.2E+00	-	-	9.1E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.6E-06*	-	-	1.1E-06	-	-	*4.6E-06*	-	-	*7.7E-05*	-	-	*3.2E-05*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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RSV = Risk-based Screening Value
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mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		D-02			D-03			D-04			D-05			D-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	14.1	2.9E-02	*4.7E-06*	6.7	1.4E-02	*2.2E-06*	3.5	7.3E-03	1.2E-06	47.8	1.0E-01	*1.6E-05*	96.5	2.0E-01	*3.2E-05*
Barium	2.2E+05	-	326	1.5E-03	-	228	1.1E-03	-	66	3.1E-04	-	3,500	1.6E-02	-	1,100	5.1E-03	-
Cadmium	9.8E+02	8.4E+03	32.5	3.3E-02	3.8E-09	16.6 J	1.7E-02	2.0E-09	1.27 J	1.3E-03	1.5E-10	70.6	7.2E-02	8.4E-09	111	1.1E-01	1.3E-08
Cobalt	3.5E+02	1.7E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	20.6	5.9E-02	1.2E-08
Copper	4.7E+04	-	115	2.5E-03	-	89.4	1.9E-03	-	8.9	1.9E-04	-	312	6.7E-03	-	435	9.3E-03	-
Lead	2.0E+03	-	254 J	1.3E-01	-	325	1.7E-01	-	8.6	4.4E-03	-	1,680	8.6E-01	-	3,360	**1.7E+00**	-
Manganese	2.5E+04	-	347	1.4E-02	-	645	2.5E-02	-	305	1.2E-02	-	1,140	4.5E-02	-	1,890	7.4E-02	-
Mercury	3.5E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.0284 U	8.1E-05	-
Zinc	3.5E+05	-	9,050 J	2.6E-02	-	2,350	6.7E-03	-	104	3.0E-04	-	11,300 J	3.2E-02	-	33,300	9.5E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.42	-	1.5E-07
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.3 J	-	1.0E-06
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.76	-	2.6E-07
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.25 J	-	8.7E-09
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.54	-	1.9E-09
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.047 J	-	1.6E-07
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.27 J	-	9.3E-08
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.11 J	1.5E-04	5.3E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	3.5E-02	-	-	1.8E-02	-	-	1.6E-03	-	-	8.8E-02	-	-	1.2E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	*1.7E-06*
Total (PAH + Arsenic) Risk	-		-	-	*4.7E-06*	-	-	*2.2E-06*	-	-	1.2E-06	-	-	*1.6E-05*	-	-	*3.4E-05*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		D-07			E-01			E-02			E-04			E-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	105	2.2E-01	*3.5E-05*	15.1	3.2E-02	*5.0E-06*	20.1	4.2E-02	*6.7E-06*	47.8	1.0E-01	*1.6E-05*	29.7	6.2E-02	*9.9E-06*
Barium	2.2E+05	-	5,200	2.4E-02	-	209	9.7E-04	-	247	1.1E-03	-	254	1.2E-03	-	306	1.4E-03	-
Cadmium	9.8E+02	8.4E+03	57.8	5.9E-02	6.8E-09	29.5	3.0E-02	3.5E-09	19.1	1.9E-02	2.3E-09	131	1.3E-01	1.6E-08	53.9	5.5E-02	6.4E-09
Cobalt	3.5E+02	1.7E+03	28	8.1E-02	1.7E-08	3.6 J	1.0E-02	2.1E-09	10.2	2.9E-02	6.0E-09	NA	-	-	NA	-	-
Copper	4.7E+04	-	449	9.6E-03	-	198	4.2E-03	-	62.6	1.3E-03	-	517	1.1E-02	-	303	6.5E-03	-
Lead	2.0E+03	-	2,190	1.1E+00	-	325	1.7E-01	-	104	5.3E-02	-	1,710	8.7E-01	-	1,090	5.6E-01	-
Manganese	2.5E+04	-	1,690	6.7E-02	-	346	1.4E-02	-	1,560	6.1E-02	-	584	2.3E-02	-	461	1.8E-02	-
Mercury	3.5E+02	-	0.21	6.0E-04	-	0.0492 U	1.4E-04	-	0.0688 J	2.0E-04	-	NA	-	-	NA	-	-
Zinc	3.5E+05	-	16,400 J	4.7E-02	-	3,650	1.0E-02	-	1,470	4.2E-03	-	25,100 J	7.2E-02	-	6,980	2.0E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	0.23 J	-	8.0E-08	NA	-	-	0.064 J	-	2.2E-08	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	0.17 J	-	5.9E-07	NA	-	-	0.047 J	-	1.6E-07	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	0.4 J	-	1.4E-07	NA	-	-	0.082 J	-	2.8E-08	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	0.13 J	-	4.5E-09	NA	-	-	0.038 J	-	1.3E-09	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	0.4 J	-	1.4E-09	NA	-	-	0.098 J	-	3.4E-10	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	0.042 U	-	1.5E-07	NA	-	-	0.037 U	-	1.3E-07	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.14 J	-	4.8E-08	NA	-	-	0.037 U	-	1.3E-08	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	0.071 J	9.8E-05	3.4E-09	NA	-	-	0.037 U	5.1E-05	1.8E-09	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	8.3E-02	-	-	3.1E-02	-	-	2.1E-02	-	-	1.3E-01	-	-	5.6E-02	-
Total PAH Risk	-		-	-	1.0E-06	-	-	-	-	-	3.6E-07	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*3.6E-05*	-	-	*5.0E-06*	-	-	*7.1E-06*	-	-	*1.6E-05*	-	-	*9.9E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		E-06			F-01			F-02			F-03			G-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	380	7.9E-01	*1.3E-04*	22.5 J	4.7E-02	*7.5E-06*	7.2	1.5E-02	*2.4E-06*	47.1	9.8E-02	*1.6E-05*	10	2.1E-02	*3.3E-06*
Barium	2.2E+05	-	3,980	1.9E-02	-	162 J	7.5E-04	-	125 J	5.8E-04	-	1,120 J	5.2E-03	-	147	6.8E-04	-
Cadmium	9.8E+02	8.4E+03	256	2.6E-01	3.0E-08	61.6 J	6.3E-02	7.3E-09	8.3	8.5E-03	9.8E-10	186	1.9E-01	2.2E-08	20.8 J	2.1E-02	2.5E-09
Cobalt	3.5E+02	1.7E+03	25.8	7.4E-02	1.5E-08	8.2 B	2.4E-02	4.9E-09	6.7	1.9E-02	4.0E-09	25	7.2E-02	1.5E-08	6.7 B	1.9E-02	4.0E-09
Copper	4.7E+04	-	4,880 J	1.0E-01	-	210 J	4.5E-03	-	31.7	6.8E-04	-	1,320	2.8E-02	-	60.7 J	1.3E-03	-
Lead	2.0E+03	-	9,140	**4.7E+00**	-	289 J	1.5E-01	-	209	1.1E-01	-	920	4.7E-01	-	108	5.5E-02	-
Manganese	2.5E+04	-	1,580	6.2E-02	-	632	2.5E-02	-	444	1.7E-02	-	783	3.1E-02	-	477	1.9E-02	-
Mercury	3.5E+02	-	0.86	2.5E-03	-	0.024 U	6.9E-05	-	0.34	9.7E-04	-	1.47	4.2E-03	-	0.041 B	1.2E-04	-
Zinc	3.5E+05	-	75,900	2.2E-01	-	5,870 J	1.7E-02	-	766	2.2E-03	-	52,300	1.5E-01	-	3,170	9.0E-03	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	5 U	-	*1.7E-06*	0.39 U	-	1.3E-07	0.039 U	-	1.3E-08	0.14 J	-	4.8E-08	0.37 U	-	1.3E-07
Benzo(a)pyrene	-	2.9E-01	5 U	-	*1.7E-05*	0.39 U	-	1.3E-06	0.039 U	-	1.3E-07	0.11 J	-	3.8E-07	0.37 U	-	1.3E-06
Benzo(b)fluoranthene	-	2.9E+00	5 U	-	*1.7E-06*	0.39 U	-	1.3E-07	0.039 U	-	1.3E-08	0.16 J	-	5.5E-08	0.37 U	-	1.3E-07
Benzo(k)fluoranthene	-	2.9E+01	5 U	-	1.7E-07	0.39 U	-	1.3E-08	0.039 U	-	1.3E-09	0.065 J	-	2.2E-09	0.37 U	-	1.3E-08
Chrysene	-	2.9E+02	5 U	-	1.7E-08	0.39 U	-	1.3E-09	0.039 U	-	1.3E-10	0.18 J	-	6.2E-10	0.37 UJ	-	1.3E-09
Dibenz(a,h)anthracene	-	2.9E-01	5 U	-	*1.7E-05*	0.39 U	-	1.3E-06	0.039 U	-	1.3E-07	0.038 U	-	1.3E-07	0.37 U	-	1.3E-06
Indeno(1,2,3-cd)pyrene	-	2.9E+00	5 U	-	*1.7E-06*	0.39 U	-	1.3E-07	0.039 U	-	1.3E-08	0.071 J	-	2.5E-08	0.37 U	-	1.3E-07
Naphthalene	7.2E+02	2.1E+01	3.7 J	5.1E-03	1.8E-07	0.39 U	5.4E-04	1.9E-08	0.039 U	5.4E-05	1.9E-09	0.038 U	5.3E-05	1.8E-09	0.37 U	5.1E-04	1.8E-08
Totals																	
Total (Barium + Cadmium) HI	-		-	2.8E-01	-	-	6.4E-02	-	-	9.0E-03	-	-	1.9E-01	-	-	2.2E-02	-
Total PAH Risk	-		-	-	*4.0E-05*	-	-	*3.1E-06*	-	-	3.1E-07	-	-	6.5E-07	-	-	*3.0E-06*
Total (PAH + Arsenic) Risk	-		-	-	*1.7E-04*	-	-	*1.1E-05*	-	-	*2.7E-06*	-	-	*1.6E-05*	-	-	*6.3E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
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HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		G-02			G-03			G-04			G-05			G-07		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	88.5	1.8E-01	*3.0E-05*	182	3.8E-01	*6.1E-05*	55.2	1.2E-01	*1.8E-05*	45.6	9.5E-02	*1.5E-05*	4.5 J	9.4E-03	*1.5E-06*
Barium	2.2E+05	-	1,330	6.2E-03	-	276	1.3E-03	-	296	1.4E-03	-	867 J	4.0E-03	-	360	1.7E-03	-
Cadmium	9.8E+02	8.4E+03	235	2.4E-01	2.8E-08	945	9.6E-01	1.1E-07	327	3.3E-01	3.9E-08	160	1.6E-01	1.9E-08	5.7	5.8E-03	6.7E-10
Cobalt	3.5E+02	1.7E+03	8.1	2.3E-02	4.8E-09	NA	-	-	6.5 B	1.9E-02	3.8E-09	NA	-	-	NA	-	-
Copper	4.7E+04	-	899	1.9E-02	-	3,180	6.8E-02	-	467	1.0E-02	-	475	1.0E-02	-	52	1.1E-03	-
Lead	2.0E+03	-	2,830	1.4E+00	-	4,600	**2.3E+00**	-	1,360	6.9E-01	-	1,390	7.1E-01	-	63	3.2E-02	-
Manganese	2.5E+04	-	1,370	5.4E-02	-	2,110	8.3E-02	-	566	2.2E-02	-	732	2.9E-02	-	320	1.3E-02	-
Mercury	3.5E+02	-	0.067 B	1.9E-04	-	NA	-	-	0.28	8.0E-04	-	NA	-	-	NA	-	-
Zinc	3.5E+05	-	37,300 J	1.1E-01	-	260,000 J	7.4E-01	-	43,300 J	1.2E-01	-	21,700	6.2E-02	-	850	2.4E-03	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	0.39 U	-	1.3E-07	NA	-	-	0.36 U	-	1.2E-07	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	0.39 U	-	1.3E-06	NA	-	-	0.36 U	-	1.2E-06	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	0.39 U	-	1.3E-07	NA	-	-	0.36 U	-	1.2E-07	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	0.39 U	-	1.3E-08	NA	-	-	0.36 U	-	1.2E-08	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	0.39 U	-	1.3E-09	NA	-	-	0.36 U	-	1.2E-09	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	0.39 U	-	1.3E-06	NA	-	-	0.36 U	-	1.2E-06	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.39 U	-	1.3E-07	NA	-	-	0.36 U	-	1.2E-07	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	0.39 U	5.4E-04	1.9E-08	NA	-	-	0.36 U	5.0E-04	1.7E-08	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.5E-01	-	-	9.6E-01	-	-	3.3E-01	-	-	1.7E-01	-	-	7.5E-03	-
Total PAH Risk	-		-	-	*3.1E-06*	-	-	-	-	-	*2.9E-06*	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*3.3E-05*	-	-	*6.1E-05*	-	-	*2.1E-05*	-	-	*1.5E-05*	-	-	*1.5E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		H-02			H-04			H-05			H-06			H-07		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	9	1.9E-02	*3.0E-06*	4.7	9.8E-03	*1.6E-06*	51	1.1E-01	*1.7E-05*	110	2.3E-01	*3.7E-05*	27.8	5.8E-02	*9.3E-06*
Barium	2.2E+05	-	88	4.1E-04	-	52	2.4E-04	-	1,800	8.4E-03	-	1,200	5.6E-03	-	8,590	4.0E-02	-
Cadmium	9.8E+02	8.4E+03	6.2	6.3E-03	7.3E-10	9	9.2E-03	1.1E-09	170	1.7E-01	2.0E-08	130	1.3E-01	1.5E-08	12.9	1.3E-02	1.5E-09
Cobalt	3.5E+02	1.7E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	6.5 B	1.9E-02	3.8E-09
Copper	4.7E+04	-	19.1 J	4.1E-04	-	50	1.1E-03	-	820	1.8E-02	-	990	2.1E-02	-	160	3.4E-03	-
Lead	2.0E+03	-	34	1.7E-02	-	87 J	4.4E-02	-	3,700 J	**1.9E+00**	-	4,000 J	**2.0E+00**	-	274	1.4E-01	-
Manganese	2.5E+04	-	579	2.3E-02	-	350 J	1.4E-02	-	730 J	2.9E-02	-	601	2.4E-02	-	2,480	9.8E-02	-
Mercury	3.5E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.023 U	6.6E-05	-
Zinc	3.5E+05	-	1,450 J	4.1E-03	-	1,200 J	3.4E-03	-	45,000 J	1.3E-01	-	89,000 J	2.5E-01	-	3,810 J	1.1E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.3E-07
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.3E-06
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.3E-07
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.3E-08
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.3E-09
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.3E-06
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.3E-07
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	5.4E-04	1.9E-08
Totals																	
Total (Barium + Cadmium) HI	-		-	6.7E-03	-	-	9.4E-03	-	-	1.8E-01	-	-	1.4E-01	-	-	5.3E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	*3.1E-06*
Total (PAH + Arsenic) Risk	-		-	-	*3.0E-06*	-	-	*1.6E-06*	-	-	*1.7E-05*	-	-	*3.7E-05*	-	-	*1.2E-05*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		H-08			HH-10			HH-12			I-02			I-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	826	**1.7E+00**	*2.8E-04*	230.1	4.8E-01	*7.7E-05*	417	8.7E-01	*1.4E-04*	60	1.3E-01	*2.0E-05*	33.1	6.9E-02	*1.1E-05*
Barium	2.2E+05	-	4,980	2.3E-02	-	77	3.6E-04	-	11,100	5.2E-02	-	3,200	1.5E-02	-	3,920	1.8E-02	-
Cadmium	9.8E+02	8.4E+03	317 J	3.2E-01	3.8E-08	1.3 B	1.3E-03	1.5E-10	94	9.6E-02	1.1E-08	101	1.0E-01	1.2E-08	104	1.1E-01	1.2E-08
Cobalt	3.5E+02	1.7E+03	90.5	2.6E-01	5.4E-08	10 B	2.9E-02	5.9E-09	90	2.6E-01	5.3E-08	9.5 B	2.7E-02	5.6E-09	7.6 B	2.2E-02	4.5E-09
Copper	4.7E+04	-	2,530 J	5.4E-02	-	3,360	7.2E-02	-	1,810	3.9E-02	-	3,280	7.0E-02	-	236	5.1E-03	-
Lead	2.0E+03	-	22,800	**1.2E+01**	-	21,700	**1.1E+01**	-	24,400	**1.2E+01**	-	7,570	**3.9E+00**	-	1,440	7.3E-01	-
Manganese	2.5E+04	-	8,770	3.5E-01	-	1,350	5.3E-02	-	6,310	2.5E-01	-	18,000	7.1E-01	-	815	3.2E-02	-
Mercury	3.5E+02	-	1.57	4.5E-03	-	0.03 U	8.6E-05	-	0.02 U	5.7E-05	-	0.05 U	1.4E-04	-	0.048 U	1.4E-04	-
Zinc	3.5E+05	-	35,100	1.0E-01	-	3,600	1.0E-02	-	28,800	8.2E-02	-	36,100	1.0E-01	-	9,030	2.6E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	0.56	-	1.9E-07	NA	-	-	NA	-	-	0.4 U	-	1.4E-07	0.39 U	-	1.3E-07
Benzo(a)pyrene	-	2.9E-01	0.42 J	-	1.5E-06	NA	-	-	NA	-	-	0.4 U	-	1.4E-06	0.39 U	-	1.3E-06
Benzo(b)fluoranthene	-	2.9E+00	0.62	-	2.1E-07	NA	-	-	NA	-	-	0.4 U	-	1.4E-07	0.39 U	-	1.3E-07
Benzo(k)fluoranthene	-	2.9E+01	0.26 J	-	9.0E-09	NA	-	-	NA	-	-	0.4 U	-	1.4E-08	0.39 U	-	1.3E-08
Chrysene	-	2.9E+02	0.58	-	2.0E-09	NA	-	-	NA	-	-	0.4 U	-	1.4E-09	0.39 U	-	1.3E-09
Dibenz(a,h)anthracene	-	2.9E-01	0.083 J	-	2.9E-07	NA	-	-	NA	-	-	0.4 U	-	1.4E-06	0.39 U	-	1.3E-06
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.26 J	-	9.0E-08	NA	-	-	NA	-	-	0.4 U	-	1.4E-07	0.39 U	-	1.3E-07
Naphthalene	7.2E+02	2.1E+01	0.053 J	7.3E-05	2.5E-09	NA	-	-	NA	-	-	0.4 U	5.5E-04	1.9E-08	0.39 U	5.4E-04	1.9E-08
Totals																	
Total (Barium + Cadmium) HI	-		-	3.5E-01	-	-	1.7E-03	-	-	1.5E-01	-	-	1.2E-01	-	-	1.2E-01	-
Total PAH Risk	-		-	-	*2.3E-06*	-	-	-	-	-	-	-	-	*3.2E-06*	-	-	*3.1E-06*
Total (PAH + Arsenic) Risk	-		-	-	*2.8E-04*	-	-	*7.7E-05*	-	-	*1.4E-04*	-	-	*2.3E-05*	-	-	*1.4E-05*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		I-04			I-05			I-06			I-07			I-09		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	47.4	9.9E-02	*1.6E-05*	141	2.9E-01	*4.7E-05*	99.9	2.1E-01	*3.3E-05*	235	4.9E-01	*7.8E-05*	28.2	5.9E-02	*9.4E-06*
Barium	2.2E+05	-	1,770 J	8.2E-03	-	969	4.5E-03	-	6,500	3.0E-02	-	1,130	5.3E-03	-	1,250	5.8E-03	-
Cadmium	9.8E+02	8.4E+03	135	1.4E-01	1.6E-08	197	2.0E-01	2.3E-08	1,010	1.0E+00	1.2E-07	139	1.4E-01	1.6E-08	44.8	4.6E-02	5.3E-09
Cobalt	3.5E+02	1.7E+03	NA	-	-	8.3 B	2.4E-02	4.9E-09	20.4	5.9E-02	1.2E-08	NA	-	-	NA	-	-
Copper	4.7E+04	-	1,060 J	2.3E-02	-	4,430	9.5E-02	-	1,620 J	3.5E-02	-	5,530 J	1.2E-01	-	764	1.6E-02	-
Lead	2.0E+03	-	1,510 J	7.7E-01	-	2,490 J	1.3E+00	-	4,840	**2.5E+00**	-	4,650	**2.4E+00**	-	922	4.7E-01	-
Manganese	2.5E+04	-	2,330	9.2E-02	-	3,860	1.5E-01	-	2,020	7.9E-02	-	2,590	1.0E-01	-	802	3.2E-02	-
Mercury	3.5E+02	-	NA	-	-	0.049 B	1.4E-04	-	0.43 J	1.2E-03	-	NA	-	-	NA	-	-
Zinc	3.5E+05	-	15,200	4.3E-02	-	38,100	1.1E-01	-	65,600	1.9E-01	-	44,700	1.3E-01	-	9,760	2.8E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	0.38 U	-	1.3E-07	0.93	-	3.2E-07	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	0.38 U	-	1.3E-06	0.58	-	*2.0E-06*	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	0.38 U	-	1.3E-07	0.92	-	3.2E-07	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	0.38 U	-	1.3E-08	0.28 J	-	9.7E-09	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	0.38 U	-	1.3E-09	1.7	-	5.9E-09	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	0.38 U	-	1.3E-06	0.16 J	-	5.5E-07	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	0.38 U	-	1.3E-07	0.35 J	-	1.2E-07	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	0.38 U	5.3E-04	1.8E-08	0.21 J	2.9E-04	1.0E-08	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.5E-01	-	-	2.1E-01	-	-	1.1E+00	-	-	1.5E-01	-	-	5.1E-02	-
Total PAH Risk	-		-	-	-	-	-	*3.1E-06*	-	-	*3.3E-06*	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.6E-05*	-	-	*5.0E-05*	-	-	*3.7E-05*	-	-	*7.8E-05*	-	-	*9.4E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		I-11			J-01			J-02			J-03			J-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	45.5 J	9.5E-02	*1.5E-05*	11.6	2.4E-02	*3.9E-06*	20	4.2E-02	*6.7E-06*	18.4	3.8E-02	*6.1E-06*	111	2.3E-01	*3.7E-05*
Barium	2.2E+05	-	11,200	5.2E-02	-	611	2.8E-03	-	204	9.5E-04	-	205	9.5E-04	-	7,020	3.3E-02	-
Cadmium	9.8E+02	8.4E+03	96.8 J	9.9E-02	1.1E-08	8.2	8.4E-03	9.7E-10	84.3	8.6E-02	1.0E-08	7.6	7.7E-03	9.0E-10	109	1.1E-01	1.3E-08
Cobalt	3.5E+02	1.7E+03	39.6	1.1E-01	2.3E-08	NA	-	-	6.1	1.8E-02	3.6E-09	9 B	2.6E-02	5.3E-09	NA	-	-
Copper	4.7E+04	-	958	2.1E-02	-	42.8	9.2E-04	-	33.6	7.2E-04	-	65.9	1.4E-03	-	1,230	2.6E-02	-
Lead	2.0E+03	-	1,290 J	6.6E-01	-	109 J	5.6E-02	-	1,060 J	5.4E-01	-	328 J	1.7E-01	-	4,790	**2.4E+00**	-
Manganese	2.5E+04	-	1,190	4.7E-02	-	630	2.5E-02	-	457	1.8E-02	-	663	2.6E-02	-	3,220	1.3E-01	-
Mercury	3.5E+02	-	0.2 J	5.7E-04	-	NA	-	-	0.029 B	8.3E-05	-	0.039 B	1.1E-04	-	NA	-	-
Zinc	3.5E+05	-	15,800	4.5E-02	-	1,460	4.2E-03	-	6,120	1.7E-02	-	1,580	4.5E-03	-	24,500	7.0E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	0.25 J	-	8.7E-08	NA	-	-	0.35 U	-	1.2E-07	0.4 U	-	1.4E-07	NA	-	-
Benzo(a)pyrene	-	2.9E-01	0.2 J	-	6.9E-07	NA	-	-	0.35 U	-	1.2E-06	0.4 U	-	1.4E-06	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	0.36 J	-	1.2E-07	NA	-	-	0.35 U	-	1.2E-07	0.4 U	-	1.4E-07	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	0.15 J	-	5.2E-09	NA	-	-	0.35 U	-	1.2E-08	0.4 U	-	1.4E-08	NA	-	-
Chrysene	-	2.9E+02	0.42	-	1.5E-09	NA	-	-	0.35 U	-	1.2E-09	0.4 U	-	1.4E-09	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	0.053 J	-	1.8E-07	NA	-	-	0.35 U	-	1.2E-06	0.4 U	-	1.4E-06	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.16 J	-	5.5E-08	NA	-	-	0.35 U	-	1.2E-07	0.4 U	-	1.4E-07	NA	-	-
Naphthalene	7.2E+02	2.1E+01	0.07 J	9.7E-05	3.4E-09	NA	-	-	0.35 U	4.8E-04	1.7E-08	0.4 U	5.5E-04	1.9E-08	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.5E-01	-	-	1.1E-02	-	-	8.7E-02	-	-	8.7E-03	-	-	1.4E-01	-
Total PAH Risk	-		-	-	1.2E-06	-	-	-	-	-	*2.8E-06*	-	-	*3.2E-06*	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.6E-05*	-	-	*3.9E-06*	-	-	*9.5E-06*	-	-	*9.4E-06*	-	-	*3.7E-05*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-07			J-08			J-09			J-10			J-11		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	36.3 J	7.6E-02	*1.2E-05*	139 J	2.9E-01	*4.6E-05*	79 J	1.6E-01	*2.6E-05*	10.3	2.1E-02	*3.4E-06*	9.3 J	1.9E-02	*3.1E-06*
Barium	2.2E+05	-	133 J	6.2E-04	-	734 J	3.4E-03	-	391 J	1.8E-03	-	296	1.4E-03	-	420	2.0E-03	-
Cadmium	9.8E+02	8.4E+03	14.7	1.5E-02	1.7E-09	40	4.1E-02	4.7E-09	6.5 J	6.6E-03	7.7E-10	15.1 J	1.5E-02	1.8E-09	19	1.9E-02	2.2E-09
Cobalt	3.5E+02	1.7E+03	15.8	4.6E-02	9.4E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.7E+04	-	699 J	1.5E-02	-	8,610 J	1.8E-01	-	2,760 J	5.9E-02	-	116	2.5E-03	-	130	2.8E-03	-
Lead	2.0E+03	-	536 J	2.7E-01	-	4,620 J	**2.4E+00**	-	2,450 J	1.2E+00	-	166	8.5E-02	-	200 J	1.0E-01	-
Manganese	2.5E+04	-	1,060 J	4.2E-02	-	13,700 J	5.4E-01	-	20,400 J	8.0E-01	-	576 J	2.3E-02	-	390	1.5E-02	-
Mercury	3.5E+02	-	0.028 U	8.0E-05	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	3.5E+05	-	6,420	1.8E-02	-	36,500	1.0E-01	-	10,900	3.1E-02	-	2,300	6.6E-03	-	2,000 J	5.7E-03	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	0.36 U	-	1.2E-07	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	0.36 U	-	1.2E-06	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	0.36 U	-	1.2E-07	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	0.36 U	-	1.2E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	0.36 U	-	1.2E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	0.36 U	-	1.2E-06	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.36 U	-	1.2E-07	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	0.36 U	5.0E-04	1.7E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.6E-02	-	-	4.4E-02	-	-	8.4E-03	-	-	1.7E-02	-	-	2.1E-02	-
Total PAH Risk	-		-	-	*2.9E-06*	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.5E-05*	-	-	*4.6E-05*	-	-	*2.6E-05*	-	-	*3.4E-06*	-	-	*3.1E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-12			J-13			K-01			K-02			K-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	17.9	3.7E-02	*6.0E-06*	230 J	4.8E-01	*7.7E-05*	15 J	3.1E-02	*5.0E-06*	29.1	6.1E-02	*9.7E-06*	17.3	3.6E-02	*5.8E-06*
Barium	2.2E+05	-	4,390	2.0E-02	-	686	3.2E-03	-	405	1.9E-03	-	15,600	7.3E-02	-	5,780	2.7E-02	-
Cadmium	9.8E+02	8.4E+03	67.6 J	6.9E-02	8.0E-09	676 J	6.9E-01	8.0E-08	18.3	1.9E-02	2.2E-09	34.7	3.5E-02	4.1E-09	15.9	1.6E-02	1.9E-09
Cobalt	3.5E+02	1.7E+03	NA	-	-	42.2	1.2E-01	2.5E-08	6.7	1.9E-02	4.0E-09	NA	-	-	NA	-	-
Copper	4.7E+04	-	319	6.8E-03	-	3,910	8.4E-02	-	69.6	1.5E-03	-	1,040	2.2E-02	-	497	1.1E-02	-
Lead	2.0E+03	-	485	2.5E-01	-	2,910 J	1.5E+00	-	115	5.9E-02	-	939	4.8E-01	-	679	3.5E-01	-
Manganese	2.5E+04	-	588 J	2.3E-02	-	2,180	8.6E-02	-	550	2.2E-02	-	6,200	2.4E-01	-	1,800	7.1E-02	-
Mercury	3.5E+02	-	NA	-	-	0.58 J	1.7E-03	-	0.11 U	3.1E-04	-	NA	-	-	NA	-	-
Zinc	3.5E+05	-	6,650	1.9E-02	-	101,000	2.9E-01	-	1,340	3.8E-03	-	9,980	2.8E-02	-	5,420	1.5E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	0.051 UJ	-	1.8E-08	0.38 U	-	1.3E-07	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	0.051 UJ	-	1.8E-07	0.38 U	-	1.3E-06	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	0.051 UJ	-	1.8E-08	0.38 U	-	1.3E-07	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	0.051 UJ	-	1.8E-09	0.38 U	-	1.3E-08	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	0.051 UJ	-	1.8E-10	0.38 U	-	1.3E-09	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	0.051 UJ	-	1.8E-07	0.38 U	-	1.3E-06	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	0.051 UJ	-	1.8E-08	0.38 U	-	1.3E-07	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	0.29 J	4.0E-04	1.4E-08	0.38 U	5.3E-04	1.8E-08	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	8.9E-02	-	-	6.9E-01	-	-	2.1E-02	-	-	1.1E-01	-	-	4.3E-02	-
Total PAH Risk	-		-	-	-	-	-	4.2E-07	-	-	*3.1E-06*	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*6.0E-06*	-	-	*7.7E-05*	-	-	*8.1E-06*	-	-	*9.7E-06*	-	-	*5.8E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		K-04			K-05			L-02			L-03			L-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	36.7	7.7E-02	*1.2E-05*	36.5 J	7.6E-02	*1.2E-05*	78 J	1.6E-01	*2.6E-05*	91 J	1.9E-01	*3.0E-05*	114	2.4E-01	*3.8E-05*
Barium	2.2E+05	-	411	1.9E-03	-	340	1.6E-03	-	350	1.6E-03	-	2,500	1.2E-02	-	9,510	4.4E-02	-
Cadmium	9.8E+02	8.4E+03	34.9	3.6E-02	4.1E-09	38 J	3.9E-02	4.5E-09	33	3.4E-02	3.9E-09	64	6.5E-02	7.6E-09	141	1.4E-01	1.7E-08
Cobalt	3.5E+02	1.7E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.7E+04	-	533	1.1E-02	-	400	8.6E-03	-	380	8.1E-03	-	490	1.0E-02	-	662	1.4E-02	-
Lead	2.0E+03	-	1,560	8.0E-01	-	526 J	2.7E-01	-	13,000	**6.6E+00**	-	4,700	**2.4E+00**	-	2,300	1.2E+00	-
Manganese	2.5E+04	-	921	3.6E-02	-	1,050	4.1E-02	-	1,100	4.3E-02	-	3,400	1.3E-01	-	2,750	1.1E-01	-
Mercury	3.5E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	3.5E+05	-	8,840	2.5E-02	-	10,300	2.9E-02	-	9,400	2.7E-02	-	20,000	5.7E-02	-	31,500	9.0E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	3.7E-02	-	-	4.0E-02	-	-	3.5E-02	-	-	7.7E-02	-	-	1.9E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.2E-05*	-	-	*1.2E-05*	-	-	*2.6E-05*	-	-	*3.0E-05*	-	-	*3.8E-05*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		L-06			M-01			M-02			M-03			M-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	21	4.4E-02	*7.0E-06*	22.8	4.8E-02	*7.6E-06*	12.8	2.7E-02	*4.3E-06*	10.5	2.2E-02	*3.5E-06*	10.8	2.3E-02	*3.6E-06*
Barium	2.2E+05	-	1,010	4.7E-03	-	595	2.8E-03	-	207	9.6E-04	-	175	8.1E-04	-	216	1.0E-03	-
Cadmium	9.8E+02	8.4E+03	36.8	3.8E-02	4.4E-09	64.8	6.6E-02	7.7E-09	15.7	1.6E-02	1.9E-09	14.7	1.5E-02	1.7E-09	27.7	2.8E-02	3.3E-09
Cobalt	3.5E+02	1.7E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.7E+04	-	292	6.3E-03	-	268	5.7E-03	-	115	2.5E-03	-	109	2.3E-03	-	130	2.8E-03	-
Lead	2.0E+03	-	453	2.3E-01	-	780	4.0E-01	-	154	7.8E-02	-	145	7.4E-02	-	161	8.2E-02	-
Manganese	2.5E+04	-	391	1.5E-02	-	709	2.8E-02	-	579	2.3E-02	-	554	2.2E-02	-	521	2.1E-02	-
Mercury	3.5E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	3.5E+05	-	4,280 J	1.2E-02	-	9,330	2.7E-02	-	2,200 J	6.3E-03	-	1,520 J	4.3E-03	-	3,850 J	1.1E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.2E-02	-	-	6.9E-02	-	-	1.7E-02	-	-	1.6E-02	-	-	2.9E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*7.0E-06*	-	-	*7.6E-06*	-	-	*4.3E-06*	-	-	*3.5E-06*	-	-	*3.6E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		N-01			N-02			N-03			P-01			P-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	207	4.3E-01	*6.9E-05*	6.3	1.3E-02	*2.1E-06*	7.4	1.5E-02	*2.5E-06*	35 J	7.3E-02	*1.2E-05*	8.8	1.8E-02	*2.9E-06*
Barium	2.2E+05	-	168	7.8E-04	-	137	6.4E-04	-	306	1.4E-03	-	4,500 J	2.1E-02	-	125	5.8E-04	-
Cadmium	9.8E+02	8.4E+03	11	1.1E-02	1.3E-09	10.1	1.0E-02	1.2E-09	6.7	6.8E-03	7.9E-10	52	5.3E-02	6.2E-09	4.6	4.7E-03	5.4E-10
Cobalt	3.5E+02	1.7E+03	NA	-	-	NA	-	-	NA	-	-	5.9 J	1.7E-02	3.5E-09	4.5 J	1.3E-02	2.7E-09
Copper	4.7E+04	-	5,060	1.1E-01	-	774	1.7E-02	-	44.6	9.5E-04	-	320 J	6.8E-03	-	20	4.3E-04	-
Lead	2.0E+03	-	9,210	**4.7E+00**	-	53.5	2.7E-02	-	61.4	3.1E-02	-	2,500 J	1.3E+00	-	26.7	1.4E-02	-
Manganese	2.5E+04	-	1,950	7.7E-02	-	770	3.0E-02	-	451	1.8E-02	-	440 J	1.7E-02	-	299	1.2E-02	-
Mercury	3.5E+02	-	NA	-	-	NA	-	-	NA	-	-	0.94 J	2.7E-03	-	0.0053 U	1.5E-05	-
Zinc	3.5E+05	-	3,390	9.7E-03	-	3,180 J	9.1E-03	-	908 J	2.6E-03	-	4,100	1.2E-02	-	488	1.4E-03	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.2E-02	-	-	1.1E-02	-	-	8.3E-03	-	-	7.4E-02	-	-	5.3E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*6.9E-05*	-	-	*2.1E-06*	-	-	*2.5E-06*	-	-	*1.2E-05*	-	-	*2.9E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		P-03			P-04			PZ-01(S)			PZ-02(S)			PZ-03(I)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	36 J	7.5E-02	*1.2E-05*	24 J	5.0E-02	*8.0E-06*	110 J	2.3E-01	*3.7E-05*	110	2.3E-01	*3.7E-05*	124	2.6E-01	*4.1E-05*
Barium	2.2E+05	-	7,500 J	3.5E-02	-	5,600 J	2.6E-02	-	840	3.9E-03	-	5,360	2.5E-02	-	2,930	1.4E-02	-
Cadmium	9.8E+02	8.4E+03	48	4.9E-02	5.7E-09	61	6.2E-02	7.2E-09	50	5.1E-02	5.9E-09	111 J	1.1E-01	1.3E-08	41.5	4.2E-02	4.9E-09
Cobalt	3.5E+02	1.7E+03	17	4.9E-02	1.0E-08	6.4 J	1.8E-02	3.8E-09	NA	-	-	55.1	1.6E-01	3.3E-08	NA	-	-
Copper	4.7E+04	-	700 J	1.5E-02	-	390 J	8.3E-03	-	940	2.0E-02	-	1,930	4.1E-02	-	4,030	8.6E-02	-
Lead	2.0E+03	-	940 J	4.8E-01	-	1,300 J	6.6E-01	-	2,800	1.4E+00	-	3,870	**2.0E+00**	-	5,560	**2.8E+00**	-
Manganese	2.5E+04	-	700 J	2.8E-02	-	600 J	2.4E-02	-	4,100	1.6E-01	-	3,570 J	1.4E-01	-	6,380	2.5E-01	-
Mercury	3.5E+02	-	0.13 J	3.7E-04	-	0.99 J	2.8E-03	-	NA	-	-	0.36	1.0E-03	-	NA	-	-
Zinc	3.5E+05	-	13,000	3.7E-02	-	11,000	3.1E-02	-	20,000	5.7E-02	-	26,500	7.6E-02	-	13,700	3.9E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	0.27 J	-	9.3E-08	1.2	-	4.2E-07	NA	-	-	0.2 J	-	6.9E-08	NA	-	-
Benzo(a)pyrene	-	2.9E-01	0.26 J	-	9.0E-07	0.85	-	*2.9E-06*	NA	-	-	0.084 J	-	2.9E-07	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	0.31 J	-	1.1E-07	0.74	-	2.6E-07	NA	-	-	0.18 J	-	6.2E-08	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	0.35 J	-	1.2E-08	0.8	-	2.8E-08	NA	-	-	0.066 J	-	2.3E-09	NA	-	-
Chrysene	-	2.9E+02	0.47	-	1.6E-09	1.2	-	4.2E-09	NA	-	-	0.35 J	-	1.2E-09	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	0.4 U	-	1.4E-06	0.47	-	*1.6E-06*	NA	-	-	0.041 U	-	1.4E-07	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.29 J	-	1.0E-07	0.81	-	2.8E-07	NA	-	-	0.052 J	-	1.8E-08	NA	-	-
Naphthalene	7.2E+02	2.1E+01	0.4 U	5.5E-04	1.9E-08	0.15 J	2.1E-04	7.2E-09	NA	-	-	0.22 J	3.0E-04	1.1E-08	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	8.4E-02	-	-	8.8E-02	-	-	5.5E-02	-	-	1.4E-01	-	-	5.6E-02	-
Total PAH Risk	-		-	-	*2.6E-06*	-	-	*5.6E-06*	-	-	-	-	-	6.0E-07	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.5E-05*	-	-	*1.4E-05*	-	-	*3.7E-05*	-	-	*3.7E-05*	-	-	*4.1E-05*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		PZ-04(S)			SB-04			SB-09			SL-A			SL-B		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	108	2.3E-01	*3.6E-05*	14.8	3.1E-02	*4.9E-06*	139	2.9E-01	*4.6E-05*	56.8	1.2E-01	*1.9E-05*	160	3.3E-01	*5.3E-05*
Barium	2.2E+05	-	1,330	6.2E-03	-	86.4 *	4.0E-04	-	1,180	5.5E-03	-	129	6.0E-04	-	98	4.6E-04	-
Cadmium	9.8E+02	8.4E+03	35	3.6E-02	4.1E-09	8.8	9.0E-03	1.0E-09	74.8	7.6E-02	8.9E-09	466	4.8E-01	5.5E-08	1.1 U	1.1E-03	1.3E-10
Cobalt	3.5E+02	1.7E+03	8.5	2.5E-02	5.0E-09	15.6	4.5E-02	9.2E-09	NA	-	-	21.4	6.2E-02	1.3E-08	47	1.4E-01	2.8E-08
Copper	4.7E+04	-	1,980	4.2E-02	-	115	2.5E-03	-	232	5.0E-03	-	2,250	4.8E-02	-	3,760	8.0E-02	-
Lead	2.0E+03	-	2,930	1.5E+00	-	244 J	1.2E-01	-	9,480	**4.8E+00**	-	2,690	1.4E+00	-	7,200	**3.7E+00**	-
Manganese	2.5E+04	-	1,620	6.4E-02	-	268 *	1.1E-02	-	1,090	4.3E-02	-	1,530 J	6.0E-02	-	1,630 J	6.4E-02	-
Mercury	3.5E+02	-	0.026 U	7.4E-05	-	0.12 U	3.4E-04	-	NA	-	-	0.0436 B	1.2E-04	-	0.0067 U	1.9E-05	-
Zinc	3.5E+05	-	9,230	2.6E-02	-	1,420	4.1E-03	-	13,900	4.0E-02	-	54,000	1.5E-01	-	8,120	2.3E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	0.037 U	-	1.3E-08	0.41 U	-	1.4E-07	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	0.037 U	-	1.3E-07	0.41 U	-	1.4E-06	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	0.037 U	-	1.3E-08	0.41 U	-	1.4E-07	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	0.037 U	-	1.3E-09	0.41 U	-	1.4E-08	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	0.037 U	-	1.3E-10	0.41 U	-	1.4E-09	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	0.037 U	-	1.3E-07	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.037 U	-	1.3E-08	0.41 U	-	1.4E-07	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	0.037 U	5.1E-05	1.8E-09	0.38 U	5.3E-04	1.8E-08	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.2E-02	-	-	9.4E-03	-	-	8.2E-02	-	-	4.8E-01	-	-	1.6E-03	-
Total PAH Risk	-		-	-	3.0E-07	-	-	*1.9E-06*	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*3.6E-05*	-	-	*6.8E-06*	-	-	*4.6E-05*	-	-	*1.9E-05*	-	-	*5.3E-05*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
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- > 10

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Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SL-C			SL-D-1			SL-D-2			SL-E			SL-G		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	32	6.7E-02	*1.1E-05*	91.5	1.9E-01	*3.1E-05*	112	2.3E-01	*3.7E-05*	218	4.5E-01	*7.3E-05*	4,020	**8.4E+00**	*1.3E-03*
Barium	2.2E+05	-	760	3.5E-03	-	990	4.6E-03	-	1,660	7.7E-03	-	163	7.6E-04	-	1,310	6.1E-03	-
Cadmium	9.8E+02	8.4E+03	54.8	5.6E-02	6.5E-09	246	2.5E-01	2.9E-08	403	4.1E-01	4.8E-08	1 U	1.0E-03	1.2E-10	389	4.0E-01	4.6E-08
Cobalt	3.5E+02	1.7E+03	20.3	5.9E-02	1.2E-08	29 J	8.4E-02	1.7E-08	26.9	7.8E-02	1.6E-08	90	2.6E-01	5.3E-08	19.5	5.6E-02	1.2E-08
Copper	4.7E+04	-	1,340	2.9E-02	-	3,030	6.5E-02	-	2,420	5.2E-02	-	2,790	6.0E-02	-	1,600	3.4E-02	-
Lead	2.0E+03	-	820	4.2E-01	-	2,370	1.2E+00	-	3,690	**1.9E+00**	-	3,350	**1.7E+00**	-	14,300	**7.3E+00**	-
Manganese	2.5E+04	-	1,020 J	4.0E-02	-	25,300	1.0E+00	-	1,690	6.7E-02	-	1,780 J	7.0E-02	-	1,240	4.9E-02	-
Mercury	3.5E+02	-	0.48	1.4E-03	-	0.4	1.1E-03	-	0.55	1.6E-03	-	0.0061 U	1.7E-05	-	11.9	3.4E-02	-
Zinc	3.5E+05	-	8,660	2.5E-02	-	44,600	1.3E-01	-	64,900	1.9E-01	-	3,060	8.7E-03	-	14,000	4.0E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	0.61	-	2.1E-07	0.43 J	-	1.5E-07	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	0.44 J	-	*1.5E-06*	0.25 J	-	8.7E-07	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	0.84	-	2.9E-07	0.57	-	2.0E-07	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	0.2 J	-	6.9E-09	0.17 J	-	5.9E-09	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	0.95	-	3.3E-09	0.7	-	2.4E-09	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	0.11 J	-	3.8E-07	0.079 U	-	2.7E-07	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	0.26 J	-	9.0E-08	0.17 J	-	5.9E-08	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	0.18 J	2.5E-04	8.6E-09	0.38 J	5.3E-04	1.8E-08	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.9E-02	-	-	2.6E-01	-	-	4.2E-01	-	-	1.8E-03	-	-	4.0E-01	-
Total PAH Risk	-		-	-	-	-	-	*2.5E-06*	-	-	*1.6E-06*	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.1E-05*	-	-	*3.3E-05*	-	-	*3.9E-05*	-	-	*7.3E-05*	-	-	*1.3E-03*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
* = Duplicate analysis not within control limits.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-01			SS-04			SS-05			SS-06			SS-07		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	14 U	2.9E-02	*4.7E-06*	24	5.0E-02	*8.0E-06*	8.8 J	1.8E-02	*2.9E-06*	11.8 J	2.5E-02	*3.9E-06*	19	4.0E-02	*6.3E-06*
Barium	2.2E+05	-	607 J	2.8E-03	-	6,720 J	3.1E-02	-	708	3.3E-03	-	3,420 J	1.6E-02	-	5,680	2.6E-02	-
Cadmium	9.8E+02	8.4E+03	88.8	9.1E-02	1.1E-08	13.2	1.3E-02	1.6E-09	55.1	5.6E-02	6.5E-09	17.4	1.8E-02	2.1E-09	147	1.5E-01	1.7E-08
Cobalt	3.5E+02	1.7E+03	3.78 J	1.1E-02	2.2E-09	46.1	1.3E-01	2.7E-08	7.2	2.1E-02	4.3E-09	0.69 U	2.0E-03	4.1E-10	19.1	5.5E-02	1.1E-08
Copper	4.7E+04	-	106	2.3E-03	-	1,570	3.4E-02	-	191	4.1E-03	-	65	1.4E-03	-	1,070	2.3E-02	-
Lead	2.0E+03	-	78 J	4.0E-02	-	2,260 J	1.2E+00	-	544	2.8E-01	-	157 J	8.0E-02	-	7,730	**3.9E+00**	-
Manganese	2.5E+04	-	105 J	4.1E-03	-	2,670 J	1.1E-01	-	558	2.2E-02	-	131 J	5.2E-03	-	3,000	1.2E-01	-
Mercury	3.5E+02	-	0.0256 J	7.3E-05	-	0.102 J	2.9E-04	-	0.47	1.3E-03	-	0.0708 J	2.0E-04	-	0.73	2.1E-03	-
Zinc	3.5E+05	-	144,000 J	4.1E-01	-	8,080 J	2.3E-02	-	6,830	1.9E-02	-	1,460 J	4.2E-03	-	25,300	7.2E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	0.043 U	-	1.5E-08	0.077 J	-	2.7E-08	0.1 J	-	3.5E-08	0.047 U	-	1.6E-08	0.41	-	1.4E-07
Benzo(a)pyrene	-	2.9E-01	0.043 U	-	1.5E-07	0.069 J	-	2.4E-07	0.084 J	-	2.9E-07	0.047 U	-	1.6E-07	0.41	-	1.4E-06
Benzo(b)fluoranthene	-	2.9E+00	0.043 U	-	1.5E-08	0.091 J	-	3.1E-08	0.16 J	-	5.5E-08	0.047 U	-	1.6E-08	0.76	-	2.6E-07
Benzo(k)fluoranthene	-	2.9E+01	0.043 U	-	1.5E-09	0.042 U	-	1.5E-09	0.053 J	-	1.8E-09	0.047 U	-	1.6E-09	0.2 J	-	6.9E-09
Chrysene	-	2.9E+02	0.055 J	-	1.9E-10	0.11 J	-	3.8E-10	0.14 J	-	4.8E-10	0.047 U	-	1.6E-10	0.97	-	3.4E-09
Dibenz(a,h)anthracene	-	2.9E-01	0.043 U	-	1.5E-07	0.042 U	-	1.5E-07	0.039 U	-	1.3E-07	0.047 U	-	1.6E-07	0.25 J	-	8.7E-07
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.043 U	-	1.5E-08	0.055 J	-	1.9E-08	0.039 U	-	1.3E-08	0.047 U	-	1.6E-08	0.43	-	1.5E-07
Naphthalene	7.2E+02	2.1E+01	0.043 U	6.0E-05	2.1E-09	0.042 U	5.8E-05	2.0E-09	0.039 U	5.4E-05	1.9E-09	0.047 U	6.5E-05	2.3E-09	0.1 J	1.4E-04	4.8E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	9.3E-02	-	-	4.5E-02	-	-	5.9E-02	-	-	3.4E-02	-	-	1.8E-01	-
Total PAH Risk	-		-	-	3.5E-07	-	-	4.7E-07	-	-	5.3E-07	-	-	3.8E-07	-	-	*2.9E-06*
Total (PAH + Arsenic) Risk	-		-	-	*5.0E-06*	-	-	*8.5E-06*	-	-	*3.5E-06*	-	-	*4.3E-06*	-	-	*9.2E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-08			SS-09			SS-10			SS-11A			SS-12		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	49	1.0E-01	*1.6E-05*	173	3.6E-01	*5.8E-05*	2.6 U	5.4E-03	8.7E-07	6.5 J	1.4E-02	*2.2E-06*	15	3.1E-02	*5.0E-06*
Barium	2.2E+05	-	7,150 J	3.3E-02	-	5,290	2.5E-02	-	208	9.7E-04	-	489 J	2.3E-03	-	1,040	4.8E-03	-
Cadmium	9.8E+02	8.4E+03	107	1.1E-01	1.3E-08	139	1.4E-01	1.6E-08	596	6.1E-01	7.1E-08	82.5	8.4E-02	9.8E-09	118	1.2E-01	1.4E-08
Cobalt	3.5E+02	1.7E+03	24.4	7.0E-02	1.4E-08	45.7	1.3E-01	2.7E-08	4.74 J	1.4E-02	2.8E-09	17.1	4.9E-02	1.0E-08	3.37 J	9.7E-03	2.0E-09
Copper	4.7E+04	-	477	1.0E-02	-	3,270	7.0E-02	-	177	3.8E-03	-	2,820	6.0E-02	-	378	8.1E-03	-
Lead	2.0E+03	-	3,970 J	**2.0E+00**	-	16,100	**8.2E+00**	-	952	4.9E-01	-	1,280 J	6.5E-01	-	877	4.5E-01	-
Manganese	2.5E+04	-	1,290 J	5.1E-02	-	3,330	1.3E-01	-	686	2.7E-02	-	34,600 J	1.4E+00	-	553	2.2E-02	-
Mercury	3.5E+02	-	0.2	5.7E-04	-	0.23	6.6E-04	-	0.053 J	1.5E-04	-	0.12	3.4E-04	-	0.15	4.3E-04	-
Zinc	3.5E+05	-	20,600 J	5.9E-02	-	29,200	8.3E-02	-	58,900	1.7E-01	-	19,400 J	5.5E-02	-	17,200	4.9E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	2.6	-	9.0E-07	0.15 J	-	5.2E-08	NA	-	-	0.1 J	-	3.5E-08	0.073 J	-	2.5E-08
Benzo(a)pyrene	-	2.9E-01	2.3	-	*8.0E-06*	0.12 J	-	4.2E-07	NA	-	-	0.094 J	-	3.3E-07	0.081 J	-	2.8E-07
Benzo(b)fluoranthene	-	2.9E+00	4.7	-	*1.6E-06*	0.23 J	-	8.0E-08	NA	-	-	0.13 J	-	4.5E-08	0.13 J	-	4.5E-08
Benzo(k)fluoranthene	-	2.9E+01	1.6	-	5.5E-08	0.089 J	-	3.1E-09	NA	-	-	0.04 U	-	1.4E-09	0.041 J	-	1.4E-09
Chrysene	-	2.9E+02	3.3	-	1.1E-08	0.25 J	-	8.7E-10	NA	-	-	0.24 J	-	8.3E-10	0.088 J	-	3.0E-10
Dibenz(a,h)anthracene	-	2.9E-01	0.65	-	*2.2E-06*	0.041 U	-	1.4E-07	NA	-	-	0.04 U	-	1.4E-07	0.039 U	-	1.3E-07
Indeno(1,2,3-cd)pyrene	-	2.9E+00	2.7	-	9.3E-07	0.041 U	-	1.4E-08	NA	-	-	0.058 J	-	2.0E-08	0.039 U	-	1.3E-08
Naphthalene	7.2E+02	2.1E+01	0.21 J	2.9E-04	1.0E-08	0.041 U	5.7E-05	2.0E-09	NA	-	-	0.04 U	5.5E-05	1.9E-09	0.039 U	5.4E-05	1.9E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	1.4E-01	-	-	1.7E-01	-	-	6.1E-01	-	-	8.6E-02	-	-	1.3E-01	-
Total PAH Risk	-		-	-	*1.4E-05*	-	-	7.1E-07	-	-	-	-	-	5.7E-07	-	-	5.0E-07
Total (PAH + Arsenic) Risk	-		-	-	*3.0E-05*	-	-	*5.8E-05*	-	-	8.7E-07	-	-	*2.7E-06*	-	-	*5.5E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-13			SS-14			SS-15			SS-16			SS-17A		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	150	3.1E-01	*5.0E-05*	1,330 J	**2.8E+00**	*4.4E-04*	13.2 J	2.8E-02	*4.4E-06*	11.2 J	2.3E-02	*3.7E-06*	5 J	1.0E-02	*1.7E-06*
Barium	2.2E+05	-	7,320	3.4E-02	-	737 J	3.4E-03	-	165 J	7.7E-04	-	99,300	4.6E-01	-	120	5.6E-04	-
Cadmium	9.8E+02	8.4E+03	361	3.7E-01	4.3E-08	34.9	3.6E-02	4.1E-09	35.1	3.6E-02	4.2E-09	5.4	5.5E-03	6.4E-10	157	1.6E-01	1.9E-08
Cobalt	3.5E+02	1.7E+03	68	2.0E-01	4.0E-08	158 J	4.6E-01	9.4E-08	2.8 J	8.1E-03	1.7E-09	0.86 U	2.5E-03	5.1E-10	25.4	7.3E-02	1.5E-08
Copper	4.7E+04	-	1,680	3.6E-02	-	1,810	3.9E-02	-	92	2.0E-03	-	79.6	1.7E-03	-	6,010	1.3E-01	-
Lead	2.0E+03	-	16,300	**8.3E+00**	-	8,290	**4.2E+00**	-	175 J	8.9E-02	-	2,740	1.4E+00	-	4,890	**2.5E+00**	-
Manganese	2.5E+04	-	2,700	1.1E-01	-	3,660 J	1.4E-01	-	647 J	2.5E-02	-	210	8.3E-03	-	1,570	6.2E-02	-
Mercury	3.5E+02	-	3.3	9.4E-03	-	0.75 J	2.1E-03	-	0.56	1.6E-03	-	0.0106 J	3.0E-05	-	0.0383 J	1.1E-04	-
Zinc	3.5E+05	-	77,300	2.2E-01	-	14,600	4.2E-02	-	3,440 J	9.8E-03	-	786	2.2E-03	-	55,900	1.6E-01	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	4.6	-	*1.6E-06*	0.18 J	-	6.2E-08	NA	-	-	0.069 U	-	2.4E-08	NA	-	-
Benzo(a)pyrene	-	2.9E-01	4.8	-	*1.7E-05*	0.22 J	-	7.6E-07	NA	-	-	0.069 U	-	2.4E-07	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	8.9	-	*3.1E-06*	0.42	-	1.5E-07	NA	-	-	0.069 U	-	2.4E-08	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	2.8	-	9.7E-08	0.14 J	-	4.8E-09	NA	-	-	0.069 U	-	2.4E-09	NA	-	-
Chrysene	-	2.9E+02	7.8	-	2.7E-08	0.31 J	-	1.1E-09	NA	-	-	0.069 U	-	2.4E-10	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	1.2	-	*4.2E-06*	0.066 J	-	2.3E-07	NA	-	-	0.069 U	-	2.4E-07	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	3.6	-	1.2E-06	0.24 J	-	8.3E-08	NA	-	-	0.069 U	-	2.4E-08	NA	-	-
Naphthalene	7.2E+02	2.1E+01	0.18 J	2.5E-04	8.6E-09	0.038 U	5.3E-05	1.8E-09	NA	-	-	0.069 U	9.6E-05	3.3E-09	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.0E-01	-	-	3.9E-02	-	-	3.7E-02	-	-	4.7E-01	-	-	1.6E-01	-
Total PAH Risk	-		-	-	*2.7E-05*	-	-	1.3E-06	-	-	-	-	-	5.6E-07	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*7.7E-05*	-	-	*4.5E-04*	-	-	*4.4E-06*	-	-	*4.3E-06*	-	-	*1.7E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
* = Duplicate analysis not within control limits.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-18			SS-19			SS-20			SS-22			SS-23		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	87,900 J	**1.8E+02**	*2.9E-02*	2.5 UJ	5.2E-03	8.3E-07	19 J	4.0E-02	*6.3E-06*	322 J	6.7E-01	*1.1E-04*	3.9 UJ	8.1E-03	1.3E-06
Barium	2.2E+05	-	309	1.4E-03	-	3,820 J	1.8E-02	-	92,300	4.3E-01	-	956 J	4.4E-03	-	190	8.8E-04	-
Cadmium	9.8E+02	8.4E+03	8,320 J	**8.5E+00**	9.8E-07	606	6.2E-01	7.2E-08	10.5 J	1.1E-02	1.2E-09	1,580	**1.6E+00**	1.9E-07	563 J	5.7E-01	6.7E-08
Cobalt	3.5E+02	1.7E+03	11	3.2E-02	6.5E-09	3.21 J	9.3E-03	1.9E-09	0.88 U	2.5E-03	5.2E-10	355 J	1.0E+00	2.1E-07	102	2.9E-01	6.0E-08
Copper	4.7E+04	-	8,700	1.9E-01	-	1,810	3.9E-02	-	84.3	1.8E-03	-	12,500	2.7E-01	-	6,560	1.4E-01	-
Lead	2.0E+03	-	90,000	**4.6E+01**	-	152,000	**7.7E+01**	-	480	2.4E-01	-	38,800	**2.0E+01**	-	1,580	8.1E-01	-
Manganese	2.5E+04	-	799	3.1E-02	-	157 J	6.2E-03	-	462	1.8E-02	-	153,000 J	**6.0E+00**	-	3,550	1.4E-01	-
Mercury	3.5E+02	-	10.1	2.9E-02	-	0.25 J	7.1E-04	-	0.005 U	1.4E-05	-	5.9 J	1.7E-02	-	0.0256 J	7.3E-05	-
Zinc	3.5E+05	-	90,600	2.6E-01	-	65,500	1.9E-01	-	964	2.8E-03	-	176,000	5.0E-01	-	115,000	3.3E-01	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	0.043 UB	-	1.5E-08	0.06 U	-	2.1E-08	0.098 UJ	-	3.4E-08	1.6	-	5.5E-07
Benzo(a)pyrene	-	2.9E-01	NA	-	-	0.043 UB	-	1.5E-07	0.06 U	-	2.1E-07	0.098 UJ	-	3.4E-07	0.59 J	-	*2.0E-06*
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	0.043 UB	-	1.5E-08	0.06 U	-	2.1E-08	0.098 UJ	-	3.4E-08	1.4	-	4.8E-07
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	0.043 UB	-	1.5E-09	0.06 U	-	2.1E-09	0.098 UJ	-	3.4E-09	0.4 J	-	1.4E-08
Chrysene	-	2.9E+02	NA	-	-	0.043 UB	-	1.5E-10	0.06 U	-	2.1E-10	0.098 UJ	-	3.4E-10	2.1	-	7.3E-09
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	0.043 UB	-	1.5E-07	0.06 U	-	2.1E-07	0.098 UJ	-	3.4E-07	0.25 J	-	8.7E-07
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	0.043 UB	-	1.5E-08	0.06 U	-	2.1E-08	0.098 UJ	-	3.4E-08	0.48 J	-	1.7E-07
Naphthalene	7.2E+02	2.1E+01	NA	-	-	0.58 J	8.0E-04	2.8E-08	0.06 U	8.3E-05	2.9E-09	0.098 UJ	1.4E-04	4.7E-09	0.33 J	4.6E-04	1.6E-08
Totals																	
Total (Barium + Cadmium) HI	-		-	**8.5E+00**	-	-	6.4E-01	-	-	4.4E-01	-	-	**1.6E+00**	-	-	5.7E-01	-
Total PAH Risk	-		-	-	-	-	-	3.7E-07	-	-	4.8E-07	-	-	7.9E-07	-	-	*4.1E-06*
Total (PAH + Arsenic) Risk	-		-	-	*2.9E-02*	-	-	1.2E-06	-	-	*6.8E-06*	-	-	*1.1E-04*	-	-	*5.4E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
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* = Duplicate analysis not within control limits.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-24			SS-25			SS-26			SS-27A			SS-28		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	97 J	2.0E-01	*3.2E-05*	27	5.6E-02	*9.0E-06*	4.5 U	9.4E-03	*1.5E-06*	209	4.4E-01	*7.0E-05*	2.8 UJ	5.8E-03	9.3E-07
Barium	2.2E+05	-	391	1.8E-03	-	13,800 J	6.4E-02	-	809 J	3.8E-03	-	501 J	2.3E-03	-	4,100	1.9E-02	-
Cadmium	9.8E+02	8.4E+03	1,120 J	1.1E+00	1.3E-07	5.9	6.0E-03	7.0E-10	1,680	**1.7E+00**	2.0E-07	2,980	**3.0E+00**	3.5E-07	133 J	1.4E-01	1.6E-08
Cobalt	3.5E+02	1.7E+03	68.1	2.0E-01	4.0E-08	9.3	2.7E-02	5.5E-09	1,600	**4.6E+00**	9.5E-07	104	3.0E-01	6.2E-08	11.2	3.2E-02	6.6E-09
Copper	4.7E+04	-	8,620	1.8E-01	-	112 J	2.4E-03	-	18,500 J	4.0E-01	-	27,800 J	6.0E-01	-	688	1.5E-02	-
Lead	2.0E+03	-	6,860	**3.5E+00**	-	146 J	7.4E-02	-	22,800 J	**1.2E+01**	-	75,700 J	**3.9E+01**	-	1,380	7.0E-01	-
Manganese	2.5E+04	-	2,630	1.0E-01	-	5,620 J	2.2E-01	-	74,800 J	**2.9E+00**	-	3,350 J	1.3E-01	-	743	2.9E-02	-
Mercury	3.5E+02	-	0.0801 J	2.3E-04	-	0.0046 U	1.3E-05	-	4.3	1.2E-02	-	14.7	4.2E-02	-	3.2	9.1E-03	-
Zinc	3.5E+05	-	91,300	2.6E-01	-	562	1.6E-03	-	162,000	4.6E-01	-	157000	4.5E-01	-	39,600	1.1E-01	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	1.4	-	4.8E-07	0.059 U	-	2.0E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	0.32 J	-	1.1E-06	0.059 U	-	2.0E-07	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	0.85	-	2.9E-07	0.059 U	-	2.0E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	0.33 J	-	1.1E-08	0.059 U	-	2.0E-09	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	2.2	-	7.6E-09	0.059 U	-	2.0E-10	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	0.17 J	-	5.9E-07	0.059 U	-	2.0E-07	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.27 J	-	9.3E-08	0.059 U	-	2.0E-08	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	1.2	1.7E-03	5.8E-08	0.059 U	8.2E-05	2.8E-09	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.1E+00	-	-	7.0E-02	-	-	**1.7E+00**	-	-	**3.0E+00**	-	-	1.5E-01	-
Total PAH Risk	-		-	-	*2.6E-06*	-	-	4.7E-07	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*3.5E-05*	-	-	*9.5E-06*	-	-	*1.5E-06*	-	-	*7.0E-05*	-	-	9.3E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-29			SS-30A			SS-31			SS-32			SS-33		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	5.8 J	1.2E-02	*1.9E-06*	3.5 U	7.3E-03	1.2E-06	19	4.0E-02	*6.3E-06*	11.8 J	2.5E-02	*3.9E-06*	57	1.2E-01	*1.9E-05*
Barium	2.2E+05	-	138,000	6.4E-01	-	2,040 J	9.5E-03	-	5,810 J	2.7E-02	-	99,800 J	4.6E-01	-	539 J	2.5E-03	-
Cadmium	9.8E+02	8.4E+03	5.3 J	5.4E-03	6.3E-10	775	7.9E-01	9.2E-08	36	3.7E-02	4.3E-09	29.5	3.0E-02	3.5E-09	38.6	3.9E-02	4.6E-09
Cobalt	3.5E+02	1.7E+03	0.86 U	2.5E-03	5.1E-10	449	1.3E+00	2.7E-07	5.89 J	1.7E-02	3.5E-09	0.83 U	2.4E-03	4.9E-10	32.8	9.5E-02	1.9E-08
Copper	4.7E+04	-	74.7	1.6E-03	-	35,200 J	7.5E-01	-	168 J	3.6E-03	-	210 J	4.5E-03	-	812	1.7E-02	-
Lead	2.0E+03	-	523	2.7E-01	-	25,300 J	**1.3E+01**	-	1,240 J	6.3E-01	-	226 J	1.2E-01	-	6,630 J	**3.4E+00**	-
Manganese	2.5E+04	-	248	9.8E-03	-	11,600 J	4.6E-01	-	543 J	2.1E-02	-	495 J	1.9E-02	-	2,000 J	7.9E-02	-
Mercury	3.5E+02	-	0.0109 J	3.1E-05	-	0.6	1.7E-03	-	0.0692	2.0E-04	-	0.0045 U	1.3E-05	-	0.12 J	3.4E-04	-
Zinc	3.5E+05	-	274	7.8E-04	-	168,000	4.8E-01	-	7,340	2.1E-02	-	1,060	3.0E-03	-	11,200 J	3.2E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	0.059 U	-	2.0E-08	NA	-	-	NA	-	-	0.051 U	-	1.8E-08	NA	-	-
Benzo(a)pyrene	-	2.9E-01	0.059 U	-	2.0E-07	NA	-	-	NA	-	-	0.051 U	-	1.8E-07	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	0.059 U	-	2.0E-08	NA	-	-	NA	-	-	0.051 U	-	1.8E-08	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	0.059 U	-	2.0E-09	NA	-	-	NA	-	-	0.051 U	-	1.8E-09	NA	-	-
Chrysene	-	2.9E+02	0.059 U	-	2.0E-10	NA	-	-	NA	-	-	0.051 U	-	1.8E-10	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	0.059 U	-	2.0E-07	NA	-	-	NA	-	-	0.051 U	-	1.8E-07	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.059 U	-	2.0E-08	NA	-	-	NA	-	-	0.051 U	-	1.8E-08	NA	-	-
Naphthalene	7.2E+02	2.1E+01	0.059 U	8.2E-05	2.8E-09	NA	-	-	NA	-	-	0.051 U	7.1E-05	2.4E-09	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	6.5E-01	-	-	8.0E-01	-	-	6.4E-02	-	-	4.9E-01	-	-	4.2E-02	-
Total PAH Risk	-		-	-	4.7E-07	-	-	-	-	-	-	-	-	4.1E-07	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*2.4E-06*	-	-	1.2E-06	-	-	*6.3E-06*	-	-	*4.3E-06*	-	-	*1.9E-05*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
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mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-34			SS-36			SS-37			SS-38			SS-39		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	406	8.5E-01	*1.4E-04*	44	9.2E-02	*1.5E-05*	130	2.7E-01	*4.3E-05*	215 J	4.5E-01	*7.2E-05*	15.2 J	3.2E-02	*5.1E-06*
Barium	2.2E+05	-	244 J	1.1E-03	-	2,520 J	1.2E-02	-	479 J	2.2E-03	-	304 J	1.4E-03	-	125,000 J	5.8E-01	-
Cadmium	9.8E+02	8.4E+03	20.2	2.1E-02	2.4E-09	66.9	6.8E-02	7.9E-09	128	1.3E-01	1.5E-08	14.5	1.5E-02	1.7E-09	5.9	6.0E-03	7.0E-10
Cobalt	3.5E+02	1.7E+03	16	4.6E-02	9.5E-09	18	5.2E-02	1.1E-08	53.4	1.5E-01	3.2E-08	52.8 J	1.5E-01	3.1E-08	0.9 UJ	2.6E-03	5.3E-10
Copper	4.7E+04	-	2,220	4.8E-02	-	471	1.0E-02	-	4,580	9.8E-02	-	3,900	8.3E-02	-	74.9	1.6E-03	-
Lead	2.0E+03	-	33,900 J	**1.7E+01**	-	2,260 J	1.2E+00	-	2,010 J	1.0E+00	-	7,110	**3.6E+00**	-	554	2.8E-01	-
Manganese	2.5E+04	-	2,660 J	1.0E-01	-	1,490 J	5.9E-02	-	1,450 J	5.7E-02	-	1,790 J	7.0E-02	-	757 J	3.0E-02	-
Mercury	3.5E+02	-	0.0035 U	1.0E-05	-	0.32	9.1E-04	-	0.078 J	2.2E-04	-	0.149 J	4.3E-04	-	0.0075 J	2.1E-05	-
Zinc	3.5E+05	-	16,300 J	4.7E-02	-	7,700 J	2.2E-02	-	11,900 J	3.4E-02	-	3,430	9.8E-03	-	734	2.1E-03	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	0.04 U	-	1.4E-08	NA	-	-	NA	-	-	0.048 U	-	1.7E-08	NA	-	-
Benzo(a)pyrene	-	2.9E-01	0.04 U	-	1.4E-07	NA	-	-	NA	-	-	0.048 U	-	1.7E-07	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	0.04 U	-	1.4E-08	NA	-	-	NA	-	-	0.048 U	-	1.7E-08	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	0.04 U	-	1.4E-09	NA	-	-	NA	-	-	0.048 U	-	1.7E-09	NA	-	-
Chrysene	-	2.9E+02	0.04 U	-	1.4E-10	NA	-	-	NA	-	-	0.048 U	-	1.7E-10	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	0.04 U	-	1.4E-07	NA	-	-	NA	-	-	0.048 U	-	1.7E-07	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.04 U	-	1.4E-08	NA	-	-	NA	-	-	0.048 U	-	1.7E-08	NA	-	-
Naphthalene	7.2E+02	2.1E+01	0.04 U	5.5E-05	1.9E-09	NA	-	-	NA	-	-	0.057 J	7.9E-05	2.7E-09	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.2E-02	-	-	8.0E-02	-	-	1.3E-01	-	-	1.6E-02	-	-	5.9E-01	-
Total PAH Risk	-		-	-	3.2E-07	-	-	-	-	-	-	-	-	3.9E-07	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.4E-04*	-	-	*1.5E-05*	-	-	*4.3E-05*	-	-	*7.2E-05*	-	-	*5.1E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-40			SS-41			SS-42			SS-43			SS-44		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	53 J	1.1E-01	*1.8E-05*	287 J	6.0E-01	*9.6E-05*	30	6.3E-02	*1.00E-05*	9.8 J	2.0E-02	*3.3E-06*	349 J	7.3E-01	*1.2E-04*
Barium	2.2E+05	-	1,060 J	4.9E-03	-	131 J	6.1E-04	-	111	5.2E-04	-	4,580 J	2.1E-02	-	19,300	9.0E-02	-
Cadmium	9.8E+02	8.4E+03	2,040	**2.1E+00**	2.4E-07	356	3.6E-01	4.2E-08	288	2.9E-01	3.4E-08	21.9	2.2E-02	2.6E-09	43.1 J	4.4E-02	5.1E-09
Cobalt	3.5E+02	1.7E+03	81.6 J	2.4E-01	4.8E-08	30 J	8.7E-02	1.8E-08	51.8	1.5E-01	3.1E-08	8.4 J	2.4E-02	5.0E-09	30.7	8.9E-02	1.8E-08
Copper	4.7E+04	-	9,400	2.0E-01	-	4,820	1.0E-01	-	5,120	1.1E-01	-	398	8.5E-03	-	3,540	7.6E-02	-
Lead	2.0E+03	-	8,930	**4.6E+00**	-	5,680	**2.9E+00**	-	4,120	**2.1E+00**	-	1,020	5.2E-01	-	8,370	**4.3E+00**	-
Manganese	2.5E+04	-	7,190 J	2.8E-01	-	2,070 J	8.1E-02	-	2,220	8.7E-02	-	343 J	1.3E-02	-	1,930	7.6E-02	-
Mercury	3.5E+02	-	0.44 J	1.3E-03	-	0.0655 J	1.9E-04	-	0.0497 J	1.4E-04	-	3.3 J	9.4E-03	-	0.0634 J	1.8E-04	-
Zinc	3.5E+05	-	88,800	2.5E-01	-	127,000	3.6E-01	-	70,200	2.0E-01	-	4,740	1.4E-02	-	7,260	2.1E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	0.14 J	-	4.8E-08	0.069 U	-	2.4E-08	0.063 U	-	2.2E-08	NA	-	-	0.053 U	-	1.8E-08
Benzo(a)pyrene	-	2.9E-01	0.061 U	-	2.1E-07	0.069 U	-	2.4E-07	0.063 U	-	2.2E-07	NA	-	-	0.053 U	-	1.8E-07
Benzo(b)fluoranthene	-	2.9E+00	0.061 U	-	2.1E-08	0.069 U	-	2.4E-08	0.063 U	-	2.2E-08	NA	-	-	0.053 U	-	1.8E-08
Benzo(k)fluoranthene	-	2.9E+01	0.061 U	-	2.1E-09	0.069 U	-	2.4E-09	0.063 U	-	2.2E-09	NA	-	-	0.053 U	-	1.8E-09
Chrysene	-	2.9E+02	0.13 J	-	4.5E-10	0.069 U	-	2.4E-10	0.063 U	-	2.2E-10	NA	-	-	0.053 U	-	1.8E-10
Dibenz(a,h)anthracene	-	2.9E-01	0.061 U	-	2.1E-07	0.069 U	-	2.4E-07	0.063 U	-	2.2E-07	NA	-	-	0.053 U	-	1.8E-07
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.061 U	-	2.1E-08	0.069 U	-	2.4E-08	0.063 U	-	2.2E-08	NA	-	-	0.053 U	-	1.8E-08
Naphthalene	7.2E+02	2.1E+01	0.4 J	5.5E-04	1.9E-08	1.4 J	1.9E-03	6.7E-08	0.49 J	6.8E-04	2.4E-08	NA	-	-	0.13 J	1.8E-04	6.2E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	**2.1E+00**	-	-	3.6E-01	-	-	2.9E-01	-	-	4.4E-02	-	-	1.3E-01	-
Total PAH Risk	-		-	-	5.3E-07	-	-	6.2E-07	-	-	5.3E-07	-	-	-	-	-	4.3E-07
Total (PAH + Arsenic) Risk	-		-	-	*1.8E-05*	-	-	*9.6E-05*	-	-	*1.1E-05*	-	-	*3.3E-06*	-	-	*1.2E-04*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-45			SS-46			SS-47			SS-48			SS-49		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	328 J	6.8E-01	*1.1E-04*	370 J	7.7E-01	*1.2E-04*	157 J	3.3E-01	*5.2E-05*	204 J	4.3E-01	*6.8E-05*	21 J	4.4E-02	*7.0E-06*
Barium	2.2E+05	-	63	2.9E-04	-	508 J	2.4E-03	-	85	4.0E-04	-	54	2.5E-04	-	447	2.1E-03	-
Cadmium	9.8E+02	8.4E+03	13.1 J	1.3E-02	1.6E-09	37.5	3.8E-02	4.4E-09	17.6 J	1.8E-02	2.1E-09	13.3 J	1.4E-02	1.6E-09	40.7 J	4.1E-02	4.8E-09
Cobalt	3.5E+02	1.7E+03	36.9	1.1E-01	2.2E-08	37.5 J	1.1E-01	2.2E-08	26.2	7.6E-02	1.6E-08	24.1	7.0E-02	1.4E-08	28.4	8.2E-02	1.7E-08
Copper	4.7E+04	-	3,860	8.3E-02	-	3,190	6.8E-02	-	5,550	1.2E-01	-	6,280	1.3E-01	-	2,850	6.1E-02	-
Lead	2.0E+03	-	9,900	**5.0E+00**	-	7,060	**3.6E+00**	-	3,250	**1.7E+00**	-	2,790	1.4E+00	-	1,340	6.8E-01	-
Manganese	2.5E+04	-	1,620	6.4E-02	-	1,810 J	7.1E-02	-	987	3.9E-02	-	1,030	4.1E-02	-	36,000	1.4E+00	-
Mercury	3.5E+02	-	0.0867 J	2.5E-04	-	0.0995 J	2.8E-04	-	0.0161 J	4.6E-05	-	0.0241 J	6.9E-05	-	0.0318 J	9.1E-05	-
Zinc	3.5E+05	-	8,880	2.5E-02	-	11,500	3.3E-02	-	6,950	2.0E-02	-	4,790	1.4E-02	-	16,200	4.6E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	0.046 UJ	-	1.6E-08	0.047 UB	-	1.6E-08	NA	-	-	0.041 J	-	1.4E-08
Benzo(a)pyrene	-	2.9E-01	NA	-	-	0.046 UJ	-	1.6E-07	0.047 UB	-	1.6E-07	NA	-	-	0.047 J	-	1.6E-07
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	0.046 UJ	-	1.6E-08	0.047 UB	-	1.6E-08	NA	-	-	0.09 J	-	3.1E-08
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	0.046 UJ	-	1.6E-09	0.047 UB	-	1.6E-09	NA	-	-	0.037 U	-	1.3E-09
Chrysene	-	2.9E+02	NA	-	-	0.046 UJ	-	1.6E-10	0.047 UB	-	1.6E-10	NA	-	-	0.062 J	-	2.1E-10
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	0.046 UJ	-	1.6E-07	0.047 UB	-	1.6E-07	NA	-	-	0.037 U	-	1.3E-07
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	0.046 UJ	-	1.6E-08	0.047 UB	-	1.6E-08	NA	-	-	0.042 J	-	1.5E-08
Naphthalene	7.2E+02	2.1E+01	NA	-	-	0.1 J	1.4E-04	4.8E-09	0.13 J	1.8E-04	6.2E-09	NA	-	-	0.037 U	5.1E-05	1.8E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	1.4E-02	-	-	4.1E-02	-	-	1.8E-02	-	-	1.4E-02	-	-	4.4E-02	-
Total PAH Risk	-		-	-	-	-	-	3.7E-07	-	-	3.8E-07	-	-	-	-	-	3.5E-07
Total (PAH + Arsenic) Risk	-		-	-	*1.1E-04*	-	-	*1.2E-04*	-	-	*5.3E-05*	-	-	*6.8E-05*	-	-	*7.4E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-50A			SS-51A			SS-53			SS-55			SS-56		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	81 J	1.7E-01	*2.7E-05*	73 J	1.5E-01	*2.4E-05*	255	5.3E-01	*8.5E-05*	359	7.5E-01	*1.2E-04*	2.4 U	5.0E-03	8.0E-07
Barium	2.2E+05	-	327	1.5E-03	-	1,210	5.6E-03	-	210 J	9.8E-04	-	215 J	1.0E-03	-	675 J	3.1E-03	-
Cadmium	9.8E+02	8.4E+03	1,840 J	**1.9E+00**	2.2E-07	574 J	5.9E-01	6.8E-08	16.1	1.6E-02	1.9E-09	17.8	1.8E-02	2.1E-09	60.6	6.2E-02	7.2E-09
Cobalt	3.5E+02	1.7E+03	73.4	2.1E-01	4.3E-08	58.2	1.7E-01	3.4E-08	26.2	7.6E-02	1.6E-08	30	8.7E-02	1.8E-08	67.5	1.9E-01	4.0E-08
Copper	4.7E+04	-	4,510	9.7E-02	-	3,370	7.2E-02	-	4,190	9.0E-02	-	6,300	1.3E-01	-	2,690	5.8E-02	-
Lead	2.0E+03	-	5,130	**2.6E+00**	-	2,850	1.5E+00	-	4,690 J	**2.4E+00**	-	6,430 J	**3.3E+00**	-	789 J	4.0E-01	-
Manganese	2.5E+04	-	2,780	1.1E-01	-	2,330	9.2E-02	-	1,110 J	4.4E-02	-	1,730 J	6.8E-02	-	40,400 J	**1.6E+00**	-
Mercury	3.5E+02	-	0.0639 J	1.8E-04	-	0.151 J	4.3E-04	-	0.0166 J	4.7E-05	-	0.0225 J	6.4E-05	-	0.0121 J	3.5E-05	-
Zinc	3.5E+05	-	166,000	4.7E-01	-	91,300	2.6E-01	-	8,330 J	2.4E-02	-	6,010 J	1.7E-02	-	33,000 J	9.4E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	0.047 U	-	1.6E-08	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	0.047 U	-	1.6E-07	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	0.047 U	-	1.6E-08	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	0.047 U	-	1.6E-09	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	0.047 U	-	1.6E-10	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	0.047 U	-	1.6E-07	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	0.047 U	-	1.6E-08	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	0.047 U	6.5E-05	2.3E-09	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	**1.9E+00**	-	-	5.9E-01	-	-	1.7E-02	-	-	1.9E-02	-	-	6.5E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	3.8E-07	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*2.7E-05*	-	-	*2.4E-05*	-	-	*8.5E-05*	-	-	*1.2E-04*	-	-	8.0E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-57			SS-58			SS-59			TA-01			TA-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	105	2.2E-01	*3.5E-05*	148	3.1E-01	*4.9E-05*	24	5.0E-02	*8.0E-06*	3 U	6.3E-03	1.0E-06	212 J	4.4E-01	*7.1E-05*
Barium	2.2E+05	-	851 J	4.0E-03	-	10,800 J	5.0E-02	-	184 J	8.6E-04	-	375	1.7E-03	-	263	1.2E-03	-
Cadmium	9.8E+02	8.4E+03	40.6	4.1E-02	4.8E-09	86	8.8E-02	1.0E-08	33.1	3.4E-02	3.9E-09	110	1.1E-01	1.3E-08	121	1.2E-01	1.4E-08
Cobalt	3.5E+02	1.7E+03	21.1	6.1E-02	1.2E-08	16.8	4.8E-02	9.9E-09	15.4	4.4E-02	9.1E-09	170 J	4.9E-01	1.0E-07	36.7 J	1.1E-01	2.2E-08
Copper	4.7E+04	-	681 J	1.5E-02	-	421 J	9.0E-03	-	115 J	2.5E-03	-	31,000	6.6E-01	-	4,480	9.6E-02	-
Lead	2.0E+03	-	4,040 J	**2.1E+00**	-	4,630 J	**2.4E+00**	-	4,050 J	**2.1E+00**	-	2,980	**1.5E+00**	-	6,610	**3.4E+00**	-
Manganese	2.5E+04	-	2,280 J	9.0E-02	-	3,010 J	1.2E-01	-	1,930 J	7.6E-02	-	8,390	3.3E-01	-	1,810	7.1E-02	-
Mercury	3.5E+02	-	0.89	2.5E-03	-	3.6	1.0E-02	-	0.36	1.0E-03	-	1.29 J	3.7E-03	-	0.0579 J	1.7E-04	-
Zinc	3.5E+05	-	33,400	9.5E-02	-	31,100	8.9E-02	-	16,000	4.6E-02	-	35,300	1.0E-01	-	15,000	4.3E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	0.04 U	-	1.4E-08	NA	-	-	0.18 J	-	6.2E-08	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	0.04 U	-	1.4E-07	NA	-	-	0.16 J	-	5.5E-07	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	0.04 U	-	1.4E-08	NA	-	-	0.25 J	-	8.7E-08	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	0.04 U	-	1.4E-09	NA	-	-	0.085 J	-	2.9E-09	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	0.04 U	-	1.4E-10	NA	-	-	0.26 J	-	9.0E-10	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	0.04 U	-	1.4E-07	NA	-	-	0.042 U	-	1.5E-07	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	0.04 U	-	1.4E-08	NA	-	-	0.13 J	-	4.5E-08	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	0.04 U	5.5E-05	1.9E-09	NA	-	-	0.042 U	5.8E-05	2.0E-09	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.5E-02	-	-	1.4E-01	-	-	3.5E-02	-	-	1.1E-01	-	-	1.2E-01	-
Total PAH Risk	-		-	-	3.2E-07	-	-	-	-	-	9.0E-07	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*3.5E-05*	-	-	*4.9E-05*	-	-	*8.9E-06*	-	-	1.0E-06	-	-	*7.1E-05*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		TA-03			TP-120			W-05(S)			W-06(S)			W-07(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	2.7 U	5.6E-03	9.0E-07	95.3	2.0E-01	*3.2E-05*	73.7	1.5E-01	*2.5E-05*	10 J	2.1E-02	*3.3E-06*	16.9	3.5E-02	*5.6E-06*
Barium	2.2E+05	-	131	6.1E-04	-	3,670	1.7E-02	-	4,990	2.3E-02	-	380	1.8E-03	-	1,340	6.2E-03	-
Cadmium	9.8E+02	8.4E+03	103	1.1E-01	1.2E-08	286	2.9E-01	3.4E-08	125	1.3E-01	1.5E-08	28	2.9E-02	3.3E-09	54.6	5.6E-02	6.5E-09
Cobalt	3.5E+02	1.7E+03	5.41 J	1.6E-02	3.2E-09	20	5.8E-02	1.2E-08	NA	-	-	NA	-	-	3.4 B	9.8E-03	2.0E-09
Copper	4.7E+04	-	237	5.1E-03	-	1,330	2.8E-02	-	314	6.7E-03	-	170	3.6E-03	-	534	1.1E-02	-
Lead	2.0E+03	-	661	3.4E-01	-	6,590	**3.4E+00**	-	3,290	**1.7E+00**	-	980	5.0E-01	-	674	3.4E-01	-
Manganese	2.5E+04	-	401	1.6E-02	-	1,270	5.0E-02	-	1,680	6.6E-02	-	120	4.7E-03	-	591	2.3E-02	-
Mercury	3.5E+02	-	0.82 J	2.3E-03	-	11.5	3.3E-02	-	NA	-	-	NA	-	-	0.027 UJ	7.7E-05	-
Zinc	3.5E+05	-	25,900	7.4E-02	-	43,800	1.3E-01	-	20,600 J	5.9E-02	-	3,100	8.8E-03	-	4,600	1.3E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	0.56	-	1.9E-07	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	0.44	-	*1.5E-06*	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	0.74	-	2.6E-07	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	0.28	-	9.7E-09	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	0.68	-	2.4E-09	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	0.21 U	2.9E-04	1.0E-08	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.1E-01	-	-	3.1E-01	-	-	1.5E-01	-	-	3.0E-02	-	-	6.2E-02	-
Total PAH Risk	-		-	-	-	-	-	*2.0E-06*	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	9.0E-07	-	-	*3.4E-05*	-	-	*2.5E-05*	-	-	*3.3E-06*	-	-	*5.6E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-08(S)			W-09(S)			W-10(S)			W-11(S)			W-13(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	3.4 J	7.1E-03	1.1E-06	6.3	1.3E-02	*2.1E-06*	8.2	1.7E-02	*2.7E-06*	5.5	1.1E-02	*1.8E-06*	15.8	3.3E-02	*5.3E-06*
Barium	2.2E+05	-	55 J	2.6E-04	-	163	7.6E-04	-	394	1.8E-03	-	61	2.8E-04	-	619	2.9E-03	-
Cadmium	9.8E+02	8.4E+03	3	3.1E-03	3.6E-10	9.8	1.0E-02	1.2E-09	15.8	1.6E-02	1.9E-09	4.2 J	4.3E-03	5.0E-10	31.8	3.2E-02	3.8E-09
Cobalt	3.5E+02	1.7E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.7E+04	-	17 J	3.6E-04	-	28.5	6.1E-04	-	46.1 J	9.9E-04	-	29.9 J	6.4E-04	-	135	2.9E-03	-
Lead	2.0E+03	-	24 J	1.2E-02	-	54.2 J	2.8E-02	-	189	9.6E-02	-	27.4	1.4E-02	-	266	1.4E-01	-
Manganese	2.5E+04	-	330 J	1.3E-02	-	444	1.7E-02	-	656	2.6E-02	-	482	1.9E-02	-	407	1.6E-02	-
Mercury	3.5E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	3.5E+05	-	370	1.1E-03	-	1,010 J	2.9E-03	-	1,390	4.0E-03	-	365	1.0E-03	-	6,990	2.0E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	3.3E-03	-	-	1.1E-02	-	-	1.8E-02	-	-	4.6E-03	-	-	3.5E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.1E-06	-	-	*2.1E-06*	-	-	*2.7E-06*	-	-	*1.8E-06*	-	-	*5.3E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-14(S)			W-15(S)			W-16(S)			W-17(D)			W-18(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	76.8	1.6E-01	*2.6E-05*	120	2.5E-01	*4.0E-05*	358	7.5E-01	*1.2E-04*	233 J	4.9E-01	*7.8E-05*	190	4.0E-01	*6.3E-05*
Barium	2.2E+05	-	3,910	1.8E-02	-	727	3.4E-03	-	7,290	3.4E-02	-	7,070	3.3E-02	-	2,320	1.1E-02	-
Cadmium	9.8E+02	8.4E+03	38.8	4.0E-02	4.6E-09	212	2.2E-01	2.5E-08	134	1.4E-01	1.6E-08	258	2.6E-01	3.1E-08	126	1.3E-01	1.5E-08
Cobalt	3.5E+02	1.7E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.7E+04	-	1,770	3.8E-02	-	4,670	1.0E-01	-	7,510	1.6E-01	-	4,160	8.9E-02	-	723	1.5E-02	-
Lead	2.0E+03	-	917	4.7E-01	-	4,910	**2.5E+00**	-	6,090	**3.1E+00**	-	12,500	**6.4E+00**	-	2,330	1.2E+00	-
Manganese	2.5E+04	-	992	3.9E-02	-	1,560	6.1E-02	-	1,800	7.1E-02	-	2,070	8.1E-02	-	4,420	1.7E-01	-
Mercury	3.5E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	3.5E+05	-	5,860 J	1.7E-02	-	117,000 J	3.3E-01	-	20,900	6.0E-02	-	48,900	1.4E-01	-	17,500	5.0E-02	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.8E-02	-	-	2.2E-01	-	-	1.7E-01	-	-	3.0E-01	-	-	1.4E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*2.6E-05*	-	-	*4.0E-05*	-	-	*1.2E-04*	-	-	*7.8E-05*	-	-	*6.3E-05*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-19(S)			W-20(I)			W-21(D)			W-22(S)			Z-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.8E+02	3.0E+00	175	3.7E-01	*5.8E-05*	9.8	2.0E-02	*3.3E-06*	153	3.2E-01	*5.1E-05*	33.1 J	6.9E-02	*1.1E-05*	NA	-	-
Barium	2.2E+05	-	725	3.4E-03	-	166	7.7E-04	-	5,440	2.5E-02	-	6,750	3.1E-02	-	116	5.4E-04	-
Cadmium	9.8E+02	8.4E+03	82.3 J	8.4E-02	9.7E-09	29	3.0E-02	3.4E-09	340	3.5E-01	4.0E-08	36.6	3.7E-02	4.3E-09	1.5 B	1.5E-03	1.8E-10
Cobalt	3.5E+02	1.7E+03	18.2	5.2E-02	1.1E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.7E+04	-	2,160	4.6E-02	-	394	8.4E-03	-	16,400	3.5E-01	-	634	1.4E-02	-	NA	-	-
Lead	2.0E+03	-	5,930	**3.0E+00**	-	650	3.3E-01	-	4,990	**2.5E+00**	-	890	4.5E-01	-	72	3.7E-02	-
Manganese	2.5E+04	-	1,300	5.1E-02	-	503	2.0E-02	-	1,540	6.1E-02	-	531	2.1E-02	-	NA	-	-
Mercury	3.5E+02	-	83	2.4E-01	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	3.5E+05	-	13,000 J	3.7E-02	-	2,010	5.7E-03	-	49,600	1.4E-01	-	9,360	2.7E-02	-	452	1.3E-03	-
PAHs																	
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	8.7E-02	-	-	3.0E-02	-	-	3.7E-01	-	-	6.9E-02	-	-	2.1E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*5.8E-05*	-	-	*3.3E-06*	-	-	*5.1E-05*	-	-	*1.1E-05*	-	-	-

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
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Table C1-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		Z-03			Z-05			Z-09		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals											
Arsenic	4.8E+02	3.0E+00	NA	-	-	NA	-	-	0.7 B	1.5E-03	2.3E-07
Barium	2.2E+05	-	16.3	7.6E-05	-	164	7.6E-04	-	2,040	9.5E-03	-
Cadmium	9.8E+02	8.4E+03	0.5 B	5.1E-04	5.9E-11	3.2	3.3E-03	3.8E-10	26.3	2.7E-02	3.1E-09
Cobalt	3.5E+02	1.7E+03	NA	-	-	NA	-	-	12	3.5E-02	7.1E-09
Copper	4.7E+04	-	NA	-	-	NA	-	-	173	3.7E-03	-
Lead	2.0E+03	-	6 B	3.1E-03	-	32	1.6E-02	-	81	4.1E-02	-
Manganese	2.5E+04	-	NA	-	-	NA	-	-	56.6	2.2E-03	-
Mercury	3.5E+02	-	NA	-	-	NA	-	-	0.04 B	1.1E-04	-
Zinc	3.5E+05	-	148	4.2E-04	-	393	1.1E-03	-	1,570	4.5E-03	-
PAHs											
Benzo(a)anthracene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.9E+01	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.9E+02	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.9E-01	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.9E+00	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.2E+02	2.1E+01	NA	-	-	NA	-	-	NA	-	-
Totals											
Total (Barium + Cadmium) HI	-		-	5.9E-04	-	-	4.0E-03	-	-	3.6E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	-	-	-	-	-	-	2.3E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		A-02			A-03			A-04			A-05			B-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	4.3	1.0E-03	1.7E-07	6.3	1.5E-03	2.4E-07	7	1.7E-03	2.7E-07	9.1	2.2E-03	3.5E-07	4.6	1.1E-03	1.8E-07
Barium	1.0E+06	-	54 J	5.4E-05	-	189	1.9E-04	-	379	3.8E-04	-	720	7.2E-04	-	36	3.6E-05	-
Cadmium	8.5E+03	7.3E+04	4.2 J	5.0E-04	5.8E-11	11.7 J	1.4E-03	1.6E-10	16.9 J	2.0E-03	2.3E-10	18.9	2.2E-03	2.6E-10	1.47 J	1.7E-04	2.0E-11
Cobalt	3.0E+03	1.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.0E+05	-	12	3.0E-05	-	21.9 J	5.4E-05	-	34.5	8.6E-05	-	36.3 J	9.0E-05	-	9.1	2.3E-05	-
Lead	8.4E+03	-	20 J	2.4E-03	-	49.6	5.9E-03	-	81.7	9.7E-03	-	325	3.9E-02	-	10.1 J	1.2E-03	-
Manganese	2.2E+05	-	350 J	1.6E-03	-	413	1.9E-03	-	512	2.3E-03	-	736	3.4E-03	-	278	1.3E-03	-
Mercury	3.0E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	290	2.9E-04	-	828	8.3E-04	-	1,320	1.3E-03	-	1,840	1.8E-03	-	115	1.2E-04	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.5E-04	-	-	1.6E-03	-	-	2.4E-03	-	-	3.0E-03	-	-	2.1E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.7E-07	-	-	2.4E-07	-	-	2.7E-07	-	-	3.5E-07	-	-	1.8E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		B-02			B-03			B-04			B-05			B-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	3.4 J	8.2E-04	1.3E-07	13.3	3.2E-03	5.1E-07	8.4	2.0E-03	3.3E-07	367	8.9E-02	*1.4E-05*	15 J	3.6E-03	5.8E-07
Barium	1.0E+06	-	42 J	4.2E-05	-	190	1.9E-04	-	117	1.2E-04	-	2,110	2.1E-03	-	1,410 J	1.4E-03	-
Cadmium	8.5E+03	7.3E+04	1.5 B	1.8E-04	2.1E-11	29.3	3.5E-03	4.0E-10	28.7	3.4E-03	3.9E-10	834	9.9E-02	1.1E-08	49.8	5.9E-03	6.8E-10
Cobalt	3.0E+03	1.5E+04	NA	-	-	NA	-	-	NA	-	-	208	7.0E-02	1.4E-08	NA	-	-
Copper	4.0E+05	-	8.9 J	2.2E-05	-	440	1.1E-03	-	173	4.3E-04	-	24,400	6.1E-02	-	274 J	6.8E-04	-
Lead	8.4E+03	-	17 J	2.0E-03	-	767	9.1E-02	-	262	3.1E-02	-	44,500	**5.3E+00**	-	403 J	4.8E-02	-
Manganese	2.2E+05	-	290 J	1.3E-03	-	601	2.7E-03	-	501	2.3E-03	-	6,660	3.0E-02	-	845 J	3.9E-03	-
Mercury	3.0E+03	-	NA	-	-	NA	-	-	NA	-	-	9.6	3.2E-03	-	NA	-	-
Zinc	1.0E+06	-	110	1.1E-04	-	2,450	2.5E-03	-	1,560	1.6E-03	-	106,000	1.1E-01	-	3,980 J	4.0E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.2E-04	-	-	3.7E-03	-	-	3.5E-03	-	-	1.0E-01	-	-	7.3E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.3E-07	-	-	5.1E-07	-	-	3.3E-07	-	-	*1.4E-05*	-	-	5.8E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		C-01			C-02			C-03			C-04			C-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	4.8	1.2E-03	1.9E-07	3.2	7.7E-04	1.2E-07	13.7	3.3E-03	5.3E-07	230	5.6E-02	*8.9E-06*	96	2.3E-02	*3.7E-06*
Barium	1.0E+06	-	65 J	6.5E-05	-	57	5.7E-05	-	7,150	7.2E-03	-	2,500	2.5E-03	-	8,730	8.7E-03	-
Cadmium	8.5E+03	7.3E+04	3.9 J	4.6E-04	5.4E-11	1.5 J	1.8E-04	2.1E-11	38.9	4.6E-03	5.3E-10	1,180	1.4E-01	1.6E-08	49.3	5.8E-03	6.8E-10
Cobalt	3.0E+03	1.5E+04	NA	-	-	NA	-	-	NA	-	-	1,420	4.8E-01	9.7E-08	NA	-	-
Copper	4.0E+05	-	17	4.2E-05	-	16.9	4.2E-05	-	286	7.1E-04	-	14,600	3.6E-02	-	802	2.0E-03	-
Lead	8.4E+03	-	21 J	2.5E-03	-	19.9	2.4E-03	-	593	7.0E-02	-	29,700	**3.5E+00**	-	8,730	1.0E+00	-
Manganese	2.2E+05	-	390 J	1.8E-03	-	245	1.1E-03	-	743	3.4E-03	-	67,700	3.1E-01	-	4,230	1.9E-02	-
Mercury	3.0E+03	-	NA	-	-	NA	-	-	NA	-	-	5.1	1.7E-03	-	NA	-	-
Zinc	1.0E+06	-	280	2.8E-04	-	196 J	2.0E-04	-	4,650 J	4.7E-03	-	110,000	1.1E-01	-	8,760	8.8E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.3E-04	-	-	2.3E-04	-	-	1.2E-02	-	-	1.4E-01	-	-	1.5E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.9E-07	-	-	1.2E-07	-	-	5.3E-07	-	-	*8.9E-06*	-	-	*3.7E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		D-02			D-03			D-04			D-05			D-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	14.1	3.4E-03	5.5E-07	6.7	1.6E-03	2.6E-07	3.5	8.5E-04	1.4E-07	47.8	1.2E-02	*1.9E-06*	96.5	2.3E-02	*3.7E-06*
Barium	1.0E+06	-	326	3.3E-04	-	228	2.3E-04	-	66	6.6E-05	-	3,500	3.5E-03	-	1,100	1.1E-03	-
Cadmium	8.5E+03	7.3E+04	32.5	3.8E-03	4.5E-10	16.6 J	2.0E-03	2.3E-10	1.27 J	1.5E-04	1.7E-11	70.6	8.3E-03	9.7E-10	111	1.3E-02	1.5E-09
Cobalt	3.0E+03	1.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	20.6	6.9E-03	1.4E-09
Copper	4.0E+05	-	115	2.9E-04	-	89.4	2.2E-04	-	8.9	2.2E-05	-	312	7.7E-04	-	435	1.1E-03	-
Lead	8.4E+03	-	254 J	3.0E-02	-	325	3.9E-02	-	8.6	1.0E-03	-	1,680	2.0E-01	-	3,360	4.0E-01	-
Manganese	2.2E+05	-	347	1.6E-03	-	645	2.9E-03	-	305	1.4E-03	-	1,140	5.2E-03	-	1,890	8.6E-03	-
Mercury	3.0E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.0284 U	9.4E-06	-
Zinc	1.0E+06	-	9,050 J	9.1E-03	-	2,350	2.4E-03	-	104	1.0E-04	-	11,300 J	1.1E-02	-	33,300	3.3E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.42	-	1.7E-08
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.3 J	-	1.2E-07
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.76	-	3.1E-08
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.25 J	-	1.0E-09
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.54	-	2.2E-10
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.047 J	-	1.9E-08
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.27 J	-	1.1E-08
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.11 J	1.8E-05	6.1E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	4.2E-03	-	-	2.2E-03	-	-	2.2E-04	-	-	1.2E-02	-	-	1.4E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0E-07
Total (PAH + Arsenic) Risk	-		-	-	5.5E-07	-	-	2.6E-07	-	-	1.4E-07	-	-	*1.9E-06*	-	-	*3.9E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		D-07			E-01			E-02			E-04			E-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	105	2.5E-02	*4.1E-06*	15.1	3.7E-03	5.8E-07	20.1	4.9E-03	7.8E-07	47.8	1.2E-02	*1.9E-06*	29.7	7.E-03	1.E-06
Barium	1.0E+06	-	5,200	5.2E-03	-	209	2.1E-04	-	247	2.5E-04	-	254	2.5E-04	-	306	3.E-04	-
Cadmium	8.5E+03	7.3E+04	57.8	6.8E-03	7.9E-10	29.5	3.5E-03	4.1E-10	19.1	2.3E-03	2.6E-10	131	1.5E-02	1.8E-09	53.9	6.E-03	7.E-10
Cobalt	3.0E+03	1.5E+04	28	9.4E-03	1.9E-09	3.6 J	1.2E-03	2.5E-10	10.2	3.4E-03	7.0E-10	NA	-	-	NA	-	-
Copper	4.0E+05	-	449	1.1E-03	-	198	4.9E-04	-	62.6	1.6E-04	-	517	1.3E-03	-	303	8.E-04	-
Lead	8.4E+03	-	2,190	2.6E-01	-	325	3.9E-02	-	104	1.2E-02	-	1,710	2.0E-01	-	1,090	1.E-01	-
Manganese	2.2E+05	-	1,690	7.7E-03	-	346	1.6E-03	-	1,560	7.1E-03	-	584	2.7E-03	-	461	2.E-03	-
Mercury	3.0E+03	-	0.21	7.0E-05	-	0.0492 U	1.6E-05	-	0.0688 J	2.3E-05	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	16,400 J	1.6E-02	-	3,650	3.7E-03	-	1,470	1.5E-03	-	25,100 J	2.5E-02	-	6,980	7.E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	0.23 J	-	9.2E-09	NA	-	-	0.064 J	-	2.6E-09	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	0.17 J	-	6.8E-08	NA	-	-	0.047 J	-	1.9E-08	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	0.4 J	-	1.6E-08	NA	-	-	0.082 J	-	3.3E-09	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	0.13 J	-	5.2E-10	NA	-	-	0.038 J	-	1.5E-10	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	0.4 J	-	1.6E-10	NA	-	-	0.098 J	-	3.9E-11	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	0.042 U	-	1.7E-08	NA	-	-	0.037 U	-	1.5E-08	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.14 J	-	5.6E-09	NA	-	-	0.037 U	-	1.5E-09	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	0.071 J	1.1E-05	4.0E-10	NA	-	-	0.037 U	5.9E-06	2.1E-10	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.2E-02	-	-	3.7E-03	-	-	2.5E-03	-	-	1.6E-02	-	-	7.E-03	-
Total PAH Risk	-		-	-	1.2E-07	-	-	-	-	-	4.1E-08	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*4.2E-06*	-	-	5.8E-07	-	-	8.2E-07	-	-	*1.9E-06*	-	-	1.E-06

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
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HHCOPC = Human Health Chemicals of Potential Concern
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mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		E-06			F-01			F-02			F-03			G-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	380	9.2E-02	*1.5E-05*	22.5 J	5.4E-03	8.7E-07	7.2	1.7E-03	2.8E-07	47.1	1.1E-02	*1.8E-06*	10	2.4E-03	3.9E-07
Barium	1.0E+06	-	3,980	4.0E-03	-	162 J	1.6E-04	-	125 J	1.3E-04	-	1,120 J	1.1E-03	-	147	1.5E-04	-
Cadmium	8.5E+03	7.3E+04	256	3.0E-02	3.5E-09	61.6 J	7.3E-03	8.5E-10	8.3	9.8E-04	1.1E-10	186	2.2E-02	2.6E-09	20.8 J	2.5E-03	2.9E-10
Cobalt	3.0E+03	1.5E+04	25.8	8.6E-03	1.8E-09	8.2 B	2.7E-03	5.6E-10	6.7	2.2E-03	4.6E-10	25	8.4E-03	1.7E-09	6.7 B	2.2E-03	4.6E-10
Copper	4.0E+05	-	4,880 J	1.2E-02	-	210 J	5.2E-04	-	31.7	7.9E-05	-	1,320	3.3E-03	-	60.7 J	1.5E-04	-
Lead	8.4E+03	-	9,140	1.1E+00	-	289 J	3.4E-02	-	209	2.5E-02	-	920	1.1E-01	-	108	1.3E-02	-
Manganese	2.2E+05	-	1,580	7.2E-03	-	632	2.9E-03	-	444	2.0E-03	-	783	3.6E-03	-	477	2.2E-03	-
Mercury	3.0E+03	-	0.86	2.8E-04	-	0.024 U	7.9E-06	-	0.34	1.1E-04	-	1.47	4.9E-04	-	0.041 B	1.4E-05	-
Zinc	1.0E+06	-	75,900	7.6E-02	-	5,870 J	5.9E-03	-	766	7.7E-04	-	52,300	5.2E-02	-	3,170	3.2E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	5 U	-	2.0E-07	0.39 U	-	1.6E-08	0.039 U	-	1.6E-09	0.14 J	-	5.6E-09	0.37 U	-	1.5E-08
Benzo(a)pyrene	-	2.5E+00	5 U	-	*2.0E-06*	0.39 U	-	1.6E-07	0.039 U	-	1.6E-08	0.11 J	-	4.4E-08	0.37 U	-	1.5E-07
Benzo(b)fluoranthene	-	2.5E+01	5 U	-	2.0E-07	0.39 U	-	1.6E-08	0.039 U	-	1.6E-09	0.16 J	-	6.4E-09	0.37 U	-	1.5E-08
Benzo(k)fluoranthene	-	2.5E+02	5 U	-	2.0E-08	0.39 U	-	1.6E-09	0.039 U	-	1.6E-10	0.065 J	-	2.6E-10	0.37 U	-	1.5E-09
Chrysene	-	2.5E+03	5 U	-	2.0E-09	0.39 U	-	1.6E-10	0.039 U	-	1.6E-11	0.18 J	-	7.2E-11	0.37 UJ	-	1.5E-10
Dibenz(a,h)anthracene	-	2.5E+00	5 U	-	*2.0E-06*	0.39 U	-	1.6E-07	0.039 U	-	1.6E-08	0.038 U	-	1.5E-08	0.37 U	-	1.5E-07
Indeno(1,2,3-cd)pyrene	-	2.5E+01	5 U	-	2.0E-07	0.39 U	-	1.6E-08	0.039 U	-	1.6E-09	0.071 J	-	2.8E-09	0.37 U	-	1.5E-08
Naphthalene	6.2E+03	1.8E+02	3.7 J	5.9E-04	2.1E-08	0.39 U	6.3E-05	2.2E-09	0.039 U	6.3E-06	2.2E-10	0.038 U	6.1E-06	2.1E-10	0.37 U	5.9E-05	2.1E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	3.4E-02	-	-	7.4E-03	-	-	1.1E-03	-	-	2.3E-02	-	-	2.6E-03	-
Total PAH Risk	-		-	-	*4.7E-06*	-	-	3.6E-07	-	-	3.6E-08	-	-	7.5E-08	-	-	3.5E-07
Total (PAH + Arsenic) Risk	-		-	-	*1.9E-05*	-	-	1.2E-06	-	-	3.2E-07	-	-	*1.9E-06*	-	-	7.3E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		G-02			G-03			G-04			G-05			G-07		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	88.5	2.1E-02	*3.4E-06*	182	4.4E-02	*7.0E-06*	55.2	1.3E-02	*2.1E-06*	45.6	1.1E-02	*1.8E-06*	4.5 J	1.1E-03	1.7E-07
Barium	1.0E+06	-	1,330	1.3E-03	-	276	2.8E-04	-	296	3.0E-04	-	867 J	8.7E-04	-	360	3.6E-04	-
Cadmium	8.5E+03	7.3E+04	235	2.8E-02	3.2E-09	945	1.1E-01	1.3E-08	327	3.9E-02	4.5E-09	160	1.9E-02	2.2E-09	5.7	6.7E-04	7.8E-11
Cobalt	3.0E+03	1.5E+04	8.1	2.7E-03	5.6E-10	NA	-	-	6.5 B	2.2E-03	4.5E-10	NA	-	-	NA	-	-
Copper	4.0E+05	-	899	2.2E-03	-	3,180	7.9E-03	-	467	1.2E-03	-	475	1.2E-03	-	52	1.3E-04	-
Lead	8.4E+03	-	2,830	3.4E-01	-	4,600	5.5E-01	-	1,360	1.6E-01	-	1,390	1.6E-01	-	63	7.5E-03	-
Manganese	2.2E+05	-	1,370	6.3E-03	-	2,110	9.6E-03	-	566	2.6E-03	-	732	3.3E-03	-	320	1.5E-03	-
Mercury	3.0E+03	-	0.067 B	2.2E-05	-	NA	-	-	0.28	9.3E-05	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	37,300 J	3.7E-02	-	260,000 J	2.6E-01	-	43,300 J	4.3E-02	-	21,700	2.2E-02	-	850	8.5E-04	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	0.39 U	-	1.6E-08	NA	-	-	0.36 U	-	1.4E-08	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	0.39 U	-	1.6E-07	NA	-	-	0.36 U	-	1.4E-07	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	0.39 U	-	1.6E-08	NA	-	-	0.36 U	-	1.4E-08	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	0.39 U	-	1.6E-09	NA	-	-	0.36 U	-	1.4E-09	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	0.39 U	-	1.6E-10	NA	-	-	0.36 U	-	1.4E-10	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	0.39 U	-	1.6E-07	NA	-	-	0.36 U	-	1.4E-07	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.39 U	-	1.6E-08	NA	-	-	0.36 U	-	1.4E-08	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	0.39 U	6.3E-05	2.2E-09	NA	-	-	0.36 U	5.8E-05	2.0E-09	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.9E-02	-	-	1.1E-01	-	-	3.9E-02	-	-	2.0E-02	-	-	1.0E-03	-
Total PAH Risk	-		-	-	3.6E-07	-	-	-	-	-	3.4E-07	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*3.8E-06*	-	-	*7.0E-06*	-	-	*2.5E-06*	-	-	*1.8E-06*	-	-	1.7E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		H-02			H-04			H-05			H-06			H-07		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	9	2.2E-03	3.5E-07	4.7	1.1E-03	1.8E-07	51	1.2E-02	*2.0E-06*	110	2.7E-02	*4.3E-06*	27.8	6.7E-03	1.1E-06
Barium	1.0E+06	-	88	8.8E-05	-	52	5.2E-05	-	1,800	1.8E-03	-	1,200	1.2E-03	-	8,590	8.6E-03	-
Cadmium	8.5E+03	7.3E+04	6.2	7.3E-04	8.5E-11	9	1.1E-03	1.2E-10	170	2.0E-02	2.3E-09	130	1.5E-02	1.8E-09	12.9	1.5E-03	1.8E-10
Cobalt	3.0E+03	1.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	6.5 B	2.2E-03	4.5E-10
Copper	4.0E+05	-	19.1 J	4.7E-05	-	50	1.2E-04	-	820	2.0E-03	-	990	2.5E-03	-	160	4.0E-04	-
Lead	8.4E+03	-	34	4.0E-03	-	87 J	1.0E-02	-	3,700 J	4.4E-01	-	4,000 J	4.7E-01	-	274	3.2E-02	-
Manganese	2.2E+05	-	579	2.6E-03	-	350 J	1.6E-03	-	730 J	3.3E-03	-	601	2.7E-03	-	2,480	1.1E-02	-
Mercury	3.0E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.023 U	7.6E-06	-
Zinc	1.0E+06	-	1,450 J	1.5E-03	-	1,200 J	1.2E-03	-	45,000 J	4.5E-02	-	89,000 J	8.9E-02	-	3,810 J	3.8E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.6E-08
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.6E-07
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.6E-08
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.6E-09
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.6E-10
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.6E-07
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	-	1.6E-08
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.39 U	6.3E-05	2.2E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	8.2E-04	-	-	1.1E-03	-	-	2.2E-02	-	-	1.7E-02	-	-	1.0E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6E-07
Total (PAH + Arsenic) Risk	-		-	-	3.5E-07	-	-	1.8E-07	-	-	*2.0E-06*	-	-	*4.3E-06*	-	-	1.4E-06

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		H-08			HH-10			HH-12			I-02			I-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	826	2.0E-01	*3.2E-05*	230.1	5.6E-02	*8.9E-06*	417	1.0E-01	*1.6E-05*	60	1.5E-02	*2.3E-06*	33.1	8.0E-03	1.3E-06
Barium	1.0E+06	-	4,980	5.0E-03	-	77	7.7E-05	-	11,100	1.1E-02	-	3,200	3.2E-03	-	3,920	3.9E-03	-
Cadmium	8.5E+03	7.3E+04	317 J	3.7E-02	4.4E-09	1.3 B	1.5E-04	1.8E-11	94	1.1E-02	1.3E-09	101	1.2E-02	1.4E-09	104	1.2E-02	1.4E-09
Cobalt	3.0E+03	1.5E+04	90.5	3.0E-02	6.2E-09	10 B	3.3E-03	6.9E-10	90	3.0E-02	6.2E-09	9.5 B	3.2E-03	6.5E-10	7.6 B	2.5E-03	5.2E-10
Copper	4.0E+05	-	2,530 J	6.3E-03	-	3,360	8.3E-03	-	1,810	4.5E-03	-	3,280	8.1E-03	-	236	5.9E-04	-
Lead	8.4E+03	-	22,800	**2.7E+00**	-	21,700	**2.6E+00**	-	24,400	**2.9E+00**	-	7,570	9.0E-01	-	1,440	1.7E-01	-
Manganese	2.2E+05	-	8,770	4.0E-02	-	1,350	6.2E-03	-	6,310	2.9E-02	-	18,000	8.2E-02	-	815	3.7E-03	-
Mercury	3.0E+03	-	1.57	5.2E-04	-	0.03 U	9.9E-06	-	0.02 U	6.6E-06	-	0.05 U	1.7E-05	-	0.048 U	1.6E-05	-
Zinc	1.0E+06	-	35,100	3.5E-02	-	3,600	3.6E-03	-	28,800	2.9E-02	-	36,100	3.6E-02	-	9,030	9.0E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	0.56	-	2.2E-08	NA	-	-	NA	-	-	0.4 U	-	1.6E-08	0.39 U	-	1.6E-08
Benzo(a)pyrene	-	2.5E+00	0.42 J	-	1.7E-07	NA	-	-	NA	-	-	0.4 U	-	1.6E-07	0.39 U	-	1.6E-07
Benzo(b)fluoranthene	-	2.5E+01	0.62	-	2.5E-08	NA	-	-	NA	-	-	0.4 U	-	1.6E-08	0.39 U	-	1.6E-08
Benzo(k)fluoranthene	-	2.5E+02	0.26 J	-	1.0E-09	NA	-	-	NA	-	-	0.4 U	-	1.6E-09	0.39 U	-	1.6E-09
Chrysene	-	2.5E+03	0.58	-	2.3E-10	NA	-	-	NA	-	-	0.4 U	-	1.6E-10	0.39 U	-	1.6E-10
Dibenz(a,h)anthracene	-	2.5E+00	0.083 J	-	3.3E-08	NA	-	-	NA	-	-	0.4 U	-	1.6E-07	0.39 U	-	1.6E-07
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.26 J	-	1.0E-08	NA	-	-	NA	-	-	0.4 U	-	1.6E-08	0.39 U	-	1.6E-08
Naphthalene	6.2E+03	1.8E+02	0.053 J	8.5E-06	3.0E-10	NA	-	-	NA	-	-	0.4 U	6.4E-05	2.2E-09	0.39 U	6.3E-05	2.2E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	4.2E-02	-	-	2.3E-04	-	-	2.2E-02	-	-	1.5E-02	-	-	1.6E-02	-
Total PAH Risk	-		-	-	2.6E-07	-	-	-	-	-	-	-	-	3.7E-07	-	-	3.6E-07
Total (PAH + Arsenic) Risk	-		-	-	*3.2E-05*	-	-	*8.9E-06*	-	-	*1.6E-05*	-	-	*2.7E-06*	-	-	*1.6E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		I-04			I-05			I-06			I-07			I-09		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	47.4	1.1E-02	*1.8E-06*	141	3.4E-02	*5.5E-06*	99.9	2.4E-02	*3.9E-06*	235	5.7E-02	*9.1E-06*	28.2	6.8E-03	1.1E-06
Barium	1.0E+06	-	1,770 J	1.8E-03	-	969	9.7E-04	-	6,500	6.5E-03	-	1,130	1.1E-03	-	1,250	1.3E-03	-
Cadmium	8.5E+03	7.3E+04	135	1.6E-02	1.9E-09	197	2.3E-02	2.7E-09	1,010	1.2E-01	1.4E-08	139	1.6E-02	1.9E-09	44.8	5.3E-03	6.2E-10
Cobalt	3.0E+03	1.5E+04	NA	-	-	8.3 B	2.8E-03	5.7E-10	20.4	6.8E-03	1.4E-09	NA	-	-	NA	-	-
Copper	4.0E+05	-	1,060 J	2.6E-03	-	4,430	1.1E-02	-	1,620 J	4.0E-03	-	5,530 J	1.4E-02	-	764	1.9E-03	-
Lead	8.4E+03	-	1,510 J	1.8E-01	-	2,490 J	3.0E-01	-	4,840	5.7E-01	-	4,650	5.5E-01	-	922	1.1E-01	-
Manganese	2.2E+05	-	2,330	1.1E-02	-	3,860	1.8E-02	-	2,020	9.2E-03	-	2,590	1.2E-02	-	802	3.7E-03	-
Mercury	3.0E+03	-	NA	-	-	0.049 B	1.6E-05	-	0.43 J	1.4E-04	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	15,200	1.5E-02	-	38,100	3.8E-02	-	65,600	6.6E-02	-	44,700	4.5E-02	-	9,760	9.8E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	0.38 U	-	1.5E-08	0.93	-	3.7E-08	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	0.38 U	-	1.5E-07	0.58	-	2.3E-07	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	0.38 U	-	1.5E-08	0.92	-	3.7E-08	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	0.38 U	-	1.5E-09	0.28 J	-	1.1E-09	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	0.38 U	-	1.5E-10	1.7	-	6.8E-10	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	0.38 U	-	1.5E-07	0.16 J	-	6.4E-08	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	0.38 U	-	1.5E-08	0.35 J	-	1.4E-08	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	0.38 U	6.1E-05	2.1E-09	0.21 J	3.4E-05	1.2E-09	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.8E-02	-	-	2.4E-02	-	-	1.3E-01	-	-	1.8E-02	-	-	6.5E-03	-
Total PAH Risk	-		-	-	-	-	-	3.5E-07	-	-	3.9E-07	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.8E-06*	-	-	*5.8E-06*	-	-	*4.3E-06*	-	-	*9.1E-06*	-	-	1.1E-06

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
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HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		I-11			J-01			J-02			J-03			J-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	45.5 J	1.1E-02	*1.8E-06*	11.6	2.8E-03	4.5E-07	20	4.8E-03	7.7E-07	18.4	4.5E-03	7.1E-07	111	2.7E-02	*4.3E-06*
Barium	1.0E+06	-	11,200	1.1E-02	-	611	6.1E-04	-	204	2.0E-04	-	205	2.1E-04	-	7,020	7.0E-03	-
Cadmium	8.5E+03	7.3E+04	96.8 J	1.1E-02	1.3E-09	8.2	9.7E-04	1.1E-10	84.3	1.0E-02	1.2E-09	7.6	9.0E-04	1.0E-10	109	1.3E-02	1.5E-09
Cobalt	3.0E+03	1.5E+04	39.6	1.3E-02	2.7E-09	NA	-	-	6.1	2.0E-03	4.2E-10	9 B	3.0E-03	6.2E-10	NA	-	-
Copper	4.0E+05	-	958	2.4E-03	-	42.8	1.1E-04	-	33.6	8.3E-05	-	65.9	1.6E-04	-	1,230	3.1E-03	-
Lead	8.4E+03	-	1,290 J	1.5E-01	-	109 J	1.3E-02	-	1,060 J	1.3E-01	-	328 J	3.9E-02	-	4,790	5.7E-01	-
Manganese	2.2E+05	-	1,190	5.4E-03	-	630	2.9E-03	-	457	2.1E-03	-	663	3.0E-03	-	3,220	1.5E-02	-
Mercury	3.0E+03	-	0.2 J	6.6E-05	-	NA	-	-	0.029 B	9.6E-06	-	0.039 B	1.3E-05	-	NA	-	-
Zinc	1.0E+06	-	15,800	1.6E-02	-	1,460	1.5E-03	-	6,120	6.1E-03	-	1,580	1.6E-03	-	24,500	2.5E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	0.25 J	-	1.0E-08	NA	-	-	0.35 U	-	1.4E-08	0.4 U	-	1.6E-08	NA	-	-
Benzo(a)pyrene	-	2.5E+00	0.2 J	-	8.0E-08	NA	-	-	0.35 U	-	1.4E-07	0.4 U	-	1.6E-07	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	0.36 J	-	1.4E-08	NA	-	-	0.35 U	-	1.4E-08	0.4 U	-	1.6E-08	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	0.15 J	-	6.0E-10	NA	-	-	0.35 U	-	1.4E-09	0.4 U	-	1.6E-09	NA	-	-
Chrysene	-	2.5E+03	0.42	-	1.7E-10	NA	-	-	0.35 U	-	1.4E-10	0.4 U	-	1.6E-10	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	0.053 J	-	2.1E-08	NA	-	-	0.35 U	-	1.4E-07	0.4 U	-	1.6E-07	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.16 J	-	6.4E-09	NA	-	-	0.35 U	-	1.4E-08	0.4 U	-	1.6E-08	NA	-	-
Naphthalene	6.2E+03	1.8E+02	0.07 J	1.1E-05	3.9E-10	NA	-	-	0.35 U	5.6E-05	2.0E-09	0.4 U	6.4E-05	2.2E-09	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.3E-02	-	-	1.6E-03	-	-	1.0E-02	-	-	1.1E-03	-	-	2.0E-02	-
Total PAH Risk	-		-	-	1.3E-07	-	-	-	-	-	3.3E-07	-	-	3.7E-07	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.9E-06*	-	-	4.5E-07	-	-	1.1E-06	-	-	1.1E-06	-	-	*4.3E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-07			J-08			J-09			J-10			J-11		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	36.3 J	8.8E-03	1.4E-06	139 J	3.4E-02	*5.4E-06*	79 J	1.9E-02	*3.1E-06*	10.3	2.5E-03	4.0E-07	9.3 J	2.3E-03	3.6E-07
Barium	1.0E+06	-	133 J	1.3E-04	-	734 J	7.3E-04	-	391 J	3.9E-04	-	296	3.0E-04	-	420	4.2E-04	-
Cadmium	8.5E+03	7.3E+04	14.7	1.7E-03	2.0E-10	40	4.7E-03	5.5E-10	6.5 J	7.7E-04	8.9E-11	15.1 J	1.8E-03	2.1E-10	19	2.2E-03	2.6E-10
Cobalt	3.0E+03	1.5E+04	15.8	5.3E-03	1.1E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.0E+05	-	699 J	1.7E-03	-	8,610 J	2.1E-02	-	2,760 J	6.9E-03	-	116	2.9E-04	-	130	3.2E-04	-
Lead	8.4E+03	-	536 J	6.4E-02	-	4,620 J	5.5E-01	-	2,450 J	2.9E-01	-	166	2.0E-02	-	200 J	2.4E-02	-
Manganese	2.2E+05	-	1,060 J	4.8E-03	-	13,700 J	6.3E-02	-	20,400 J	9.3E-02	-	576 J	2.6E-03	-	390	1.8E-03	-
Mercury	3.0E+03	-	0.028 U	9.3E-06	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	6,420	6.4E-03	-	36,500	3.7E-02	-	10,900	1.1E-02	-	2,300	2.3E-03	-	2,000 J	2.0E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	0.36 U	-	1.4E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	0.36 U	-	1.4E-07	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	0.36 U	-	1.4E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	0.36 U	-	1.4E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	0.36 U	-	1.4E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	0.36 U	-	1.4E-07	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.36 U	-	1.4E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	0.36 U	5.8E-05	2.0E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.9E-03	-	-	5.5E-03	-	-	1.2E-03	-	-	2.1E-03	-	-	2.7E-03	-
Total PAH Risk	-		-	-	3.4E-07	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.7E-06*	-	-	*5.4E-06*	-	-	*3.1E-06*	-	-	4.0E-07	-	-	3.6E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-12			J-13			K-01			K-02			K-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	17.9	4.3E-03	6.9E-07	230 J	5.6E-02	*8.9E-06*	15 J	3.6E-03	5.8E-07	29.1	7.0E-03	1.1E-06	17.3	4.2E-03	6.7E-07
Barium	1.0E+06	-	4,390	4.4E-03	-	686	6.9E-04	-	405	4.1E-04	-	15,600	1.6E-02	-	5,780	5.8E-03	-
Cadmium	8.5E+03	7.3E+04	67.6 J	8.0E-03	9.3E-10	676 J	8.0E-02	9.3E-09	18.3	2.2E-03	2.5E-10	34.7	4.1E-03	4.8E-10	15.9	1.9E-03	2.2E-10
Cobalt	3.0E+03	1.5E+04	NA	-	-	42.2	1.4E-02	2.9E-09	6.7	2.2E-03	4.6E-10	NA	-	-	NA	-	-
Copper	4.0E+05	-	319	7.9E-04	-	3,910	9.7E-03	-	69.6	1.7E-04	-	1,040	2.6E-03	-	497	1.2E-03	-
Lead	8.4E+03	-	485	5.8E-02	-	2,910 J	3.5E-01	-	115	1.4E-02	-	939	1.1E-01	-	679	8.1E-02	-
Manganese	2.2E+05	-	588 J	2.7E-03	-	2,180	1.0E-02	-	550	2.5E-03	-	6,200	2.8E-02	-	1,800	8.2E-03	-
Mercury	3.0E+03	-	NA	-	-	0.58 J	1.9E-04	-	0.11 U	3.6E-05	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	6,650	6.7E-03	-	101,000	1.0E-01	-	1,340	1.3E-03	-	9,980	1.0E-02	-	5,420	5.4E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	0.051 UJ	-	2.0E-09	0.38 U	-	1.5E-08	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	0.051 UJ	-	2.0E-08	0.38 U	-	1.5E-07	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	0.051 UJ	-	2.0E-09	0.38 U	-	1.5E-08	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	0.051 UJ	-	2.0E-10	0.38 U	-	1.5E-09	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	0.051 UJ	-	2.0E-11	0.38 U	-	1.5E-10	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	0.051 UJ	-	2.0E-08	0.38 U	-	1.5E-07	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	0.051 UJ	-	2.0E-09	0.38 U	-	1.5E-08	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	0.29 J	4.7E-05	1.6E-09	0.38 U	6.1E-05	2.1E-09	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.2E-02	-	-	8.1E-02	-	-	2.6E-03	-	-	2.0E-02	-	-	7.7E-03	-
Total PAH Risk	-		-	-	-	-	-	4.9E-08	-	-	3.5E-07	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	6.9E-07	-	-	*9.0E-06*	-	-	9.4E-07	-	-	1.1E-06	-	-	6.7E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		K-04			K-05			L-02			L-03			L-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	36.7	8.9E-03	1.4E-06	36.5 J	8.8E-03	1.4E-06	78 J	1.9E-02	*3.0E-06*	91 J	2.2E-02	*3.5E-06*	114	2.8E-02	*4.4E-06*
Barium	1.0E+06	-	411	4.1E-04	-	340	3.4E-04	-	350	3.5E-04	-	2,500	2.5E-03	-	9,510	9.5E-03	-
Cadmium	8.5E+03	7.3E+04	34.9	4.1E-03	4.8E-10	38 J	4.5E-03	5.2E-10	33	3.9E-03	4.5E-10	64	7.6E-03	8.8E-10	141	1.7E-02	1.9E-09
Cobalt	3.0E+03	1.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.0E+05	-	533	1.3E-03	-	400	9.9E-04	-	380	9.4E-04	-	490	1.2E-03	-	662	1.6E-03	-
Lead	8.4E+03	-	1,560	1.8E-01	-	526 J	6.2E-02	-	13,000	**1.5E+00**	-	4,700	5.6E-01	-	2,300	2.7E-01	-
Manganese	2.2E+05	-	921	4.2E-03	-	1,050	4.8E-03	-	1,100	5.0E-03	-	3,400	1.6E-02	-	2,750	1.3E-02	-
Mercury	3.0E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	8,840	8.8E-03	-	10,300	1.0E-02	-	9,400	9.4E-03	-	20,000	2.0E-02	-	31,500	3.2E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.5E-03	-	-	4.8E-03	-	-	4.3E-03	-	-	1.0E-02	-	-	2.6E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.4E-06	-	-	1.4E-06	-	-	*3.0E-06*	-	-	*3.5E-06*	-	-	*4.4E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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RSV = Risk-based Screening Value
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HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		L-06			M-01			M-02			M-03			M-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	21	5.1E-03	8.1E-07	22.8	5.5E-03	8.8E-07	12.8	3.1E-03	5.0E-07	10.5	2.5E-03	4.1E-07	10.8	2.6E-03	4.2E-07
Barium	1.0E+06	-	1,010	1.0E-03	-	595	6.0E-04	-	207	2.1E-04	-	175	1.8E-04	-	216	2.2E-04	-
Cadmium	8.5E+03	7.3E+04	36.8	4.4E-03	5.1E-10	64.8	7.7E-03	8.9E-10	15.7	1.9E-03	2.2E-10	14.7	1.7E-03	2.0E-10	27.7	3.3E-03	3.8E-10
Cobalt	3.0E+03	1.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.0E+05	-	292	7.3E-04	-	268	6.7E-04	-	115	2.9E-04	-	109	2.7E-04	-	130	3.2E-04	-
Lead	8.4E+03	-	453	5.4E-02	-	780	9.2E-02	-	154	1.8E-02	-	145	1.7E-02	-	161	1.9E-02	-
Manganese	2.2E+05	-	391	1.8E-03	-	709	3.2E-03	-	579	2.6E-03	-	554	2.5E-03	-	521	2.4E-03	-
Mercury	3.0E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	4,280 J	4.3E-03	-	9,330	9.3E-03	-	2,200 J	2.2E-03	-	1,520 J	1.5E-03	-	3,850 J	3.9E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.4E-03	-	-	8.3E-03	-	-	2.1E-03	-	-	1.9E-03	-	-	3.5E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	8.1E-07	-	-	8.8E-07	-	-	5.0E-07	-	-	4.1E-07	-	-	4.2E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
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HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		N-01			N-02			N-03			P-01			P-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	207	5.0E-02	*8.0E-06*	6.3	1.5E-03	2.4E-07	7.4	1.8E-03	2.9E-07	35 J	8.E-03	1.E-06	8.8	2.1E-03	3.4E-07
Barium	1.0E+06	-	168	1.7E-04	-	137	1.4E-04	-	306	3.1E-04	-	4,500 J	5.E-03	-	125	1.3E-04	-
Cadmium	8.5E+03	7.3E+04	11	1.3E-03	1.5E-10	10.1	1.2E-03	1.4E-10	6.7	7.9E-04	9.2E-11	52	6.E-03	7.E-10	4.6	5.4E-04	6.3E-11
Cobalt	3.0E+03	1.5E+04	NA	-	-	NA	-	-	NA	-	-	5.9 J	2.E-03	4.E-10	4.5 J	1.5E-03	3.1E-10
Copper	4.0E+05	-	5,060	1.3E-02	-	774	1.9E-03	-	44.6	1.1E-04	-	320 J	8.E-04	-	20	5.0E-05	-
Lead	8.4E+03	-	9,210	1.1E+00	-	53.5	6.3E-03	-	61.4	7.3E-03	-	2,500 J	3.E-01	-	26.7	3.2E-03	-
Manganese	2.2E+05	-	1,950	8.9E-03	-	770	3.5E-03	-	451	2.1E-03	-	440 J	2.E-03	-	299	1.4E-03	-
Mercury	3.0E+03	-	NA	-	-	NA	-	-	NA	-	-	0.94 J	3.E-04	-	0.0053 U	1.8E-06	-
Zinc	1.0E+06	-	3,390	3.4E-03	-	3,180 J	3.2E-03	-	908 J	9.1E-04	-	4,100	4.E-03	-	488	4.9E-04	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.5E-03	-	-	1.3E-03	-	-	1.1E-03	-	-	1.E-02	-	-	6.7E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*8.0E-06*	-	-	2.4E-07	-	-	2.9E-07	-	-	1.E-06	-	-	3.4E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
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Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		P-03			P-04			PZ-01(S)			PZ-02(S)			PZ-03(I)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	36 J	8.7E-03	1.4E-06	24 J	5.8E-03	9.3E-07	110 J	2.7E-02	*4.3E-06*	110	2.7E-02	*4.3E-06*	124	3.0E-02	*4.8E-06*
Barium	1.0E+06	-	7,500 J	7.5E-03	-	5,600 J	5.6E-03	-	840	8.4E-04	-	5,360	5.4E-03	-	2,930	2.9E-03	-
Cadmium	8.5E+03	7.3E+04	48	5.7E-03	6.6E-10	61	7.2E-03	8.4E-10	50	5.9E-03	6.9E-10	111 J	1.3E-02	1.5E-09	41.5	4.9E-03	5.7E-10
Cobalt	3.0E+03	1.5E+04	17	5.7E-03	1.2E-09	6.4 J	2.1E-03	4.4E-10	NA	-	-	55.1	1.8E-02	3.8E-09	NA	-	-
Copper	4.0E+05	-	700 J	1.7E-03	-	390 J	9.7E-04	-	940	2.3E-03	-	1,930	4.8E-03	-	4,030	1.0E-02	-
Lead	8.4E+03	-	940 J	1.1E-01	-	1,300 J	1.5E-01	-	2,800	3.3E-01	-	3,870	4.6E-01	-	5,560	6.6E-01	-
Manganese	2.2E+05	-	700 J	3.2E-03	-	600 J	2.7E-03	-	4,100	1.9E-02	-	3,570 J	1.6E-02	-	6,380	2.9E-02	-
Mercury	3.0E+03	-	0.13 J	4.3E-05	-	0.99 J	3.3E-04	-	NA	-	-	0.36	1.2E-04	-	NA	-	-
Zinc	1.0E+06	-	13,000	1.3E-02	-	11,000	1.1E-02	-	20,000	2.0E-02	-	26,500	2.7E-02	-	13,700	1.4E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	0.27 J	-	1.1E-08	1.2	-	4.8E-08	NA	-	-	0.2 J	-	8.0E-09	NA	-	-
Benzo(a)pyrene	-	2.5E+00	0.26 J	-	1.0E-07	0.85	-	3.4E-07	NA	-	-	0.084 J	-	3.4E-08	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	0.31 J	-	1.2E-08	0.74	-	3.0E-08	NA	-	-	0.18 J	-	7.2E-09	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	0.35 J	-	1.4E-09	0.8	-	3.2E-09	NA	-	-	0.066 J	-	2.6E-10	NA	-	-
Chrysene	-	2.5E+03	0.47	-	1.9E-10	1.2	-	4.8E-10	NA	-	-	0.35 J	-	1.4E-10	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	0.4 U	-	1.6E-07	0.47	-	1.9E-07	NA	-	-	0.041 U	-	1.6E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.29 J	-	1.2E-08	0.81	-	3.3E-08	NA	-	-	0.052 J	-	2.1E-09	NA	-	-
Naphthalene	6.2E+03	1.8E+02	0.4 U	6.4E-05	2.2E-09	0.15 J	2.4E-05	8.4E-10	NA	-	-	0.22 J	3.5E-05	1.2E-09	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.3E-02	-	-	1.3E-02	-	-	6.8E-03	-	-	1.8E-02	-	-	7.8E-03	-
Total PAH Risk	-		-	-	3.0E-07	-	-	6.4E-07	-	-	-	-	-	6.9E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.7E-06*	-	-	*1.6E-06*	-	-	*4.3E-06*	-	-	*4.3E-06*	-	-	*4.8E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		PZ-04(S)			SB-04			SB-09			SL-A			SL-B		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	108	2.6E-02	*4.2E-06*	14.8	3.6E-03	5.7E-07	139	3.4E-02	*5.4E-06*	56.8	1.4E-02	*2.2E-06*	160	3.9E-02	*6.2E-06*
Barium	1.0E+06	-	1,330	1.3E-03	-	86.4 *	8.6E-05	-	1,180	1.2E-03	-	129	1.3E-04	-	98	9.8E-05	-
Cadmium	8.5E+03	7.3E+04	35	4.1E-03	4.8E-10	8.8	1.0E-03	1.2E-10	74.8	8.8E-03	1.0E-09	466	5.5E-02	6.4E-09	1.1 U	1.3E-04	1.5E-11
Cobalt	3.0E+03	1.5E+04	8.5	2.8E-03	5.8E-10	15.6	5.2E-03	1.1E-09	NA	-	-	21.4	7.2E-03	1.5E-09	47	1.6E-02	3.2E-09
Copper	4.0E+05	-	1,980	4.9E-03	-	115	2.9E-04	-	232	5.8E-04	-	2,250	5.6E-03	-	3,760	9.3E-03	-
Lead	8.4E+03	-	2,930	3.5E-01	-	244 J	2.9E-02	-	9,480	1.1E+00	-	2,690	3.2E-01	-	7,200	8.5E-01	-
Manganese	2.2E+05	-	1,620	7.4E-03	-	268 *	1.2E-03	-	1,090	5.0E-03	-	1,530 J	7.0E-03	-	1,630 J	7.4E-03	-
Mercury	3.0E+03	-	0.026 U	8.6E-06	-	0.12 U	4.0E-05	-	NA	-	-	0.0436 B	1.4E-05	-	0.0067 U	2.2E-06	-
Zinc	1.0E+06	-	9,230	9.2E-03	-	1,420	1.4E-03	-	13,900	1.4E-02	-	54,000	5.4E-02	-	8,120	8.1E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	0.037 U	-	1.5E-09	0.41 U	-	1.6E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	0.037 U	-	1.5E-08	0.41 U	-	1.6E-07	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	0.037 U	-	1.5E-09	0.41 U	-	1.6E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	0.037 U	-	1.5E-10	0.41 U	-	1.6E-09	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	0.037 U	-	1.5E-11	0.41 U	-	1.6E-10	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	0.037 U	-	1.5E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.037 U	-	1.5E-09	0.41 U	-	1.6E-08	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	0.037 U	5.9E-06	2.1E-10	0.38 U	6.1E-05	2.1E-09	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.5E-03	-	-	1.1E-03	-	-	1.0E-02	-	-	5.5E-02	-	-	2.3E-04	-
Total PAH Risk	-		-	-	3.5E-08	-	-	2.2E-07	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*4.2E-06*	-	-	7.9E-07	-	-	*5.4E-06*	-	-	*2.2E-06*	-	-	*6.2E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SL-C			SL-D-1			SL-D-2			SL-E			SL-G		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	32	7.7E-03	1.2E-06	91.5	2.2E-02	*3.5E-06*	112	2.7E-02	*4.3E-06*	218	5.3E-02	*8.4E-06*	4,020	9.7E-01	*1.6E-04*
Barium	1.0E+06	-	760	7.6E-04	-	990	9.9E-04	-	1,660	1.7E-03	-	163	1.6E-04	-	1,310	1.3E-03	-
Cadmium	8.5E+03	7.3E+04	54.8	6.5E-03	7.5E-10	246	2.9E-02	3.4E-09	403	4.8E-02	5.5E-09	1 U	1.2E-04	1.4E-11	389	4.6E-02	5.3E-09
Cobalt	3.0E+03	1.5E+04	20.3	6.8E-03	1.4E-09	29 J	9.7E-03	2.0E-09	26.9	9.0E-03	1.8E-09	90	3.0E-02	6.2E-09	19.5	6.5E-03	1.3E-09
Copper	4.0E+05	-	1,340	3.3E-03	-	3,030	7.5E-03	-	2,420	6.0E-03	-	2,790	6.9E-03	-	1,600	4.0E-03	-
Lead	8.4E+03	-	820	9.7E-02	-	2,370	2.8E-01	-	3,690	4.4E-01	-	3,350	4.0E-01	-	14,300	**1.7E+00**	-
Manganese	2.2E+05	-	1,020 J	4.7E-03	-	25,300	1.2E-01	-	1,690	7.7E-03	-	1,780 J	8.1E-03	-	1,240	5.7E-03	-
Mercury	3.0E+03	-	0.48	1.6E-04	-	0.4	1.3E-04	-	0.55	1.8E-04	-	0.0061 U	2.0E-06	-	11.9	3.9E-03	-
Zinc	1.0E+06	-	8,660	8.7E-03	-	44,600	4.5E-02	-	64,900	6.5E-02	-	3,060	3.1E-03	-	14,000	1.4E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	0.61	-	2.4E-08	0.43 J	-	1.7E-08	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	0.44 J	-	1.8E-07	0.25 J	-	1.0E-07	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	0.84	-	3.4E-08	0.57	-	2.3E-08	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	0.2 J	-	8.0E-10	0.17 J	-	6.8E-10	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	0.95	-	3.8E-10	0.7	-	2.8E-10	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	0.11 J	-	4.4E-08	0.079 U	-	3.2E-08	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	0.26 J	-	1.0E-08	0.17 J	-	6.8E-09	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	0.18 J	2.9E-05	1.0E-09	0.38 J	6.1E-05	2.1E-09	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	7.2E-03	-	-	3.0E-02	-	-	4.9E-02	-	-	2.8E-04	-	-	4.7E-02	-
Total PAH Risk	-		-	-	-	-	-	2.9E-07	-	-	1.8E-07	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.2E-06	-	-	*3.8E-06*	-	-	*4.5E-06*	-	-	*8.4E-06*	-	-	*1.6E-04*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-01			SS-04			SS-05			SS-06			SS-07		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	14 U	3.4E-03	5.4E-07	24	5.8E-03	9.3E-07	8.8 J	2.1E-03	3.4E-07	11.8 J	2.9E-03	4.6E-07	19	4.6E-03	7.4E-07
Barium	1.0E+06	-	607 J	6.1E-04	-	6,720 J	6.7E-03	-	708	7.1E-04	-	3,420 J	3.4E-03	-	5,680	5.7E-03	-
Cadmium	8.5E+03	7.3E+04	88.8	1.1E-02	1.2E-09	13.2	1.6E-03	1.8E-10	55.1	6.5E-03	7.6E-10	17.4	2.1E-03	2.4E-10	147	1.7E-02	2.0E-09
Cobalt	3.0E+03	1.5E+04	3.78 J	1.3E-03	2.6E-10	46.1	1.5E-02	3.2E-09	7.2	2.4E-03	4.9E-10	0.69 U	2.3E-04	4.7E-11	19.1	6.4E-03	1.3E-09
Copper	4.0E+05	-	106	2.6E-04	-	1,570	3.9E-03	-	191	4.7E-04	-	65	1.6E-04	-	1,070	2.7E-03	-
Lead	8.4E+03	-	78 J	9.2E-03	-	2,260 J	2.7E-01	-	544	6.5E-02	-	157 J	1.9E-02	-	7,730	9.2E-01	-
Manganese	2.2E+05	-	105 J	4.8E-04	-	2,670 J	1.2E-02	-	558	2.5E-03	-	131 J	6.0E-04	-	3,000	1.4E-02	-
Mercury	3.0E+03	-	0.0256 J	8.5E-06	-	0.102 J	3.4E-05	-	0.47	1.6E-04	-	0.0708 J	2.3E-05	-	0.73	2.4E-04	-
Zinc	1.0E+06	-	144,000 J	1.4E-01	-	8,080 J	8.1E-03	-	6,830	6.8E-03	-	1,460 J	1.5E-03	-	25,300	2.5E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	0.043 U	-	1.7E-09	0.077 J	-	3.1E-09	0.1 J	-	4.0E-09	0.047 U	-	1.9E-09	0.41	-	1.6E-08
Benzo(a)pyrene	-	2.5E+00	0.043 U	-	1.7E-08	0.069 J	-	2.8E-08	0.084 J	-	3.4E-08	0.047 U	-	1.9E-08	0.41	-	1.6E-07
Benzo(b)fluoranthene	-	2.5E+01	0.043 U	-	1.7E-09	0.091 J	-	3.7E-09	0.16 J	-	6.4E-09	0.047 U	-	1.9E-09	0.76	-	3.1E-08
Benzo(k)fluoranthene	-	2.5E+02	0.043 U	-	1.7E-10	0.042 U	-	1.7E-10	0.053 J	-	2.1E-10	0.047 U	-	1.9E-10	0.2 J	-	8.0E-10
Chrysene	-	2.5E+03	0.055 J	-	2.2E-11	0.11 J	-	4.4E-11	0.14 J	-	5.6E-11	0.047 U	-	1.9E-11	0.97	-	3.9E-10
Dibenz(a,h)anthracene	-	2.5E+00	0.043 U	-	1.7E-08	0.042 U	-	1.7E-08	0.039 U	-	1.6E-08	0.047 U	-	1.9E-08	0.25 J	-	1.0E-07
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.043 U	-	1.7E-09	0.055 J	-	2.2E-09	0.039 U	-	1.6E-09	0.047 U	-	1.9E-09	0.43	-	1.7E-08
Naphthalene	6.2E+03	1.8E+02	0.043 U	6.9E-06	2.4E-10	0.042 U	6.8E-06	2.3E-10	0.039 U	6.3E-06	2.2E-10	0.047 U	7.6E-06	2.6E-10	0.1 J	1.6E-05	5.6E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	1.1E-02	-	-	8.3E-03	-	-	7.2E-03	-	-	5.5E-03	-	-	2.3E-02	-
Total PAH Risk	-		-	-	4.0E-08	-	-	5.4E-08	-	-	6.2E-08	-	-	4.4E-08	-	-	3.3E-07
Total (PAH + Arsenic) Risk	-		-	-	5.8E-07	-	-	9.8E-07	-	-	4.0E-07	-	-	5.0E-07	-	-	1.1E-06

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-08			SS-09			SS-10			SS-11A			SS-12		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	49	1.2E-02	*1.9E-06*	173	4.2E-02	*6.7E-06*	2.6 U	6.3E-04	1.0E-07	6.5 J	1.6E-03	2.5E-07	15	3.6E-03	5.8E-07
Barium	1.0E+06	-	7,150 J	7.2E-03	-	5,290	5.3E-03	-	208	2.1E-04	-	489 J	4.9E-04	-	1,040	1.0E-03	-
Cadmium	8.5E+03	7.3E+04	107	1.3E-02	1.5E-09	139	1.6E-02	1.9E-09	596	7.0E-02	8.2E-09	82.5	9.8E-03	1.1E-09	118	1.4E-02	1.6E-09
Cobalt	3.0E+03	1.5E+04	24.4	8.2E-03	1.7E-09	45.7	1.5E-02	3.1E-09	4.74 J	1.6E-03	3.3E-10	17.1	5.7E-03	1.2E-09	3.37 J	1.1E-03	2.3E-10
Copper	4.0E+05	-	477	1.2E-03	-	3,270	8.1E-03	-	177	4.4E-04	-	2,820	7.0E-03	-	378	9.4E-04	-
Lead	8.4E+03	-	3,970 J	4.7E-01	-	16,100	**1.9E+00**	-	952	1.1E-01	-	1,280 J	1.5E-01	-	877	1.0E-01	-
Manganese	2.2E+05	-	1,290 J	5.9E-03	-	3,330	1.5E-02	-	686	3.1E-03	-	34,600 J	1.6E-01	-	553	2.5E-03	-
Mercury	3.0E+03	-	0.2	6.6E-05	-	0.23	7.6E-05	-	0.053 J	1.8E-05	-	0.12	4.0E-05	-	0.15	5.0E-05	-
Zinc	1.0E+06	-	20,600 J	2.1E-02	-	29,200	2.9E-02	-	58,900	5.9E-02	-	19,400 J	1.9E-02	-	17,200	1.7E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	2.6	-	1.0E-07	0.15 J	-	6.0E-09	NA	-	-	0.1 J	-	4.0E-09	0.073 J	-	2.9E-09
Benzo(a)pyrene	-	2.5E+00	2.3	-	9.2E-07	0.12 J	-	4.8E-08	NA	-	-	0.094 J	-	3.8E-08	0.081 J	-	3.3E-08
Benzo(b)fluoranthene	-	2.5E+01	4.7	-	1.9E-07	0.23 J	-	9.2E-09	NA	-	-	0.13 J	-	5.2E-09	0.13 J	-	5.2E-09
Benzo(k)fluoranthene	-	2.5E+02	1.6	-	6.4E-09	0.089 J	-	3.6E-10	NA	-	-	0.04 U	-	1.6E-10	0.041 J	-	1.6E-10
Chrysene	-	2.5E+03	3.3	-	1.3E-09	0.25 J	-	1.0E-10	NA	-	-	0.24 J	-	9.6E-11	0.088 J	-	3.5E-11
Dibenz(a,h)anthracene	-	2.5E+00	0.65	-	2.6E-07	0.041 U	-	1.6E-08	NA	-	-	0.04 U	-	1.6E-08	0.039 U	-	1.6E-08
Indeno(1,2,3-cd)pyrene	-	2.5E+01	2.7	-	1.1E-07	0.041 U	-	1.6E-09	NA	-	-	0.058 J	-	2.3E-09	0.039 U	-	1.6E-09
Naphthalene	6.2E+03	1.8E+02	0.21 J	3.4E-05	1.2E-09	0.041 U	6.6E-06	2.3E-10	NA	-	-	0.04 U	6.4E-06	2.2E-10	0.039 U	6.3E-06	2.2E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	2.0E-02	-	-	2.2E-02	-	-	7.1E-02	-	-	1.0E-02	-	-	1.5E-02	-
Total PAH Risk	-		-	-	*1.6E-06*	-	-	8.2E-08	-	-	-	-	-	6.6E-08	-	-	5.8E-08
Total (PAH + Arsenic) Risk	-		-	-	*3.5E-06*	-	-	*6.8E-06*	-	-	1.0E-07	-	-	3.2E-07	-	-	6.4E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-13			SS-14			SS-15			SS-16			SS-17A		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	150	3.6E-02	*5.8E-06*	1,330 J	3.2E-01	*5.1E-05*	13.2 J	3.2E-03	5.1E-07	11.2 J	2.7E-03	4.3E-07	5 J	1.E-03	2.E-07
Barium	1.0E+06	-	7,320	7.3E-03	-	737 J	7.4E-04	-	165 J	1.7E-04	-	99,300	9.9E-02	-	120	1.E-04	-
Cadmium	8.5E+03	7.3E+04	361	4.3E-02	5.0E-09	34.9	4.1E-03	4.8E-10	35.1	4.2E-03	4.8E-10	5.4	6.4E-04	7.4E-11	157	2.E-02	2.E-09
Cobalt	3.0E+03	1.5E+04	68	2.3E-02	4.7E-09	158 J	5.3E-02	1.1E-08	2.8 J	9.4E-04	1.9E-10	0.86 U	2.9E-04	5.9E-11	25.4	8.E-03	2.E-09
Copper	4.0E+05	-	1,680	4.2E-03	-	1,810	4.5E-03	-	92	2.3E-04	-	79.6	2.0E-04	-	6,010	1.E-02	-
Lead	8.4E+03	-	16,300	**1.9E+00**	-	8,290	9.8E-01	-	175 J	2.1E-02	-	2,740	3.2E-01	-	4,890	6.E-01	-
Manganese	2.2E+05	-	2,700	1.2E-02	-	3,660 J	1.7E-02	-	647 J	3.0E-03	-	210	9.6E-04	-	1,570	7.E-03	-
Mercury	3.0E+03	-	3.3	1.1E-03	-	0.75 J	2.5E-04	-	0.56	1.9E-04	-	0.0106 J	3.5E-06	-	0.0383 J	1.E-05	-
Zinc	1.0E+06	-	77,300	7.7E-02	-	14,600	1.5E-02	-	3,440 J	3.4E-03	-	786	7.9E-04	-	55,900	6.E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	4.6	-	1.8E-07	0.18 J	-	7.2E-09	NA	-	-	0.069 U	-	2.8E-09	NA	-	-
Benzo(a)pyrene	-	2.5E+00	4.8	-	*1.9E-06*	0.22 J	-	8.8E-08	NA	-	-	0.069 U	-	2.8E-08	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	8.9	-	3.6E-07	0.42	-	1.7E-08	NA	-	-	0.069 U	-	2.8E-09	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	2.8	-	1.1E-08	0.14 J	-	5.6E-10	NA	-	-	0.069 U	-	2.8E-10	NA	-	-
Chrysene	-	2.5E+03	7.8	-	3.1E-09	0.31 J	-	1.2E-10	NA	-	-	0.069 U	-	2.8E-11	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	1.2	-	4.8E-07	0.066 J	-	2.6E-08	NA	-	-	0.069 U	-	2.8E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	3.6	-	1.4E-07	0.24 J	-	9.6E-09	NA	-	-	0.069 U	-	2.8E-09	NA	-	-
Naphthalene	6.2E+03	1.8E+02	0.18 J	2.9E-05	1.0E-09	0.038 U	6.1E-06	2.1E-10	NA	-	-	0.069 U	1.1E-05	3.8E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.0E-02	-	-	4.9E-03	-	-	4.3E-03	-	-	1.0E-01	-	-	2.E-02	-
Total PAH Risk	-		-	-	*3.1E-06*	-	-	1.5E-07	-	-	-	-	-	6.4E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*8.9E-06*	-	-	*5.2E-05*	-	-	5.1E-07	-	-	5.0E-07	-	-	2.E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-18			SS-19			SS-20			SS-22			SS-23		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	87,900 J	**2.1E+01**	*3.4E-03*	2.5 UJ	6.1E-04	9.7E-08	19 J	4.6E-03	7.4E-07	322 J	7.8E-02	*1.2E-05*	3.9 UJ	9.4E-04	1.5E-07
Barium	1.0E+06	-	309	3.1E-04	-	3,820 J	3.8E-03	-	92,300	9.2E-02	-	956 J	9.6E-04	-	190	1.9E-04	-
Cadmium	8.5E+03	7.3E+04	8,320 J	9.8E-01	1.1E-07	606	7.2E-02	8.3E-09	10.5 J	1.2E-03	1.4E-10	1,580	1.9E-01	2.2E-08	563 J	6.7E-02	7.7E-09
Cobalt	3.0E+03	1.5E+04	11	3.7E-03	7.6E-10	3.21 J	1.1E-03	2.2E-10	0.88 U	2.9E-04	6.0E-11	355 J	1.2E-01	2.4E-08	102	3.4E-02	7.0E-09
Copper	4.0E+05	-	8,700	2.2E-02	-	1,810	4.5E-03	-	84.3	2.1E-04	-	12,500	3.1E-02	-	6,560	1.6E-02	-
Lead	8.4E+03	-	90,000	**1.1E+01**	-	152,000	**1.8E+01**	-	480	5.7E-02	-	38,800	**4.6E+00**	-	1,580	1.9E-01	-
Manganese	2.2E+05	-	799	3.6E-03	-	157 J	7.2E-04	-	462	2.1E-03	-	153,000 J	7.0E-01	-	3,550	1.6E-02	-
Mercury	3.0E+03	-	10.1	3.3E-03	-	0.25 J	8.3E-05	-	0.005 U	1.7E-06	-	5.9 J	2.0E-03	-	0.0256 J	8.5E-06	-
Zinc	1.0E+06	-	90,600	9.1E-02	-	65,500	6.6E-02	-	964	9.6E-04	-	176,000	1.8E-01	-	115,000	1.2E-01	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	0.043 UB	-	1.7E-09	0.06 U	-	2.4E-09	0.098 UJ	-	3.9E-09	1.6	-	6.4E-08
Benzo(a)pyrene	-	2.5E+00	NA	-	-	0.043 UB	-	1.7E-08	0.06 U	-	2.4E-08	0.098 UJ	-	3.9E-08	0.59 J	-	2.4E-07
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	0.043 UB	-	1.7E-09	0.06 U	-	2.4E-09	0.098 UJ	-	3.9E-09	1.4	-	5.6E-08
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	0.043 UB	-	1.7E-10	0.06 U	-	2.4E-10	0.098 UJ	-	3.9E-10	0.4 J	-	1.6E-09
Chrysene	-	2.5E+03	NA	-	-	0.043 UB	-	1.7E-11	0.06 U	-	2.4E-11	0.098 UJ	-	3.9E-11	2.1	-	8.4E-10
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	0.043 UB	-	1.7E-08	0.06 U	-	2.4E-08	0.098 UJ	-	3.9E-08	0.25 J	-	1.0E-07
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	0.043 UB	-	1.7E-09	0.06 U	-	2.4E-09	0.098 UJ	-	3.9E-09	0.48 J	-	1.9E-08
Naphthalene	6.2E+03	1.8E+02	NA	-	-	0.58 J	9.3E-05	3.2E-09	0.06 U	9.6E-06	3.3E-10	0.098 UJ	1.6E-05	5.5E-10	0.33 J	5.3E-05	1.8E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	9.8E-01	-	-	7.5E-02	-	-	9.4E-02	-	-	1.9E-01	-	-	6.7E-02	-
Total PAH Risk	-		-	-	-	-	-	4.3E-08	-	-	5.6E-08	-	-	9.1E-08	-	-	4.8E-07
Total (PAH + Arsenic) Risk	-		-	-	*3.4E-03*	-	-	1.4E-07	-	-	7.9E-07	-	-	*1.3E-05*	-	-	6.3E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-24			SS-25			SS-26			SS-27A			SS-28		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	97 J	2.3E-02	*3.8E-06*	27	6.5E-03	1.0E-06	4.5 U	1.1E-03	1.7E-07	209	5.1E-02	*8.1E-06*	2.8 UJ	6.8E-04	1.1E-07
Barium	1.0E+06	-	391	3.9E-04	-	13,800 J	1.4E-02	-	809 J	8.1E-04	-	501 J	5.0E-04	-	4,100	4.1E-03	-
Cadmium	8.5E+03	7.3E+04	1,120 J	1.3E-01	1.5E-08	5.9	7.0E-04	8.1E-11	1,680	2.0E-01	2.3E-08	2,980	3.5E-01	4.1E-08	133 J	1.6E-02	1.8E-09
Cobalt	3.0E+03	1.5E+04	68.1	2.3E-02	4.7E-09	9.3	3.1E-03	6.4E-10	1,600	5.4E-01	1.1E-07	104	3.5E-02	7.1E-09	11.2	3.7E-03	7.7E-10
Copper	4.0E+05	-	8,620	2.1E-02	-	112 J	2.8E-04	-	18,500 J	4.6E-02	-	27,800 J	6.9E-02	-	688	1.7E-03	-
Lead	8.4E+03	-	6,860	8.1E-01	-	146 J	1.7E-02	-	22,800 J	**2.7E+00**	-	75,700 J	**9.0E+00**	-	1,380	1.6E-01	-
Manganese	2.2E+05	-	2,630	1.2E-02	-	5,620 J	2.6E-02	-	74,800 J	3.4E-01	-	3,350 J	1.5E-02	-	743	3.4E-03	-
Mercury	3.0E+03	-	0.0801 J	2.7E-05	-	0.0046 U	1.5E-06	-	4.3	1.4E-03	-	14.7	4.9E-03	-	3.2	1.1E-03	-
Zinc	1.0E+06	-	91,300	9.1E-02	-	562	5.6E-04	-	162,000	1.6E-01	-	157,000	1.6E-01	-	39,600	4.0E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	1.4	-	5.6E-08	0.059 U	-	2.4E-09	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	0.32 J	-	1.3E-07	0.059 U	-	2.4E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	0.85	-	3.4E-08	0.059 U	-	2.4E-09	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	0.33 J	-	1.3E-09	0.059 U	-	2.4E-10	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	2.2	-	8.8E-10	0.059 U	-	2.4E-11	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	0.17 J	-	6.8E-08	0.059 U	-	2.4E-08	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.27 J	-	1.1E-08	0.059 U	-	2.4E-09	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	1.2	1.9E-04	6.7E-09	0.059 U	9.5E-06	3.3E-10	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.3E-01	-	-	1.4E-02	-	-	2.0E-01	-	-	3.5E-01	-	-	2.0E-02	-
Total PAH Risk	-		-	-	3.1E-07	-	-	5.5E-08	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*4.1E-06*	-	-	1.1E-06	-	-	1.7E-07	-	-	*8.1E-06*	-	-	1.1E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-29			SS-30A			SS-31			SS-32			SS-33		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	5.8 J	1.4E-03	2.2E-07	3.5 U	8.5E-04	1.4E-07	19	4.6E-03	7.4E-07	11.8 J	2.9E-03	4.6E-07	57	1.4E-02	*2.2E-06*
Barium	1.0E+06	-	138,000	1.4E-01	-	2,040 J	2.0E-03	-	5,810 J	5.8E-03	-	99,800 J	1.0E-01	-	539 J	5.4E-04	-
Cadmium	8.5E+03	7.3E+04	5.3 J	6.3E-04	7.3E-11	775	9.2E-02	1.1E-08	36	4.3E-03	4.9E-10	29.5	3.5E-03	4.1E-10	38.6	4.6E-03	5.3E-10
Cobalt	3.0E+03	1.5E+04	0.86 U	2.9E-04	5.9E-11	449	1.5E-01	3.1E-08	5.89 J	2.0E-03	4.0E-10	0.83 U	2.8E-04	5.7E-11	32.8	1.1E-02	2.3E-09
Copper	4.0E+05	-	74.7	1.9E-04	-	35,200 J	8.7E-02	-	168 J	4.2E-04	-	210 J	5.2E-04	-	812	2.0E-03	-
Lead	8.4E+03	-	523	6.2E-02	-	25,300 J	**3.0E+00**	-	1,240 J	1.5E-01	-	226 J	2.7E-02	-	6,630 J	7.9E-01	-
Manganese	2.2E+05	-	248	1.1E-03	-	11,600 J	5.3E-02	-	543 J	2.5E-03	-	495 J	2.3E-03	-	2,000 J	9.1E-03	-
Mercury	3.0E+03	-	0.0109 J	3.6E-06	-	0.6	2.0E-04	-	0.0692	2.3E-05	-	0.0045 U	1.5E-06	-	0.12 J	4.0E-05	-
Zinc	1.0E+06	-	274	2.7E-04	-	168,000	1.7E-01	-	7,340	7.3E-03	-	1,060	1.1E-03	-	11,200 J	1.1E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	0.059 U	-	2.4E-09	NA	-	-	NA	-	-	0.051 U	-	2.0E-09	NA	-	-
Benzo(a)pyrene	-	2.5E+00	0.059 U	-	2.4E-08	NA	-	-	NA	-	-	0.051 U	-	2.0E-08	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	0.059 U	-	2.4E-09	NA	-	-	NA	-	-	0.051 U	-	2.0E-09	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	0.059 U	-	2.4E-10	NA	-	-	NA	-	-	0.051 U	-	2.0E-10	NA	-	-
Chrysene	-	2.5E+03	0.059 U	-	2.4E-11	NA	-	-	NA	-	-	0.051 U	-	2.0E-11	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	0.059 U	-	2.4E-08	NA	-	-	NA	-	-	0.051 U	-	2.0E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.059 U	-	2.4E-09	NA	-	-	NA	-	-	0.051 U	-	2.0E-09	NA	-	-
Naphthalene	6.2E+03	1.8E+02	0.059 U	9.5E-06	3.3E-10	NA	-	-	NA	-	-	0.051 U	8.2E-06	2.8E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.4E-01	-	-	9.4E-02	-	-	1.0E-02	-	-	1.0E-01	-	-	5.1E-03	-
Total PAH Risk	-		-	-	5.5E-08	-	-	-	-	-	-	-	-	4.8E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.8E-07	-	-	1.4E-07	-	-	7.4E-07	-	-	5.0E-07	-	-	*2.2E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-34			SS-36			SS-37			SS-38			SS-39		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	406	9.8E-02	*1.6E-05*	44	1.1E-02	*1.7E-06*	130	3.1E-02	*5.0E-06*	215 J	5.2E-02	*8.3E-06*	15.2 J	3.7E-03	5.9E-07
Barium	1.0E+06	-	244 J	2.4E-04	-	2,520 J	2.5E-03	-	479 J	4.8E-04	-	304 J	3.0E-04	-	125,000 J	1.3E-01	-
Cadmium	8.5E+03	7.3E+04	20.2	2.4E-03	2.8E-10	66.9	7.9E-03	9.2E-10	128	1.5E-02	1.8E-09	14.5	1.7E-03	2.0E-10	5.9	7.0E-04	8.1E-11
Cobalt	3.0E+03	1.5E+04	16	5.4E-03	1.1E-09	18	6.0E-03	1.2E-09	53.4	1.8E-02	3.7E-09	52.8 J	1.8E-02	3.6E-09	0.9 UJ	3.0E-04	6.2E-11
Copper	4.0E+05	-	2,220	5.5E-03	-	471	1.2E-03	-	4,580	1.1E-02	-	3,900	9.7E-03	-	74.9	1.9E-04	-
Lead	8.4E+03	-	33,900 J	**4.0E+00**	-	2,260 J	2.7E-01	-	2,010 J	2.4E-01	-	7,110	8.4E-01	-	554	6.6E-02	-
Manganese	2.2E+05	-	2,660 J	1.2E-02	-	1,490 J	6.8E-03	-	1,450 J	6.6E-03	-	1,790 J	8.2E-03	-	757 J	3.5E-03	-
Mercury	3.0E+03	-	0.0035 U	1.2E-06	-	0.32	1.1E-04	-	0.078 J	2.6E-05	-	0.149 J	4.9E-05	-	0.0075 J	2.5E-06	-
Zinc	1.0E+06	-	16,300 J	1.6E-02	-	7,700 J	7.7E-03	-	11,900 J	1.2E-02	-	3,430	3.4E-03	-	734	7.3E-04	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	0.04 U	-	1.6E-09	NA	-	-	NA	-	-	0.048 U	-	1.9E-09	NA	-	-
Benzo(a)pyrene	-	2.5E+00	0.04 U	-	1.6E-08	NA	-	-	NA	-	-	0.048 B	-	1.9E-08	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	0.04 U	-	1.6E-09	NA	-	-	NA	-	-	0.048 B	-	1.9E-09	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	0.04 U	-	1.6E-10	NA	-	-	NA	-	-	0.048 B	-	1.9E-10	NA	-	-
Chrysene	-	2.5E+03	0.04 U	-	1.6E-11	NA	-	-	NA	-	-	0.048 B	-	1.9E-11	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	0.04 U	-	1.6E-08	NA	-	-	NA	-	-	0.048 B	-	1.9E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.04 U	-	1.6E-09	NA	-	-	NA	-	-	0.048 B	-	1.9E-09	NA	-	-
Naphthalene	6.2E+03	1.8E+02	0.04 U	6.4E-06	2.2E-10	NA	-	-	NA	-	-	0.057 J	9.2E-06	3.2E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.6E-03	-	-	1.0E-02	-	-	1.6E-02	-	-	2.0E-03	-	-	1.3E-01	-
Total PAH Risk	-		-	-	3.7E-08	-	-	-	-	-	-	-	-	4.5E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.6E-05*	-	-	*1.7E-06*	-	-	*5.0E-06*	-	-	*8.4E-06*	-	-	5.9E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-40			SS-41			SS-42			SS-43			SS-44		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	53 J	1.3E-02	*2.1E-06*	287 J	6.9E-02	*1.1E-05*	30	7.3E-03	1.2E-06	9.8 J	2.4E-03	3.8E-07	349 J	8.4E-02	*1.4E-05*
Barium	1.0E+06	-	1,060 J	1.1E-03	-	131 J	1.3E-04	-	111	1.1E-04	-	4,580 J	4.6E-03	-	19,300	1.9E-02	-
Cadmium	8.5E+03	7.3E+04	2,040	2.4E-01	2.8E-08	356	4.2E-02	4.9E-09	288	3.4E-02	4.0E-09	21.9	2.6E-03	3.0E-10	43.1 J	5.1E-03	5.9E-10
Cobalt	3.0E+03	1.5E+04	81.6 J	2.7E-02	5.6E-09	30 J	1.0E-02	2.1E-09	51.8	1.7E-02	3.6E-09	8.4 J	2.8E-03	5.8E-10	30.7	1.0E-02	2.1E-09
Copper	4.0E+05	-	9,400	2.3E-02	-	4,820	1.2E-02	-	5,120	1.3E-02	-	398	9.9E-04	-	3,540	8.8E-03	-
Lead	8.4E+03	-	8,930	1.1E+00	-	5,680	6.7E-01	-	4,120	4.9E-01	-	1,020	1.2E-01	-	8,370	9.9E-01	-
Manganese	2.2E+05	-	7,190 J	3.3E-02	-	2,070 J	9.5E-03	-	2,220	1.0E-02	-	343 J	1.6E-03	-	1,930	8.8E-03	-
Mercury	3.0E+03	-	0.44 J	1.5E-04	-	0.0655 J	2.2E-05	-	0.0497 J	1.6E-05	-	3.3 J	1.1E-03	-	0.0634 J	2.1E-05	-
Zinc	1.0E+06	-	88,800	8.9E-02	-	127,000	1.3E-01	-	70,200	7.0E-02	-	4,740	4.7E-03	-	7,260	7.3E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	0.14 J	-	5.6E-09	0.069 U	-	2.8E-09	0.063 U	-	2.5E-09	NA	-	-	0.053 U	-	2.1E-09
Benzo(a)pyrene	-	2.5E+00	0.061 U	-	2.4E-08	0.069 U	-	2.8E-08	0.063 U	-	2.5E-08	NA	-	-	0.053 U	-	2.1E-08
Benzo(b)fluoranthene	-	2.5E+01	0.061 U	-	2.4E-09	0.069 U	-	2.8E-09	0.063 U	-	2.5E-09	NA	-	-	0.053 U	-	2.1E-09
Benzo(k)fluoranthene	-	2.5E+02	0.061 U	-	2.4E-10	0.069 U	-	2.8E-10	0.063 U	-	2.5E-10	NA	-	-	0.053 U	-	2.1E-10
Chrysene	-	2.5E+03	0.13 J	-	5.2E-11	0.069 U	-	2.8E-11	0.063 U	-	2.5E-11	NA	-	-	0.053 U	-	2.1E-11
Dibenz(a,h)anthracene	-	2.5E+00	0.061 U	-	2.4E-08	0.069 U	-	2.8E-08	0.063 U	-	2.5E-08	NA	-	-	0.053 U	-	2.1E-08
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.061 U	-	2.4E-09	0.069 U	-	2.8E-09	0.063 U	-	2.5E-09	NA	-	-	0.053 U	-	2.1E-09
Naphthalene	6.2E+03	1.8E+02	0.4 J	6.4E-05	2.2E-09	1.4 J	2.3E-04	7.8E-09	0.49 J	7.9E-05	2.7E-09	NA	-	-	0.13 J	2.1E-05	7.2E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	2.4E-01	-	-	4.2E-02	-	-	3.4E-02	-	-	7.2E-03	-	-	2.4E-02	-
Total PAH Risk	-		-	-	6.2E-08	-	-	7.2E-08	-	-	6.1E-08	-	-	-	-	-	5.0E-08
Total (PAH + Arsenic) Risk	-		-	-	*2.1E-06*	-	-	*1.1E-05*	-	-	1.2E-06	-	-	3.8E-07	-	-	*1.4E-05*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-45			SS-46			SS-47			SS-48			SS-49		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	328 J	7.9E-02	*1.3E-05*	370 J	9.0E-02	*1.4E-05*	157 J	3.8E-02	*6.1E-06*	204 J	4.9E-02	*7.9E-06*	21 J	5.1E-03	8.1E-07
Barium	1.0E+06	-	63	6.3E-05	-	508 J	5.1E-04	-	85	8.5E-05	-	54	5.4E-05	-	447	4.5E-04	-
Cadmium	8.5E+03	7.3E+04	13.1 J	1.5E-03	1.8E-10	37.5	4.4E-03	5.1E-10	17.6 J	2.1E-03	2.4E-10	13.3 J	1.6E-03	1.8E-10	40.7 J	4.8E-03	5.6E-10
Cobalt	3.0E+03	1.5E+04	36.9	1.2E-02	2.5E-09	37.5 J	1.3E-02	2.6E-09	26.2	8.8E-03	1.8E-09	24.1	8.1E-03	1.7E-09	28.4	9.5E-03	1.9E-09
Copper	4.0E+05	-	3,860	9.6E-03	-	3,190	7.9E-03	-	5,550	1.4E-02	-	6,280	1.6E-02	-	2,850	7.1E-03	-
Lead	8.4E+03	-	9,900	1.2E+00	-	7,060	8.4E-01	-	3,250	3.9E-01	-	2,790	3.3E-01	-	1,340	1.6E-01	-
Manganese	2.2E+05	-	1,620	7.4E-03	-	1,810 J	8.3E-03	-	987	4.5E-03	-	1,030	4.7E-03	-	36,000	1.6E-01	-
Mercury	3.0E+03	-	0.0867 J	2.9E-05	-	0.0995 J	3.3E-05	-	0.0161 J	5.3E-06	-	0.0241 J	8.0E-06	-	0.0318 J	1.1E-05	-
Zinc	1.0E+06	-	8,880	8.9E-03	-	11,500	1.2E-02	-	6,950	7.0E-03	-	4,790	4.8E-03	-	16,200	1.6E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	0.046 UJ	-	1.8E-09	0.047 UB	-	1.9E-09	NA	-	-	0.041 J	-	1.6E-09
Benzo(a)pyrene	-	2.5E+00	NA	-	-	0.046 UJ	-	1.8E-08	0.047 UB	-	1.9E-08	NA	-	-	0.047 J	-	1.9E-08
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	0.046 UJ	-	1.8E-09	0.047 UB	-	1.9E-09	NA	-	-	0.09 J	-	3.6E-09
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	0.046 UJ	-	1.8E-10	0.047 UB	-	1.9E-10	NA	-	-	0.037 U	-	1.5E-10
Chrysene	-	2.5E+03	NA	-	-	0.046 UJ	-	1.8E-11	0.047 UB	-	1.9E-11	NA	-	-	0.062 J	-	2.5E-11
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	0.046 UJ	-	1.8E-08	0.047 UB	-	1.9E-08	NA	-	-	0.037 U	-	1.5E-08
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	0.046 UJ	-	1.8E-09	0.047 UB	-	1.9E-09	NA	-	-	0.042 J	-	1.7E-09
Naphthalene	6.2E+03	1.8E+02	NA	-	-	0.1 J	1.6E-05	5.6E-10	0.13 J	2.1E-05	7.2E-10	NA	-	-	0.037 U	5.9E-06	2.1E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	1.6E-03	-	-	4.9E-03	-	-	2.2E-03	-	-	1.6E-03	-	-	5.3E-03	-
Total PAH Risk	-		-	-	-	-	-	4.3E-08	-	-	4.4E-08	-	-	-	-	-	4.1E-08
Total (PAH + Arsenic) Risk	-		-	-	*1.3E-05*	-	-	*1.4E-05*	-	-	*6.1E-06*	-	-	*7.9E-06*	-	-	8.5E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-50A			SS-51A			SS-53			SS-55			SS-56		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	81 J	2.0E-02	*3.1E-06*	73 J	1.8E-02	*2.8E-06*	255	6.2E-02	*9.9E-06*	359	8.7E-02	*1.4E-05*	2.4 U	5.8E-04	9.3E-08
Barium	1.0E+06	-	327	3.3E-04	-	1,210	1.2E-03	-	210 J	2.1E-04	-	215 J	2.2E-04	-	675 J	6.8E-04	-
Cadmium	8.5E+03	7.3E+04	1,840 J	2.2E-01	2.5E-08	574 J	6.8E-02	7.9E-09	16.1	1.9E-03	2.2E-10	17.8	2.1E-03	2.4E-10	60.6	7.2E-03	8.3E-10
Cobalt	3.0E+03	1.5E+04	73.4	2.5E-02	5.0E-09	58.2	1.9E-02	4.0E-09	26.2	8.8E-03	1.8E-09	30	1.0E-02	2.1E-09	67.5	2.3E-02	4.6E-09
Copper	4.0E+05	-	4,510	1.1E-02	-	3,370	8.4E-03	-	4,190	1.0E-02	-	6,300	1.6E-02	-	2,690	6.7E-03	-
Lead	8.4E+03	-	5,130	6.1E-01	-	2,850	3.4E-01	-	4,690 J	5.6E-01	-	6,430 J	7.6E-01	-	789 J	9.4E-02	-
Manganese	2.2E+05	-	2,780	1.3E-02	-	2,330	1.1E-02	-	1,110 J	5.1E-03	-	1,730 J	7.9E-03	-	40,400 J	1.8E-01	-
Mercury	3.0E+03	-	0.0639 J	2.1E-05	-	0.151 J	5.0E-05	-	0.0166 J	5.5E-06	-	0.0225 J	7.5E-06	-	0.0121 J	4.0E-06	-
Zinc	1.0E+06	-	166,000	1.7E-01	-	91,300	9.1E-02	-	8,330 J	8.3E-03	-	6,010 J	6.0E-03	-	33,000 J	3.3E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	0.047 U	-	1.9E-09	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	0.047 U	-	1.9E-08	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	0.047 U	-	1.9E-09	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	0.047 U	-	1.9E-10	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	0.047 U	-	1.9E-11	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	0.047 U	-	1.9E-08	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	0.047 U	-	1.9E-09	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	0.047 U	7.6E-06	2.6E-10	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.2E-01	-	-	6.9E-02	-	-	2.1E-03	-	-	2.3E-03	-	-	7.8E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	4.4E-08	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*3.1E-06*	-	-	*2.8E-06*	-	-	*9.9E-06*	-	-	*1.4E-05*	-	-	9.3E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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B = Compound was detected in associated blank.
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-57			SS-58			SS-59			TA-01			TA-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	105	2.5E-02	*4.1E-06*	148	3.6E-02	*5.7E-06*	24	5.8E-03	9.3E-07	3 U	7.3E-04	1.2E-07	212 J	5.1E-02	*8.2E-06*
Barium	1.0E+06	-	851 J	8.5E-04	-	10,800 J	1.1E-02	-	184 J	1.8E-04	-	375	3.8E-04	-	263	2.6E-04	-
Cadmium	8.5E+03	7.3E+04	40.6	4.8E-03	5.6E-10	86	1.0E-02	1.2E-09	33.1	3.9E-03	4.5E-10	110	1.3E-02	1.5E-09	121	1.4E-02	1.7E-09
Cobalt	3.0E+03	1.5E+04	21.1	7.1E-03	1.4E-09	16.8	5.6E-03	1.2E-09	15.4	5.2E-03	1.1E-09	170 J	5.7E-02	1.2E-08	36.7 J	1.2E-02	2.5E-09
Copper	4.0E+05	-	681 J	1.7E-03	-	421 J	1.0E-03	-	115 J	2.9E-04	-	31,000	7.7E-02	-	4,480	1.1E-02	-
Lead	8.4E+03	-	4,040 J	4.8E-01	-	4,630 J	5.5E-01	-	4,050 J	4.8E-01	-	2,980	3.5E-01	-	6,610	7.8E-01	-
Manganese	2.2E+05	-	2,280 J	1.0E-02	-	3,010 J	1.4E-02	-	1,930 J	8.8E-03	-	8,390	3.8E-02	-	1,810	8.3E-03	-
Mercury	3.0E+03	-	0.89	2.9E-04	-	3.6	1.2E-03	-	0.36	1.2E-04	-	1.29 J	4.3E-04	-	0.0579 J	1.9E-05	-
Zinc	1.0E+06	-	33,400	3.3E-02	-	31,100	3.1E-02	-	16,000	1.6E-02	-	35,300	3.5E-02	-	15,000	1.5E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	0.04 U	-	1.6E-09	NA	-	-	0.18 J	-	7.2E-09	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	0.04 U	-	1.6E-08	NA	-	-	0.16 J	-	6.4E-08	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	0.04 U	-	1.6E-09	NA	-	-	0.25 J	-	1.0E-08	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	0.04 U	-	1.6E-10	NA	-	-	0.085 J	-	3.4E-10	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	0.04 U	-	1.6E-11	NA	-	-	0.26 J	-	1.0E-10	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	0.04 U	-	1.6E-08	NA	-	-	0.042 U	-	1.7E-08	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	0.04 U	-	1.6E-09	NA	-	-	0.13 J	-	5.2E-09	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	0.04 U	6.4E-06	2.2E-10	NA	-	-	0.042 U	6.8E-06	2.3E-10	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.7E-03	-	-	2.1E-02	-	-	4.1E-03	-	-	1.3E-02	-	-	1.5E-02	-
Total PAH Risk	-		-	-	3.7E-08	-	-	-	-	-	1.0E-07	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*4.1E-06*	-	-	*5.7E-06*	-	-	1.0E-06	-	-	1.2E-07	-	-	*8.2E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		TA-03			TP-120			W-05(S)			W-06(S)			W-07(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	2.7 U	6.5E-04	1.0E-07	95.3	2.3E-02	*3.7E-06*	73.7	1.8E-02	*2.9E-06*	10 J	2.4E-03	3.9E-07	16.9	4.1E-03	6.5E-07
Barium	1.0E+06	-	131	1.3E-04	-	3,670	3.7E-03	-	4,990	5.0E-03	-	380	3.8E-04	-	1,340	1.3E-03	-
Cadmium	8.5E+03	7.3E+04	103	1.2E-02	1.4E-09	286	3.4E-02	3.9E-09	125	1.5E-02	1.7E-09	28	3.3E-03	3.8E-10	54.6	6.5E-03	7.5E-10
Cobalt	3.0E+03	1.5E+04	5.41 J	1.8E-03	3.7E-10	20	6.7E-03	1.4E-09	NA	-	-	NA	-	-	3.4 B	1.1E-03	2.3E-10
Copper	4.0E+05	-	237	5.9E-04	-	1,330	3.3E-03	-	314	7.8E-04	-	170	4.2E-04	-	534	1.3E-03	-
Lead	8.4E+03	-	661	7.8E-02	-	6,590	7.8E-01	-	3,290	3.9E-01	-	980	1.2E-01	-	674	8.0E-02	-
Manganese	2.2E+05	-	401	1.8E-03	-	1,270	5.8E-03	-	1,680	7.7E-03	-	120	5.5E-04	-	591	2.7E-03	-
Mercury	3.0E+03	-	0.82 J	2.7E-04	-	11.5	3.8E-03	-	NA	-	-	NA	-	-	0.027 UJ	8.9E-06	-
Zinc	1.0E+06	-	25,900	2.6E-02	-	43,800	4.4E-02	-	20,600 J	2.1E-02	-	3,100	3.1E-03	-	4,600	4.6E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	0.56	-	2.2E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	0.44	-	1.8E-07	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	0.74	-	3.0E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	0.28	-	1.1E-09	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	0.68	-	2.7E-10	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	0.21 U	3.4E-05	1.2E-09	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.2E-02	-	-	3.7E-02	-	-	2.0E-02	-	-	3.7E-03	-	-	7.8E-03	-
Total PAH Risk	-		-	-	-	-	-	2.3E-07	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.0E-07	-	-	*3.9E-06*	-	-	*2.9E-06*	-	-	3.9E-07	-	-	6.5E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-08(S)			W-09(S)			W-10(S)			W-11(S)			W-13(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	3.4 J	8.2E-04	1.3E-07	6.3	1.5E-03	2.4E-07	8.2	2.0E-03	3.2E-07	5.5	1.3E-03	2.1E-07	15.8	3.8E-03	6.1E-07
Barium	1.0E+06	-	55 J	5.5E-05	-	163	1.6E-04	-	394	3.9E-04	-	61	6.1E-05	-	619	6.2E-04	-
Cadmium	8.5E+03	7.3E+04	3	3.5E-04	4.1E-11	9.8	1.2E-03	1.3E-10	15.8	1.9E-03	2.2E-10	4.2 J	5.0E-04	5.8E-11	31.8	3.8E-03	4.4E-10
Cobalt	3.0E+03	1.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.0E+05	-	17 J	4.2E-05	-	28.5	7.1E-05	-	46.1 J	1.1E-04	-	29.9 J	7.4E-05	-	135	3.4E-04	-
Lead	8.4E+03	-	24 J	2.8E-03	-	54.2 J	6.4E-03	-	189	2.2E-02	-	27.4	3.2E-03	-	266	3.2E-02	-
Manganese	2.2E+05	-	330 J	1.5E-03	-	444	2.0E-03	-	656	3.0E-03	-	482	2.2E-03	-	407	1.9E-03	-
Mercury	3.0E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	370	3.7E-04	-	1,010 J	1.0E-03	-	1,390	1.4E-03	-	365	3.7E-04	-	6,990	7.0E-03	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.1E-04	-	-	1.3E-03	-	-	2.3E-03	-	-	5.6E-04	-	-	4.4E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.3E-07	-	-	2.4E-07	-	-	3.2E-07	-	-	2.1E-07	-	-	6.1E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-14(S)			W-15(S)			W-16(S)			W-17(D)			W-18(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	76.8	1.9E-02	*3.0E-06*	120	2.9E-02	*4.6E-06*	358	8.7E-02	*1.4E-05*	233 J	5.6E-02	*9.0E-06*	190	4.6E-02	*7.4E-06*
Barium	1.0E+06	-	3,910	3.9E-03	-	727	7.3E-04	-	7,290	7.3E-03	-	7,070	7.1E-03	-	2,320	2.3E-03	-
Cadmium	8.5E+03	7.3E+04	38.8	4.6E-03	5.3E-10	212	2.5E-02	2.9E-09	134	1.6E-02	1.8E-09	258	3.1E-02	3.5E-09	126	1.5E-02	1.7E-09
Cobalt	3.0E+03	1.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.0E+05	-	1,770	4.4E-03	-	4,670	1.2E-02	-	7,510	1.9E-02	-	4,160	1.0E-02	-	723	1.8E-03	-
Lead	8.4E+03	-	917	1.1E-01	-	4,910	5.8E-01	-	6,090	7.2E-01	-	12,500	1.5E+00	-	2,330	2.8E-01	-
Manganese	2.2E+05	-	992	4.5E-03	-	1,560	7.1E-03	-	1,800	8.2E-03	-	2,070	9.5E-03	-	4,420	2.0E-02	-
Mercury	3.0E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	5,860 J	5.9E-03	-	117,000 J	1.2E-01	-	20,900	2.1E-02	-	48,900	4.9E-02	-	17,500	1.8E-02	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	8.5E-03	-	-	2.6E-02	-	-	2.3E-02	-	-	3.8E-02	-	-	1.7E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*3.0E-06*	-	-	*4.6E-06*	-	-	*1.4E-05*	-	-	*9.0E-06*	-	-	*7.4E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-19(S)			W-20(I)			W-21(D)			W-22(S)			Z-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	4.1E+03	2.6E+01	175	4.2E-02	*6.8E-06*	9.8	2.4E-03	3.8E-07	153	3.7E-02	*5.9E-06*	33.1 J	8.0E-03	1.3E-06	NA	-	-
Barium	1.0E+06	-	725	7.3E-04	-	166	1.7E-04	-	5,440	5.4E-03	-	6,750	6.8E-03	-	116	1.2E-04	-
Cadmium	8.5E+03	7.3E+04	82.3 J	9.7E-03	1.1E-09	29	3.4E-03	4.0E-10	340	4.0E-02	4.7E-09	36.6	4.3E-03	5.0E-10	1.5 B	1.8E-04	2.1E-11
Cobalt	3.0E+03	1.5E+04	18.2	6.1E-03	1.2E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.0E+05	-	2,160	5.4E-03	-	394	9.8E-04	-	16,400	4.1E-02	-	634	1.6E-03	-	NA	-	-
Lead	8.4E+03	-	5,930	7.0E-01	-	650	7.7E-02	-	4,990	5.9E-01	-	890	1.1E-01	-	72	8.5E-03	-
Manganese	2.2E+05	-	1,300	5.9E-03	-	503	2.3E-03	-	1,540	7.0E-03	-	531	2.4E-03	-	NA	-	-
Mercury	3.0E+03	-	83	2.7E-02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	13,000 J	1.3E-02	-	2,010	2.0E-03	-	49,600	5.0E-02	-	9,360	9.4E-03	-	452	4.5E-04	-
PAHs																	
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.0E-02	-	-	3.6E-03	-	-	4.6E-02	-	-	1.1E-02	-	-	2.9E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*6.8E-06*	-	-	3.8E-07	-	-	*5.9E-06*	-	-	1.3E-06	-	-	-

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		Z-03			Z-05			Z-09		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals											
Arsenic	4.1E+03	2.6E+01	NA	-	-	NA	-	-	0.7 B	1.7E-04	2.7E-08
Barium	1.0E+06	-	16.3	1.6E-05	-	164	1.6E-04	-	2,040	2.0E-03	-
Cadmium	8.5E+03	7.3E+04	0.5 B	5.9E-05	6.9E-12	3.2	3.8E-04	4.4E-11	26.3	3.1E-03	3.6E-10
Cobalt	3.0E+03	1.5E+04	NA	-	-	NA	-	-	12	4.0E-03	8.2E-10
Copper	4.0E+05	-	NA	-	-	NA	-	-	173	4.3E-04	-
Lead	8.4E+03	-	6 B	7.1E-04	-	32	3.8E-03	-	81	9.6E-03	-
Manganese	2.2E+05	-	NA	-	-	NA	-	-	56.6	2.6E-04	-
Mercury	3.0E+03	-	NA	-	-	NA	-	-	0.04 B	1.3E-05	-
Zinc	1.0E+06	-	148	1.5E-04	-	393	3.9E-04	-	1,570	1.6E-03	-
PAHs											
Benzo(a)anthracene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.5E+02	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.5E+03	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.5E+00	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.5E+01	NA	-	-	NA	-	-	NA	-	-
Naphthalene	6.2E+03	1.8E+02	NA	-	-	NA	-	-	NA	-	-
Totals											
Total (Barium + Cadmium) HI	-		-	7.5E-05	-	-	5.4E-04	-	-	5.2E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	-	-	-	-	-	-	2.7E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		A-01			A-02			A-02			A-03			A-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	4.8	3.3E-02	2.4E-08	4.3	3.0E-02	2.2E-08	4.3	3.0E-02	2.2E-08	6.3	4.4E-02	3.2E-08	7	4.9E-02	3.6E-08
Barium	6.6E+04	-	18	2.7E-04	-	54 J	8.2E-04	-	54 J	8.2E-04	-	189	2.9E-03	-	379	5.7E-03	-
Cadmium	1.5E+02	1.8E+05	0.28 J	1.9E-03	1.6E-12	4.2 J	2.9E-02	2.4E-11	4.2 J	2.9E-02	2.4E-11	11.7 J	8.0E-02	6.6E-11	16.9 J	1.2E-01	9.6E-11
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	7.9 J	2.3E-03	-	12	3.5E-03	-	12	3.5E-03	-	21.9 J	6.5E-03	-	34.5	1.0E-02	-
Lead	9.4E+02	-	10.5	1.1E-02	-	20 J	2.1E-02	-	20 J	2.1E-02	-	49.6	5.3E-02	-	81.7	8.7E-02	-
Manganese	6.2E+03	-	505	8.1E-02	-	350 J	5.6E-02	-	350 J	5.6E-02	-	413	6.7E-02	-	512	8.3E-02	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	35	3.4E-04	-	290	2.8E-03	-	290	2.8E-03	-	828	8.1E-03	-	1,320	1.3E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.2E-03	-	-	3.0E-02	-	-	3.0E-02	-	-	8.3E-02	-	-	1.2E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.4E-08	-	-	2.2E-08	-	-	2.2E-08	-	-	3.2E-08	-	-	3.6E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		A-05			B-01			B-02			B-03			B-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	9.1	6.3E-02	4.6E-08	4.6	3.2E-02	2.3E-08	3.4 J	2.4E-02	1.7E-08	13.3	9.3E-02	6.7E-08	8.4	5.9E-02	4.3E-08
Barium	6.6E+04	-	720	1.1E-02	-	36	5.4E-04	-	42 J	6.4E-04	-	190	2.9E-03	-	117	1.8E-03	-
Cadmium	1.5E+02	1.8E+05	18.9	1.3E-01	1.1E-10	1.47 J	1.0E-02	8.4E-12	1.5 B	1.0E-02	8.5E-12	29.3	2.0E-01	1.7E-10	28.7	2.0E-01	1.6E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	36.3 J	1.1E-02	-	9.1	2.7E-03	-	8.9 J	2.6E-03	-	440	1.3E-01	-	173	5.1E-02	-
Lead	9.4E+02	-	325	3.5E-01	-	10.1 J	1.1E-02	-	17 J	1.8E-02	-	767	8.2E-01	-	262	2.8E-01	-
Manganese	6.2E+03	-	736	1.2E-01	-	278	4.5E-02	-	290 J	4.7E-02	-	601	9.7E-02	-	501	8.1E-02	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	1,840	1.8E-02	-	115	1.1E-03	-	110	1.1E-03	-	2,450	2.4E-02	-	1,560	1.5E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.4E-01	-	-	1.1E-02	-	-	1.1E-02	-	-	2.0E-01	-	-	2.0E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	4.6E-08	-	-	2.3E-08	-	-	1.7E-08	-	-	6.7E-08	-	-	4.3E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		B-05			B-06			C-01			C-02			C-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	367	**2.6E+00**	*1.9E-06*	15 J	1.0E-01	7.6E-08	4.8	3.3E-02	2.4E-08	3.2	2.2E-02	1.6E-08	13.7	9.5E-02	6.9E-08
Barium	6.6E+04	-	2,110	3.2E-02	-	1,410 J	2.1E-02	-	65 J	9.8E-04	-	57	8.6E-04	-	7,150	1.1E-01	-
Cadmium	1.5E+02	1.8E+05	834	**5.7E+00**	4.7E-09	49.8	3.4E-01	2.8E-10	3.9 J	2.7E-02	2.2E-11	1.5 J	1.0E-02	8.5E-12	38.9	2.7E-01	2.2E-10
Cobalt	9.3E+02	3.5E+04	208	2.2E-01	5.9E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	24,400	**7.2E+00**	-	274 J	8.1E-02	-	17	5.0E-03	-	16.9	5.0E-03	-	286	8.4E-02	-
Lead	9.4E+02	-	44,500	**4.7E+01**	-	403 J	4.3E-01	-	21 J	2.2E-02	-	19.9	2.1E-02	-	593	6.3E-01	-
Manganese	6.2E+03	-	6,660	1.1E+00	-	845 J	1.4E-01	-	390 J	6.3E-02	-	245	4.0E-02	-	743	1.2E-01	-
Mercury	6.8E+02	-	9.6	1.4E-02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	106,000	1.0E+00	-	3,980 J	3.9E-02	-	280	2.8E-03	-	196 J	1.9E-03	-	4,650 J	4.6E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	**5.7E+00**	-	-	3.6E-01	-	-	2.8E-02	-	-	1.1E-02	-	-	3.7E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.9E-06*	-	-	7.6E-08	-	-	2.4E-08	-	-	1.6E-08	-	-	6.9E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
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HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		C-04			C-05			D-02			D-03			D-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	230	**1.6E+00**	1.2E-06	96	6.7E-01	4.9E-07	14.1	9.8E-02	7.2E-08	6.7	4.7E-02	3.4E-08	3.5	2.4E-02	1.8E-08
Barium	6.6E+04	-	2,500	3.8E-02	-	8,730	1.3E-01	-	326	4.9E-03	-	228	3.4E-03	-	66	1.0E-03	-
Cadmium	1.5E+02	1.8E+05	1,180	**8.1E+00**	6.7E-09	49.3	3.4E-01	2.8E-10	32.5	2.2E-01	1.8E-10	16.6 J	1.1E-01	9.4E-11	1.27 J	8.7E-03	7.2E-12
Cobalt	9.3E+02	3.5E+04	1,420	**1.5E+00**	4.0E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	14,600	**4.3E+00**	-	802	2.4E-01	-	115	3.4E-02	-	89.4	2.6E-02	-	8.9	2.6E-03	-
Lead	9.4E+02	-	29,700	**3.2E+01**	-	8,730	**9.3E+00**	-	254 J	2.7E-01	-	325	3.5E-01	-	8.6	9.1E-03	-
Manganese	6.2E+03	-	67,700	**1.1E+01**	-	4,230	6.8E-01	-	347	5.6E-02	-	645	1.0E-01	-	305	4.9E-02	-
Mercury	6.8E+02	-	5.1	7.6E-03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	110,000	1.1E+00	-	8,760	8.6E-02	-	9,050 J	8.9E-02	-	2,350	2.3E-02	-	104	1.0E-03	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	**8.1E+00**	-	-	4.7E-01	-	-	2.3E-01	-	-	1.2E-01	-	-	9.7E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.2E-06	-	-	4.9E-07	-	-	7.2E-08	-	-	3.4E-08	-	-	1.8E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		D-05			D-06			D-07			E-01			E-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	47.8	3.3E-01	2.4E-07	96.5	6.7E-01	4.9E-07	105	7.3E-01	5.3E-07	15.1	1.1E-01	7.7E-08	20.1	1.4E-01	1.0E-07
Barium	6.6E+04	-	3,500	5.3E-02	-	1,100	1.7E-02	-	5,200	7.9E-02	-	209	3.2E-03	-	247	3.7E-03	-
Cadmium	1.5E+02	1.8E+05	70.6	4.8E-01	4.0E-10	111	7.6E-01	6.3E-10	57.8	4.0E-01	3.3E-10	29.5	2.0E-01	1.7E-10	19.1	1.3E-01	1.1E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	20.6	2.2E-02	5.9E-10	28	3.0E-02	8.0E-10	3.6 J	3.9E-03	1.0E-10	10.2	1.1E-02	2.9E-10
Copper	3.4E+03	-	312	9.2E-02	-	435	1.3E-01	-	449	1.3E-01	-	198	5.8E-02	-	62.6	1.8E-02	-
Lead	9.4E+02	-	1,680	**1.8E+00**	-	3,360	**3.6E+00**	-	2,190	**2.3E+00**	-	325	3.5E-01	-	104	1.1E-01	-
Manganese	6.2E+03	-	1,140	1.8E-01	-	1,890	3.0E-01	-	1,690	2.7E-01	-	346	5.6E-02	-	1,560	2.5E-01	-
Mercury	6.8E+02	-	NA	-	-	0.0284 U	4.2E-05	-	0.21	3.1E-04	-	0.0492 U	7.3E-05	-	0.0688 J	1.0E-04	-
Zinc	1.0E+05	-	11,300 J	1.1E-01	-	33,300	3.3E-01	-	16,400 J	1.6E-01	-	3,650	3.6E-02	-	1,470	1.4E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	0.42	-	2.1E-09	0.23 J	-	1.2E-09	NA	-	-	0.064 J	-	3.2E-10
Benzo(a)pyrene	-	2.0E+01	NA	-	-	0.3 J	-	1.5E-08	0.17 J	-	8.5E-09	NA	-	-	0.047 J	-	2.4E-09
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	0.76	-	3.8E-09	0.4 J	-	2.0E-09	NA	-	-	0.082 J	-	4.1E-10
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	0.25 J	-	1.3E-10	0.13 J	-	6.5E-11	NA	-	-	0.038 J	-	1.9E-11
Chrysene	-	2.0E+04	NA	-	-	0.54	-	2.7E-11	0.4 J	-	2.0E-11	NA	-	-	0.098 J	-	4.9E-12
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	0.047 J	-	2.4E-09	0.042 U	-	2.1E-09	NA	-	-	0.037 U	-	1.9E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	0.27 J	-	1.4E-09	0.14 J	-	7.0E-10	NA	-	-	0.037 U	-	1.9E-10
Naphthalene	7.3E+01	4.3E+02	NA	-	-	0.11 J	1.5E-03	2.5E-10	0.071 J	9.8E-04	1.6E-10	NA	-	-	0.037 U	5.1E-04	8.5E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	5.4E-01	-	-	7.8E-01	-	-	4.7E-01	-	-	2.1E-01	-	-	1.3E-01	-
Total PAH Risk	-		-	-	-	-	-	2.5E-08	-	-	1.5E-08	-	-	-	-	-	5.2E-09
Total (PAH + Arsenic) Risk	-		-	-	2.4E-07	-	-	5.1E-07	-	-	5.5E-07	-	-	7.7E-08	-	-	1.1E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		E-03			E-04			E-05			E-06			F-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	7.5	5.2E-02	3.8E-08	47.8	3.3E-01	2.4E-07	29.7	2.1E-01	1.5E-07	380	**2.6E+00**	*1.9E-06*	22.5 J	1.6E-01	1.1E-07
Barium	6.6E+04	-	260	3.9E-03	-	254	3.8E-03	-	306	4.6E-03	-	3,980	6.0E-02	-	162 J	2.5E-03	-
Cadmium	1.5E+02	1.8E+05	15.8	1.1E-01	9.0E-11	131	9.0E-01	7.4E-10	53.9	3.7E-01	3.1E-10	256	**1.8E+00**	1.5E-09	61.6 J	4.2E-01	3.5E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	NA	-	-	25.8	2.8E-02	7.3E-10	8.2 B	8.8E-03	2.3E-10
Copper	3.4E+03	-	37.4	1.1E-02	-	517	1.5E-01	-	303	8.9E-02	-	4,880 J	1.4E+00	-	210 J	6.2E-02	-
Lead	9.4E+02	-	129	1.4E-01	-	1,710	**1.8E+00**	-	1,090	1.2E+00	-	9,140	**9.7E+00**	-	289 J	3.1E-01	-
Manganese	6.2E+03	-	880	1.4E-01	-	584	9.4E-02	-	461	7.4E-02	-	1,580	2.5E-01	-	632	1.0E-01	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	NA	-	-	0.86	1.3E-03	-	0.024 U	3.6E-05	-
Zinc	1.0E+05	-	2,110 J	2.1E-02	-	25,100 J	2.5E-01	-	6,980	6.9E-02	-	75,900	7.5E-01	-	5,870 J	5.8E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	5 U	-	2.5E-08	0.39 U	-	2.0E-09
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	5 U	-	2.5E-07	0.39 U	-	2.0E-08
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	5 U	-	2.5E-08	0.39 U	-	2.0E-09
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	5 U	-	2.5E-09	0.39 U	-	2.0E-10
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	5 U	-	2.5E-10	0.39 U	-	2.0E-11
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	5 U	-	2.5E-07	0.39 U	-	2.0E-08
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	5 U	-	2.5E-08	0.39 U	-	2.0E-09
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	3.7 J	5.1E-02	8.5E-09	0.39 U	5.4E-03	9.0E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	1.1E-01	-	-	9.0E-01	-	-	3.7E-01	-	-	**1.8E+00**	-	-	4.2E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	5.9E-07	-	-	4.6E-08
Total (PAH + Arsenic) Risk	-		-	-	3.8E-08	-	-	2.4E-07	-	-	1.5E-07	-	-	*2.5E-06*	-	-	1.6E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		F-02			F-03			G-01			G-02			G-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	7.2	5.0E-02	3.7E-08	47.1	3.3E-01	2.4E-07	10	7.0E-02	5.1E-08	88.5	6.2E-01	4.5E-07	182	1.3E+00	9.2E-07
Barium	6.6E+04	-	125 J	1.9E-03	-	1,120 J	1.7E-02	-	147	2.2E-03	-	1,330	2.0E-02	-	276	4.2E-03	-
Cadmium	1.5E+02	1.8E+05	8.3	5.7E-02	4.7E-11	186	1.3E+00	1.1E-09	20.8 J	1.4E-01	1.2E-10	235	**1.6E+00**	1.3E-09	945	**6.5E+00**	5.4E-09
Cobalt	9.3E+02	3.5E+04	6.7	7.2E-03	1.9E-10	25	2.7E-02	7.1E-10	6.7 B	7.2E-03	1.9E-10	8.1	8.7E-03	2.3E-10	NA	-	-
Copper	3.4E+03	-	31.7	9.3E-03	-	1,320	3.9E-01	-	60.7 J	1.8E-02	-	899	2.7E-01	-	3,180	9.4E-01	-
Lead	9.4E+02	-	209	2.2E-01	-	920	9.8E-01	-	108	1.1E-01	-	2,830	**3.0E+00**	-	4,600	**4.9E+00**	-
Manganese	6.2E+03	-	444	7.2E-02	-	783	1.3E-01	-	477	7.7E-02	-	1,370	2.2E-01	-	2,110	3.4E-01	-
Mercury	6.8E+02	-	0.34	5.0E-04	-	1.47	2.2E-03	-	0.041 B	6.1E-05	-	0.067 B	9.9E-05	-	NA	-	-
Zinc	1.0E+05	-	766	7.5E-03	-	52,300	5.1E-01	-	3,170	3.1E-02	-	37,300 J	3.7E-01	-	260,000 J	**2.6E+00**	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.039 U	-	2.0E-10	0.14 J	-	7.0E-10	0.37 U	-	1.9E-09	0.39 U	-	2.0E-09	NA	-	-
Benzo(a)pyrene	-	2.0E+01	0.039 U	-	2.0E-09	0.11 J	-	5.5E-09	0.37 U	-	1.9E-08	0.39 U	-	2.0E-08	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	0.039 U	-	2.0E-10	0.16 J	-	8.0E-10	0.37 U	-	1.9E-09	0.39 U	-	2.0E-09	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	0.039 U	-	2.0E-11	0.065 J	-	3.3E-11	0.37 U	-	1.9E-10	0.39 U	-	2.0E-10	NA	-	-
Chrysene	-	2.0E+04	0.039 U	-	2.0E-12	0.18 J	-	9.0E-12	0.37 UJ	-	1.9E-11	0.39 U	-	2.0E-11	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	0.039 U	-	2.0E-09	0.038 U	-	1.9E-09	0.37 U	-	1.9E-08	0.39 U	-	2.0E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.039 U	-	2.0E-10	0.071 J	-	3.6E-10	0.37 U	-	1.9E-09	0.39 U	-	2.0E-09	NA	-	-
Naphthalene	7.3E+01	4.3E+02	0.039 U	5.4E-04	9.0E-11	0.038 U	5.2E-04	8.8E-11	0.37 U	5.1E-03	8.5E-10	0.39 U	5.4E-03	9.0E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.9E-02	-	-	1.3E+00	-	-	1.4E-01	-	-	**1.6E+00**	-	-	**6.5E+00**	-
Total PAH Risk	-		-	-	4.6E-09	-	-	9.4E-09	-	-	4.4E-08	-	-	4.6E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	4.1E-08	-	-	2.5E-07	-	-	9.4E-08	-	-	4.9E-07	-	-	9.2E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		G-04			G-05			G-07			H-02			H-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	55.2	3.8E-01	2.8E-07	45.6	3.2E-01	2.3E-07	4.5 J	3.1E-02	2.3E-08	9	6.3E-02	4.6E-08	4.7	3.3E-02	2.4E-08
Barium	6.6E+04	-	296	4.5E-03	-	867 J	1.3E-02	-	360	5.4E-03	-	88	1.3E-03	-	52	7.9E-04	-
Cadmium	1.5E+02	1.8E+05	327	**2.2E+00**	1.9E-09	160	1.1E+00	9.1E-10	5.7	3.9E-02	3.2E-11	6.2	4.2E-02	3.5E-11	9	6.2E-02	5.1E-11
Cobalt	9.3E+02	3.5E+04	6.5 B	7.0E-03	1.8E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	467	1.4E-01	-	475	1.4E-01	-	52	1.5E-02	-	19.1 J	5.6E-03	-	50	1.5E-02	-
Lead	9.4E+02	-	1,360	1.4E+00	-	1,390	1.5E+00	-	63	6.7E-02	-	34	3.6E-02	-	87 J	9.2E-02	-
Manganese	6.2E+03	-	566	9.1E-02	-	732	1.2E-01	-	320	5.2E-02	-	579	9.3E-02	-	350 J	5.6E-02	-
Mercury	6.8E+02	-	0.28	4.1E-04	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	43,300 J	4.3E-01	-	21,700	2.1E-01	-	850	8.4E-03	-	1,450 J	1.4E-02	-	1,200 J	1.2E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.36 U	-	1.8E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	0.36 U	-	1.8E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	0.36 U	-	1.8E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	0.36 U	-	1.8E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	0.36 U	-	1.8E-11	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	0.36 U	-	1.8E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.36 U	-	1.8E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	0.36 U	5.0E-03	8.3E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	**2.2E+00**	-	-	1.1E+00	-	-	4.4E-02	-	-	4.4E-02	-	-	6.2E-02	-
Total PAH Risk	-		-	-	4.3E-08	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.2E-07	-	-	2.3E-07	-	-	2.3E-08	-	-	4.6E-08	-	-	2.4E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		H-05			H-06			H-07			H-08			HH-10		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	51	3.6E-01	2.6E-07	110	7.7E-01	5.6E-07	27.8	1.9E-01	1.4E-07	826	**5.8E+00**	*4.2E-06*	230.1	**1.6E+00**	1.2E-06
Barium	6.6E+04	-	1,800	2.7E-02	-	1,200	1.8E-02	-	8,590	1.3E-01	-	4,980	7.5E-02	-	77	1.2E-03	-
Cadmium	1.5E+02	1.8E+05	170	1.2E+00	9.7E-10	130	8.9E-01	7.4E-10	12.9	8.8E-02	7.3E-11	317 J	**2.2E+00**	1.8E-09	1.3 B	8.9E-03	7.4E-12
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	6.5 B	7.0E-03	1.8E-10	90.5	9.8E-02	2.6E-09	10 B	1.1E-02	2.8E-10
Copper	3.4E+03	-	820	2.4E-01	-	990	2.9E-01	-	160	4.7E-02	-	2,530 J	7.5E-01	-	3,360	9.9E-01	-
Lead	9.4E+02	-	3,700 J	**3.9E+00**	-	4,000 J	**4.3E+00**	-	274	2.9E-01	-	22,800	**2.4E+01**	-	21,700	**2.3E+01**	-
Manganese	6.2E+03	-	730 J	1.2E-01	-	601	9.7E-02	-	2,480	4.0E-01	-	8,770	1.4E+00	-	1,350	2.2E-01	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	0.023 U	3.4E-05	-	1.57	2.3E-03	-	0.03 U	4.4E-05	-
Zinc	1.0E+05	-	45,000 J	4.4E-01	-	89,000 J	8.7E-01	-	3,810 J	3.7E-02	-	35,100	3.4E-01	-	3,600	3.5E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	0.39 U	-	2.0E-09	0.56	-	2.8E-09	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	0.39 U	-	2.0E-08	0.42 J	-	2.1E-08	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	0.39 U	-	2.0E-09	0.62	-	3.1E-09	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	0.39 U	-	2.0E-10	0.26 J	-	1.3E-10	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	0.39 U	-	2.0E-11	0.58	-	2.9E-11	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	0.39 U	-	2.0E-08	0.083 J	-	4.2E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	0.39 U	-	2.0E-09	0.26 J	-	1.3E-09	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	0.39 U	5.4E-03	9.0E-10	0.053 J	7.3E-04	1.2E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.2E+00	-	-	9.1E-01	-	-	2.2E-01	-	-	**2.2E+00**	-	-	1.0E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	4.6E-08	-	-	3.3E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.6E-07	-	-	5.6E-07	-	-	1.9E-07	-	-	*4.2E-06*	-	-	1.2E-06

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		HH-12			I-02			I-03			I-04			I-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	417	**2.9E+00**	*2.1E-06*	60	4.2E-01	3.0E-07	33.1	2.3E-01	1.7E-07	47.4	3.3E-01	2.4E-07	141	9.8E-01	7.2E-07
Barium	6.6E+04	-	11,100	1.7E-01	-	3,200	4.8E-02	-	3,920	5.9E-02	-	1,770 J	2.7E-02	-	969	1.5E-02	-
Cadmium	1.5E+02	1.8E+05	94	6.4E-01	5.3E-10	101	6.9E-01	5.7E-10	104	7.1E-01	5.9E-10	135	9.2E-01	7.7E-10	197	1.3E+00	1.1E-09
Cobalt	9.3E+02	3.5E+04	90	9.7E-02	2.6E-09	9.5 B	1.0E-02	2.7E-10	7.6 B	8.2E-03	2.2E-10	NA	-	-	8.3 B	9.0E-03	2.4E-10
Copper	3.4E+03	-	1,810	5.3E-01	-	3,280	9.7E-01	-	236	7.0E-02	-	1,060 J	3.1E-01	-	4,430	1.3E+00	-
Lead	9.4E+02	-	24,400	**2.6E+01**	-	7,570	**8.0E+00**	-	1,440	**1.5E+00**	-	1,510 J	**1.6E+00**	-	2,490 J	**2.6E+00**	-
Manganese	6.2E+03	-	6,310	1.0E+00	-	18,000	**2.9E+00**	-	815	1.3E-01	-	2,330	3.8E-01	-	3,860	6.2E-01	-
Mercury	6.8E+02	-	0.02 U	3.0E-05	-	0.05 U	7.4E-05	-	0.048 U	7.1E-05	-	NA	-	-	0.049 B	7.3E-05	-
Zinc	1.0E+05	-	28,800	2.8E-01	-	36,100	3.5E-01	-	9,030	8.9E-02	-	15,200	1.5E-01	-	38,100	3.7E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	0.4 U	-	2.0E-09	0.39 U	-	2.0E-09	NA	-	-	0.38 U	-	1.9E-09
Benzo(a)pyrene	-	2.0E+01	NA	-	-	0.4 U	-	2.0E-08	0.39 U	-	2.0E-08	NA	-	-	0.38 U	-	1.9E-08
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	0.4 U	-	2.0E-09	0.39 U	-	2.0E-09	NA	-	-	0.38 U	-	1.9E-09
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	0.4 U	-	2.0E-10	0.39 U	-	2.0E-10	NA	-	-	0.38 U	-	1.9E-10
Chrysene	-	2.0E+04	NA	-	-	0.4 U	-	2.0E-11	0.39 U	-	2.0E-11	NA	-	-	0.38 U	-	1.9E-11
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	0.4 U	-	2.0E-08	0.39 U	-	2.0E-08	NA	-	-	0.38 U	-	1.9E-08
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	0.4 U	-	2.0E-09	0.39 U	-	2.0E-09	NA	-	-	0.38 U	-	1.9E-09
Naphthalene	7.3E+01	4.3E+02	NA	-	-	0.4 U	5.5E-03	9.2E-10	0.39 U	5.4E-03	9.0E-10	NA	-	-	0.38 U	5.2E-03	8.8E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	8.1E-01	-	-	7.4E-01	-	-	7.7E-01	-	-	9.5E-01	-	-	1.4E+00	-
Total PAH Risk	-		-	-	-	-	-	4.7E-08	-	-	4.6E-08	-	-	-	-	-	4.5E-08
Total (PAH + Arsenic) Risk	-		-	-	*2.1E-06*	-	-	3.5E-07	-	-	2.1E-07	-	-	2.4E-07	-	-	7.6E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		I-06			I-07			I-09			I-11			J-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	99.9	7.0E-01	5.1E-07	235	**1.6E+00**	1.2E-06	28.2	2.0E-01	1.4E-07	45.5 J	3.2E-01	2.3E-07	11.6	8.1E-02	5.9E-08
Barium	6.6E+04	-	6,500	9.8E-02	-	1,130	1.7E-02	-	1,250	1.9E-02	-	11,200	1.7E-01	-	611	9.2E-03	-
Cadmium	1.5E+02	1.8E+05	1,010	**6.9E+00**	5.7E-09	139	9.5E-01	7.9E-10	44.8	3.1E-01	2.5E-10	96.8 J	6.6E-01	5.5E-10	8.2	5.6E-02	4.7E-11
Cobalt	9.3E+02	3.5E+04	20.4	2.2E-02	5.8E-10	NA	-	-	NA	-	-	39.6	4.3E-02	1.1E-09	NA	-	-
Copper	3.4E+03	-	1,620 J	4.8E-01	-	5,530 J	**1.6E+00**	-	764	2.3E-01	-	958	2.8E-01	-	42.8	1.3E-02	-
Lead	9.4E+02	-	4,840	**5.1E+00**	-	4,650	**4.9E+00**	-	922	9.8E-01	-	1,290 J	1.4E+00	-	109 J	1.2E-01	-
Manganese	6.2E+03	-	2,020	3.3E-01	-	2,590	4.2E-01	-	802	1.3E-01	-	1,190	1.9E-01	-	630	1.0E-01	-
Mercury	6.8E+02	-	0.43 J	6.4E-04	-	NA	-	-	NA	-	-	0.2 J	3.0E-04	-	NA	-	-
Zinc	1.0E+05	-	65,600	6.4E-01	-	44,700	4.4E-01	-	9,760	9.6E-02	-	15,800	1.6E-01	-	1,460	1.4E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.93	-	4.7E-09	NA	-	-	NA	-	-	0.25 J	-	1.3E-09	NA	-	-
Benzo(a)pyrene	-	2.0E+01	0.58	-	2.9E-08	NA	-	-	NA	-	-	0.2 J	-	1.0E-08	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	0.92	-	4.6E-09	NA	-	-	NA	-	-	0.36 J	-	1.8E-09	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	0.28 J	-	1.4E-10	NA	-	-	NA	-	-	0.15 J	-	7.5E-11	NA	-	-
Chrysene	-	2.0E+04	1.7	-	8.5E-11	NA	-	-	NA	-	-	0.42	-	2.1E-11	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	0.16 J	-	8.0E-09	NA	-	-	NA	-	-	0.053 J	-	2.7E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.35 J	-	1.8E-09	NA	-	-	NA	-	-	0.16 J	-	8.0E-10	NA	-	-
Naphthalene	7.3E+01	4.3E+02	0.21 J	2.9E-03	4.8E-10	NA	-	-	NA	-	-	0.07 J	9.6E-04	1.6E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	**7.0E+00**	-	-	9.7E-01	-	-	3.3E-01	-	-	8.3E-01	-	-	6.5E-02	-
Total PAH Risk	-		-	-	4.9E-08	-	-	-	-	-	-	-	-	1.7E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	5.6E-07	-	-	1.2E-06	-	-	1.4E-07	-	-	2.5E-07	-	-	5.9E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-02			J-03			J-06			J-07			J-08		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	20	1.4E-01	1.0E-07	18.4	1.3E-01	9.3E-08	111	7.7E-01	5.6E-07	36.3 J	2.5E-01	1.8E-07	139 J	9.7E-01	7.0E-07
Barium	6.6E+04	-	204	3.1E-03	-	205	3.1E-03	-	7,020	1.1E-01	-	133 J	2.0E-03	-	734 J	1.1E-02	-
Cadmium	1.5E+02	1.8E+05	84.3	5.8E-01	4.8E-10	7.6	5.2E-02	4.3E-11	109	7.5E-01	6.2E-10	14.7	1.0E-01	8.4E-11	40	2.7E-01	2.3E-10
Cobalt	9.3E+02	3.5E+04	6.1	6.6E-03	1.7E-10	9 B	9.7E-03	2.6E-10	NA	-	-	15.8	1.7E-02	4.5E-10	NA	-	-
Copper	3.4E+03	-	33.6	9.9E-03	-	65.9	1.9E-02	-	1,230	3.6E-01	-	699 J	2.1E-01	-	8,610 J	**2.5E+00**	-
Lead	9.4E+02	-	1,060 J	1.1E+00	-	328 J	3.5E-01	-	4,790	**5.1E+00**	-	536 J	5.7E-01	-	4,620 J	**4.9E+00**	-
Manganese	6.2E+03	-	457	7.4E-02	-	663	1.1E-01	-	3,220	5.2E-01	-	1,060 J	1.7E-01	-	13,700 J	**2.2E+00**	-
Mercury	6.8E+02	-	0.029 B	4.3E-05	-	0.039 B	5.8E-05	-	NA	-	-	0.028 U	4.1E-05	-	NA	-	-
Zinc	1.0E+05	-	6,120	6.0E-02	-	1,580	1.6E-02	-	24,500	2.4E-01	-	6,420	6.3E-02	-	36,500	3.6E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.35 U	-	1.8E-09	0.4 U	-	2.0E-09	NA	-	-	0.36 U	-	1.8E-09	NA	-	-
Benzo(a)pyrene	-	2.0E+01	0.35 U	-	1.8E-08	0.4 U	-	2.0E-08	NA	-	-	0.36 U	-	1.8E-08	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	0.35 U	-	1.8E-09	0.4 U	-	2.0E-09	NA	-	-	0.36 U	-	1.8E-09	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	0.35 U	-	1.8E-10	0.4 U	-	2.0E-10	NA	-	-	0.36 U	-	1.8E-10	NA	-	-
Chrysene	-	2.0E+04	0.35 U	-	1.8E-11	0.4 U	-	2.0E-11	NA	-	-	0.36 U	-	1.8E-11	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	0.35 U	-	1.8E-08	0.4 U	-	2.0E-08	NA	-	-	0.36 U	-	1.8E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.35 U	-	1.8E-09	0.4 U	-	2.0E-09	NA	-	-	0.36 U	-	1.8E-09	NA	-	-
Naphthalene	7.3E+01	4.3E+02	0.35 U	4.8E-03	8.1E-10	0.4 U	5.5E-03	9.2E-10	NA	-	-	0.36 U	5.0E-03	8.3E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.8E-01	-	-	5.5E-02	-	-	8.5E-01	-	-	1.0E-01	-	-	2.8E-01	-
Total PAH Risk	-		-	-	4.1E-08	-	-	4.7E-08	-	-	-	-	-	4.3E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.4E-07	-	-	1.4E-07	-	-	5.6E-07	-	-	2.3E-07	-	-	7.0E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
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Bold = Non-carcinogenic hazard quotient greater than 1
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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-09			J-10			J-11			J-12			J-13		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	79 J	5.5E-01	4.0E-07	10.3	7.2E-02	5.2E-08	9.3 J	6.5E-02	4.7E-08	17.9	1.2E-01	9.1E-08	230 J	**1.6E+00**	1.2E-06
Barium	6.6E+04	-	391 J	5.9E-03	-	296	4.5E-03	-	420	6.4E-03	-	4,390	6.6E-02	-	686	1.0E-02	-
Cadmium	1.5E+02	1.8E+05	6.5 J	4.4E-02	3.7E-11	15.1 J	1.0E-01	8.6E-11	19	1.3E-01	1.1E-10	67.6 J	4.6E-01	3.8E-10	676 J	**4.6E+00**	3.8E-09
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	42.2	4.6E-02	1.2E-09
Copper	3.4E+03	-	2,760 J	8.1E-01	-	116	3.4E-02	-	130	3.8E-02	-	319	9.4E-02	-	3,910	1.2E+00	-
Lead	9.4E+02	-	2,450 J	**2.6E+00**	-	166	1.8E-01	-	200 J	2.1E-01	-	485	5.2E-01	-	2,910 J	**3.1E+00**	-
Manganese	6.2E+03	-	20,400 J	**3.3E+00**	-	576 J	9.3E-02	-	390	6.3E-02	-	588 J	9.5E-02	-	2,180	3.5E-01	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.58 J	8.6E-04	-
Zinc	1.0E+05	-	10,900	1.1E-01	-	2,300	2.3E-02	-	2,000 J	2.0E-02	-	6,650	6.5E-02	-	101,000	9.9E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	2.6E-10
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	2.6E-09
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	2.6E-10
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	2.6E-11
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	2.6E-12
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	2.6E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	2.6E-10
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.29 J	4.0E-03	6.7E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	5.0E-02	-	-	1.1E-01	-	-	1.4E-01	-	-	5.3E-01	-	-	**4.6E+00**	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.6E-09
Total (PAH + Arsenic) Risk	-		-	-	4.0E-07	-	-	5.2E-08	-	-	4.7E-08	-	-	9.1E-08	-	-	1.2E-06

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		K-01			K-02			K-03			K-04			K-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	15 J	1.0E-01	7.6E-08	29.1	2.0E-01	1.5E-07	17.3	1.2E-01	8.8E-08	36.7	2.6E-01	1.9E-07	36.5 J	2.5E-01	1.9E-07
Barium	6.6E+04	-	405	6.1E-03	-	15,600	2.4E-01	-	5,780	8.7E-02	-	411	6.2E-03	-	340	5.1E-03	-
Cadmium	1.5E+02	1.8E+05	18.3	1.3E-01	1.0E-10	34.7	2.4E-01	2.0E-10	15.9	1.1E-01	9.0E-11	34.9	2.4E-01	2.0E-10	38 J	2.6E-01	2.2E-10
Cobalt	9.3E+02	3.5E+04	6.7	7.2E-03	1.9E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	69.6	2.1E-02	-	1,040	3.1E-01	-	497	1.5E-01	-	533	1.6E-01	-	400	1.2E-01	-
Lead	9.4E+02	-	115	1.2E-01	-	939	1.0E+00	-	679	7.2E-01	-	1,560	**1.7E+00**	-	526 J	5.6E-01	-
Manganese	6.2E+03	-	550	8.9E-02	-	6,200	1.0E+00	-	1,800	2.9E-01	-	921	1.5E-01	-	1,050	1.7E-01	-
Mercury	6.8E+02	-	0.11 U	1.6E-04	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	1,340	1.3E-02	-	9,980	9.8E-02	-	5,420	5.3E-02	-	8,840	8.7E-02	-	10,300	1.0E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.38 U	-	1.9E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	0.38 U	-	1.9E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	0.38 U	-	1.9E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	0.38 U	-	1.9E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	0.38 U	-	1.9E-11	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	0.38 U	-	1.9E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.38 U	-	1.9E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	0.38 U	5.2E-03	8.8E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.3E-01	-	-	4.7E-01	-	-	2.0E-01	-	-	2.5E-01	-	-	2.7E-01	-
Total PAH Risk	-		-	-	4.5E-08	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.2E-07	-	-	1.5E-07	-	-	8.8E-08	-	-	1.9E-07	-	-	1.9E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
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- > 5 - ≤10
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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		L-02			L-03			L-04			L-06			M-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	78 J	5.4E-01	4.0E-07	91 J	6.3E-01	4.6E-07	114	7.9E-01	5.8E-07	21	1.5E-01	1.1E-07	22.8	1.6E-01	1.2E-07
Barium	6.6E+04	-	350	5.3E-03	-	2,500	3.8E-02	-	9,510	1.4E-01	-	1,010	1.5E-02	-	595	9.0E-03	-
Cadmium	1.5E+02	1.8E+05	33	2.3E-01	1.9E-10	64	4.4E-01	3.6E-10	141	9.7E-01	8.0E-10	36.8	2.5E-01	2.1E-10	64.8	4.4E-01	3.7E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	380	1.1E-01	-	490	1.4E-01	-	662	2.0E-01	-	292	8.6E-02	-	268	7.9E-02	-
Lead	9.4E+02	-	13,000	**1.4E+01**	-	4,700	**5.0E+00**	-	2,300	**2.4E+00**	-	453	4.8E-01	-	780	8.3E-01	-
Manganese	6.2E+03	-	1,100	1.8E-01	-	3,400	5.5E-01	-	2,750	4.4E-01	-	391	6.3E-02	-	709	1.1E-01	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	9,400	9.2E-02	-	20,000	2.0E-01	-	31,500	3.1E-01	-	4,280 J	4.2E-02	-	9,330	9.2E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.3E-01	-	-	4.8E-01	-	-	1.1E+00	-	-	2.7E-01	-	-	4.5E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	4.0E-07	-	-	4.6E-07	-	-	5.8E-07	-	-	1.1E-07	-	-	1.2E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
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RSV = Risk-based Screening Value
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HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		M-02			M-03			M-04			N-01			N-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	12.8	8.9E-02	6.5E-08	10.5	7.3E-02	5.3E-08	10.8	7.5E-02	5.5E-08	207	1.4E+00	1.0E-06	6.3	4.4E-02	3.2E-08
Barium	6.6E+04	-	207	3.1E-03	-	175	2.6E-03	-	216	3.3E-03	-	168	2.5E-03	-	137	2.1E-03	-
Cadmium	1.5E+02	1.8E+05	15.7	1.1E-01	8.9E-11	14.7	1.0E-01	8.4E-11	27.7	1.9E-01	1.6E-10	11	7.5E-02	6.2E-11	10.1	6.9E-02	5.7E-11
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	115	3.4E-02	-	109	3.2E-02	-	130	3.8E-02	-	5,060	1.5E+00	-	774	2.3E-01	-
Lead	9.4E+02	-	154	1.6E-01	-	145	1.5E-01	-	161	1.7E-01	-	9,210	**9.8E+00**	-	53.5	5.7E-02	-
Manganese	6.2E+03	-	579	9.3E-02	-	554	8.9E-02	-	521	8.4E-02	-	1,950	3.1E-01	-	770	1.2E-01	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	2,200 J	2.2E-02	-	1,520 J	1.5E-02	-	3,850 J	3.8E-02	-	3,390	3.3E-02	-	3,180 J	3.1E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.1E-01	-	-	1.0E-01	-	-	1.9E-01	-	-	7.8E-02	-	-	7.1E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	6.5E-08	-	-	5.3E-08	-	-	5.5E-08	-	-	1.0E-06	-	-	3.2E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		N-03			P-01			P-02			P-03			P-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	7.4	5.2E-02	3.8E-08	35 J	2.4E-01	1.8E-07	8.8	6.1E-02	4.5E-08	36 J	2.5E-01	1.8E-07	24 J	1.7E-01	1.2E-07
Barium	6.6E+04	-	306	4.6E-03	-	4,500 J	6.8E-02	-	125	1.9E-03	-	7,500 J	1.1E-01	-	5,600 J	8.5E-02	-
Cadmium	1.5E+02	1.8E+05	6.7	4.6E-02	3.8E-11	52	3.6E-01	3.0E-10	4.6	3.1E-02	2.6E-11	48	3.3E-01	2.7E-10	61	4.2E-01	3.5E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	5.9 J	6.4E-03	1.7E-10	4.5 J	4.9E-03	1.3E-10	17	1.8E-02	4.8E-10	6.4 J	6.9E-03	1.8E-10
Copper	3.4E+03	-	44.6	1.3E-02	-	320 J	9.4E-02	-	20	5.9E-03	-	700 J	2.1E-01	-	390 J	1.1E-01	-
Lead	9.4E+02	-	61.4	6.5E-02	-	2,500 J	**2.7E+00**	-	26.7	2.8E-02	-	940 J	1.0E+00	-	1,300 J	1.4E+00	-
Manganese	6.2E+03	-	451	7.3E-02	-	440 J	7.1E-02	-	299	4.8E-02	-	700 J	1.1E-01	-	600 J	9.7E-02	-
Mercury	6.8E+02	-	NA	-	-	0.94 J	1.4E-03	-	0.0053 U	7.8E-06	-	0.13 J	1.9E-04	-	0.99 J	1.5E-03	-
Zinc	1.0E+05	-	908 J	8.9E-03	-	4,100	4.0E-02	-	488	4.8E-03	-	13,000	1.3E-01	-	11,000	1.1E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.27 J	-	1.4E-09	1.2	-	6.0E-09
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	0.26 J	-	1.3E-08	0.85	-	4.3E-08
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.31 J	-	1.6E-09	0.74	-	3.7E-09
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	0.35 J	-	1.8E-10	0.8	-	4.0E-10
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	0.47	-	2.4E-11	1.2	-	6.0E-11
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	0.4 U	-	2.0E-08	0.47	-	2.4E-08
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.29 J	-	1.5E-09	0.81	-	4.1E-09
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	0.4 U	5.5E-03	9.2E-10	0.15 J	2.1E-03	3.5E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	5.0E-02	-	-	4.2E-01	-	-	3.3E-02	-	-	4.4E-01	-	-	5.0E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	3.9E-08	-	-	8.1E-08
Total (PAH + Arsenic) Risk	-		-	-	3.8E-08	-	-	1.8E-07	-	-	4.5E-08	-	-	2.2E-07	-	-	2.0E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		PZ-01(S)			PZ-02(S)			PZ-03(I)			PZ-04(S)			SB-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	110 J	7.7E-01	5.6E-07	110	7.7E-01	5.6E-07	124	8.6E-01	6.3E-07	108	7.5E-01	5.5E-07	14.8	1.0E-01	7.5E-08
Barium	6.6E+04	-	840	1.3E-02	-	5,360	8.1E-02	-	2,930	4.4E-02	-	1,330	2.0E-02	-	86.4 *	1.3E-03	-
Cadmium	1.5E+02	1.8E+05	50	3.4E-01	2.8E-10	111 J	7.6E-01	6.3E-10	41.5	2.8E-01	2.4E-10	35	2.4E-01	2.0E-10	8.8	6.0E-02	5.0E-11
Cobalt	9.3E+02	3.5E+04	NA	-	-	55.1	5.9E-02	1.6E-09	NA	-	-	8.5	9.2E-03	2.4E-10	15.6	1.7E-02	4.4E-10
Copper	3.4E+03	-	940	2.8E-01	-	1,930	5.7E-01	-	4,030	1.2E+00	-	1,980	5.8E-01	-	115	3.4E-02	-
Lead	9.4E+02	-	2,800	**3.0E+00**	-	3,870	**4.1E+00**	-	5,560	**5.9E+00**	-	2,930	**3.1E+00**	-	244 J	2.6E-01	-
Manganese	6.2E+03	-	4,100	6.6E-01	-	3,570 J	5.8E-01	-	6,380	1.0E+00	-	1,620	2.6E-01	-	268 *	4.3E-02	-
Mercury	6.8E+02	-	NA	-	-	0.36	5.3E-04	-	NA	-	-	0.026 U	3.8E-05	-	0.12 U	1.8E-04	-
Zinc	1.0E+05	-	20000	2.0E-01	-	26,500	2.6E-01	-	13,700	1.3E-01	-	9,230	9.1E-02	-	1,420	1.4E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	0.2 J	-	1.0E-09	NA	-	-	0.037 U	-	1.9E-10	0.41 U	-	2.1E-09
Benzo(a)pyrene	-	2.0E+01	NA	-	-	0.084 J	-	4.2E-09	NA	-	-	0.037 U	-	1.9E-09	0.41 U	-	2.1E-08
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	0.18 J	-	9.0E-10	NA	-	-	0.037 U	-	1.9E-10	0.41 U	-	2.1E-09
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	0.066 J	-	3.3E-11	NA	-	-	0.037 U	-	1.9E-11	0.41 U	-	2.1E-10
Chrysene	-	2.0E+04	NA	-	-	0.35 J	-	1.8E-11	NA	-	-	0.037 U	-	1.9E-12	0.41 U	-	2.1E-11
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	0.041 U	-	2.1E-09	NA	-	-	0.037 U	-	1.9E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	0.052 J	-	2.6E-10	NA	-	-	0.037 U	-	1.9E-10	0.41 U	-	2.1E-09
Naphthalene	7.3E+01	4.3E+02	NA	-	-	0.22 J	3.0E-03	5.1E-10	NA	-	-	0.037 U	5.1E-04	8.5E-11	0.38 U	5.2E-03	8.8E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	3.5E-01	-	-	8.4E-01	-	-	3.3E-01	-	-	2.6E-01	-	-	6.2E-02	-
Total PAH Risk	-		-	-	-	-	-	9.0E-09	-	-	-	-	-	4.4E-09	-	-	2.8E-08
Total (PAH + Arsenic) Risk	-		-	-	5.6E-07	-	-	5.7E-07	-	-	6.3E-07	-	-	5.5E-07	-	-	1.0E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-09			SB-52			SB-53			SB-54			SB-55		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	139	9.7E-01	7.0E-07	9.6	6.7E-02	4.9E-08	8.1	5.6E-02	4.1E-08	12.4 J	8.6E-02	6.3E-08	19.1	1.3E-01	9.7E-08
Barium	6.6E+04	-	1,180	1.8E-02	-	1,730	2.6E-02	-	2,690	4.1E-02	-	393 J	5.9E-03	-	229	3.5E-03	-
Cadmium	1.5E+02	1.8E+05	74.8	5.1E-01	4.2E-10	40.8	2.8E-01	2.3E-10	47.6	3.3E-01	2.7E-10	24.9 J	1.7E-01	1.4E-10	42.8 J	2.9E-01	2.4E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	11.4	1.2E-02	3.2E-10	10.1	1.1E-02	2.9E-10	20.2	2.2E-02	5.7E-10	9.8 J	1.1E-02	2.8E-10
Copper	3.4E+03	-	232	6.8E-02	-	31.9	9.4E-03	-	62.6	1.8E-02	-	33.2	9.8E-03	-	60.6	1.8E-02	-
Lead	9.4E+02	-	9,480	**1.0E+01**	-	132	1.4E-01	-	388	4.1E-01	-	29 J	3.1E-02	-	456	4.8E-01	-
Manganese	6.2E+03	-	1,090	1.8E-01	-	652	1.1E-01	-	1,250	2.0E-01	-	849	1.4E-01	-	1,080	1.7E-01	-
Mercury	6.8E+02	-	NA	-	-	0.1 J	1.5E-04	-	0.12 U	1.8E-04	-	0.066 J	9.8E-05	-	0.096 J	1.4E-04	-
Zinc	1.0E+05	-	13,900	1.4E-01	-	2,290	2.3E-02	-	4,680	4.6E-02	-	1,490 J	1.5E-02	-	4,600 J	4.5E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.3E-01	-	-	3.1E-01	-	-	3.7E-01	-	-	1.8E-01	-	-	3.0E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	7.0E-07	-	-	4.9E-08	-	-	4.1E-08	-	-	6.3E-08	-	-	9.7E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-56			SB-57			SB-58			SB-59			SB-60		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	27.2	1.9E-01	1.4E-07	7.5	5.2E-02	3.8E-08	4	2.8E-02	2.0E-08	8.2 J	5.7E-02	4.2E-08	18.2 J	1.3E-01	9.2E-08
Barium	6.6E+04	-	1,200	1.8E-02	-	286	4.3E-03	-	69.6	1.1E-03	-	126 J	1.9E-03	-	3,730 J	5.6E-02	-
Cadmium	1.5E+02	1.8E+05	50.9 J	3.5E-01	2.9E-10	25.7	1.8E-01	1.5E-10	1.4 J	9.6E-03	8.0E-12	2.7	1.8E-02	1.5E-11	92	6.3E-01	5.2E-10
Cobalt	9.3E+02	3.5E+04	12.2 J	1.3E-02	3.5E-10	8.9	9.6E-03	2.5E-10	6.7 J	7.2E-03	1.9E-10	5.8 J	6.3E-03	1.6E-10	10.1 J	1.1E-02	2.9E-10
Copper	3.4E+03	-	40	1.2E-02	-	26.8	7.9E-03	-	12.4	3.7E-03	-	14.7	4.3E-03	-	63	1.9E-02	-
Lead	9.4E+02	-	278	3.0E-01	-	115	1.2E-01	-	12.8	1.4E-02	-	11.3 J	1.2E-02	-	433 J	4.6E-01	-
Manganese	6.2E+03	-	960	1.5E-01	-	540	8.7E-02	-	391	6.3E-02	-	318 J	5.1E-02	-	856 J	1.4E-01	-
Mercury	6.8E+02	-	0.065 J	9.6E-05	-	0.039 J	5.8E-05	-	0.016 J	2.4E-05	-	0.1 UJ	1.5E-04	-	0.2	3.0E-04	-
Zinc	1.0E+05	-	3,580 J	3.5E-02	-	2,430	2.4E-02	-	105 J	1.0E-03	-	194 J	1.9E-03	-	6,520 J	6.4E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	3.7E-01	-	-	1.8E-01	-	-	1.1E-02	-	-	2.0E-02	-	-	6.9E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.4E-07	-	-	3.8E-08	-	-	2.0E-08	-	-	4.2E-08	-	-	9.2E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
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* = Duplicate analysis not within control limits.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-61			SB-62			SB-63			SB-64			SB-65		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	19.3	1.3E-01	9.8E-08	6.6 J	4.6E-02	3.3E-08	13.3 J	9.3E-02	6.7E-08	6.8	4.7E-02	3.4E-08	11.5 U	8.0E-02	5.8E-08
Barium	6.6E+04	-	2,330 J	3.5E-02	-	1,310 J	2.0E-02	-	271 J	4.1E-03	-	172	2.6E-03	-	115 J	1.7E-03	-
Cadmium	1.5E+02	1.8E+05	177 J	1.2E+00	1.0E-09	23.2	1.6E-01	1.3E-10	39.9	2.7E-01	2.3E-10	5.3	3.6E-02	3.0E-11	14.1	9.7E-02	8.0E-11
Cobalt	9.3E+02	3.5E+04	10.4 J	1.1E-02	3.0E-10	8.3 J	9.0E-03	2.4E-10	9 J	9.7E-03	2.6E-10	7.5	8.1E-03	2.1E-10	10.1	1.1E-02	2.9E-10
Copper	3.4E+03	-	139	4.1E-02	-	23.4	6.9E-03	-	32.9	9.7E-03	-	15.9	4.7E-03	-	21.3	6.3E-03	-
Lead	9.4E+02	-	759 J	8.1E-01	-	135 J	1.4E-01	-	60.6 J	6.4E-02	-	25.9	2.8E-02	-	23.3 J	2.5E-02	-
Manganese	6.2E+03	-	959 J	1.5E-01	-	446 J	7.2E-02	-	654 J	1.1E-01	-	348	5.6E-02	-	3,110 J	5.0E-01	-
Mercury	6.8E+02	-	0.052 J	7.7E-05	-	0.048 U	7.1E-05	-	0.032 U	4.7E-05	-	0.03 J	4.4E-05	-	0.032 J	4.7E-05	-
Zinc	1.0E+05	-	7,830 J	7.7E-02	-	1,550 J	1.5E-02	-	4,020 J	4.0E-02	-	452	4.4E-03	-	1,000	9.8E-03	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.2E+00	-	-	1.8E-01	-	-	2.8E-01	-	-	3.9E-02	-	-	9.8E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	9.8E-08	-	-	3.3E-08	-	-	6.7E-08	-	-	3.4E-08	-	-	5.8E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-66			SB-67			SB-68			SB-69			SB-70		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	17.5	1.2E-01	8.9E-08	9.8	6.8E-02	5.0E-08	8.3	5.8E-02	4.2E-08	6.4	4.5E-02	3.2E-08	4.3	3.0E-02	2.2E-08
Barium	6.6E+04	-	442 J	6.7E-03	-	553 J	8.4E-03	-	1,150 J	1.7E-02	-	112	1.7E-03	-	104	1.6E-03	-
Cadmium	1.5E+02	1.8E+05	55.7 J	3.8E-01	3.2E-10	80.9 J	5.5E-01	4.6E-10	58.2 J	4.0E-01	3.3E-10	1.5	1.0E-02	8.5E-12	3.5 J	2.4E-02	2.0E-11
Cobalt	9.3E+02	3.5E+04	8.7 J	9.4E-03	2.5E-10	8.8 J	9.5E-03	2.5E-10	7.4 J	8.0E-03	2.1E-10	8.7	9.4E-03	2.5E-10	5.4 J	5.8E-03	1.5E-10
Copper	3.4E+03	-	70.6	2.1E-02	-	74.8	2.2E-02	-	35.8	1.1E-02	-	15.9	4.7E-03	-	23.1	6.8E-03	-
Lead	9.4E+02	-	214 J	2.3E-01	-	373 J	4.0E-01	-	158 J	1.7E-01	-	13.8	1.5E-02	-	14.9	1.6E-02	-
Manganese	6.2E+03	-	458 J	7.4E-02	-	699 J	1.1E-01	-	591 J	9.5E-02	-	403	6.5E-02	-	354	5.7E-02	-
Mercury	6.8E+02	-	0.071 J	1.1E-04	-	0.16 U	2.4E-04	-	0.029 J	4.3E-05	-	0.042 J	6.2E-05	-	0.015 U	2.2E-05	-
Zinc	1.0E+05	-	5,380 J	5.3E-02	-	5,340 J	5.2E-02	-	5,730 J	5.6E-02	-	145	1.4E-03	-	271 J	2.7E-03	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	3.9E-01	-	-	5.6E-01	-	-	4.2E-01	-	-	1.2E-02	-	-	2.6E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	8.9E-08	-	-	5.0E-08	-	-	4.2E-08	-	-	3.2E-08	-	-	2.2E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-71			SB-72			SB-73			SB-74			SB-75		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	8.8	6.1E-02	4.5E-08	8.1	5.6E-02	4.1E-08	3	2.1E-02	1.5E-08	17.6	1.2E-01	8.9E-08	9.4	6.6E-02	4.8E-08
Barium	6.6E+04	-	162	2.5E-03	-	154	2.3E-03	-	70.6	1.1E-03	-	189	2.9E-03	-	137	2.1E-03	-
Cadmium	1.5E+02	1.8E+05	7.2	4.9E-02	4.1E-11	5.2 J	3.6E-02	3.0E-11	2.3 J	1.6E-02	1.3E-11	11.1 J	7.6E-02	6.3E-11	12.6 J	8.6E-02	7.2E-11
Cobalt	9.3E+02	3.5E+04	11.5	1.2E-02	3.3E-10	8.5 J	9.2E-03	2.4E-10	4.9 J	5.3E-03	1.4E-10	8.4	9.1E-03	2.4E-10	10.7	1.2E-02	3.0E-10
Copper	3.4E+03	-	18.6	5.5E-03	-	23.7	7.0E-03	-	12.9	3.8E-03	-	27.2	8.0E-03	-	20.6	6.1E-03	-
Lead	9.4E+02	-	25.8	2.7E-02	-	42.1	4.5E-02	-	9.4 J	1.0E-02	-	47.2 J	5.0E-02	-	35.4 J	3.8E-02	-
Manganese	6.2E+03	-	612	9.9E-02	-	528	8.5E-02	-	362	5.8E-02	-	338	5.5E-02	-	363	5.9E-02	-
Mercury	6.8E+02	-	0.033 J	4.9E-05	-	0.099 U	1.5E-04	-	0.1 U	1.5E-04	-	0.047 J	7.0E-05	-	0.11 U	1.6E-04	-
Zinc	1.0E+05	-	530	5.2E-03	-	560 J	5.5E-03	-	117	1.1E-03	-	915	9.0E-03	-	928	9.1E-03	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.2E-02	-	-	3.8E-02	-	-	1.7E-02	-	-	7.9E-02	-	-	8.8E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	4.5E-08	-	-	4.1E-08	-	-	1.5E-08	-	-	8.9E-08	-	-	4.8E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-76			SB-77			SB-78			SB-79			SB-80		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	11.2	7.8E-02	5.7E-08	9.9	6.9E-02	5.0E-08	8.2	5.7E-02	4.2E-08	8.9	6.2E-02	4.5E-08	9.8	6.8E-02	5.0E-08
Barium	6.6E+04	-	1,750	2.6E-02	-	585	8.8E-03	-	899	1.4E-02	-	140	2.1E-03	-	177	2.7E-03	-
Cadmium	1.5E+02	1.8E+05	28.6	2.0E-01	1.6E-10	24.9 J	1.7E-01	1.4E-10	85.9	5.9E-01	4.9E-10	101	6.9E-01	5.7E-10	23.2 J	1.6E-01	1.3E-10
Cobalt	9.3E+02	3.5E+04	15.8	1.7E-02	4.5E-10	11.7	1.3E-02	3.3E-10	6.1 J	6.6E-03	1.7E-10	9.4	1.0E-02	2.7E-10	13.5	1.5E-02	3.8E-10
Copper	3.4E+03	-	62.2	1.8E-02	-	21.6	6.4E-03	-	41.1	1.2E-02	-	26.9	7.9E-03	-	20.7	6.1E-03	-
Lead	9.4E+02	-	230	2.4E-01	-	92.9 J	9.9E-02	-	200	2.1E-01	-	66	7.0E-02	-	26.8 J	2.8E-02	-
Manganese	6.2E+03	-	1,050	1.7E-01	-	642	1.0E-01	-	528	8.5E-02	-	529	8.5E-02	-	831	1.3E-01	-
Mercury	6.8E+02	-	0.071 J	1.1E-04	-	0.036 J	5.3E-05	-	0.095 U	1.4E-04	-	0.018 J	2.7E-05	-	0.049 J	7.3E-05	-
Zinc	1.0E+05	-	3,770	3.7E-02	-	2,710	2.7E-02	-	9,450	9.3E-02	-	4,810	4.7E-02	-	1,660	1.6E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.2E-01	-	-	1.8E-01	-	-	6.0E-01	-	-	6.9E-01	-	-	1.6E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	5.7E-08	-	-	5.0E-08	-	-	4.2E-08	-	-	4.5E-08	-	-	5.0E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-81			SB-82			SB-83			SB-84			SB-85		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	12.8	8.9E-02	6.5E-08	12	8.4E-02	6.1E-08	11.3 J	7.9E-02	5.7E-08	12.1	8.4E-02	6.1E-08	12.8	8.9E-02	6.5E-08
Barium	6.6E+04	-	1,590	2.4E-02	-	194	2.9E-03	-	275 J	4.2E-03	-	135	2.0E-03	-	661	1.0E-02	-
Cadmium	1.5E+02	1.8E+05	67 J	4.6E-01	3.8E-10	24.1 J	1.6E-01	1.4E-10	23.8	1.6E-01	1.4E-10	13.8	9.4E-02	7.8E-11	58.5	4.0E-01	3.3E-10
Cobalt	9.3E+02	3.5E+04	8.9	9.6E-03	2.5E-10	10.9 J	1.2E-02	3.1E-10	10.4 J	1.1E-02	3.0E-10	16.1	1.7E-02	4.6E-10	9.3	1.0E-02	2.6E-10
Copper	3.4E+03	-	57.9	1.7E-02	-	23.6	7.0E-03	-	27.9	8.2E-03	-	29.3	8.6E-03	-	50.3	1.5E-02	-
Lead	9.4E+02	-	243 J	2.6E-01	-	33.6 J	3.6E-02	-	42.4 J	4.5E-02	-	55.5	5.9E-02	-	133	1.4E-01	-
Manganese	6.2E+03	-	428	6.9E-02	-	427	6.9E-02	-	469 J	7.6E-02	-	540	8.7E-02	-	938	1.5E-01	-
Mercury	6.8E+02	-	0.064 J	9.5E-05	-	0.071 J	1.1E-04	-	0.064 U	9.5E-05	-	0.051 J	7.6E-05	-	0.049 J	7.3E-05	-
Zinc	1.0E+05	-	5,630	5.5E-02	-	2,240	2.2E-02	-	1,580 J	1.6E-02	-	955	9.4E-03	-	4,360	4.3E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.8E-01	-	-	1.7E-01	-	-	1.7E-01	-	-	9.6E-02	-	-	4.1E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	6.5E-08	-	-	6.1E-08	-	-	5.7E-08	-	-	6.1E-08	-	-	6.5E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-86			SL-A			SL-B			SL-C			SL-D-1		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	8.7	6.1E-02	4.4E-08	56.8	4.0E-01	2.9E-07	160	1.1E+00	8.1E-07	32	2.2E-01	1.6E-07	91.5	6.4E-01	4.6E-07
Barium	6.6E+04	-	308	4.7E-03	-	129	2.0E-03	-	98	1.5E-03	-	760	1.1E-02	-	990	1.5E-02	-
Cadmium	1.5E+02	1.8E+05	23.4 J	1.6E-01	1.3E-10	466	**3.2E+00**	2.6E-09	1.1 U	7.5E-03	6.2E-12	54.8	3.8E-01	3.1E-10	246	**1.7E+00**	1.4E-09
Cobalt	9.3E+02	3.5E+04	9.6 J	1.0E-02	2.7E-10	21.4	2.3E-02	6.1E-10	47	5.1E-02	1.3E-09	20.3	2.2E-02	5.8E-10	29 J	3.1E-02	8.2E-10
Copper	3.4E+03	-	23.1	6.8E-03	-	2,250	6.6E-01	-	3,760	1.1E+00	-	1,340	4.0E-01	-	3,030	8.9E-01	-
Lead	9.4E+02	-	58	6.2E-02	-	2,690	**2.9E+00**	-	7,200	**7.7E+00**	-	820	8.7E-01	-	2,370	**2.5E+00**	-
Manganese	6.2E+03	-	586	9.5E-02	-	1,530 J	2.5E-01	-	1,630 J	2.6E-01	-	1,020 J	1.6E-01	-	25,300	**4.1E+00**	-
Mercury	6.8E+02	-	0.046 J	6.8E-05	-	0.0436 B	6.5E-05	-	0.0067 U	9.9E-06	-	0.48	7.1E-04	-	0.4	5.9E-04	-
Zinc	1.0E+05	-	2,250 J	2.2E-02	-	54,000	5.3E-01	-	8,120	8.0E-02	-	8,660	8.5E-02	-	44,600	4.4E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.61	-	3.1E-09
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.44 J	-	2.2E-08
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.84	-	4.2E-09
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.2 J	-	1.0E-10
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.95	-	4.8E-11
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.11 J	-	5.5E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.26 J	-	1.3E-09
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.18 J	2.5E-03	4.1E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	1.6E-01	-	-	**3.2E+00**	-	-	9.0E-03	-	-	3.9E-01	-	-	**1.7E+00**	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7E-08
Total (PAH + Arsenic) Risk	-		-	-	4.4E-08	-	-	2.9E-07	-	-	8.1E-07	-	-	1.6E-07	-	-	5.0E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SL-D-2			SL-E			SL-G			SS-01			SS-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	112	7.8E-01	5.7E-07	218	**1.5E+00**	1.1E-06	4,020	**2.8E+01**	*2.0E-05*	14 U	9.8E-02	7.1E-08	24	1.7E-01	1.2E-07
Barium	6.6E+04	-	1,660	2.5E-02	-	163	2.5E-03	-	1,310	2.0E-02	-	607 J	9.2E-03	-	6,720 J	1.0E-01	-
Cadmium	1.5E+02	1.8E+05	403	**2.8E+00**	2.3E-09	1 U	6.8E-03	5.7E-12	389	**2.7E+00**	2.2E-09	88.8	6.1E-01	5.0E-10	13.2	9.0E-02	7.5E-11
Cobalt	9.3E+02	3.5E+04	26.9	2.9E-02	7.6E-10	90	9.7E-02	2.6E-09	19.5	2.1E-02	5.5E-10	3.78 J	4.1E-03	1.1E-10	46.1	5.0E-02	1.3E-09
Copper	3.4E+03	-	2,420	7.1E-01	-	2,790	8.2E-01	-	1,600	4.7E-01	-	106	3.1E-02	-	1,570	4.6E-01	-
Lead	9.4E+02	-	3,690	**3.9E+00**	-	3,350	**3.6E+00**	-	14,300	**1.5E+01**	-	78 J	8.3E-02	-	2,260 J	**2.4E+00**	-
Manganese	6.2E+03	-	1,690	2.7E-01	-	1,780 J	2.9E-01	-	1,240	2.0E-01	-	105 J	1.7E-02	-	2,670 J	4.3E-01	-
Mercury	6.8E+02	-	0.55	8.1E-04	-	0.0061 U	9.0E-06	-	11.9	1.8E-02	-	0.0256 J	3.8E-05	-	0.102 J	1.5E-04	-
Zinc	1.0E+05	-	64,900	6.4E-01	-	3,060	3.0E-02	-	14,000	1.4E-01	-	144,000 J	1.4E+00	-	8,080 J	7.9E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.43 J	-	2.2E-09	NA	-	-	NA	-	-	0.043 U	-	2.2E-10	0.077 J	-	3.9E-10
Benzo(a)pyrene	-	2.0E+01	0.25 J	-	1.3E-08	NA	-	-	NA	-	-	0.043 U	-	2.2E-09	0.069 J	-	3.5E-09
Benzo(b)fluoranthene	-	2.0E+02	0.57	-	2.9E-09	NA	-	-	NA	-	-	0.043 U	-	2.2E-10	0.091 J	-	4.6E-10
Benzo(k)fluoranthene	-	2.0E+03	0.17 J	-	8.5E-11	NA	-	-	NA	-	-	0.043 U	-	2.2E-11	0.042 U	-	2.1E-11
Chrysene	-	2.0E+04	0.7	-	3.5E-11	NA	-	-	NA	-	-	0.055 J	-	2.8E-12	0.11 J	-	5.5E-12
Dibenz(a,h)anthracene	-	2.0E+01	0.079 U	-	4.0E-09	NA	-	-	NA	-	-	0.043 U	-	2.2E-09	0.042 U	-	2.1E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.17 J	-	8.5E-10	NA	-	-	NA	-	-	0.043 U	-	2.2E-10	0.055 J	-	2.8E-10
Naphthalene	7.3E+01	4.3E+02	0.38 J	5.2E-03	8.8E-10	NA	-	-	NA	-	-	0.043 U	5.9E-04	9.9E-11	0.042 U	5.8E-04	9.7E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	**2.8E+00**	-	-	9.3E-03	-	-	**2.7E+00**	-	-	6.2E-01	-	-	1.9E-01	-
Total PAH Risk	-		-	-	2.3E-08	-	-	-	-	-	-	-	-	5.1E-09	-	-	6.8E-09
Total (PAH + Arsenic) Risk	-		-	-	5.9E-07	-	-	1.1E-06	-	-	*2.0E-05*	-	-	7.6E-08	-	-	1.3E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-05			SS-06			SS-07			SS-08			SS-09		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	8.8 J	6.1E-02	4.5E-08	11.8 J	8.2E-02	6.0E-08	19	1.3E-01	9.6E-08	49	3.4E-01	2.5E-07	173	1.2E+00	8.8E-07
Barium	6.6E+04	-	708	1.1E-02	-	3,420 J	5.2E-02	-	5,680	8.6E-02	-	7,150 J	1.1E-01	-	5,290	8.0E-02	-
Cadmium	1.5E+02	1.8E+05	55.1	3.8E-01	3.1E-10	17.4	1.2E-01	9.9E-11	147	1.0E+00	8.4E-10	107	7.3E-01	6.1E-10	139	9.5E-01	7.9E-10
Cobalt	9.3E+02	3.5E+04	7.2	7.8E-03	2.0E-10	0.69 U	7.4E-04	2.0E-11	19.1	2.1E-02	5.4E-10	24.4	2.6E-02	6.9E-10	45.7	4.9E-02	1.3E-09
Copper	3.4E+03	-	191	5.6E-02	-	65	1.9E-02	-	1,070	3.2E-01	-	477	1.4E-01	-	3,270	9.6E-01	-
Lead	9.4E+02	-	544	5.8E-01	-	157 J	1.7E-01	-	7,730	**8.2E+00**	-	3,970 J	**4.2E+00**	-	16,100	**1.7E+01**	-
Manganese	6.2E+03	-	558	9.0E-02	-	131 J	2.1E-02	-	3,000	4.8E-01	-	1,290 J	2.1E-01	-	3,330	5.4E-01	-
Mercury	6.8E+02	-	0.47	7.0E-04	-	0.0708 J	1.0E-04	-	0.73	1.1E-03	-	0.2	3.0E-04	-	0.23	3.4E-04	-
Zinc	1.0E+05	-	6,830	6.7E-02	-	1,460 J	1.4E-02	-	25,300	2.5E-01	-	20,600 J	2.0E-01	-	29,200	2.9E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.1 J	-	5.0E-10	0.047 U	-	2.4E-10	0.41	-	2.1E-09	2.6	-	1.3E-08	0.15 J	-	7.5E-10
Benzo(a)pyrene	-	2.0E+01	0.084 J	-	4.2E-09	0.047 U	-	2.4E-09	0.41	-	2.1E-08	2.3	-	1.2E-07	0.12 J	-	6.0E-09
Benzo(b)fluoranthene	-	2.0E+02	0.16 J	-	8.0E-10	0.047 U	-	2.4E-10	0.76	-	3.8E-09	4.7	-	2.4E-08	0.23 J	-	1.2E-09
Benzo(k)fluoranthene	-	2.0E+03	0.053 J	-	2.7E-11	0.047 U	-	2.4E-11	0.2 J	-	1.0E-10	1.6	-	8.0E-10	0.089 J	-	4.5E-11
Chrysene	-	2.0E+04	0.14 J	-	7.0E-12	0.047 U	-	2.4E-12	0.97	-	4.9E-11	3.3	-	1.7E-10	0.25 J	-	1.3E-11
Dibenz(a,h)anthracene	-	2.0E+01	0.039 U	-	2.0E-09	0.047 U	-	2.4E-09	0.25 J	-	1.3E-08	0.65	-	3.3E-08	0.041 U	-	2.1E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.039 U	-	2.0E-10	0.047 U	-	2.4E-10	0.43	-	2.2E-09	2.7	-	1.4E-08	0.041 U	-	2.1E-10
Naphthalene	7.3E+01	4.3E+02	0.039 U	5.4E-04	9.0E-11	0.047 U	6.5E-04	1.1E-10	0.1 J	1.4E-03	2.3E-10	0.21 J	2.9E-03	4.8E-10	0.041 U	5.6E-04	9.4E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	3.9E-01	-	-	1.7E-01	-	-	1.1E+00	-	-	8.4E-01	-	-	1.0E+00	-
Total PAH Risk	-		-	-	7.8E-09	-	-	5.5E-09	-	-	4.1E-08	-	-	2.0E-07	-	-	1.0E-08
Total (PAH + Arsenic) Risk	-		-	-	5.2E-08	-	-	6.5E-08	-	-	1.4E-07	-	-	4.5E-07	-	-	8.9E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-10			SS-11A			SS-12			SS-13			SS-14		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	2.6 U	1.8E-02	1.3E-08	6.5 J	4.5E-02	3.3E-08	15	1.0E-01	7.6E-08	150	1.0E+00	7.6E-07	1,330 J	**9.3E+00**	*6.7E-06*
Barium	6.6E+04	-	208	3.1E-03	-	489 J	7.4E-03	-	1,040	1.6E-02	-	7,320	1.1E-01	-	737 J	1.1E-02	-
Cadmium	1.5E+02	1.8E+05	596	**4.1E+00**	3.4E-09	82.5	5.6E-01	4.7E-10	118	8.1E-01	6.7E-10	361	**2.5E+00**	2.1E-09	34.9	2.4E-01	2.0E-10
Cobalt	9.3E+02	3.5E+04	4.74 J	5.1E-03	1.3E-10	17.1	1.8E-02	4.9E-10	3.37 J	3.6E-03	9.6E-11	68	7.3E-02	1.9E-09	158 J	1.7E-01	4.5E-09
Copper	3.4E+03	-	177	5.2E-02	-	2,820	8.3E-01	-	378	1.1E-01	-	1,680	5.0E-01	-	1,810	5.3E-01	-
Lead	9.4E+02	-	952	1.0E+00	-	1,280 J	1.4E+00	-	877	9.3E-01	-	16,300	**1.7E+01**	-	8,290	**8.8E+00**	-
Manganese	6.2E+03	-	686	1.1E-01	-	34,600 J	**5.6E+00**	-	553	8.9E-02	-	2,700	4.4E-01	-	3,660 J	5.9E-01	-
Mercury	6.8E+02	-	0.053 J	7.8E-05	-	0.12	1.8E-04	-	0.15	2.2E-04	-	3.3	4.9E-03	-	0.75 J	1.1E-03	-
Zinc	1.0E+05	-	58,900	5.8E-01	-	19,400 J	1.9E-01	-	17,200	1.7E-01	-	77,300	7.6E-01	-	14,600	1.4E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	0.1 J	-	5.0E-10	0.073 J	-	3.7E-10	4.6	-	2.3E-08	0.18 J	-	9.0E-10
Benzo(a)pyrene	-	2.0E+01	NA	-	-	0.094 J	-	4.7E-09	0.081 J	-	4.1E-09	4.8	-	2.4E-07	0.22 J	-	1.1E-08
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	0.13 J	-	6.5E-10	0.13 J	-	6.5E-10	8.9	-	4.5E-08	0.42	-	2.1E-09
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	0.04 U	-	2.0E-11	0.041 J	-	2.1E-11	2.8	-	1.4E-09	0.14 J	-	7.0E-11
Chrysene	-	2.0E+04	NA	-	-	0.24 J	-	1.2E-11	0.088 J	-	4.4E-12	7.8	-	3.9E-10	0.31 J	-	1.6E-11
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	0.04 U	-	2.0E-09	0.039 U	-	2.0E-09	1.2	-	6.0E-08	0.066 J	-	3.3E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	0.058 J	-	2.9E-10	0.039 U	-	2.0E-10	3.6	-	1.8E-08	0.24 J	-	1.2E-09
Naphthalene	7.3E+01	4.3E+02	NA	-	-	0.04 U	5.5E-04	9.2E-11	0.039 U	5.4E-04	9.0E-11	0.18 J	2.5E-03	4.1E-10	0.038 U	5.2E-04	8.8E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	**4.1E+00**	-	-	5.7E-01	-	-	8.2E-01	-	-	**2.6E+00**	-	-	2.5E-01	-
Total PAH Risk	-		-	-	-	-	-	8.3E-09	-	-	7.3E-09	-	-	3.9E-07	-	-	1.9E-08
Total (PAH + Arsenic) Risk	-		-	-	1.3E-08	-	-	4.1E-08	-	-	8.3E-08	-	-	1.1E-06	-	-	*6.8E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-15			SS-16			SS-17A			SS-18			SS-19		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	13.2 J	9.2E-02	6.7E-08	11.2 J	7.8E-02	5.7E-08	5 J	3.5E-02	2.5E-08	87,900 J	**6.1E+02**	*4.5E-04*	2.5 UJ	1.7E-02	1.3E-08
Barium	6.6E+04	-	165 J	2.5E-03	-	99,300	**1.5E+00**	-	120	1.8E-03	-	309	4.7E-03	-	3,820 J	5.8E-02	-
Cadmium	1.5E+02	1.8E+05	35.1	2.4E-01	2.0E-10	5.4	3.7E-02	3.1E-11	157	1.1E+00	8.9E-10	8,320 J	**5.7E+01**	4.7E-08	606	**4.1E+00**	3.4E-09
Cobalt	9.3E+02	3.5E+04	2.8 J	3.0E-03	8.0E-11	0.86 U	9.3E-04	2.4E-11	25.4	2.7E-02	7.2E-10	11	1.2E-02	3.1E-10	3.21 J	3.5E-03	9.1E-11
Copper	3.4E+03	-	92	2.7E-02	-	79.6	2.3E-02	-	6,010	**1.8E+00**	-	8,700	**2.6E+00**	-	1,810	5.3E-01	-
Lead	9.4E+02	-	175 J	1.9E-01	-	2,740	**2.9E+00**	-	4,890	**5.2E+00**	-	90,000	**9.6E+01**	-	152,000	**1.6E+02**	-
Manganese	6.2E+03	-	647 J	1.0E-01	-	210	3.4E-02	-	1,570	2.5E-01	-	799	1.3E-01	-	157 J	2.5E-02	-
Mercury	6.8E+02	-	0.56	8.3E-04	-	0.0106 J	1.6E-05	-	0.0383 J	5.7E-05	-	10.1	1.5E-02	-	0.25 J	3.7E-04	-
Zinc	1.0E+05	-	3,440 J	3.4E-02	-	786	7.7E-03	-	55,900	5.5E-01	-	90,600	8.9E-01	-	65,500	6.4E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	0.069 U	-	3.5E-10	NA	-	-	NA	-	-	0.043 UJ	-	2.2E-10
Benzo(a)pyrene	-	2.0E+01	NA	-	-	0.069 U	-	3.5E-09	NA	-	-	NA	-	-	0.043 UJ	-	2.2E-09
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	0.069 U	-	3.5E-10	NA	-	-	NA	-	-	0.043 UJ	-	2.2E-10
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	0.069 U	-	3.5E-11	NA	-	-	NA	-	-	0.043 UJ	-	2.2E-11
Chrysene	-	2.0E+04	NA	-	-	0.069 U	-	3.5E-12	NA	-	-	NA	-	-	0.043 UJ	-	2.2E-12
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	0.069 U	-	3.5E-09	NA	-	-	NA	-	-	0.043 UJ	-	2.2E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	0.069 U	-	3.5E-10	NA	-	-	NA	-	-	0.043 UJ	-	2.2E-10
Naphthalene	7.3E+01	4.3E+02	NA	-	-	0.069 U	9.5E-04	1.6E-10	NA	-	-	NA	-	-	0.58 J	8.0E-03	1.3E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	2.4E-01	-	-	**1.5E+00**	-	-	1.1E+00	-	-	**5.7E+01**	-	-	**4.2E+00**	-
Total PAH Risk	-		-	-	-	-	-	8.1E-09	-	-	-	-	-	-	-	-	6.3E-09
Total (PAH + Arsenic) Risk	-		-	-	6.7E-08	-	-	6.5E-08	-	-	2.5E-08	-	-	*4.5E-04*	-	-	1.9E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-20			SS-22			SS-23			SS-24			SS-25		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	19 J	1.3E-01	9.6E-08	322 J	**2.2E+00**	*1.6E-06*	3.9 UJ	2.7E-02	2.0E-08	97 J	6.8E-01	4.9E-07	27	1.9E-01	1.4E-07
Barium	6.6E+04	-	92,300	1.4E+00	-	956 J	1.4E-02	-	190	2.9E-03	-	391	5.9E-03	-	13,800 J	2.1E-01	-
Cadmium	1.5E+02	1.8E+05	10.5 J	7.2E-02	6.0E-11	1,580	**1.1E+01**	9.0E-09	563 J	**3.9E+00**	3.2E-09	1,120 J	**7.7E+00**	6.4E-09	5.9	4.0E-02	3.4E-11
Cobalt	9.3E+02	3.5E+04	0.88 U	9.5E-04	2.5E-11	355 J	3.8E-01	1.0E-08	102	1.1E-01	2.9E-09	68.1	7.3E-02	1.9E-09	9.3	1.0E-02	2.6E-10
Copper	3.4E+03	-	84.3	2.5E-02	-	12,500	**3.7E+00**	-	6,560	**1.9E+00**	-	8,620	**2.5E+00**	-	112 J	3.3E-02	-
Lead	9.4E+02	-	480	5.1E-01	-	38,800	**4.1E+01**	-	1,580	**1.7E+00**	-	6,860	**7.3E+00**	-	146 J	1.6E-01	-
Manganese	6.2E+03	-	462	7.5E-02	-	153,000 J	**2.5E+01**	-	3,550	5.7E-01	-	2,630	4.2E-01	-	5,620 J	9.1E-01	-
Mercury	6.8E+02	-	0.005 U	7.4E-06	-	5.9 J	8.7E-03	-	0.0256 J	3.8E-05	-	0.0801 J	1.2E-04	-	0.0046 U	6.8E-06	-
Zinc	1.0E+05	-	964	9.5E-03	-	176,000	**1.7E+00**	-	115,000	1.1E+00	-	91,300	9.0E-01	-	562	5.5E-03	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.06 U	-	3.0E-10	0.098 UJ	-	4.9E-10	1.6	-	8.0E-09	1.4	-	7.0E-09	0.059 U	-	3.0E-10
Benzo(a)pyrene	-	2.0E+01	0.06 U	-	3.0E-09	0.098 UJ	-	4.9E-09	0.59 J	-	3.0E-08	0.32 J	-	1.6E-08	0.059 U	-	3.0E-09
Benzo(b)fluoranthene	-	2.0E+02	0.06 U	-	3.0E-10	0.098 UJ	-	4.9E-10	1.4	-	7.0E-09	0.85	-	4.3E-09	0.059 U	-	3.0E-10
Benzo(k)fluoranthene	-	2.0E+03	0.06 U	-	3.0E-11	0.098 UJ	-	4.9E-11	0.4 J	-	2.0E-10	0.33 J	-	1.7E-10	0.059 U	-	3.0E-11
Chrysene	-	2.0E+04	0.06 U	-	3.0E-12	0.098 UJ	-	4.9E-12	2.1	-	1.1E-10	2.2	-	1.1E-10	0.059 U	-	3.0E-12
Dibenz(a,h)anthracene	-	2.0E+01	0.06 U	-	3.0E-09	0.098 UJ	-	4.9E-09	0.25 J	-	1.3E-08	0.17 J	-	8.5E-09	0.059 U	-	3.0E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.06 U	-	3.0E-10	0.098 UJ	-	4.9E-10	0.48 J	-	2.4E-09	0.27 J	-	1.4E-09	0.059 U	-	3.0E-10
Naphthalene	7.3E+01	4.3E+02	0.06 U	8.3E-04	1.4E-10	0.098 UJ	1.3E-03	2.3E-10	0.33 J	4.5E-03	7.6E-10	1.2	1.7E-02	2.8E-09	0.059 U	8.1E-04	1.4E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	1.5E+00	-	-	**1.1E+01**	-	-	**3.9E+00**	-	-	**7.7E+00**	-	-	2.5E-01	-
Total PAH Risk	-		-	-	7.1E-09	-	-	1.2E-08	-	-	6.1E-08	-	-	4.0E-08	-	-	7.0E-09
Total (PAH + Arsenic) Risk	-		-	-	1.0E-07	-	-	*1.6E-06*	-	-	8.0E-08	-	-	5.3E-07	-	-	1.4E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-26			SS-27A			SS-28			SS-29			SS-30A		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	4.5 U	3.1E-02	2.3E-08	209	1.5E+00	1.1E-06	2.8 UJ	2.0E-02	1.4E-08	5.8 J	4.0E-02	2.9E-08	3.5 U	2.4E-02	1.8E-08
Barium	6.6E+04	-	809 J	1.2E-02	-	501 J	7.6E-03	-	4,100	6.2E-02	-	138,000	**2.1E+00**	-	2,040 J	3.1E-02	-
Cadmium	1.5E+02	1.8E+05	1,680	**1.1E+01**	9.5E-09	2,980	**2.0E+01**	1.7E-08	133 J	9.1E-01	7.6E-10	5.3 J	3.6E-02	3.0E-11	775	**5.3E+00**	4.4E-09
Cobalt	9.3E+02	3.5E+04	1,600	**1.7E+00**	4.5E-08	104	1.1E-01	3.0E-09	11.2	1.2E-02	3.2E-10	0.86 U	9.3E-04	2.4E-11	449	4.8E-01	1.3E-08
Copper	3.4E+03	-	18,500 J	**5.5E+00**	-	27,800 J	**8.2E+00**	-	688	2.0E-01	-	74.7	2.2E-02	-	35,200 J	**1.0E+01**	-
Lead	9.4E+02	-	22,800 J	**2.4E+01**	-	75,700 J	**8.0E+01**	-	1,380	1.5E+00	-	523	5.6E-01	-	25,300 J	**2.7E+01**	-
Manganese	6.2E+03	-	74,800 J	**1.2E+01**	-	3,350 J	5.4E-01	-	743	1.2E-01	-	248	4.0E-02	-	11,600 J	**1.9E+00**	-
Mercury	6.8E+02	-	4.3	6.4E-03	-	14.7	2.2E-02	-	3.2	4.7E-03	-	0.0109 J	1.6E-05	-	0.6	8.9E-04	-
Zinc	1.0E+05	-	162,000	**1.6E+00**	-	157,000	**1.5E+00**	-	39,600	3.9E-01	-	274	2.7E-03	-	168,000	**1.7E+00**	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	3.0E-10	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	3.0E-09	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	3.0E-10	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	3.0E-11	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	3.0E-12	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	3.0E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	3.0E-10	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	0.059 U	8.1E-04	1.4E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	**1.2E+01**	-	-	**2.0E+01**	-	-	9.7E-01	-	-	**2.1E+00**	-	-	**5.3E+00**	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	7.0E-09	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.3E-08	-	-	1.1E-06	-	-	1.4E-08	-	-	3.6E-08	-	-	1.8E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-31			SS-32			SS-33			SS-34			SS-36		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	19	1.3E-01	9.6E-08	11.8 J	8.2E-02	6.0E-08	57	4.0E-01	2.9E-07	406	**2.8E+00**	*2.1E-06*	44	3.1E-01	2.2E-07
Barium	6.6E+04	-	5,810 J	8.8E-02	-	99,800 J	**1.5E+00**	-	539 J	8.2E-03	-	244 J	3.7E-03	-	2,520 J	3.8E-02	-
Cadmium	1.5E+02	1.8E+05	36	2.5E-01	2.0E-10	29.5	2.0E-01	1.7E-10	38.6	2.6E-01	2.2E-10	20.2	1.4E-01	1.1E-10	66.9	4.6E-01	3.8E-10
Cobalt	9.3E+02	3.5E+04	5.89 J	6.4E-03	1.7E-10	0.83 U	9.0E-04	2.4E-11	32.8	3.5E-02	9.3E-10	16	1.7E-02	4.5E-10	18	1.9E-02	5.1E-10
Copper	3.4E+03	-	168 J	5.0E-02	-	210 J	6.2E-02	-	812	2.4E-01	-	2,220	6.5E-01	-	471	1.4E-01	-
Lead	9.4E+02	-	1,240 J	1.3E+00	-	226 J	2.4E-01	-	6,630 J	**7.0E+00**	-	33,900 J	**3.6E+01**	-	2,260 J	**2.4E+00**	-
Manganese	6.2E+03	-	543 J	8.8E-02	-	495 J	8.0E-02	-	2,000 J	3.2E-01	-	2,660 J	4.3E-01	-	1,490 J	2.4E-01	-
Mercury	6.8E+02	-	0.0692	1.0E-04	-	0.0045 U	6.7E-06	-	0.12 J	1.8E-04	-	0.0035 U	5.2E-06	-	0.32	4.7E-04	-
Zinc	1.0E+05	-	7,340	7.2E-02	-	1,060	1.0E-02	-	11,200 J	1.1E-01	-	16,300 J	1.6E-01	-	7,700 J	7.6E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	0.051 U	-	2.6E-10	NA	-	-	0.04 U	-	2.0E-10	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	0.051 U	-	2.6E-09	NA	-	-	0.04 U	-	2.0E-09	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	0.051 U	-	2.6E-10	NA	-	-	0.04 U	-	2.0E-10	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	0.051 U	-	2.6E-11	NA	-	-	0.04 U	-	2.0E-11	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	0.051 U	-	2.6E-12	NA	-	-	0.04 U	-	2.0E-12	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	0.051 U	-	2.6E-09	NA	-	-	0.04 U	-	2.0E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	0.051 U	-	2.6E-10	NA	-	-	0.04 U	-	2.0E-10	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	0.051 U	7.0E-04	1.2E-10	NA	-	-	0.04 U	5.5E-04	9.2E-11	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	3.3E-01	-	-	**1.7E+00**	-	-	2.7E-01	-	-	1.4E-01	-	-	5.0E-01	-
Total PAH Risk	-		-	-	-	-	-	6.0E-09	-	-	-	-	-	4.7E-09	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	9.6E-08	-	-	6.6E-08	-	-	2.9E-07	-	-	*2.1E-06*	-	-	2.2E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-37			SS-38			SS-39			SS-40			SS-41		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	130	9.1E-01	6.6E-07	215 J	1.5E+00	1.1E-06	15.2 J	1.1E-01	7.7E-08	53 J	3.7E-01	2.7E-07	287 J	**2.0E+00**	1.5E-06
Barium	6.6E+04	-	479 J	7.2E-03	-	304 J	4.6E-03	-	125,000 J	**1.9E+00**	-	1,060 J	1.6E-02	-	131 J	2.0E-03	-
Cadmium	1.5E+02	1.8E+05	128	8.8E-01	7.3E-10	14.5	9.9E-02	8.2E-11	5.9	4.0E-02	3.4E-11	2,040	**1.4E+01**	1.2E-08	356	**2.4E+00**	2.0E-09
Cobalt	9.3E+02	3.5E+04	53.4	5.8E-02	1.5E-09	52.8 J	5.7E-02	1.5E-09	0.9 UJ	9.7E-04	2.6E-11	81.6 J	8.8E-02	2.3E-09	30 J	3.2E-02	8.5E-10
Copper	3.4E+03	-	4,580	1.4E+00	-	3,900	1.1E+00	-	74.9	2.2E-02	-	9,400	**2.8E+00**	-	4,820	1.4E+00	-
Lead	9.4E+02	-	2,010 J	**2.1E+00**	-	7,110	**7.6E+00**	-	554	5.9E-01	-	8,930	**9.5E+00**	-	5,680	**6.0E+00**	-
Manganese	6.2E+03	-	1,450 J	2.3E-01	-	1,790 J	2.9E-01	-	757 J	1.2E-01	-	7,190 J	1.2E+00	-	2,070 J	3.3E-01	-
Mercury	6.8E+02	-	0.078 J	1.2E-04	-	0.149 J	2.2E-04	-	0.0075 J	1.1E-05	-	0.44 J	6.5E-04	-	0.0655 J	9.7E-05	-
Zinc	1.0E+05	-	11,900 J	1.2E-01	-	3,430	3.4E-02	-	734	7.2E-03	-	88,800	8.7E-01	-	127,000	1.2E+00	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	0.048 UB	-	2.4E-10	NA	-	-	0.14 J	-	7.0E-10	0.069 UB	-	3.5E-10
Benzo(a)pyrene	-	2.0E+01	NA	-	-	0.048 UB	-	2.4E-09	NA	-	-	0.061 U	-	3.1E-09	0.069 UB	-	3.5E-09
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	0.048 UB	-	2.4E-10	NA	-	-	0.061 U	-	3.1E-10	0.069 UB	-	3.5E-10
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	0.048 UB	-	2.4E-11	NA	-	-	0.061 U	-	3.1E-11	0.069 UB	-	3.5E-11
Chrysene	-	2.0E+04	NA	-	-	0.048 UB	-	2.4E-12	NA	-	-	0.13 J	-	6.5E-12	0.069 UB	-	3.5E-12
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	0.048 UB	-	2.4E-09	NA	-	-	0.061 U	-	3.1E-09	0.069 UB	-	3.5E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	0.048 UB	-	2.4E-10	NA	-	-	0.061 U	-	3.1E-10	0.069 UB	-	3.5E-10
Naphthalene	7.3E+01	4.3E+02	NA	-	-	0.057 J	7.8E-04	1.3E-10	NA	-	-	0.4 J	5.5E-03	9.2E-10	1.4 J	1.9E-02	3.2E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	8.8E-01	-	-	1.0E-01	-	-	**1.9E+00**	-	-	**1.4E+01**	-	-	**2.4E+00**	-
Total PAH Risk	-		-	-	-	-	-	5.7E-09	-	-	-	-	-	8.4E-09	-	-	1.1E-08
Total (PAH + Arsenic) Risk	-		-	-	6.6E-07	-	-	1.1E-06	-	-	7.7E-08	-	-	2.8E-07	-	-	1.5E-06

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-42			SS-43			SS-44			SS-45			SS-46		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	30	2.1E-01	1.5E-07	9.8 J	6.8E-02	5.0E-08	349 J	**2.4E+00**	*1.8E-06*	328 J	**2.3E+00**	*1.7E-06*	370 J	**2.6E+00**	*1.9E-06*
Barium	6.6E+04	-	111	1.7E-03	-	4,580 J	6.9E-02	-	19,300	2.9E-01	-	63	9.5E-04	-	508 J	7.7E-03	-
Cadmium	1.5E+02	1.8E+05	288	**2.0E+00**	1.6E-09	21.9	1.5E-01	1.2E-10	43.1 J	3.0E-01	2.4E-10	13.1 J	9.0E-02	7.4E-11	37.5	2.6E-01	2.1E-10
Cobalt	9.3E+02	3.5E+04	51.8	5.6E-02	1.5E-09	8.4 J	9.1E-03	2.4E-10	30.7	3.3E-02	8.7E-10	36.9	4.0E-02	1.0E-09	37.5 J	4.0E-02	1.1E-09
Copper	3.4E+03	-	5,120	**1.5E+00**	-	398	1.2E-01	-	3,540	1.0E+00	-	3,860	1.1E+00	-	3,190	9.4E-01	-
Lead	9.4E+02	-	4,120	**4.4E+00**	-	1,020	1.1E+00	-	8,370	**8.9E+00**	-	9,900	**1.1E+01**	-	7,060	**7.5E+00**	-
Manganese	6.2E+03	-	2,220	3.6E-01	-	343 J	5.5E-02	-	1,930	3.1E-01	-	1,620	2.6E-01	-	1,810 J	2.9E-01	-
Mercury	6.8E+02	-	0.0497 J	7.4E-05	-	3.3 J	4.9E-03	-	0.0634 J	9.4E-05	-	0.0867 J	1.3E-04	-	0.0995 J	1.5E-04	-
Zinc	1.0E+05	-	70,200	6.9E-01	-	4,740	4.7E-02	-	7,260	7.1E-02	-	8,880	8.7E-02	-	11,500	1.1E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.063 U	-	3.2E-10	NA	-	-	0.053 U	-	2.7E-10	NA	-	-	0.046 UJ	-	2.3E-10
Benzo(a)pyrene	-	2.0E+01	0.063 U	-	3.2E-09	NA	-	-	0.053 U	-	2.7E-09	NA	-	-	0.046 UJ	-	2.3E-09
Benzo(b)fluoranthene	-	2.0E+02	0.063 U	-	3.2E-10	NA	-	-	0.053 U	-	2.7E-10	NA	-	-	0.046 UJ	-	2.3E-10
Benzo(k)fluoranthene	-	2.0E+03	0.063 U	-	3.2E-11	NA	-	-	0.053 U	-	2.7E-11	NA	-	-	0.046 UJ	-	2.3E-11
Chrysene	-	2.0E+04	0.063 U	-	3.2E-12	NA	-	-	0.053 U	-	2.7E-12	NA	-	-	0.046 UJ	-	2.3E-12
Dibenz(a,h)anthracene	-	2.0E+01	0.063 U	-	3.2E-09	NA	-	-	0.053 U	-	2.7E-09	NA	-	-	0.046 UJ	-	2.3E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.063 U	-	3.2E-10	NA	-	-	0.053 U	-	2.7E-10	NA	-	-	0.046 UJ	-	2.3E-10
Naphthalene	7.3E+01	4.3E+02	0.49 J	6.7E-03	1.1E-09	NA	-	-	0.13 J	1.8E-03	3.0E-10	NA	-	-	0.1 J	1.4E-03	2.3E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	**2.0E+00**	-	-	2.2E-01	-	-	5.9E-01	-	-	9.1E-02	-	-	2.6E-01	-
Total PAH Risk	-		-	-	8.4E-09	-	-	-	-	-	6.4E-09	-	-	-	-	-	5.6E-09
Total (PAH + Arsenic) Risk	-		-	-	1.6E-07	-	-	5.0E-08	-	-	*1.8E-06*	-	-	*1.7E-06*	-	-	*1.9E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-47			SS-48			SS-49			SS-50A			SS-51A		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	157 J	1.1E+00	8.0E-07	204 J	1.4E+00	1.0E-06	21 J	1.5E-01	1.1E-07	81 J	5.6E-01	4.1E-07	73 J	5.1E-01	3.7E-07
Barium	6.6E+04	-	85	1.3E-03	-	54	8.2E-04	-	447	6.8E-03	-	327	4.9E-03	-	1,210	1.8E-02	-
Cadmium	1.5E+02	1.8E+05	17.6 J	1.2E-01	1.0E-10	13.3 J	9.1E-02	7.6E-11	40.7 J	2.8E-01	2.3E-10	1,840 J	**1.3E+01**	1.0E-08	574 J	**3.9E+00**	3.3E-09
Cobalt	9.3E+02	3.5E+04	26.2	2.8E-02	7.4E-10	24.1	2.6E-02	6.8E-10	28.4	3.1E-02	8.1E-10	73.4	7.9E-02	2.1E-09	58.2	6.3E-02	1.7E-09
Copper	3.4E+03	-	5,550	**1.6E+00**	-	6,280	**1.9E+00**	-	2,850	8.4E-01	-	4,510	1.3E+00	-	3,370	9.9E-01	-
Lead	9.4E+02	-	3,250	**3.5E+00**	-	2,790	**3.0E+00**	-	1,340	1.4E+00	-	5,130	**5.5E+00**	-	2,850	**3.0E+00**	-
Manganese	6.2E+03	-	987	1.6E-01	-	1,030	1.7E-01	-	36,000	**5.8E+00**	-	2,780	4.5E-01	-	2,330	3.8E-01	-
Mercury	6.8E+02	-	0.0161 J	2.4E-05	-	0.0241 J	3.6E-05	-	0.0318 J	4.7E-05	-	0.0639 J	9.5E-05	-	0.151 J	2.2E-04	-
Zinc	1.0E+05	-	6,950	6.8E-02	-	4,790	4.7E-02	-	16,200	1.6E-01	-	166,000	**1.6E+00**	-	91,300	9.0E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.047 U	-	2.4E-10	NA	-	-	0.041 J	-	2.1E-10	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	0.047 U	-	2.4E-09	NA	-	-	0.047 J	-	2.4E-09	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	0.047 U	-	2.4E-10	NA	-	-	0.09 J	-	4.5E-10	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	0.047 U	-	2.4E-11	NA	-	-	0.037 U	-	1.9E-11	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	0.047 U	-	2.4E-12	NA	-	-	0.062 J	-	3.1E-12	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	0.047 U	-	2.4E-09	NA	-	-	0.037 U	-	1.9E-09	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.047 U	-	2.4E-10	NA	-	-	0.042 J	-	2.1E-10	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	0.13 J	1.8E-03	3.0E-10	NA	-	-	0.037 U	5.1E-04	8.5E-11	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.2E-01	-	-	9.2E-02	-	-	2.9E-01	-	-	**1.3E+01**	-	-	**3.9E+00**	-
Total PAH Risk	-		-	-	5.7E-09	-	-	-	-	-	5.2E-09	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	8.0E-07	-	-	1.0E-06	-	-	1.1E-07	-	-	4.1E-07	-	-	3.7E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-53			SS-55			SS-56			SS-57			SS-58		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	255	**1.8E+00**	1.3E-06	359	**2.5E+00**	*1.8E-06*	2.4 U	1.7E-02	1.2E-08	105	7.3E-01	5.3E-07	148	1.0E+00	7.5E-07
Barium	6.6E+04	-	210 J	3.2E-03	-	215 J	3.3E-03	-	675 J	1.0E-02	-	851 J	1.3E-02	-	10,800 J	1.6E-01	-
Cadmium	1.5E+02	1.8E+05	16.1	1.1E-01	9.1E-11	17.8	1.2E-01	1.0E-10	60.6	4.1E-01	3.4E-10	40.6	2.8E-01	2.3E-10	86	5.9E-01	4.9E-10
Cobalt	9.3E+02	3.5E+04	26.2	2.8E-02	7.4E-10	30	3.2E-02	8.5E-10	67.5	7.3E-02	1.9E-09	21.1	2.3E-02	6.0E-10	16.8	1.8E-02	4.8E-10
Copper	3.4E+03	-	4,190	1.2E+00	-	6,300	**1.9E+00**	-	2,690	7.9E-01	-	681 J	2.0E-01	-	421 J	1.2E-01	-
Lead	9.4E+02	-	4,690 J	**5.0E+00**	-	6,430 J	**6.8E+00**	-	789 J	8.4E-01	-	4,040 J	**4.3E+00**	-	4,630 J	**4.9E+00**	-
Manganese	6.2E+03	-	1,110 J	1.8E-01	-	1,730 J	2.8E-01	-	40,400 J	**6.5E+00**	-	2,280 J	3.7E-01	-	3,010 J	4.9E-01	-
Mercury	6.8E+02	-	0.0166 J	2.5E-05	-	0.0225 J	3.3E-05	-	0.0121 J	1.8E-05	-	0.89	1.3E-03	-	3.6	5.3E-03	-
Zinc	1.0E+05	-	8,330 J	8.2E-02	-	6,010 J	5.9E-02	-	33,000 J	3.2E-01	-	33,400	3.3E-01	-	31,100	3.1E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.047 U	-	2.4E-10	NA	-	-	NA	-	-	0.04 U	-	2.0E-10	NA	-	-
Benzo(a)pyrene	-	2.0E+01	0.047 U	-	2.4E-09	NA	-	-	NA	-	-	0.04 U	-	2.0E-09	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	0.047 U	-	2.4E-10	NA	-	-	NA	-	-	0.04 U	-	2.0E-10	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	0.047 U	-	2.4E-11	NA	-	-	NA	-	-	0.04 U	-	2.0E-11	NA	-	-
Chrysene	-	2.0E+04	0.047 U	-	2.4E-12	NA	-	-	NA	-	-	0.04 U	-	2.0E-12	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	0.047 U	-	2.4E-09	NA	-	-	NA	-	-	0.04 U	-	2.0E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.047 U	-	2.4E-10	NA	-	-	NA	-	-	0.04 U	-	2.0E-10	NA	-	-
Naphthalene	7.3E+01	4.3E+02	0.047 U	6.5E-04	1.1E-10	NA	-	-	NA	-	-	0.04 U	5.5E-04	9.2E-11	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.1E-01	-	-	1.3E-01	-	-	4.3E-01	-	-	2.9E-01	-	-	7.5E-01	-
Total PAH Risk	-		-	-	5.5E-09	-	-	-	-	-	-	-	-	4.7E-09	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.3E-06	-	-	*1.8E-06*	-	-	1.2E-08	-	-	5.4E-07	-	-	7.5E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-59			TA-01			TA-02			TA-03			TP-120		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	24	1.7E-01	1.2E-07	3 U	2.1E-02	1.5E-08	212 J	1.5E+00	1.1E-06	2.7 U	1.9E-02	1.4E-08	95.3	6.6E-01	4.8E-07
Barium	6.6E+04	-	184 J	2.8E-03	-	375	5.7E-03	-	263	4.0E-03	-	131	2.0E-03	-	3,670	5.6E-02	-
Cadmium	1.5E+02	1.8E+05	33.1	2.3E-01	1.9E-10	110	7.5E-01	6.2E-10	121	8.3E-01	6.9E-10	103	7.1E-01	5.9E-10	286	**2.0E+00**	1.6E-09
Cobalt	9.3E+02	3.5E+04	15.4	1.7E-02	4.4E-10	170 J	1.8E-01	4.8E-09	36.7 J	4.0E-02	1.0E-09	5.41 J	5.8E-03	1.5E-10	20	2.2E-02	5.7E-10
Copper	3.4E+03	-	115 J	3.4E-02	-	31,000	**9.1E+00**	-	4,480	1.3E+00	-	237	7.0E-02	-	1,330	3.9E-01	-
Lead	9.4E+02	-	4,050 J	**4.3E+00**	-	2,980	**3.2E+00**	-	6,610	**7.0E+00**	-	661	7.0E-01	-	6,590	**7.0E+00**	-
Manganese	6.2E+03	-	1,930 J	3.1E-01	-	8,390	1.4E+00	-	1,810	2.9E-01	-	401	6.5E-02	-	1,270	2.0E-01	-
Mercury	6.8E+02	-	0.36	5.3E-04	-	1.29 J	1.9E-03	-	0.0579 J	8.6E-05	-	0.82 J	1.2E-03	-	11.5	1.7E-02	-
Zinc	1.0E+05	-	16,000	1.6E-01	-	35,300	3.5E-01	-	15,000	1.5E-01	-	25,900	2.5E-01	-	43,800	4.3E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.18 J	-	9.0E-10	NA	-	-	NA	-	-	NA	-	-	0.56	-	2.8E-09
Benzo(a)pyrene	-	2.0E+01	0.16 J	-	8.0E-09	NA	-	-	NA	-	-	NA	-	-	0.44	-	2.2E-08
Benzo(b)fluoranthene	-	2.0E+02	0.25 J	-	1.3E-09	NA	-	-	NA	-	-	NA	-	-	0.74	-	3.7E-09
Benzo(k)fluoranthene	-	2.0E+03	0.085 J	-	4.3E-11	NA	-	-	NA	-	-	NA	-	-	0.28	-	1.4E-10
Chrysene	-	2.0E+04	0.26 J	-	1.3E-11	NA	-	-	NA	-	-	NA	-	-	0.68	-	3.4E-11
Dibenz(a,h)anthracene	-	2.0E+01	0.042 U	-	2.1E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.13 J	-	6.5E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	0.042 U	5.8E-04	9.7E-11	NA	-	-	NA	-	-	NA	-	-	0.21 U	2.9E-03	4.8E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	2.3E-01	-	-	7.6E-01	-	-	8.3E-01	-	-	7.1E-01	-	-	**2.0E+00**	-
Total PAH Risk	-		-	-	1.3E-08	-	-	-	-	-	-	-	-	-	-	-	2.9E-08
Total (PAH + Arsenic) Risk	-		-	-	1.3E-07	-	-	1.5E-08	-	-	1.1E-06	-	-	1.4E-08	-	-	5.1E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-01(S)			W-02(S)			W-05(S)			W-06(S)			W-07(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	5.9 J	4.1E-02	3.0E-08	9.2 J	6.4E-02	4.7E-08	73.7	5.1E-01	3.7E-07	10 J	7.0E-02	5.1E-08	16.9	1.2E-01	8.6E-08
Barium	6.6E+04	-	1,190	1.8E-02	-	445	6.7E-03	-	4,990	7.5E-02	-	380	5.7E-03	-	1,340	2.0E-02	-
Cadmium	1.5E+02	1.8E+05	11.5	7.9E-02	6.5E-11	36.9	2.5E-01	2.1E-10	125	8.6E-01	7.1E-10	28	1.9E-01	1.6E-10	54.6	3.7E-01	3.1E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	3.4 B	3.7E-03	9.7E-11
Copper	3.4E+03	-	22.3	6.6E-03	-	59.3	1.7E-02	-	314	9.3E-02	-	170	5.0E-02	-	534	1.6E-01	-
Lead	9.4E+02	-	71	7.5E-02	-	195	2.1E-01	-	3,290	**3.5E+00**	-	980	1.0E+00	-	674	7.2E-01	-
Manganese	6.2E+03	-	433	7.0E-02	-	484	7.8E-02	-	1,680	2.7E-01	-	120	1.9E-02	-	591	9.5E-02	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.027 UJ	4.0E-05	-
Zinc	1.0E+05	-	1,180	1.2E-02	-	2,460	2.4E-02	-	20,600 J	2.0E-01	-	3,100	3.0E-02	-	4,600	4.5E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	9.7E-02	-	-	2.6E-01	-	-	9.3E-01	-	-	2.0E-01	-	-	3.9E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.0E-08	-	-	4.7E-08	-	-	3.7E-07	-	-	5.1E-08	-	-	8.6E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
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Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-08(S)			W-09(S)			W-10(S)			W-11(S)			W-12(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	3.4 J	2.4E-02	1.7E-08	6.3	4.4E-02	3.2E-08	8.2	5.7E-02	4.2E-08	5.5	3.8E-02	2.8E-08	6.8	4.7E-02	3.4E-08
Barium	6.6E+04	-	55 J	8.3E-04	-	163	2.5E-03	-	394	6.0E-03	-	61	9.2E-04	-	108	1.6E-03	-
Cadmium	1.5E+02	1.8E+05	3	2.1E-02	1.7E-11	9.8	6.7E-02	5.6E-11	15.8	1.1E-01	9.0E-11	4.2 J	2.9E-02	2.4E-11	7.2	4.9E-02	4.1E-11
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	17 J	5.0E-03	-	28.5	8.4E-03	-	46.1 J	1.4E-02	-	29.9 J	8.8E-03	-	17.6	5.2E-03	-
Lead	9.4E+02	-	24 J	2.6E-02	-	54.2 J	5.8E-02	-	189	2.0E-01	-	27.4	2.9E-02	-	35	3.7E-02	-
Manganese	6.2E+03	-	330 J	5.3E-02	-	444	7.2E-02	-	656	1.1E-01	-	482	7.8E-02	-	470	7.6E-02	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	370	3.6E-03	-	1,010 J	9.9E-03	-	1,390	1.4E-02	-	365	3.6E-03	-	619 J	6.1E-03	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.1E-02	-	-	7.0E-02	-	-	1.1E-01	-	-	3.0E-02	-	-	5.1E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.7E-08	-	-	3.2E-08	-	-	4.2E-08	-	-	2.8E-08	-	-	3.4E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-13(S)			W-14(S)			W-15(S)			W-16(S)			W-17(D)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	15.8	1.1E-01	8.0E-08	76.8	5.4E-01	3.9E-07	120	8.4E-01	6.1E-07	358	**2.5E+00**	*1.8E-06*	233 J	**1.6E+00**	1.2E-06
Barium	6.6E+04	-	619	9.4E-03	-	3,910	5.9E-02	-	727	1.1E-02	-	7,290	1.1E-01	-	7,070	1.1E-01	-
Cadmium	1.5E+02	1.8E+05	31.8	2.2E-01	1.8E-10	38.8	2.7E-01	2.2E-10	212	1.5E+00	1.2E-09	134	9.2E-01	7.6E-10	258	**1.8E+00**	1.5E-09
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	135	4.0E-02	-	1,770	5.2E-01	-	4,670	1.4E+00	-	7,510	**2.2E+00**	-	4,160	1.2E+00	-
Lead	9.4E+02	-	266	2.8E-01	-	917	9.7E-01	-	4,910	**5.2E+00**	-	6,090	**6.5E+00**	-	12,500	**1.3E+01**	-
Manganese	6.2E+03	-	407	6.6E-02	-	992	1.6E-01	-	1,560	2.5E-01	-	1,800	2.9E-01	-	2,070	3.3E-01	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	6,990	6.9E-02	-	5,860 J	5.8E-02	-	117,000 J	1.1E+00	-	20,900	2.1E-01	-	48,900	4.8E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.3E-01	-	-	3.2E-01	-	-	1.5E+00	-	-	1.0E+00	-	-	**1.9E+00**	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	8.0E-08	-	-	3.9E-07	-	-	6.1E-07	-	-	*1.8E-06*	-	-	1.2E-06

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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RSV = Risk-based Screening Value
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HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-18(S)			W-19(S)			W-20(I)			W-21(D)			W-22(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	190	1.3E+00	9.6E-07	175	1.2E+00	8.9E-07	9.8	6.8E-02	5.0E-08	153	1.1E+00	7.8E-07	33.1 J	2.3E-01	1.7E-07
Barium	6.6E+04	-	2,320	3.5E-02	-	725	1.1E-02	-	166	2.5E-03	-	5,440	8.2E-02	-	6,750	1.0E-01	-
Cadmium	1.5E+02	1.8E+05	126	8.6E-01	7.2E-10	82.3 J	5.6E-01	4.7E-10	29	2.0E-01	1.6E-10	340	**2.3E+00**	1.9E-09	36.6	2.5E-01	2.1E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	18.2	2.0E-02	5.2E-10	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	723	2.1E-01	-	2,160	6.4E-01	-	394	1.2E-01	-	16,400	**4.8E+00**	-	634	1.9E-01	-
Lead	9.4E+02	-	2,330	**2.5E+00**	-	5,930	**6.3E+00**	-	650	6.9E-01	-	4,990	**5.3E+00**	-	890	9.5E-01	-
Manganese	6.2E+03	-	4,420	7.1E-01	-	1,300	2.1E-01	-	503	8.1E-02	-	1,540	2.5E-01	-	531	8.6E-02	-
Mercury	6.8E+02	-	NA	-	-	83	1.2E-01	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	17,500	1.7E-01	-	13,000 J	1.3E-01	-	2,010	2.0E-02	-	49,600	4.9E-01	-	9,360	9.2E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	9.0E-01	-	-	5.7E-01	-	-	2.0E-01	-	-	**2.4E+00**	-	-	3.5E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	9.6E-07	-	-	8.9E-07	-	-	5.0E-08	-	-	7.8E-07	-	-	1.7E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		Z-02			Z-03			Z-05			Z-09		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals														
Arsenic	1.4E+02	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.7 B	4.9E-03	3.6E-09
Barium	6.6E+04	-	116	1.8E-03	-	16.3	2.5E-04	-	164	2.5E-03	-	2,040	3.1E-02	-
Cadmium	1.5E+02	1.8E+05	1.5 B	1.0E-02	8.5E-12	0.5 B	3.4E-03	2.8E-12	3.2	2.2E-02	1.8E-11	26.3	1.8E-01	1.5E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	NA	-	-	12	1.3E-02	3.4E-10
Copper	3.4E+03	-	NA	-	-	NA	-	-	NA	-	-	173	5.1E-02	-
Lead	9.4E+02	-	72	7.7E-02	-	6 B	6.4E-03	-	32	3.4E-02	-	81	8.6E-02	-
Manganese	6.2E+03	-	NA	-	-	NA	-	-	NA	-	-	56.6	9.1E-03	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	NA	-	-	0.04 B	5.9E-05	-
Zinc	1.0E+05	-	452	4.4E-03	-	148	1.5E-03	-	393	3.9E-03	-	1,570	1.5E-02	-
PAHs														
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals														
Total (Barium + Cadmium) HI	-		-	1.2E-02	-	-	3.7E-03	-	-	2.4E-02	-	-	2.1E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	-	-	-	-	-	-	-	-	-	3.6E-09

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		A-01			A-02			A-03			A-04			B-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	2.6	1.8E-02	1.3E-08	2.4	1.7E-02	1.2E-08	4.1	2.9E-02	2.1E-08	6.6	4.6E-02	3.3E-08	4.3	3.0E-02	2.2E-08
Barium	6.6E+04	-	33	5.0E-04	-	37 J	5.6E-04	-	134	2.0E-03	-	156	2.4E-03	-	42	6.4E-04	-
Cadmium	1.5E+02	1.8E+05	0.32 J	2.2E-03	1.8E-12	0.069 U	4.7E-04	3.9E-13	2.1 J	1.4E-02	1.2E-11	16.1 J	1.1E-01	9.1E-11	0.2 J	1.4E-03	1.1E-12
Cobalt	9.3E+02	3.5E+04	NA	-	-	5.2 B	5.6E-03	1.5E-10	6.2	6.7E-03	1.8E-10	NA	-	-	5.3 J	5.7E-03	1.5E-10
Copper	3.4E+03	-	11.6	3.4E-03	-	9.7	2.9E-03	-	9.3 J	2.7E-03	-	22.4	6.6E-03	-	12.5	3.7E-03	-
Lead	9.4E+02	-	6.5 J	6.9E-03	-	7.2 U	7.7E-03	-	32.5	3.5E-02	-	75.2	8.0E-02	-	5.7 J	6.1E-03	-
Manganese	6.2E+03	-	352	5.7E-02	-	150 J	2.4E-02	-	380	6.1E-02	-	383	6.2E-02	-	300	4.8E-02	-
Mercury	6.8E+02	-	NA	-	-	0.019 B	2.8E-05	-	0.0085 U	1.3E-05	-	NA	-	-	0.0129 J	1.9E-05	-
Zinc	1.0E+05	-	30	2.9E-04	-	29	2.8E-04	-	475	4.7E-03	-	1,150	1.1E-02	-	27	2.7E-04	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	0.035 U	-	1.8E-10	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	0.035 U	-	1.8E-09	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	0.035 U	-	1.8E-10	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	0.035 U	-	1.8E-11	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	0.035 U	-	1.8E-12	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	0.035 U	-	1.8E-09	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	0.035 U	-	1.8E-10	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	0.035 U	4.8E-04	8.1E-11	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.7E-03	-	-	1.0E-03	-	-	1.6E-02	-	-	1.1E-01	-	-	2.0E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	4.1E-09	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.3E-08	-	-	1.2E-08	-	-	2.5E-08	-	-	3.3E-08	-	-	2.2E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
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UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
R = The result was considered unusable during the quality assurance review.
N = Presumptive evidence of the presence of the compund.
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mg/kg = milligrams per kilogram

Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		B-01			B-02			B-03			B-04			B-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	4.3	3.0E-02	2.2E-08	6 J	4.2E-02	3.0E-08	5.6 J	3.9E-02	2.8E-08	70.7	4.9E-01	3.6E-07	395	**2.8E+00**	*2.0E-06*
Barium	6.6E+04	-	42	6.4E-04	-	870 J	1.3E-02	-	783	1.2E-02	-	2,660	4.0E-02	-	849	1.3E-02	-
Cadmium	1.5E+02	1.8E+05	0.2 J	1.4E-03	1.1E-12	61	4.2E-01	3.5E-10	73.1	5.0E-01	4.2E-10	308	**2.1E+00**	1.7E-09	2,190	**1.5E+01**	1.2E-08
Cobalt	9.3E+02	3.5E+04	5.3 J	5.7E-03	1.5E-10	NA	-	-	19	2.0E-02	5.4E-10	NA	-	-	273	2.9E-01	7.8E-09
Copper	3.4E+03	-	12.5	3.7E-03	-	48 J	1.4E-02	-	528	1.6E-01	-	10,400	**3.1E+00**	-	28,800	**8.5E+00**	-
Lead	9.4E+02	-	5.7 J	6.1E-03	-	130 J	1.4E-01	-	97.1	1.0E-01	-	9,470	**1.0E+01**	-	59,900	**6.4E+01**	-
Manganese	6.2E+03	-	300	4.8E-02	-	410 J	6.6E-02	-	728	1.2E-01	-	3,700	6.0E-01	-	8,060	1.3E+00	-
Mercury	6.8E+02	-	0.0129 J	1.9E-05	-	NA	-	-	0.025 B	3.7E-05	-	NA	-	-	16.8	2.5E-02	-
Zinc	1.0E+05	-	27	2.7E-04	-	3,700	3.6E-02	-	4,000	3.9E-02	-	46,100	4.5E-01	-	129,000	1.3E+00	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	0.4 U	-	2.0E-09	NA	-	-	0.11 J	-	5.5E-10
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	0.4 U	-	2.0E-08	NA	-	-	0.076 J	-	3.8E-09
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	0.4 U	-	2.0E-09	NA	-	-	0.13 J	-	6.5E-10
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	0.4 U	-	2.0E-10	NA	-	-	0.56 U	-	2.8E-10
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	0.4 U	-	2.0E-11	NA	-	-	0.17 J	-	8.5E-12
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	0.4 U	-	2.0E-08	NA	-	-	0.56 U	-	2.8E-08
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	0.4 U	-	2.0E-09	NA	-	-	0.56 U	-	2.8E-09
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	0.4 U	5.5E-03	9.2E-10	NA	-	-	0.56 U	7.7E-03	1.3E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	2.0E-03	-	-	4.3E-01	-	-	5.1E-01	-	-	**2.1E+00**	-	-	**1.5E+01**	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	4.7E-08	-	-	-	-	-	3.7E-08
Total (PAH + Arsenic) Risk	-		-	-	2.2E-08	-	-	3.0E-08	-	-	7.6E-08	-	-	3.6E-07	-	-	*2.0E-06*

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		B-06			C-01			C-02			C-03			C-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	6.6 J	4.6E-02	3.3E-08	1.6	1.1E-02	8.1E-09	4.9 U	3.4E-02	2.5E-08	10.5	7.3E-02	5.3E-08	8.7	6.1E-02	4.4E-08
Barium	6.6E+04	-	48 J	7.3E-04	-	39 J	5.9E-04	-	379	5.7E-03	-	8,450	1.3E-01	-	7,010	1.1E-01	-
Cadmium	1.5E+02	1.8E+05	0.66 J	4.5E-03	3.7E-12	2.3 U	1.6E-02	1.3E-11	5.9	4.0E-02	3.4E-11	37.6	2.6E-01	2.1E-10	82.5	5.6E-01	4.7E-10
Cobalt	9.3E+02	3.5E+04	6.4	6.9E-03	1.8E-10	NA	-	-	5.1 B	5.5E-03	1.4E-10	9	9.7E-03	2.6E-10	18.9	2.0E-02	5.4E-10
Copper	3.4E+03	-	19.2 J	5.7E-03	-	10	2.9E-03	-	17.6	5.2E-03	-	57.9	1.7E-02	-	119	3.5E-02	-
Lead	9.4E+02	-	11.2 J	1.2E-02	-	5.4 U	5.7E-03	-	94.2	1.0E-01	-	182	1.9E-01	-	347	3.7E-01	-
Manganese	6.2E+03	-	530 J	8.5E-02	-	330 J	5.3E-02	-	353	5.7E-02	-	396	6.4E-02	-	1,340	2.2E-01	-
Mercury	6.8E+02	-	0.024 J	3.6E-05	-	NA	-	-	0.023 U	3.4E-05	-	0.0672 U	9.9E-05	-	0.0855 J	1.3E-04	-
Zinc	1.0E+05	-	47 J	4.6E-04	-	22	2.2E-04	-	2,080	2.0E-02	-	6,980 J	6.9E-02	-	8,420	8.3E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	0.36 U	-	1.8E-09	0.042 U	-	2.1E-10	0.042 U	-	2.1E-10
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	0.36 U	-	1.8E-08	0.042 U	-	2.1E-09	0.042 U	-	2.1E-09
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	0.36 U	-	1.8E-09	0.068 J	-	3.4E-10	0.042 U	-	2.1E-10
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	0.36 U	-	1.8E-10	0.042 UJ	-	2.1E-11	0.042 U	-	2.1E-11
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	0.36 U	-	1.8E-11	0.05 J	-	2.5E-12	0.042 U	-	2.1E-12
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	0.36 U	-	1.8E-08	0.042 U	-	2.1E-09	0.042 U	-	2.1E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	0.36 U	-	1.8E-09	0.042 U	-	2.1E-10	0.042 U	-	2.1E-10
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	0.36 U	5.0E-03	8.3E-10	0.042 U	5.8E-04	9.7E-11	0.042 U	5.8E-04	9.7E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	5.2E-03	-	-	1.6E-02	-	-	4.6E-02	-	-	3.9E-01	-	-	6.7E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	4.3E-08	-	-	5.1E-09	-	-	5.0E-09
Total (PAH + Arsenic) Risk	-		-	-	3.3E-08	-	-	8.1E-09	-	-	6.7E-08	-	-	5.8E-08	-	-	4.9E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		C-05			D-02			D-03			D-04			D-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	102	7.1E-01	5.2E-07	7.8	5.4E-02	4.0E-08	36.6	2.6E-01	1.9E-07	10.5	7.3E-02	5.3E-08	4.3	3.0E-02	2.2E-08
Barium	6.6E+04	-	382	5.8E-03	-	91	1.4E-03	-	60	9.1E-04	-	720	1.1E-02	-	40	6.1E-04	-
Cadmium	1.5E+02	1.8E+05	138	9.4E-01	7.8E-10	11.3	7.7E-02	6.4E-11	173 J	1.2E+00	9.8E-10	127	8.7E-01	7.2E-10	14.4	9.9E-02	8.2E-11
Cobalt	9.3E+02	3.5E+04	58.6	6.3E-02	1.7E-09	7.3 B	7.9E-03	2.1E-10	7.3	7.9E-03	2.1E-10	NA	-	-	NA	-	-
Copper	3.4E+03	-	1,320 J	3.9E-01	-	27.8	8.2E-03	-	152	4.5E-02	-	44.9	1.3E-02	-	32.5	9.6E-03	-
Lead	9.4E+02	-	8,340	**8.9E+00**	-	83.4 J	8.9E-02	-	118	1.3E-01	-	369	3.9E-01	-	5.7	6.1E-03	-
Manganese	6.2E+03	-	11,200	**1.8E+00**	-	536	8.6E-02	-	610	9.8E-02	-	131	2.1E-02	-	218	3.5E-02	-
Mercury	6.8E+02	-	0.32	4.7E-04	-	0.025 U	3.7E-05	-	0.0158 U	2.3E-05	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	40,200	4.0E-01	-	1,490 J	1.5E-02	-	26,300	2.6E-01	-	6,100	6.0E-02	-	3,980 J	3.9E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.1 J	-	5.0E-10	0.4 U	-	2.0E-09	0.039 UJ	-	2.0E-10	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	0.079 J	-	4.0E-09	0.4 U	-	2.0E-08	0.039 UJ	-	2.0E-09	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	0.13 J	-	6.5E-10	0.4 U	-	2.0E-09	0.039 UJ	-	2.0E-10	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	0.046 J	-	2.3E-11	0.4 U	-	2.0E-10	0.039 UJ	-	2.0E-11	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	0.13 J	-	6.5E-12	0.4 U	-	2.0E-11	0.039 UJ	-	2.0E-12	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	0.37 U	-	1.9E-08	0.4 U	-	2.0E-08	0.039 UJ	-	2.0E-09	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.049 J	-	2.5E-10	0.4 U	-	2.0E-09	0.039 UJ	-	2.0E-10	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	0.37 U	5.1E-03	8.5E-10	0.4 U	5.5E-03	9.2E-10	0.039 UJ	5.4E-04	9.0E-11	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	9.5E-01	-	-	7.9E-02	-	-	1.2E+00	-	-	8.8E-01	-	-	9.9E-02	-
Total PAH Risk	-		-	-	2.5E-08	-	-	4.7E-08	-	-	4.6E-09	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	5.4E-07	-	-	8.7E-08	-	-	1.9E-07	-	-	5.3E-08	-	-	2.2E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
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(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		E-02			E-03			E-04			E-05			E-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	4.4	3.1E-02	2.2E-08	3.6	2.5E-02	1.8E-08	13.5	9.4E-02	6.8E-08	382	**2.7E+00**	*1.9E-06*	19 J	1.3E-01	9.6E-08
Barium	6.6E+04	-	64	9.7E-04	-	39	5.9E-04	-	179	2.7E-03	-	434	6.6E-03	-	2,220 J	3.4E-02	-
Cadmium	1.5E+02	1.8E+05	0.46 J	3.1E-03	2.6E-12	0.19 U	1.3E-03	1.1E-12	21.1	1.4E-01	1.2E-10	731	**5.0E+00**	4.2E-09	72.7	5.0E-01	4.1E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	6.7	7.2E-03	1.9E-10	7.2	7.8E-03	2.0E-10	6.8 J	7.3E-03	1.9E-10	NA	-	-
Copper	3.4E+03	-	12.5	3.7E-03	-	12.4	3.7E-03	-	279	8.2E-02	-	1,150	3.4E-01	-	183 J	5.4E-02	-
Lead	9.4E+02	-	10.3	1.1E-02	-	7.5	8.0E-03	-	240	2.6E-01	-	11,300	**1.2E+01**	-	1,110 J	1.2E+00	-
Manganese	6.2E+03	-	580	9.4E-02	-	219	3.5E-02	-	823	1.3E-01	-	237	3.8E-02	-	616 J	9.9E-02	-
Mercury	6.8E+02	-	NA	-	-	0.0233 J	3.4E-05	-	0.46	6.8E-04	-	8.2	1.2E-02	-	NA	-	-
Zinc	1.0E+05	-	135	1.3E-03	-	57 J	5.6E-04	-	2,040 J	2.0E-02	-	11,700	1.1E-01	-	17,600 J	1.7E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	0.11 J	-	5.5E-10	1.1	-	5.5E-09	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	0.16 J	-	8.0E-09	0.79	-	4.0E-08	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	0.48 J	-	2.4E-09	1.2	-	6.0E-09	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	0.18 J	-	9.0E-11	0.46 J	-	2.3E-10	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	0.21 J	-	1.1E-11	1.1	-	5.5E-11	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	0.038 UJ	-	1.9E-09	0.42 U	-	2.1E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	0.17 J	-	8.5E-10	0.57	-	2.9E-09	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	0.051 J	7.0E-04	1.2E-10	0.42 U	5.8E-03	9.7E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.1E-03	-	-	1.9E-03	-	-	1.5E-01	-	-	**5.0E+00**	-	-	5.3E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	1.4E-08	-	-	7.6E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.2E-08	-	-	1.8E-08	-	-	8.2E-08	-	-	*2.0E-06*	-	-	9.6E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		F-02			F-03			G-01			G-02			G-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	3.9 U	2.7E-02	2.0E-08	11.5	8.0E-02	5.8E-08	5.8	4.0E-02	2.9E-08	4.6	3.2E-02	2.3E-08	6.2	4.3E-02	3.1E-08
Barium	6.6E+04	-	54 J	8.2E-04	-	51.4	7.8E-04	-	56	8.5E-04	-	45	6.8E-04	-	62	9.4E-04	-
Cadmium	1.5E+02	1.8E+05	0.25 U	1.7E-03	1.4E-12	5.6	3.8E-02	3.2E-11	0.19 J	1.3E-03	1.1E-12	0.19 U	1.3E-03	1.1E-12	1.57 J	1.1E-02	8.9E-12
Cobalt	9.3E+02	3.5E+04	NA	-	-	2.7 B	2.9E-03	7.7E-11	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	13.9	4.1E-03	-	13.2	3.9E-03	-	12.8 J	3.8E-03	-	12.1	3.6E-03	-	17.1	5.0E-03	-
Lead	9.4E+02	-	10.6	1.1E-02	-	15.2	1.6E-02	-	9.2	9.8E-03	-	8.9	9.5E-03	-	13.2	1.4E-02	-
Manganese	6.2E+03	-	456	7.4E-02	-	74	1.2E-02	-	459	7.4E-02	-	389	6.3E-02	-	625	1.0E-01	-
Mercury	6.8E+02	-	NA	-	-	0.094 B	1.4E-04	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	42	4.1E-04	-	1,360	1.3E-02	-	45 J	4.4E-04	-	43 J	4.2E-04	-	53 J	5.2E-04	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	0.42 U	-	2.1E-09	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	0.42 U	-	2.1E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	0.42 U	-	2.1E-09	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	0.42 U	-	2.1E-10	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	0.42 U	-	2.1E-11	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	0.42 U	-	2.1E-08	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	0.42 U	-	2.1E-09	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	0.42 U	5.8E-03	9.7E-10	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.5E-03	-	-	3.9E-02	-	-	2.1E-03	-	-	2.0E-03	-	-	1.2E-02	-
Total PAH Risk	-		-	-	-	-	-	5.0E-08	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.0E-08	-	-	1.1E-07	-	-	2.9E-08	-	-	2.3E-08	-	-	3.1E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		G-04			G-05			G-07			H-02			H-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	4.1 U	2.9E-02	2.1E-08	40.2	2.8E-01	2.0E-07	260 J	**1.8E+00**	1.3E-06	6	4.2E-02	3.0E-08	7.2	5.0E-02	3.7E-08
Barium	6.6E+04	-	82	1.2E-03	-	101 J	1.5E-03	-	170	2.6E-03	-	28	4.2E-04	-	81	1.2E-03	-
Cadmium	1.5E+02	1.8E+05	88.4	6.1E-01	5.0E-10	134	9.2E-01	7.6E-10	18	1.2E-01	1.0E-10	0.36 J	2.5E-03	2.0E-12	0.39 B	2.7E-03	2.2E-12
Cobalt	9.3E+02	3.5E+04	NA	-	-	3.61 J	3.9E-03	1.0E-10	17	1.8E-02	4.8E-10	NA	-	-	9.1 B	9.8E-03	2.6E-10
Copper	3.4E+03	-	19.4	5.7E-03	-	137	4.0E-02	-	660	1.9E-01	-	6.9 U	2.0E-03	-	19	5.6E-03	-
Lead	9.4E+02	-	28.1	3.0E-02	-	1,190	1.3E+00	-	3,600	**3.8E+00**	-	6.1	6.5E-03	-	12	1.3E-02	-
Manganese	6.2E+03	-	679	1.1E-01	-	605	9.8E-02	-	2,800	4.5E-01	-	378	6.1E-02	-	670	1.1E-01	-
Mercury	6.8E+02	-	NA	-	-	0.1 J	1.5E-04	-	28 J	4.1E-02	-	NA	-	-	0.035	5.2E-05	-
Zinc	1.0E+05	-	3,210 J	3.2E-02	-	16,200	1.6E-01	-	16,000	1.6E-01	-	36 J	3.5E-04	-	54 J	5.3E-04	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	0.35 J	-	1.8E-09	NA	-	-	0.41 U	-	2.1E-09
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	0.23 J	-	1.2E-08	NA	-	-	0.41 U	-	2.1E-08
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	0.28 J	-	1.4E-09	NA	-	-	0.41 U	-	2.1E-09
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	0.31 J	-	1.6E-10	NA	-	-	0.41 U	-	2.1E-10
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	0.44	-	2.2E-11	NA	-	-	0.41 U	-	2.1E-11
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	0.032 J	-	1.6E-09	NA	-	-	0.41 U	-	2.1E-08
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	0.16 J	-	8.0E-10	NA	-	-	0.41 U	-	2.1E-09
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	0.032 J	4.4E-04	7.4E-11	NA	-	-	0.41 U	5.6E-03	9.4E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	6.1E-01	-	-	9.2E-01	-	-	1.3E-01	-	-	2.9E-03	-	-	3.9E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	1.7E-08	-	-	-	-	-	4.8E-08
Total (PAH + Arsenic) Risk	-		-	-	2.1E-08	-	-	2.0E-07	-	-	1.3E-06	-	-	3.0E-08	-	-	8.5E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

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Table C1-4:
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(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		H-05			H-06			H-07			H-08			HH-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	5	3.5E-02	2.5E-08	5	3.5E-02	2.5E-08	2.4 U	1.7E-02	1.2E-08	16.8	1.2E-01	8.5E-08	3.9	2.7E-02	2.0E-08
Barium	6.6E+04	-	33	5.0E-04	-	35 B	5.3E-04	-	18,300	2.8E-01	-	147	2.2E-03	-	32.2	4.9E-04	-
Cadmium	1.5E+02	1.8E+05	37	2.5E-01	2.1E-10	2.4	1.6E-02	1.4E-11	0.2 U	1.4E-03	1.1E-12	14.4 J	9.9E-02	8.2E-11	0.8 B	5.5E-03	4.5E-12
Cobalt	9.3E+02	3.5E+04	5.4 B	5.8E-03	1.5E-10	0.85 B	9.2E-04	2.4E-11	12	1.3E-02	3.4E-10	NA	-	-	5 B	5.4E-03	1.4E-10
Copper	3.4E+03	-	13	3.8E-03	-	14	4.1E-03	-	9.8	2.9E-03	-	46.9 J	1.4E-02	-	10	2.9E-03	-
Lead	9.4E+02	-	7.1 J	7.5E-03	-	13	1.4E-02	-	7.3	7.8E-03	-	318	3.4E-01	-	5 U	5.3E-03	-
Manganese	6.2E+03	-	360 J	5.8E-02	-	24	3.9E-03	-	287	4.6E-02	-	838	1.4E-01	-	221	3.6E-02	-
Mercury	6.8E+02	-	0.02 B	3.0E-05	-	0.032	4.7E-05	-	0.0059 U	8.7E-06	-	NA	-	-	0.02 U	3.0E-05	-
Zinc	1.0E+05	-	1,200 J	1.2E-02	-	260 J	2.6E-03	-	92 J	9.0E-04	-	2,240	2.2E-02	-	30	2.9E-04	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	0.41 U	-	2.1E-09	0.041 U	-	2.1E-10	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	0.41 U	-	2.1E-08	0.041 U	-	2.1E-09	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	0.41 U	-	2.1E-09	0.041 U	-	2.1E-10	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	0.41 U	-	2.1E-10	0.041 U	-	2.1E-11	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	0.41 U	-	2.1E-11	0.041 U	-	2.1E-12	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	0.41 U	-	2.1E-08	0.041 U	-	2.1E-09	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	0.41 U	-	2.1E-09	0.041 U	-	2.1E-10	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	0.41 U	5.6E-03	9.4E-10	0.041 U	5.6E-04	9.4E-11	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.5E-01	-	-	1.7E-02	-	-	2.8E-01	-	-	1.0E-01	-	-	6.0E-03	-
Total PAH Risk	-		-	-	-	-	-	4.8E-08	-	-	4.8E-09	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.5E-08	-	-	7.4E-08	-	-	1.7E-08	-	-	8.5E-08	-	-	2.0E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-4:
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(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		HH-06			HH-07			HH-08			HH-09			HH-11		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	3.328	2.3E-02	1.7E-08	15	1.0E-01	7.6E-08	5.072	3.5E-02	2.6E-08	1.728	1.2E-02	8.8E-09	321.1	**2.2E+00**	*1.6E-06*
Barium	6.6E+04	-	37.7	5.7E-04	-	94.2	1.4E-03	-	84.7	1.3E-03	-	101	1.5E-03	-	58	8.8E-04	-
Cadmium	1.5E+02	1.8E+05	0.3 U	2.1E-03	1.7E-12	102	7.0E-01	5.8E-10	132	9.0E-01	7.5E-10	40.3	2.8E-01	2.3E-10	4 U	2.7E-02	2.3E-11
Cobalt	9.3E+02	3.5E+04	5	5.4E-03	1.4E-10	8	8.6E-03	2.3E-10	6	6.5E-03	1.7E-10	11	1.2E-02	3.1E-10	50 B	5.4E-02	1.4E-09
Copper	3.4E+03	-	11	3.2E-03	-	29	8.5E-03	-	18	5.3E-03	-	29	8.5E-03	-	4,440	1.3E+00	-
Lead	9.4E+02	-	5 B	5.3E-03	-	10 B	1.1E-02	-	62	6.6E-02	-	12 B	1.3E-02	-	2,310	**2.5E+00**	-
Manganese	6.2E+03	-	321	5.2E-02	-	244	3.9E-02	-	474	7.6E-02	-	196	3.2E-02	-	1,270	2.0E-01	-
Mercury	6.8E+02	-	0.02 U	3.0E-05	-	0.03 B	4.4E-05	-	0.027 B	4.0E-05	-	0.03 B	4.4E-05	-	0.03 U	4.4E-05	-
Zinc	1.0E+05	-	34	3.3E-04	-	6,100	6.0E-02	-	3,990	3.9E-02	-	3,690	3.6E-02	-	5,410	5.3E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.6E-03	-	-	7.0E-01	-	-	9.0E-01	-	-	2.8E-01	-	-	2.8E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.7E-08	-	-	7.6E-08	-	-	2.6E-08	-	-	8.8E-09	-	-	*1.6E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

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- > 1 - ≤5
- > 5 - ≤10
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OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		HH-12			I-01			I-04			I-07			I-09		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	2.44	1.7E-02	1.2E-08	153	1.1E+00	7.8E-07	45.7	3.2E-01	2.3E-07	437	**3.0E+00**	*2.2E-06*	5.5	3.8E-02	2.8E-08
Barium	6.6E+04	-	44.6	6.7E-04	-	3,560 J	5.4E-02	-	3,020 J	4.6E-02	-	117	1.8E-03	-	41	6.2E-04	-
Cadmium	1.5E+02	1.8E+05	0.3 U	2.1E-03	1.7E-12	162	1.1E+00	9.2E-10	187	1.3E+00	1.1E-09	21.8	1.5E-01	1.2E-10	35.2	2.4E-01	2.0E-10
Cobalt	9.3E+02	3.5E+04	1 U	1.1E-03	2.8E-11	NA	-	-	NA	-	-	16.3	1.8E-02	4.6E-10	6.4 B	6.9E-03	1.8E-10
Copper	3.4E+03	-	3 B	8.8E-04	-	982 J	2.9E-01	-	328 J	9.7E-02	-	2,020 J	6.0E-01	-	27	8.0E-03	-
Lead	9.4E+02	-	5 U	5.3E-03	-	3,230 J	**3.4E+00**	-	1,840 J	**2.0E+00**	-	29,600	**3.1E+01**	-	16.3	1.7E-02	-
Manganese	6.2E+03	-	133	2.1E-02	-	2,400	3.9E-01	-	1,260	2.0E-01	-	14,000	**2.3E+00**	-	276	4.5E-02	-
Mercury	6.8E+02	-	0.05 B	7.4E-05	-	NA	-	-	NA	-	-	0.024 U	3.6E-05	-	0.022 U	3.3E-05	-
Zinc	1.0E+05	-	19	1.9E-04	-	14,100	1.4E-01	-	21,000	2.1E-01	-	36,000	3.5E-01	-	3,120	3.1E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	2.0E-09	0.38 U	-	1.9E-09
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	2.0E-08	0.38 U	-	1.9E-08
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	2.0E-09	0.38 U	-	1.9E-09
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	2.0E-10	0.38 U	-	1.9E-10
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	2.0E-11	0.38 U	-	1.9E-11
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	2.0E-08	0.38 U	-	1.9E-08
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	2.0E-09	0.38 U	-	1.9E-09
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	0.12 UJ	1.7E-03	2.8E-10	0.38 U	5.2E-03	8.8E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	2.7E-03	-	-	1.2E+00	-	-	1.3E+00	-	-	1.5E-01	-	-	2.4E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	4.5E-08	-	-	4.5E-08
Total (PAH + Arsenic) Risk	-		-	-	1.2E-08	-	-	7.8E-07	-	-	2.3E-07	-	-	*2.3E-06*	-	-	7.3E-08

Notes:

Risk:

- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):

- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
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mg/kg = milligrams per kilogram

Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		I-11			J-01			J-02			J-06			J-07		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	1.2 J	8.4E-03	6.1E-09	4.8	3.3E-02	2.4E-08	12.3	8.6E-02	6.2E-08	5	3.5E-02	2.5E-08	6.2 J	4.3E-02	3.1E-08
Barium	6.6E+04	-	37	5.6E-04	-	137	2.1E-03	-	84	1.3E-03	-	12	1.8E-04	-	53 J	8.0E-04	-
Cadmium	1.5E+02	1.8E+05	1.59 J	1.1E-02	9.0E-12	0.11 U	7.5E-04	6.2E-13	0.28 J	1.9E-03	1.6E-12	0.18 U	1.2E-03	1.0E-12	0.8 J	5.5E-03	4.5E-12
Cobalt	9.3E+02	3.5E+04	NA	-	-	7 B	7.6E-03	2.0E-10	NA	-	-	4.3 J	4.6E-03	1.2E-10	NA	-	-
Copper	3.4E+03	-	11.1 U	3.3E-03	-	15.2	4.5E-03	-	29.6	8.7E-03	-	5.9	1.7E-03	-	19.8 J	5.8E-03	-
Lead	9.4E+02	-	6.8 J	7.2E-03	-	17.8	1.9E-02	-	14.2 J	1.5E-02	-	4.7	5.0E-03	-	8.4 J	8.9E-03	-
Manganese	6.2E+03	-	89.1	1.4E-02	-	418	6.7E-02	-	735	1.2E-01	-	235	3.8E-02	-	464 J	7.5E-02	-
Mercury	6.8E+02	-	NA	-	-	0.055 B	8.1E-05	-	NA	-	-	0.0117 J	1.7E-05	-	NA	-	-
Zinc	1.0E+05	-	1,630	1.6E-02	-	215	2.1E-03	-	59	5.8E-04	-	80 J	7.9E-04	-	202	2.0E-03	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	0.37 U	-	1.9E-09	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	0.37 U	-	1.9E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	0.37 U	-	1.9E-09	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	0.37 U	-	1.9E-10	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	0.37 U	-	1.9E-11	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	0.37 U	-	1.9E-08	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	0.37 U	-	1.9E-09	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	0.37 U	5.1E-03	8.5E-10	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.1E-02	-	-	2.8E-03	-	-	3.2E-03	-	-	1.4E-03	-	-	6.3E-03	-
Total PAH Risk	-		-	-	-	-	-	4.4E-08	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	6.1E-09	-	-	6.8E-08	-	-	6.2E-08	-	-	2.5E-08	-	-	3.1E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
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Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-08			J-09			J-10			J-11			J-12		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	105 J	7.3E-01	5.3E-07	393 J	**2.7E+00**	*2.0E-06*	132	9.2E-01	6.7E-07	330 J	**2.3E+00**	*1.7E-06*	331	**2.3E+00**	*1.7E-06*
Barium	6.6E+04	-	1,150 J	1.7E-02	-	346 J	5.2E-03	-	577	8.7E-03	-	2,600	3.9E-02	-	5,390	8.2E-02	-
Cadmium	1.5E+02	1.8E+05	17	1.2E-01	9.7E-11	293	**2.0E+00**	1.7E-09	158 J	1.1E+00	9.0E-10	13	8.9E-02	7.4E-11	32.6 J	2.2E-01	1.9E-10
Cobalt	9.3E+02	3.5E+04	265	2.9E-01	7.5E-09	29.1 J	3.1E-02	8.3E-10	47	5.1E-02	1.3E-09	18	1.9E-02	5.1E-10	4.1 J	4.4E-03	1.2E-10
Copper	3.4E+03	-	12,000 J	**3.5E+00**	-	13,200 J	**3.9E+00**	-	5,380	**1.6E+00**	-	6,000	**1.8E+00**	-	21,800	**6.4E+00**	-
Lead	9.4E+02	-	15,200 J	**1.6E+01**	-	14,700 J	**1.6E+01**	-	6,840	**7.3E+00**	-	6,700 J	**7.1E+00**	-	9,860	**1.0E+01**	-
Manganese	6.2E+03	-	7,260 J	1.2E+00	-	4,490 J	7.2E-01	-	3,490 J	5.6E-01	-	1,400	2.3E-01	-	4,890 J	7.9E-01	-
Mercury	6.8E+02	-	0.0202 J	3.0E-05	-	0.0041 U	6.1E-06	-	0.027 U	4.0E-05	-	0.18 U	2.7E-04	-	0.0066 U	9.8E-06	-
Zinc	1.0E+05	-	57,000	5.6E-01	-	63,100	6.2E-01	-	55,400	5.4E-01	-	7,800 J	7.7E-02	-	4,170	4.1E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.044 UJ	-	2.2E-10	0.055 UJ	-	2.8E-10	0.44 U	-	2.2E-09	0.59 UB	-	3.0E-09	NA	-	-
Benzo(a)pyrene	-	2.0E+01	0.044 UJ	-	2.2E-09	0.055 UJ	-	2.8E-09	0.44 U	-	2.2E-08	0.59 UB	-	3.0E-08	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	0.044 UJ	-	2.2E-10	0.055 UJ	-	2.8E-10	0.44 U	-	2.2E-09	0.59 UB	-	3.0E-09	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	0.044 UJ	-	2.2E-11	0.055 UJ	-	2.8E-11	0.44 U	-	2.2E-10	0.59 UB	-	3.0E-10	NA	-	-
Chrysene	-	2.0E+04	0.044 UJ	-	2.2E-12	0.055 UJ	-	2.8E-12	0.44 U	-	2.2E-11	0.59 UB	-	3.0E-11	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	0.044 UJ	-	2.2E-09	0.055 UJ	-	2.8E-09	0.44 U	-	2.2E-08	0.59 UB	-	3.0E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.044 UJ	-	2.2E-10	0.055 UJ	-	2.8E-10	0.44 U	-	2.2E-09	0.59 UB	-	3.0E-09	NA	-	-
Naphthalene	7.3E+01	4.3E+02	0.057 J	7.8E-04	1.3E-10	0.055 UJ	7.6E-04	1.3E-10	0.44 U	6.1E-03	1.0E-09	0.59 J	8.1E-03	1.4E-09	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.3E-01	-	-	**2.0E+00**	-	-	1.1E+00	-	-	1.3E-01	-	-	3.0E-01	-
Total PAH Risk	-		-	-	5.2E-09	-	-	6.5E-09	-	-	5.2E-08	-	-	7.0E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	5.4E-07	-	-	*2.0E-06*	-	-	7.2E-07	-	-	*1.7E-06*	-	-	*1.7E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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mg/kg = milligrams per kilogram

Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-13			K-01			K-02			K-03			K-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	189 J	1.3E+00	9.6E-07	2.4 J	1.7E-02	1.2E-08	40.2	2.8E-01	2.0E-07	75.9	5.3E-01	3.8E-07	28.2	2.0E-01	1.4E-07
Barium	6.6E+04	-	1,870	2.8E-02	-	25	3.8E-04	-	581	8.8E-03	-	8,410	1.3E-01	-	359	5.4E-03	-
Cadmium	1.5E+02	1.8E+05	399 J	**2.7E+00**	2.3E-09	0.37 B	2.5E-03	2.1E-12	282	**1.9E+00**	1.6E-09	65.4	4.5E-01	3.7E-10	20.3	1.4E-01	1.2E-10
Cobalt	9.3E+02	3.5E+04	1.5 B	1.6E-03	4.3E-11	NA	-	-	119	1.3E-01	3.4E-09	6.5 J	7.0E-03	1.8E-10	4.8 J	5.2E-03	1.4E-10
Copper	3.4E+03	-	4,540	1.3E+00	-	19	5.6E-03	-	297	8.8E-02	-	1,880	5.5E-01	-	392	1.2E-01	-
Lead	9.4E+02	-	3,080 J	**3.3E+00**	-	7.7 B	8.2E-03	-	84.2	8.9E-02	-	2,090	**2.2E+00**	-	509	5.4E-01	-
Manganese	6.2E+03	-	1,740	2.8E-01	-	340	5.5E-02	-	10,200	**1.6E+00**	-	2,700	4.4E-01	-	894	1.4E-01	-
Mercury	6.8E+02	-	0.1 U	1.5E-04	-	NA	-	-	0.0251 U	3.7E-05	-	0.178 J	2.6E-04	-	0.015 U	2.2E-05	-
Zinc	1.0E+05	-	63,500	6.2E-01	-	42 J	4.1E-04	-	22,200	2.2E-01	-	20,900	2.1E-01	-	12,700	1.2E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	1.6 U	-	8.0E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	1.6 U	-	8.0E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	1.6 U	-	8.0E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	1.6 U	-	8.0E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	1.6 U	-	8.0E-11	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	1.6 U	-	8.0E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	1.6 U	-	8.0E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	1.6 U	2.2E-02	3.7E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	**2.8E+00**	-	-	2.9E-03	-	-	**1.9E+00**	-	-	5.7E-01	-	-	1.4E-01	-
Total PAH Risk	-		-	-	1.9E-07	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.1E-06	-	-	1.2E-08	-	-	2.0E-07	-	-	3.8E-07	-	-	1.4E-07

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

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OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		K-05			L-02			L-03			L-04			L-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	29.4 J	2.0E-01	1.5E-07	210 J	1.5E+00	1.1E-06	98 J	6.8E-01	5.0E-07	78.8	5.5E-01	4.0E-07	106	7.4E-01	5.4E-07
Barium	6.6E+04	-	339	5.1E-03	-	290	4.4E-03	-	430	6.5E-03	-	334	5.1E-03	-	7,040	1.1E-01	-
Cadmium	1.5E+02	1.8E+05	22.6 J	1.5E-01	1.3E-10	23	1.6E-01	1.3E-10	1.7 B	1.2E-02	9.7E-12	11.3	7.7E-02	6.4E-11	29.2	2.0E-01	1.7E-10
Cobalt	9.3E+02	3.5E+04	7.3	7.9E-03	2.1E-10	15	1.6E-02	4.3E-10	110	1.2E-01	3.1E-09	27	2.9E-02	7.7E-10	NA	-	-
Copper	3.4E+03	-	280	8.3E-02	-	780	2.3E-01	-	4,200	1.2E+00	-	638	1.9E-01	-	626	1.8E-01	-
Lead	9.4E+02	-	500 J	5.3E-01	-	16,000	**1.7E+01**	-	12,000	**1.3E+01**	-	3,730	**4.0E+00**	-	814	8.7E-01	-
Manganese	6.2E+03	-	425	6.9E-02	-	2,200	3.5E-01	-	16,000	**2.6E+00**	-	1,060	1.7E-01	-	772	1.2E-01	-
Mercury	6.8E+02	-	0.132 J	2.0E-04	-	1.1 J	1.6E-03	-	0.016 UJ	2.4E-05	-	0.0896 J	1.3E-04	-	NA	-	-
Zinc	1.0E+05	-	7,520	7.4E-02	-	8,600	8.5E-02	-	59,000	5.8E-01	-	30,700	3.0E-01	-	3,640 J	3.6E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.055 J	-	2.8E-10	0.2 J	-	1.0E-09	0.34 U	-	1.7E-09	0.22 J	-	1.1E-09	NA	-	-
Benzo(a)pyrene	-	2.0E+01	0.061 J	-	3.1E-09	0.11 J	-	5.5E-09	0.34 U	-	1.7E-08	0.13 J	-	6.5E-09	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	0.14 J	-	7.0E-10	0.17 J	-	8.5E-10	0.34 U	-	1.7E-09	0.16 J	-	8.0E-10	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	0.045 U	-	2.3E-11	0.15 J	-	7.5E-11	0.34 U	-	1.7E-10	0.15 J	-	7.5E-11	NA	-	-
Chrysene	-	2.0E+04	0.085 J	-	4.3E-12	0.26 J	-	1.3E-11	0.34 U	-	1.7E-11	0.3 J	-	1.5E-11	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	0.045 U	-	2.3E-09	0.39 U	-	2.0E-08	0.34 U	-	1.7E-08	0.041 U	-	2.1E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.045 U	-	2.3E-10	0.066 J	-	3.3E-10	0.34 U	-	1.7E-09	0.051 J	-	2.6E-10	NA	-	-
Naphthalene	7.3E+01	4.3E+02	0.045 U	6.2E-04	1.0E-10	0.077 J	1.1E-03	1.8E-10	0.34 U	4.7E-03	7.8E-10	0.12 J	1.7E-03	2.8E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.6E-01	-	-	1.6E-01	-	-	1.8E-02	-	-	8.2E-02	-	-	3.1E-01	-
Total PAH Risk	-		-	-	6.6E-09	-	-	2.7E-08	-	-	4.0E-08	-	-	1.1E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.6E-07	-	-	1.1E-06	-	-	5.4E-07	-	-	4.1E-07	-	-	5.4E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		LY-1			M-01			M-02			M-03			M-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	524	**3.7E+00**	*2.7E-06*	116	8.1E-01	5.9E-07	66.2	4.6E-01	3.4E-07	61.1	4.3E-01	3.1E-07	15.2	1.1E-01	7.7E-08
Barium	6.6E+04	-	61	9.2E-04	-	199	3.0E-03	-	4,160	6.3E-02	-	15,700	2.4E-01	-	575	8.7E-03	-
Cadmium	1.5E+02	1.8E+05	1.4 U	9.6E-03	8.0E-12	459	**3.1E+00**	2.6E-09	130	8.9E-01	7.4E-10	298	**2.0E+00**	1.7E-09	76.4	5.2E-01	4.3E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	26	2.8E-02	7.4E-10	19.6	2.1E-02	5.6E-10	NA	-	-	9.3 J	1.0E-02	2.6E-10
Copper	3.4E+03	-	2,990	8.8E-01	-	1,580	4.7E-01	-	2,360	7.0E-01	-	574	1.7E-01	-	206 J	6.1E-02	-
Lead	9.4E+02	-	1,870	**2.0E+00**	-	1,720	**1.8E+00**	-	3,320	**3.5E+00**	-	4,520	**4.8E+00**	-	546	5.8E-01	-
Manganese	6.2E+03	-	1,210	2.0E-01	-	1,910	3.1E-01	-	2,560	4.1E-01	-	851	1.4E-01	-	352	5.7E-02	-
Mercury	6.8E+02	-	NA	-	-	2.16	3.2E-03	-	0.12	1.8E-04	-	NA	-	-	0.12	1.8E-04	-
Zinc	1.0E+05	-	6,770	6.7E-02	-	57,900	5.7E-01	-	14,600 J	1.4E-01	-	34,600 J	3.4E-01	-	11,200 J	1.1E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	0.068 U	-	3.4E-10	0.36 J	-	1.8E-09	NA	-	-	0.28 J	-	1.4E-09
Benzo(a)pyrene	-	2.0E+01	NA	-	-	0.068 U	-	3.4E-09	0.38 J	-	1.9E-08	NA	-	-	0.27 J	-	1.4E-08
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	0.068 U	-	3.4E-10	0.58	-	2.9E-09	NA	-	-	0.41 J	-	2.1E-09
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	0.068 U	-	3.4E-11	0.22 J	-	1.1E-10	NA	-	-	0.14 J	-	7.0E-11
Chrysene	-	2.0E+04	NA	-	-	0.068 U	-	3.4E-12	0.47	-	2.4E-11	NA	-	-	0.32 J	-	1.6E-11
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	0.068 U	-	3.4E-09	0.092 J	-	4.6E-09	NA	-	-	0.057 J	-	2.9E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	0.068 U	-	3.4E-10	0.27 J	-	1.4E-09	NA	-	-	0.15 J	-	7.5E-10
Naphthalene	7.3E+01	4.3E+02	NA	-	-	0.39 J	5.4E-03	9.0E-10	0.04 U	5.5E-04	9.2E-11	NA	-	-	0.43 U	5.9E-03	9.9E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	1.1E-02	-	-	**3.1E+00**	-	-	9.5E-01	-	-	**2.3E+00**	-	-	5.3E-01	-
Total PAH Risk	-		-	-	-	-	-	8.8E-09	-	-	3.0E-08	-	-	-	-	-	2.2E-08
Total (PAH + Arsenic) Risk	-		-	-	*2.7E-06*	-	-	6.0E-07	-	-	3.7E-07	-	-	3.1E-07	-	-	9.9E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		N-02			N-03			P-01			P-02			P-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	335	**2.3E+00**	*1.7E-06*	344	**2.4E+00**	*1.7E-06*	3 J	2.1E-02	1.5E-08	4.2	2.9E-02	2.1E-08	4.1 J	2.9E-02	2.1E-08
Barium	6.6E+04	-	56	8.5E-04	-	125 J	1.9E-03	-	75 J	1.1E-03	-	8.14 J	1.2E-04	-	110 J	1.7E-03	-
Cadmium	1.5E+02	1.8E+05	2.7 J	1.8E-02	1.5E-11	12 U	8.2E-02	6.8E-11	1 B	6.8E-03	5.7E-12	0.58 J	4.0E-03	3.3E-12	0.81 B	5.5E-03	4.6E-12
Cobalt	9.3E+02	3.5E+04	56.5	6.1E-02	1.6E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	8,890	**2.6E+00**	-	15,200	**4.5E+00**	-	7.2 J	2.1E-03	-	9.3	2.7E-03	-	10 J	2.9E-03	-
Lead	9.4E+02	-	10,600	**1.1E+01**	-	2,710	**2.9E+00**	-	8.9 J	9.5E-03	-	6.2	6.6E-03	-	13 J	1.4E-02	-
Manganese	6.2E+03	-	2,420	3.9E-01	-	4,810	7.8E-01	-	220 J	3.5E-02	-	276	4.5E-02	-	230 J	3.7E-02	-
Mercury	6.8E+02	-	0.0072 U	1.1E-05	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	13,500	1.3E-01	-	13,400 J	1.3E-01	-	170	1.7E-03	-	32	3.1E-04	-	100	9.8E-04	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.9E-02	-	-	8.4E-02	-	-	8.0E-03	-	-	4.1E-03	-	-	7.2E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*1.7E-06*	-	-	*1.7E-06*	-	-	1.5E-08	-	-	2.1E-08	-	-	2.1E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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mg/kg = milligrams per kilogram

Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		P-04			PZ-01(S)			PZ-02(S)			PZ-03(I)			PZ-04(I)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	5 J	3.5E-02	2.5E-08	1.8 J	1.3E-02	9.1E-09	2.6	1.8E-02	1.3E-08	37.5	2.6E-01	1.9E-07	7	4.9E-02	3.6E-08
Barium	6.6E+04	-	200 J	3.0E-03	-	29	4.4E-04	-	57	8.6E-04	-	1,110	1.7E-02	-	56	8.5E-04	-
Cadmium	1.5E+02	1.8E+05	0.67 B	4.6E-03	3.8E-12	17	1.2E-01	9.7E-11	17.7 J	1.2E-01	1.0E-10	12.8	8.8E-02	7.3E-11	3.7	2.5E-02	2.1E-11
Cobalt	9.3E+02	3.5E+04	NA	-	-	3.6 B	3.9E-03	1.0E-10	NA	-	-	11.6 J	1.3E-02	3.3E-10	NA	-	-
Copper	3.4E+03	-	9.9 J	2.9E-03	-	8.1	2.4E-03	-	9.4	2.8E-03	-	853	2.5E-01	-	59.8	1.8E-02	-
Lead	9.4E+02	-	36 J	3.8E-02	-	4.8 B	5.1E-03	-	7.8	8.3E-03	-	1,150	1.2E+00	-	61.9	6.6E-02	-
Manganese	6.2E+03	-	300 J	4.8E-02	-	190	3.1E-02	-	227 J	3.7E-02	-	659	1.1E-01	-	193	3.1E-02	-
Mercury	6.8E+02	-	NA	-	-	0.11 UJ	1.6E-04	-	NA	-	-	0.0546 U	8.1E-05	-	NA	-	-
Zinc	1.0E+05	-	94	9.2E-04	-	3,600	3.5E-02	-	2,760	2.7E-02	-	2,640	2.6E-02	-	1,100	1.1E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	7.6E-03	-	-	1.2E-01	-	-	1.2E-01	-	-	1.0E-01	-	-	2.6E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.5E-08	-	-	9.1E-09	-	-	1.3E-08	-	-	1.9E-07	-	-	3.6E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
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Table C1-4:
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OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		PZ-04(S)			SB-04			SB-09			SS-02			SS-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	4.6 U	3.2E-02	2.3E-08	15.7 N	1.1E-01	8.0E-08	72	5.0E-01	3.7E-07	189	1.3E+00	9.6E-07	180	1.3E+00	9.1E-07
Barium	6.6E+04	-	77	1.2E-03	-	508	7.7E-03	-	1,630	2.5E-02	-	3,260 J	4.9E-02	-	6,590 J	1.0E-01	-
Cadmium	1.5E+02	1.8E+05	0.58 J	4.0E-03	3.3E-12	13.7 N	9.4E-02	7.8E-11	57.5	3.9E-01	3.3E-10	1,220	**8.4E+00**	6.9E-09	1,370	**9.4E+00**	7.8E-09
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	4.6 J	5.0E-03	1.3E-10	14.1	1.5E-02	4.0E-10	31	3.3E-02	8.8E-10
Copper	3.4E+03	-	12.8	3.8E-03	-	124 N	3.7E-02	-	367	1.1E-01	-	3,410	1.0E+00	-	3,640	1.1E+00	-
Lead	9.4E+02	-	11.3	1.2E-02	-	236 J	2.5E-01	-	5,430	**5.8E+00**	-	23,200 J	**2.5E+01**	-	9,380 J	**1.0E+01**	-
Manganese	6.2E+03	-	774	1.2E-01	-	346 N	5.6E-02	-	1,100	1.8E-01	-	661 J	1.1E-01	-	1,580 J	2.5E-01	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	0.11 U	1.6E-04	-	8.6	1.3E-02	-	0.52	7.7E-04	-
Zinc	1.0E+05	-	2,450	2.4E-02	-	1,360 J	1.3E-02	-	19,500	1.9E-01	-	37,400 J	3.7E-01	-	52,900 J	5.2E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	0.4 U	-	2.0E-09	0.045 U	-	2.3E-10	1.2	-	6.0E-09
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	0.4 U	-	2.0E-08	0.045 U	-	2.3E-09	0.31 J	-	1.6E-08
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	0.4 U	-	2.0E-09	0.053 J	-	2.7E-10	0.71	-	3.6E-09
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	0.4 U	-	2.0E-10	0.045 U	-	2.3E-11	0.21 J	-	1.1E-10
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	0.4 U	-	2.0E-11	0.06 J	-	3.0E-12	1.6	-	8.0E-11
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	0.045 U	-	2.3E-09	0.081 J	-	4.1E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	0.4 U	-	2.0E-09	0.045 U	-	2.3E-10	0.15 J	-	7.5E-10
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	0.4 U	5.5E-03	9.2E-10	0.045 U	6.2E-04	1.0E-10	0.042 U	5.8E-04	9.7E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	5.1E-03	-	-	1.0E-01	-	-	4.2E-01	-	-	**8.4E+00**	-	-	**9.5E+00**	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	2.7E-08	-	-	5.4E-09	-	-	3.0E-08
Total (PAH + Arsenic) Risk	-		-	-	2.3E-08	-	-	8.0E-08	-	-	3.9E-07	-	-	9.6E-07	-	-	9.4E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-17A			SS-21			SS-27A			SS-30A			SS-50A		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	133	9.3E-01	6.7E-07	3.8 U	2.6E-02	1.9E-08	3.3 U	2.3E-02	1.7E-08	15 U	1.0E-01	7.6E-08	69 J	4.8E-01	3.5E-07
Barium	6.6E+04	-	172	2.6E-03	-	1,490 J	2.3E-02	-	982 J	1.5E-02	-	677 J	1.0E-02	-	284 J	4.3E-03	-
Cadmium	1.5E+02	1.8E+05	93.7	6.4E-01	5.3E-10	951	**6.5E+00**	5.4E-09	1,080	**7.4E+00**	6.1E-09	3,960	**2.7E+01**	2.2E-08	1,390	**9.5E+00**	7.9E-09
Cobalt	9.3E+02	3.5E+04	39.9	4.3E-02	1.1E-09	1,160	1.3E+00	3.3E-08	533	5.7E-01	1.5E-08	164	1.8E-01	4.7E-09	48.9 J	5.3E-02	1.4E-09
Copper	3.4E+03	-	4,380	1.3E+00	-	24,100 J	**7.1E+00**	-	22,800 J	**6.7E+00**	-	27,700 J	**8.2E+00**	-	4,170	1.2E+00	-
Lead	9.4E+02	-	3,080	**3.3E+00**	-	32,400 J	**3.4E+01**	-	22,400 J	**2.4E+01**	-	12,900 J	**1.4E+01**	-	4,340	**4.6E+00**	-
Manganese	6.2E+03	-	1,280	2.1E-01	-	32,600 J	**5.3E+00**	-	13,200 J	**2.1E+00**	-	6,070 J	9.8E-01	-	2,270 J	3.7E-01	-
Mercury	6.8E+02	-	0.0243 J	3.6E-05	-	2	3.0E-03	-	7.7	1.1E-02	-	0.36	5.3E-04	-	0.0973 J	1.4E-04	-
Zinc	1.0E+05	-	21,700	2.1E-01	-	123,000	1.2E+00	-	90,000	8.8E-01	-	150,000	1.5E+00	-	185,000	**1.8E+00**	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.47 J	-	2.4E-09	NA	-	-	NA	-	-	NA	-	-	0.15 J	-	7.5E-10
Benzo(a)pyrene	-	2.0E+01	0.054 U	-	2.7E-09	NA	-	-	NA	-	-	NA	-	-	0.11 J	-	5.5E-09
Benzo(b)fluoranthene	-	2.0E+02	0.083 J	-	4.2E-10	NA	-	-	NA	-	-	NA	-	-	0.062 U	-	3.1E-10
Benzo(k)fluoranthene	-	2.0E+03	0.054 U	-	2.7E-11	NA	-	-	NA	-	-	NA	-	-	0.062 U	-	3.1E-11
Chrysene	-	2.0E+04	0.46 J	-	2.3E-11	NA	-	-	NA	-	-	NA	-	-	0.25 J	-	1.3E-11
Dibenz(a,h)anthracene	-	2.0E+01	0.054 U	-	2.7E-09	NA	-	-	NA	-	-	NA	-	-	0.062 U	-	3.1E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.054 U	-	2.7E-10	NA	-	-	NA	-	-	NA	-	-	0.071 J	-	3.6E-10
Naphthalene	7.3E+01	4.3E+02	4.1	5.6E-02	9.4E-09	NA	-	-	NA	-	-	NA	-	-	0.062 U	8.5E-04	1.4E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	6.4E-01	-	-	**6.5E+00**	-	-	**7.4E+00**	-	-	**2.7E+01**	-	-	**9.5E+00**	-
Total PAH Risk	-		-	-	1.8E-08	-	-	-	-	-	-	-	-	-	-	-	1.0E-08
Total (PAH + Arsenic) Risk	-		-	-	6.9E-07	-	-	1.9E-08	-	-	1.7E-08	-	-	7.6E-08	-	-	3.6E-07

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

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Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-51A			TP-100			TP-105			TP-107			TP-112		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	94 J	6.6E-01	4.8E-07	5.3	3.7E-02	2.7E-08	8.8	6.1E-02	4.5E-08	2.4	1.7E-02	1.2E-08	8.4	5.9E-02	4.3E-08
Barium	6.6E+04	-	840 J	1.3E-02	-	656	9.9E-03	-	63.5	9.6E-04	-	18.3 J	2.8E-04	-	37	5.6E-04	-
Cadmium	1.5E+02	1.8E+05	625	**4.3E+00**	3.6E-09	34.3	2.3E-01	1.9E-10	9.3	6.4E-02	5.3E-11	22.5	1.5E-01	1.3E-10	16.6	1.1E-01	9.4E-11
Cobalt	9.3E+02	3.5E+04	47 J	5.1E-02	1.3E-09	5.9	6.4E-03	1.7E-10	5 J	5.4E-03	1.4E-10	4 J	4.3E-03	1.1E-10	4.7 J	5.1E-03	1.3E-10
Copper	3.4E+03	-	6,000	**1.8E+00**	-	19.9	5.9E-03	-	49.7	1.5E-02	-	25.9	7.6E-03	-	9.9	2.9E-03	-
Lead	9.4E+02	-	3,890	**4.1E+00**	-	86.7	9.2E-02	-	147	1.6E-01	-	9.7	1.0E-02	-	9	9.6E-03	-
Manganese	6.2E+03	-	2,330 J	3.8E-01	-	561	9.0E-02	-	767	1.2E-01	-	548	8.8E-02	-	903	1.5E-01	-
Mercury	6.8E+02	-	0.13 J	1.9E-04	-	0.12 U	1.8E-04	-	0.046 J	6.8E-05	-	0.12 U	1.8E-04	-	0.048 J	7.1E-05	-
Zinc	1.0E+05	-	133,000	1.3E+00	-	1,730	1.7E-02	-	3,630	3.6E-02	-	2,370	2.3E-02	-	3,000	2.9E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.051 UB	-	2.6E-10	0.4 U	-	2.0E-09	0.4 U	-	2.0E-09	0.39 U	-	2.0E-09	0.39 U	-	2.0E-09
Benzo(a)pyrene	-	2.0E+01	0.051 UB	-	2.6E-09	0.4 U	-	2.0E-08	0.4 U	-	2.0E-08	0.39 U	-	2.0E-08	0.39 U	-	2.0E-08
Benzo(b)fluoranthene	-	2.0E+02	0.051 UB	-	2.6E-10	0.4 U	-	2.0E-09	0.4 U	-	2.0E-09	0.39 U	-	2.0E-09	0.39 U	-	2.0E-09
Benzo(k)fluoranthene	-	2.0E+03	0.051 UB	-	2.6E-11	0.4 U	-	2.0E-10	0.4 U	-	2.0E-10	0.39 U	-	2.0E-10	0.39 U	-	2.0E-10
Chrysene	-	2.0E+04	0.051 UB	-	2.6E-12	0.4 U	-	2.0E-11	0.4 U	-	2.0E-11	0.39 U	-	2.0E-11	0.39 U	-	2.0E-11
Dibenz(a,h)anthracene	-	2.0E+01	0.051 UB	-	2.6E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.051 UB	-	2.6E-10	0.4 U	-	2.0E-09	0.4 U	-	2.0E-09	0.39 U	-	2.0E-09	0.39 U	-	2.0E-09
Naphthalene	7.3E+01	4.3E+02	1.1 J	1.5E-02	2.5E-09	0.4 U	5.5E-03	9.2E-10	0.4 U	5.5E-03	9.2E-10	0.39 U	5.4E-03	9.0E-10	0.39 U	5.4E-03	9.0E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	**4.3E+00**	-	-	2.4E-01	-	-	6.5E-02	-	-	1.5E-01	-	-	1.1E-01	-
Total PAH Risk	-		-	-	8.4E-09	-	-	2.7E-08	-	-	2.7E-08	-	-	2.7E-08	-	-	2.7E-08
Total (PAH + Arsenic) Risk	-		-	-	4.9E-07	-	-	5.4E-08	-	-	7.2E-08	-	-	3.9E-08	-	-	6.9E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		TP-113			TP-114			TP-115			TP-116			TP-117		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	9.5	6.6E-02	4.8E-08	32.5	2.3E-01	1.6E-07	NA	-	-	NA	-	-	NA	-	-
Barium	6.6E+04	-	3,890	5.9E-02	-	7,460	1.1E-01	-	372 J	5.6E-03	-	297 J	4.5E-03	-	76.4 J	1.2E-03	-
Cadmium	1.5E+02	1.8E+05	22.2	1.5E-01	1.3E-10	105	7.2E-01	6.0E-10	44.4 J	3.0E-01	2.5E-10	30.6 J	2.1E-01	1.7E-10	61.8 J	4.2E-01	3.5E-10
Cobalt	9.3E+02	3.5E+04	113	1.2E-01	3.2E-09	9.5	1.0E-02	2.7E-10	NA	-	-	10.2	1.1E-02	2.9E-10	NA	-	-
Copper	3.4E+03	-	281	8.3E-02	-	263	7.8E-02	-	14.6 J	4.3E-03	-	22.6 J	6.7E-03	-	30.2 J	8.9E-03	-
Lead	9.4E+02	-	89.5	9.5E-02	-	637	6.8E-01	-	48.3 J	5.1E-02	-	63.2 J	6.7E-02	-	81.9 J	8.7E-02	-
Manganese	6.2E+03	-	3,070	5.0E-01	-	665	1.1E-01	-	646 J	1.0E-01	-	1,030 J	1.7E-01	-	270 J	4.4E-02	-
Mercury	6.8E+02	-	0.17	2.5E-04	-	7.7	1.1E-02	-	NA	-	-	0.04 J	5.9E-05	-	NA	-	-
Zinc	1.0E+05	-	8,390	8.2E-02	-	13,700	1.3E-01	-	1,820 J	1.8E-02	-	3,870 J	3.8E-02	-	3,080 J	3.0E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	0.49 U	-	2.5E-09	0.44	-	2.2E-09	NA	-	-	0.22 U	-	1.1E-09	NA	-	-
Benzo(a)pyrene	-	2.0E+01	0.49 U	-	2.5E-08	0.43 J	-	2.2E-08	NA	-	-	0.22 U	-	1.1E-08	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	0.49 U	-	2.5E-09	0.6	-	3.0E-09	NA	-	-	0.22 U	-	1.1E-09	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	0.49 U	-	2.5E-10	0.49	-	2.5E-10	NA	-	-	0.22 U	-	1.1E-10	NA	-	-
Chrysene	-	2.0E+04	0.49 U	-	2.5E-11	0.58	-	2.9E-11	NA	-	-	0.22 U	-	1.1E-11	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	0.49 U	-	2.5E-09	0.35 J	-	1.8E-09	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	0.49 U	6.7E-03	1.1E-09	0.43 U	5.9E-03	9.9E-10	NA	-	-	0.22 U	3.0E-03	5.1E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.1E-01	-	-	8.3E-01	-	-	3.1E-01	-	-	2.1E-01	-	-	4.2E-01	-
Total PAH Risk	-		-	-	3.3E-08	-	-	3.0E-08	-	-	-	-	-	1.4E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	8.1E-08	-	-	1.9E-07	-	-	-	-	-	-	-	-	-

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

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Table C1-4:
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(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		TP-118			TP-119			TP-125			TP-128			W-01(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	NA	-	-	NA	-	-	1.7	1.2E-02	8.6E-09	56.1	3.9E-01	2.8E-07	10.1 J	7.0E-02	5.1E-08
Barium	6.6E+04	-	207 J	3.1E-03	-	4,110 J	6.2E-02	-	89.8	1.4E-03	-	2,290	3.5E-02	-	50	7.6E-04	-
Cadmium	1.5E+02	1.8E+05	10.7 J	7.3E-02	6.1E-11	56.5 J	3.9E-01	3.2E-10	0.39 J	2.7E-03	2.2E-12	155	1.1E+00	8.8E-10	25.7	1.8E-01	1.5E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	7.7	8.3E-03	2.2E-10	24.7	2.7E-02	7.0E-10	NA	-	-
Copper	3.4E+03	-	21.1 J	6.2E-03	-	61.4 J	1.8E-02	-	8.6	2.5E-03	-	1,330	3.9E-01	-	60.2	1.8E-02	-
Lead	9.4E+02	-	67.4 J	7.2E-02	-	505 J	5.4E-01	-	9.2	9.8E-03	-	2,290	**2.4E+00**	-	205	2.2E-01	-
Manganese	6.2E+03	-	676 J	1.1E-01	-	415 J	6.7E-02	-	113	1.8E-02	-	1,150	1.9E-01	-	312	5.0E-02	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	0.12 U	1.8E-04	-	0.68	1.0E-03	-	NA	-	-
Zinc	1.0E+05	-	936 J	9.2E-03	-	4,950 J	4.9E-02	-	180	1.8E-03	-	21,300	2.1E-01	-	2,270	2.2E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	0.2 U	-	1.0E-09	0.96 U	-	4.8E-09	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	0.2 U	-	1.0E-08	0.96 U	-	4.8E-08	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	0.2 U	-	1.0E-09	0.96 U	-	4.8E-09	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	0.2 U	-	1.0E-10	0.96 U	-	4.8E-10	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	0.2 U	-	1.0E-11	0.96 U	-	4.8E-11	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	0.2 U	2.8E-03	4.6E-10	0.96 U	1.3E-02	2.2E-09	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	7.6E-02	-	-	4.5E-01	-	-	4.0E-03	-	-	1.1E+00	-	-	1.8E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	1.3E-08	-	-	6.0E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	-	-	-	-	-	-	2.1E-08	-	-	3.4E-07	-	-	5.1E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
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mg/kg = milligrams per kilogram

Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-02(S)			W-05(S)			W-06(S)			W-08(S)			W-09(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	6.8 J	4.7E-02	3.4E-08	5.9	4.1E-02	3.0E-08	3.4 J	2.4E-02	1.7E-08	230 J	**1.6E+00**	1.2E-06	409	**2.9E+00**	*2.1E-06*
Barium	6.6E+04	-	58	8.8E-04	-	51	7.7E-04	-	48	7.3E-04	-	100	1.5E-03	-	55	8.3E-04	-
Cadmium	1.5E+02	1.8E+05	0.45 J	3.1E-03	2.6E-12	0.83 J	5.7E-03	4.7E-12	20	1.4E-01	1.1E-10	2.4 B	1.6E-02	1.4E-11	1.2 U	8.2E-03	6.8E-12
Cobalt	9.3E+02	3.5E+04	6	6.5E-03	1.7E-10	NA	-	-	0.43 B	4.6E-04	1.2E-11	37.7	4.1E-02	1.1E-09	60.7	6.5E-02	1.7E-09
Copper	3.4E+03	-	13.1	3.9E-03	-	16.1	4.7E-03	-	20	5.9E-03	-	14,800	**4.4E+00**	-	7,750	**2.3E+00**	-
Lead	9.4E+02	-	13.6	1.4E-02	-	10.1	1.1E-02	-	13	1.4E-02	-	10,000 J	**1.1E+01**	-	9,410	**1.0E+01**	-
Manganese	6.2E+03	-	403	6.5E-02	-	482	7.8E-02	-	350	5.6E-02	-	802	1.3E-01	-	1,780	2.9E-01	-
Mercury	6.8E+02	-	0.0122 J	1.8E-05	-	NA	-	-	0.056 UJ	8.3E-05	-	0.0068 U	1.0E-05	-	0.0068 U	1.0E-05	-
Zinc	1.0E+05	-	55	5.4E-04	-	41	4.0E-04	-	1,500	1.5E-02	-	21,800	2.1E-01	-	12,600	1.2E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.0E-03	-	-	6.5E-03	-	-	1.4E-01	-	-	1.8E-02	-	-	9.0E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.4E-08	-	-	3.0E-08	-	-	1.7E-08	-	-	1.2E-06	-	-	*2.1E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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RSV = Risk-based Screening Value
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HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-10(S)			W-11(S)			W-12(S)			W-13(S)			W-14(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	169	1.2E+00	8.6E-07	424	**3.0E+00**	*2.2E-06*	3.7	2.6E-02	1.9E-08	4	2.8E-02	2.0E-08	5.6	3.9E-02	2.8E-08
Barium	6.6E+04	-	31	4.7E-04	-	55	8.3E-04	-	41	6.2E-04	-	89	1.3E-03	-	51	7.7E-04	-
Cadmium	1.5E+02	1.8E+05	0.23 U	1.6E-03	1.3E-12	5.3 J	3.6E-02	3.0E-11	0.51 J	3.5E-03	2.9E-12	7.7	5.3E-02	4.4E-11	0.53 J	3.6E-03	3.0E-12
Cobalt	9.3E+02	3.5E+04	NA	-	-	25.5	2.8E-02	7.2E-10	6.1	6.6E-03	1.7E-10	2.6 J	2.8E-03	7.4E-11	NA	-	-
Copper	3.4E+03	-	4,530 J	1.3E+00	-	3,280	9.7E-01	-	11.9	3.5E-03	-	10.1	3.0E-03	-	13.6	4.0E-03	-
Lead	9.4E+02	-	2,380	**2.5E+00**	-	10,300	**1.1E+01**	-	8.4	8.9E-03	-	31.5	3.3E-02	-	9.8	1.0E-02	-
Manganese	6.2E+03	-	1,360	2.2E-01	-	1,510	2.4E-01	-	228	3.7E-02	-	60.9	9.8E-03	-	421	6.8E-02	-
Mercury	6.8E+02	-	NA	-	-	0.0067 U	9.9E-06	-	0.0058 U	8.6E-06	-	0.25	3.7E-04	-	NA	-	-
Zinc	1.0E+05	-	3,450	3.4E-02	-	4,030	4.0E-02	-	31	3.0E-04	-	396	3.9E-03	-	266 J	2.6E-03	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	2.1E-10	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	2.1E-09	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	2.1E-10	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	2.1E-11	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	2.1E-12	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	2.1E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	2.1E-10	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	0.042 U	5.8E-04	9.7E-11	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.0E-03	-	-	3.7E-02	-	-	4.1E-03	-	-	5.4E-02	-	-	4.4E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	5.0E-09	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	8.6E-07	-	-	*2.2E-06*	-	-	1.9E-08	-	-	2.5E-08	-	-	2.8E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-15(S)			W-16(S)			W-17(D)			W-18(S)			W-19(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	5.1	3.6E-02	2.6E-08	3.5	2.4E-02	1.8E-08	3.5 J	2.4E-02	1.8E-08	40.9	2.9E-01	2.1E-07	26 J	1.8E-01	1.3E-07
Barium	6.6E+04	-	52	7.9E-04	-	88	1.3E-03	-	76	1.1E-03	-	756	1.1E-02	-	474 J	7.2E-03	-
Cadmium	1.5E+02	1.8E+05	3.7	2.5E-02	2.1E-11	0.98 J	6.7E-03	5.6E-12	19.9	1.4E-01	1.1E-10	392	**2.7E+00**	2.2E-09	92.8 J	6.4E-01	5.3E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	8	8.6E-03	2.3E-10	9.3	1.0E-02	2.6E-10	7.7	8.3E-03	2.2E-10
Copper	3.4E+03	-	13.9	4.1E-03	-	16.4	4.8E-03	-	16.5	4.9E-03	-	111	3.3E-02	-	262 J	7.7E-02	-
Lead	9.4E+02	-	9.8	1.0E-02	-	11.3	1.2E-02	-	10.3	1.1E-02	-	2,210	**2.3E+00**	-	1,130 J	1.2E+00	-
Manganese	6.2E+03	-	405	6.5E-02	-	601	9.7E-02	-	401	6.5E-02	-	880	1.4E-01	-	756	1.2E-01	-
Mercury	6.8E+02	-	NA	-	-	0.0166 J	2.5E-05	-	0.019 J	2.8E-05	-	9.3	1.4E-02	-	0.0378 U	5.6E-05	-
Zinc	1.0E+05	-	173 J	1.7E-03	-	57	5.6E-04	-	2,250	2.2E-02	-	7,690	7.6E-02	-	20,500 J	2.0E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.16 J	-	8.0E-10	0.75	-	3.8E-09
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	0.14 J	-	7.0E-09	0.5	-	2.5E-08
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.23 J	-	1.2E-09	0.86	-	4.3E-09
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	0.083 J	-	4.2E-11	0.34 J	-	1.7E-10
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	0.19 J	-	9.5E-12	0.92	-	4.6E-11
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	0.042 UJ	-	2.1E-09	0.12 J	-	6.0E-09
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	0.12 J	-	6.0E-10	0.41	-	2.1E-09
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	0.042 UJ	5.8E-04	9.7E-11	0.088 J	1.2E-03	2.0E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	2.6E-02	-	-	8.0E-03	-	-	1.4E-01	-	-	**2.7E+00**	-	-	6.4E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	1.2E-08	-	-	4.2E-08
Total (PAH + Arsenic) Risk	-		-	-	2.6E-08	-	-	1.8E-08	-	-	1.8E-08	-	-	2.2E-07	-	-	1.7E-07

Notes:

Risk:

- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):

- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-20(I)			W-21(D)			W-22(S)			Z-01			Z-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	94.7	6.6E-01	4.8E-07	5.1	3.6E-02	2.6E-08	13.4 J	9.3E-02	6.8E-08	NA	-	-	NA	-	-
Barium	6.6E+04	-	421	6.4E-03	-	90	1.4E-03	-	860	1.3E-02	-	162	2.5E-03	-	11,300	1.7E-01	-
Cadmium	1.5E+02	1.8E+05	2,310	**1.6E+01**	1.3E-08	94.9	6.5E-01	5.4E-10	3.9	2.7E-02	2.2E-11	8.8	6.0E-02	5.0E-11	32	2.2E-01	1.8E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	8.7	9.4E-03	2.5E-10	NA	-	-	NA	-	-
Copper	3.4E+03	-	7,850	**2.3E+00**	-	20.1	5.9E-03	-	35.3	1.0E-02	-	NA	-	-	NA	-	-
Lead	9.4E+02	-	11,500	**1.2E+01**	-	18.6	2.0E-02	-	46.3	4.9E-02	-	67	7.1E-02	-	2,120	**2.3E+00**	-
Manganese	6.2E+03	-	174,000	**2.8E+01**	-	901	1.5E-01	-	1,250	2.0E-01	-	NA	-	-	NA	-	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	0.0408 J	6.0E-05	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	118,000	1.2E+00	-	2,230	2.2E-02	-	792	7.8E-03	-	1,570	1.5E-02	-	13,100	1.3E-01	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	**1.6E+01**	-	-	6.5E-01	-	-	4.0E-02	-	-	6.3E-02	-	-	3.9E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	4.8E-07	-	-	2.6E-08	-	-	6.8E-08	-	-	-	-	-	-

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
R = The result was considered unusable during the quality assurance review.
N = Presumptive evidence of the presence of the compund.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		Z-03			Z-04			Z-05			Z-06			Z-07		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Barium	6.6E+04	-	30.8	4.7E-04	-	71.9	1.1E-03	-	734	1.1E-02	-	78.9	1.2E-03	-	31.9	4.8E-04	-
Cadmium	1.5E+02	1.8E+05	2 U	1.4E-02	1.1E-11	7.9	5.4E-02	4.5E-11	90.5	6.2E-01	5.1E-10	40.9	2.8E-01	2.3E-10	1.8 B	1.2E-02	1.0E-11
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	3.4E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Lead	9.4E+02	-	15 B	1.6E-02	-	11 B	1.2E-02	-	3,430	**3.6E+00**	-	11 B	1.2E-02	-	10 B	1.1E-02	-
Manganese	6.2E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+05	-	101	9.9E-04	-	2,790	2.7E-02	-	20,300	2.0E-01	-	1,470	1.4E-02	-	446	4.4E-03	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.4E-02	-	-	5.5E-02	-	-	6.3E-01	-	-	2.8E-01	-	-	1.3E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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N = Presumptive evidence of the presence of the compund.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		Z-08			Z-09			Z-10			Z-11			Z-12		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.4E+02	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	26	1.8E-01	1.3E-07
Barium	6.6E+04	-	44.5	6.7E-04	-	131,000	**2.0E+00**	-	86.1	1.3E-03	-	35.2	5.3E-04	-	344	5.2E-03	-
Cadmium	1.5E+02	1.8E+05	2.8	1.9E-02	1.6E-11	58	4.0E-01	3.3E-10	3.5	2.4E-02	2.0E-11	0.8 B	5.5E-03	4.5E-12	38	2.6E-01	2.2E-10
Cobalt	9.3E+02	3.5E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	6 U	6.5E-03	1.7E-10
Copper	3.4E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	70 B	2.1E-02	-
Lead	9.4E+02	-	12 B	1.3E-02	-	480	5.1E-01	-	13 B	1.4E-02	-	9 B	9.6E-03	-	380	4.0E-01	-
Manganese	6.2E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	310	5.0E-02	-
Mercury	6.8E+02	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.477	7.1E-04	-
Zinc	1.0E+05	-	869	8.5E-03	-	30,200	3.0E-01	-	666	6.5E-03	-	104	1.0E-03	-	4,100	4.0E-02	-
PAHs																	
Benzo(a)anthracene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	2.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	2.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	7.3E+01	4.3E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.0E-02	-	-	**2.4E+00**	-	-	2.5E-02	-	-	6.0E-03	-	-	2.7E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		A-01			A-02			A-02			A-03			A-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	4.8	2.6E-03	1.6E-08	4.3	2.3E-03	1.5E-08	4.3	2.3E-03	1.5E-08	6.3	3.4E-03	2.1E-08	7	3.7E-03	2.4E-08
Barium	8.6E+05	-	18	2.1E-05	-	54 J	6.3E-05	-	54 J	6.3E-05	-	189	2.2E-04	-	379	4.4E-04	-
Cadmium	1.9E+03	2.6E+05	0.28 J	1.5E-04	1.1E-12	4.2 J	2.2E-03	1.6E-11	4.2 J	2.2E-03	1.6E-11	11.7 J	6.1E-03	4.4E-11	16.9 J	8.9E-03	6.4E-11
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	7.9 J	1.8E-04	-	12	2.7E-04	-	12	2.7E-04	-	21.9 J	5.0E-04	-	34.5	7.8E-04	-
Lead	3.7E+03	-	10.5	2.8E-03	-	20 J	5.4E-03	-	20 J	5.4E-03	-	49.6	1.3E-02	-	81.7	2.2E-02	-
Manganese	8.1E+04	-	505	6.2E-03	-	350 J	4.3E-03	-	350 J	4.3E-03	-	413	5.1E-03	-	512	6.3E-03	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	35	3.5E-05	-	290	2.9E-04	-	290	2.9E-04	-	828	8.3E-04	-	1,320	1.3E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.7E-04	-	-	2.3E-03	-	-	2.3E-03	-	-	6.3E-03	-	-	9.3E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.6E-08	-	-	1.5E-08	-	-	1.5E-08	-	-	2.1E-08	-	-	2.4E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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* = Duplicate analysis not within control limits.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		A-05			B-01			B-02			B-03			B-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	9.1	4.9E-03	3.1E-08	4.6	2.5E-03	1.6E-08	3.4 J	1.8E-03	1.1E-08	13.3	7.1E-03	4.5E-08	8.4	4.5E-03	2.8E-08
Barium	8.6E+05	-	720	8.3E-04	-	36	4.2E-05	-	42 J	4.9E-05	-	190	2.2E-04	-	117	1.4E-04	-
Cadmium	1.9E+03	2.6E+05	18.9	9.9E-03	7.2E-11	1.47 J	7.7E-04	5.6E-12	1.5 B	7.9E-04	5.7E-12	29.3	1.5E-02	1.1E-10	28.7	1.5E-02	1.1E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	36.3 J	8.2E-04	-	9.1	2.1E-04	-	8.9 J	2.0E-04	-	440	9.9E-03	-	173	3.9E-03	-
Lead	3.7E+03	-	325	8.7E-02	-	10.1 J	2.7E-03	-	17 J	4.6E-03	-	767	2.1E-01	-	262	7.1E-02	-
Manganese	8.1E+04	-	736	9.1E-03	-	278	3.4E-03	-	290 J	3.6E-03	-	601	7.4E-03	-	501	6.2E-03	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	1,840	1.8E-03	-	115	1.2E-04	-	110	1.1E-04	-	2,450	2.5E-03	-	1,560	1.6E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.1E-02	-	-	8.1E-04	-	-	8.3E-04	-	-	1.6E-02	-	-	1.5E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.1E-08	-	-	1.6E-08	-	-	1.1E-08	-	-	4.5E-08	-	-	2.8E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		B-05			B-06			C-01			C-02			C-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	367	2.0E-01	1.2E-06	15 J	8.0E-03	5.1E-08	4.8	2.6E-03	1.6E-08	3.2	1.7E-03	1.1E-08	13.7	7.3E-03	4.6E-08
Barium	8.6E+05	-	2,110	2.4E-03	-	1,410 J	1.6E-03	-	65 J	7.5E-05	-	57	6.6E-05	-	7,150	8.3E-03	-
Cadmium	1.9E+03	2.6E+05	834	4.4E-01	3.2E-09	49.8	2.6E-02	1.9E-10	3.9 J	2.0E-03	1.5E-11	1.5 J	7.9E-04	5.7E-12	38.9	2.0E-02	1.5E-10
Cobalt	1.2E+04	5.3E+04	208	1.7E-02	3.9E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	24,400	5.5E-01	-	274 J	6.2E-03	-	17	3.8E-04	-	16.9	3.8E-04	-	286	6.5E-03	-
Lead	3.7E+03	-	44,500	**1.2E+01**	-	403 J	1.1E-01	-	21 J	5.7E-03	-	19.9	5.4E-03	-	593	1.6E-01	-
Manganese	8.1E+04	-	6,660	8.2E-02	-	845 J	1.0E-02	-	390 J	4.8E-03	-	245	3.0E-03	-	743	9.2E-03	-
Mercury	8.8E+03	-	9.6	1.1E-03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	106,000	1.1E-01	-	3,980 J	4.0E-03	-	280	2.8E-04	-	196 J	2.0E-04	-	4,650 J	4.7E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.4E-01	-	-	2.8E-02	-	-	2.1E-03	-	-	8.5E-04	-	-	2.9E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.2E-06	-	-	5.1E-08	-	-	1.6E-08	-	-	1.1E-08	-	-	4.6E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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* = Duplicate analysis not within control limits.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		C-04			C-05			D-02			D-03			D-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	230	1.2E-01	7.8E-07	96	5.1E-02	3.2E-07	14.1	7.5E-03	4.8E-08	6.7	3.6E-03	2.3E-08	3.5	1.9E-03	1.2E-08
Barium	8.6E+05	-	2,500	2.9E-03	-	8,730	1.0E-02	-	326	3.8E-04	-	228	2.6E-04	-	66	7.7E-05	-
Cadmium	1.9E+03	2.6E+05	1,180	6.2E-01	4.5E-09	49.3	2.6E-02	1.9E-10	32.5	1.7E-02	1.2E-10	16.6 J	8.7E-03	6.3E-11	1.27 J	6.7E-04	4.8E-12
Cobalt	1.2E+04	5.3E+04	1,420	1.2E-01	2.7E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	14,600	3.3E-01	-	802	1.8E-02	-	115	2.6E-03	-	89.4	2.0E-03	-	8.9	2.0E-04	-
Lead	3.7E+03	-	29,700	**8.0E+00**	-	8,730	**2.3E+00**	-	254 J	6.8E-02	-	325	8.7E-02	-	8.6	2.3E-03	-
Manganese	8.1E+04	-	67,700	8.4E-01	-	4,230	5.2E-02	-	347	4.3E-03	-	645	8.0E-03	-	305	3.8E-03	-
Mercury	8.8E+03	-	5.1	5.8E-04	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	110,000	1.1E-01	-	8,760	8.8E-03	-	9,050 J	9.1E-03	-	2,350	2.4E-03	-	104	1.0E-04	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	6.2E-01	-	-	3.6E-02	-	-	1.7E-02	-	-	9.0E-03	-	-	7.4E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	7.8E-07	-	-	3.2E-07	-	-	4.8E-08	-	-	2.3E-08	-	-	1.2E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		D-05			D-06			D-07			E-01			E-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	47.8	2.5E-02	1.6E-07	96.5	5.1E-02	3.3E-07	105	5.6E-02	3.5E-07	15.1	8.1E-03	5.1E-08	20.1	1.1E-02	6.8E-08
Barium	8.6E+05	-	3,500	4.1E-03	-	1,100	1.3E-03	-	5,200	6.0E-03	-	209	2.4E-04	-	247	2.9E-04	-
Cadmium	1.9E+03	2.6E+05	70.6	3.7E-02	2.7E-10	111	5.8E-02	4.2E-10	57.8	3.0E-02	2.2E-10	29.5	1.5E-02	1.1E-10	19.1	1.0E-02	7.2E-11
Cobalt	1.2E+04	5.3E+04	NA	-	-	20.6	1.7E-03	3.9E-10	28	2.3E-03	5.3E-10	3.6 J	3.0E-04	6.8E-11	10.2	8.4E-04	1.9E-10
Copper	4.4E+04	-	312	7.1E-03	-	435	9.8E-03	-	449	1.0E-02	-	198	4.5E-03	-	62.6	1.4E-03	-
Lead	3.7E+03	-	1,680	4.5E-01	-	3,360	9.0E-01	-	2,190	5.9E-01	-	325	8.7E-02	-	104	2.8E-02	-
Manganese	8.1E+04	-	1,140	1.4E-02	-	1,890	2.3E-02	-	1,690	2.1E-02	-	346	4.3E-03	-	1,560	1.9E-02	-
Mercury	8.8E+03	-	NA	-	-	0.0284 U	3.2E-06	-	0.21	2.4E-05	-	0.0492 U	5.6E-06	-	0.0688 J	7.8E-06	-
Zinc	1.0E+06	-	11,300 J	1.1E-02	-	33,300	3.3E-02	-	16,400 J	1.6E-02	-	3,650	3.7E-03	-	1,470	1.5E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	0.42	-	1.4E-09	0.23 J	-	7.6E-10	NA	-	-	0.064 J	-	2.1E-10
Benzo(a)pyrene	-	3.0E+01	NA	-	-	0.3 J	-	1.0E-08	0.17 J	-	5.7E-09	NA	-	-	0.047 J	-	1.6E-09
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	0.76	-	2.5E-09	0.4 J	-	1.3E-09	NA	-	-	0.082 J	-	2.7E-10
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	0.25 J	-	8.3E-11	0.13 J	-	4.3E-11	NA	-	-	0.038 J	-	1.3E-11
Chrysene	-	3.0E+04	NA	-	-	0.54	-	1.8E-11	0.4 J	-	1.3E-11	NA	-	-	0.098 J	-	3.3E-12
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	0.047 J	-	1.6E-09	0.042 U	-	1.4E-09	NA	-	-	0.037 U	-	1.2E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	0.27 J	-	9.0E-10	0.14 J	-	4.7E-10	NA	-	-	0.037 U	-	1.2E-10
Naphthalene	9.5E+02	6.5E+02	NA	-	-	0.11 J	1.2E-04	1.7E-10	0.071 J	7.5E-05	1.1E-10	NA	-	-	0.037 U	3.9E-05	5.7E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	4.1E-02	-	-	5.9E-02	-	-	3.6E-02	-	-	1.6E-02	-	-	1.0E-02	-
Total PAH Risk	-		-	-	-	-	-	1.7E-08	-	-	9.8E-09	-	-	-	-	-	3.5E-09
Total (PAH + Arsenic) Risk	-		-	-	1.6E-07	-	-	3.4E-07	-	-	3.6E-07	-	-	5.1E-08	-	-	7.1E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
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PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		E-03			E-04			E-05			E-06			F-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	7.5	4.0E-03	2.5E-08	47.8	2.5E-02	1.6E-07	29.7	1.6E-02	1.0E-07	380	2.0E-01	1.3E-06	22.5 J	1.2E-02	7.6E-08
Barium	8.6E+05	-	260	3.0E-04	-	254	2.9E-04	-	306	3.5E-04	-	3,980	4.6E-03	-	162 J	1.9E-04	-
Cadmium	1.9E+03	2.6E+05	15.8	8.3E-03	6.0E-11	131	6.9E-02	5.0E-10	53.9	2.8E-02	2.0E-10	256	1.3E-01	9.7E-10	61.6 J	3.2E-02	2.3E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	NA	-	-	25.8	2.1E-03	4.9E-10	8.2 B	6.8E-04	1.6E-10
Copper	4.4E+04	-	37.4	8.5E-04	-	517	1.2E-02	-	303	6.8E-03	-	4,880 J	1.1E-01	-	210 J	4.7E-03	-
Lead	3.7E+03	-	129	3.5E-02	-	1,710	4.6E-01	-	1,090	2.9E-01	-	9,140	**2.5E+00**	-	289 J	7.8E-02	-
Manganese	8.1E+04	-	880	1.1E-02	-	584	7.2E-03	-	461	5.7E-03	-	1,580	2.0E-02	-	632	7.8E-03	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	NA	-	-	0.86	9.8E-05	-	0.024 U	2.7E-06	-
Zinc	1.0E+06	-	2,110 J	2.1E-03	-	25,100 J	2.5E-02	-	6,980	7.0E-03	-	75,900	7.6E-02	-	5,870 J	5.9E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	5 U	-	1.7E-08	0.39 U	-	1.3E-09
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	5 U	-	1.7E-07	0.39 U	-	1.3E-08
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	5 U	-	1.7E-08	0.39 U	-	1.3E-09
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	5 U	-	1.7E-09	0.39 U	-	1.3E-10
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	5 U	-	1.7E-10	0.39 U	-	1.3E-11
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	5 U	-	1.7E-07	0.39 U	-	1.3E-08
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	5 U	-	1.7E-08	0.39 U	-	1.3E-09
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	3.7 J	3.9E-03	5.7E-09	0.39 U	4.1E-04	6.0E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	8.6E-03	-	-	6.9E-02	-	-	2.9E-02	-	-	1.4E-01	-	-	3.2E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	3.9E-07	-	-	3.1E-08
Total (PAH + Arsenic) Risk	-		-	-	2.5E-08	-	-	1.6E-07	-	-	1.0E-07	-	-	*1.7E-06*	-	-	1.1E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		F-02			F-03			G-01			G-02			G-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	7.2	3.8E-03	2.4E-08	47.1	2.5E-02	1.6E-07	10	5.3E-03	3.4E-08	88.5	4.7E-02	3.0E-07	182	9.7E-02	6.1E-07
Barium	8.6E+05	-	125 J	1.4E-04	-	1,120 J	1.3E-03	-	147	1.7E-04	-	1,330	1.5E-03	-	276	3.2E-04	-
Cadmium	1.9E+03	2.6E+05	8.3	4.3E-03	3.1E-11	186	9.7E-02	7.0E-10	20.8 J	1.1E-02	7.9E-11	235	1.2E-01	8.9E-10	945	5.0E-01	3.6E-09
Cobalt	1.2E+04	5.3E+04	6.7	5.5E-04	1.3E-10	25	2.1E-03	4.7E-10	6.7 B	5.5E-04	1.3E-10	8.1	6.7E-04	1.5E-10	NA	-	-
Copper	4.4E+04	-	31.7	7.2E-04	-	1,320	3.0E-02	-	60.7 J	1.4E-03	-	899	2.0E-02	-	3,180	7.2E-02	-
Lead	3.7E+03	-	209	5.6E-02	-	920	2.5E-01	-	108	2.9E-02	-	2,830	7.6E-01	-	4,600	1.2E+00	-
Manganese	8.1E+04	-	444	5.5E-03	-	783	9.7E-03	-	477	5.9E-03	-	1,370	1.7E-02	-	2,110	2.6E-02	-
Mercury	8.8E+03	-	0.34	3.9E-05	-	1.47	1.7E-04	-	0.041 B	4.7E-06	-	0.067 B	7.6E-06	-	NA	-	-
Zinc	1.0E+06	-	766	7.7E-04	-	52,300	5.2E-02	-	3,170	3.2E-03	-	37,300 J	3.7E-02	-	260,000 J	2.6E-01	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.039 U	-	1.3E-10	0.14 J	-	4.7E-10	0.37 U	-	1.2E-09	0.39 U	-	1.3E-09	NA	-	-
Benzo(a)pyrene	-	3.0E+01	0.039 U	-	1.3E-09	0.11 J	-	3.7E-09	0.37 U	-	1.2E-08	0.39 U	-	1.3E-08	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	0.039 U	-	1.3E-10	0.16 J	-	5.3E-10	0.37 U	-	1.2E-09	0.39 U	-	1.3E-09	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	0.039 U	-	1.3E-11	0.065 J	-	2.2E-11	0.37 U	-	1.2E-10	0.39 U	-	1.3E-10	NA	-	-
Chrysene	-	3.0E+04	0.039 U	-	1.3E-12	0.18 J	-	6.0E-12	0.37 UJ	-	1.2E-11	0.39 U	-	1.3E-11	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	0.039 U	-	1.3E-09	0.038 U	-	1.3E-09	0.37 U	-	1.2E-08	0.39 U	-	1.3E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.039 U	-	1.3E-10	0.071 J	-	2.4E-10	0.37 U	-	1.2E-09	0.39 U	-	1.3E-09	NA	-	-
Naphthalene	9.5E+02	6.5E+02	0.039 U	4.1E-05	6.0E-11	0.038 U	4.0E-05	5.8E-11	0.37 U	3.9E-04	5.7E-10	0.39 U	4.1E-04	6.0E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.5E-03	-	-	9.9E-02	-	-	1.1E-02	-	-	1.2E-01	-	-	5.0E-01	-
Total PAH Risk	-		-	-	3.1E-09	-	-	6.2E-09	-	-	2.9E-08	-	-	3.1E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.7E-08	-	-	1.7E-07	-	-	6.3E-08	-	-	3.3E-07	-	-	6.1E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		G-04			G-05			G-07			H-02			H-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	55.2	2.9E-02	1.9E-07	45.6	2.4E-02	1.5E-07	4.5 J	2.4E-03	1.5E-08	9	4.8E-03	3.0E-08	4.7	2.5E-03	1.6E-08
Barium	8.6E+05	-	296	3.4E-04	-	867 J	1.0E-03	-	360	4.2E-04	-	88	1.0E-04	-	52	6.0E-05	-
Cadmium	1.9E+03	2.6E+05	327	1.7E-01	1.2E-09	160	8.4E-02	6.1E-10	5.7	3.0E-03	2.2E-11	6.2	3.2E-03	2.3E-11	9	4.7E-03	3.4E-11
Cobalt	1.2E+04	5.3E+04	6.5 B	5.4E-04	1.2E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	467	1.1E-02	-	475	1.1E-02	-	52	1.2E-03	-	19.1 J	4.3E-04	-	50	1.1E-03	-
Lead	3.7E+03	-	1,360	3.7E-01	-	1,390	3.7E-01	-	63	1.7E-02	-	34	9.1E-03	-	87 J	2.3E-02	-
Manganese	8.1E+04	-	566	7.0E-03	-	732	9.1E-03	-	320	4.0E-03	-	579	7.2E-03	-	350 J	4.3E-03	-
Mercury	8.8E+03	-	0.28	3.2E-05	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	43,300 J	4.3E-02	-	21,700	2.2E-02	-	850	8.5E-04	-	1,450 J	1.5E-03	-	1,200 J	1.2E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.36 U	-	1.2E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	0.36 U	-	1.2E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	0.36 U	-	1.2E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	0.36 U	-	1.2E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	0.36 U	-	1.2E-11	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	0.36 U	-	1.2E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.36 U	-	1.2E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	0.36 U	3.8E-04	5.5E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.7E-01	-	-	8.5E-02	-	-	3.4E-03	-	-	3.3E-03	-	-	4.8E-03	-
Total PAH Risk	-		-	-	2.8E-08	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.1E-07	-	-	1.5E-07	-	-	1.5E-08	-	-	3.0E-08	-	-	1.6E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		H-05			H-06			H-07			H-08			HH-10		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	51	2.7E-02	1.7E-07	110	5.9E-02	3.7E-07	27.8	1.5E-02	9.4E-08	826	4.4E-01	*2.8E-06*	230.1	1.2E-01	7.8E-07
Barium	8.6E+05	-	1,800	2.1E-03	-	1,200	1.4E-03	-	8,590	1.0E-02	-	4,980	5.8E-03	-	77	8.9E-05	-
Cadmium	1.9E+03	2.6E+05	170	8.9E-02	6.4E-10	130	6.8E-02	4.9E-10	12.9	6.8E-03	4.9E-11	317 J	1.7E-01	1.2E-09	1.3 B	6.8E-04	4.9E-12
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	6.5 B	5.4E-04	1.2E-10	90.5	7.5E-03	1.7E-09	10 B	8.3E-04	1.9E-10
Copper	4.4E+04	-	820	1.9E-02	-	990	2.2E-02	-	160	3.6E-03	-	2,530 J	5.7E-02	-	3,360	7.6E-02	-
Lead	3.7E+03	-	3,700 J	1.0E+00	-	4,000 J	1.1E+00	-	274	7.4E-02	-	22,800	**6.1E+00**	-	21,700	**5.8E+00**	-
Manganese	8.1E+04	-	730 J	9.0E-03	-	601	7.4E-03	-	2,480	3.1E-02	-	8,770	1.1E-01	-	1,350	1.7E-02	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	0.023 U	2.6E-06	-	1.57	1.8E-04	-	0.03 U	3.4E-06	-
Zinc	1.0E+06	-	45,000 J	4.5E-02	-	89,000 J	8.9E-02	-	3,810 J	3.8E-03	-	35,100	3.5E-02	-	3,600	3.6E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	0.39 U	-	1.3E-09	0.56	-	1.9E-09	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	0.39 U	-	1.3E-08	0.42 J	-	1.4E-08	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	0.39 U	-	1.3E-09	0.62	-	2.1E-09	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	0.39 U	-	1.3E-10	0.26 J	-	8.6E-11	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	0.39 U	-	1.3E-11	0.58	-	1.9E-11	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	0.39 U	-	1.3E-08	0.083 J	-	2.8E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	0.39 U	-	1.3E-09	0.26 J	-	8.6E-10	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	0.39 U	4.1E-04	6.0E-10	0.053 J	5.6E-05	8.1E-11	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	9.1E-02	-	-	6.9E-02	-	-	1.7E-02	-	-	1.7E-01	-	-	7.7E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	3.1E-08	-	-	2.2E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.7E-07	-	-	3.7E-07	-	-	1.2E-07	-	-	*2.8E-06*	-	-	7.8E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		HH-12			I-02			I-03			I-04			I-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	417	2.2E-01	1.4E-06	60	3.2E-02	2.0E-07	33.1	1.8E-02	1.1E-07	47.4	2.5E-02	1.6E-07	141	7.5E-02	4.8E-07
Barium	8.6E+05	-	11,100	1.3E-02	-	3,200	3.7E-03	-	3,920	4.5E-03	-	1,770 J	2.1E-03	-	969	1.1E-03	-
Cadmium	1.9E+03	2.6E+05	94	4.9E-02	3.6E-10	101	5.3E-02	3.8E-10	104	5.4E-02	3.9E-10	135	7.1E-02	5.1E-10	197	1.0E-01	7.5E-10
Cobalt	1.2E+04	5.3E+04	90	7.4E-03	1.7E-09	9.5 B	7.9E-04	1.8E-10	7.6 B	6.3E-04	1.4E-10	NA	-	-	8.3 B	6.9E-04	1.6E-10
Copper	4.4E+04	-	1,810	4.1E-02	-	3,280	7.4E-02	-	236	5.3E-03	-	1,060 J	2.4E-02	-	4,430	1.0E-01	-
Lead	3.7E+03	-	24,400	**6.6E+00**	-	7,570	**2.0E+00**	-	1,440	3.9E-01	-	1,510 J	4.1E-01	-	2,490 J	6.7E-01	-
Manganese	8.1E+04	-	6,310	7.8E-02	-	18,000	2.2E-01	-	815	1.0E-02	-	2,330	2.9E-02	-	3,860	4.8E-02	-
Mercury	8.8E+03	-	0.02 U	2.3E-06	-	0.05 U	5.7E-06	-	0.048 U	5.4E-06	-	NA	-	-	0.049 B	5.6E-06	-
Zinc	1.0E+06	-	28,800	2.9E-02	-	36,100	3.6E-02	-	9,030	9.0E-03	-	15,200	1.5E-02	-	38,100	3.8E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	0.4 U	-	1.3E-09	0.39 U	-	1.3E-09	NA	-	-	0.38 U	-	1.3E-09
Benzo(a)pyrene	-	3.0E+01	NA	-	-	0.4 U	-	1.3E-08	0.39 U	-	1.3E-08	NA	-	-	0.38 U	-	1.3E-08
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	0.4 U	-	1.3E-09	0.39 U	-	1.3E-09	NA	-	-	0.38 U	-	1.3E-09
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	0.4 U	-	1.3E-10	0.39 U	-	1.3E-10	NA	-	-	0.38 U	-	1.3E-10
Chrysene	-	3.0E+04	NA	-	-	0.4 U	-	1.3E-11	0.39 U	-	1.3E-11	NA	-	-	0.38 U	-	1.3E-11
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	0.4 U	-	1.3E-08	0.39 U	-	1.3E-08	NA	-	-	0.38 U	-	1.3E-08
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	0.4 U	-	1.3E-09	0.39 U	-	1.3E-09	NA	-	-	0.38 U	-	1.3E-09
Naphthalene	9.5E+02	6.5E+02	NA	-	-	0.4 U	4.2E-04	6.1E-10	0.39 U	4.1E-04	6.0E-10	NA	-	-	0.38 U	4.0E-04	5.8E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	6.2E-02	-	-	5.7E-02	-	-	5.9E-02	-	-	7.3E-02	-	-	1.0E-01	-
Total PAH Risk	-		-	-	-	-	-	3.1E-08	-	-	3.1E-08	-	-	-	-	-	3.0E-08
Total (PAH + Arsenic) Risk	-		-	-	1.4E-06	-	-	2.3E-07	-	-	1.4E-07	-	-	1.6E-07	-	-	5.1E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		I-06			I-07			I-09			I-11			J-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	99.9	5.3E-02	3.4E-07	235	1.3E-01	7.9E-07	28.2	1.5E-02	9.5E-08	45.5 J	2.4E-02	1.5E-07	11.6	6.2E-03	3.9E-08
Barium	8.6E+05	-	6,500	7.5E-03	-	1,130	1.3E-03	-	1,250	1.4E-03	-	11,200	1.3E-02	-	611	7.1E-04	-
Cadmium	1.9E+03	2.6E+05	1,010	5.3E-01	3.8E-09	139	7.3E-02	5.3E-10	44.8	2.3E-02	1.7E-10	96.8 J	5.1E-02	3.7E-10	8.2	4.3E-03	3.1E-11
Cobalt	1.2E+04	5.3E+04	20.4	1.7E-03	3.9E-10	NA	-	-	NA	-	-	39.6	3.3E-03	7.5E-10	NA	-	-
Copper	4.4E+04	-	1,620 J	3.7E-02	-	5,530 J	1.2E-01	-	764	1.7E-02	-	958	2.2E-02	-	42.8	9.7E-04	-
Lead	3.7E+03	-	4,840	1.3E+00	-	4,650	1.3E+00	-	922	2.5E-01	-	1,290 J	3.5E-01	-	109 J	2.9E-02	-
Manganese	8.1E+04	-	2,020	2.5E-02	-	2,590	3.2E-02	-	802	9.9E-03	-	1,190	1.5E-02	-	630	7.8E-03	-
Mercury	8.8E+03	-	0.43 J	4.9E-05	-	NA	-	-	NA	-	-	0.2 J	2.3E-05	-	NA	-	-
Zinc	1.0E+06	-	65,600	6.6E-02	-	44,700	4.5E-02	-	9,760	9.8E-03	-	15,800	1.6E-02	-	1,460	1.5E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.93	-	3.1E-09	NA	-	-	NA	-	-	0.25 J	-	8.3E-10	NA	-	-
Benzo(a)pyrene	-	3.0E+01	0.58	-	1.9E-08	NA	-	-	NA	-	-	0.2 J	-	6.6E-09	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	0.92	-	3.1E-09	NA	-	-	NA	-	-	0.36 J	-	1.2E-09	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	0.28 J	-	9.3E-11	NA	-	-	NA	-	-	0.15 J	-	5.0E-11	NA	-	-
Chrysene	-	3.0E+04	1.7	-	5.7E-11	NA	-	-	NA	-	-	0.42	-	1.4E-11	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	0.16 J	-	5.3E-09	NA	-	-	NA	-	-	0.053 J	-	1.8E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.35 J	-	1.2E-09	NA	-	-	NA	-	-	0.16 J	-	5.3E-10	NA	-	-
Naphthalene	9.5E+02	6.5E+02	0.21 J	2.2E-04	3.2E-10	NA	-	-	NA	-	-	0.07 J	7.4E-05	1.1E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.4E-01	-	-	7.4E-02	-	-	2.5E-02	-	-	6.4E-02	-	-	5.0E-03	-
Total PAH Risk	-		-	-	3.2E-08	-	-	-	-	-	-	-	-	1.1E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.7E-07	-	-	7.9E-07	-	-	9.5E-08	-	-	1.6E-07	-	-	3.9E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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* = Duplicate analysis not within control limits.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-02			J-03			J-06			J-07			J-08		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	20	1.1E-02	6.7E-08	18.4	9.8E-03	6.2E-08	111	5.9E-02	3.7E-07	36.3 J	1.9E-02	1.2E-07	139 J	7.4E-02	4.7E-07
Barium	8.6E+05	-	204	2.4E-04	-	205	2.4E-04	-	7,020	8.1E-03	-	133 J	1.5E-04	-	734 J	8.5E-04	-
Cadmium	1.9E+03	2.6E+05	84.3	4.4E-02	3.2E-10	7.6	4.0E-03	2.9E-11	109	5.7E-02	4.1E-10	14.7	7.7E-03	5.6E-11	40	2.1E-02	1.5E-10
Cobalt	1.2E+04	5.3E+04	6.1	5.0E-04	1.2E-10	9 B	7.4E-04	1.7E-10	NA	-	-	15.8	1.3E-03	3.0E-10	NA	-	-
Copper	4.4E+04	-	33.6	7.6E-04	-	65.9	1.5E-03	-	1,230	2.8E-02	-	699 J	1.6E-02	-	8,610 J	1.9E-01	-
Lead	3.7E+03	-	1,060 J	2.9E-01	-	328 J	8.8E-02	-	4,790	1.3E+00	-	536 J	1.4E-01	-	4,620 J	1.2E+00	-
Manganese	8.1E+04	-	457	5.7E-03	-	663	8.2E-03	-	3,220	4.0E-02	-	1,060 J	1.3E-02	-	13,700 J	1.7E-01	-
Mercury	8.8E+03	-	0.029 B	3.3E-06	-	0.039 B	4.4E-06	-	NA	-	-	0.028 U	3.2E-06	-	NA	-	-
Zinc	1.0E+06	-	6,120	6.1E-03	-	1,580	1.6E-03	-	24,500	2.5E-02	-	6,420	6.4E-03	-	36,500	3.7E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.35 U	-	1.2E-09	0.4 U	-	1.3E-09	NA	-	-	0.36 U	-	1.2E-09	NA	-	-
Benzo(a)pyrene	-	3.0E+01	0.35 U	-	1.2E-08	0.4 U	-	1.3E-08	NA	-	-	0.36 U	-	1.2E-08	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	0.35 U	-	1.2E-09	0.4 U	-	1.3E-09	NA	-	-	0.36 U	-	1.2E-09	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	0.35 U	-	1.2E-10	0.4 U	-	1.3E-10	NA	-	-	0.36 U	-	1.2E-10	NA	-	-
Chrysene	-	3.0E+04	0.35 U	-	1.2E-11	0.4 U	-	1.3E-11	NA	-	-	0.36 U	-	1.2E-11	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	0.35 U	-	1.2E-08	0.4 U	-	1.3E-08	NA	-	-	0.36 U	-	1.2E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.35 U	-	1.2E-09	0.4 U	-	1.3E-09	NA	-	-	0.36 U	-	1.2E-09	NA	-	-
Naphthalene	9.5E+02	6.5E+02	0.35 U	3.7E-04	5.4E-10	0.4 U	4.2E-04	6.1E-10	NA	-	-	0.36 U	3.8E-04	5.5E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.4E-02	-	-	4.2E-03	-	-	6.5E-02	-	-	7.9E-03	-	-	2.2E-02	-
Total PAH Risk	-		-	-	2.7E-08	-	-	3.1E-08	-	-	-	-	-	2.8E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	9.5E-08	-	-	9.3E-08	-	-	3.7E-07	-	-	1.5E-07	-	-	4.7E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-09			J-10			J-11			J-12			J-13		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	79 J	4.2E-02	2.7E-07	10.3	5.5E-03	3.5E-08	9.3 J	5.0E-03	3.1E-08	17.9	9.5E-03	6.0E-08	230 J	1.2E-01	7.8E-07
Barium	8.6E+05	-	391 J	4.5E-04	-	296	3.4E-04	-	420	4.9E-04	-	4,390	5.1E-03	-	686	8.0E-04	-
Cadmium	1.9E+03	2.6E+05	6.5 J	3.4E-03	2.5E-11	15.1 J	7.9E-03	5.7E-11	19	1.0E-02	7.2E-11	67.6 J	3.5E-02	2.6E-10	676 J	3.5E-01	2.6E-09
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	42.2	3.5E-03	8.0E-10
Copper	4.4E+04	-	2,760 J	6.2E-02	-	116	2.6E-03	-	130	2.9E-03	-	319	7.2E-03	-	3,910	8.8E-02	-
Lead	3.7E+03	-	2,450 J	6.6E-01	-	166	4.5E-02	-	200 J	5.4E-02	-	485	1.3E-01	-	2,910 J	7.8E-01	-
Manganese	8.1E+04	-	20,400 J	2.5E-01	-	576 J	7.1E-03	-	390	4.8E-03	-	588 J	7.3E-03	-	2,180	2.7E-02	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.58 J	6.6E-05	-
Zinc	1.0E+06	-	10,900	1.1E-02	-	2,300	2.3E-03	-	2,000 J	2.0E-03	-	6,650	6.7E-03	-	101,000	1.0E-01	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.7E-10
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.7E-09
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.7E-10
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.7E-11
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.7E-12
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.7E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.7E-10
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.29 J	3.1E-04	4.5E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	3.9E-03	-	-	8.3E-03	-	-	1.0E-02	-	-	4.1E-02	-	-	3.5E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4E-09
Total (PAH + Arsenic) Risk	-		-	-	2.7E-07	-	-	3.5E-08	-	-	3.1E-08	-	-	6.0E-08	-	-	7.8E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		K-01			K-02			K-03			K-04			K-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	15 J	8.0E-03	5.1E-08	29.1	1.6E-02	9.8E-08	17.3	9.2E-03	5.8E-08	36.7	2.0E-02	1.2E-07	36.5 J	1.9E-02	1.2E-07
Barium	8.6E+05	-	405	4.7E-04	-	15,600	1.8E-02	-	5,780	6.7E-03	-	411	4.8E-04	-	340	3.9E-04	-
Cadmium	1.9E+03	2.6E+05	18.3	9.6E-03	6.9E-11	34.7	1.8E-02	1.3E-10	15.9	8.3E-03	6.0E-11	34.9	1.8E-02	1.3E-10	38 J	2.0E-02	1.4E-10
Cobalt	1.2E+04	5.3E+04	6.7	5.5E-04	1.3E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	69.6	1.6E-03	-	1,040	2.4E-02	-	497	1.1E-02	-	533	1.2E-02	-	400	9.0E-03	-
Lead	3.7E+03	-	115	3.1E-02	-	939	2.5E-01	-	679	1.8E-01	-	1,560	4.2E-01	-	526 J	1.4E-01	-
Manganese	8.1E+04	-	550	6.8E-03	-	6,200	7.7E-02	-	1,800	2.2E-02	-	921	1.1E-02	-	1,050	1.3E-02	-
Mercury	8.8E+03	-	0.11 U	1.2E-05	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	1,340	1.3E-03	-	9,980	1.0E-02	-	5,420	5.4E-03	-	8,840	8.8E-03	-	10,300	1.0E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.38 U	-	1.3E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	0.38 U	-	1.3E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	0.38 U	-	1.3E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	0.38 U	-	1.3E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	0.38 U	-	1.3E-11	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	0.38 U	-	1.3E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.38 U	-	1.3E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	0.38 U	4.0E-04	5.8E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.0E-02	-	-	3.6E-02	-	-	1.5E-02	-	-	1.9E-02	-	-	2.0E-02	-
Total PAH Risk	-		-	-	3.0E-08	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	8.0E-08	-	-	9.8E-08	-	-	5.8E-08	-	-	1.2E-07	-	-	1.2E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		L-02			L-03			L-04			L-06			M-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	78 J	4.2E-02	2.6E-07	91 J	4.9E-02	3.1E-07	114	6.1E-02	3.8E-07	21	1.1E-02	7.1E-08	22.8	1.2E-02	7.7E-08
Barium	8.6E+05	-	350	4.1E-04	-	2,500	2.9E-03	-	9,510	1.1E-02	-	1,010	1.2E-03	-	595	6.9E-04	-
Cadmium	1.9E+03	2.6E+05	33	1.7E-02	1.2E-10	64	3.4E-02	2.4E-10	141	7.4E-02	5.3E-10	36.8	1.9E-02	1.4E-10	64.8	3.4E-02	2.5E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	380	8.6E-03	-	490	1.1E-02	-	662	1.5E-02	-	292	6.6E-03	-	268	6.1E-03	-
Lead	3.7E+03	-	13,000	**3.5E+00**	-	4,700	1.3E+00	-	2,300	6.2E-01	-	453	1.2E-01	-	780	2.1E-01	-
Manganese	8.1E+04	-	1,100	1.4E-02	-	3,400	4.2E-02	-	2,750	3.4E-02	-	391	4.8E-03	-	709	8.8E-03	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	9,400	9.4E-03	-	20,000	2.0E-02	-	31,500	3.2E-02	-	4,280 J	4.3E-03	-	9,330	9.3E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.8E-02	-	-	3.6E-02	-	-	8.5E-02	-	-	2.0E-02	-	-	3.5E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.6E-07	-	-	3.1E-07	-	-	3.8E-07	-	-	7.1E-08	-	-	7.7E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		M-02			M-03			M-04			N-01			N-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	12.8	6.8E-03	4.3E-08	10.5	5.6E-03	3.5E-08	10.8	5.8E-03	3.6E-08	207	1.1E-01	7.0E-07	6.3	3.4E-03	2.1E-08
Barium	8.6E+05	-	207	2.4E-04	-	175	2.0E-04	-	216	2.5E-04	-	168	1.9E-04	-	137	1.6E-04	-
Cadmium	1.9E+03	2.6E+05	15.7	8.2E-03	5.9E-11	14.7	7.7E-03	5.6E-11	27.7	1.5E-02	1.0E-10	11	5.8E-03	4.2E-11	10.1	5.3E-03	3.8E-11
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	115	2.6E-03	-	109	2.5E-03	-	130	2.9E-03	-	5,060	1.1E-01	-	774	1.7E-02	-
Lead	3.7E+03	-	154	4.1E-02	-	145	3.9E-02	-	161	4.3E-02	-	9,210	**2.5E+00**	-	53.5	1.4E-02	-
Manganese	8.1E+04	-	579	7.2E-03	-	554	6.8E-03	-	521	6.4E-03	-	1,950	2.4E-02	-	770	9.5E-03	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	2,200 J	2.2E-03	-	1,520 J	1.5E-03	-	3,850 J	3.9E-03	-	3,390	3.4E-03	-	3,180 J	3.2E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	8.5E-03	-	-	7.9E-03	-	-	1.5E-02	-	-	6.0E-03	-	-	5.4E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	4.3E-08	-	-	3.5E-08	-	-	3.6E-08	-	-	7.0E-07	-	-	2.1E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		N-03			P-01			P-02			P-03			P-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	7.4	3.9E-03	2.5E-08	35 J	1.9E-02	1.2E-07	8.8	4.7E-03	3.0E-08	36 J	1.9E-02	1.2E-07	24 J	1.3E-02	8.1E-08
Barium	8.6E+05	-	306	3.5E-04	-	4,500 J	5.2E-03	-	125	1.4E-04	-	7,500 J	8.7E-03	-	5,600 J	6.5E-03	-
Cadmium	1.9E+03	2.6E+05	6.7	3.5E-03	2.5E-11	52	2.7E-02	2.0E-10	4.6	2.4E-03	1.7E-11	48	2.5E-02	1.8E-10	61	3.2E-02	2.3E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	5.9 J	4.9E-04	1.1E-10	4.5 J	3.7E-04	8.5E-11	17	1.4E-03	3.2E-10	6.4 J	5.3E-04	1.2E-10
Copper	4.4E+04	-	44.6	1.0E-03	-	320 J	7.2E-03	-	20	4.5E-04	-	700 J	1.6E-02	-	390 J	8.8E-03	-
Lead	3.7E+03	-	61.4	1.7E-02	-	2,500 J	6.7E-01	-	26.7	7.2E-03	-	940 J	2.5E-01	-	1,300 J	3.5E-01	-
Manganese	8.1E+04	-	451	5.6E-03	-	440 J	5.4E-03	-	299	3.7E-03	-	700 J	8.7E-03	-	600 J	7.4E-03	-
Mercury	8.8E+03	-	NA	-	-	0.94 J	1.1E-04	-	0.0053 U	6.0E-07	-	0.13 J	1.5E-05	-	0.99 J	1.1E-04	-
Zinc	1.0E+06	-	908 J	9.1E-04	-	4,100	4.1E-03	-	488	4.9E-04	-	13,000	1.3E-02	-	11,000	1.1E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.27 J	-	9.0E-10	1.2	-	4.0E-09
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	0.26 J	-	8.6E-09	0.85	-	2.8E-08
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.31 J	-	1.0E-09	0.74	-	2.5E-09
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	0.35 J	-	1.2E-10	0.8	-	2.7E-10
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	0.47	-	1.6E-11	1.2	-	4.0E-11
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	0.4 U	-	1.3E-08	0.47	-	1.6E-08
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.29 J	-	9.6E-10	0.81	-	2.7E-09
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	0.4 U	4.2E-04	6.1E-10	0.15 J	1.6E-04	2.3E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	3.9E-03	-	-	3.2E-02	-	-	2.6E-03	-	-	3.4E-02	-	-	3.8E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	2.6E-08	-	-	5.4E-08
Total (PAH + Arsenic) Risk	-		-	-	2.5E-08	-	-	1.2E-07	-	-	3.0E-08	-	-	1.5E-07	-	-	1.3E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		PZ-01(S)			PZ-02(S)			PZ-03(I)			PZ-04(S)			SB-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	110 J	5.9E-02	3.7E-07	110	5.9E-02	3.7E-07	124	6.6E-02	4.2E-07	108	5.8E-02	3.6E-07	14.8	7.9E-03	5.0E-08
Barium	8.6E+05	-	840	9.7E-04	-	5,360	6.2E-03	-	2,930	3.4E-03	-	1,330	1.5E-03	-	86.4 *	1.0E-04	-
Cadmium	1.9E+03	2.6E+05	50	2.6E-02	1.9E-10	111 J	5.8E-02	4.2E-10	41.5	2.2E-02	1.6E-10	35	1.8E-02	1.3E-10	8.8	4.6E-03	3.3E-11
Cobalt	1.2E+04	5.3E+04	NA	-	-	55.1	4.6E-03	1.0E-09	NA	-	-	8.5	7.0E-04	1.6E-10	15.6	1.3E-03	3.0E-10
Copper	4.4E+04	-	940	2.1E-02	-	1,930	4.4E-02	-	4,030	9.1E-02	-	1,980	4.5E-02	-	115	2.6E-03	-
Lead	3.7E+03	-	2,800	7.5E-01	-	3,870	1.0E+00	-	5,560	1.5E+00	-	2,930	7.9E-01	-	244 J	6.6E-02	-
Manganese	8.1E+04	-	4,100	5.1E-02	-	3,570 J	4.4E-02	-	6,380	7.9E-02	-	1,620	2.0E-02	-	268 *	3.3E-03	-
Mercury	8.8E+03	-	NA	-	-	0.36	4.1E-05	-	NA	-	-	0.026 U	3.0E-06	-	0.12 U	1.4E-05	-
Zinc	1.0E+06	-	20000	2.0E-02	-	26,500	2.7E-02	-	13,700	1.4E-02	-	9,230	9.2E-03	-	1,420	1.4E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	0.2 J	-	6.6E-10	NA	-	-	0.037 U	-	1.2E-10	0.41 U	-	1.4E-09
Benzo(a)pyrene	-	3.0E+01	NA	-	-	0.084 J	-	2.8E-09	NA	-	-	0.037 U	-	1.2E-09	0.41 U	-	1.4E-08
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	0.18 J	-	6.0E-10	NA	-	-	0.037 U	-	1.2E-10	0.41 U	-	1.4E-09
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	0.066 J	-	2.2E-11	NA	-	-	0.037 U	-	1.2E-11	0.41 U	-	1.4E-10
Chrysene	-	3.0E+04	NA	-	-	0.35 J	-	1.2E-11	NA	-	-	0.037 U	-	1.2E-12	0.41 U	-	1.4E-11
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	0.041 U	-	1.4E-09	NA	-	-	0.037 U	-	1.2E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	0.052 J	-	1.7E-10	NA	-	-	0.037 U	-	1.2E-10	0.41 U	-	1.4E-09
Naphthalene	9.5E+02	6.5E+02	NA	-	-	0.22 J	2.3E-04	3.4E-10	NA	-	-	0.037 U	3.9E-05	5.7E-11	0.38 U	4.0E-04	5.8E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	2.7E-02	-	-	6.4E-02	-	-	2.5E-02	-	-	2.0E-02	-	-	4.7E-03	-
Total PAH Risk	-		-	-	-	-	-	6.0E-09	-	-	-	-	-	2.9E-09	-	-	1.8E-08
Total (PAH + Arsenic) Risk	-		-	-	3.7E-07	-	-	3.8E-07	-	-	4.2E-07	-	-	3.7E-07	-	-	6.8E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-09			SB-52			SB-53			SB-54			SB-55		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	139	7.4E-02	4.7E-07	9.6	5.1E-03	3.2E-08	8.1	4.3E-03	2.7E-08	12.4 J	6.6E-03	4.2E-08	19.1	1.0E-02	6.4E-08
Barium	8.6E+05	-	1,180	1.4E-03	-	1,730	2.0E-03	-	2,690	3.1E-03	-	393 J	4.6E-04	-	229	2.7E-04	-
Cadmium	1.9E+03	2.6E+05	74.8	3.9E-02	2.8E-10	40.8	2.1E-02	1.5E-10	47.6	2.5E-02	1.8E-10	24.9 J	1.3E-02	9.4E-11	42.8 J	2.2E-02	1.6E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	11.4	9.4E-04	2.2E-10	10.1	8.4E-04	1.9E-10	20.2	1.7E-03	3.8E-10	9.8 J	8.1E-04	1.9E-10
Copper	4.4E+04	-	232	5.2E-03	-	31.9	7.2E-04	-	62.6	1.4E-03	-	33.2	7.5E-04	-	60.6	1.4E-03	-
Lead	3.7E+03	-	9,480	**2.6E+00**	-	132	3.6E-02	-	388	1.0E-01	-	29 J	7.8E-03	-	456	1.2E-01	-
Manganese	8.1E+04	-	1,090	1.3E-02	-	652	8.1E-03	-	1,250	1.5E-02	-	849	1.0E-02	-	1,080	1.3E-02	-
Mercury	8.8E+03	-	NA	-	-	0.1 J	1.1E-05	-	0.12 U	1.4E-05	-	0.066 J	7.5E-06	-	0.096 J	1.1E-05	-
Zinc	1.0E+06	-	13,900	1.4E-02	-	2,290	2.3E-03	-	4,680	4.7E-03	-	1,490 J	1.5E-03	-	4,600 J	4.6E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.1E-02	-	-	2.3E-02	-	-	2.8E-02	-	-	1.3E-02	-	-	2.3E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	4.7E-07	-	-	3.2E-08	-	-	2.7E-08	-	-	4.2E-08	-	-	6.4E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
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Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-56			SB-57			SB-58			SB-59			SB-60		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	27.2	1.5E-02	9.2E-08	7.5	4.0E-03	2.5E-08	4	2.1E-03	1.3E-08	8.2 J	4.4E-03	2.8E-08	18.2 J	9.7E-03	6.1E-08
Barium	8.6E+05	-	1,200	1.4E-03	-	286	3.3E-04	-	69.6	8.1E-05	-	126 J	1.5E-04	-	3,730 J	4.3E-03	-
Cadmium	1.9E+03	2.6E+05	50.9 J	2.7E-02	1.9E-10	25.7	1.3E-02	9.7E-11	1.4 J	7.3E-04	5.3E-12	2.7	1.4E-03	1.0E-11	92	4.8E-02	3.5E-10
Cobalt	1.2E+04	5.3E+04	12.2 J	1.0E-03	2.3E-10	8.9	7.4E-04	1.7E-10	6.7 J	5.5E-04	1.3E-10	5.8 J	4.8E-04	1.1E-10	10.1 J	8.4E-04	1.9E-10
Copper	4.4E+04	-	40	9.0E-04	-	26.8	6.1E-04	-	12.4	2.8E-04	-	14.7	3.3E-04	-	63	1.4E-03	-
Lead	3.7E+03	-	278	7.5E-02	-	115	3.1E-02	-	12.8	3.4E-03	-	11.3 J	3.0E-03	-	433 J	1.2E-01	-
Manganese	8.1E+04	-	960	1.2E-02	-	540	6.7E-03	-	391	4.8E-03	-	318 J	3.9E-03	-	856 J	1.1E-02	-
Mercury	8.8E+03	-	0.065 J	7.4E-06	-	0.039 J	4.4E-06	-	0.016 J	1.8E-06	-	0.1 UJ	1.1E-05	-	0.2	2.3E-05	-
Zinc	1.0E+06	-	3,580 J	3.6E-03	-	2,430	2.4E-03	-	105 J	1.1E-04	-	194 J	1.9E-04	-	6,520 J	6.5E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.8E-02	-	-	1.4E-02	-	-	8.1E-04	-	-	1.6E-03	-	-	5.3E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	9.2E-08	-	-	2.5E-08	-	-	1.3E-08	-	-	2.8E-08	-	-	6.1E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
* = Duplicate analysis not within control limits.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-61			SB-62			SB-63			SB-64			SB-65		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	19.3	1.0E-02	6.5E-08	6.6 J	3.5E-03	2.2E-08	13.3 J	7.1E-03	4.5E-08	6.8	3.6E-03	2.3E-08	11.5 U	6.1E-03	3.9E-08
Barium	8.6E+05	-	2,330 J	2.7E-03	-	1,310 J	1.5E-03	-	271 J	3.1E-04	-	172	2.0E-04	-	115 J	1.3E-04	-
Cadmium	1.9E+03	2.6E+05	177 J	9.3E-02	6.7E-10	23.2	1.2E-02	8.8E-11	39.9	2.1E-02	1.5E-10	5.3	2.8E-03	2.0E-11	14.1	7.4E-03	5.3E-11
Cobalt	1.2E+04	5.3E+04	10.4 J	8.6E-04	2.0E-10	8.3 J	6.9E-04	1.6E-10	9 J	7.4E-04	1.7E-10	7.5	6.2E-04	1.4E-10	10.1	8.4E-04	1.9E-10
Copper	4.4E+04	-	139	3.1E-03	-	23.4	5.3E-04	-	32.9	7.4E-04	-	15.9	3.6E-04	-	21.3	4.8E-04	-
Lead	3.7E+03	-	759 J	2.0E-01	-	135 J	3.6E-02	-	60.6 J	1.6E-02	-	25.9	7.0E-03	-	23.3 J	6.3E-03	-
Manganese	8.1E+04	-	959 J	1.2E-02	-	446 J	5.5E-03	-	654 J	8.1E-03	-	348	4.3E-03	-	3,110 J	3.8E-02	-
Mercury	8.8E+03	-	0.052 J	5.9E-06	-	0.048 U	5.4E-06	-	0.032 U	3.6E-06	-	0.03 J	3.4E-06	-	0.032 J	3.6E-06	-
Zinc	1.0E+06	-	7,830 J	7.8E-03	-	1,550 J	1.6E-03	-	4,020 J	4.0E-03	-	452	4.5E-04	-	1,000	1.0E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	9.5E-02	-	-	1.4E-02	-	-	2.1E-02	-	-	3.0E-03	-	-	7.5E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	6.5E-08	-	-	2.2E-08	-	-	4.5E-08	-	-	2.3E-08	-	-	3.9E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-66			SB-67			SB-68			SB-69			SB-70		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	17.5	9.3E-03	5.9E-08	9.8	5.2E-03	3.3E-08	8.3	4.4E-03	2.8E-08	6.4	3.4E-03	2.2E-08	4.3	2.3E-03	1.5E-08
Barium	8.6E+05	-	442 J	5.1E-04	-	553 J	6.4E-04	-	1,150 J	1.3E-03	-	112	1.3E-04	-	104	1.2E-04	-
Cadmium	1.9E+03	2.6E+05	55.7 J	2.9E-02	2.1E-10	80.9 J	4.2E-02	3.1E-10	58.2 J	3.0E-02	2.2E-10	1.5	7.9E-04	5.7E-12	3.5 J	1.8E-03	1.3E-11
Cobalt	1.2E+04	5.3E+04	8.7 J	7.2E-04	1.6E-10	8.8 J	7.3E-04	1.7E-10	7.4 J	6.1E-04	1.4E-10	8.7	7.2E-04	1.6E-10	5.4 J	4.5E-04	1.0E-10
Copper	4.4E+04	-	70.6	1.6E-03	-	74.8	1.7E-03	-	35.8	8.1E-04	-	15.9	3.6E-04	-	23.1	5.2E-04	-
Lead	3.7E+03	-	214 J	5.8E-02	-	373 J	1.0E-01	-	158 J	4.3E-02	-	13.8	3.7E-03	-	14.9	4.0E-03	-
Manganese	8.1E+04	-	458 J	5.7E-03	-	699 J	8.6E-03	-	591 J	7.3E-03	-	403	5.0E-03	-	354	4.4E-03	-
Mercury	8.8E+03	-	0.071 J	8.1E-06	-	0.16 U	1.8E-05	-	0.029 J	3.3E-06	-	0.042 J	4.8E-06	-	0.015 U	1.7E-06	-
Zinc	1.0E+06	-	5,380 J	5.4E-03	-	5,340 J	5.3E-03	-	5,730 J	5.7E-03	-	145	1.5E-04	-	271 J	2.7E-04	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	3.0E-02	-	-	4.3E-02	-	-	3.2E-02	-	-	9.2E-04	-	-	2.0E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	5.9E-08	-	-	3.3E-08	-	-	2.8E-08	-	-	2.2E-08	-	-	1.5E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-71			SB-72			SB-73			SB-74			SB-75		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	8.8	4.7E-03	3.0E-08	8.1	4.3E-03	2.7E-08	3	1.6E-03	1.0E-08	17.6	9.4E-03	5.9E-08	9.4	5.0E-03	3.2E-08
Barium	8.6E+05	-	162	1.9E-04	-	154	1.8E-04	-	70.6	8.2E-05	-	189	2.2E-04	-	137	1.6E-04	-
Cadmium	1.9E+03	2.6E+05	7.2	3.8E-03	2.7E-11	5.2 J	2.7E-03	2.0E-11	2.3 J	1.2E-03	8.7E-12	11.1 J	5.8E-03	4.2E-11	12.6 J	6.6E-03	4.8E-11
Cobalt	1.2E+04	5.3E+04	11.5	9.5E-04	2.2E-10	8.5 J	7.0E-04	1.6E-10	4.9 J	4.1E-04	9.3E-11	8.4	6.9E-04	1.6E-10	10.7	8.8E-04	2.0E-10
Copper	4.4E+04	-	18.6	4.2E-04	-	23.7	5.4E-04	-	12.9	2.9E-04	-	27.2	6.1E-04	-	20.6	4.7E-04	-
Lead	3.7E+03	-	25.8	6.9E-03	-	42.1	1.1E-02	-	9.4 J	2.5E-03	-	47.2 J	1.3E-02	-	35.4 J	9.5E-03	-
Manganese	8.1E+04	-	612	7.6E-03	-	528	6.5E-03	-	362	4.5E-03	-	338	4.2E-03	-	363	4.5E-03	-
Mercury	8.8E+03	-	0.033 J	3.7E-06	-	0.099 U	1.1E-05	-	0.1 U	1.1E-05	-	0.047 J	5.3E-06	-	0.11 U	1.2E-05	-
Zinc	1.0E+06	-	530	5.3E-04	-	560 J	5.6E-04	-	117	1.2E-04	-	915	9.2E-04	-	928	9.3E-04	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.0E-03	-	-	2.9E-03	-	-	1.3E-03	-	-	6.0E-03	-	-	6.8E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.0E-08	-	-	2.7E-08	-	-	1.0E-08	-	-	5.9E-08	-	-	3.2E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-76			SB-77			SB-78			SB-79			SB-80		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	11.2	6.0E-03	3.8E-08	9.9	5.3E-03	3.3E-08	8.2	4.4E-03	2.8E-08	8.9	4.7E-03	3.0E-08	9.8	5.2E-03	3.3E-08
Barium	8.6E+05	-	1,750	2.0E-03	-	585	6.8E-04	-	899	1.0E-03	-	140	1.6E-04	-	177	2.1E-04	-
Cadmium	1.9E+03	2.6E+05	28.6	1.5E-02	1.1E-10	24.9 J	1.3E-02	9.4E-11	85.9	4.5E-02	3.3E-10	101	5.3E-02	3.8E-10	23.2 J	1.2E-02	8.8E-11
Cobalt	1.2E+04	5.3E+04	15.8	1.3E-03	3.0E-10	11.7	9.7E-04	2.2E-10	6.1 J	5.0E-04	1.2E-10	9.4	7.8E-04	1.8E-10	13.5	1.1E-03	2.6E-10
Copper	4.4E+04	-	62.2	1.4E-03	-	21.6	4.9E-04	-	41.1	9.3E-04	-	26.9	6.1E-04	-	20.7	4.7E-04	-
Lead	3.7E+03	-	230	6.2E-02	-	92.9 J	2.5E-02	-	200	5.4E-02	-	66	1.8E-02	-	26.8 J	7.2E-03	-
Manganese	8.1E+04	-	1,050	1.3E-02	-	642	7.9E-03	-	528	6.5E-03	-	529	6.5E-03	-	831	1.0E-02	-
Mercury	8.8E+03	-	0.071 J	8.1E-06	-	0.036 J	4.1E-06	-	0.095 U	1.1E-05	-	0.018 J	2.0E-06	-	0.049 J	5.6E-06	-
Zinc	1.0E+06	-	3,770	3.8E-03	-	2,710	2.7E-03	-	9,450	9.5E-03	-	4,810	4.8E-03	-	1,660	1.7E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.7E-02	-	-	1.4E-02	-	-	4.6E-02	-	-	5.3E-02	-	-	1.2E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.8E-08	-	-	3.3E-08	-	-	2.8E-08	-	-	3.0E-08	-	-	3.3E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-81			SB-82			SB-83			SB-84			SB-85		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	12.8	6.8E-03	4.3E-08	12	6.4E-03	4.0E-08	11.3 J	6.0E-03	3.8E-08	12.1	6.5E-03	4.1E-08	12.8	6.8E-03	4.3E-08
Barium	8.6E+05	-	1,590	1.8E-03	-	194	2.2E-04	-	275 J	3.2E-04	-	135	1.6E-04	-	661	7.7E-04	-
Cadmium	1.9E+03	2.6E+05	67 J	3.5E-02	2.5E-10	24.1 J	1.3E-02	9.1E-11	23.8	1.2E-02	9.0E-11	13.8	7.2E-03	5.2E-11	58.5	3.1E-02	2.2E-10
Cobalt	1.2E+04	5.3E+04	8.9	7.4E-04	1.7E-10	10.9 J	9.0E-04	2.1E-10	10.4 J	8.6E-04	2.0E-10	16.1	1.3E-03	3.0E-10	9.3	7.7E-04	1.8E-10
Copper	4.4E+04	-	57.9	1.3E-03	-	23.6	5.3E-04	-	27.9	6.3E-04	-	29.3	6.6E-04	-	50.3	1.1E-03	-
Lead	3.7E+03	-	243 J	6.5E-02	-	33.6 J	9.0E-03	-	42.4 J	1.1E-02	-	55.5	1.5E-02	-	133	3.6E-02	-
Manganese	8.1E+04	-	428	5.3E-03	-	427	5.3E-03	-	469 J	5.8E-03	-	540	6.7E-03	-	938	1.2E-02	-
Mercury	8.8E+03	-	0.064 J	7.3E-06	-	0.071 J	8.1E-06	-	0.064 U	7.3E-06	-	0.051 J	5.8E-06	-	0.049 J	5.6E-06	-
Zinc	1.0E+06	-	5,630	5.6E-03	-	2,240	2.2E-03	-	1,580 J	1.6E-03	-	955	9.6E-04	-	4,360	4.4E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	3.7E-02	-	-	1.3E-02	-	-	1.3E-02	-	-	7.4E-03	-	-	3.1E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	4.3E-08	-	-	4.0E-08	-	-	3.8E-08	-	-	4.1E-08	-	-	4.3E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-86			SL-A			SL-B			SL-C			SL-D-1		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	8.7	4.6E-03	2.9E-08	56.8	3.0E-02	1.9E-07	160	8.5E-02	5.4E-07	32	1.7E-02	1.1E-07	91.5	4.9E-02	3.1E-07
Barium	8.6E+05	-	308	3.6E-04	-	129	1.5E-04	-	98	1.1E-04	-	760	8.8E-04	-	990	1.1E-03	-
Cadmium	1.9E+03	2.6E+05	23.4 J	1.2E-02	8.9E-11	466	2.4E-01	1.8E-09	1.1 U	5.8E-04	4.2E-12	54.8	2.9E-02	2.1E-10	246	1.3E-01	9.3E-10
Cobalt	1.2E+04	5.3E+04	9.6 J	7.9E-04	1.8E-10	21.4	1.8E-03	4.1E-10	47	3.9E-03	8.9E-10	20.3	1.7E-03	3.8E-10	29 J	2.4E-03	5.5E-10
Copper	4.4E+04	-	23.1	5.2E-04	-	2,250	5.1E-02	-	3,760	8.5E-02	-	1,340	3.0E-02	-	3,030	6.8E-02	-
Lead	3.7E+03	-	58	1.6E-02	-	2,690	7.2E-01	-	7,200	**1.9E+00**	-	820	2.2E-01	-	2,370	6.4E-01	-
Manganese	8.1E+04	-	586	7.2E-03	-	1,530 J	1.9E-02	-	1,630 J	2.0E-02	-	1,020 J	1.3E-02	-	25,300	3.1E-01	-
Mercury	8.8E+03	-	0.046 J	5.2E-06	-	0.0436 B	4.9E-06	-	0.0067 U	7.6E-07	-	0.48	5.4E-05	-	0.4	4.5E-05	-
Zinc	1.0E+06	-	2,250 J	2.3E-03	-	54,000	5.4E-02	-	8,120	8.1E-03	-	8,660	8.7E-03	-	44,600	4.5E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.61	-	2.0E-09
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.44 J	-	1.5E-08
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.84	-	2.8E-09
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.2 J	-	6.7E-11
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.95	-	3.2E-11
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.11 J	-	3.7E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.26 J	-	8.6E-10
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.18 J	1.9E-04	2.8E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	1.3E-02	-	-	2.4E-01	-	-	6.9E-04	-	-	3.0E-02	-	-	1.3E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.4E-08
Total (PAH + Arsenic) Risk	-		-	-	2.9E-08	-	-	1.9E-07	-	-	5.4E-07	-	-	1.1E-07	-	-	3.3E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SL-D-2			SL-E			SL-G			SS-01			SS-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	112	6.0E-02	3.8E-07	218	1.2E-01	7.4E-07	4,020	**2.1E+00**	*1.4E-05*	14 U	7.5E-03	4.7E-08	24	1.3E-02	8.1E-08
Barium	8.6E+05	-	1,660	1.9E-03	-	163	1.9E-04	-	1,310	1.5E-03	-	607 J	7.0E-04	-	6,720 J	7.8E-03	-
Cadmium	1.9E+03	2.6E+05	403	2.1E-01	1.5E-09	1 U	5.2E-04	3.8E-12	389	2.0E-01	1.5E-09	88.8	4.7E-02	3.4E-10	13.2	6.9E-03	5.0E-11
Cobalt	1.2E+04	5.3E+04	26.9	2.2E-03	5.1E-10	90	7.4E-03	1.7E-09	19.5	1.6E-03	3.7E-10	3.78 J	3.1E-04	7.2E-11	46.1	3.8E-03	8.7E-10
Copper	4.4E+04	-	2,420	5.5E-02	-	2,790	6.3E-02	-	1,600	3.6E-02	-	106	2.4E-03	-	1,570	3.5E-02	-
Lead	3.7E+03	-	3,690	9.9E-01	-	3,350	9.0E-01	-	14,300	**3.8E+00**	-	78 J	2.1E-02	-	2,260 J	6.1E-01	-
Manganese	8.1E+04	-	1,690	2.1E-02	-	1,780 J	2.2E-02	-	1,240	1.5E-02	-	105 J	1.3E-03	-	2,670 J	3.3E-02	-
Mercury	8.8E+03	-	0.55	6.2E-05	-	0.0061 U	6.9E-07	-	11.9	1.4E-03	-	0.0256 J	2.9E-06	-	0.102 J	1.2E-05	-
Zinc	1.0E+06	-	64,900	6.5E-02	-	3,060	3.1E-03	-	14,000	1.4E-02	-	144,000 J	1.4E-01	-	8,080 J	8.1E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.43 J	-	1.4E-09	NA	-	-	NA	-	-	0.043 U	-	1.4E-10	0.077 J	-	2.6E-10
Benzo(a)pyrene	-	3.0E+01	0.25 J	-	8.3E-09	NA	-	-	NA	-	-	0.043 U	-	1.4E-09	0.069 J	-	2.3E-09
Benzo(b)fluoranthene	-	3.0E+02	0.57	-	1.9E-09	NA	-	-	NA	-	-	0.043 U	-	1.4E-10	0.091 J	-	3.0E-10
Benzo(k)fluoranthene	-	3.0E+03	0.17 J	-	5.7E-11	NA	-	-	NA	-	-	0.043 U	-	1.4E-11	0.042 U	-	1.4E-11
Chrysene	-	3.0E+04	0.7	-	2.3E-11	NA	-	-	NA	-	-	0.055 J	-	1.8E-12	0.11 J	-	3.7E-12
Dibenz(a,h)anthracene	-	3.0E+01	0.079 U	-	2.6E-09	NA	-	-	NA	-	-	0.043 U	-	1.4E-09	0.042 U	-	1.4E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.17 J	-	5.7E-10	NA	-	-	NA	-	-	0.043 U	-	1.4E-10	0.055 J	-	1.8E-10
Naphthalene	9.5E+02	6.5E+02	0.38 J	4.0E-04	5.8E-10	NA	-	-	NA	-	-	0.043 U	4.5E-05	6.6E-11	0.042 U	4.4E-05	6.5E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	2.1E-01	-	-	7.1E-04	-	-	2.1E-01	-	-	4.7E-02	-	-	1.5E-02	-
Total PAH Risk	-		-	-	1.5E-08	-	-	-	-	-	-	-	-	3.4E-09	-	-	4.5E-09
Total (PAH + Arsenic) Risk	-		-	-	3.9E-07	-	-	7.4E-07	-	-	*1.4E-05*	-	-	5.1E-08	-	-	8.5E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-05			SS-06			SS-07			SS-08			SS-09		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	8.8 J	4.7E-03	3.0E-08	11.8 J	6.3E-03	4.0E-08	19	1.0E-02	6.4E-08	49	2.6E-02	1.7E-07	173	9.2E-02	5.8E-07
Barium	8.6E+05	-	708	8.2E-04	-	3,420 J	4.0E-03	-	5,680	6.6E-03	-	7,150 J	8.3E-03	-	5,290	6.1E-03	-
Cadmium	1.9E+03	2.6E+05	55.1	2.9E-02	2.1E-10	17.4	9.1E-03	6.6E-11	147	7.7E-02	5.6E-10	107	5.6E-02	4.1E-10	139	7.3E-02	5.3E-10
Cobalt	1.2E+04	5.3E+04	7.2	6.0E-04	1.4E-10	0.69 U	5.7E-05	1.3E-11	19.1	1.6E-03	3.6E-10	24.4	2.0E-03	4.6E-10	45.7	3.8E-03	8.7E-10
Copper	4.4E+04	-	191	4.3E-03	-	65	1.5E-03	-	1,070	2.4E-02	-	477	1.1E-02	-	3,270	7.4E-02	-
Lead	3.7E+03	-	544	1.5E-01	-	157 J	4.2E-02	-	7,730	**2.1E+00**	-	3,970 J	1.1E+00	-	16,100	**4.3E+00**	-
Manganese	8.1E+04	-	558	6.9E-03	-	131 J	1.6E-03	-	3,000	3.7E-02	-	1,290 J	1.6E-02	-	3,330	4.1E-02	-
Mercury	8.8E+03	-	0.47	5.3E-05	-	0.0708 J	8.0E-06	-	0.73	8.3E-05	-	0.2	2.3E-05	-	0.23	2.6E-05	-
Zinc	1.0E+06	-	6,830	6.8E-03	-	1,460 J	1.5E-03	-	25,300	2.5E-02	-	20,600 J	2.1E-02	-	29,200	2.9E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.1 J	-	3.3E-10	0.047 U	-	1.6E-10	0.41	-	1.4E-09	2.6	-	8.6E-09	0.15 J	-	5.0E-10
Benzo(a)pyrene	-	3.0E+01	0.084 J	-	2.8E-09	0.047 U	-	1.6E-09	0.41	-	1.4E-08	2.3	-	7.6E-08	0.12 J	-	4.0E-09
Benzo(b)fluoranthene	-	3.0E+02	0.16 J	-	5.3E-10	0.047 U	-	1.6E-10	0.76	-	2.5E-09	4.7	-	1.6E-08	0.23 J	-	7.6E-10
Benzo(k)fluoranthene	-	3.0E+03	0.053 J	-	1.8E-11	0.047 U	-	1.6E-11	0.2 J	-	6.7E-11	1.6	-	5.3E-10	0.089 J	-	3.0E-11
Chrysene	-	3.0E+04	0.14 J	-	4.7E-12	0.047 U	-	1.6E-12	0.97	-	3.2E-11	3.3	-	1.1E-10	0.25 J	-	8.3E-12
Dibenz(a,h)anthracene	-	3.0E+01	0.039 U	-	1.3E-09	0.047 U	-	1.6E-09	0.25 J	-	8.3E-09	0.65	-	2.2E-08	0.041 U	-	1.4E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.039 U	-	1.3E-10	0.047 U	-	1.6E-10	0.43	-	1.4E-09	2.7	-	9.0E-09	0.041 U	-	1.4E-10
Naphthalene	9.5E+02	6.5E+02	0.039 U	4.1E-05	6.0E-11	0.047 U	5.0E-05	7.2E-11	0.1 J	1.1E-04	1.5E-10	0.21 J	2.2E-04	3.2E-10	0.041 U	4.3E-05	6.3E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	3.0E-02	-	-	1.3E-02	-	-	8.4E-02	-	-	6.4E-02	-	-	7.9E-02	-
Total PAH Risk	-		-	-	5.2E-09	-	-	3.7E-09	-	-	2.8E-08	-	-	1.3E-07	-	-	6.9E-09
Total (PAH + Arsenic) Risk	-		-	-	3.5E-08	-	-	4.3E-08	-	-	9.2E-08	-	-	3.0E-07	-	-	5.9E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
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* = Duplicate analysis not within control limits.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-10			SS-11A			SS-12			SS-13			SS-14		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	2.6 U	1.4E-03	8.8E-09	6.5 J	3.5E-03	2.2E-08	15	8.0E-03	5.1E-08	150	8.0E-02	5.1E-07	1,330 J	7.1E-01	*4.5E-06*
Barium	8.6E+05	-	208	2.4E-04	-	489 J	5.7E-04	-	1,040	1.2E-03	-	7,320	8.5E-03	-	737 J	8.5E-04	-
Cadmium	1.9E+03	2.6E+05	596	3.1E-01	2.3E-09	82.5	4.3E-02	3.1E-10	118	6.2E-02	4.5E-10	361	1.9E-01	1.4E-09	34.9	1.8E-02	1.3E-10
Cobalt	1.2E+04	5.3E+04	4.74 J	3.9E-04	9.0E-11	17.1	1.4E-03	3.2E-10	3.37 J	2.8E-04	6.4E-11	68	5.6E-03	1.3E-09	158 J	1.3E-02	3.0E-09
Copper	4.4E+04	-	177	4.0E-03	-	2,820	6.4E-02	-	378	8.5E-03	-	1,680	3.8E-02	-	1,810	4.1E-02	-
Lead	3.7E+03	-	952	2.6E-01	-	1,280 J	3.4E-01	-	877	2.4E-01	-	16,300	**4.4E+00**	-	8,290	**2.2E+00**	-
Manganese	8.1E+04	-	686	8.5E-03	-	34,600 J	4.3E-01	-	553	6.8E-03	-	2,700	3.3E-02	-	3,660 J	4.5E-02	-
Mercury	8.8E+03	-	0.053 J	6.0E-06	-	0.12	1.4E-05	-	0.15	1.7E-05	-	3.3	3.7E-04	-	0.75 J	8.5E-05	-
Zinc	1.0E+06	-	58,900	5.9E-02	-	19,400 J	1.9E-02	-	17,200	1.7E-02	-	77,300	7.7E-02	-	14,600	1.5E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	0.1 J	-	3.3E-10	0.073 J	-	2.4E-10	4.6	-	1.5E-08	0.18 J	-	6.0E-10
Benzo(a)pyrene	-	3.0E+01	NA	-	-	0.094 J	-	3.1E-09	0.081 J	-	2.7E-09	4.8	-	1.6E-07	0.22 J	-	7.3E-09
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	0.13 J	-	4.3E-10	0.13 J	-	4.3E-10	8.9	-	3.0E-08	0.42	-	1.4E-09
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	0.04 U	-	1.3E-11	0.041 J	-	1.4E-11	2.8	-	9.3E-10	0.14 J	-	4.7E-11
Chrysene	-	3.0E+04	NA	-	-	0.24 J	-	8.0E-12	0.088 J	-	2.9E-12	7.8	-	2.6E-10	0.31 J	-	1.0E-11
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	0.04 U	-	1.3E-09	0.039 U	-	1.3E-09	1.2	-	4.0E-08	0.066 J	-	2.2E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	0.058 J	-	1.9E-10	0.039 U	-	1.3E-10	3.6	-	1.2E-08	0.24 J	-	8.0E-10
Naphthalene	9.5E+02	6.5E+02	NA	-	-	0.04 U	4.2E-05	6.1E-11	0.039 U	4.1E-05	6.0E-11	0.18 J	1.9E-04	2.8E-10	0.038 U	4.0E-05	5.8E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	3.1E-01	-	-	4.4E-02	-	-	6.3E-02	-	-	2.0E-01	-	-	1.9E-02	-
Total PAH Risk	-		-	-	-	-	-	5.5E-09	-	-	4.9E-09	-	-	2.6E-07	-	-	1.2E-08
Total (PAH + Arsenic) Risk	-		-	-	8.8E-09	-	-	2.7E-08	-	-	5.5E-08	-	-	7.6E-07	-	-	*4.5E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-15			SS-16			SS-17A			SS-18			SS-19		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	13.2 J	7.0E-03	4.5E-08	11.2 J	6.0E-03	3.8E-08	5 J	2.7E-03	1.7E-08	87,900 J	**4.7E+01**	*3.0E-04*	2.5 UJ	1.3E-03	8.4E-09
Barium	8.6E+05	-	165 J	1.9E-04	-	99,300	1.2E-01	-	120	1.4E-04	-	309	3.6E-04	-	3,820 J	4.4E-03	-
Cadmium	1.9E+03	2.6E+05	35.1	1.8E-02	1.3E-10	5.4	2.8E-03	2.0E-11	157	8.2E-02	5.9E-10	8,320 J	**4.4E+00**	3.2E-08	606	3.2E-01	2.3E-09
Cobalt	1.2E+04	5.3E+04	2.8 J	2.3E-04	5.3E-11	0.86 U	7.1E-05	1.6E-11	25.4	2.1E-03	4.8E-10	11	9.1E-04	2.1E-10	3.21 J	2.7E-04	6.1E-11
Copper	4.4E+04	-	92	2.1E-03	-	79.6	1.8E-03	-	6,010	1.4E-01	-	8,700	2.0E-01	-	1,810	4.1E-02	-
Lead	3.7E+03	-	175 J	4.7E-02	-	2,740	7.4E-01	-	4,890	1.3E+00	-	90,000	**2.4E+01**	-	152,000	**4.1E+01**	-
Manganese	8.1E+04	-	647 J	8.0E-03	-	210	2.6E-03	-	1,570	1.9E-02	-	799	9.9E-03	-	157 J	1.9E-03	-
Mercury	8.8E+03	-	0.56	6.4E-05	-	0.0106 J	1.2E-06	-	0.0383 J	4.3E-06	-	10.1	1.1E-03	-	0.25 J	2.8E-05	-
Zinc	1.0E+06	-	3,440 J	3.4E-03	-	786	7.9E-04	-	55,900	5.6E-02	-	90,600	9.1E-02	-	65,500	6.6E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	0.069 U	-	2.3E-10	NA	-	-	NA	-	-	0.043 UB	-	1.4E-10
Benzo(a)pyrene	-	3.0E+01	NA	-	-	0.069 U	-	2.3E-09	NA	-	-	NA	-	-	0.043 UB	-	1.4E-09
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	0.069 U	-	2.3E-10	NA	-	-	NA	-	-	0.043 UB	-	1.4E-10
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	0.069 U	-	2.3E-11	NA	-	-	NA	-	-	0.043 UB	-	1.4E-11
Chrysene	-	3.0E+04	NA	-	-	0.069 U	-	2.3E-12	NA	-	-	NA	-	-	0.043 UB	-	1.4E-12
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	0.069 U	-	2.3E-09	NA	-	-	NA	-	-	0.043 UB	-	1.4E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	0.069 U	-	2.3E-10	NA	-	-	NA	-	-	0.043 UB	-	1.4E-10
Naphthalene	9.5E+02	6.5E+02	NA	-	-	0.069 U	7.3E-05	1.1E-10	NA	-	-	NA	-	-	0.58 J	6.1E-04	8.9E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	1.9E-02	-	-	1.2E-01	-	-	8.2E-02	-	-	**4.4E+00**	-	-	3.2E-01	-
Total PAH Risk	-		-	-	-	-	-	5.4E-09	-	-	-	-	-	-	-	-	4.2E-09
Total (PAH + Arsenic) Risk	-		-	-	4.5E-08	-	-	4.3E-08	-	-	1.7E-08	-	-	*3.0E-04*	-	-	1.3E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-20			SS-22			SS-23			SS-24			SS-25		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	19 J	1.0E-02	6.4E-08	322 J	1.7E-01	1.1E-06	3.9 UJ	2.1E-03	1.3E-08	97 J	5.2E-02	3.3E-07	27	1.4E-02	9.1E-08
Barium	8.6E+05	-	92,300	1.1E-01	-	956 J	1.1E-03	-	190	2.2E-04	-	391	4.5E-04	-	13,800 J	1.6E-02	-
Cadmium	1.9E+03	2.6E+05	10.5 J	5.5E-03	4.0E-11	1,580	8.3E-01	6.0E-09	563 J	2.9E-01	2.1E-09	1,120 J	5.9E-01	4.2E-09	5.9	3.1E-03	2.2E-11
Cobalt	1.2E+04	5.3E+04	0.88 U	7.3E-05	1.7E-11	355 J	2.9E-02	6.7E-09	102	8.4E-03	1.9E-09	68.1	5.6E-03	1.3E-09	9.3	7.7E-04	1.8E-10
Copper	4.4E+04	-	84.3	1.9E-03	-	12,500	2.8E-01	-	6,560	1.5E-01	-	8,620	1.9E-01	-	112 J	2.5E-03	-
Lead	3.7E+03	-	480	1.3E-01	-	38,800	**1.0E+01**	-	1,580	4.3E-01	-	6,860	**1.8E+00**	-	146 J	3.9E-02	-
Manganese	8.1E+04	-	462	5.7E-03	-	153,000 J	**1.9E+00**	-	3,550	4.4E-02	-	2,630	3.3E-02	-	5,620 J	6.9E-02	-
Mercury	8.8E+03	-	0.005 U	5.7E-07	-	5.9 J	6.7E-04	-	0.0256 J	2.9E-06	-	0.0801 J	9.1E-06	-	0.0046 U	5.2E-07	-
Zinc	1.0E+06	-	964	9.6E-04	-	176,000	1.8E-01	-	115,000	1.2E-01	-	91,300	9.1E-02	-	562	5.6E-04	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.06 U	-	2.0E-10	0.098 UJ	-	3.3E-10	1.6	-	5.3E-09	1.4	-	4.7E-09	0.059 U	-	2.0E-10
Benzo(a)pyrene	-	3.0E+01	0.06 U	-	2.0E-09	0.098 UJ	-	3.3E-09	0.59 J	-	2.0E-08	0.32 J	-	1.1E-08	0.059 U	-	2.0E-09
Benzo(b)fluoranthene	-	3.0E+02	0.06 U	-	2.0E-10	0.098 UJ	-	3.3E-10	1.4	-	4.7E-09	0.85	-	2.8E-09	0.059 U	-	2.0E-10
Benzo(k)fluoranthene	-	3.0E+03	0.06 U	-	2.0E-11	0.098 UJ	-	3.3E-11	0.4 J	-	1.3E-10	0.33 J	-	1.1E-10	0.059 U	-	2.0E-11
Chrysene	-	3.0E+04	0.06 U	-	2.0E-12	0.098 UJ	-	3.3E-12	2.1	-	7.0E-11	2.2	-	7.3E-11	0.059 U	-	2.0E-12
Dibenz(a,h)anthracene	-	3.0E+01	0.06 U	-	2.0E-09	0.098 UJ	-	3.3E-09	0.25 J	-	8.3E-09	0.17 J	-	5.7E-09	0.059 U	-	2.0E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.06 U	-	2.0E-10	0.098 UJ	-	3.3E-10	0.48 J	-	1.6E-09	0.27 J	-	9.0E-10	0.059 U	-	2.0E-10
Naphthalene	9.5E+02	6.5E+02	0.06 U	6.3E-05	9.2E-11	0.098 UJ	1.0E-04	1.5E-10	0.33 J	3.5E-04	5.1E-10	1.2	1.3E-03	1.8E-09	0.059 U	6.2E-05	9.1E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	1.1E-01	-	-	8.3E-01	-	-	3.0E-01	-	-	5.9E-01	-	-	1.9E-02	-
Total PAH Risk	-		-	-	4.7E-09	-	-	7.7E-09	-	-	4.0E-08	-	-	2.7E-08	-	-	4.6E-09
Total (PAH + Arsenic) Risk	-		-	-	6.9E-08	-	-	1.1E-06	-	-	5.3E-08	-	-	3.5E-07	-	-	9.6E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-26			SS-27A			SS-28			SS-29			SS-30A		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	4.5 U	2.4E-03	1.5E-08	209	1.1E-01	7.1E-07	2.8 UJ	1.5E-03	9.4E-09	5.8 J	3.1E-03	2.0E-08	3.5 U	1.9E-03	1.2E-08
Barium	8.6E+05	-	809 J	9.4E-04	-	501 J	5.8E-04	-	4,100	4.8E-03	-	138,000	1.6E-01	-	2,040 J	2.4E-03	-
Cadmium	1.9E+03	2.6E+05	1,680	8.8E-01	6.4E-09	2,980	**1.6E+00**	1.1E-08	133 J	7.0E-02	5.0E-10	5.3 J	2.8E-03	2.0E-11	775	4.1E-01	2.9E-09
Cobalt	1.2E+04	5.3E+04	1,600	1.3E-01	3.0E-08	104	8.6E-03	2.0E-09	11.2	9.3E-04	2.1E-10	0.86 U	7.1E-05	1.6E-11	449	3.7E-02	8.5E-09
Copper	4.4E+04	-	18,500 J	4.2E-01	-	27,800 J	6.3E-01	-	688	1.6E-02	-	74.7	1.7E-03	-	35,200 J	8.0E-01	-
Lead	3.7E+03	-	22,800 J	**6.1E+00**	-	75,700 J	**2.0E+01**	-	1,380	3.7E-01	-	523	1.4E-01	-	25,300 J	**6.8E+00**	-
Manganese	8.1E+04	-	74,800 J	9.2E-01	-	3,350 J	4.1E-02	-	743	9.2E-03	-	248	3.1E-03	-	11,600 J	1.4E-01	-
Mercury	8.8E+03	-	4.3	4.9E-04	-	14.7	1.7E-03	-	3.2	3.6E-04	-	0.0109 J	1.2E-06	-	0.6	6.8E-05	-
Zinc	1.0E+06	-	162,000	1.6E-01	-	157,000	1.6E-01	-	39,600	4.0E-02	-	274	2.7E-04	-	168,000	1.7E-01	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	2.0E-10	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	2.0E-09	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	2.0E-10	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	2.0E-11	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	2.0E-12	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	2.0E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.059 U	-	2.0E-10	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	0.059 U	6.2E-05	9.1E-11	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	8.8E-01	-	-	**1.6E+00**	-	-	7.4E-02	-	-	1.6E-01	-	-	4.1E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	4.6E-09	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.5E-08	-	-	7.1E-07	-	-	9.4E-09	-	-	2.4E-08	-	-	1.2E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
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* = Duplicate analysis not within control limits.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-31			SS-32			SS-33			SS-34			SS-36		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	19	1.0E-02	6.4E-08	11.8 J	6.3E-03	4.0E-08	57	3.0E-02	1.9E-07	406	2.2E-01	1.4E-06	44	2.3E-02	1.5E-07
Barium	8.6E+05	-	5,810 J	6.7E-03	-	99,800 J	1.2E-01	-	539 J	6.3E-04	-	244 J	2.8E-04	-	2,520 J	2.9E-03	-
Cadmium	1.9E+03	2.6E+05	36	1.9E-02	1.4E-10	29.5	1.5E-02	1.1E-10	38.6	2.0E-02	1.5E-10	20.2	1.1E-02	7.7E-11	66.9	3.5E-02	2.5E-10
Cobalt	1.2E+04	5.3E+04	5.89 J	4.9E-04	1.1E-10	0.83 U	6.9E-05	1.6E-11	32.8	2.7E-03	6.2E-10	16	1.3E-03	3.0E-10	18	1.5E-03	3.4E-10
Copper	4.4E+04	-	168 J	3.8E-03	-	210 J	4.7E-03	-	812	1.8E-02	-	2,220	5.0E-02	-	471	1.1E-02	-
Lead	3.7E+03	-	1,240 J	3.3E-01	-	226 J	6.1E-02	-	6,630 J	**1.8E+00**	-	33,900 J	**9.1E+00**	-	2,260 J	6.1E-01	-
Manganese	8.1E+04	-	543 J	6.7E-03	-	495 J	6.1E-03	-	2,000 J	2.5E-02	-	2,660 J	3.3E-02	-	1,490 J	1.8E-02	-
Mercury	8.8E+03	-	0.0692	7.9E-06	-	0.0045 U	5.1E-07	-	0.12 J	1.4E-05	-	0.0035 U	4.0E-07	-	0.32	3.6E-05	-
Zinc	1.0E+06	-	7,340	7.3E-03	-	1,060	1.1E-03	-	11,200 J	1.1E-02	-	16,300 J	1.6E-02	-	7,700 J	7.7E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	0.051 U	-	1.7E-10	NA	-	-	0.04 U	-	1.3E-10	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	0.051 U	-	1.7E-09	NA	-	-	0.04 U	-	1.3E-09	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	0.051 U	-	1.7E-10	NA	-	-	0.04 U	-	1.3E-10	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	0.051 U	-	1.7E-11	NA	-	-	0.04 U	-	1.3E-11	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	0.051 U	-	1.7E-12	NA	-	-	0.04 U	-	1.3E-12	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	0.051 U	-	1.7E-09	NA	-	-	0.04 U	-	1.3E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	0.051 U	-	1.7E-10	NA	-	-	0.04 U	-	1.3E-10	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	0.051 U	5.4E-05	7.8E-11	NA	-	-	0.04 U	4.2E-05	6.1E-11	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.6E-02	-	-	1.3E-01	-	-	2.1E-02	-	-	1.1E-02	-	-	3.8E-02	-
Total PAH Risk	-		-	-	-	-	-	4.0E-09	-	-	-	-	-	3.1E-09	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	6.4E-08	-	-	4.4E-08	-	-	1.9E-07	-	-	1.4E-06	-	-	1.5E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-37			SS-38			SS-39			SS-40			SS-41		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	130	6.9E-02	4.4E-07	215 J	1.1E-01	7.3E-07	15.2 J	8.1E-03	5.1E-08	53 J	2.8E-02	1.8E-07	287 J	1.5E-01	9.7E-07
Barium	8.6E+05	-	479 J	5.6E-04	-	304 J	3.5E-04	-	125,000 J	1.4E-01	-	1,060 J	1.2E-03	-	131 J	1.5E-04	-
Cadmium	1.9E+03	2.6E+05	128	6.7E-02	4.8E-10	14.5	7.6E-03	5.5E-11	5.9	3.1E-03	2.2E-11	2,040	1.1E+00	7.7E-09	356	1.9E-01	1.3E-09
Cobalt	1.2E+04	5.3E+04	53.4	4.4E-03	1.0E-09	52.8 J	4.4E-03	1.0E-09	0.9 UJ	7.4E-05	1.7E-11	81.6 J	6.7E-03	1.5E-09	30 J	2.5E-03	5.7E-10
Copper	4.4E+04	-	4,580	1.0E-01	-	3,900	8.8E-02	-	74.9	1.7E-03	-	9,400	2.1E-01	-	4,820	1.1E-01	-
Lead	3.7E+03	-	2,010 J	5.4E-01	-	7,110	**1.9E+00**	-	554	1.5E-01	-	8,930	**2.4E+00**	-	5,680	**1.5E+00**	-
Manganese	8.1E+04	-	1,450 J	1.8E-02	-	1,790 J	2.2E-02	-	757 J	9.4E-03	-	7,190 J	8.9E-02	-	2,070 J	2.6E-02	-
Mercury	8.8E+03	-	0.078 J	8.9E-06	-	0.149 J	1.7E-05	-	0.0075 J	8.5E-07	-	0.44 J	5.0E-05	-	0.0655 J	7.4E-06	-
Zinc	1.0E+06	-	11,900 J	1.2E-02	-	3,430	3.4E-03	-	734	7.3E-04	-	88,800	8.9E-02	-	127,000	1.3E-01	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	0.048 UB	-	1.6E-10	NA	-	-	0.14 J	-	4.7E-10	0.069 UB	-	2.3E-10
Benzo(a)pyrene	-	3.0E+01	NA	-	-	0.048 UB	-	1.6E-09	NA	-	-	0.061 U	-	2.0E-09	0.069 UB	-	2.3E-09
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	0.048 UB	-	1.6E-10	NA	-	-	0.061 U	-	2.0E-10	0.069 UB	-	2.3E-10
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	0.048 UB	-	1.6E-11	NA	-	-	0.061 U	-	2.0E-11	0.069 UB	-	2.3E-11
Chrysene	-	3.0E+04	NA	-	-	0.048 UB	-	1.6E-12	NA	-	-	0.13 J	-	4.3E-12	0.069 UB	-	2.3E-12
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	0.048 UB	-	1.6E-09	NA	-	-	0.061 U	-	2.0E-09	0.069 UB	-	2.3E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	0.048 UB	-	1.6E-10	NA	-	-	0.061 U	-	2.0E-10	0.069 UB	-	2.3E-10
Naphthalene	9.5E+02	6.5E+02	NA	-	-	0.057 J	6.0E-05	8.8E-11	NA	-	-	0.4 J	4.2E-04	6.1E-10	1.4 J	1.5E-03	2.2E-09
Totals																	
Total (Barium + Cadmium) HI	-		-	6.8E-02	-	-	7.9E-03	-	-	1.5E-01	-	-	1.1E+00	-	-	1.9E-01	-
Total PAH Risk	-		-	-	-	-	-	3.8E-09	-	-	-	-	-	5.6E-09	-	-	7.5E-09
Total (PAH + Arsenic) Risk	-		-	-	4.4E-07	-	-	7.3E-07	-	-	5.1E-08	-	-	1.8E-07	-	-	9.8E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-42			SS-43			SS-44			SS-45			SS-46		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	30	1.6E-02	1.0E-07	9.8 J	5.2E-03	3.3E-08	349 J	1.9E-01	1.2E-06	328 J	1.7E-01	1.1E-06	370 J	2.0E-01	1.2E-06
Barium	8.6E+05	-	111	1.3E-04	-	4,580 J	5.3E-03	-	19,300	2.2E-02	-	63	7.3E-05	-	508 J	5.9E-04	-
Cadmium	1.9E+03	2.6E+05	288	1.5E-01	1.1E-09	21.9	1.1E-02	8.3E-11	43.1 J	2.3E-02	1.6E-10	13.1 J	6.9E-03	5.0E-11	37.5	2.0E-02	1.4E-10
Cobalt	1.2E+04	5.3E+04	51.8	4.3E-03	9.8E-10	8.4 J	6.9E-04	1.6E-10	30.7	2.5E-03	5.8E-10	36.9	3.1E-03	7.0E-10	37.5 J	3.1E-03	7.1E-10
Copper	4.4E+04	-	5,120	1.2E-01	-	398	9.0E-03	-	3,540	8.0E-02	-	3,860	8.7E-02	-	3,190	7.2E-02	-
Lead	3.7E+03	-	4,120	1.1E+00	-	1,020	2.7E-01	-	8,370	**2.3E+00**	-	9,900	**2.7E+00**	-	7,060	**1.9E+00**	-
Manganese	8.1E+04	-	2,220	2.7E-02	-	343 J	4.2E-03	-	1,930	2.4E-02	-	1,620	2.0E-02	-	1,810 J	2.2E-02	-
Mercury	8.8E+03	-	0.0497 J	5.6E-06	-	3.3 J	3.7E-04	-	0.0634 J	7.2E-06	-	0.0867 J	9.8E-06	-	0.0995 J	1.1E-05	-
Zinc	1.0E+06	-	70,200	7.0E-02	-	4,740	4.7E-03	-	7,260	7.3E-03	-	8,880	8.9E-03	-	11,500	1.2E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.063 U	-	2.1E-10	NA	-	-	0.053 U	-	1.8E-10	NA	-	-	0.046 UJ	-	1.5E-10
Benzo(a)pyrene	-	3.0E+01	0.063 U	-	2.1E-09	NA	-	-	0.053 U	-	1.8E-09	NA	-	-	0.046 UJ	-	1.5E-09
Benzo(b)fluoranthene	-	3.0E+02	0.063 U	-	2.1E-10	NA	-	-	0.053 U	-	1.8E-10	NA	-	-	0.046 UJ	-	1.5E-10
Benzo(k)fluoranthene	-	3.0E+03	0.063 U	-	2.1E-11	NA	-	-	0.053 U	-	1.8E-11	NA	-	-	0.046 UJ	-	1.5E-11
Chrysene	-	3.0E+04	0.063 U	-	2.1E-12	NA	-	-	0.053 U	-	1.8E-12	NA	-	-	0.046 UJ	-	1.5E-12
Dibenz(a,h)anthracene	-	3.0E+01	0.063 U	-	2.1E-09	NA	-	-	0.053 U	-	1.8E-09	NA	-	-	0.046 UJ	-	1.5E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.063 U	-	2.1E-10	NA	-	-	0.053 U	-	1.8E-10	NA	-	-	0.046 UJ	-	1.5E-10
Naphthalene	9.5E+02	6.5E+02	0.49 J	5.2E-04	7.5E-10	NA	-	-	0.13 J	1.4E-04	2.0E-10	NA	-	-	0.1 J	1.1E-04	1.5E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	1.5E-01	-	-	1.7E-02	-	-	4.5E-02	-	-	6.9E-03	-	-	2.0E-02	-
Total PAH Risk	-		-	-	5.6E-09	-	-	-	-	-	4.3E-09	-	-	-	-	-	3.7E-09
Total (PAH + Arsenic) Risk	-		-	-	1.1E-07	-	-	3.3E-08	-	-	1.2E-06	-	-	1.1E-06	-	-	1.3E-06

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-47			SS-48			SS-49			SS-50A			SS-51A		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	157 J	8.4E-02	5.3E-07	204 J	1.1E-01	6.9E-07	21 J	1.1E-02	7.1E-08	81 J	4.3E-02	2.7E-07	73 J	3.9E-02	2.5E-07
Barium	8.6E+05	-	85	9.9E-05	-	54	6.3E-05	-	447	5.2E-04	-	327	3.8E-04	-	1,210	1.4E-03	-
Cadmium	1.9E+03	2.6E+05	17.6 J	9.2E-03	6.7E-11	13.3 J	7.0E-03	5.0E-11	40.7 J	2.1E-02	1.5E-10	1,840 J	9.6E-01	7.0E-09	574 J	3.0E-01	2.2E-09
Cobalt	1.2E+04	5.3E+04	26.2	2.2E-03	5.0E-10	24.1	2.0E-03	4.6E-10	28.4	2.3E-03	5.4E-10	73.4	6.1E-03	1.4E-09	58.2	4.8E-03	1.1E-09
Copper	4.4E+04	-	5,550	1.3E-01	-	6,280	1.4E-01	-	2,850	6.4E-02	-	4,510	1.0E-01	-	3,370	7.6E-02	-
Lead	3.7E+03	-	3,250	8.7E-01	-	2,790	7.5E-01	-	1,340	3.6E-01	-	5,130	1.4E+00	-	2,850	7.7E-01	-
Manganese	8.1E+04	-	987	1.2E-02	-	1,030	1.3E-02	-	36,000	4.5E-01	-	2,780	3.4E-02	-	2,330	2.9E-02	-
Mercury	8.8E+03	-	0.0161 J	1.8E-06	-	0.0241 J	2.7E-06	-	0.0318 J	3.6E-06	-	0.0639 J	7.3E-06	-	0.151 J	1.7E-05	-
Zinc	1.0E+06	-	6,950	7.0E-03	-	4,790	4.8E-03	-	16,200	1.6E-02	-	166,000	1.7E-01	-	91,300	9.1E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.047 U	-	1.6E-10	NA	-	-	0.041 J	-	1.4E-10	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	0.047 U	-	1.6E-09	NA	-	-	0.047 J	-	1.6E-09	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	0.047 U	-	1.6E-10	NA	-	-	0.09 J	-	3.0E-10	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	0.047 U	-	1.6E-11	NA	-	-	0.037 U	-	1.2E-11	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	0.047 U	-	1.6E-12	NA	-	-	0.062 J	-	2.1E-12	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	0.047 U	-	1.6E-09	NA	-	-	0.037 U	-	1.2E-09	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.047 U	-	1.6E-10	NA	-	-	0.042 J	-	1.4E-10	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	0.13 J	1.4E-04	2.0E-10	NA	-	-	0.037 U	3.9E-05	5.7E-11	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	9.3E-03	-	-	7.0E-03	-	-	2.2E-02	-	-	9.6E-01	-	-	3.0E-01	-
Total PAH Risk	-		-	-	3.8E-09	-	-	-	-	-	3.4E-09	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	5.3E-07	-	-	6.9E-07	-	-	7.4E-08	-	-	2.7E-07	-	-	2.5E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-53			SS-55			SS-56			SS-57			SS-58		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	255	1.4E-01	8.6E-07	359	1.9E-01	1.2E-06	2.4 U	1.3E-03	8.1E-09	105	5.6E-02	3.5E-07	148	7.9E-02	5.0E-07
Barium	8.6E+05	-	210 J	2.4E-04	-	215 J	2.5E-04	-	675 J	7.8E-04	-	851 J	9.9E-04	-	10,800 J	1.3E-02	-
Cadmium	1.9E+03	2.6E+05	16.1	8.4E-03	6.1E-11	17.8	9.3E-03	6.7E-11	60.6	3.2E-02	2.3E-10	40.6	2.1E-02	1.5E-10	86	4.5E-02	3.3E-10
Cobalt	1.2E+04	5.3E+04	26.2	2.2E-03	5.0E-10	30	2.5E-03	5.7E-10	67.5	5.6E-03	1.3E-09	21.1	1.7E-03	4.0E-10	16.8	1.4E-03	3.2E-10
Copper	4.4E+04	-	4,190	9.5E-02	-	6,300	1.4E-01	-	2,690	6.1E-02	-	681 J	1.5E-02	-	421 J	9.5E-03	-
Lead	3.7E+03	-	4,690 J	1.3E+00	-	6,430 J	**1.7E+00**	-	789 J	2.1E-01	-	4,040 J	1.1E+00	-	4,630 J	1.2E+00	-
Manganese	8.1E+04	-	1,110 J	1.4E-02	-	1,730 J	2.1E-02	-	40,400 J	5.0E-01	-	2,280 J	2.8E-02	-	3,010 J	3.7E-02	-
Mercury	8.8E+03	-	0.0166 J	1.9E-06	-	0.0225 J	2.6E-06	-	0.0121 J	1.4E-06	-	0.89	1.0E-04	-	3.6	4.1E-04	-
Zinc	1.0E+06	-	8,330 J	8.3E-03	-	6,010 J	6.0E-03	-	33,000 J	3.3E-02	-	33,400	3.3E-02	-	31,100	3.1E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.047 U	-	1.6E-10	NA	-	-	NA	-	-	0.04 U	-	1.3E-10	NA	-	-
Benzo(a)pyrene	-	3.0E+01	0.047 U	-	1.6E-09	NA	-	-	NA	-	-	0.04 U	-	1.3E-09	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	0.047 U	-	1.6E-10	NA	-	-	NA	-	-	0.04 U	-	1.3E-10	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	0.047 U	-	1.6E-11	NA	-	-	NA	-	-	0.04 U	-	1.3E-11	NA	-	-
Chrysene	-	3.0E+04	0.047 U	-	1.6E-12	NA	-	-	NA	-	-	0.04 U	-	1.3E-12	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	0.047 U	-	1.6E-09	NA	-	-	NA	-	-	0.04 U	-	1.3E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.047 U	-	1.6E-10	NA	-	-	NA	-	-	0.04 U	-	1.3E-10	NA	-	-
Naphthalene	9.5E+02	6.5E+02	0.047 U	5.0E-05	7.2E-11	NA	-	-	NA	-	-	0.04 U	4.2E-05	6.1E-11	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	8.7E-03	-	-	9.6E-03	-	-	3.3E-02	-	-	2.2E-02	-	-	5.8E-02	-
Total PAH Risk	-		-	-	3.7E-09	-	-	-	-	-	-	-	-	3.1E-09	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	8.6E-07	-	-	1.2E-06	-	-	8.1E-09	-	-	3.6E-07	-	-	5.0E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-59			TA-01			TA-02			TA-03			TP-120		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	24	1.3E-02	8.1E-08	3 U	1.6E-03	1.0E-08	212 J	1.1E-01	7.2E-07	2.7 U	1.4E-03	9.1E-09	95.3	5.1E-02	3.2E-07
Barium	8.6E+05	-	184 J	2.1E-04	-	375	4.3E-04	-	263	3.0E-04	-	131	1.5E-04	-	3,670	4.3E-03	-
Cadmium	1.9E+03	2.6E+05	33.1	1.7E-02	1.3E-10	110	5.8E-02	4.2E-10	121	6.3E-02	4.6E-10	103	5.4E-02	3.9E-10	286	1.5E-01	1.1E-09
Cobalt	1.2E+04	5.3E+04	15.4	1.3E-03	2.9E-10	170 J	1.4E-02	3.2E-09	36.7 J	3.0E-03	7.0E-10	5.41 J	4.5E-04	1.0E-10	20	1.7E-03	3.8E-10
Copper	4.4E+04	-	115 J	2.6E-03	-	31,000	7.0E-01	-	4,480	1.0E-01	-	237	5.4E-03	-	1,330	3.0E-02	-
Lead	3.7E+03	-	4,050 J	1.1E+00	-	2,980	8.0E-01	-	6,610	**1.8E+00**	-	661	1.8E-01	-	6,590	**1.8E+00**	-
Manganese	8.1E+04	-	1,930 J	2.4E-02	-	8,390	1.0E-01	-	1,810	2.2E-02	-	401	5.0E-03	-	1,270	1.6E-02	-
Mercury	8.8E+03	-	0.36	4.1E-05	-	1.29 J	1.5E-04	-	0.0579 J	6.6E-06	-	0.82 J	9.3E-05	-	11.5	1.3E-03	-
Zinc	1.0E+06	-	16,000	1.6E-02	-	35,300	3.5E-02	-	15,000	1.5E-02	-	25,900	2.6E-02	-	43,800	4.4E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.18 J	-	6.0E-10	NA	-	-	NA	-	-	NA	-	-	0.56	-	1.9E-09
Benzo(a)pyrene	-	3.0E+01	0.16 J	-	5.3E-09	NA	-	-	NA	-	-	NA	-	-	0.44	-	1.5E-08
Benzo(b)fluoranthene	-	3.0E+02	0.25 J	-	8.3E-10	NA	-	-	NA	-	-	NA	-	-	0.74	-	2.5E-09
Benzo(k)fluoranthene	-	3.0E+03	0.085 J	-	2.8E-11	NA	-	-	NA	-	-	NA	-	-	0.28	-	9.3E-11
Chrysene	-	3.0E+04	0.26 J	-	8.6E-12	NA	-	-	NA	-	-	NA	-	-	0.68	-	2.3E-11
Dibenz(a,h)anthracene	-	3.0E+01	0.042 U	-	1.4E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.13 J	-	4.3E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	0.042 U	4.4E-05	6.5E-11	NA	-	-	NA	-	-	NA	-	-	0.21 U	2.2E-04	3.2E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	1.8E-02	-	-	5.8E-02	-	-	6.4E-02	-	-	5.4E-02	-	-	1.5E-01	-
Total PAH Risk	-		-	-	8.7E-09	-	-	-	-	-	-	-	-	-	-	-	1.9E-08
Total (PAH + Arsenic) Risk	-		-	-	9.0E-08	-	-	1.0E-08	-	-	7.2E-07	-	-	9.1E-09	-	-	3.4E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-01(S)			W-02(S)			W-05(S)			W-06(S)			W-07(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	5.9 J	3.1E-03	2.0E-08	9.2 J	4.9E-03	3.1E-08	73.7	3.9E-02	2.5E-07	10 J	5.3E-03	3.4E-08	16.9	9.0E-03	5.7E-08
Barium	8.6E+05	-	1,190	1.4E-03	-	445	5.2E-04	-	4,990	5.8E-03	-	380	4.4E-04	-	1,340	1.6E-03	-
Cadmium	1.9E+03	2.6E+05	11.5	6.0E-03	4.4E-11	36.9	1.9E-02	1.4E-10	125	6.5E-02	4.7E-10	28	1.5E-02	1.1E-10	54.6	2.9E-02	2.1E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	3.4 B	2.8E-04	6.4E-11
Copper	4.4E+04	-	22.3	5.0E-04	-	59.3	1.3E-03	-	314	7.1E-03	-	170	3.8E-03	-	534	1.2E-02	-
Lead	3.7E+03	-	71	1.9E-02	-	195	5.2E-02	-	3,290	8.9E-01	-	980	2.6E-01	-	674	1.8E-01	-
Manganese	8.1E+04	-	433	5.4E-03	-	484	6.0E-03	-	1,680	2.1E-02	-	120	1.5E-03	-	591	7.3E-03	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.027 UJ	3.1E-06	-
Zinc	1.0E+06	-	1,180	1.2E-03	-	2,460	2.5E-03	-	20,600 J	2.1E-02	-	3,100	3.1E-03	-	4,600	4.6E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	7.4E-03	-	-	2.0E-02	-	-	7.1E-02	-	-	1.5E-02	-	-	3.0E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.0E-08	-	-	3.1E-08	-	-	2.5E-07	-	-	3.4E-08	-	-	5.7E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
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mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-08(S)			W-09(S)			W-10(S)			W-11(S)			W-12(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	3.4 J	1.8E-03	1.1E-08	6.3	3.4E-03	2.1E-08	8.2	4.4E-03	2.8E-08	5.5	2.9E-03	1.9E-08	6.8	3.6E-03	2.3E-08
Barium	8.6E+05	-	55 J	6.4E-05	-	163	1.9E-04	-	394	4.6E-04	-	61	7.1E-05	-	108	1.3E-04	-
Cadmium	1.9E+03	2.6E+05	3	1.6E-03	1.1E-11	9.8	5.1E-03	3.7E-11	15.8	8.3E-03	6.0E-11	4.2 J	2.2E-03	1.6E-11	7.2	3.8E-03	2.7E-11
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	17 J	3.8E-04	-	28.5	6.4E-04	-	46.1 J	1.0E-03	-	29.9 J	6.8E-04	-	17.6	4.0E-04	-
Lead	3.7E+03	-	24 J	6.5E-03	-	54.2 J	1.5E-02	-	189	5.1E-02	-	27.4	7.4E-03	-	35	9.4E-03	-
Manganese	8.1E+04	-	330 J	4.1E-03	-	444	5.5E-03	-	656	8.1E-03	-	482	6.0E-03	-	470	5.8E-03	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	370	3.7E-04	-	1,010 J	1.0E-03	-	1,390	1.4E-03	-	365	3.7E-04	-	619 J	6.2E-04	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.6E-03	-	-	5.3E-03	-	-	8.7E-03	-	-	2.3E-03	-	-	3.9E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.1E-08	-	-	2.1E-08	-	-	2.8E-08	-	-	1.9E-08	-	-	2.3E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-13(S)			W-14(S)			W-15(S)			W-16(S)			W-17(D)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	15.8	8.4E-03	5.3E-08	76.8	4.1E-02	2.6E-07	120	6.4E-02	4.0E-07	358	1.9E-01	1.2E-06	233 J	1.2E-01	7.9E-07
Barium	8.6E+05	-	619	7.2E-04	-	3,910	4.5E-03	-	727	8.4E-04	-	7,290	8.5E-03	-	7,070	8.2E-03	-
Cadmium	1.9E+03	2.6E+05	31.8	1.7E-02	1.2E-10	38.8	2.0E-02	1.5E-10	212	1.1E-01	8.0E-10	134	7.0E-02	5.1E-10	258	1.4E-01	9.8E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	135	3.1E-03	-	1,770	4.0E-02	-	4,670	1.1E-01	-	7,510	1.7E-01	-	4,160	9.4E-02	-
Lead	3.7E+03	-	266	7.2E-02	-	917	2.5E-01	-	4,910	1.3E+00	-	6,090	**1.6E+00**	-	12,500	**3.4E+00**	-
Manganese	8.1E+04	-	407	5.0E-03	-	992	1.2E-02	-	1,560	1.9E-02	-	1,800	2.2E-02	-	2,070	2.6E-02	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	6,990	7.0E-03	-	5,860 J	5.9E-03	-	117,000 J	1.2E-01	-	20,900	2.1E-02	-	48,900	4.9E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.7E-02	-	-	2.5E-02	-	-	1.1E-01	-	-	7.9E-02	-	-	1.4E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	5.3E-08	-	-	2.6E-07	-	-	4.0E-07	-	-	1.2E-06	-	-	7.9E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-18(S)			W-19(S)			W-20(I)			W-21(D)			W-22(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	190	1.0E-01	6.4E-07	175	9.3E-02	5.9E-07	9.8	5.2E-03	3.3E-08	153	8.2E-02	5.2E-07	33.1 J	1.8E-02	1.1E-07
Barium	8.6E+05	-	2,320	2.7E-03	-	725	8.4E-04	-	166	1.9E-04	-	5,440	6.3E-03	-	6,750	7.8E-03	-
Cadmium	1.9E+03	2.6E+05	126	6.6E-02	4.8E-10	82.3 J	4.3E-02	3.1E-10	29	1.5E-02	1.1E-10	340	1.8E-01	1.3E-09	36.6	1.9E-02	1.4E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	18.2	1.5E-03	3.4E-10	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	723	1.6E-02	-	2,160	4.9E-02	-	394	8.9E-03	-	16,400	3.7E-01	-	634	1.4E-02	-
Lead	3.7E+03	-	2,330	6.3E-01	-	5,930	**1.6E+00**	-	650	1.7E-01	-	4,990	1.3E+00	-	890	2.4E-01	-
Manganese	8.1E+04	-	4,420	5.5E-02	-	1,300	1.6E-02	-	503	6.2E-03	-	1,540	1.9E-02	-	531	6.6E-03	-
Mercury	8.8E+03	-	NA	-	-	83	9.4E-03	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	17,500	1.8E-02	-	13,000 J	1.3E-02	-	2,010	2.0E-03	-	49,600	5.0E-02	-	9,360	9.4E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	6.9E-02	-	-	4.4E-02	-	-	1.5E-02	-	-	1.8E-01	-	-	2.7E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	6.4E-07	-	-	5.9E-07	-	-	3.3E-08	-	-	5.2E-07	-	-	1.1E-07

Notes:

Risk:
> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):
> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		Z-02			Z-03			Z-05			Z-09		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals														
Arsenic	1.9E+03	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.7 B	3.7E-04	2.4E-09
Barium	8.6E+05	-	116	1.3E-04	-	16.3	1.9E-05	-	164	1.9E-04	-	2,040	2.4E-03	-
Cadmium	1.9E+03	2.6E+05	1.5 B	7.9E-04	5.7E-12	0.5 B	2.6E-04	1.9E-12	3.2	1.7E-03	1.2E-11	26.3	1.4E-02	1.0E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	NA	-	-	12	9.9E-04	2.3E-10
Copper	4.4E+04	-	NA	-	-	NA	-	-	NA	-	-	173	3.9E-03	-
Lead	3.7E+03	-	72	1.9E-02	-	6 B	1.6E-03	-	32	8.6E-03	-	81	2.2E-02	-
Manganese	8.1E+04	-	NA	-	-	NA	-	-	NA	-	-	56.6	7.0E-04	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	NA	-	-	0.04 B	4.5E-06	-
Zinc	1.0E+06	-	452	4.5E-04	-	148	1.5E-04	-	393	3.9E-04	-	1,570	1.6E-03	-
PAHs														
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals														
Total (Barium + Cadmium) HI	-		-	9.2E-04	-	-	2.8E-04	-	-	1.9E-03	-	-	1.6E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	-	-	-	-	-	-	-	-	-	2.4E-09

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		A-01			A-02			A-03			A-04			B-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	2.6	1.4E-03	8.8E-09	2.4	1.3E-03	8.1E-09	4.1	2.2E-03	1.4E-08	6.6	3.5E-03	2.2E-08	4.3	2.3E-03	1.5E-08
Barium	8.6E+05	-	33	3.8E-05	-	37 J	4.3E-05	-	134	1.6E-04	-	156	1.8E-04	-	42	4.9E-05	-
Cadmium	1.9E+03	2.6E+05	0.32 J	1.7E-04	1.2E-12	0.069 U	3.6E-05	2.6E-13	2.1 J	1.1E-03	8.0E-12	16.1 J	8.4E-03	6.1E-11	0.2 J	1.0E-04	7.6E-13
Cobalt	1.2E+04	5.3E+04	NA	-	-	5.2 B	4.3E-04	9.8E-11	6.2	5.1E-04	1.2E-10	NA	-	-	5.3 J	4.4E-04	1.0E-10
Copper	4.4E+04	-	11.6	2.6E-04	-	9.7	2.2E-04	-	9.3 J	2.1E-04	-	22.4	5.1E-04	-	12.5	2.8E-04	-
Lead	3.7E+03	-	6.5 J	1.7E-03	-	7.2 U	1.9E-03	-	32.5	8.7E-03	-	75.2	2.0E-02	-	5.7 J	1.5E-03	-
Manganese	8.1E+04	-	352	4.4E-03	-	150 J	1.9E-03	-	380	4.7E-03	-	383	4.7E-03	-	300	3.7E-03	-
Mercury	8.8E+03	-	NA	-	-	0.019 B	2.2E-06	-	0.0085 U	9.6E-07	-	NA	-	-	0.0129 J	1.5E-06	-
Zinc	1.0E+06	-	30	3.0E-05	-	29	2.9E-05	-	475	4.8E-04	-	1,150	1.2E-03	-	27	2.7E-05	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	0.035 U	-	1.2E-10	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	0.035 U	-	1.2E-09	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	0.035 U	-	1.2E-10	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	0.035 U	-	1.2E-11	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	0.035 U	-	1.2E-12	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	0.035 U	-	1.2E-09	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	0.035 U	-	1.2E-10	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	0.035 U	3.7E-05	5.4E-11	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.1E-04	-	-	7.9E-05	-	-	1.3E-03	-	-	8.6E-03	-	-	1.5E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	2.7E-09	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	8.8E-09	-	-	8.1E-09	-	-	1.7E-08	-	-	2.2E-08	-	-	1.5E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
R = The result was considered unusable during the quality assurance review.
N = Presumptive evidence of the presence of the compund.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		B-01			B-02			B-03			B-04			B-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	4.3	2.3E-03	1.5E-08	6 J	3.2E-03	2.0E-08	5.6 J	3.0E-03	1.9E-08	70.7	3.8E-02	2.4E-07	395	2.1E-01	1.3E-06
Barium	8.6E+05	-	42	4.9E-05	-	870 J	1.0E-03	-	783	9.1E-04	-	2,660	3.1E-03	-	849	9.8E-04	-
Cadmium	1.9E+03	2.6E+05	0.2 J	1.0E-04	7.6E-13	61	3.2E-02	2.3E-10	73.1	3.8E-02	2.8E-10	308	1.6E-01	1.2E-09	2,190	1.1E+00	8.3E-09
Cobalt	1.2E+04	5.3E+04	5.3 J	4.4E-04	1.0E-10	NA	-	-	19	1.6E-03	3.6E-10	NA	-	-	273	2.3E-02	5.2E-09
Copper	4.4E+04	-	12.5	2.8E-04	-	48 J	1.1E-03	-	528	1.2E-02	-	10,400	2.4E-01	-	28,800	6.5E-01	-
Lead	3.7E+03	-	5.7 J	1.5E-03	-	130 J	3.5E-02	-	97.1	2.6E-02	-	9,470	**2.5E+00**	-	59,900	**1.6E+01**	-
Manganese	8.1E+04	-	300	3.7E-03	-	410 J	5.1E-03	-	728	9.0E-03	-	3,700	4.6E-02	-	8,060	1.0E-01	-
Mercury	8.8E+03	-	0.0129 J	1.5E-06	-	NA	-	-	0.025 B	2.8E-06	-	NA	-	-	16.8	1.9E-03	-
Zinc	1.0E+06	-	27	2.7E-05	-	3,700	3.7E-03	-	4,000	4.0E-03	-	46,100	4.6E-02	-	129,000	1.3E-01	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	0.4 U	-	1.3E-09	NA	-	-	0.11 J	-	3.7E-10
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	0.4 U	-	1.3E-08	NA	-	-	0.076 J	-	2.5E-09
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	0.4 U	-	1.3E-09	NA	-	-	0.13 J	-	4.3E-10
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	0.4 U	-	1.3E-10	NA	-	-	0.56 U	-	1.9E-10
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	0.4 U	-	1.3E-11	NA	-	-	0.17 J	-	5.7E-12
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	0.4 U	-	1.3E-08	NA	-	-	0.56 U	-	1.9E-08
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	0.4 U	-	1.3E-09	NA	-	-	0.56 U	-	1.9E-09
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	0.4 U	4.2E-04	6.1E-10	NA	-	-	0.56 U	5.9E-04	8.6E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	1.5E-04	-	-	3.3E-02	-	-	3.9E-02	-	-	1.6E-01	-	-	1.1E+00	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	3.1E-08	-	-	-	-	-	2.5E-08
Total (PAH + Arsenic) Risk	-		-	-	1.5E-08	-	-	2.0E-08	-	-	5.0E-08	-	-	2.4E-07	-	-	1.4E-06

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		B-06			C-01			C-02			C-03			C-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	6.6 J	3.5E-03	2.2E-08	1.6	8.5E-04	5.4E-09	4.9 U	2.6E-03	1.7E-08	10.5	5.6E-03	3.5E-08	8.7	4.6E-03	2.9E-08
Barium	8.6E+05	-	48 J	5.6E-05	-	39 J	4.5E-05	-	379	4.4E-04	-	8,450	9.8E-03	-	7,010	8.1E-03	-
Cadmium	1.9E+03	2.6E+05	0.66 J	3.5E-04	2.5E-12	2.3 U	1.2E-03	8.7E-12	5.9	3.1E-03	2.2E-11	37.6	2.0E-02	1.4E-10	82.5	4.3E-02	3.1E-10
Cobalt	1.2E+04	5.3E+04	6.4	5.3E-04	1.2E-10	NA	-	-	5.1 B	4.2E-04	9.7E-11	9	7.4E-04	1.7E-10	18.9	1.6E-03	3.6E-10
Copper	4.4E+04	-	19.2 J	4.3E-04	-	10	2.3E-04	-	17.6	4.0E-04	-	57.9	1.3E-03	-	119	2.7E-03	-
Lead	3.7E+03	-	11.2 J	3.0E-03	-	5.4 U	1.5E-03	-	94.2	2.5E-02	-	182	4.9E-02	-	347	9.3E-02	-
Manganese	8.1E+04	-	530 J	6.6E-03	-	330 J	4.1E-03	-	353	4.4E-03	-	396	4.9E-03	-	1,340	1.7E-02	-
Mercury	8.8E+03	-	0.024 J	2.7E-06	-	NA	-	-	0.023 U	2.6E-06	-	0.0672 U	7.6E-06	-	0.0855 J	9.7E-06	-
Zinc	1.0E+06	-	47 J	4.7E-05	-	22	2.2E-05	-	2,080	2.1E-03	-	6,980 J	7.0E-03	-	8,420	8.4E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	0.36 U	-	1.2E-09	0.042 U	-	1.4E-10	0.042 U	-	1.4E-10
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	0.36 U	-	1.2E-08	0.042 U	-	1.4E-09	0.042 U	-	1.4E-09
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	0.36 U	-	1.2E-09	0.068 J	-	2.3E-10	0.042 U	-	1.4E-10
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	0.36 U	-	1.2E-10	0.042 UJ	-	1.4E-11	0.042 U	-	1.4E-11
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	0.36 U	-	1.2E-11	0.05 J	-	1.7E-12	0.042 U	-	1.4E-12
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	0.36 U	-	1.2E-08	0.042 U	-	1.4E-09	0.042 U	-	1.4E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	0.36 U	-	1.2E-09	0.042 U	-	1.4E-10	0.042 U	-	1.4E-10
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	0.36 U	3.8E-04	5.5E-10	0.042 U	4.4E-05	6.5E-11	0.042 U	4.4E-05	6.5E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	4.0E-04	-	-	1.3E-03	-	-	3.5E-03	-	-	2.9E-02	-	-	5.1E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	2.8E-08	-	-	3.4E-09	-	-	3.3E-09
Total (PAH + Arsenic) Risk	-		-	-	2.2E-08	-	-	5.4E-09	-	-	4.5E-08	-	-	3.9E-08	-	-	3.3E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		C-05			D-02			D-03			D-04			D-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	102	5.4E-02	3.4E-07	7.8	4.2E-03	2.6E-08	36.6	2.0E-02	1.2E-07	10.5	5.6E-03	3.5E-08	4.3	2.3E-03	1.5E-08
Barium	8.6E+05	-	382	4.4E-04	-	91	1.1E-04	-	60	7.0E-05	-	720	8.3E-04	-	40	4.6E-05	-
Cadmium	1.9E+03	2.6E+05	138	7.2E-02	5.2E-10	11.3	5.9E-03	4.3E-11	173 J	9.1E-02	6.6E-10	127	6.7E-02	4.8E-10	14.4	7.5E-03	5.5E-11
Cobalt	1.2E+04	5.3E+04	58.6	4.8E-03	1.1E-09	7.3 B	6.0E-04	1.4E-10	7.3	6.0E-04	1.4E-10	NA	-	-	NA	-	-
Copper	4.4E+04	-	1,320 J	3.0E-02	-	27.8	6.3E-04	-	152	3.4E-03	-	44.9	1.0E-03	-	32.5	7.3E-04	-
Lead	3.7E+03	-	8,340	**2.2E+00**	-	83.4 J	2.2E-02	-	118	3.2E-02	-	369	9.9E-02	-	5.7	1.5E-03	-
Manganese	8.1E+04	-	11,200	1.4E-01	-	536	6.6E-03	-	610	7.5E-03	-	131	1.6E-03	-	218	2.7E-03	-
Mercury	8.8E+03	-	0.32	3.6E-05	-	0.025 U	2.8E-06	-	0.0158 U	1.8E-06	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	40,200	4.0E-02	-	1,490 J	1.5E-03	-	26,300	2.6E-02	-	6,100	6.1E-03	-	3,980 J	4.0E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.1 J	-	3.3E-10	0.4 U	-	1.3E-09	0.039 UJ	-	1.3E-10	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	0.079 J	-	2.6E-09	0.4 U	-	1.3E-08	0.039 UJ	-	1.3E-09	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	0.13 J	-	4.3E-10	0.4 U	-	1.3E-09	0.039 UJ	-	1.3E-10	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	0.046 J	-	1.5E-11	0.4 U	-	1.3E-10	0.039 UJ	-	1.3E-11	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	0.13 J	-	4.3E-12	0.4 U	-	1.3E-11	0.039 UJ	-	1.3E-12	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	0.37 U	-	1.2E-08	0.4 U	-	1.3E-08	0.039 UJ	-	1.3E-09	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.049 J	-	1.6E-10	0.4 U	-	1.3E-09	0.039 UJ	-	1.3E-10	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	0.37 U	3.9E-04	5.7E-10	0.4 U	4.2E-04	6.1E-10	0.039 UJ	4.1E-05	6.0E-11	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	7.3E-02	-	-	6.0E-03	-	-	9.1E-02	-	-	6.7E-02	-	-	7.6E-03	-
Total PAH Risk	-		-	-	1.6E-08	-	-	3.1E-08	-	-	3.1E-09	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.6E-07	-	-	5.8E-08	-	-	1.3E-07	-	-	3.5E-08	-	-	1.5E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		E-02			E-03			E-04			E-05			E-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	4.4	2.3E-03	1.5E-08	3.6	1.9E-03	1.2E-08	13.5	7.2E-03	4.6E-08	382	2.0E-01	1.3E-06	19 J	1.0E-02	6.4E-08
Barium	8.6E+05	-	64	7.4E-05	-	39	4.5E-05	-	179	2.1E-04	-	434	5.0E-04	-	2,220 J	2.6E-03	-
Cadmium	1.9E+03	2.6E+05	0.46 J	2.4E-04	1.7E-12	0.19 U	1.0E-04	7.2E-13	21.1	1.1E-02	8.0E-11	731	3.8E-01	2.8E-09	72.7	3.8E-02	2.8E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	6.7	5.5E-04	1.3E-10	7.2	6.0E-04	1.4E-10	6.8 J	5.6E-04	1.3E-10	NA	-	-
Copper	4.4E+04	-	12.5	2.8E-04	-	12.4	2.8E-04	-	279	6.3E-03	-	1,150	2.6E-02	-	183 J	4.1E-03	-
Lead	3.7E+03	-	10.3	2.8E-03	-	7.5	2.0E-03	-	240	6.5E-02	-	11,300	**3.0E+00**	-	1,110 J	3.0E-01	-
Manganese	8.1E+04	-	580	7.2E-03	-	219	2.7E-03	-	823	1.0E-02	-	237	2.9E-03	-	616 J	7.6E-03	-
Mercury	8.8E+03	-	NA	-	-	0.0233 J	2.6E-06	-	0.46	5.2E-05	-	8.2	9.3E-04	-	NA	-	-
Zinc	1.0E+06	-	135	1.4E-04	-	57 J	5.7E-05	-	2,040 J	2.0E-03	-	11,700	1.2E-02	-	17,600 J	1.8E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	0.11 J	-	3.7E-10	1.1	-	3.7E-09	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	0.16 J	-	5.3E-09	0.79	-	2.6E-08	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	0.48 J	-	1.6E-09	1.2	-	4.0E-09	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	0.18 J	-	6.0E-11	0.46 J	-	1.5E-10	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	0.21 J	-	7.0E-12	1.1	-	3.7E-11	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	0.038 UJ	-	1.3E-09	0.42 U	-	1.4E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	0.17 J	-	5.7E-10	0.57	-	1.9E-09	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	0.051 J	5.4E-05	7.8E-11	0.42 U	4.4E-04	6.5E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	3.2E-04	-	-	1.4E-04	-	-	1.1E-02	-	-	3.8E-01	-	-	4.1E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	9.3E-09	-	-	5.1E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.5E-08	-	-	1.2E-08	-	-	5.5E-08	-	-	1.3E-06	-	-	6.4E-08

Notes:

Risk:

- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):

- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-6:
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(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		F-02			F-03			G-01			G-02			G-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	3.9 U	2.1E-03	1.3E-08	11.5	6.1E-03	3.9E-08	5.8	3.1E-03	2.0E-08	4.6	2.5E-03	1.6E-08	6.2	3.3E-03	2.1E-08
Barium	8.6E+05	-	54 J	6.3E-05	-	51.4	6.0E-05	-	56	6.5E-05	-	45	5.2E-05	-	62	7.2E-05	-
Cadmium	1.9E+03	2.6E+05	0.25 U	1.3E-04	9.5E-13	5.6	2.9E-03	2.1E-11	0.19 J	1.0E-04	7.2E-13	0.19 U	1.0E-04	7.2E-13	1.57 J	8.2E-04	5.9E-12
Cobalt	1.2E+04	5.3E+04	NA	-	-	2.7 B	2.2E-04	5.1E-11	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	13.9	3.1E-04	-	13.2	3.0E-04	-	12.8 J	2.9E-04	-	12.1	2.7E-04	-	17.1	3.9E-04	-
Lead	3.7E+03	-	10.6	2.9E-03	-	15.2	4.1E-03	-	9.2	2.5E-03	-	8.9	2.4E-03	-	13.2	3.6E-03	-
Manganese	8.1E+04	-	456	5.6E-03	-	74	9.1E-04	-	459	5.7E-03	-	389	4.8E-03	-	625	7.7E-03	-
Mercury	8.8E+03	-	NA	-	-	0.094 B	1.1E-05	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	42	4.2E-05	-	1,360	1.4E-03	-	45 J	4.5E-05	-	43 J	4.3E-05	-	53 J	5.3E-05	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	0.42 U	-	1.4E-09	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	0.42 U	-	1.4E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	0.42 U	-	1.4E-09	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	0.42 U	-	1.4E-10	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	0.42 U	-	1.4E-11	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	0.42 U	-	1.4E-08	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	0.42 U	-	1.4E-09	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	0.42 U	4.4E-04	6.5E-10	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.9E-04	-	-	3.0E-03	-	-	1.6E-04	-	-	1.5E-04	-	-	8.9E-04	-
Total PAH Risk	-		-	-	-	-	-	3.3E-08	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.3E-08	-	-	7.2E-08	-	-	2.0E-08	-	-	1.6E-08	-	-	2.1E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		G-04			G-05			G-07			H-02			H-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	4.1 U	2.2E-03	1.4E-08	40.2	2.1E-02	1.4E-07	260 J	1.4E-01	8.8E-07	6	3.2E-03	2.0E-08	7.2	3.8E-03	2.4E-08
Barium	8.6E+05	-	82	9.5E-05	-	101 J	1.2E-04	-	170	2.0E-04	-	28	3.2E-05	-	81	9.4E-05	-
Cadmium	1.9E+03	2.6E+05	88.4	4.6E-02	3.3E-10	134	7.0E-02	5.1E-10	18	9.4E-03	6.8E-11	0.36 J	1.9E-04	1.4E-12	0.39 B	2.0E-04	1.5E-12
Cobalt	1.2E+04	5.3E+04	NA	-	-	3.61 J	3.0E-04	6.8E-11	17	1.4E-03	3.2E-10	NA	-	-	9.1 B	7.5E-04	1.7E-10
Copper	4.4E+04	-	19.4	4.4E-04	-	137	3.1E-03	-	660	1.5E-02	-	6.9 U	1.6E-04	-	19	4.3E-04	-
Lead	3.7E+03	-	28.1	7.6E-03	-	1,190	3.2E-01	-	3,600	9.7E-01	-	6.1	1.6E-03	-	12	3.2E-03	-
Manganese	8.1E+04	-	679	8.4E-03	-	605	7.5E-03	-	2,800	3.5E-02	-	378	4.7E-03	-	670	8.3E-03	-
Mercury	8.8E+03	-	NA	-	-	0.1 J	1.1E-05	-	28 J	3.2E-03	-	NA	-	-	0.035	4.0E-06	-
Zinc	1.0E+06	-	3,210 J	3.2E-03	-	16,200	1.6E-02	-	16,000	1.6E-02	-	36 J	3.6E-05	-	54 J	5.4E-05	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	0.35 J	-	1.2E-09	NA	-	-	0.41 U	-	1.4E-09
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	0.23 J	-	7.6E-09	NA	-	-	0.41 U	-	1.4E-08
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	0.28 J	-	9.3E-10	NA	-	-	0.41 U	-	1.4E-09
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	0.31 J	-	1.0E-10	NA	-	-	0.41 U	-	1.4E-10
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	0.44	-	1.5E-11	NA	-	-	0.41 U	-	1.4E-11
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	0.032 J	-	1.1E-09	NA	-	-	0.41 U	-	1.4E-08
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	0.16 J	-	5.3E-10	NA	-	-	0.41 U	-	1.4E-09
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	0.032 J	3.4E-05	4.9E-11	NA	-	-	0.41 U	4.3E-04	6.3E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	4.6E-02	-	-	7.0E-02	-	-	9.6E-03	-	-	2.2E-04	-	-	3.0E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	1.2E-08	-	-	-	-	-	3.2E-08
Total (PAH + Arsenic) Risk	-		-	-	1.4E-08	-	-	1.4E-07	-	-	8.9E-07	-	-	2.0E-08	-	-	5.6E-08

Notes:

Risk:

- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):

- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		H-05			H-06			H-07			H-08			HH-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	5	2.7E-03	1.7E-08	5	2.7E-03	1.7E-08	2.4 U	1.3E-03	8.1E-09	16.8	9.0E-03	5.7E-08	3.9	2.1E-03	1.3E-08
Barium	8.6E+05	-	33	3.8E-05	-	35 B	4.1E-05	-	18,300	2.1E-02	-	147	1.7E-04	-	32.2	3.7E-05	-
Cadmium	1.9E+03	2.6E+05	37	1.9E-02	1.4E-10	2.4	1.3E-03	9.1E-12	0.2 U	1.0E-04	7.6E-13	14.4 J	7.5E-03	5.5E-11	0.8 B	4.2E-04	3.0E-12
Cobalt	1.2E+04	5.3E+04	5.4 B	4.5E-04	1.0E-10	0.85 B	7.0E-05	1.6E-11	12	9.9E-04	2.3E-10	NA	-	-	5 B	4.1E-04	9.5E-11
Copper	4.4E+04	-	13	2.9E-04	-	14	3.2E-04	-	9.8	2.2E-04	-	46.9 J	1.1E-03	-	10	2.3E-04	-
Lead	3.7E+03	-	7.1 J	1.9E-03	-	13	3.5E-03	-	7.3	2.0E-03	-	318	8.6E-02	-	5 U	1.3E-03	-
Manganese	8.1E+04	-	360 J	4.5E-03	-	24	3.0E-04	-	287	3.5E-03	-	838	1.0E-02	-	221	2.7E-03	-
Mercury	8.8E+03	-	0.02 B	2.3E-06	-	0.032	3.6E-06	-	0.0059 U	6.7E-07	-	NA	-	-	0.02 U	2.3E-06	-
Zinc	1.0E+06	-	1,200 J	1.2E-03	-	260 J	2.6E-04	-	92 J	9.2E-05	-	2,240	2.2E-03	-	30	3.0E-05	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	0.41 U	-	1.4E-09	0.041 U	-	1.4E-10	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	0.41 U	-	1.4E-08	0.041 U	-	1.4E-09	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	0.41 U	-	1.4E-09	0.041 U	-	1.4E-10	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	0.41 U	-	1.4E-10	0.041 U	-	1.4E-11	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	0.41 U	-	1.4E-11	0.041 U	-	1.4E-12	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	0.41 U	-	1.4E-08	0.041 U	-	1.4E-09	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	0.41 U	-	1.4E-09	0.041 U	-	1.4E-10	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	0.41 U	4.3E-04	6.3E-10	0.041 U	4.3E-05	6.3E-11	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.9E-02	-	-	1.3E-03	-	-	2.1E-02	-	-	7.7E-03	-	-	4.6E-04	-
Total PAH Risk	-		-	-	-	-	-	3.2E-08	-	-	3.2E-09	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.7E-08	-	-	4.9E-08	-	-	1.1E-08	-	-	5.7E-08	-	-	1.3E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		HH-06			HH-07			HH-08			HH-09			HH-11		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	3.328	1.8E-03	1.1E-08	15	8.0E-03	5.1E-08	5.072	2.7E-03	1.7E-08	1.728	9.2E-04	5.8E-09	321.1	1.7E-01	1.1E-06
Barium	8.6E+05	-	37.7	4.4E-05	-	94.2	1.1E-04	-	84.7	9.8E-05	-	101	1.2E-04	-	58	6.7E-05	-
Cadmium	1.9E+03	2.6E+05	0.3 U	1.6E-04	1.1E-12	102	5.3E-02	3.9E-10	132	6.9E-02	5.0E-10	40.3	2.1E-02	1.5E-10	4 U	2.1E-03	1.5E-11
Cobalt	1.2E+04	5.3E+04	5	4.1E-04	9.5E-11	8	6.6E-04	1.5E-10	6	5.0E-04	1.1E-10	11	9.1E-04	2.1E-10	50 B	4.1E-03	9.5E-10
Copper	4.4E+04	-	11	2.5E-04	-	29	6.6E-04	-	18	4.1E-04	-	29	6.6E-04	-	4,440	1.0E-01	-
Lead	3.7E+03	-	5 B	1.3E-03	-	10 B	2.7E-03	-	62	1.7E-02	-	12 B	3.2E-03	-	2,310	6.2E-01	-
Manganese	8.1E+04	-	321	4.0E-03	-	244	3.0E-03	-	474	5.9E-03	-	196	2.4E-03	-	1,270	1.6E-02	-
Mercury	8.8E+03	-	0.02 U	2.3E-06	-	0.03 B	3.4E-06	-	0.027 B	3.1E-06	-	0.03 B	3.4E-06	-	0.03 U	3.4E-06	-
Zinc	1.0E+06	-	34	3.4E-05	-	6,100	6.1E-03	-	3,990	4.0E-03	-	3,690	3.7E-03	-	5,410	5.4E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.0E-04	-	-	5.4E-02	-	-	6.9E-02	-	-	2.1E-02	-	-	2.2E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.1E-08	-	-	5.1E-08	-	-	1.7E-08	-	-	5.8E-09	-	-	1.1E-06

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
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Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		HH-12			I-01			I-04			I-07			I-09		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	2.44	1.3E-03	8.2E-09	153	8.2E-02	5.2E-07	45.7	2.4E-02	1.5E-07	437	2.3E-01	1.5E-06	5.5	2.9E-03	1.9E-08
Barium	8.6E+05	-	44.6	5.2E-05	-	3,560 J	4.1E-03	-	3,020 J	3.5E-03	-	117	1.4E-04	-	41	4.8E-05	-
Cadmium	1.9E+03	2.6E+05	0.3 U	1.6E-04	1.1E-12	162	8.5E-02	6.1E-10	187	9.8E-02	7.1E-10	21.8	1.1E-02	8.3E-11	35.2	1.8E-02	1.3E-10
Cobalt	1.2E+04	5.3E+04	1 U	8.3E-05	1.9E-11	NA	-	-	NA	-	-	16.3	1.3E-03	3.1E-10	6.4 B	5.3E-04	1.2E-10
Copper	4.4E+04	-	3 B	6.8E-05	-	982 J	2.2E-02	-	328 J	7.4E-03	-	2,020 J	4.6E-02	-	27	6.1E-04	-
Lead	3.7E+03	-	5 U	1.3E-03	-	3,230 J	8.7E-01	-	1,840 J	5.0E-01	-	29,600	**8.0E+00**	-	16.3	4.4E-03	-
Manganese	8.1E+04	-	133	1.6E-03	-	2,400	3.0E-02	-	1,260	1.6E-02	-	14,000	1.7E-01	-	276	3.4E-03	-
Mercury	8.8E+03	-	0.05 B	5.7E-06	-	NA	-	-	NA	-	-	0.024 U	2.7E-06	-	0.022 U	2.5E-06	-
Zinc	1.0E+06	-	19	1.9E-05	-	14,100	1.4E-02	-	21,000	2.1E-02	-	36,000	3.6E-02	-	3,120	3.1E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	1.3E-09	0.38 U	-	1.3E-09
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	1.3E-08	0.38 U	-	1.3E-08
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	1.3E-09	0.38 U	-	1.3E-09
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	1.3E-10	0.38 U	-	1.3E-10
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	1.3E-11	0.38 U	-	1.3E-11
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	1.3E-08	0.38 U	-	1.3E-08
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.39 UJ	-	1.3E-09	0.38 U	-	1.3E-09
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	0.12 UJ	1.3E-04	1.8E-10	0.38 U	4.0E-04	5.8E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	2.1E-04	-	-	8.9E-02	-	-	1.0E-01	-	-	1.2E-02	-	-	1.8E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	3.0E-08	-	-	3.0E-08
Total (PAH + Arsenic) Risk	-		-	-	8.2E-09	-	-	5.2E-07	-	-	1.5E-07	-	-	*1.5E-06*	-	-	4.8E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		I-11			J-01			J-02			J-06			J-07		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	1.2 J	6.4E-04	4.0E-09	4.8	2.6E-03	1.6E-08	12.3	6.6E-03	4.1E-08	5	2.7E-03	1.7E-08	6.2 J	3.3E-03	2.1E-08
Barium	8.6E+05	-	37	4.3E-05	-	137	1.6E-04	-	84	9.7E-05	-	12	1.4E-05	-	53 J	6.1E-05	-
Cadmium	1.9E+03	2.6E+05	1.59 J	8.3E-04	6.0E-12	0.11 U	5.8E-05	4.2E-13	0.28 J	1.5E-04	1.1E-12	0.18 U	9.4E-05	6.8E-13	0.8 J	4.2E-04	3.0E-12
Cobalt	1.2E+04	5.3E+04	NA	-	-	7 B	5.8E-04	1.3E-10	NA	-	-	4.3 J	3.6E-04	8.1E-11	NA	-	-
Copper	4.4E+04	-	11.1 U	2.5E-04	-	15.2	3.4E-04	-	29.6	6.7E-04	-	5.9	1.3E-04	-	19.8 J	4.5E-04	-
Lead	3.7E+03	-	6.8 J	1.8E-03	-	17.8	4.8E-03	-	14.2 J	3.8E-03	-	4.7	1.3E-03	-	8.4 J	2.3E-03	-
Manganese	8.1E+04	-	89.1	1.1E-03	-	418	5.2E-03	-	735	9.1E-03	-	235	2.9E-03	-	464 J	5.7E-03	-
Mercury	8.8E+03	-	NA	-	-	0.055 B	6.2E-06	-	NA	-	-	0.0117 J	1.3E-06	-	NA	-	-
Zinc	1.0E+06	-	1,630	1.6E-03	-	215	2.2E-04	-	59	5.9E-05	-	80 J	8.0E-05	-	202	2.0E-04	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	0.37 U	-	1.2E-09	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	0.37 U	-	1.2E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	0.37 U	-	1.2E-09	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	0.37 U	-	1.2E-10	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	0.37 U	-	1.2E-11	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	0.37 U	-	1.2E-08	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	0.37 U	-	1.2E-09	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	0.37 U	3.9E-04	5.7E-10	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	8.8E-04	-	-	2.2E-04	-	-	2.4E-04	-	-	1.1E-04	-	-	4.8E-04	-
Total PAH Risk	-		-	-	-	-	-	2.9E-08	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	4.0E-09	-	-	4.5E-08	-	-	4.1E-08	-	-	1.7E-08	-	-	2.1E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

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Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-08			J-09			J-10			J-11			J-12		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	105 J	5.6E-02	3.5E-07	393 J	2.1E-01	1.3E-06	132	7.0E-02	4.5E-07	330 J	1.8E-01	1.1E-06	331	1.8E-01	1.1E-06
Barium	8.6E+05	-	1,150 J	1.3E-03	-	346 J	4.0E-04	-	577	6.7E-04	-	2,600	3.0E-03	-	5,390	6.3E-03	-
Cadmium	1.9E+03	2.6E+05	17	8.9E-03	6.4E-11	293	1.5E-01	1.1E-09	158 J	8.3E-02	6.0E-10	13	6.8E-03	4.9E-11	32.6 J	1.7E-02	1.2E-10
Cobalt	1.2E+04	5.3E+04	265	2.2E-02	5.0E-09	29.1 J	2.4E-03	5.5E-10	47	3.9E-03	8.9E-10	18	1.5E-03	3.4E-10	4.1 J	3.4E-04	7.8E-11
Copper	4.4E+04	-	12,000 J	2.7E-01	-	13,200 J	3.0E-01	-	5,380	1.2E-01	-	6,000	1.4E-01	-	21,800	4.9E-01	-
Lead	3.7E+03	-	15,200 J	**4.1E+00**	-	14,700 J	**4.0E+00**	-	6,840	**1.8E+00**	-	6,700 J	**1.8E+00**	-	9,860	**2.7E+00**	-
Manganese	8.1E+04	-	7,260 J	9.0E-02	-	4,490 J	5.6E-02	-	3,490 J	4.3E-02	-	1,400	1.7E-02	-	4,890 J	6.0E-02	-
Mercury	8.8E+03	-	0.0202 J	2.3E-06	-	0.0041 U	4.7E-07	-	0.027 U	3.1E-06	-	0.18 U	2.0E-05	-	0.0066 U	7.5E-07	-
Zinc	1.0E+06	-	57,000	5.7E-02	-	63,100	6.3E-02	-	55,400	5.5E-02	-	7,800 J	7.8E-03	-	4,170	4.2E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.044 UJ	-	1.5E-10	0.055 UJ	-	1.8E-10	0.44 U	-	1.5E-09	0.59 UB	-	2.0E-09	NA	-	-
Benzo(a)pyrene	-	3.0E+01	0.044 UJ	-	1.5E-09	0.055 UJ	-	1.8E-09	0.44 U	-	1.5E-08	0.59 UB	-	2.0E-08	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	0.044 UJ	-	1.5E-10	0.055 UJ	-	1.8E-10	0.44 U	-	1.5E-09	0.59 UB	-	2.0E-09	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	0.044 UJ	-	1.5E-11	0.055 UJ	-	1.8E-11	0.44 U	-	1.5E-10	0.59 UB	-	2.0E-10	NA	-	-
Chrysene	-	3.0E+04	0.044 UJ	-	1.5E-12	0.055 UJ	-	1.8E-12	0.44 U	-	1.5E-11	0.59 UB	-	2.0E-11	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	0.044 UJ	-	1.5E-09	0.055 UJ	-	1.8E-09	0.44 U	-	1.5E-08	0.59 UB	-	2.0E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.044 UJ	-	1.5E-10	0.055 UJ	-	1.8E-10	0.44 U	-	1.5E-09	0.59 UB	-	2.0E-09	NA	-	-
Naphthalene	9.5E+02	6.5E+02	0.057 J	6.0E-05	8.8E-11	0.055 UJ	5.8E-05	8.5E-11	0.44 U	4.6E-04	6.8E-10	0.59 J	6.2E-04	9.1E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.0E-02	-	-	1.5E-01	-	-	8.3E-02	-	-	9.8E-03	-	-	2.3E-02	-
Total PAH Risk	-		-	-	3.5E-09	-	-	4.3E-09	-	-	3.4E-08	-	-	4.6E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.6E-07	-	-	1.3E-06	-	-	4.8E-07	-	-	1.2E-06	-	-	1.1E-06

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
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mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-13			K-01			K-02			K-03			K-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	189 J	1.0E-01	6.4E-07	2.4 J	1.3E-03	8.1E-09	40.2	2.1E-02	1.4E-07	75.9	4.0E-02	2.6E-07	28.2	1.5E-02	9.5E-08
Barium	8.6E+05	-	1,870	2.2E-03	-	25	2.9E-05	-	581	6.7E-04	-	8,410	9.8E-03	-	359	4.2E-04	-
Cadmium	1.9E+03	2.6E+05	399 J	2.1E-01	1.5E-09	0.37 B	1.9E-04	1.4E-12	282	1.5E-01	1.1E-09	65.4	3.4E-02	2.5E-10	20.3	1.1E-02	7.7E-11
Cobalt	1.2E+04	5.3E+04	1.5 B	1.2E-04	2.8E-11	NA	-	-	119	9.8E-03	2.3E-09	6.5 J	5.4E-04	1.2E-10	4.8 J	4.0E-04	9.1E-11
Copper	4.4E+04	-	4,540	1.0E-01	-	19	4.3E-04	-	297	6.7E-03	-	1,880	4.2E-02	-	392	8.9E-03	-
Lead	3.7E+03	-	3,080 J	8.3E-01	-	7.7 B	2.1E-03	-	84.2	2.3E-02	-	2,090	5.6E-01	-	509	1.4E-01	-
Manganese	8.1E+04	-	1,740	2.2E-02	-	340	4.2E-03	-	10,200	1.3E-01	-	2,700	3.3E-02	-	894	1.1E-02	-
Mercury	8.8E+03	-	0.1 U	1.1E-05	-	NA	-	-	0.0251 U	2.8E-06	-	0.178 J	2.0E-05	-	0.015 U	1.7E-06	-
Zinc	1.0E+06	-	63,500	6.4E-02	-	42 J	4.2E-05	-	22,200	2.2E-02	-	20,900	2.1E-02	-	12,700	1.3E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	1.6 U	-	5.3E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	1.6 U	-	5.3E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	1.6 U	-	5.3E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	1.6 U	-	5.3E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	1.6 U	-	5.3E-11	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	1.6 U	-	5.3E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	1.6 U	-	5.3E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	1.6 U	1.7E-03	2.5E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.1E-01	-	-	2.2E-04	-	-	1.5E-01	-	-	4.4E-02	-	-	1.1E-02	-
Total PAH Risk	-		-	-	1.3E-07	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	7.6E-07	-	-	8.1E-09	-	-	1.4E-07	-	-	2.6E-07	-	-	9.5E-08

Notes:

Risk:

- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):

- > 1 - ≤5
- > 5 - ≤10
- > 10

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Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		K-05			L-02			L-03			L-04			L-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	29.4 J	1.6E-02	9.9E-08	210 J	1.1E-01	7.1E-07	98 J	5.2E-02	3.3E-07	78.8	4.2E-02	2.7E-07	106	5.7E-02	3.6E-07
Barium	8.6E+05	-	339	3.9E-04	-	290	3.4E-04	-	430	5.0E-04	-	334	3.9E-04	-	7,040	8.2E-03	-
Cadmium	1.9E+03	2.6E+05	22.6 J	1.2E-02	8.6E-11	23	1.2E-02	8.7E-11	1.7 B	8.9E-04	6.4E-12	11.3	5.9E-03	4.3E-11	29.2	1.5E-02	1.1E-10
Cobalt	1.2E+04	5.3E+04	7.3	6.0E-04	1.4E-10	15	1.2E-03	2.8E-10	110	9.1E-03	2.1E-09	27	2.2E-03	5.1E-10	NA	-	-
Copper	4.4E+04	-	280	6.3E-03	-	780	1.8E-02	-	4,200	9.5E-02	-	638	1.4E-02	-	626	1.4E-02	-
Lead	3.7E+03	-	500 J	1.3E-01	-	16,000	**4.3E+00**	-	12,000	**3.2E+00**	-	3,730	1.0E+00	-	814	2.2E-01	-
Manganese	8.1E+04	-	425	5.3E-03	-	2,200	2.7E-02	-	16,000	2.0E-01	-	1,060	1.3E-02	-	772	9.5E-03	-
Mercury	8.8E+03	-	0.132 J	1.5E-05	-	1.1 J	1.2E-04	-	0.016 UJ	1.8E-06	-	0.0896 J	1.0E-05	-	NA	-	-
Zinc	1.0E+06	-	7,520	7.5E-03	-	8,600	8.6E-03	-	59,000	5.9E-02	-	30,700	3.1E-02	-	3,640 J	3.6E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.055 J	-	1.8E-10	0.2 J	-	6.6E-10	0.34 U	-	1.1E-09	0.22 J	-	7.3E-10	NA	-	-
Benzo(a)pyrene	-	3.0E+01	0.061 J	-	2.0E-09	0.11 J	-	3.7E-09	0.34 U	-	1.1E-08	0.13 J	-	4.3E-09	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	0.14 J	-	4.7E-10	0.17 J	-	5.7E-10	0.34 U	-	1.1E-09	0.16 J	-	5.3E-10	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	0.045 U	-	1.5E-11	0.15 J	-	5.0E-11	0.34 U	-	1.1E-10	0.15 J	-	5.0E-11	NA	-	-
Chrysene	-	3.0E+04	0.085 J	-	2.8E-12	0.26 J	-	8.6E-12	0.34 U	-	1.1E-11	0.3 J	-	1.0E-11	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	0.045 U	-	1.5E-09	0.39 U	-	1.3E-08	0.34 U	-	1.1E-08	0.041 U	-	1.4E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.045 U	-	1.5E-10	0.066 J	-	2.2E-10	0.34 U	-	1.1E-09	0.051 J	-	1.7E-10	NA	-	-
Naphthalene	9.5E+02	6.5E+02	0.045 U	4.7E-05	6.9E-11	0.077 J	8.1E-05	1.2E-10	0.34 U	3.6E-04	5.2E-10	0.12 J	1.3E-04	1.8E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.2E-02	-	-	1.2E-02	-	-	1.4E-03	-	-	6.3E-03	-	-	2.3E-02	-
Total PAH Risk	-		-	-	4.4E-09	-	-	1.8E-08	-	-	2.7E-08	-	-	7.4E-09	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.0E-07	-	-	7.3E-07	-	-	3.6E-07	-	-	2.7E-07	-	-	3.6E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		LY-1			M-01			M-02			M-03			M-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	524	2.8E-01	*1.8E-06*	116	6.2E-02	3.9E-07	66.2	3.5E-02	2.2E-07	61.1	3.3E-02	2.1E-07	15.2	8.1E-03	5.1E-08
Barium	8.6E+05	-	61	7.1E-05	-	199	2.3E-04	-	4,160	4.8E-03	-	15,700	1.8E-02	-	575	6.7E-04	-
Cadmium	1.9E+03	2.6E+05	1.4 U	7.3E-04	5.3E-12	459	2.4E-01	1.7E-09	130	6.8E-02	4.9E-10	298	1.6E-01	1.1E-09	76.4	4.0E-02	2.9E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	26	2.2E-03	4.9E-10	19.6	1.6E-03	3.7E-10	NA	-	-	9.3 J	7.7E-04	1.8E-10
Copper	4.4E+04	-	2,990	6.8E-02	-	1,580	3.6E-02	-	2,360	5.3E-02	-	574	1.3E-02	-	206 J	4.7E-03	-
Lead	3.7E+03	-	1,870	5.0E-01	-	1,720	4.6E-01	-	3,320	8.9E-01	-	4,520	1.2E+00	-	546	1.5E-01	-
Manganese	8.1E+04	-	1,210	1.5E-02	-	1,910	2.4E-02	-	2,560	3.2E-02	-	851	1.1E-02	-	352	4.4E-03	-
Mercury	8.8E+03	-	NA	-	-	2.16	2.5E-04	-	0.12	1.4E-05	-	NA	-	-	0.12	1.4E-05	-
Zinc	1.0E+06	-	6,770	6.8E-03	-	57,900	5.8E-02	-	14,600 J	1.5E-02	-	34,600 J	3.5E-02	-	11,200 J	1.1E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	0.068 U	-	2.3E-10	0.36 J	-	1.2E-09	NA	-	-	0.28 J	-	9.3E-10
Benzo(a)pyrene	-	3.0E+01	NA	-	-	0.068 U	-	2.3E-09	0.38 J	-	1.3E-08	NA	-	-	0.27 J	-	9.0E-09
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	0.068 U	-	2.3E-10	0.58	-	1.9E-09	NA	-	-	0.41 J	-	1.4E-09
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	0.068 U	-	2.3E-11	0.22 J	-	7.3E-11	NA	-	-	0.14 J	-	4.7E-11
Chrysene	-	3.0E+04	NA	-	-	0.068 U	-	2.3E-12	0.47	-	1.6E-11	NA	-	-	0.32 J	-	1.1E-11
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	0.068 U	-	2.3E-09	0.092 J	-	3.1E-09	NA	-	-	0.057 J	-	1.9E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	0.068 U	-	2.3E-10	0.27 J	-	9.0E-10	NA	-	-	0.15 J	-	5.0E-10
Naphthalene	9.5E+02	6.5E+02	NA	-	-	0.39 J	4.1E-04	6.0E-10	0.04 U	4.2E-05	6.1E-11	NA	-	-	0.43 U	4.5E-04	6.6E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	8.0E-04	-	-	2.4E-01	-	-	7.3E-02	-	-	1.7E-01	-	-	4.1E-02	-
Total PAH Risk	-		-	-	-	-	-	5.8E-09	-	-	2.0E-08	-	-	-	-	-	1.4E-08
Total (PAH + Arsenic) Risk	-		-	-	*1.8E-06*	-	-	4.0E-07	-	-	2.4E-07	-	-	2.1E-07	-	-	6.6E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		N-02			N-03			P-01			P-02			P-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	335	1.8E-01	1.1E-06	344	1.8E-01	1.2E-06	3 J	1.6E-03	1.0E-08	4.2	2.2E-03	1.4E-08	4.1 J	2.2E-03	1.4E-08
Barium	8.6E+05	-	56	6.5E-05	-	125 J	1.4E-04	-	75 J	8.7E-05	-	8.14 J	9.4E-06	-	110 J	1.3E-04	-
Cadmium	1.9E+03	2.6E+05	2.7 J	1.4E-03	1.0E-11	12 U	6.3E-03	4.5E-11	1 B	5.2E-04	3.8E-12	0.58 J	3.0E-04	2.2E-12	0.81 B	4.2E-04	3.1E-12
Cobalt	1.2E+04	5.3E+04	56.5	4.7E-03	1.1E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	8,890	2.0E-01	-	15,200	3.4E-01	-	7.2 J	1.6E-04	-	9.3	2.1E-04	-	10 J	2.3E-04	-
Lead	3.7E+03	-	10,600	**2.9E+00**	-	2,710	7.3E-01	-	8.9 J	2.4E-03	-	6.2	1.7E-03	-	13 J	3.5E-03	-
Manganese	8.1E+04	-	2,420	3.0E-02	-	4,810	5.9E-02	-	220 J	2.7E-03	-	276	3.4E-03	-	230 J	2.8E-03	-
Mercury	8.8E+03	-	0.0072 U	8.2E-07	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	13,500	1.4E-02	-	13,400 J	1.3E-02	-	170	1.7E-04	-	32	3.2E-05	-	100	1.0E-04	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.5E-03	-	-	6.4E-03	-	-	6.1E-04	-	-	3.1E-04	-	-	5.5E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.1E-06	-	-	1.2E-06	-	-	1.0E-08	-	-	1.4E-08	-	-	1.4E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		P-04			PZ-01(S)			PZ-02(S)			PZ-03(I)			PZ-04(I)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	5 J	2.7E-03	1.7E-08	1.8 J	9.6E-04	6.1E-09	2.6	1.4E-03	8.8E-09	37.5	2.0E-02	1.3E-07	7	3.7E-03	2.4E-08
Barium	8.6E+05	-	200 J	2.3E-04	-	29	3.4E-05	-	57	6.6E-05	-	1,110	1.3E-03	-	56	6.5E-05	-
Cadmium	1.9E+03	2.6E+05	0.67 B	3.5E-04	2.5E-12	17	8.9E-03	6.4E-11	17.7 J	9.3E-03	6.7E-11	12.8	6.7E-03	4.8E-11	3.7	1.9E-03	1.4E-11
Cobalt	1.2E+04	5.3E+04	NA	-	-	3.6 B	3.0E-04	6.8E-11	NA	-	-	11.6 J	9.6E-04	2.2E-10	NA	-	-
Copper	4.4E+04	-	9.9 J	2.2E-04	-	8.1	1.8E-04	-	9.4	2.1E-04	-	853	1.9E-02	-	59.8	1.4E-03	-
Lead	3.7E+03	-	36 J	9.7E-03	-	4.8 B	1.3E-03	-	7.8	2.1E-03	-	1,150	3.1E-01	-	61.9	1.7E-02	-
Manganese	8.1E+04	-	300 J	3.7E-03	-	190	2.3E-03	-	227 J	2.8E-03	-	659	8.1E-03	-	193	2.4E-03	-
Mercury	8.8E+03	-	NA	-	-	0.11 UJ	1.2E-05	-	NA	-	-	0.0546 U	6.2E-06	-	NA	-	-
Zinc	1.0E+06	-	94	9.4E-05	-	3,600	3.6E-03	-	2,760	2.8E-03	-	2,640	2.6E-03	-	1,100	1.1E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.8E-04	-	-	8.9E-03	-	-	9.3E-03	-	-	8.0E-03	-	-	2.0E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.7E-08	-	-	6.1E-09	-	-	8.8E-09	-	-	1.3E-07	-	-	2.4E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

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Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		PZ-04(S)			SB-04			SB-09			SS-02			SS-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	4.6 U	2.5E-03	1.6E-08	15.7 N	8.4E-03	5.3E-08	72	3.8E-02	2.4E-07	189	1.0E-01	6.4E-07	180	9.6E-02	6.1E-07
Barium	8.6E+05	-	77	8.9E-05	-	508	5.9E-04	-	1,630	1.9E-03	-	3,260 J	3.8E-03	-	6,590 J	7.6E-03	-
Cadmium	1.9E+03	2.6E+05	0.58 J	3.0E-04	2.2E-12	13.7 N	7.2E-03	5.2E-11	57.5	3.0E-02	2.2E-10	1,220	6.4E-01	4.6E-09	1,370	7.2E-01	5.2E-09
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	4.6 J	3.8E-04	8.7E-11	14.1	1.2E-03	2.7E-10	31	2.6E-03	5.9E-10
Copper	4.4E+04	-	12.8	2.9E-04	-	124 N	2.8E-03	-	367	8.3E-03	-	3,410	7.7E-02	-	3,640	8.2E-02	-
Lead	3.7E+03	-	11.3	3.0E-03	-	236 J	6.4E-02	-	5,430	1.5E+00	-	23,200 J	**6.2E+00**	-	9,380 J	**2.5E+00**	-
Manganese	8.1E+04	-	774	9.6E-03	-	346 N	4.3E-03	-	1,100	1.4E-02	-	661 J	8.2E-03	-	1,580 J	2.0E-02	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	0.11 U	1.2E-05	-	8.6	9.8E-04	-	0.52	5.9E-05	-
Zinc	1.0E+06	-	2,450	2.5E-03	-	1,360 J	1.4E-03	-	19,500	2.0E-02	-	37,400 J	3.7E-02	-	52,900 J	5.3E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	0.4 U	-	1.3E-09	0.045 U	-	1.5E-10	1.2	-	4.0E-09
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	0.4 U	-	1.3E-08	0.045 U	-	1.5E-09	0.31 J	-	1.0E-08
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	0.4 U	-	1.3E-09	0.053 J	-	1.8E-10	0.71	-	2.4E-09
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	0.4 U	-	1.3E-10	0.045 U	-	1.5E-11	0.21 J	-	7.0E-11
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	0.4 U	-	1.3E-11	0.06 J	-	2.0E-12	1.6	-	5.3E-11
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	0.045 U	-	1.5E-09	0.081 J	-	2.7E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	0.4 U	-	1.3E-09	0.045 U	-	1.5E-10	0.15 J	-	5.0E-10
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	0.4 U	4.2E-04	6.1E-10	0.045 U	4.7E-05	6.9E-11	0.042 U	4.4E-05	6.5E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	3.9E-04	-	-	7.8E-03	-	-	3.2E-02	-	-	6.4E-01	-	-	7.3E-01	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	1.8E-08	-	-	3.6E-09	-	-	2.0E-08
Total (PAH + Arsenic) Risk	-		-	-	1.6E-08	-	-	5.3E-08	-	-	2.6E-07	-	-	6.4E-07	-	-	6.3E-07

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-17A			SS-21			SS-27A			SS-30A			SS-50A		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	133	7.1E-02	4.5E-07	3.8 U	2.0E-03	1.3E-08	3.3 U	1.8E-03	1.1E-08	15 U	8.0E-03	5.1E-08	69 J	3.7E-02	2.3E-07
Barium	8.6E+05	-	172	2.0E-04	-	1,490 J	1.7E-03	-	982 J	1.1E-03	-	677 J	7.9E-04	-	284 J	3.3E-04	-
Cadmium	1.9E+03	2.6E+05	93.7	4.9E-02	3.5E-10	951	5.0E-01	3.6E-09	1,080	5.7E-01	4.1E-09	3,960	**2.1E+00**	1.5E-08	1,390	7.3E-01	5.3E-09
Cobalt	1.2E+04	5.3E+04	39.9	3.3E-03	7.6E-10	1,160	9.6E-02	2.2E-08	533	4.4E-02	1.0E-08	164	1.4E-02	3.1E-09	48.9 J	4.0E-03	9.3E-10
Copper	4.4E+04	-	4,380	9.9E-02	-	24,100 J	5.4E-01	-	22,800 J	5.2E-01	-	27,700 J	6.3E-01	-	4,170	9.4E-02	-
Lead	3.7E+03	-	3,080	8.3E-01	-	32,400 J	**8.7E+00**	-	22,400 J	**6.0E+00**	-	12,900 J	**3.5E+00**	-	4,340	1.2E+00	-
Manganese	8.1E+04	-	1,280	1.6E-02	-	32,600 J	4.0E-01	-	13,200 J	1.6E-01	-	6,070 J	7.5E-02	-	2,270 J	2.8E-02	-
Mercury	8.8E+03	-	0.0243 J	2.8E-06	-	2	2.3E-04	-	7.7	8.7E-04	-	0.36	4.1E-05	-	0.0973 J	1.1E-05	-
Zinc	1.0E+06	-	21,700	2.2E-02	-	123,000	1.2E-01	-	90,000	9.0E-02	-	150,000	1.5E-01	-	185,000	1.9E-01	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.47 J	-	1.6E-09	NA	-	-	NA	-	-	NA	-	-	0.15 J	-	5.0E-10
Benzo(a)pyrene	-	3.0E+01	0.054 U	-	1.8E-09	NA	-	-	NA	-	-	NA	-	-	0.11 J	-	3.7E-09
Benzo(b)fluoranthene	-	3.0E+02	0.083 J	-	2.8E-10	NA	-	-	NA	-	-	NA	-	-	0.062 U	-	2.1E-10
Benzo(k)fluoranthene	-	3.0E+03	0.054 U	-	1.8E-11	NA	-	-	NA	-	-	NA	-	-	0.062 U	-	2.1E-11
Chrysene	-	3.0E+04	0.46 J	-	1.5E-11	NA	-	-	NA	-	-	NA	-	-	0.25 J	-	8.3E-12
Dibenz(a,h)anthracene	-	3.0E+01	0.054 U	-	1.8E-09	NA	-	-	NA	-	-	NA	-	-	0.062 U	-	2.1E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.054 U	-	1.8E-10	NA	-	-	NA	-	-	NA	-	-	0.071 J	-	2.4E-10
Naphthalene	9.5E+02	6.5E+02	4.1	4.3E-03	6.3E-09	NA	-	-	NA	-	-	NA	-	-	0.062 U	6.5E-05	9.5E-11
Totals																	
Total (Barium + Cadmium) HI	-		-	4.9E-02	-	-	5.0E-01	-	-	5.7E-01	-	-	**2.1E+00**	-	-	7.3E-01	-
Total PAH Risk	-		-	-	1.2E-08	-	-	-	-	-	-	-	-	-	-	-	6.8E-09
Total (PAH + Arsenic) Risk	-		-	-	4.6E-07	-	-	1.3E-08	-	-	1.1E-08	-	-	5.1E-08	-	-	2.4E-07

Notes:

Risk:

- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):

- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-51A			TP-100			TP-105			TP-107			TP-112		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	94 J	5.0E-02	3.2E-07	5.3	2.8E-03	1.8E-08	8.8	4.7E-03	3.0E-08	2.4	1.3E-03	8.1E-09	8.4	4.5E-03	2.8E-08
Barium	8.6E+05	-	840 J	9.7E-04	-	656	7.6E-04	-	63.5	7.4E-05	-	18.3 J	2.1E-05	-	37	4.3E-05	-
Cadmium	1.9E+03	2.6E+05	625	3.3E-01	2.4E-09	34.3	1.8E-02	1.3E-10	9.3	4.9E-03	3.5E-11	22.5	1.2E-02	8.5E-11	16.6	8.7E-03	6.3E-11
Cobalt	1.2E+04	5.3E+04	47 J	3.9E-03	8.9E-10	5.9	4.9E-04	1.1E-10	5 J	4.1E-04	9.5E-11	4 J	3.3E-04	7.6E-11	4.7 J	3.9E-04	8.9E-11
Copper	4.4E+04	-	6,000	1.4E-01	-	19.9	4.5E-04	-	49.7	1.1E-03	-	25.9	5.9E-04	-	9.9	2.2E-04	-
Lead	3.7E+03	-	3,890	1.0E+00	-	86.7	2.3E-02	-	147	4.0E-02	-	9.7	2.6E-03	-	9	2.4E-03	-
Manganese	8.1E+04	-	2,330 J	2.9E-02	-	561	6.9E-03	-	767	9.5E-03	-	548	6.8E-03	-	903	1.1E-02	-
Mercury	8.8E+03	-	0.13 J	1.5E-05	-	0.12 U	1.4E-05	-	0.046 J	5.2E-06	-	0.12 U	1.4E-05	-	0.048 J	5.4E-06	-
Zinc	1.0E+06	-	133,000	1.3E-01	-	1,730	1.7E-03	-	3,630	3.6E-03	-	2,370	2.4E-03	-	3,000	3.0E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.051 UB	-	1.7E-10	0.4 U	-	1.3E-09	0.4 U	-	1.3E-09	0.39 U	-	1.3E-09	0.39 U	-	1.3E-09
Benzo(a)pyrene	-	3.0E+01	0.051 UB	-	1.7E-09	0.4 U	-	1.3E-08	0.4 U	-	1.3E-08	0.39 U	-	1.3E-08	0.39 U	-	1.3E-08
Benzo(b)fluoranthene	-	3.0E+02	0.051 UB	-	1.7E-10	0.4 U	-	1.3E-09	0.4 U	-	1.3E-09	0.39 U	-	1.3E-09	0.39 U	-	1.3E-09
Benzo(k)fluoranthene	-	3.0E+03	0.051 UB	-	1.7E-11	0.4 U	-	1.3E-10	0.4 U	-	1.3E-10	0.39 U	-	1.3E-10	0.39 U	-	1.3E-10
Chrysene	-	3.0E+04	0.051 UB	-	1.7E-12	0.4 U	-	1.3E-11	0.4 U	-	1.3E-11	0.39 U	-	1.3E-11	0.39 U	-	1.3E-11
Dibenz(a,h)anthracene	-	3.0E+01	0.051 UB	-	1.7E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.051 UB	-	1.7E-10	0.4 U	-	1.3E-09	0.4 U	-	1.3E-09	0.39 U	-	1.3E-09	0.39 U	-	1.3E-09
Naphthalene	9.5E+02	6.5E+02	1.1 J	1.2E-03	1.7E-09	0.4 U	4.2E-04	6.1E-10	0.4 U	4.2E-04	6.1E-10	0.39 U	4.1E-04	6.0E-10	0.39 U	4.1E-04	6.0E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	3.3E-01	-	-	1.9E-02	-	-	4.9E-03	-	-	1.2E-02	-	-	8.7E-03	-
Total PAH Risk	-		-	-	5.6E-09	-	-	1.8E-08	-	-	1.8E-08	-	-	1.8E-08	-	-	1.8E-08
Total (PAH + Arsenic) Risk	-		-	-	3.2E-07	-	-	3.6E-08	-	-	4.8E-08	-	-	2.6E-08	-	-	4.6E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
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mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		TP-113			TP-114			TP-115			TP-116			TP-117		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	9.5	5.1E-03	3.2E-08	32.5	1.7E-02	1.1E-07	NA	-	-	NA	-	-	NA	-	-
Barium	8.6E+05	-	3,890	4.5E-03	-	7,460	8.7E-03	-	372 J	4.3E-04	-	297 J	3.4E-04	-	76.4 J	8.9E-05	-
Cadmium	1.9E+03	2.6E+05	22.2	1.2E-02	8.4E-11	105	5.5E-02	4.0E-10	44.4 J	2.3E-02	1.7E-10	30.6 J	1.6E-02	1.2E-10	61.8 J	3.2E-02	2.3E-10
Cobalt	1.2E+04	5.3E+04	113	9.3E-03	2.1E-09	9.5	7.9E-04	1.8E-10	NA	-	-	10.2	8.4E-04	1.9E-10	NA	-	-
Copper	4.4E+04	-	281	6.4E-03	-	263	5.9E-03	-	14.6 J	3.3E-04	-	22.6 J	5.1E-04	-	30.2 J	6.8E-04	-
Lead	3.7E+03	-	89.5	2.4E-02	-	637	1.7E-01	-	48.3 J	1.3E-02	-	63.2 J	1.7E-02	-	81.9 J	2.2E-02	-
Manganese	8.1E+04	-	3,070	3.8E-02	-	665	8.2E-03	-	646 J	8.0E-03	-	1,030 J	1.3E-02	-	270 J	3.3E-03	-
Mercury	8.8E+03	-	0.17	1.9E-05	-	7.7	8.7E-04	-	NA	-	-	0.04 J	4.5E-06	-	NA	-	-
Zinc	1.0E+06	-	8,390	8.4E-03	-	13,700	1.4E-02	-	1,820 J	1.8E-03	-	3,870 J	3.9E-03	-	3,080 J	3.1E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	0.49 U	-	1.6E-09	0.44	-	1.5E-09	NA	-	-	0.22 U	-	7.3E-10	NA	-	-
Benzo(a)pyrene	-	3.0E+01	0.49 U	-	1.6E-08	0.43 J	-	1.4E-08	NA	-	-	0.22 U	-	7.3E-09	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	0.49 U	-	1.6E-09	0.6	-	2.0E-09	NA	-	-	0.22 U	-	7.3E-10	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	0.49 U	-	1.6E-10	0.49	-	1.6E-10	NA	-	-	0.22 U	-	7.3E-11	NA	-	-
Chrysene	-	3.0E+04	0.49 U	-	1.6E-11	0.58	-	1.9E-11	NA	-	-	0.22 U	-	7.3E-12	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	0.49 U	-	1.6E-09	0.35 J	-	1.2E-09	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	0.49 U	5.2E-04	7.5E-10	0.43 U	4.5E-04	6.6E-10	NA	-	-	0.22 U	2.3E-04	3.4E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.6E-02	-	-	6.4E-02	-	-	2.4E-02	-	-	1.6E-02	-	-	3.2E-02	-
Total PAH Risk	-		-	-	2.2E-08	-	-	2.0E-08	-	-	-	-	-	9.2E-09	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	5.4E-08	-	-	1.3E-07	-	-	-	-	-	-	-	-	-

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		TP-118			TP-119			TP-125			TP-128			W-01(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	NA	-	-	NA	-	-	1.7	9.1E-04	5.7E-09	56.1	3.0E-02	1.9E-07	10.1 J	5.4E-03	3.4E-08
Barium	8.6E+05	-	207 J	2.4E-04	-	4,110 J	4.8E-03	-	89.8	1.0E-04	-	2,290	2.7E-03	-	50	5.8E-05	-
Cadmium	1.9E+03	2.6E+05	10.7 J	5.6E-03	4.1E-11	56.5 J	3.0E-02	2.1E-10	0.39 J	2.0E-04	1.5E-12	155	8.1E-02	5.9E-10	25.7	1.3E-02	9.7E-11
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	7.7	6.4E-04	1.5E-10	24.7	2.0E-03	4.7E-10	NA	-	-
Copper	4.4E+04	-	21.1 J	4.8E-04	-	61.4 J	1.4E-03	-	8.6	1.9E-04	-	1,330	3.0E-02	-	60.2	1.4E-03	-
Lead	3.7E+03	-	67.4 J	1.8E-02	-	505 J	1.4E-01	-	9.2	2.5E-03	-	2,290	6.2E-01	-	205	5.5E-02	-
Manganese	8.1E+04	-	676 J	8.4E-03	-	415 J	5.1E-03	-	113	1.4E-03	-	1,150	1.4E-02	-	312	3.9E-03	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	0.12 U	1.4E-05	-	0.68	7.7E-05	-	NA	-	-
Zinc	1.0E+06	-	936 J	9.4E-04	-	4,950 J	5.0E-03	-	180	1.8E-04	-	21,300	2.1E-02	-	2,270	2.3E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	0.2 U	-	6.6E-10	0.96 U	-	3.2E-09	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	0.2 U	-	6.6E-09	0.96 U	-	3.2E-08	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	0.2 U	-	6.6E-10	0.96 U	-	3.2E-09	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	0.2 U	-	6.7E-11	0.96 U	-	3.2E-10	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	0.2 U	-	6.7E-12	0.96 U	-	3.2E-11	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	0.2 U	2.1E-04	3.1E-10	0.96 U	1.0E-03	1.5E-09	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.8E-03	-	-	3.4E-02	-	-	3.1E-04	-	-	8.4E-02	-	-	1.4E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	8.4E-09	-	-	4.0E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	-	-	-	-	-	-	1.4E-08	-	-	2.3E-07	-	-	3.4E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-02(S)			W-05(S)			W-06(S)			W-08(S)			W-09(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	6.8 J	3.6E-03	2.3E-08	5.9	3.1E-03	2.0E-08	3.4 J	1.8E-03	1.1E-08	230 J	1.2E-01	7.8E-07	409	2.2E-01	1.4E-06
Barium	8.6E+05	-	58	6.7E-05	-	51	5.9E-05	-	48	5.6E-05	-	100	1.2E-04	-	55	6.4E-05	-
Cadmium	1.9E+03	2.6E+05	0.45 J	2.4E-04	1.7E-12	0.83 J	4.3E-04	3.1E-12	20	1.0E-02	7.6E-11	2.4 B	1.3E-03	9.1E-12	1.2 U	6.3E-04	4.5E-12
Cobalt	1.2E+04	5.3E+04	6	5.0E-04	1.1E-10	NA	-	-	0.43 B	3.6E-05	8.1E-12	37.7	3.1E-03	7.1E-10	60.7	5.0E-03	1.1E-09
Copper	4.4E+04	-	13.1	3.0E-04	-	16.1	3.6E-04	-	20	4.5E-04	-	14,800	3.3E-01	-	7,750	1.8E-01	-
Lead	3.7E+03	-	13.6	3.7E-03	-	10.1	2.7E-03	-	13	3.5E-03	-	10,000 J	**2.7E+00**	-	9,410	**2.5E+00**	-
Manganese	8.1E+04	-	403	5.0E-03	-	482	6.0E-03	-	350	4.3E-03	-	802	9.9E-03	-	1,780	2.2E-02	-
Mercury	8.8E+03	-	0.0122 J	1.4E-06	-	NA	-	-	0.056 UJ	6.4E-06	-	0.0068 U	7.7E-07	-	0.0068 U	7.7E-07	-
Zinc	1.0E+06	-	55	5.5E-05	-	41	4.1E-05	-	1,500	1.5E-03	-	21,800	2.2E-02	-	12,600	1.3E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	3.0E-04	-	-	4.9E-04	-	-	1.1E-02	-	-	1.4E-03	-	-	6.9E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.3E-08	-	-	2.0E-08	-	-	1.1E-08	-	-	7.8E-07	-	-	1.4E-06

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-10(S)			W-11(S)			W-12(S)			W-13(S)			W-14(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	169	9.0E-02	5.7E-07	424	2.3E-01	1.4E-06	3.7	2.0E-03	1.2E-08	4	2.1E-03	1.3E-08	5.6	3.0E-03	1.9E-08
Barium	8.6E+05	-	31	3.6E-05	-	55	6.4E-05	-	41	4.8E-05	-	89	1.0E-04	-	51	5.9E-05	-
Cadmium	1.9E+03	2.6E+05	0.23 U	1.2E-04	8.7E-13	5.3 J	2.8E-03	2.0E-11	0.51 J	2.7E-04	1.9E-12	7.7	4.0E-03	2.9E-11	0.53 J	2.8E-04	2.0E-12
Cobalt	1.2E+04	5.3E+04	NA	-	-	25.5	2.1E-03	4.8E-10	6.1	5.0E-04	1.2E-10	2.6 J	2.2E-04	4.9E-11	NA	-	-
Copper	4.4E+04	-	4,530 J	1.0E-01	-	3,280	7.4E-02	-	11.9	2.7E-04	-	10.1	2.3E-04	-	13.6	3.1E-04	-
Lead	3.7E+03	-	2,380	6.4E-01	-	10,300	**2.8E+00**	-	8.4	2.3E-03	-	31.5	8.5E-03	-	9.8	2.6E-03	-
Manganese	8.1E+04	-	1,360	1.7E-02	-	1,510	1.9E-02	-	228	2.8E-03	-	60.9	7.5E-04	-	421	5.2E-03	-
Mercury	8.8E+03	-	NA	-	-	0.0067 U	7.6E-07	-	0.0058 U	6.6E-07	-	0.25	2.8E-05	-	NA	-	-
Zinc	1.0E+06	-	3,450	3.5E-03	-	4,030	4.0E-03	-	31	3.1E-05	-	396	4.0E-04	-	266 J	2.7E-04	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	1.4E-10	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	1.4E-09	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	1.4E-10	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	1.4E-11	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	1.4E-12	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	1.4E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.042 U	-	1.4E-10	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	0.042 U	4.4E-05	6.5E-11	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.6E-04	-	-	2.8E-03	-	-	3.1E-04	-	-	4.1E-03	-	-	3.4E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	3.3E-09	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	5.7E-07	-	-	1.4E-06	-	-	1.2E-08	-	-	1.7E-08	-	-	1.9E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-15(S)			W-16(S)			W-17(D)			W-18(S)			W-19(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	5.1	2.7E-03	1.7E-08	3.5	1.9E-03	1.2E-08	3.5 J	1.9E-03	1.2E-08	40.9	2.2E-02	1.4E-07	26 J	1.4E-02	8.8E-08
Barium	8.6E+05	-	52	6.0E-05	-	88	1.0E-04	-	76	8.8E-05	-	756	8.8E-04	-	474 J	5.5E-04	-
Cadmium	1.9E+03	2.6E+05	3.7	1.9E-03	1.4E-11	0.98 J	5.1E-04	3.7E-12	19.9	1.0E-02	7.5E-11	392	2.1E-01	1.5E-09	92.8 J	4.9E-02	3.5E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	8	6.6E-04	1.5E-10	9.3	7.7E-04	1.8E-10	7.7	6.4E-04	1.5E-10
Copper	4.4E+04	-	13.9	3.1E-04	-	16.4	3.7E-04	-	16.5	3.7E-04	-	111	2.5E-03	-	262 J	5.9E-03	-
Lead	3.7E+03	-	9.8	2.6E-03	-	11.3	3.0E-03	-	10.3	2.8E-03	-	2,210	5.9E-01	-	1,130 J	3.0E-01	-
Manganese	8.1E+04	-	405	5.0E-03	-	601	7.4E-03	-	401	5.0E-03	-	880	1.1E-02	-	756	9.3E-03	-
Mercury	8.8E+03	-	NA	-	-	0.0166 J	1.9E-06	-	0.019 J	2.2E-06	-	9.3	1.1E-03	-	0.0378 U	4.3E-06	-
Zinc	1.0E+06	-	173 J	1.7E-04	-	57	5.7E-05	-	2,250	2.3E-03	-	7,690	7.7E-03	-	20,500 J	2.1E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.16 J	-	5.3E-10	0.75	-	2.5E-09
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	0.14 J	-	4.7E-09	0.5	-	1.7E-08
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.23 J	-	7.6E-10	0.86	-	2.9E-09
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	0.083 J	-	2.8E-11	0.34 J	-	1.1E-10
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	0.19 J	-	6.3E-12	0.92	-	3.1E-11
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	0.042 UJ	-	1.4E-09	0.12 J	-	4.0E-09
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	0.12 J	-	4.0E-10	0.41	-	1.4E-09
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	0.042 UJ	4.4E-05	6.5E-11	0.088 J	9.3E-05	1.4E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	2.0E-03	-	-	6.2E-04	-	-	1.1E-02	-	-	2.1E-01	-	-	4.9E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	7.8E-09	-	-	2.8E-08
Total (PAH + Arsenic) Risk	-		-	-	1.7E-08	-	-	1.2E-08	-	-	1.2E-08	-	-	1.5E-07	-	-	1.2E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-20(I)			W-21(D)			W-22(S)			Z-01			Z-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	94.7	5.0E-02	3.2E-07	5.1	2.7E-03	1.7E-08	13.4 J	7.1E-03	4.5E-08	NA	-	-	NA	-	-
Barium	8.6E+05	-	421	4.9E-04	-	90	1.0E-04	-	860	1.0E-03	-	162	1.9E-04	-	11,300	1.3E-02	-
Cadmium	1.9E+03	2.6E+05	2,310	1.2E+00	8.7E-09	94.9	5.0E-02	3.6E-10	3.9	2.0E-03	1.5E-11	8.8	4.6E-03	3.3E-11	32	1.7E-02	1.2E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	8.7	7.2E-04	1.6E-10	NA	-	-	NA	-	-
Copper	4.4E+04	-	7,850	1.8E-01	-	20.1	4.5E-04	-	35.3	8.0E-04	-	NA	-	-	NA	-	-
Lead	3.7E+03	-	11,500	**3.1E+00**	-	18.6	5.0E-03	-	46.3	1.2E-02	-	67	1.8E-02	-	2,120	5.7E-01	-
Manganese	8.1E+04	-	174,000	**2.2E+00**	-	901	1.1E-02	-	1,250	1.5E-02	-	NA	-	-	NA	-	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	0.0408 J	4.6E-06	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	118,000	1.2E-01	-	2,230	2.2E-03	-	792	7.9E-04	-	1,570	1.6E-03	-	13,100	1.3E-02	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.2E+00	-	-	5.0E-02	-	-	3.0E-03	-	-	4.8E-03	-	-	3.0E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.2E-07	-	-	1.7E-08	-	-	4.5E-08	-	-	-	-	-	-

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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B = Compound was detected in associated blank.
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R = The result was considered unusable during the quality assurance review.
N = Presumptive evidence of the presence of the compund.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		Z-03			Z-04			Z-05			Z-06			Z-07		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Barium	8.6E+05	-	30.8	3.6E-05	-	71.9	8.3E-05	-	734	8.5E-04	-	78.9	9.1E-05	-	31.9	3.7E-05	-
Cadmium	1.9E+03	2.6E+05	2 U	1.0E-03	7.6E-12	7.9	4.1E-03	3.0E-11	90.5	4.7E-02	3.4E-10	40.9	2.1E-02	1.5E-10	1.8 B	9.4E-04	6.8E-12
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	4.4E+04	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Lead	3.7E+03	-	15 B	4.0E-03	-	11 B	3.0E-03	-	3,430	9.2E-01	-	11 B	3.0E-03	-	10 B	2.7E-03	-
Manganese	8.1E+04	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	101	1.0E-04	-	2,790	2.8E-03	-	20,300	2.0E-02	-	1,470	1.5E-03	-	446	4.5E-04	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.1E-03	-	-	4.2E-03	-	-	4.8E-02	-	-	2.2E-02	-	-	9.8E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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N = Presumptive evidence of the presence of the compund.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		Z-08			Z-09			Z-10			Z-11			Z-12		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.9E+03	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	26	1.4E-02	8.8E-08
Barium	8.6E+05	-	44.5	5.2E-05	-	131,000	1.5E-01	-	86.1	1.0E-04	-	35.2	4.1E-05	-	344	4.0E-04	-
Cadmium	1.9E+03	2.6E+05	2.8	1.5E-03	1.1E-11	58	3.0E-02	2.2E-10	3.5	1.8E-03	1.3E-11	0.8 B	4.2E-04	3.0E-12	38	2.0E-02	1.4E-10
Cobalt	1.2E+04	5.3E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	6 U	5.0E-04	1.1E-10
Copper	4.4E+04	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	70 B	1.6E-03	-
Lead	3.7E+03	-	12 B	3.2E-03	-	480	1.3E-01	-	13 B	3.5E-03	-	9 B	2.4E-03	-	380	1.0E-01	-
Manganese	8.1E+04	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	310	3.8E-03	-
Mercury	8.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.477	5.4E-05	-
Zinc	1.0E+06	-	869	8.7E-04	-	30,200	3.0E-02	-	666	6.7E-04	-	104	1.0E-04	-	4,100	4.1E-03	-
PAHs																	
Benzo(a)anthracene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	3.0E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	3.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	3.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	9.5E+02	6.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.5E-03	-	-	1.8E-01	-	-	1.9E-03	-	-	4.6E-04	-	-	2.0E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.8E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Hazard Quotient (HQ):

> 1 - ≤5
> 5 - ≤10
> 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		A-02			A-03			A-04			A-05			B-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	4.3	4.3E-04	2.8E-08	6.3	6.3E-04	4.1E-08	7	7.0E-04	4.5E-08	6.5	6.5E-04	4.2E-08	4.6	4.6E-04	3.0E-08
Barium	1.0E+06	-	54 J	5.4E-05	-	189	1.9E-04	-	379	3.8E-04	-	720	7.2E-04	-	36	3.6E-05	-
Cadmium	2.1E+04	1.0E+06	4.2 J	2.0E-04	4.2E-12	11.7 J	5.6E-04	1.2E-11	16.7 J	7.9E-04	1.7E-11	18.9	9.0E-04	1.9E-11	1.47 J	7.0E-05	1.5E-12
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	1.0E+06	-	12	1.2E-05	-	21.9 J	2.2E-05	-	34.5	3.5E-05	-	36.3 J	3.6E-05	-	9.1	9.1E-06	-
Lead	2.2E+04	-	20 J	9.1E-04	-	49.6	2.3E-03	-	70.8	3.2E-03	-	325	1.5E-02	-	10.1 J	4.6E-04	-
Manganese	6.4E+05	-	350 J	5.5E-04	-	413	6.5E-04	-	512	8.0E-04	-	736	1.2E-03	-	278	4.3E-04	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	290	2.9E-04	-	828	8.3E-04	-	1,320	1.3E-03	-	1,840	1.8E-03	-	115	1.2E-04	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.5E-04	-	-	7.5E-04	-	-	1.2E-03	-	-	1.6E-03	-	-	1.1E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.8E-08	-	-	4.1E-08	-	-	4.5E-08	-	-	4.2E-08	-	-	3.0E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI =Hazard Indice
mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		B-02			B-03			B-04			B-05			B-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	3 J	3.0E-04	1.9E-08	13.3	1.3E-03	8.6E-08	8.4	8.4E-04	5.4E-08	21.7 J	2.2E-03	1.4E-07	14.4	1.4E-03	9.3E-08
Barium	1.0E+06	-	33 J	3.3E-05	-	190	1.9E-04	-	117	1.2E-04	-	247 J	2.5E-04	-	1,060	1.1E-03	-
Cadmium	2.1E+04	1.0E+06	1.3 B	6.2E-05	1.3E-12	29.3	1.4E-03	2.9E-11	28.7	1.4E-03	2.9E-11	62.8 J	3.0E-03	6.3E-11	39.8 J	1.9E-03	4.0E-11
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	1.0E+06	-	7.3 J	7.3E-06	-	440	4.4E-04	-	173	1.7E-04	-	1,080 J	1.1E-03	-	233 J	2.3E-04	-
Lead	2.2E+04	-	17 J	7.7E-04	-	767	3.5E-02	-	262	1.2E-02	-	1,930 J	8.8E-02	-	369	1.7E-02	-
Manganese	6.4E+05	-	270 J	4.2E-04	-	601	9.4E-04	-	501	7.8E-04	-	752	1.2E-03	-	836	1.3E-03	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	96	9.6E-05	-	2,450	2.5E-03	-	1,560	1.6E-03	-	5,410 J	5.4E-03	-	3,520	3.5E-03	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	9.5E-05	-	-	1.6E-03	-	-	1.5E-03	-	-	3.2E-03	-	-	3.0E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.9E-08	-	-	8.6E-08	-	-	5.4E-08	-	-	1.4E-07	-	-	9.3E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
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Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		C-01			C-02			C-03			C-04			C-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	4.2	4.2E-04	2.7E-08	3.2	3.2E-04	2.1E-08	13.7	1.4E-03	8.8E-08	230	2.3E-02	1.5E-06	96	9.6E-03	6.2E-07
Barium	1.0E+06	-	41 J	4.1E-05	-	57	5.7E-05	-	7,150	7.2E-03	-	819	8.2E-04	-	8,730	8.7E-03	-
Cadmium	2.1E+04	1.0E+06	2.2 U	1.0E-04	2.2E-12	1.5 J	7.1E-05	1.5E-12	38.9	1.9E-03	3.9E-11	921	4.4E-02	9.2E-10	49.3	2.3E-03	4.9E-11
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	1.0E+06	-	13	1.3E-05	-	16.9	1.7E-05	-	286	2.9E-04	-	14,400	1.4E-02	-	802	8.0E-04	-
Lead	2.2E+04	-	21 J	9.6E-04	-	19.9	9.1E-04	-	593	2.7E-02	-	29,700	1.4E+00	-	8,730	4.0E-01	-
Manganese	6.4E+05	-	310 J	4.8E-04	-	245	3.8E-04	-	743	1.2E-03	-	32,900	5.1E-02	-	4,230	6.6E-03	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	280	2.8E-04	-	196 J	2.0E-04	-	4,650 J	4.7E-03	-	84,800	8.5E-02	-	8,760	8.8E-03	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.5E-04	-	-	1.3E-04	-	-	9.0E-03	-	-	4.5E-02	-	-	1.1E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.7E-08	-	-	2.1E-08	-	-	8.8E-08	-	-	1.5E-06	-	-	6.2E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI =Hazard Indice
mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		D-02			D-03			D-04			D-05			D-06		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	14.1	1.4E-03	9.1E-08	6.7	6.7E-04	4.3E-08	3.5	3.5E-04	2.3E-08	21.8	2.2E-03	1.4E-07	96.5	9.7E-03	6.2E-07
Barium	1.0E+06	-	326	3.3E-04	-	228	2.3E-04	-	66	6.6E-05	-	1,280	1.3E-03	-	1,100	1.1E-03	-
Cadmium	2.1E+04	1.0E+06	32.5	1.5E-03	3.3E-11	16.6 J	7.9E-04	1.7E-11	1.27 J	6.0E-05	1.3E-12	20.6	9.8E-04	2.1E-11	111	5.3E-03	1.1E-10
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-	NA	-	-	NA	-	-	20.6	2.5E-03	5.5E-11
Copper	1.0E+06	-	115	1.2E-04	-	89.4	8.9E-05	-	8.9	8.9E-06	-	261	2.6E-04	-	435	4.4E-04	-
Lead	2.2E+04	-	254 J	1.2E-02	-	325	1.5E-02	-	8.6	3.9E-04	-	437	2.0E-02	-	3,360	1.5E-01	-
Manganese	6.4E+05	-	347	5.4E-04	-	645	1.0E-03	-	305	4.8E-04	-	231	3.6E-04	-	1,890	3.0E-03	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.0284 U	3.5E-06	-
Zinc	1.0E+06	-	9,050 J	9.1E-03	-	2,350	2.4E-03	-	104	1.0E-04	-	2,660 J	2.7E-03	-	33,300	3.3E-02	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.42	-	9.4E-09
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.3 J	-	6.7E-08
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.76	-	1.7E-08
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.25 J	-	5.6E-10
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.54	-	1.2E-10
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.047 J	-	1.1E-08
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.27 J	-	6.1E-09
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.11 J	9.4E-06	1.2E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	1.9E-03	-	-	1.0E-03	-	-	1.3E-04	-	-	2.3E-03	-	-	6.4E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1E-07
Total (PAH + Arsenic) Risk	-		-	-	9.1E-08	-	-	4.3E-08	-	-	2.3E-08	-	-	1.4E-07	-	-	7.3E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		D-07			E-01			E-02			E-04			E-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	105	1.1E-02	6.8E-07	15.1	1.5E-03	9.7E-08	6.2	6.2E-04	4.0E-08	47.8	4.8E-03	3.1E-07	29.7	3.0E-03	1.9E-07
Barium	1.0E+06	-	5,200	5.2E-03	-	209	2.1E-04	-	247	2.5E-04	-	254	2.5E-04	-	306	3.1E-04	-
Cadmium	2.1E+04	1.0E+06	57.8	2.8E-03	5.8E-11	29.5	1.4E-03	3.0E-11	14.6	6.9E-04	1.5E-11	131	6.2E-03	1.3E-10	53.9	2.6E-03	5.4E-11
Cobalt	8.2E+03	3.7E+05	28	3.4E-03	7.5E-11	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	1.0E+06	-	449	4.5E-04	-	198	2.0E-04	-	62.6	6.3E-05	-	517	5.2E-04	-	303	3.0E-04	-
Lead	2.2E+04	-	2,190	1.0E-01	-	325	1.5E-02	-	104	4.7E-03	-	1,710	7.8E-02	-	1,090	5.0E-02	-
Manganese	6.4E+05	-	1,690	2.6E-03	-	346	5.4E-04	-	293	4.6E-04	-	584	9.1E-04	-	461	7.2E-04	-
Mercury	8.2E+03	-	0.21	2.6E-05	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	16,400 J	1.6E-02	-	3,650	3.7E-03	-	1,470	1.5E-03	-	25,100 J	2.5E-02	-	6,980	7.0E-03	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	0.23 J	-	5.2E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	0.17 J	-	3.8E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	0.4 J	-	9.0E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	0.13 J	-	2.9E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	0.4 J	-	9.0E-11	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	0.042 U	-	9.4E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	0.14 J	-	3.1E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	0.071 J	6.1E-06	7.8E-11	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	8.0E-03	-	-	1.6E-03	-	-	9.4E-04	-	-	6.5E-03	-	-	2.9E-03	-
Total PAH Risk	-		-	-	6.5E-08	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	7.4E-07	-	-	9.7E-08	-	-	4.0E-08	-	-	3.1E-07	-	-	1.9E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		E-06			F-01			F-02			F-03			G-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	19.7 J	2.0E-03	1.3E-07	22.5 J	2.3E-03	1.4E-07	7.2	7.2E-04	4.6E-08	20.1	2.0E-03	1.3E-07	10	1.0E-03	6.4E-08
Barium	1.0E+06	-	466 J	4.7E-04	-	162 J	1.6E-04	-	41 J	4.1E-05	-	327 J	3.3E-04	-	147	1.5E-04	-
Cadmium	2.1E+04	1.0E+06	48.9	2.3E-03	4.9E-11	61.6 J	2.9E-03	6.2E-11	1.5 J	7.1E-05	1.5E-12	49.5	2.4E-03	5.0E-11	20.8 J	9.9E-04	2.1E-11
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-	NA	-	-	NA	-	-	6.7 B	8.2E-04	1.8E-11
Copper	1.0E+06	-	205 J	2.1E-04	-	210 J	2.1E-04	-	29.5	3.0E-05	-	197	2.0E-04	-	60.7 J	6.1E-05	-
Lead	2.2E+04	-	466 J	2.1E-02	-	289 J	1.3E-02	-	23.7	1.1E-03	-	397	1.8E-02	-	108	4.9E-03	-
Manganese	6.4E+05	-	332 J	5.2E-04	-	632	9.9E-04	-	422	6.6E-04	-	458	7.2E-04	-	477	7.5E-04	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.041 B	5.0E-06	-
Zinc	1.0E+06	-	6,350 J	6.4E-03	-	5,870 J	5.9E-03	-	202	2.0E-04	-	7,750	7.8E-03	-	3,170	3.2E-03	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.37 U	-	8.3E-09
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.37 U	-	8.3E-08
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.37 U	-	8.3E-09
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.37 U	-	8.3E-10
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.37 UJ	-	8.3E-11
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.37 U	-	8.3E-08
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.37 U	-	8.3E-09
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.37 U	3.2E-05	4.0E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	2.8E-03	-	-	3.1E-03	-	-	1.1E-04	-	-	2.7E-03	-	-	1.1E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9E-07
Total (PAH + Arsenic) Risk	-		-	-	1.3E-07	-	-	1.4E-07	-	-	4.6E-08	-	-	1.3E-07	-	-	2.6E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		G-02			G-03			G-04			G-05			G-07		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	88.5	8.9E-03	5.7E-07	182	1.8E-02	1.2E-06	55.2	5.5E-03	3.6E-07	45.6	4.6E-03	2.9E-07	4.5 J	4.5E-04	2.9E-08
Barium	1.0E+06	-	1,330	1.3E-03	-	276	2.8E-04	-	184	1.8E-04	-	867 J	8.7E-04	-	360	3.6E-04	-
Cadmium	2.1E+04	1.0E+06	235	1.1E-02	2.4E-10	945	4.5E-02	9.5E-10	239	1.1E-02	2.4E-10	160	7.6E-03	1.6E-10	5.7	2.7E-04	5.7E-12
Cobalt	8.2E+03	3.7E+05	8.1	9.9E-04	2.2E-11	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	1.0E+06	-	899	9.0E-04	-	3,180	3.2E-03	-	467	4.7E-04	-	475	4.8E-04	-	52	5.2E-05	-
Lead	2.2E+04	-	2,830	1.3E-01	-	4,600	2.1E-01	-	1,350	6.2E-02	-	1,390	6.3E-02	-	63	2.9E-03	-
Manganese	6.4E+05	-	1,370	2.1E-03	-	2,110	3.3E-03	-	566	8.8E-04	-	732	1.1E-03	-	320	5.0E-04	-
Mercury	8.2E+03	-	0.067 B	8.2E-06	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	37,300 J	3.7E-02	-	260,000 J	2.6E-01	-	43,300 J	4.3E-02	-	21,700	2.2E-02	-	850	8.5E-04	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	0.39 U	-	8.8E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	0.39 U	-	8.8E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	0.39 U	-	8.8E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	0.39 U	-	8.8E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	0.39 U	-	8.8E-11	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	0.39 U	-	8.8E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	0.39 U	-	8.8E-09	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	0.39 U	3.3E-05	4.3E-10	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.3E-02	-	-	4.5E-02	-	-	1.2E-02	-	-	8.5E-03	-	-	6.3E-04	-
Total PAH Risk	-		-	-	2.0E-07	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	7.7E-07	-	-	1.2E-06	-	-	3.6E-07	-	-	2.9E-07	-	-	2.9E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI =Hazard Indice
mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		H-02			H-04			H-05			H-06			H-07		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	9	9.0E-04	5.8E-08	4.7	4.7E-04	3.0E-08	51	5.1E-03	3.3E-07	110	1.1E-02	7.1E-07	27.8	2.8E-03	1.8E-07
Barium	1.0E+06	-	88	8.8E-05	-	52	5.2E-05	-	1,800	1.8E-03	-	1,200	1.2E-03	-	8,590	8.6E-03	-
Cadmium	2.1E+04	1.0E+06	6.2	2.9E-04	6.2E-12	9	4.3E-04	9.0E-12	170	8.1E-03	1.7E-10	130	6.2E-03	1.3E-10	12.9	6.1E-04	1.3E-11
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	1.0E+06	-	19.1 J	1.9E-05	-	50	5.0E-05	-	820	8.2E-04	-	990	9.9E-04	-	160	1.6E-04	-
Lead	2.2E+04	-	34	1.5E-03	-	87 J	4.0E-03	-	3,700 J	1.7E-01	-	4,000 J	1.8E-01	-	274	1.2E-02	-
Manganese	6.4E+05	-	189	3.0E-04	-	350 J	5.5E-04	-	730 J	1.1E-03	-	600 J	9.4E-04	-	2,480	3.9E-03	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	361 J	3.6E-04	-	1,200 J	1.2E-03	-	45,000 J	4.5E-02	-	89,000 J	8.9E-02	-	3,810 J	3.8E-03	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	3.8E-04	-	-	4.8E-04	-	-	9.9E-03	-	-	7.4E-03	-	-	9.2E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	5.8E-08	-	-	3.0E-08	-	-	3.3E-07	-	-	7.1E-07	-	-	1.8E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		H-08			I-02			I-03			I-04			I-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	475	4.8E-02	*3.1E-06*	60	6.0E-03	3.9E-07	33.1	3.3E-03	2.1E-07	47.4	4.8E-03	3.1E-07	141	1.4E-02	9.1E-07
Barium	1.0E+06	-	2,980	3.0E-03	-	3,200	3.2E-03	-	3,920	3.9E-03	-	1,770 J	1.8E-03	-	969	9.7E-04	-
Cadmium	2.1E+04	1.0E+06	236 J	1.1E-02	2.4E-10	101	4.8E-03	1.0E-10	104	4.9E-03	1.0E-10	135	6.4E-03	1.4E-10	197	9.4E-03	2.0E-10
Cobalt	8.2E+03	3.7E+05	NA	-	-	9.5 B	1.2E-03	2.5E-11	7.6 B	9.3E-04	2.0E-11	NA	-	-	NA	-	-
Copper	1.0E+06	-	1,700 J	1.7E-03	-	3,280	3.3E-03	-	236	2.4E-04	-	1,060 J	1.1E-03	-	4,430	4.4E-03	-
Lead	2.2E+04	-	11,300	5.1E-01	-	7,570	3.4E-01	-	1,440	6.6E-02	-	1,510 J	6.9E-02	-	2,490 J	1.1E-01	-
Manganese	6.4E+05	-	3,830	6.0E-03	-	18,000	2.8E-02	-	815	1.3E-03	-	2,330	3.6E-03	-	3,860	6.0E-03	-
Mercury	8.2E+03	-	NA	-	-	0.05 U	6.1E-06	-	0.048 U	5.8E-06	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	24,800	2.5E-02	-	36,100	3.6E-02	-	9,030	9.0E-03	-	15,200	1.5E-02	-	38,100	3.8E-02	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	0.4 U	-	9.0E-09	0.39 U	-	8.8E-09	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	0.4 U	-	9.0E-08	0.39 U	-	8.8E-08	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	0.4 U	-	9.0E-09	0.39 U	-	8.8E-09	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	0.4 U	-	9.0E-10	0.39 U	-	8.8E-10	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	0.4 U	-	9.0E-11	0.39 U	-	8.8E-11	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	0.4 U	-	9.0E-08	0.39 U	-	8.8E-08	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	0.4 U	-	9.0E-09	0.39 U	-	8.8E-09	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	0.4 U	3.4E-05	4.4E-10	0.39 U	3.3E-05	4.3E-10	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.4E-02	-	-	8.0E-03	-	-	8.9E-03	-	-	8.2E-03	-	-	1.0E-02	-
Total PAH Risk	-		-	-	-	-	-	2.1E-07	-	-	2.0E-07	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*3.1E-06*	-	-	5.9E-07	-	-	4.2E-07	-	-	3.1E-07	-	-	9.1E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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RSV = Risk-based Screening Value
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mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		I-06			I-07			I-09			I-11			J-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	99.9	1.0E-02	6.4E-07	235	2.4E-02	*1.5E-06*	28.2	2.8E-03	1.8E-07	41.3 J	4.1E-03	2.7E-07	11.6	1.2E-03	7.5E-08
Barium	1.0E+06	-	6,170 J	6.2E-03	-	1,130	1.1E-03	-	1,250	1.3E-03	-	11,200	1.1E-02	-	505	5.1E-04	-
Cadmium	2.1E+04	1.0E+06	1,010	4.8E-02	1.0E-09	139	6.6E-03	1.4E-10	44.8	2.1E-03	4.5E-11	49.6 J	2.4E-03	5.0E-11	8.2	3.9E-04	8.2E-12
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	1.0E+06	-	1,620 J	1.6E-03	-	5,530 J	5.5E-03	-	764	7.6E-04	-	958	9.6E-04	-	42.8	4.3E-05	-
Lead	2.2E+04	-	4,310 J	2.0E-01	-	4,650	2.1E-01	-	922	4.2E-02	-	935 J	4.3E-02	-	109 J	5.0E-03	-
Manganese	6.4E+05	-	2,020	3.2E-03	-	2,590	4.0E-03	-	802	1.3E-03	-	1,190	1.9E-03	-	630	9.9E-04	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	65,600	6.6E-02	-	44,700	4.5E-02	-	9,760	9.8E-03	-	12,100	1.2E-02	-	1,460	1.5E-03	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.4E-02	-	-	7.7E-03	-	-	3.4E-03	-	-	1.4E-02	-	-	9.0E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	6.4E-07	-	-	*1.5E-06*	-	-	1.8E-07	-	-	2.7E-07	-	-	7.5E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-02			J-06			J-07			J-08			J-09		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	20	2.0E-03	1.3E-07	111	1.1E-02	7.1E-07	36.3 J	3.6E-03	2.3E-07	139 J	1.4E-02	9.0E-07	79 J	7.9E-03	5.1E-07
Barium	1.0E+06	-	204	2.0E-04	-	7,020	7.0E-03	-	133 J	1.3E-04	-	734 J	7.3E-04	-	391 J	3.9E-04	-
Cadmium	2.1E+04	1.0E+06	84.3	4.0E-03	8.4E-11	109	5.2E-03	1.1E-10	14.7	7.0E-04	1.5E-11	40	1.9E-03	4.0E-11	6.5 J	3.1E-04	6.5E-12
Cobalt	8.2E+03	3.7E+05	6.1	7.4E-04	1.6E-11	NA	-	-	15.8	1.9E-03	4.2E-11	NA	-	-	NA	-	-
Copper	1.0E+06	-	33.6	3.4E-05	-	1,230	1.2E-03	-	699 J	7.0E-04	-	8,610 J	8.6E-03	-	2,760 J	2.8E-03	-
Lead	2.2E+04	-	1,060 J	4.8E-02	-	4,790	2.2E-01	-	536 J	2.4E-02	-	4,620 J	2.1E-01	-	2,450 J	1.1E-01	-
Manganese	6.4E+05	-	457	7.1E-04	-	3,220	5.0E-03	-	1,060 J	1.7E-03	-	13,700 J	2.1E-02	-	20,400 J	3.2E-02	-
Mercury	8.2E+03	-	0.029 B	3.5E-06	-	NA	-	-	0.028 U	3.4E-06	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	6,120	6.1E-03	-	24,500	2.5E-02	-	6,420	6.4E-03	-	36,500	3.7E-02	-	10,900	1.1E-02	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	0.35 U	-	7.9E-09	NA	-	-	0.036 UJ	-	8.1E-10	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	0.35 U	-	7.9E-08	NA	-	-	0.036 UJ	-	8.1E-09	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	0.35 U	-	7.9E-09	NA	-	-	0.036 UJ	-	8.1E-10	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	0.35 U	-	7.9E-10	NA	-	-	0.036 UJ	-	8.1E-11	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	0.35 U	-	7.9E-11	NA	-	-	0.036 UJ	-	8.1E-12	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	0.35 U	-	7.9E-08	NA	-	-	0.036 UJ	-	8.1E-09	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	0.35 U	-	7.9E-09	NA	-	-	0.036 UJ	-	8.1E-10	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	0.35 U	3.0E-05	3.8E-10	NA	-	-	0.046 J	3.9E-06	5.0E-11	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	4.2E-03	-	-	1.2E-02	-	-	8.3E-04	-	-	2.6E-03	-	-	7.0E-04	-
Total PAH Risk	-		-	-	1.8E-07	-	-	-	-	-	1.9E-08	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.1E-07	-	-	7.1E-07	-	-	2.5E-07	-	-	9.0E-07	-	-	5.1E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

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Table C1-7:
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Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		J-10			J-11			J-12			J-13			N-01		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	10.3	1.0E-03	6.6E-08	9.3 J	9.3E-04	6.0E-08	17.9	1.8E-03	1.2E-07	230 J	2.3E-02	1.5E-06	6.5	6.5E-04	4.2E-08
Barium	1.0E+06	-	296	3.0E-04	-	420	4.2E-04	-	4,390	4.4E-03	-	686	6.9E-04	-	168	1.7E-04	-
Cadmium	2.1E+04	1.0E+06	15.1 J	7.2E-04	1.5E-11	19	9.0E-04	1.9E-11	67.6 J	3.2E-03	6.8E-11	676 J	3.2E-02	6.8E-10	11	5.2E-04	1.1E-11
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-	NA	-	-	42.2	5.2E-03	1.1E-10	NA	-	-
Copper	1.0E+06	-	116	1.2E-04	-	130	1.3E-04	-	319	3.2E-04	-	3,910	3.9E-03	-	30.2	3.0E-05	-
Lead	2.2E+04	-	166	7.6E-03	-	200 J	9.1E-03	-	485	2.2E-02	-	2,910 J	1.3E-01	-	84.2	3.8E-03	-
Manganese	6.4E+05	-	576 J	9.0E-04	-	390	6.1E-04	-	588 J	9.2E-04	-	2,180	3.4E-03	-	416	6.5E-04	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-	NA	-	-	0.58 J	7.1E-05	-	NA	-	-
Zinc	1.0E+06	-	2,300	2.3E-03	-	2,000 J	2.0E-03	-	6,650	6.7E-03	-	101,000	1.0E-01	-	1,030	1.0E-03	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.1E-09	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.1E-08	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.1E-09	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.1E-10	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.1E-11	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.1E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	0.051 UJ	-	1.1E-09	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	0.29 J	2.5E-05	3.2E-10	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.0E-03	-	-	1.3E-03	-	-	7.6E-03	-	-	3.3E-02	-	-	6.9E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	2.7E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	6.6E-08	-	-	6.0E-08	-	-	1.2E-07	-	-	*1.5E-06*	-	-	4.2E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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B = Compound was detected in associated blank.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI =Hazard Indice
mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		N-02			N-03			P-01			P-02			P-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	6.3	6.3E-04	4.1E-08	7.4	7.4E-04	4.8E-08	35 J	3.5E-03	2.3E-07	5.2	5.2E-04	3.3E-08	36 J	3.6E-03	2.3E-07
Barium	1.0E+06	-	137	1.4E-04	-	306	3.1E-04	-	4,500 J	4.5E-03	-	125	1.3E-04	-	7,500 J	7.5E-03	-
Cadmium	2.1E+04	1.0E+06	10.1	4.8E-04	1.0E-11	6.7	3.2E-04	6.7E-12	52	2.5E-03	5.2E-11	4.6	2.2E-04	4.6E-12	48	2.3E-03	4.8E-11
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-	5.9 J	7.2E-04	1.6E-11	NA	-	-	NA	-	-
Copper	1.0E+06	-	774	7.7E-04	-	45	4.5E-05	-	320 J	3.2E-04	-	20	2.0E-05	-	700 J	7.0E-04	-
Lead	2.2E+04	-	53.5	2.4E-03	-	61	2.8E-03	-	2,500 J	1.1E-01	-	26.7	1.2E-03	-	940 J	4.3E-02	-
Manganese	6.4E+05	-	770	1.2E-03	-	451	7.1E-04	-	440 J	6.9E-04	-	290	4.5E-04	-	700 J	1.1E-03	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-	0.94 J	1.1E-04	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	3,180 J	3.2E-03	-	908 J	9.1E-04	-	4,100	4.1E-03	-	488	4.9E-04	-	13,000	1.3E-02	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	6.2E-04	-	-	6.2E-04	-	-	7.0E-03	-	-	3.4E-04	-	-	9.8E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	4.1E-08	-	-	4.8E-08	-	-	2.3E-07	-	-	3.3E-08	-	-	2.3E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
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HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		P-04			PZ-01(S)			PZ-02(S)			PZ-03(I)			PZ-04(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	24 J	2.4E-03	1.5E-07	12 J	1.2E-03	7.7E-08	23.9	2.4E-03	1.5E-07	101	1.0E-02	6.5E-07	108	1.1E-02	7.0E-07
Barium	1.0E+06	-	3,600 J	3.6E-03	-	840	8.4E-04	-	2,640	2.6E-03	-	2,930	2.9E-03	-	1,330	1.3E-03	-
Cadmium	2.1E+04	1.0E+06	61	2.9E-03	6.1E-11	20	9.5E-04	2.0E-11	38.4 J	1.8E-03	3.8E-11	41.5	2.0E-03	4.2E-11	35	1.7E-03	3.5E-11
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	1.0E+06	-	370 J	3.7E-04	-	940	9.4E-04	-	678	6.8E-04	-	4,030	4.0E-03	-	1,980	2.0E-03	-
Lead	2.2E+04	-	1,300 J	5.9E-02	-	220	1.0E-02	-	702	3.2E-02	-	3,120	1.4E-01	-	2,930	1.3E-01	-
Manganese	6.4E+05	-	390 J	6.1E-04	-	4,100	6.4E-03	-	530 J	8.3E-04	-	6,380	1.0E-02	-	1,620	2.5E-03	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	11,000	1.1E-02	-	11,000	1.1E-02	-	8,700	8.7E-03	-	13,700	1.4E-02	-	9,230	9.2E-03	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	6.5E-03	-	-	1.8E-03	-	-	4.5E-03	-	-	4.9E-03	-	-	3.0E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.5E-07	-	-	7.7E-08	-	-	1.5E-07	-	-	6.5E-07	-	-	7.0E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI =Hazard Indice
mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SL-A			SL-B			SL-C			SL-D-1			SL-D-2		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	56.8	5.7E-03	3.7E-07	160	1.6E-02	1.0E-06	32	3.2E-03	2.1E-07	91.5	9.2E-03	5.9E-07	112	1.1E-02	7.2E-07
Barium	1.0E+06	-	129	1.3E-04	-	98	9.8E-05	-	760	7.6E-04	-	990	9.9E-04	-	1,660	1.7E-03	-
Cadmium	2.1E+04	1.0E+06	466	2.2E-02	4.7E-10	1.1 U	5.2E-05	1.1E-12	54.8	2.6E-03	5.5E-11	246	1.2E-02	2.5E-10	403	1.9E-02	4.0E-10
Cobalt	8.2E+03	3.7E+05	21.4	2.6E-03	5.7E-11	47	5.7E-03	1.3E-10	20.3	2.5E-03	5.4E-11	29 J	3.5E-03	7.7E-11	26.9	3.3E-03	7.2E-11
Copper	1.0E+06	-	2,250	2.3E-03	-	3,760	3.8E-03	-	1,340	1.3E-03	-	3,030	3.0E-03	-	2,420	2.4E-03	-
Lead	2.2E+04	-	2,690	1.2E-01	-	7,200	3.3E-01	-	820	3.7E-02	-	2,370	1.1E-01	-	3,690	1.7E-01	-
Manganese	6.4E+05	-	1,530 J	2.4E-03	-	1,630 J	2.5E-03	-	1,020 J	1.6E-03	-	25,300	4.0E-02	-	1,690	2.6E-03	-
Mercury	8.2E+03	-	0.0436 B	5.3E-06	-	0.0067 U	8.2E-07	-	0.48	5.8E-05	-	0.4	4.9E-05	-	0.55	6.7E-05	-
Zinc	1.0E+06	-	54,000	5.4E-02	-	8,120	8.1E-03	-	8,660	8.7E-03	-	44,600	4.5E-02	-	64,900	6.5E-02	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	0.61	-	1.4E-08	0.43 J	-	9.7E-09
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	0.44 J	-	9.9E-08	0.25 J	-	5.6E-08
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	0.84	-	1.9E-08	0.57	-	1.3E-08
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	0.2 J	-	4.5E-10	0.17 J	-	3.8E-10
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	0.95	-	2.1E-10	0.7	-	1.6E-10
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	0.11 J	-	2.5E-08	0.079 U	-	1.8E-08
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	0.26 J	-	5.8E-09	0.17 J	-	3.8E-09
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	0.18 J	1.5E-05	2.0E-10	0.38 J	3.3E-05	4.2E-10
Totals																	
Total (Barium + Cadmium) HI	-		-	2.2E-02	-	-	1.5E-04	-	-	3.4E-03	-	-	1.3E-02	-	-	2.1E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	1.6E-07	-	-	1.0E-07
Total (PAH + Arsenic) Risk	-		-	-	3.7E-07	-	-	1.0E-06	-	-	2.1E-07	-	-	7.5E-07	-	-	8.2E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SL-E			SL-G			SS-05			SS-09			SS-10		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	218	2.2E-02	1.4E-06	220	2.2E-02	1.4E-06	8.8 J	8.8E-04	5.7E-08	173	1.7E-02	1.1E-06	2.6 U	2.6E-04	1.7E-08
Barium	1.0E+06	-	163	1.6E-04	-	449	4.5E-04	-	708	7.1E-04	-	5,290	5.3E-03	-	208	2.1E-04	-
Cadmium	2.1E+04	1.0E+06	1 U	4.8E-05	1.0E-12	62.1	3.0E-03	6.2E-11	55.1	2.6E-03	5.5E-11	139	6.6E-03	1.4E-10	596	2.8E-02	6.0E-10
Cobalt	8.2E+03	3.7E+05	90	1.1E-02	2.4E-10	19.5	2.4E-03	5.2E-11	7.2	8.8E-04	1.9E-11	45.7	5.6E-03	1.2E-10	4.74 J	5.8E-04	1.3E-11
Copper	1.0E+06	-	2,790	2.8E-03	-	1,230	1.2E-03	-	191	1.9E-04	-	3,270	3.3E-03	-	177	1.8E-04	-
Lead	2.2E+04	-	3,350	1.5E-01	-	2,360	1.1E-01	-	544	2.5E-02	-	16,100	7.3E-01	-	952	4.3E-02	-
Manganese	6.4E+05	-	1,780 J	2.8E-03	-	1,240	1.9E-03	-	558	8.7E-04	-	3,330	5.2E-03	-	686	1.1E-03	-
Mercury	8.2E+03	-	0.0061 U	7.4E-07	-	1.9	2.3E-04	-	0.47	5.7E-05	-	0.23	2.8E-05	-	0.053 J	6.5E-06	-
Zinc	1.0E+06	-	3,060	3.1E-03	-	7,930	7.9E-03	-	6,830	6.8E-03	-	29,200	2.9E-02	-	58,900	5.9E-02	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	0.1 J	-	2.2E-09	0.15 J	-	3.4E-09	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	0.084 J	-	1.9E-08	0.12 J	-	2.7E-08	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	0.16 J	-	3.6E-09	0.23 J	-	5.2E-09	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	0.053 J	-	1.2E-10	0.089 J	-	2.0E-10	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	0.14 J	-	3.1E-11	0.25 J	-	5.6E-11	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	0.039 U	-	8.8E-09	0.041 U	-	9.2E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	0.039 U	-	8.8E-10	0.041 U	-	9.2E-10	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	0.039 U	3.3E-06	4.3E-11	0.041 U	3.5E-06	4.5E-11	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.1E-04	-	-	3.4E-03	-	-	3.3E-03	-	-	1.2E-02	-	-	2.9E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	3.5E-08	-	-	4.6E-08	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.4E-06	-	-	1.4E-06	-	-	9.1E-08	-	-	1.2E-06	-	-	1.7E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI =Hazard Indice
mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-12			SS-13			SS-14			SS-15			SS-18		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	15	1.5E-03	9.7E-08	150	1.5E-02	9.7E-07	1330 J	1.3E-01	*8.6E-06*	13.2 J	1.3E-03	8.5E-08	87,900 J	**8.8E+00**	*5.7E-04*
Barium	1.0E+06	-	1,040	1.0E-03	-	7,320	7.3E-03	-	737 J	7.4E-04	-	165 J	1.7E-04	-	309	3.1E-04	-
Cadmium	2.1E+04	1.0E+06	118	5.6E-03	1.2E-10	361	1.7E-02	3.6E-10	34.9	1.7E-03	3.5E-11	35.1	1.7E-03	3.5E-11	8,320 J	4.0E-01	8.3E-09
Cobalt	8.2E+03	3.7E+05	3.37 J	4.1E-04	9.0E-12	68	8.3E-03	1.8E-10	158 J	1.9E-02	4.2E-10	2.8 J	3.4E-04	7.5E-12	11	1.3E-03	2.9E-11
Copper	1.0E+06	-	378	3.8E-04	-	1,680	1.7E-03	-	1,810	1.8E-03	-	92	9.2E-05	-	8,700	8.7E-03	-
Lead	2.2E+04	-	877	4.0E-02	-	16,300	7.4E-01	-	8,290	3.8E-01	-	175 J	8.0E-03	-	90,000	**4.1E+00**	-
Manganese	6.4E+05	-	553	8.6E-04	-	2,700	4.2E-03	-	3,660 J	5.7E-03	-	647 J	1.0E-03	-	799	1.2E-03	-
Mercury	8.2E+03	-	0.15	1.8E-05	-	3.3	4.0E-04	-	0.75 J	9.1E-05	-	0.56	6.8E-05	-	10.1	1.2E-03	-
Zinc	1.0E+06	-	17,200	1.7E-02	-	77,300	7.7E-02	-	14,600	1.5E-02	-	3,440 J	3.4E-03	-	90,600	9.1E-02	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	0.073 J	-	1.6E-09	4.6	-	1.0E-07	0.18 J	-	4.0E-09	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	0.081 J	-	1.8E-08	4.8	-	1.1E-06	0.22 J	-	4.9E-08	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	0.13 J	-	2.9E-09	8.9	-	2.0E-07	0.42	-	9.4E-09	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	0.041 J	-	9.2E-11	2.8	-	6.3E-09	0.14 J	-	3.1E-10	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	0.088 J	-	2.0E-11	7.8	-	1.8E-09	0.31 J	-	7.0E-11	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	0.039 U	-	8.8E-09	1.2	-	2.7E-07	0.066 J	-	1.5E-08	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	0.039 U	-	8.8E-10	3.6	-	8.1E-08	0.24 J	-	5.4E-09	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	0.039 U	3.3E-06	4.3E-11	0.18 J	1.5E-05	2.0E-10	0.038 U	3.3E-06	4.2E-11	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	6.7E-03	-	-	2.4E-02	-	-	2.4E-03	-	-	1.8E-03	-	-	4.0E-01	-
Total PAH Risk	-		-	-	3.3E-08	-	-	*1.7E-06*	-	-	8.4E-08	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.3E-07	-	-	*2.7E-06*	-	-	*8.6E-06*	-	-	8.5E-08	-	-	*5.7E-04*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
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mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-43			SS-44			SS-49			TA-01			TA-02		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	9.8 J	9.8E-04	6.3E-08	349 J	3.5E-02	*2.2E-06*	21 J	2.1E-03	1.4E-07	3 U	3.0E-04	1.9E-08	212 J	2.1E-02	1.4E-06
Barium	1.0E+06	-	4,580 J	4.6E-03	-	19,300	1.9E-02	-	447	4.5E-04	-	375	3.8E-04	-	263	2.6E-04	-
Cadmium	2.1E+04	1.0E+06	21.9	1.0E-03	2.2E-11	43.1 J	2.1E-03	4.3E-11	40.7 J	1.9E-03	4.1E-11	110	5.2E-03	1.1E-10	121	5.8E-03	1.2E-10
Cobalt	8.2E+03	3.7E+05	8.4 J	1.0E-03	2.2E-11	30.7	3.7E-03	8.2E-11	28.4	3.5E-03	7.6E-11	170 J	2.1E-02	4.5E-10	36.7 J	4.5E-03	9.8E-11
Copper	1.0E+06	-	398	4.0E-04	-	3,540	3.5E-03	-	2,850	2.9E-03	-	31,000	3.1E-02	-	4,480	4.5E-03	-
Lead	2.2E+04	-	1,020	4.6E-02	-	8,370	3.8E-01	-	1,340	6.1E-02	-	2,980	1.4E-01	-	6,610	3.0E-01	-
Manganese	6.4E+05	-	343 J	5.4E-04	-	1,930	3.0E-03	-	36,000	5.6E-02	-	8,390	1.3E-02	-	1,810	2.8E-03	-
Mercury	8.2E+03	-	3.3 J	4.0E-04	-	0.0634 J	7.7E-06	-	0.0318 J	3.9E-06	-	1.29 J	1.6E-04	-	0.0579 J	7.1E-06	-
Zinc	1.0E+06	-	4,740	4.7E-03	-	7,260	7.3E-03	-	16,200	1.6E-02	-	35,300	3.5E-02	-	15,000	1.5E-02	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	0.053 U	-	1.2E-09	0.041 J	-	9.2E-10	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	0.053 U	-	1.2E-08	0.047 J	-	1.1E-08	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	0.053 U	-	1.2E-09	0.09 J	-	2.0E-09	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	0.053 U	-	1.2E-10	0.037 U	-	8.3E-11	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	0.053 U	-	1.2E-11	0.062 J	-	1.4E-11	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	0.053 U	-	1.2E-08	0.037 U	-	8.3E-09	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	0.053 U	-	1.2E-09	0.042 J	-	9.4E-10	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	0.13 J	1.1E-05	1.4E-10	0.037 U	3.2E-06	4.0E-11	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.6E-03	-	-	2.1E-02	-	-	2.4E-03	-	-	5.6E-03	-	-	6.0E-03	-
Total PAH Risk	-		-	-	-	-	-	2.8E-08	-	-	2.3E-08	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	6.3E-08	-	-	*2.3E-06*	-	-	1.6E-07	-	-	1.9E-08	-	-	1.4E-06

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI =Hazard Indice
mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		TA-03			W-05(S)			W-06(S)			W-07(S)			W-08(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	2.7 U	2.7E-04	1.7E-08	73.7	7.4E-03	4.7E-07	10 J	1.0E-03	6.4E-08	16.9	1.7E-03	1.1E-07	3.4 J	3.4E-04	2.2E-08
Barium	1.0E+06	-	131	1.3E-04	-	4,990	5.0E-03	-	380	3.8E-04	-	1,340	1.3E-03	-	55 J	5.5E-05	-
Cadmium	2.1E+04	1.0E+06	103	4.9E-03	1.0E-10	125	5.9E-03	1.3E-10	28	1.3E-03	2.8E-11	54.6	2.6E-03	5.5E-11	3	1.4E-04	3.0E-12
Cobalt	8.2E+03	3.7E+05	5.41 J	6.6E-04	1.4E-11	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	1.0E+06	-	237	2.4E-04	-	314	3.1E-04	-	170	1.7E-04	-	534	5.3E-04	-	17 J	1.7E-05	-
Lead	2.2E+04	-	661	3.0E-02	-	3,290	1.5E-01	-	980	4.5E-02	-	674	3.1E-02	-	24 J	1.1E-03	-
Manganese	6.4E+05	-	401	6.3E-04	-	1,680	2.6E-03	-	120	1.9E-04	-	591	9.2E-04	-	330 J	5.2E-04	-
Mercury	8.2E+03	-	0.82 J	1.0E-04	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	25,900	2.6E-02	-	20,600 J	2.1E-02	-	3,100	3.1E-03	-	4,600	4.6E-03	-	370	3.7E-04	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.0E-03	-	-	1.1E-02	-	-	1.7E-03	-	-	3.9E-03	-	-	2.0E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.7E-08	-	-	4.7E-07	-	-	6.4E-08	-	-	1.1E-07	-	-	2.2E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-09(S)			W-10(S)			W-11(S)			W-13(S)			W-14(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	6.3	6.3E-04	4.1E-08	8.2	8.2E-04	5.3E-08	5.5	5.5E-04	3.5E-08	15.8	1.6E-03	1.0E-07	76.8	7.7E-03	4.9E-07
Barium	1.0E+06	-	163	1.6E-04	-	394	3.9E-04	-	61	6.1E-05	-	619	6.2E-04	-	3,910	3.9E-03	-
Cadmium	2.1E+04	1.0E+06	9.8	4.7E-04	9.8E-12	15.8	7.5E-04	1.6E-11	4.2 J	2.0E-04	4.2E-12	31.8	1.5E-03	3.2E-11	38.8	1.8E-03	3.9E-11
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	1.0E+06	-	28.5	2.9E-05	-	46.1 J	4.6E-05	-	29.9 J	3.0E-05	-	135	1.4E-04	-	1,770	1.8E-03	-
Lead	2.2E+04	-	54.2 J	2.5E-03	-	189	8.6E-03	-	27.4	1.2E-03	-	266	1.2E-02	-	917	4.2E-02	-
Manganese	6.4E+05	-	444	6.9E-04	-	656	1.0E-03	-	482	7.5E-04	-	407	6.4E-04	-	992	1.6E-03	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	1,010 J	1.0E-03	-	1,390	1.4E-03	-	365	3.7E-04	-	6,990	7.0E-03	-	4,810 J	4.8E-03	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	6.3E-04	-	-	1.1E-03	-	-	2.6E-04	-	-	2.1E-03	-	-	5.8E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	4.1E-08	-	-	5.3E-08	-	-	3.5E-08	-	-	1.0E-07	-	-	4.9E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
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Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-15(S)			W-16(S)			W-17(D)			W-20(I)			W-21(D)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	1.0E+04	1.6E+02	120	1.2E-02	7.7E-07	358	3.6E-02	*2.3E-06*	233 J	2.3E-02	*1.5E-06*	9.8	9.8E-04	6.3E-08	124	1.2E-02	8.0E-07
Barium	1.0E+06	-	727	7.3E-04	-	7,290	7.3E-03	-	7,070	7.1E-03	-	166	1.7E-04	-	5,440	5.4E-03	-
Cadmium	2.1E+04	1.0E+06	212	1.0E-02	2.1E-10	134	6.4E-03	1.3E-10	258	1.2E-02	2.6E-10	29	1.4E-03	2.9E-11	340	1.6E-02	3.4E-10
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	1.0E+06	-	4,670	4.7E-03	-	7,510	7.5E-03	-	4,160	4.2E-03	-	394	3.9E-04	-	1,550	1.6E-03	-
Lead	2.2E+04	-	4,910	2.2E-01	-	6,090	2.8E-01	-	12,500	5.7E-01	-	650	3.0E-02	-	4,150	1.9E-01	-
Manganese	6.4E+05	-	1,560	2.4E-03	-	1,800	2.8E-03	-	2,070	3.2E-03	-	503	7.9E-04	-	1,540	2.4E-03	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	117,000 J	1.2E-01	-	20,900	2.1E-02	-	48,900	4.9E-02	-	2,010	2.0E-03	-	49,600	5.0E-02	-
PAHs																	
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.1E-02	-	-	1.4E-02	-	-	1.9E-02	-	-	1.5E-03	-	-	2.2E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	7.7E-07	-	-	*2.3E-06*	-	-	*1.5E-06*	-	-	6.3E-08	-	-	8.0E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI =Hazard Indice
mg/kg = milligrams per kilogram

Table C1-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-22(S)			Z-05		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals								
Arsenic	1.0E+04	1.6E+02	33.1 J	3.3E-03	2.1E-07	NA	-	-
Barium	1.0E+06	-	6,750	6.8E-03	-	164	1.6E-04	-
Cadmium	2.1E+04	1.0E+06	34.2	1.6E-03	3.4E-11	3.2	1.5E-04	3.2E-12
Cobalt	8.2E+03	3.7E+05	NA	-	-	NA	-	-
Copper	1.0E+06	-	634	6.3E-04	-	NA	-	-
Lead	2.2E+04	-	890	4.1E-02	-	32	1.5E-03	-
Manganese	6.4E+05	-	480	7.5E-04	-	NA	-	-
Mercury	8.2E+03	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	9,360	9.4E-03	-	393	3.9E-04	-
PAHs								
Benzo(a)anthracene	-	4.5E+01	NA	-	-	NA	-	-
Benzo(a)pyrene	-	4.5E+00	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	4.5E+01	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	4.5E+02	NA	-	-	NA	-	-
Chrysene	-	4.5E+03	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	4.5E+00	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	4.5E+01	NA	-	-	NA	-	-
Naphthalene	1.2E+04	9.1E+02	NA	-	-	NA	-	-
Totals								
Total (Barium + Cadmium) HI	-		-	8.4E-03	-	-	3.2E-04	-
Total PAH Risk	-		-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.1E-07	-	-	-

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
B = Compound was detected in associated blank.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI =Hazard Indice
mg/kg = milligrams per kilogram

Table C1-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		A-01			E-03			K-01			K-02			K-03		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	2.1E+03	3.3E+01	4.8	2.2E-03	1.4E-07	6.9	3.2E-03	2.1E-07	14.5	6.8E-03	4.4E-07	8.7	4.1E-03	2.6E-07	17.3	8.1E-03	5.2E-07
Barium	1.0E+06	-	18	1.8E-05	-	260	2.6E-04	-	405	4.1E-04	-	300	3.0E-04	-	5,780	5.8E-03	-
Cadmium	4.5E+03	4.0E+05	0.28 J	6.2E-05	7.0E-13	14.9	3.3E-03	3.7E-11	18.3	4.1E-03	4.6E-11	1.78 J	4.0E-04	4.4E-12	15.9	3.5E-03	4.0E-11
Cobalt	1.8E+03	8.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	2.3E+05	-	7.9 J	3.4E-05	-	31.1	1.3E-04	-	69.6	3.0E-04	-	24	1.0E-04	-	497	2.1E-03	-
Lead	4.7E+03	-	10.5	2.2E-03	-	111	2.4E-02	-	115	2.4E-02	-	25.1	5.3E-03	-	679	1.4E-01	-
Manganese	1.4E+05	-	505	3.7E-03	-	475	3.5E-03	-	529	3.9E-03	-	670	4.9E-03	-	1,800	1.3E-02	-
Mercury	1.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	35	3.5E-05	-	1,650 J	1.7E-03	-	1,340	1.3E-03	-	542	5.4E-04	-	5,420	5.4E-03	-
PAHs																	
Benzo(a)anthracene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	9.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	9.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	2.5E+03	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	8.0E-05	-	-	3.6E-03	-	-	4.5E-03	-	-	7.0E-04	-	-	9.3E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.4E-07	-	-	2.1E-07	-	-	4.4E-07	-	-	2.6E-07	-	-	5.2E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		K-04			K-05			L-02			L-03			L-04		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	2.1E+03	3.3E+01	36.7	1.7E-02	1.1E-06	14.3	6.7E-03	4.3E-07	78 J	3.7E-02	*2.3E-06*	91 J	4.3E-02	*2.7E-06*	114	5.3E-02	*3.4E-06*
Barium	1.0E+06	-	411	4.1E-04	-	145	1.5E-04	-	350	3.5E-04	-	2500	2.5E-03	-	9,510	9.5E-03	-
Cadmium	4.5E+03	4.0E+05	34.9	7.7E-03	8.7E-11	8.8	2.0E-03	2.2E-11	33	7.3E-03	8.2E-11	64	1.4E-02	1.6E-10	141	3.1E-02	3.5E-10
Cobalt	1.8E+03	8.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Copper	2.3E+05	-	533	2.3E-03	-	128	5.5E-04	-	380	1.6E-03	-	490	2.1E-03	-	662	2.8E-03	-
Lead	4.7E+03	-	628	1.3E-01	-	126	2.7E-02	-	13,000	**2.8E+00**	-	4,700	1.0E+00	-	2,300	4.9E-01	-
Manganese	1.4E+05	-	921	6.7E-03	-	671	4.9E-03	-	1,100	8.0E-03	-	3,400	2.5E-02	-	2,750	2.0E-02	-
Mercury	1.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	8,840	8.8E-03	-	2,180	2.2E-03	-	9,400	9.4E-03	-	20,000	2.0E-02	-	31,500	3.2E-02	-
PAHs																	
Benzo(a)anthracene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	9.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	9.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	2.5E+03	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	8.2E-03	-	-	2.1E-03	-	-	7.7E-03	-	-	1.7E-02	-	-	4.1E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.1E-06	-	-	4.3E-07	-	-	*2.3E-06*	-	-	*2.7E-06*	-	-	*3.4E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		L-06			M-01			M-03			M-04			SB-52		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	2.1E+03	3.3E+01	21	9.8E-03	6.3E-07	22.8	1.1E-02	6.9E-07	10.5	4.9E-03	3.2E-07	10.8	5.1E-03	3.2E-07	6.4	3.0E-03	1.9E-07
Barium	1.0E+06	-	1,010	1.0E-03	-	595	6.0E-04	-	175	1.8E-04	-	216	2.2E-04	-	1,730	1.7E-03	-
Cadmium	4.5E+03	4.0E+05	36.8	8.2E-03	9.2E-11	64.8	1.4E-02	1.6E-10	14.7	3.3E-03	3.7E-11	27.7	6.2E-03	6.9E-11	40.8	9.1E-03	1.0E-10
Cobalt	1.8E+03	8.0E+04	NA	-	-	NA	-	-	NA	-	-	NA	-	-	11.4	6.5E-03	1.4E-10
Copper	2.3E+05	-	292	1.2E-03	-	268	1.1E-03	-	109	4.6E-04	-	130	5.5E-04	-	31.9	1.4E-04	-
Lead	4.7E+03	-	453	9.6E-02	-	780	1.7E-01	-	145	3.1E-02	-	161	3.4E-02	-	132	2.8E-02	-
Manganese	1.4E+05	-	391	2.9E-03	-	709	5.2E-03	-	554	4.0E-03	-	521	3.8E-03	-	652	4.8E-03	-
Mercury	1.8E+03	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-	0.1 J	5.7E-05	-
Zinc	1.0E+06	-	4,280 J	4.3E-03	-	9,330	9.3E-03	-	1,520 J	1.5E-03	-	3,850 J	3.9E-03	-	2,290	2.3E-03	-
PAHs																	
Benzo(a)anthracene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	9.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	9.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	2.5E+03	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	9.2E-03	-	-	1.5E-02	-	-	3.4E-03	-	-	6.4E-03	-	-	1.1E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	6.3E-07	-	-	6.9E-07	-	-	3.2E-07	-	-	3.2E-07	-	-	1.9E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-53			SB-54			SB-55			SB-56			SB-57		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	2.1E+03	3.3E+01	8.1	3.8E-03	2.4E-07	12.4 J	5.8E-03	3.7E-07	19.1	8.9E-03	5.7E-07	19.4	9.1E-03	5.8E-07	7.5	3.5E-03	2.3E-07
Barium	1.0E+06	-	2,690	2.7E-03	-	393 J	3.9E-04	-	229	2.3E-04	-	1,200	1.2E-03	-	286	2.9E-04	-
Cadmium	4.5E+03	4.0E+05	47.6	1.1E-02	1.2E-10	24.9 J	5.5E-03	6.2E-11	42.8 J	9.5E-03	1.1E-10	50.9 J	1.1E-02	1.3E-10	25.7	5.7E-03	6.4E-11
Cobalt	1.8E+03	8.0E+04	7.6	4.3E-03	9.5E-11	13.3	7.6E-03	1.7E-10	8.1 J	4.6E-03	1.0E-10	12.2 J	7.0E-03	1.5E-10	8.9	5.1E-03	1.1E-10
Copper	2.3E+05	-	62.6	2.7E-04	-	33.2	1.4E-04	-	60.6	2.6E-04	-	40	1.7E-04	-	26.8	1.1E-04	-
Lead	4.7E+03	-	388	8.3E-02	-	29 J	6.2E-03	-	456	9.7E-02	-	237	5.0E-02	-	115	2.4E-02	-
Manganese	1.4E+05	-	821	6.0E-03	-	350	2.6E-03	-	597	4.4E-03	-	960	7.0E-03	-	537	3.9E-03	-
Mercury	1.8E+03	-	0.11 J	6.3E-05	-	0.066 J	3.8E-05	-	0.096 J	5.5E-05	-	0.065 J	3.7E-05	-	0.039 J	2.2E-05	-
Zinc	1.0E+06	-	4,680	4.7E-03	-	1,490 J	1.5E-03	-	4,600 J	4.6E-03	-	3,580 J	3.6E-03	-	2,430	2.4E-03	-
PAHs																	
Benzo(a)anthracene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	9.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	9.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	2.5E+03	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.3E-02	-	-	5.9E-03	-	-	9.7E-03	-	-	1.3E-02	-	-	6.0E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.4E-07	-	-	3.7E-07	-	-	5.7E-07	-	-	5.8E-07	-	-	2.3E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-58			SB-59			SB-60			SB-61			SB-62		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	2.1E+03	3.3E+01	4	1.9E-03	1.2E-07	8.2 J	3.8E-03	2.5E-07	5.9 J	2.8E-03	1.8E-07	19.3	9.0E-03	5.8E-07	5.5 J	2.6E-03	1.7E-07
Barium	1.0E+06	-	69.6	7.0E-05	-	81.3 J	8.1E-05	-	706 J	7.1E-04	-	2,330 J	2.3E-03	-	1,310 J	1.3E-03	-
Cadmium	4.5E+03	4.0E+05	1.4 J	3.1E-04	3.5E-12	2.2	4.9E-04	5.5E-12	32.6	7.2E-03	8.1E-11	177 J	3.9E-02	4.4E-10	23.2	5.2E-03	5.8E-11
Cobalt	1.8E+03	8.0E+04	5.5 J	3.1E-03	6.8E-11	5.8 J	3.3E-03	7.2E-11	5 J	2.8E-03	6.2E-11	10.4 J	5.9E-03	1.3E-10	6.1 J	3.5E-03	7.6E-11
Copper	2.3E+05	-	12.4	5.3E-05	-	14.7	6.3E-05	-	34.7	1.5E-04	-	139	5.9E-04	-	23.4	1.0E-04	-
Lead	4.7E+03	-	12.8	2.7E-03	-	9 J	1.9E-03	-	131 J	2.8E-02	-	759 J	1.6E-01	-	135 J	2.9E-02	-
Manganese	1.4E+05	-	324	2.4E-03	-	292 J	2.1E-03	-	343 J	2.5E-03	-	959 J	7.0E-03	-	446 J	3.3E-03	-
Mercury	1.8E+03	-	0.0092 J	5.2E-06	-	0.018 U	1.0E-05	-	0.035 U	2.0E-05	-	0.036 J	2.0E-05	-	0.03 U	1.7E-05	-
Zinc	1.0E+06	-	105 J	1.1E-04	-	150 J	1.5E-04	-	2,590 J	2.6E-03	-	7,830 J	7.8E-03	-	1,550 J	1.6E-03	-
PAHs																	
Benzo(a)anthracene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	9.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	9.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	2.5E+03	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	3.8E-04	-	-	5.7E-04	-	-	7.9E-03	-	-	4.2E-02	-	-	6.5E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	1.2E-07	-	-	2.5E-07	-	-	1.8E-07	-	-	5.8E-07	-	-	1.7E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-63			SB-64			SB-65			SB-66			SB-67		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	2.1E+03	3.3E+01	10.8 J	5.1E-03	3.2E-07	6.5	3.0E-03	2.0E-07	10.1	4.7E-03	3.0E-07	10.2	4.8E-03	3.1E-07	9.8	4.6E-03	2.9E-07
Barium	1.0E+06	-	271 J	2.7E-04	-	172	1.7E-04	-	110	1.1E-04	-	229 J	2.3E-04	-	553 J	5.5E-04	-
Cadmium	4.5E+03	4.0E+05	39.9	8.9E-03	9.9E-11	5.3	1.2E-03	1.3E-11	14.1	3.1E-03	3.5E-11	55.7 J	1.2E-02	1.4E-10	80.9 J	1.8E-02	2.0E-10
Cobalt	1.8E+03	8.0E+04	8.2 J	4.7E-03	1.0E-10	7.5	4.3E-03	9.3E-11	9.9 J	5.6E-03	1.2E-10	7.8 J	4.4E-03	9.7E-11	5.7 J	3.2E-03	7.1E-11
Copper	2.3E+05	-	32.9	1.4E-04	-	15.9	6.8E-05	-	19.7	8.4E-05	-	70.6	3.0E-04	-	74.8	3.2E-04	-
Lead	4.7E+03	-	60.6 J	1.3E-02	-	25.9	5.5E-03	-	17.9	3.8E-03	-	214 J	4.6E-02	-	373 J	7.9E-02	-
Manganese	1.4E+05	-	415 J	3.0E-03	-	348	2.5E-03	-	305	2.2E-03	-	447 J	3.3E-03	-	545 J	4.0E-03	-
Mercury	1.8E+03	-	0.029 U	1.6E-05	-	0.021 J	1.2E-05	-	0.021 J	1.2E-05	-	0.071 J	4.0E-05	-	0.065 J	3.7E-05	-
Zinc	1.0E+06	-	4,020 J	4.0E-03	-	452	4.5E-04	-	1,000	1.0E-03	-	5,380 J	5.4E-03	-	5,340 J	5.3E-03	-
PAHs																	
Benzo(a)anthracene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	9.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	9.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	2.5E+03	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	9.1E-03	-	-	1.3E-03	-	-	3.2E-03	-	-	1.3E-02	-	-	1.9E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.2E-07	-	-	2.0E-07	-	-	3.0E-07	-	-	3.1E-07	-	-	2.9E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-68			SB-69			SB-70			SB-71			SB-72		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	2.1E+03	3.3E+01	8.3	3.9E-03	2.5E-07	6.2	2.9E-03	1.9E-07	4.3	2.0E-03	1.3E-07	8.8	4.1E-03	2.6E-07	8.1	3.8E-03	2.4E-07
Barium	1.0E+06	-	1,150 J	1.2E-03	-	98.6	9.9E-05	-	104	1.0E-04	-	155	1.6E-04	-	154	1.5E-04	-
Cadmium	4.5E+03	4.0E+05	58.2 J	1.3E-02	1.4E-10	1.5	3.3E-04	3.7E-12	3.5 J	7.8E-04	8.7E-12	3.2	7.1E-04	8.0E-12	5.2 J	1.2E-03	1.3E-11
Cobalt	1.8E+03	8.0E+04	6.7 J	3.8E-03	8.3E-11	7.7	4.4E-03	9.6E-11	5.4 J	3.1E-03	6.7E-11	11.5	6.6E-03	1.4E-10	8.5 J	4.8E-03	1.1E-10
Copper	2.3E+05	-	35.8	1.5E-04	-	15.1	6.4E-05	-	21.2	9.0E-05	-	18.6	7.9E-05	-	23.7	1.0E-04	-
Lead	4.7E+03	-	158 J	3.4E-02	-	13.8	2.9E-03	-	14.9	3.2E-03	-	18	3.8E-03	-	42.1	9.0E-03	-
Manganese	1.4E+05	-	457 J	3.3E-03	-	403	2.9E-03	-	354	2.6E-03	-	612	4.5E-03	-	528	3.9E-03	-
Mercury	1.8E+03	-	0.029 J	1.6E-05	-	0.042 J	2.4E-05	-	0.014 U	8.0E-06	-	0.015 J	8.5E-06	-	0.02 U	1.1E-05	-
Zinc	1.0E+06	-	5,730 J	5.7E-03	-	145	1.5E-04	-	271 J	2.7E-04	-	222	2.2E-04	-	560 J	5.6E-04	-
PAHs																	
Benzo(a)anthracene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	9.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	9.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	2.5E+03	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	1.4E-02	-	-	4.3E-04	-	-	8.8E-04	-	-	8.7E-04	-	-	1.3E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.5E-07	-	-	1.9E-07	-	-	1.3E-07	-	-	2.6E-07	-	-	2.4E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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mg/kg = milligrams per kilogram

Table C1-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-73			SB-74			SB-75			SB-76			SB-77		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	2.1E+03	3.3E+01	3	1.4E-03	9.0E-08	7.5	3.5E-03	2.3E-07	7.5	3.5E-03	2.3E-07	11.2	5.2E-03	3.4E-07	8.2	3.8E-03	2.5E-07
Barium	1.0E+06	-	70.6	7.1E-05	-	151	1.5E-04	-	137	1.4E-04	-	1,080	1.1E-03	-	102	1.0E-04	-
Cadmium	4.5E+03	4.0E+05	2.3 J	5.1E-04	5.7E-12	9.4 J	2.1E-03	2.3E-11	12.6 J	2.8E-03	3.1E-11	28.6	6.4E-03	7.1E-11	0.57 J	1.3E-04	1.4E-12
Cobalt	1.8E+03	8.0E+04	4.9 J	2.8E-03	6.1E-11	8.4	4.8E-03	1.0E-10	8.9	5.1E-03	1.1E-10	6.4	3.6E-03	8.0E-11	6.4	3.6E-03	8.0E-11
Copper	2.3E+05	-	12.9	5.5E-05	-	19	8.1E-05	-	19.7	8.4E-05	-	62.2	2.7E-04	-	15.9	6.8E-05	-
Lead	4.7E+03	-	9.4 J	2.0E-03	-	25.8 J	5.5E-03	-	35.4 J	7.5E-03	-	230	4.9E-02	-	10.7 J	2.3E-03	-
Manganese	1.4E+05	-	362	2.6E-03	-	338	2.5E-03	-	339	2.5E-03	-	333	2.4E-03	-	457	3.3E-03	-
Mercury	1.8E+03	-	0.032 J	1.8E-05	-	0.047 J	2.7E-05	-	0.02 J	1.1E-05	-	0.071 J	4.0E-05	-	0.036 J	2.0E-05	-
Zinc	1.0E+06	-	117	1.2E-04	-	480	4.8E-04	-	928	9.3E-04	-	3,490	3.5E-03	-	61.5	6.2E-05	-
PAHs																	
Benzo(a)anthracene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	9.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	9.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	2.5E+03	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.8E-04	-	-	2.2E-03	-	-	2.9E-03	-	-	7.4E-03	-	-	2.3E-04	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	9.0E-08	-	-	2.3E-07	-	-	2.3E-07	-	-	3.4E-07	-	-	2.5E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-78			SB-79			SB-80			SB-81			SB-82		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	2.1E+03	3.3E+01	8.2	3.8E-03	2.5E-07	8.9	4.2E-03	2.7E-07	9.4	4.4E-03	2.8E-07	12.8	6.0E-03	3.8E-07	9.3	4.4E-03	2.8E-07
Barium	1.0E+06	-	899	9.0E-04	-	140	1.4E-04	-	163	1.6E-04	-	1,590	1.6E-03	-	194	1.9E-04	-
Cadmium	4.5E+03	4.0E+05	85.9	1.9E-02	2.1E-10	101	2.2E-02	2.5E-10	23.2 J	5.2E-03	5.8E-11	67 J	1.5E-02	1.7E-10	24.1 J	5.4E-03	6.0E-11
Cobalt	1.8E+03	8.0E+04	6.1 J	3.5E-03	7.6E-11	9.4	5.4E-03	1.2E-10	8.7	5.0E-03	1.1E-10	8.9	5.1E-03	1.1E-10	8.2	4.7E-03	1.0E-10
Copper	2.3E+05	-	41.1	1.8E-04	-	26.9	1.1E-04	-	20	8.5E-05	-	57.9	2.5E-04	-	19.5	8.3E-05	-
Lead	4.7E+03	-	200	4.3E-02	-	66	1.4E-02	-	19.8 J	4.2E-03	-	243 J	5.2E-02	-	33.6 J	7.1E-03	-
Manganese	1.4E+05	-	528	3.9E-03	-	529	3.9E-03	-	295	2.2E-03	-	428	3.1E-03	-	339	2.5E-03	-
Mercury	1.8E+03	-	0.044 J	2.5E-05	-	0.018 J	1.0E-05	-	0.049 J	2.8E-05	-	0.064 J	3.6E-05	-	0.071 J	4.0E-05	-
Zinc	1.0E+06	-	9,450	9.5E-03	-	4,810	4.8E-03	-	1,530	1.5E-03	-	5,630	5.6E-03	-	2,240	2.2E-03	-
PAHs																	
Benzo(a)anthracene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	9.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	9.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	2.5E+03	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	2.0E-02	-	-	2.3E-02	-	-	5.3E-03	-	-	1.6E-02	-	-	5.5E-03	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	2.5E-07	-	-	2.7E-07	-	-	2.8E-07	-	-	3.8E-07	-	-	2.8E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SB-83			SB-84			SB-85			SB-86			SS-56		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	2.1E+03	3.3E+01	11.3 J	5.3E-03	3.4E-07	12.1	5.7E-03	3.6E-07	10.3	4.8E-03	3.1E-07	7.9	3.7E-03	2.4E-07	2.4 U	1.1E-03	7.2E-08
Barium	1.0E+06	-	275 J	2.8E-04	-	112	1.1E-04	-	661	6.6E-04	-	308	3.1E-04	-	675 J	6.8E-04	-
Cadmium	4.5E+03	4.0E+05	23.8	5.3E-03	5.9E-11	13.8	3.1E-03	3.4E-11	58.5	1.3E-02	1.5E-10	23.4 J	5.2E-03	5.8E-11	60.6	1.3E-02	1.5E-10
Cobalt	1.8E+03	8.0E+04	8.8 J	5.0E-03	1.1E-10	16.1	9.2E-03	2.0E-10	8.6	4.9E-03	1.1E-10	9.1 J	5.2E-03	1.1E-10	67.5	3.8E-02	8.4E-10
Copper	2.3E+05	-	27.9	1.2E-04	-	29.3	1.2E-04	-	50.3	2.1E-04	-	23.1	9.8E-05	-	2,690	1.1E-02	-
Lead	4.7E+03	-	42.4 J	9.0E-03	-	55.5	1.2E-02	-	133	2.8E-02	-	58	1.2E-02	-	789 J	1.7E-01	-
Manganese	1.4E+05	-	379 J	2.8E-03	-	388	2.8E-03	-	938	6.8E-03	-	354	2.6E-03	-	40,400 J	2.9E-01	-
Mercury	1.8E+03	-	0.064 U	3.6E-05	-	0.051 J	2.9E-05	-	0.049 J	2.8E-05	-	0.033 J	1.9E-05	-	0.0121 J	6.9E-06	-
Zinc	1.0E+06	-	1,580 J	1.6E-03	-	955	9.6E-04	-	4,360	4.4E-03	-	2,250 J	2.3E-03	-	33,000 J	3.3E-02	-
PAHs																	
Benzo(a)anthracene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	9.5E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	9.5E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	9.5E-01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	9.5E+00	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	2.5E+03	2.0E+02	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	5.6E-03	-	-	3.2E-03	-	-	1.4E-02	-	-	5.5E-03	-	-	1.4E-02	-
Total PAH Risk	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	3.4E-07	-	-	3.6E-07	-	-	3.1E-07	-	-	2.4E-07	-	-	7.2E-08

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		SS-59			TP-120			W-01(S)			W-02(S)			W-12(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals																	
Arsenic	2.1E+03	3.3E+01	24	1.1E-02	7.2E-07	95.3	4.5E-02	*2.9E-06*	5.9 J	2.8E-03	1.8E-07	9.2 J	4.3E-03	2.8E-07	6.8	3.2E-03	2.0E-07
Barium	1.0E+06	-	184 J	1.8E-04	-	3,670	3.7E-03	-	1,190	1.2E-03	-	445	4.5E-04	-	108	1.1E-04	-
Cadmium	4.5E+03	4.0E+05	33.1	7.3E-03	8.2E-11	286	6.4E-02	7.1E-10	11.5	2.6E-03	2.9E-11	36.9	8.2E-03	9.2E-11	7.2	1.6E-03	1.8E-11
Cobalt	1.8E+03	8.0E+04	15.4	8.8E-03	1.9E-10	20	1.1E-02	2.5E-10	NA	-	-	NA	-	-	NA	-	-
Copper	2.3E+05	-	115 J	4.9E-04	-	1,330	5.7E-03	-	22.3	9.5E-05	-	59.3	2.5E-04	-	17.6	7.5E-05	-
Lead	4.7E+03	-	4,050 J	8.6E-01	-	6,590	1.4E+00	-	71	1.5E-02	-	195	4.1E-02	-	35	7.4E-03	-
Manganese	1.4E+05	-	1,930 J	1.4E-02	-	1,270	9.3E-03	-	433	3.2E-03	-	484	3.5E-03	-	470	3.4E-03	-
Mercury	1.8E+03	-	0.36	2.0E-04	-	11.5	6.5E-03	-	NA	-	-	NA	-	-	NA	-	-
Zinc	1.0E+06	-	16,000	1.6E-02	-	43,800	4.4E-02	-	1,180	1.2E-03	-	2,460	2.5E-03	-	619 J	6.2E-04	-
PAHs																	
Benzo(a)anthracene	-	9.5E+00	0.18 J	-	1.9E-08	0.56	-	5.9E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(a)pyrene	-	9.5E-01	0.16 J	-	1.7E-07	0.44	-	4.6E-07	NA	-	-	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	9.5E+00	0.25 J	-	2.6E-08	0.74	-	7.8E-08	NA	-	-	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	9.5E+01	0.085 J	-	8.9E-10	0.28	-	2.9E-09	NA	-	-	NA	-	-	NA	-	-
Chrysene	-	9.5E+02	0.26 J	-	2.7E-10	0.68	-	7.1E-10	NA	-	-	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	9.5E-01	0.042 U	-	4.4E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	9.5E+00	0.13 J	-	1.4E-08	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Naphthalene	2.5E+03	2.0E+02	0.042 U	1.7E-05	2.1E-10	0.21 U	8.4E-05	1.1E-09	NA	-	-	NA	-	-	NA	-	-
Totals																	
Total (Barium + Cadmium) HI	-		-	7.5E-03	-	-	6.7E-02	-	-	3.7E-03	-	-	8.6E-03	-	-	1.7E-03	-
Total PAH Risk	-		-	-	2.7E-07	-	-	6.0E-07	-	-	-	-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	9.9E-07	-	-	*3.5E-06*	-	-	1.8E-07	-	-	2.8E-07	-	-	2.0E-07

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Table C1-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC	RSV (mg/kg)		W-18(S)			W-19(S)		
	Noncancer	Cancer	Conc. (mg/kg)	HQ	RISK	Conc. (mg/kg)	HQ	RISK
Metals								
Arsenic	2.1E+03	3.3E+01	190	8.9E-02	*5.7E-06*	175	8.2E-02	*5.3E-06*
Barium	1.0E+06	-	2,320	2.3E-03	-	725	7.3E-04	-
Cadmium	4.5E+03	4.0E+05	126	2.8E-02	3.1E-10	82.3 J	1.8E-02	2.0E-10
Cobalt	1.8E+03	8.0E+04	NA	-	-	18.2	1.0E-02	2.3E-10
Copper	2.3E+05	-	723	3.1E-03	-	2,160	9.2E-03	-
Lead	4.7E+03	-	2,330	5.0E-01	-	5,930	1.3E+00	-
Manganese	1.4E+05	-	4,420	3.2E-02	-	1,300	9.5E-03	-
Mercury	1.8E+03	-	NA	-	-	83	4.7E-02	-
Zinc	1.0E+06	-	17,500	1.8E-02	-	13,000 J	1.3E-02	-
PAHs								
Benzo(a)anthracene	-	9.5E+00	NA	-	-	NA	-	-
Benzo(a)pyrene	-	9.5E-01	NA	-	-	NA	-	-
Benzo(b)fluoranthene	-	9.5E+00	NA	-	-	NA	-	-
Benzo(k)fluoranthene	-	9.5E+01	NA	-	-	NA	-	-
Chrysene	-	9.5E+02	NA	-	-	NA	-	-
Dibenz(a,h)anthracene	-	9.5E-01	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	-	9.5E+00	NA	-	-	NA	-	-
Naphthalene	2.5E+03	2.0E+02	NA	-	-	NA	-	-
Totals								
Total (Barium + Cadmium) HI	-		-	3.0E-02	-	-	1.9E-02	-
Total PAH Risk	-		-	-	-	-	-	-
Total (PAH + Arsenic) Risk	-		-	-	*5.7E-06*	-	-	*5.3E-06*

Notes:

Risk:
- > 1E-06 - ≤ 1E-05
- > 1E-05 - ≤ 1E-04
- > 1E-04

Hazard Quotient (HQ):
- > 1 - ≤5
- > 5 - ≤10
- > 10

Bold = Non-carcinogenic hazard quotient greater than 1
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U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
HQ = Hazard Quotient
HI = Hazard Indice
mg/kg = milligrams per kilogram

Attachment C2

Risks for PAHs Using BaP Equivalent Summation

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			D-06			D-07			E-02			E-06			F-01		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.9E+00	0.42	4.2E-02	1.5E-07	0.23 J	2.3E-02	8.0E-08	0.064 J	6.4E-03	2.2E-08	5 U	5.0E-01	*1.7E-06*	0.39 U	3.9E-02	1.3E-07
Benzo(a)pyrene	1.0E+00	2.9E-01	0.3 J	3.0E-01	1.0E-06	0.17 J	1.7E-01	5.9E-07	0.047 J	4.7E-02	1.6E-07	5 U	5.0E+00	*1.7E-05*	0.39 U	3.9E-01	1.3E-06
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.76	7.6E-02	2.6E-07	0.4 J	4.0E-02	1.4E-07	0.082 J	8.2E-03	2.8E-08	5 U	5.0E-01	*1.7E-06*	0.39 U	3.9E-02	1.3E-07
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.25 J	2.5E-03	8.7E-09	0.13 J	1.3E-03	4.5E-09	0.038 J	3.8E-04	1.3E-09	5 U	5.0E-02	1.7E-07	0.39 U	3.9E-03	1.3E-08
Chrysene	1.0E-03	2.9E+02	0.54	5.4E-04	1.9E-09	0.4 J	4.0E-04	1.4E-09	0.098 J	9.8E-05	3.4E-10	5 U	5.0E-03	1.7E-08	0.39 U	3.9E-04	1.3E-09
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.047 J	4.7E-02	1.6E-07	0.042 U	4.2E-02	1.5E-07	0.037 U	3.7E-02	1.3E-07	5 U	5.0E+00	*1.7E-05*	0.39 U	3.9E-01	1.3E-06
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.27 J	2.7E-02	9.3E-08	0.14 J	1.4E-02	4.8E-08	0.037 U	3.7E-03	1.3E-08	5 U	5.0E-01	*1.7E-06*	0.39 U	3.9E-02	1.3E-07
Totals																	
Total PAH Risk	-		-	-	*1.7E-06*	-	-	1.0E-06	-	-	3.6E-07	-	-	*4.0E-05*	-	-	*3.1E-06*
Sum BaP Equivalent	-		-	5.0E-01	*1.7E-06*	-	2.9E-01	1.0E-06	-	1.0E-01	3.6E-07	-	1.2E+01	*4.0E-05*	-	9.0E-01	*3.1E-06*

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			F-02			F-03			G-01			G-02			G-04		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.9E+00	0.039 U	3.9E-03	1.3E-08	0.14 J	1.4E-02	4.8E-08	0.37 U	3.7E-02	1.3E-07	0.39 U	3.9E-02	1.3E-07	0.36 U	3.6E-02	1.2E-07
Benzo(a)pyrene	1.0E+00	2.9E-01	0.039 U	3.9E-02	1.3E-07	0.11 J	1.1E-01	3.8E-07	0.37 U	3.7E-01	1.3E-06	0.39 U	3.9E-01	1.3E-06	0.36 U	3.6E-01	1.2E-06
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.039 U	3.9E-03	1.3E-08	0.16 J	1.6E-02	5.5E-08	0.37 U	3.7E-02	1.3E-07	0.39 U	3.9E-02	1.3E-07	0.36 U	3.6E-02	1.2E-07
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.039 U	3.9E-04	1.3E-09	0.065 J	6.5E-04	2.2E-09	0.37 U	3.7E-03	1.3E-08	0.39 U	3.9E-03	1.3E-08	0.36 U	3.6E-03	1.2E-08
Chrysene	1.0E-03	2.9E+02	0.039 U	3.9E-05	1.3E-10	0.18 J	1.8E-04	6.2E-10	0.37 UJ	3.7E-04	1.3E-09	0.39 U	3.9E-04	1.3E-09	0.36 U	3.6E-04	1.2E-09
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.039 U	3.9E-02	1.3E-07	0.038 U	3.8E-02	1.3E-07	0.37 U	3.7E-01	1.3E-06	0.39 U	3.9E-01	1.3E-06	0.36 U	3.6E-01	1.2E-06
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.039 U	3.9E-03	1.3E-08	0.071 J	7.1E-03	2.5E-08	0.37 U	3.7E-02	1.3E-07	0.39 U	3.9E-02	1.3E-07	0.36 U	3.6E-02	1.2E-07
Totals																	
Total PAH Risk	-		-	-	3.1E-07	-	-	6.4E-07	-	-	*3.0E-06*	-	-	*3.1E-06*	-	-	*2.9E-06*
Sum BaP Equivalent	-		-	9.0E-02	3.1E-07	-	1.9E-01	6.4E-07	-	8.6E-01	*3.0E-06*	-	9.0E-01	*3.1E-06*	-	8.3E-01	*2.9E-06*

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			H-07			H-08			I-02			I-03			I-05		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.9E+00	0.39 U	3.9E-02	1.3E-07	0.56	5.6E-02	1.9E-07	0.4 U	4.0E-02	1.4E-07	0.39 U	3.9E-02	1.3E-07	0.38 U	3.8E-02	1.3E-07
Benzo(a)pyrene	1.0E+00	2.9E-01	0.39 U	3.9E-01	1.3E-06	0.42 J	4.2E-01	1.5E-06	0.4 U	4.0E-01	1.4E-06	0.39 U	3.9E-01	1.3E-06	0.38 U	3.8E-01	1.3E-06
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.39 U	3.9E-02	1.3E-07	0.62	6.2E-02	2.1E-07	0.4 U	4.0E-02	1.4E-07	0.39 U	3.9E-02	1.3E-07	0.38 U	3.8E-02	1.3E-07
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.39 U	3.9E-03	1.3E-08	0.26 J	2.6E-03	9.0E-09	0.4 U	4.0E-03	1.4E-08	0.39 U	3.9E-03	1.3E-08	0.38 U	3.8E-03	1.3E-08
Chrysene	1.0E-03	2.9E+02	0.39 U	3.9E-04	1.3E-09	0.58	5.8E-04	2.0E-09	0.4 U	4.0E-04	1.4E-09	0.39 U	3.9E-04	1.3E-09	0.38 U	3.8E-04	1.3E-09
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.39 U	3.9E-01	1.3E-06	0.083 J	8.3E-02	2.9E-07	0.4 U	4.0E-01	1.4E-06	0.39 U	3.9E-01	1.3E-06	0.38 U	3.8E-01	1.3E-06
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.39 U	3.9E-02	1.3E-07	0.26 J	2.6E-02	9.0E-08	0.4 U	4.0E-02	1.4E-07	0.39 U	3.9E-02	1.3E-07	0.38 U	3.8E-02	1.3E-07
Totals																	
Total PAH Risk	-		-	-	*3.1E-06*	-	-	*2.2E-06*	-	-	*3.2E-06*	-	-	*3.1E-06*	-	-	*3.0E-06*
Sum BaP Equivalent	-		-	9.0E-01	*3.1E-06*	-	6.5E-01	*2.2E-06*	-	9.2E-01	*3.2E-06*	-	9.0E-01	*3.1E-06*	-	8.8E-01	*3.0E-06*

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			I-06			I-11			J-02			J-03			J-07		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.9E+00	0.93	9.3E-02	3.2E-07	0.25 J	2.5E-02	8.7E-08	0.35 U	3.5E-02	1.2E-07	0.4 U	4.0E-02	1.4E-07	0.36 U	3.6E-02	1.2E-07
Benzo(a)pyrene	1.0E+00	2.9E-01	0.58	5.8E-01	*2.0E-06*	0.2 J	2.0E-01	6.9E-07	0.35 U	3.5E-01	1.2E-06	0.4 U	4.0E-01	1.4E-06	0.36 U	3.6E-01	1.2E-06
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.92	9.2E-02	3.2E-07	0.36 J	3.6E-02	1.2E-07	0.35 U	3.5E-02	1.2E-07	0.4 U	4.0E-02	1.4E-07	0.36 U	3.6E-02	1.2E-07
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.28 J	2.8E-03	9.7E-09	0.15 J	1.5E-03	5.2E-09	0.35 U	3.5E-03	1.2E-08	0.4 U	4.0E-03	1.4E-08	0.36 U	3.6E-03	1.2E-08
Chrysene	1.0E-03	2.9E+02	1.7	1.7E-03	5.9E-09	0.42	4.2E-04	1.5E-09	0.35 U	3.5E-04	1.2E-09	0.4 U	4.0E-04	1.4E-09	0.36 U	3.6E-04	1.2E-09
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.16 J	1.6E-01	5.5E-07	0.053 J	5.3E-02	1.8E-07	0.35 U	3.5E-01	1.2E-06	0.4 U	4.0E-01	1.4E-06	0.36 U	3.6E-01	1.2E-06
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.35 J	3.5E-02	1.2E-07	0.16 J	1.6E-02	5.5E-08	0.35 U	3.5E-02	1.2E-07	0.4 U	4.0E-02	1.4E-07	0.36 U	3.6E-02	1.2E-07
Totals																	
Total PAH Risk	-		-	-	*3.3E-06*	-	-	1.1E-06	-	-	*2.8E-06*	-	-	*3.2E-06*	-	-	*2.9E-06*
Sum BaP Equivalent	-		-	9.6E-01	*3.3E-06*	-	3.3E-01	1.1E-06	-	8.1E-01	*2.8E-06*	-	9.2E-01	*3.2E-06*	-	8.3E-01	*2.9E-06*

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			J-13			K-01			P-03			P-04			PZ-02(S)		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.9E+00	0.051 UJ	5.1E-03	1.8E-08	0.38 U	3.8E-02	1.3E-07	0.27 J	2.7E-02	9.3E-08	1.2	1.2E-01	4.2E-07	0.2 J	2.0E-02	6.9E-08
Benzo(a)pyrene	1.0E+00	2.9E-01	0.051 UJ	5.1E-02	1.8E-07	0.38 U	3.8E-01	1.3E-06	0.26 J	2.6E-01	9.0E-07	0.85	8.5E-01	*2.9E-06*	0.084 J	8.4E-02	2.9E-07
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.051 UJ	5.1E-03	1.8E-08	0.38 U	3.8E-02	1.3E-07	0.31 J	3.1E-02	1.1E-07	0.74	7.4E-02	2.6E-07	0.18 J	1.8E-02	6.2E-08
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.051 UJ	5.1E-04	1.8E-09	0.38 U	3.8E-03	1.3E-08	0.35 J	3.5E-03	1.2E-08	0.8	8.0E-03	2.8E-08	0.066 J	6.6E-04	2.3E-09
Chrysene	1.0E-03	2.9E+02	0.051 UJ	5.1E-05	1.8E-10	0.38 U	3.8E-04	1.3E-09	0.47	4.7E-04	1.6E-09	1.2	1.2E-03	4.2E-09	0.35 J	3.5E-04	1.2E-09
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.051 UJ	5.1E-02	1.8E-07	0.38 U	3.8E-01	1.3E-06	0.4 U	4.0E-01	1.4E-06	0.47	4.7E-01	*1.6E-06*	0.041 U	4.1E-02	1.4E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.051 UJ	5.1E-03	1.8E-08	0.38 U	3.8E-02	1.3E-07	0.29 J	2.9E-02	1.0E-07	0.81	8.1E-02	2.8E-07	0.052 J	5.2E-03	1.8E-08
Totals																	
Total PAH Risk	-		-	-	4.1E-07	-	-	*3.0E-06*	-	-	*2.6E-06*	-	-	*5.6E-06*	-	-	5.9E-07
Sum BaP Equivalent	-		-	1.2E-01	4.1E-07	-	8.8E-01	*3.0E-06*	-	7.5E-01	*2.6E-06*	-	1.6E+00	*5.6E-06*	-	1.7E-01	5.9E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			PZ-04(S)			SB-04			SL-D-1			SL-D-2			SS-01		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.9E+00	0.037 U	3.7E-03	1.3E-08	0.41 U	4.1E-02	1.4E-07	0.61	6.1E-02	2.1E-07	0.43 J	4.3E-02	1.5E-07	0.043 U	4.3E-03	1.5E-08
Benzo(a)pyrene	1.0E+00	2.9E-01	0.037 U	3.7E-02	1.3E-07	0.41 U	4.1E-01	1.4E-06	0.44 J	4.4E-01	*1.5E-06*	0.25 J	2.5E-01	8.7E-07	0.043 U	4.3E-02	1.5E-07
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.037 U	3.7E-03	1.3E-08	0.41 U	4.1E-02	1.4E-07	0.84	8.4E-02	2.9E-07	0.57	5.7E-02	2.0E-07	0.043 U	4.3E-03	1.5E-08
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.037 U	3.7E-04	1.3E-09	0.41 U	4.1E-03	1.4E-08	0.2 J	2.0E-03	6.9E-09	0.17 J	1.7E-03	5.9E-09	0.043 U	4.3E-04	1.5E-09
Chrysene	1.0E-03	2.9E+02	0.037 U	3.7E-05	1.3E-10	0.41 U	4.1E-04	1.4E-09	0.95	9.5E-04	3.3E-09	0.7	7.0E-04	2.4E-09	0.055 J	5.5E-05	1.9E-10
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.037 U	3.7E-02	1.3E-07	NA	-	-	0.11 J	1.1E-01	3.8E-07	0.079 U	7.9E-02	2.7E-07	0.043 U	4.3E-02	1.5E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.037 U	3.7E-03	1.3E-08	0.41 U	4.1E-02	1.4E-07	0.26 J	2.6E-02	9.0E-08	0.17 J	1.7E-02	5.9E-08	0.043 U	4.3E-03	1.5E-08
Totals																	
Total PAH Risk	-		-	-	3.0E-07	-	-	*1.9E-06*	-	-	*2.5E-06*	-	-	*1.6E-06*	-	-	3.4E-07
Sum BaP Equivalent	-		-	8.6E-02	3.0E-07	-	5.4E-01	*1.9E-06*	-	7.2E-01	*2.5E-06*	-	4.5E-01	*1.6E-06*	-	9.9E-02	3.4E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-04			SS-05			SS-06			SS-07			SS-08		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.9E+00	0.077 J	7.7E-03	2.7E-08	0.1 J	1.0E-02	3.5E-08	0.047 U	4.7E-03	1.6E-08	0.41	4.1E-02	1.4E-07	2.6	2.6E-01	9.0E-07
Benzo(a)pyrene	1.0E+00	2.9E-01	0.069 J	6.9E-02	2.4E-07	0.084 J	8.4E-02	2.9E-07	0.047 U	4.7E-02	1.6E-07	0.41	4.1E-01	1.4E-06	2.3	2.3E+00	*8.0E-06*
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.091 J	9.1E-03	3.1E-08	0.16 J	1.6E-02	5.5E-08	0.047 U	4.7E-03	1.6E-08	0.76	7.6E-02	2.6E-07	4.7	4.7E-01	*1.6E-06*
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.042 U	4.2E-04	1.5E-09	0.053 J	5.3E-04	1.8E-09	0.047 U	4.7E-04	1.6E-09	0.2 J	2.0E-03	6.9E-09	1.6	1.6E-02	5.5E-08
Chrysene	1.0E-03	2.9E+02	0.11 J	1.1E-04	3.8E-10	0.14 J	1.4E-04	4.8E-10	0.047 U	4.7E-05	1.6E-10	0.97	9.7E-04	3.4E-09	3.3	3.3E-03	1.1E-08
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.042 U	4.2E-02	1.5E-07	0.039 U	3.9E-02	1.3E-07	0.047 U	4.7E-02	1.6E-07	0.25 J	2.5E-01	8.7E-07	0.65	6.5E-01	*2.2E-06*
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.055 J	5.5E-03	1.9E-08	0.039 U	3.9E-03	1.3E-08	0.047 U	4.7E-03	1.6E-08	0.43	4.3E-02	1.5E-07	2.7	2.7E-01	9.3E-07
Totals																	
Total PAH Risk	-		-	-	4.6E-07	-	-	5.3E-07	-	-	3.8E-07	-	-	*2.8E-06*	-	-	*1.4E-05*
Sum BaP Equivalent	-		-	1.3E-01	4.6E-07	-	1.5E-01	5.3E-07	-	1.1E-01	3.8E-07	-	8.2E-01	*2.8E-06*	-	4.0E+00	*1.4E-05*

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-09			SS-11A			SS-12			SS-13			SS-14		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.9E+00	0.15 J	1.5E-02	5.2E-08	0.1 J	1.0E-02	3.5E-08	0.073 J	7.3E-03	2.5E-08	4.6	4.6E-01	*1.6E-06*	0.18 J	1.8E-02	6.2E-08
Benzo(a)pyrene	1.0E+00	2.9E-01	0.12 J	1.2E-01	4.2E-07	0.094 J	9.4E-02	3.3E-07	0.081 J	8.1E-02	2.8E-07	4.8	4.8E+00	*1.7E-05*	0.22 J	2.2E-01	7.6E-07
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.23 J	2.3E-02	8.0E-08	0.13 J	1.3E-02	4.5E-08	0.13 J	1.3E-02	4.5E-08	8.9	8.9E-01	*3.1E-06*	0.42	4.2E-02	1.5E-07
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.089 J	8.9E-04	3.1E-09	0.04 U	4.0E-04	1.4E-09	0.041 J	4.1E-04	1.4E-09	2.8	2.8E-02	9.7E-08	0.14 J	1.4E-03	4.8E-09
Chrysene	1.0E-03	2.9E+02	0.25 J	2.5E-04	8.7E-10	0.24 J	2.4E-04	8.3E-10	0.088 J	8.8E-05	3.0E-10	7.8	7.8E-03	2.7E-08	0.31 J	3.1E-04	1.1E-09
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.041 U	4.1E-02	1.4E-07	0.04 U	4.0E-02	1.4E-07	0.039 U	3.9E-02	1.3E-07	1.2	1.2E+00	*4.2E-06*	0.066 J	6.6E-02	2.3E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.041 U	4.1E-03	1.4E-08	0.058 J	5.8E-03	2.0E-08	0.039 U	3.9E-03	1.3E-08	3.6	3.6E-01	1.2E-06	0.24 J	2.4E-02	8.3E-08
Totals																	
Total PAH Risk	-		-	-	7.1E-07	-	-	5.7E-07	-	-	5.0E-07	-	-	*2.7E-05*	-	-	1.3E-06
Sum BaP Equivalent	-		-	2.0E-01	7.1E-07	-	1.6E-01	5.7E-07	-	1.4E-01	5.0E-07	-	7.7E+00	*2.7E-05*	-	3.7E-01	1.3E-06

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-16			SS-19			SS-20			SS-22			SS-23		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.9E+00	0.069 U	6.9E-03	2.4E-08	0.043 U	4.3E-03	1.5E-08	0.06 U	6.0E-03	2.1E-08	0.098 UJ	9.8E-03	3.4E-08	1.6	1.6E-01	5.5E-07
Benzo(a)pyrene	1.0E+00	2.9E-01	0.069 U	6.9E-02	2.4E-07	0.043 U	4.3E-02	1.5E-07	0.06 U	6.0E-02	2.1E-07	0.098 UJ	9.8E-02	3.4E-07	0.59 J	5.9E-01	*2.0E-06*
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.069 U	6.9E-03	2.4E-08	0.043 U	4.3E-03	1.5E-08	0.06 U	6.0E-03	2.1E-08	0.098 UJ	9.8E-03	3.4E-08	1.4	1.4E-01	4.8E-07
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.069 U	6.9E-04	2.4E-09	0.043 U	4.3E-04	1.5E-09	0.06 U	6.0E-04	2.1E-09	0.098 UJ	9.8E-04	3.4E-09	0.4 J	4.0E-03	1.4E-08
Chrysene	1.0E-03	2.9E+02	0.069 U	6.9E-05	2.4E-10	0.043 U	4.3E-05	1.5E-10	0.06 U	6.0E-05	2.1E-10	0.098 UJ	9.8E-05	3.4E-10	2.1	2.1E-03	7.3E-09
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.069 U	6.9E-02	2.4E-07	0.043 U	4.3E-02	1.5E-07	0.06 U	6.0E-02	2.1E-07	0.098 UJ	9.8E-02	3.4E-07	0.25 J	2.5E-01	8.7E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.069 U	6.9E-03	2.4E-08	0.043 U	4.3E-03	1.5E-08	0.06 U	6.0E-03	2.1E-08	0.098 UJ	9.8E-03	3.4E-08	0.48 J	4.8E-02	1.7E-07
Totals																	
Total PAH Risk	-		-	-	5.5E-07	-	-	3.4E-07	-	-	4.8E-07	-	-	7.8E-07	-	-	*4.1E-06*
Sum BaP Equivalent	-		-	1.6E-01	5.5E-07	-	9.9E-02	3.4E-07	-	1.4E-01	4.8E-07	-	2.3E-01	7.8E-07	-	1.2E+00	*4.1E-06*

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-24			SS-25			SS-29			SS-32			SS-34		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.9E+00	1.4	1.4E-01	4.8E-07	0.059 U	5.9E-03	2.0E-08	0.059 U	5.9E-03	2.0E-08	0.051 U	5.1E-03	1.8E-08	0.04 U	4.0E-03	1.4E-08
Benzo(a)pyrene	1.0E+00	2.9E-01	0.32 J	3.2E-01	1.1E-06	0.059 U	5.9E-02	2.0E-07	0.059 U	5.9E-02	2.0E-07	0.051 U	5.1E-02	1.8E-07	0.04 U	4.0E-02	1.4E-07
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.85	8.5E-02	2.9E-07	0.059 U	5.9E-03	2.0E-08	0.059 U	5.9E-03	2.0E-08	0.051 U	5.1E-03	1.8E-08	0.04 U	4.0E-03	1.4E-08
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.33 J	3.3E-03	1.1E-08	0.059 U	5.9E-04	2.0E-09	0.059 U	5.9E-04	2.0E-09	0.051 U	5.1E-04	1.8E-09	0.04 U	4.0E-04	1.4E-09
Chrysene	1.0E-03	2.9E+02	2.2	2.2E-03	7.6E-09	0.059 U	5.9E-05	2.0E-10	0.059 U	5.9E-05	2.0E-10	0.051 U	5.1E-05	1.8E-10	0.04 U	4.0E-05	1.4E-10
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.17 J	1.7E-01	5.9E-07	0.059 U	5.9E-02	2.0E-07	0.059 U	5.9E-02	2.0E-07	0.051 U	5.1E-02	1.8E-07	0.04 U	4.0E-02	1.4E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.27 J	2.7E-02	9.3E-08	0.059 U	5.9E-03	2.0E-08	0.059 U	5.9E-03	2.0E-08	0.051 U	5.1E-03	1.8E-08	0.04 U	4.0E-03	1.4E-08
Totals																	
Total PAH Risk	-		-	-	*2.6E-06*	-	-	4.7E-07	-	-	4.7E-07	-	-	4.1E-07	-	-	3.2E-07
Sum BaP Equivalent	-		-	7.5E-01	*2.6E-06*	-	1.4E-01	4.7E-07	-	1.4E-01	4.7E-07	-	1.2E-01	4.1E-07	-	9.2E-02	3.2E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-38			SS-40			SS-41			SS-42			SS-44		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.9E+00	0.048 U	4.8E-03	1.7E-08	0.14 J	1.4E-02	4.8E-08	0.069 U	6.9E-03	2.4E-08	0.063 U	6.3E-03	2.2E-08	0.053 U	5.3E-03	1.8E-08
Benzo(a)pyrene	1.0E+00	2.9E-01	0.048 U	4.8E-02	1.7E-07	0.061 U	6.1E-02	2.1E-07	0.069 U	6.9E-02	2.4E-07	0.063 U	6.3E-02	2.2E-07	0.053 U	5.3E-02	1.8E-07
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.048 U	4.8E-03	1.7E-08	0.061 U	6.1E-03	2.1E-08	0.069 U	6.9E-03	2.4E-08	0.063 U	6.3E-03	2.2E-08	0.053 U	5.3E-03	1.8E-08
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.048 U	4.8E-04	1.7E-09	0.061 U	6.1E-04	2.1E-09	0.069 U	6.9E-04	2.4E-09	0.063 U	6.3E-04	2.2E-09	0.053 U	5.3E-04	1.8E-09
Chrysene	1.0E-03	2.9E+02	0.048 U	4.8E-05	1.7E-10	0.13 J	1.3E-04	4.5E-10	0.069 U	6.9E-05	2.4E-10	0.063 U	6.3E-05	2.2E-10	0.053 U	5.3E-05	1.8E-10
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.048 U	4.8E-02	1.7E-07	0.061 U	6.1E-02	2.1E-07	0.069 U	6.9E-02	2.4E-07	0.063 U	6.3E-02	2.2E-07	0.053 U	5.3E-02	1.8E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.048 U	4.8E-03	1.7E-08	0.061 U	6.1E-03	2.1E-08	0.069 U	6.9E-03	2.4E-08	0.063 U	6.3E-03	2.2E-08	0.053 U	5.3E-03	1.8E-08
Totals																	
Total PAH Risk	-		-	-	3.8E-07	-	-	5.2E-07	-	-	5.5E-07	-	-	5.0E-07	-	-	4.2E-07
Sum BaP Equivalent	-		-	1.1E-01	3.8E-07	-	1.5E-01	5.2E-07	-	1.6E-01	5.5E-07	-	1.5E-01	5.0E-07	-	1.2E-01	4.2E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-46			SS-47			SS-49			SS-53			SS-57		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.9E+00	0.046 UJ	4.6E-03	1.6E-08	0.047 U	4.7E-03	1.6E-08	0.041 J	4.1E-03	1.4E-08	0.047 U	4.7E-03	1.6E-08	0.04 U	4.0E-03	1.4E-08
Benzo(a)pyrene	1.0E+00	2.9E-01	0.046 UJ	4.6E-02	1.6E-07	0.047 U	4.7E-02	1.6E-07	0.047 J	4.7E-02	1.6E-07	0.047 U	4.7E-02	1.6E-07	0.04 U	4.0E-02	1.4E-07
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.046 UJ	4.6E-03	1.6E-08	0.047 U	4.7E-03	1.6E-08	0.09 J	9.0E-03	3.1E-08	0.047 U	4.7E-03	1.6E-08	0.04 U	4.0E-03	1.4E-08
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.046 UJ	4.6E-04	1.6E-09	0.047 U	4.7E-04	1.6E-09	0.037 U	3.7E-04	1.3E-09	0.047 U	4.7E-04	1.6E-09	0.04 U	4.0E-04	1.4E-09
Chrysene	1.0E-03	2.9E+02	0.046 UJ	4.6E-05	1.6E-10	0.047 U	4.7E-05	1.6E-10	0.062 J	6.2E-05	2.1E-10	0.047 U	4.7E-05	1.6E-10	0.04 U	4.0E-05	1.4E-10
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.046 UJ	4.6E-02	1.6E-07	0.047 U	4.7E-02	1.6E-07	0.037 U	3.7E-02	1.3E-07	0.047 U	4.7E-02	1.6E-07	0.04 U	4.0E-02	1.4E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.046 UJ	4.6E-03	1.6E-08	0.047 U	4.7E-03	1.6E-08	0.042 J	4.2E-03	1.5E-08	0.047 U	4.7E-03	1.6E-08	0.04 U	4.0E-03	1.4E-08
Totals																	
Total PAH Risk	-		-	-	3.7E-07	-	-	3.8E-07	-	-	3.5E-07	-	-	3.8E-07	-	-	3.2E-07
Sum BaP Equivalent	-		-	1.1E-01	3.7E-07	-	1.1E-01	3.8E-07	-	1.0E-01	3.5E-07	-	1.1E-01	3.8E-07	-	9.2E-02	3.2E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-1:
Risks and Hazards for Future Industrial Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-59			TP-120		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs								
Benzo(a)anthracene	1.0E-01	2.9E+00	0.18 J	1.8E-02	6.2E-08	0.56	5.6E-02	1.9E-07
Benzo(a)pyrene	1.0E+00	2.9E-01	0.16 J	1.6E-01	5.5E-07	0.44	4.4E-01	*1.5E-06*
Benzo(b)fluoranthene	1.0E-01	2.9E+00	0.25 J	2.5E-02	8.7E-08	0.74	7.4E-02	2.6E-07
Benzo(k)fluoranthene	1.0E-02	2.9E+01	0.085 J	8.5E-04	2.9E-09	0.28	2.8E-03	9.7E-09
Chrysene	1.0E-03	2.9E+02	0.26 J	2.6E-04	9.0E-10	0.68	6.8E-04	2.4E-09
Dibenz(a,h)anthracene	1.0E+00	2.9E-01	0.042 U	4.2E-02	1.5E-07	NA	-	-
Indeno(1,2,3-cd)pyrene	1.0E-01	2.9E+00	0.13 J	1.3E-02	4.5E-08	NA	-	-
Totals								
Total PAH Risk	-		-	-	9.0E-07	-	-	*2.0E-06*
Sum BaP Equivalent	-		-	2.6E-01	9.0E-07	-	5.7E-01	*2.0E-06*

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			D-06			D-07			E-02			E-06			F-01		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.5E+01	0.42	4.2E-02	1.7E-08	0.23 J	2.3E-02	9.2E-09	0.064 J	6.4E-03	2.6E-09	5 U	5.0E-01	2.0E-07	0.39 U	3.9E-02	1.6E-08
Benzo(a)pyrene	1.0E+00	2.5E+00	0.3 J	3.0E-01	1.2E-07	0.17 J	1.7E-01	6.8E-08	0.047 J	4.7E-02	1.9E-08	5 U	5.0E+00	*2.0E-06*	0.39 U	3.9E-01	1.6E-07
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.76	7.6E-02	3.1E-08	0.4 J	4.0E-02	1.6E-08	0.082 J	8.2E-03	3.3E-09	5 U	5.0E-01	2.0E-07	0.39 U	3.9E-02	1.6E-08
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.25 J	2.5E-03	1.0E-09	0.13 J	1.3E-03	5.2E-10	0.038 J	3.8E-04	1.5E-10	5 U	5.0E-02	2.0E-08	0.39 U	3.9E-03	1.6E-09
Chrysene	1.0E-03	2.5E+03	0.54	5.4E-04	2.2E-10	0.4 J	4.0E-04	1.6E-10	0.098 J	9.8E-05	3.9E-11	5 U	5.0E-03	2.0E-09	0.39 U	3.9E-04	1.6E-10
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.047 J	4.7E-02	1.9E-08	0.042 U	4.2E-02	1.7E-08	0.037 U	3.7E-02	1.5E-08	5 U	5.0E+00	*2.0E-06*	0.39 U	3.9E-01	1.6E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.27 J	2.7E-02	1.1E-08	0.14 J	1.4E-02	5.6E-09	0.037 U	3.7E-03	1.5E-09	5 U	5.0E-01	2.0E-07	0.39 U	3.9E-02	1.6E-08
Totals																	
Total PAH Risk	-		-	-	2.0E-07	-	-	1.2E-07	-	-	4.1E-08	-	-	*4.6E-06*	-	-	3.6E-07
Sum BaP Equivalent	-		-	5.0E-01	2.0E-07	-	2.9E-01	1.2E-07	-	1.0E-01	4.1E-08	-	1.2E+01	*4.6E-06*	-	9.0E-01	3.6E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			F-02			F-03			G-01			G-02			G-04		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.5E+01	0.039 U	3.9E-03	1.6E-09	0.14 J	1.4E-02	5.6E-09	0.37 U	3.7E-02	1.5E-08	0.39 U	3.9E-02	1.6E-08	0.36 U	3.6E-02	1.4E-08
Benzo(a)pyrene	1.0E+00	2.5E+00	0.039 U	3.9E-02	1.6E-08	0.11 J	1.1E-01	4.4E-08	0.37 U	3.7E-01	1.5E-07	0.39 U	3.9E-01	1.6E-07	0.36 U	3.6E-01	1.4E-07
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.039 U	3.9E-03	1.6E-09	0.16 J	1.6E-02	6.4E-09	0.37 U	3.7E-02	1.5E-08	0.39 U	3.9E-02	1.6E-08	0.36 U	3.6E-02	1.4E-08
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.039 U	3.9E-04	1.6E-10	0.065 J	6.5E-04	2.6E-10	0.37 U	3.7E-03	1.5E-09	0.39 U	3.9E-03	1.6E-09	0.36 U	3.6E-03	1.4E-09
Chrysene	1.0E-03	2.5E+03	0.039 U	3.9E-05	1.6E-11	0.18 J	1.8E-04	7.2E-11	0.37 UJ	3.7E-04	1.5E-10	0.39 U	3.9E-04	1.6E-10	0.36 U	3.6E-04	1.4E-10
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.039 U	3.9E-02	1.6E-08	0.038 U	3.8E-02	1.5E-08	0.37 U	3.7E-01	1.5E-07	0.39 U	3.9E-01	1.6E-07	0.36 U	3.6E-01	1.4E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.039 U	3.9E-03	1.6E-09	0.071 J	7.1E-03	2.8E-09	0.37 U	3.7E-02	1.5E-08	0.39 U	3.9E-02	1.6E-08	0.36 U	3.6E-02	1.4E-08
Totals																	
Total PAH Risk	-		-	-	3.6E-08	-	-	7.5E-08	-	-	3.4E-07	-	-	3.6E-07	-	-	3.3E-07
Sum BaP Equivalent	-		-	9.0E-02	3.6E-08	-	1.9E-01	7.5E-08	-	8.6E-01	3.4E-07	-	9.0E-01	3.6E-07	-	8.3E-01	3.3E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			H-07			H-08			I-02			I-03			I-05		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.5E+01	0.39 U	3.9E-02	1.6E-08	0.56	5.6E-02	2.2E-08	0.4 U	4.0E-02	1.6E-08	0.39 U	3.9E-02	1.6E-08	0.38 U	3.8E-02	1.5E-08
Benzo(a)pyrene	1.0E+00	2.5E+00	0.39 U	3.9E-01	1.6E-07	0.42 J	4.2E-01	1.7E-07	0.4 U	4.0E-01	1.6E-07	0.39 U	3.9E-01	1.6E-07	0.38 U	3.8E-01	1.5E-07
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.39 U	3.9E-02	1.6E-08	0.62	6.2E-02	2.5E-08	0.4 U	4.0E-02	1.6E-08	0.39 U	3.9E-02	1.6E-08	0.38 U	3.8E-02	1.5E-08
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.39 U	3.9E-03	1.6E-09	0.26 J	2.6E-03	1.0E-09	0.4 U	4.0E-03	1.6E-09	0.39 U	3.9E-03	1.6E-09	0.38 U	3.8E-03	1.5E-09
Chrysene	1.0E-03	2.5E+03	0.39 U	3.9E-04	1.6E-10	0.58	5.8E-04	2.3E-10	0.4 U	4.0E-04	1.6E-10	0.39 U	3.9E-04	1.6E-10	0.38 U	3.8E-04	1.5E-10
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.39 U	3.9E-01	1.6E-07	0.083 J	8.3E-02	3.3E-08	0.4 U	4.0E-01	1.6E-07	0.39 U	3.9E-01	1.6E-07	0.38 U	3.8E-01	1.5E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.39 U	3.9E-02	1.6E-08	0.26 J	2.6E-02	1.0E-08	0.4 U	4.0E-02	1.6E-08	0.39 U	3.9E-02	1.6E-08	0.38 U	3.8E-02	1.5E-08
Totals																	
Total PAH Risk	-		-	-	3.6E-07	-	-	2.6E-07	-	-	3.7E-07	-	-	3.6E-07	-	-	3.5E-07
Sum BaP Equivalent	-		-	9.0E-01	3.6E-07	-	6.5E-01	2.6E-07	-	9.2E-01	3.7E-07	-	9.0E-01	3.6E-07	-	8.8E-01	3.5E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			I-06			I-11			J-02			J-03			J-07		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.5E+01	0.93	9.3E-02	3.7E-08	0.25 J	2.5E-02	1.0E-08	0.35 U	3.5E-02	1.4E-08	0.4 U	4.0E-02	1.6E-08	0.36 U	3.6E-02	1.4E-08
Benzo(a)pyrene	1.0E+00	2.5E+00	0.58	5.8E-01	2.3E-07	0.2 J	2.0E-01	8.0E-08	0.35 U	3.5E-01	1.4E-07	0.4 U	4.0E-01	1.6E-07	0.36 U	3.6E-01	1.4E-07
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.92	9.2E-02	3.7E-08	0.36 J	3.6E-02	1.4E-08	0.35 U	3.5E-02	1.4E-08	0.4 U	4.0E-02	1.6E-08	0.36 U	3.6E-02	1.4E-08
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.28 J	2.8E-03	1.1E-09	0.15 J	1.5E-03	6.0E-10	0.35 U	3.5E-03	1.4E-09	0.4 U	4.0E-03	1.6E-09	0.36 U	3.6E-03	1.4E-09
Chrysene	1.0E-03	2.5E+03	1.7	1.7E-03	6.8E-10	0.42	4.2E-04	1.7E-10	0.35 U	3.5E-04	1.4E-10	0.4 U	4.0E-04	1.6E-10	0.36 U	3.6E-04	1.4E-10
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.16 J	1.6E-01	6.4E-08	0.053 J	5.3E-02	2.1E-08	0.35 U	3.5E-01	1.4E-07	0.4 U	4.0E-01	1.6E-07	0.36 U	3.6E-01	1.4E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.35 J	3.5E-02	1.4E-08	0.16 J	1.6E-02	6.4E-09	0.35 U	3.5E-02	1.4E-08	0.4 U	4.0E-02	1.6E-08	0.36 U	3.6E-02	1.4E-08
Totals																	
Total PAH Risk	-		-	-	3.9E-07	-	-	1.3E-07	-	-	3.2E-07	-	-	3.7E-07	-	-	3.3E-07
Sum BaP Equivalent	-		-	9.6E-01	3.9E-07	-	3.3E-01	1.3E-07	-	8.1E-01	3.2E-07	-	9.2E-01	3.7E-07	-	8.3E-01	3.3E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			J-13			K-01			P-03			P-04			PZ-02(S)		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.5E+01	0.051 UJ	5.1E-03	2.0E-09	0.38 U	3.8E-02	1.5E-08	0.27 J	2.7E-02	1.1E-08	1.2	1.2E-01	4.8E-08	0.2 J	2.0E-02	8.0E-09
Benzo(a)pyrene	1.0E+00	2.5E+00	0.051 UJ	5.1E-02	2.0E-08	0.38 U	3.8E-01	1.5E-07	0.26 J	2.6E-01	1.0E-07	0.85	8.5E-01	3.4E-07	0.084 J	8.4E-02	3.4E-08
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.051 UJ	5.1E-03	2.0E-09	0.38 U	3.8E-02	1.5E-08	0.31 J	3.1E-02	1.2E-08	0.74	7.4E-02	3.0E-08	0.18 J	1.8E-02	7.2E-09
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.051 UJ	5.1E-04	2.0E-10	0.38 U	3.8E-03	1.5E-09	0.35 J	3.5E-03	1.4E-09	0.8	8.0E-03	3.2E-09	0.066 J	6.6E-04	2.6E-10
Chrysene	1.0E-03	2.5E+03	0.051 UJ	5.1E-05	2.0E-11	0.38 U	3.8E-04	1.5E-10	0.47	4.7E-04	1.9E-10	1.2	1.2E-03	4.8E-10	0.35 J	3.5E-04	1.4E-10
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.051 UJ	5.1E-02	2.0E-08	0.38 U	3.8E-01	1.5E-07	0.4 U	4.0E-01	1.6E-07	0.47	4.7E-01	1.9E-07	0.041 U	4.1E-02	1.6E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.051 UJ	5.1E-03	2.0E-09	0.38 U	3.8E-02	1.5E-08	0.29 J	2.9E-02	1.2E-08	0.81	8.1E-02	3.3E-08	0.052 J	5.2E-03	2.1E-09
Totals																	
Total PAH Risk	-		-	-	4.7E-08	-	-	3.5E-07	-	-	3.0E-07	-	-	6.4E-07	-	-	6.8E-08
Sum BaP Equivalent	-		-	1.2E-01	4.7E-08	-	8.8E-01	3.5E-07	-	7.5E-01	3.0E-07	-	1.6E+00	6.4E-07	-	1.7E-01	6.8E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			PZ-04(S)			SB-04			SL-D-1			SL-D-2			SS-01		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.5E+01	0.037 U	3.7E-03	1.5E-09	0.41 U	4.1E-02	1.6E-08	0.61	6.1E-02	2.4E-08	0.43 J	4.3E-02	1.7E-08	0.043 U	4.3E-03	1.7E-09
Benzo(a)pyrene	1.0E+00	2.5E+00	0.037 U	3.7E-02	1.5E-08	0.41 U	4.1E-01	1.6E-07	0.44 J	4.4E-01	1.8E-07	0.25 J	2.5E-01	1.0E-07	0.043 U	4.3E-02	1.7E-08
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.037 U	3.7E-03	1.5E-09	0.41 U	4.1E-02	1.6E-08	0.84	8.4E-02	3.4E-08	0.57	5.7E-02	2.3E-08	0.043 U	4.3E-03	1.7E-09
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.037 U	3.7E-04	1.5E-10	0.41 U	4.1E-03	1.6E-09	0.2 J	2.0E-03	8.0E-10	0.17 J	1.7E-03	6.8E-10	0.043 U	4.3E-04	1.7E-10
Chrysene	1.0E-03	2.5E+03	0.037 U	3.7E-05	1.5E-11	0.41 U	4.1E-04	1.6E-10	0.95	9.5E-04	3.8E-10	0.7	7.0E-04	2.8E-10	0.055 J	5.5E-05	2.2E-11
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.037 U	3.7E-02	1.5E-08	NA	-	-	0.11 J	1.1E-01	4.4E-08	0.079 U	7.9E-02	3.2E-08	0.043 U	4.3E-02	1.7E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.037 U	3.7E-03	1.5E-09	0.41 U	4.1E-02	1.6E-08	0.26 J	2.6E-02	1.0E-08	0.17 J	1.7E-02	6.8E-09	0.043 U	4.3E-03	1.7E-09
Totals																	
Total PAH Risk	-		-	-	3.4E-08	-	-	2.2E-07	-	-	2.9E-07	-	-	1.8E-07	-	-	4.0E-08
Sum BaP Equivalent	-		-	8.6E-02	3.4E-08	-	5.4E-01	2.2E-07	-	7.2E-01	2.9E-07	-	4.5E-01	1.8E-07	-	9.9E-02	4.0E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-04			SS-05			SS-06			SS-07			SS-08		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.5E+01	0.077 J	7.7E-03	3.1E-09	0.1 J	1.0E-02	4.0E-09	0.047 U	4.7E-03	1.9E-09	0.41	4.1E-02	1.6E-08	2.6	2.6E-01	1.0E-07
Benzo(a)pyrene	1.0E+00	2.5E+00	0.069 J	6.9E-02	2.8E-08	0.084 J	8.4E-02	3.4E-08	0.047 U	4.7E-02	1.9E-08	0.41	4.1E-01	1.6E-07	2.3	2.3E+00	9.2E-07
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.091 J	9.1E-03	3.7E-09	0.16 J	1.6E-02	6.4E-09	0.047 U	4.7E-03	1.9E-09	0.76	7.6E-02	3.1E-08	4.7	4.7E-01	1.9E-07
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.042 U	4.2E-04	1.7E-10	0.053 J	5.3E-04	2.1E-10	0.047 U	4.7E-04	1.9E-10	0.2 J	2.0E-03	8.0E-10	1.6	1.6E-02	6.4E-09
Chrysene	1.0E-03	2.5E+03	0.11 J	1.1E-04	4.4E-11	0.14 J	1.4E-04	5.6E-11	0.047 U	4.7E-05	1.9E-11	0.97	9.7E-04	3.9E-10	3.3	3.3E-03	1.3E-09
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.042 U	4.2E-02	1.7E-08	0.039 U	3.9E-02	1.6E-08	0.047 U	4.7E-02	1.9E-08	0.25 J	2.5E-01	1.0E-07	0.65	6.5E-01	2.6E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.055 J	5.5E-03	2.2E-09	0.039 U	3.9E-03	1.6E-09	0.047 U	4.7E-03	1.9E-09	0.43	4.3E-02	1.7E-08	2.7	2.7E-01	1.1E-07
Totals																	
Total PAH Risk	-		-	-	5.4E-08	-	-	6.2E-08	-	-	4.4E-08	-	-	3.3E-07	-	-	*1.6E-06*
Sum BaP Equivalent	-		-	1.3E-01	5.4E-08	-	1.5E-01	6.2E-08	-	1.1E-01	4.4E-08	-	8.2E-01	3.3E-07	-	4.0E+00	*1.6E-06*

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-09			SS-11A			SS-12			SS-13			SS-14		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.5E+01	0.15 J	1.5E-02	6.0E-09	0.1 J	1.0E-02	4.0E-09	0.073 J	7.3E-03	2.9E-09	4.6	4.6E-01	1.8E-07	0.18 J	1.8E-02	7.2E-09
Benzo(a)pyrene	1.0E+00	2.5E+00	0.12 J	1.2E-01	4.8E-08	0.094 J	9.4E-02	3.8E-08	0.081 J	8.1E-02	3.3E-08	4.8	4.8E+00	*1.9E-06*	0.22 J	2.2E-01	8.8E-08
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.23 J	2.3E-02	9.2E-09	0.13 J	1.3E-02	5.2E-09	0.13 J	1.3E-02	5.2E-09	8.9	8.9E-01	3.6E-07	0.42	4.2E-02	1.7E-08
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.089 J	8.9E-04	3.6E-10	0.04 U	4.0E-04	1.6E-10	0.041 J	4.1E-04	1.6E-10	2.8	2.8E-02	1.1E-08	0.14 J	1.4E-03	5.6E-10
Chrysene	1.0E-03	2.5E+03	0.25 J	2.5E-04	1.0E-10	0.24 J	2.4E-04	9.6E-11	0.088 J	8.8E-05	3.5E-11	7.8	7.8E-03	3.1E-09	0.31 J	3.1E-04	1.2E-10
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.041 U	4.1E-02	1.6E-08	0.04 U	4.0E-02	1.6E-08	0.039 U	3.9E-02	1.6E-08	1.2	1.2E+00	4.8E-07	0.066 J	6.6E-02	2.6E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.041 U	4.1E-03	1.6E-09	0.058 J	5.8E-03	2.3E-09	0.039 U	3.9E-03	1.6E-09	3.6	3.6E-01	1.4E-07	0.24 J	2.4E-02	9.6E-09
Totals																	
Total PAH Risk	-		-	-	8.2E-08	-	-	6.6E-08	-	-	5.8E-08	-	-	*3.1E-06*	-	-	1.5E-07
Sum BaP Equivalent	-		-	2.0E-01	8.2E-08	-	1.6E-01	6.6E-08	-	1.4E-01	5.8E-08	-	7.7E+00	*3.1E-06*	-	3.7E-01	1.5E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-16			SS-19			SS-20			SS-22			SS-23		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.5E+01	0.069 U	6.9E-03	2.8E-09	0.043 U	4.3E-03	1.7E-09	0.06 U	6.0E-03	2.4E-09	0.098 UJ	9.8E-03	3.9E-09	1.6	1.6E-01	6.4E-08
Benzo(a)pyrene	1.0E+00	2.5E+00	0.069 U	6.9E-02	2.8E-08	0.043 U	4.3E-02	1.7E-08	0.06 U	6.0E-02	2.4E-08	0.098 UJ	9.8E-02	3.9E-08	0.59 J	5.9E-01	2.4E-07
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.069 U	6.9E-03	2.8E-09	0.043 U	4.3E-03	1.7E-09	0.06 U	6.0E-03	2.4E-09	0.098 UJ	9.8E-03	3.9E-09	1.4	1.4E-01	5.6E-08
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.069 U	6.9E-04	2.8E-10	0.043 U	4.3E-04	1.7E-10	0.06 U	6.0E-04	2.4E-10	0.098 UJ	9.8E-04	3.9E-10	0.4 J	4.0E-03	1.6E-09
Chrysene	1.0E-03	2.5E+03	0.069 U	6.9E-05	2.8E-11	0.043 U	4.3E-05	1.7E-11	0.06 U	6.0E-05	2.4E-11	0.098 UJ	9.8E-05	3.9E-11	2.1	2.1E-03	8.4E-10
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.069 U	6.9E-02	2.8E-08	0.043 U	4.3E-02	1.7E-08	0.06 U	6.0E-02	2.4E-08	0.098 UJ	9.8E-02	3.9E-08	0.25 J	2.5E-01	1.0E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.069 U	6.9E-03	2.8E-09	0.043 U	4.3E-03	1.7E-09	0.06 U	6.0E-03	2.4E-09	0.098 UJ	9.8E-03	3.9E-09	0.48 J	4.8E-02	1.9E-08
Totals																	
Total PAH Risk	-		-	-	6.4E-08	-	-	4.0E-08	-	-	5.6E-08	-	-	9.1E-08	-	-	4.8E-07
Sum BaP Equivalent	-		-	1.6E-01	6.4E-08	-	9.9E-02	4.0E-08	-	1.4E-01	5.6E-08	-	2.3E-01	9.1E-08	-	1.2E+00	4.8E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-24			SS-25			SS-29			SS-32			SS-34		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.5E+01	1.4	1.4E-01	5.6E-08	0.059 U	5.9E-03	2.4E-09	0.059 U	5.9E-03	2.4E-09	0.051 U	5.1E-03	2.0E-09	0.04 U	4.0E-03	1.6E-09
Benzo(a)pyrene	1.0E+00	2.5E+00	0.32 J	3.2E-01	1.3E-07	0.059 U	5.9E-02	2.4E-08	0.059 U	5.9E-02	2.4E-08	0.051 U	5.1E-02	2.0E-08	0.04 U	4.0E-02	1.6E-08
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.85	8.5E-02	3.4E-08	0.059 U	5.9E-03	2.4E-09	0.059 U	5.9E-03	2.4E-09	0.051 U	5.1E-03	2.0E-09	0.04 U	4.0E-03	1.6E-09
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.33 J	3.3E-03	1.3E-09	0.059 U	5.9E-04	2.4E-10	0.059 U	5.9E-04	2.4E-10	0.051 U	5.1E-04	2.0E-10	0.04 U	4.0E-04	1.6E-10
Chrysene	1.0E-03	2.5E+03	2.2	2.2E-03	8.8E-10	0.059 U	5.9E-05	2.4E-11	0.059 U	5.9E-05	2.4E-11	0.051 U	5.1E-05	2.0E-11	0.04 U	4.0E-05	1.6E-11
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.17 J	1.7E-01	6.8E-08	0.059 U	5.9E-02	2.4E-08	0.059 U	5.9E-02	2.4E-08	0.051 U	5.1E-02	2.0E-08	0.04 U	4.0E-02	1.6E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.27 J	2.7E-02	1.1E-08	0.059 U	5.9E-03	2.4E-09	0.059 U	5.9E-03	2.4E-09	0.051 U	5.1E-03	2.0E-09	0.04 U	4.0E-03	1.6E-09
Totals																	
Total PAH Risk	-		-	-	3.0E-07	-	-	5.5E-08	-	-	5.5E-08	-	-	4.7E-08	-	-	3.7E-08
Sum BaP Equivalent	-		-	7.5E-01	3.0E-07	-	1.4E-01	5.5E-08	-	1.4E-01	5.5E-08	-	1.2E-01	4.7E-08	-	9.2E-02	3.7E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-38			SS-40			SS-41			SS-42			SS-44		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.5E+01	0.048 UJ	4.8E-03	1.9E-09	0.14 J	1.4E-02	5.6E-09	0.069 UJ	6.9E-03	2.8E-09	0.063 U	6.3E-03	2.5E-09	0.053 U	5.3E-03	2.1E-09
Benzo(a)pyrene	1.0E+00	2.5E+00	0.048 UJ	4.8E-02	1.9E-08	0.061 U	6.1E-02	2.4E-08	0.069 UJ	6.9E-02	2.8E-08	0.063 U	6.3E-02	2.5E-08	0.053 U	5.3E-02	2.1E-08
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.048 UJ	4.8E-03	1.9E-09	0.061 U	6.1E-03	2.4E-09	0.069 UJ	6.9E-03	2.8E-09	0.063 U	6.3E-03	2.5E-09	0.053 U	5.3E-03	2.1E-09
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.048 UJ	4.8E-04	1.9E-10	0.061 U	6.1E-04	2.4E-10	0.069 UJ	6.9E-04	2.8E-10	0.063 U	6.3E-04	2.5E-10	0.053 U	5.3E-04	2.1E-10
Chrysene	1.0E-03	2.5E+03	0.048 UJ	4.8E-05	1.9E-11	0.13 J	1.3E-04	5.2E-11	0.069 UJ	6.9E-05	2.8E-11	0.063 U	6.3E-05	2.5E-11	0.053 U	5.3E-05	2.1E-11
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.048 UJ	4.8E-02	1.9E-08	0.061 U	6.1E-02	2.4E-08	0.069 UJ	6.9E-02	2.8E-08	0.063 U	6.3E-02	2.5E-08	0.053 U	5.3E-02	2.1E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.048 UJ	4.8E-03	1.9E-09	0.061 U	6.1E-03	2.4E-09	0.069 UJ	6.9E-03	2.8E-09	0.063 U	6.3E-03	2.5E-09	0.053 U	5.3E-03	2.1E-09
Totals																	
Total PAH Risk	-		-	-	4.5E-08	-	-	6.0E-08	-	-	6.4E-08	-	-	5.8E-08	-	-	4.9E-08
Sum BaP Equivalent	-		-	1.1E-01	4.5E-08	-	1.5E-01	6.0E-08	-	1.6E-01	6.4E-08	-	1.5E-01	5.8E-08	-	1.2E-01	4.9E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-46			SS-47			SS-49			SS-53			SS-57		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.5E+01	0.046 UJ	4.6E-03	1.8E-09	0.047 U	4.7E-03	1.9E-09	0.041 J	4.1E-03	1.6E-09	0.047 U	4.7E-03	1.9E-09	0.04 U	4.0E-03	1.6E-09
Benzo(a)pyrene	1.0E+00	2.5E+00	0.046 UJ	4.6E-02	1.8E-08	0.047 U	4.7E-02	1.9E-08	0.047 J	4.7E-02	1.9E-08	0.047 U	4.7E-02	1.9E-08	0.04 U	4.0E-02	1.6E-08
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.046 UJ	4.6E-03	1.8E-09	0.047 U	4.7E-03	1.9E-09	0.09 J	9.0E-03	3.6E-09	0.047 U	4.7E-03	1.9E-09	0.04 U	4.0E-03	1.6E-09
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.046 UJ	4.6E-04	1.8E-10	0.047 U	4.7E-04	1.9E-10	0.037 U	3.7E-04	1.5E-10	0.047 U	4.7E-04	1.9E-10	0.04 U	4.0E-04	1.6E-10
Chrysene	1.0E-03	2.5E+03	0.046 UJ	4.6E-05	1.8E-11	0.047 U	4.7E-05	1.9E-11	0.062 J	6.2E-05	2.5E-11	0.047 U	4.7E-05	1.9E-11	0.04 U	4.0E-05	1.6E-11
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.046 UJ	4.6E-02	1.8E-08	0.047 U	4.7E-02	1.9E-08	0.037 U	3.7E-02	1.5E-08	0.047 U	4.7E-02	1.9E-08	0.04 U	4.0E-02	1.6E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.046 UJ	4.6E-03	1.8E-09	0.047 U	4.7E-03	1.9E-09	0.042 J	4.2E-03	1.7E-09	0.047 U	4.7E-03	1.9E-09	0.04 U	4.0E-03	1.6E-09
Totals																	
Total PAH Risk	-		-	-	4.3E-08	-	-	4.4E-08	-	-	4.1E-08	-	-	4.4E-08	-	-	3.7E-08
Sum BaP Equivalent	-		-	1.1E-01	4.3E-08	-	1.1E-01	4.4E-08	-	1.0E-01	4.1E-08	-	1.1E-01	4.4E-08	-	9.2E-02	3.7E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-2:
Risks and Hazards for Current Environmental Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-59			TP-120		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs								
Benzo(a)anthracene	1.0E-01	2.5E+01	0.18 J	1.8E-02	7.2E-09	0.56	5.6E-02	2.2E-08
Benzo(a)pyrene	1.0E+00	2.5E+00	0.16 J	1.6E-01	6.4E-08	0.44	4.4E-01	1.8E-07
Benzo(b)fluoranthene	1.0E-01	2.5E+01	0.25 J	2.5E-02	1.0E-08	0.74	7.4E-02	3.0E-08
Benzo(k)fluoranthene	1.0E-02	2.5E+02	0.085 J	8.5E-04	3.4E-10	0.28	2.8E-03	1.1E-09
Chrysene	1.0E-03	2.5E+03	0.26 J	2.6E-04	1.0E-10	0.68	6.8E-04	2.7E-10
Dibenz(a,h)anthracene	1.0E+00	2.5E+00	0.042 U	4.2E-02	1.7E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	1.0E-01	2.5E+01	0.13 J	1.3E-02	5.2E-09	NA	-	-
Totals								
Total PAH Risk	-		-	-	1.0E-07	-	-	2.3E-07
Sum BaP Equivalent	-		-	2.6E-01	1.0E-07	-	5.7E-01	2.3E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			D-06			D-07			E-02			E-06			F-01		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.42	4.2E-02	2.1E-09	0.23 J	2.3E-02	1.2E-09	0.064 J	6.4E-03	3.2E-10	5 U	5.0E-01	2.5E-08	0.39 U	3.9E-02	2.0E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.3 J	3.0E-01	1.5E-08	0.17 J	1.7E-01	8.5E-09	0.047 J	4.7E-02	2.4E-09	5 U	5.0E+00	2.5E-07	0.39 U	3.9E-01	2.0E-08
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.76	7.6E-02	3.8E-09	0.4 J	4.0E-02	2.0E-09	0.082 J	8.2E-03	4.1E-10	5 U	5.0E-01	2.5E-08	0.39 U	3.9E-02	2.0E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.25 J	2.5E-03	1.3E-10	0.13 J	1.3E-03	6.5E-11	0.038 J	3.8E-04	1.9E-11	5 U	5.0E-02	2.5E-09	0.39 U	3.9E-03	2.0E-10
Chrysene	1.0E-03	2.0E+04	0.54	5.4E-04	2.7E-11	0.4 J	4.0E-04	2.0E-11	0.098 J	9.8E-05	4.9E-12	5 U	5.0E-03	2.5E-10	0.39 U	3.9E-04	2.0E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.047 J	4.7E-02	2.4E-09	0.042 U	4.2E-02	2.1E-09	0.037 U	3.7E-02	1.9E-09	5 U	5.0E+00	2.5E-07	0.39 U	3.9E-01	2.0E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.27 J	2.7E-02	1.4E-09	0.14 J	1.4E-02	7.0E-10	0.037 U	3.7E-03	1.9E-10	5 U	5.0E-01	2.5E-08	0.39 U	3.9E-02	2.0E-09
Totals																	
Total PAH Risk	-		-	-	2.5E-08	-	-	1.5E-08	-	-	5.1E-09	-	-	5.8E-07	-	-	4.5E-08
Sum BaP Equivalent	-		-	5.0E-01	2.5E-08	-	2.9E-01	1.5E-08	-	1.0E-01	5.1E-09	-	1.2E+01	5.8E-07	-	9.0E-01	4.5E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			F-02			F-03			G-01			G-02			G-04		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.039 U	3.9E-03	2.0E-10	0.14 J	1.4E-02	7.0E-10	0.37 U	3.7E-02	1.9E-09	0.39 U	3.9E-02	2.0E-09	0.36 U	3.6E-02	1.8E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.039 U	3.9E-02	2.0E-09	0.11 J	1.1E-01	5.5E-09	0.37 U	3.7E-01	1.9E-08	0.39 U	3.9E-01	2.0E-08	0.36 U	3.6E-01	1.8E-08
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.039 U	3.9E-03	2.0E-10	0.16 J	1.6E-02	8.0E-10	0.37 U	3.7E-02	1.9E-09	0.39 U	3.9E-02	2.0E-09	0.36 U	3.6E-02	1.8E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.039 U	3.9E-04	2.0E-11	0.065 J	6.5E-04	3.3E-11	0.37 U	3.7E-03	1.9E-10	0.39 U	3.9E-03	2.0E-10	0.36 U	3.6E-03	1.8E-10
Chrysene	1.0E-03	2.0E+04	0.039 U	3.9E-05	2.0E-12	0.18 J	1.8E-04	9.0E-12	0.37 UJ	3.7E-04	1.9E-11	0.39 U	3.9E-04	2.0E-11	0.36 U	3.6E-04	1.8E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.039 U	3.9E-02	2.0E-09	0.038 U	3.8E-02	1.9E-09	0.37 U	3.7E-01	1.9E-08	0.39 U	3.9E-01	2.0E-08	0.36 U	3.6E-01	1.8E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.039 U	3.9E-03	2.0E-10	0.071 J	7.1E-03	3.6E-10	0.37 U	3.7E-02	1.9E-09	0.39 U	3.9E-02	2.0E-09	0.36 U	3.6E-02	1.8E-09
Totals																	
Total PAH Risk	-		-	-	4.5E-09	-	-	9.3E-09	-	-	4.3E-08	-	-	4.5E-08	-	-	4.2E-08
Sum BaP Equivalent	-		-	9.0E-02	4.5E-09	-	1.9E-01	9.3E-09	-	8.6E-01	4.3E-08	-	9.0E-01	4.5E-08	-	8.3E-01	4.2E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			H-07			H-08			I-02			I-03			I-05		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.39 U	3.9E-02	2.0E-09	0.56	5.6E-02	2.8E-09	0.4 U	4.0E-02	2.0E-09	0.39 U	3.9E-02	2.0E-09	0.38 U	3.8E-02	1.9E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.39 U	3.9E-01	2.0E-08	0.42 J	4.2E-01	2.1E-08	0.4 U	4.0E-01	2.0E-08	0.39 U	3.9E-01	2.0E-08	0.38 U	3.8E-01	1.9E-08
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.39 U	3.9E-02	2.0E-09	0.62	6.2E-02	3.1E-09	0.4 U	4.0E-02	2.0E-09	0.39 U	3.9E-02	2.0E-09	0.38 U	3.8E-02	1.9E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.39 U	3.9E-03	2.0E-10	0.26 J	2.6E-03	1.3E-10	0.4 U	4.0E-03	2.0E-10	0.39 U	3.9E-03	2.0E-10	0.38 U	3.8E-03	1.9E-10
Chrysene	1.0E-03	2.0E+04	0.39 U	3.9E-04	2.0E-11	0.58	5.8E-04	2.9E-11	0.4 U	4.0E-04	2.0E-11	0.39 U	3.9E-04	2.0E-11	0.38 U	3.8E-04	1.9E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.39 U	3.9E-01	2.0E-08	0.083 J	8.3E-02	4.2E-09	0.4 U	4.0E-01	2.0E-08	0.39 U	3.9E-01	2.0E-08	0.38 U	3.8E-01	1.9E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.39 U	3.9E-02	2.0E-09	0.26 J	2.6E-02	1.3E-09	0.4 U	4.0E-02	2.0E-09	0.39 U	3.9E-02	2.0E-09	0.38 U	3.8E-02	1.9E-09
Totals																	
Total PAH Risk	-		-	-	4.5E-08	-	-	3.3E-08	-	-	4.6E-08	-	-	4.5E-08	-	-	4.4E-08
Sum BaP Equivalent	-		-	9.0E-01	4.5E-08	-	6.5E-01	3.3E-08	-	9.2E-01	4.6E-08	-	9.0E-01	4.5E-08	-	8.8E-01	4.4E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			I-06			I-11			J-02			J-03			J-07		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.93	9.3E-02	4.7E-09	0.25 J	2.5E-02	1.3E-09	0.35 U	3.5E-02	1.8E-09	0.4 U	4.0E-02	2.0E-09	0.36 U	3.6E-02	1.8E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.58	5.8E-01	2.9E-08	0.2 J	2.0E-01	1.0E-08	0.35 U	3.5E-01	1.8E-08	0.4 U	4.0E-01	2.0E-08	0.36 U	3.6E-01	1.8E-08
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.92	9.2E-02	4.6E-09	0.36 J	3.6E-02	1.8E-09	0.35 U	3.5E-02	1.8E-09	0.4 U	4.0E-02	2.0E-09	0.36 U	3.6E-02	1.8E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.28 J	2.8E-03	1.4E-10	0.15 J	1.5E-03	7.5E-11	0.35 U	3.5E-03	1.8E-10	0.4 U	4.0E-03	2.0E-10	0.36 U	3.6E-03	1.8E-10
Chrysene	1.0E-03	2.0E+04	1.7	1.7E-03	8.5E-11	0.42	4.2E-04	2.1E-11	0.35 U	3.5E-04	1.8E-11	0.4 U	4.0E-04	2.0E-11	0.36 U	3.6E-04	1.8E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.16 J	1.6E-01	8.0E-09	0.053 J	5.3E-02	2.7E-09	0.35 U	3.5E-01	1.8E-08	0.4 U	4.0E-01	2.0E-08	0.36 U	3.6E-01	1.8E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.35 J	3.5E-02	1.8E-09	0.16 J	1.6E-02	8.0E-10	0.35 U	3.5E-02	1.8E-09	0.4 U	4.0E-02	2.0E-09	0.36 U	3.6E-02	1.8E-09
Totals																	
Total PAH Risk	-		-	-	4.8E-08	-	-	1.7E-08	-	-	4.1E-08	-	-	4.6E-08	-	-	4.2E-08
Sum BaP Equivalent	-		-	9.6E-01	4.8E-08	-	3.3E-01	1.7E-08	-	8.1E-01	4.1E-08	-	9.2E-01	4.6E-08	-	8.3E-01	4.2E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			J-13			K-01			P-03			P-04			PZ-02(S)		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.051 UJ	5.1E-03	2.6E-10	0.38 U	3.8E-02	1.9E-09	0.27 J	2.7E-02	1.4E-09	1.2	1.2E-01	6.0E-09	0.2 J	2.0E-02	1.0E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.051 UJ	5.1E-02	2.6E-09	0.38 U	3.8E-01	1.9E-08	0.26 J	2.6E-01	1.3E-08	0.85	8.5E-01	4.3E-08	0.084 J	8.4E-02	4.2E-09
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.051 UJ	5.1E-03	2.6E-10	0.38 U	3.8E-02	1.9E-09	0.31 J	3.1E-02	1.6E-09	0.74	7.4E-02	3.7E-09	0.18 J	1.8E-02	9.0E-10
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.051 UJ	5.1E-04	2.6E-11	0.38 U	3.8E-03	1.9E-10	0.35 J	3.5E-03	1.8E-10	0.8	8.0E-03	4.0E-10	0.066 J	6.6E-04	3.3E-11
Chrysene	1.0E-03	2.0E+04	0.051 UJ	5.1E-05	2.6E-12	0.38 U	3.8E-04	1.9E-11	0.47	4.7E-04	2.4E-11	1.2	1.2E-03	6.0E-11	0.35 J	3.5E-04	1.8E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.051 UJ	5.1E-02	2.6E-09	0.38 U	3.8E-01	1.9E-08	0.4 U	4.0E-01	2.0E-08	0.47	4.7E-01	2.4E-08	0.041 U	4.1E-02	2.1E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.051 UJ	5.1E-03	2.6E-10	0.38 U	3.8E-02	1.9E-09	0.29 J	2.9E-02	1.5E-09	0.81	8.1E-02	4.1E-09	0.052 J	5.2E-03	2.6E-10
Totals																	
Total PAH Risk	-		-	-	5.9E-09	-	-	4.4E-08	-	-	3.8E-08	-	-	8.0E-08	-	-	8.5E-09
Sum BaP Equivalent	-		-	1.2E-01	5.9E-09	-	8.8E-01	4.4E-08	-	7.5E-01	3.8E-08	-	1.6E+00	8.0E-08	-	1.7E-01	8.5E-09

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			PZ-04(S)			SB-04			SL-D-1			SL-D-2			SS-01		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.037 U	3.7E-03	1.9E-10	0.41 U	4.1E-02	2.1E-09	0.61	6.1E-02	3.1E-09	0.43 J	4.3E-02	2.2E-09	0.043 U	4.3E-03	2.2E-10
Benzo(a)pyrene	1.0E+00	2.0E+01	0.037 U	3.7E-02	1.9E-09	0.41 U	4.1E-01	2.1E-08	0.44 J	4.4E-01	2.2E-08	0.25 J	2.5E-01	1.3E-08	0.043 U	4.3E-02	2.2E-09
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.037 U	3.7E-03	1.9E-10	0.41 U	4.1E-02	2.1E-09	0.84	8.4E-02	4.2E-09	0.57	5.7E-02	2.9E-09	0.043 U	4.3E-03	2.2E-10
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.037 U	3.7E-04	1.9E-11	0.41 U	4.1E-03	2.1E-10	0.2 J	2.0E-03	1.0E-10	0.17 J	1.7E-03	8.5E-11	0.043 U	4.3E-04	2.2E-11
Chrysene	1.0E-03	2.0E+04	0.037 U	3.7E-05	1.9E-12	0.41 U	4.1E-04	2.1E-11	0.95	9.5E-04	4.8E-11	0.7	7.0E-04	3.5E-11	0.055 J	5.5E-05	2.8E-12
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.037 U	3.7E-02	1.9E-09	NA	-	-	0.11 J	1.1E-01	5.5E-09	0.079 U	7.9E-02	4.0E-09	0.043 U	4.3E-02	2.2E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.037 U	3.7E-03	1.9E-10	0.41 U	4.1E-02	2.1E-09	0.26 J	2.6E-02	1.3E-09	0.17 J	1.7E-02	8.5E-10	0.043 U	4.3E-03	2.2E-10
Totals																	
Total PAH Risk	-		-	-	4.3E-09	-	-	2.7E-08	-	-	3.6E-08	-	-	2.2E-08	-	-	5.0E-09
Sum BaP Equivalent	-		-	8.6E-02	4.3E-09	-	5.4E-01	2.7E-08	-	7.2E-01	3.6E-08	-	4.5E-01	2.2E-08	-	9.9E-02	5.0E-09

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-04			SS-05			SS-06			SS-07			SS-08		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.077 J	7.7E-03	3.9E-10	0.1 J	1.0E-02	5.0E-10	0.047 U	4.7E-03	2.4E-10	0.41	4.1E-02	2.1E-09	2.6	2.6E-01	1.3E-08
Benzo(a)pyrene	1.0E+00	2.0E+01	0.069 J	6.9E-02	3.5E-09	0.084 J	8.4E-02	4.2E-09	0.047 U	4.7E-02	2.4E-09	0.41	4.1E-01	2.1E-08	2.3	2.3E+00	1.2E-07
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.091 J	9.1E-03	4.6E-10	0.16 J	1.6E-02	8.0E-10	0.047 U	4.7E-03	2.4E-10	0.76	7.6E-02	3.8E-09	4.7	4.7E-01	2.4E-08
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.042 U	4.2E-04	2.1E-11	0.053 J	5.3E-04	2.7E-11	0.047 U	4.7E-04	2.4E-11	0.2 J	2.0E-03	1.0E-10	1.6	1.6E-02	8.0E-10
Chrysene	1.0E-03	2.0E+04	0.11 J	1.1E-04	5.5E-12	0.14 J	1.4E-04	7.0E-12	0.047 U	4.7E-05	2.4E-12	0.97	9.7E-04	4.9E-11	3.3	3.3E-03	1.7E-10
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.042 U	4.2E-02	2.1E-09	0.039 U	3.9E-02	2.0E-09	0.047 U	4.7E-02	2.4E-09	0.25 J	2.5E-01	1.3E-08	0.65	6.5E-01	3.3E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.055 J	5.5E-03	2.8E-10	0.039 U	3.9E-03	2.0E-10	0.047 U	4.7E-03	2.4E-10	0.43	4.3E-02	2.2E-09	2.7	2.7E-01	1.4E-08
Totals																	
Total PAH Risk	-		-	-	6.7E-09	-	-	7.7E-09	-	-	5.4E-09	-	-	4.1E-08	-	-	2.0E-07
Sum BaP Equivalent	-		-	1.3E-01	6.7E-09	-	1.5E-01	7.7E-09	-	1.1E-01	5.4E-09	-	8.2E-01	4.1E-08	-	4.0E+00	2.0E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-09			SS-11A			SS-12			SS-13			SS-14		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.15 J	1.5E-02	7.5E-10	0.1 J	1.0E-02	5.0E-10	0.073 J	7.3E-03	3.7E-10	4.6	4.6E-01	2.3E-08	0.18 J	1.8E-02	9.0E-10
Benzo(a)pyrene	1.0E+00	2.0E+01	0.12 J	1.2E-01	6.0E-09	0.094 J	9.4E-02	4.7E-09	0.081 J	8.1E-02	4.1E-09	4.8	4.8E+00	2.4E-07	0.22 J	2.2E-01	1.1E-08
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.23 J	2.3E-02	1.2E-09	0.13 J	1.3E-02	6.5E-10	0.13 J	1.3E-02	6.5E-10	8.9	8.9E-01	4.5E-08	0.42	4.2E-02	2.1E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.089 J	8.9E-04	4.5E-11	0.04 U	4.0E-04	2.0E-11	0.041 J	4.1E-04	2.1E-11	2.8	2.8E-02	1.4E-09	0.14 J	1.4E-03	7.0E-11
Chrysene	1.0E-03	2.0E+04	0.25 J	2.5E-04	1.3E-11	0.24 J	2.4E-04	1.2E-11	0.088 J	8.8E-05	4.4E-12	7.8	7.8E-03	3.9E-10	0.31 J	3.1E-04	1.6E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.041 U	4.1E-02	2.1E-09	0.04 U	4.0E-02	2.0E-09	0.039 U	3.9E-02	2.0E-09	1.2	1.2E+00	6.0E-08	0.066 J	6.6E-02	3.3E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.041 U	4.1E-03	2.1E-10	0.058 J	5.8E-03	2.9E-10	0.039 U	3.9E-03	2.0E-10	3.6	3.6E-01	1.8E-08	0.24 J	2.4E-02	1.2E-09
Totals																	
Total PAH Risk	-		-	-	1.0E-08	-	-	8.2E-09	-	-	7.2E-09	-	-	3.9E-07	-	-	1.9E-08
Sum BaP Equivalent	-		-	2.0E-01	1.0E-08	-	1.6E-01	8.2E-09	-	1.4E-01	7.2E-09	-	7.7E+00	3.9E-07	-	3.7E-01	1.9E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-16			SS-19			SS-20			SS-22			SS-23		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.069 U	6.9E-03	3.5E-10	0.043 U	4.3E-03	2.2E-10	0.06 U	6.0E-03	3.0E-10	0.098 UJ	9.8E-03	4.9E-10	1.6	1.6E-01	8.0E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.069 U	6.9E-02	3.5E-09	0.043 U	4.3E-02	2.2E-09	0.06 U	6.0E-02	3.0E-09	0.098 UJ	9.8E-02	4.9E-09	0.59 J	5.9E-01	3.0E-08
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.069 U	6.9E-03	3.5E-10	0.043 U	4.3E-03	2.2E-10	0.06 U	6.0E-03	3.0E-10	0.098 UJ	9.8E-03	4.9E-10	1.4	1.4E-01	7.0E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.069 U	6.9E-04	3.5E-11	0.043 U	4.3E-04	2.2E-11	0.06 U	6.0E-04	3.0E-11	0.098 UJ	9.8E-04	4.9E-11	0.4 J	4.0E-03	2.0E-10
Chrysene	1.0E-03	2.0E+04	0.069 U	6.9E-05	3.5E-12	0.043 U	4.3E-05	2.2E-12	0.06 U	6.0E-05	3.0E-12	0.098 UJ	9.8E-05	4.9E-12	2.1	2.1E-03	1.1E-10
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.069 U	6.9E-02	3.5E-09	0.043 U	4.3E-02	2.2E-09	0.06 U	6.0E-02	3.0E-09	0.098 UJ	9.8E-02	4.9E-09	0.25 J	2.5E-01	1.3E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.069 U	6.9E-03	3.5E-10	0.043 U	4.3E-03	2.2E-10	0.06 U	6.0E-03	3.0E-10	0.098 UJ	9.8E-03	4.9E-10	0.48 J	4.8E-02	2.4E-09
Totals																	
Total PAH Risk	-		-	-	8.0E-09	-	-	5.0E-09	-	-	6.9E-09	-	-	1.1E-08	-	-	6.0E-08
Sum BaP Equivalent	-		-	1.6E-01	8.0E-09	-	9.9E-02	5.0E-09	-	1.4E-01	6.9E-09	-	2.3E-01	1.1E-08	-	1.2E+00	6.0E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-24			SS-25			SS-29			SS-32			SS-34		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	1.4	1.4E-01	7.0E-09	0.059 U	5.9E-03	3.0E-10	0.059 U	5.9E-03	3.0E-10	0.051 U	5.1E-03	2.6E-10	0.04 U	4.0E-03	2.0E-10
Benzo(a)pyrene	1.0E+00	2.0E+01	0.32 J	3.2E-01	1.6E-08	0.059 U	5.9E-02	3.0E-09	0.059 U	5.9E-02	3.0E-09	0.051 U	5.1E-02	2.6E-09	0.04 U	4.0E-02	2.0E-09
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.85	8.5E-02	4.3E-09	0.059 U	5.9E-03	3.0E-10	0.059 U	5.9E-03	3.0E-10	0.051 U	5.1E-03	2.6E-10	0.04 U	4.0E-03	2.0E-10
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.33 J	3.3E-03	1.7E-10	0.059 U	5.9E-04	3.0E-11	0.059 U	5.9E-04	3.0E-11	0.051 U	5.1E-04	2.6E-11	0.04 U	4.0E-04	2.0E-11
Chrysene	1.0E-03	2.0E+04	2.2	2.2E-03	1.1E-10	0.059 U	5.9E-05	3.0E-12	0.059 U	5.9E-05	3.0E-12	0.051 U	5.1E-05	2.6E-12	0.04 U	4.0E-05	2.0E-12
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.17 J	1.7E-01	8.5E-09	0.059 U	5.9E-02	3.0E-09	0.059 U	5.9E-02	3.0E-09	0.051 U	5.1E-02	2.6E-09	0.04 U	4.0E-02	2.0E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.27 J	2.7E-02	1.4E-09	0.059 U	5.9E-03	3.0E-10	0.059 U	5.9E-03	3.0E-10	0.051 U	5.1E-03	2.6E-10	0.04 U	4.0E-03	2.0E-10
Totals																	
Total PAH Risk	-		-	-	3.7E-08	-	-	6.8E-09	-	-	6.8E-09	-	-	5.9E-09	-	-	4.6E-09
Sum BaP Equivalent	-		-	7.5E-01	3.7E-08	-	1.4E-01	6.8E-09	-	1.4E-01	6.8E-09	-	1.2E-01	5.9E-09	-	9.2E-02	4.6E-09

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-38			SS-40			SS-41			SS-42			SS-44		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.048 UJ	4.8E-03	2.4E-10	0.14 J	1.4E-02	7.0E-10	0.069 UJ	6.9E-03	3.5E-10	0.063 U	6.3E-03	3.2E-10	0.053 U	5.3E-03	2.7E-10
Benzo(a)pyrene	1.0E+00	2.0E+01	0.048 UJ	4.8E-02	2.4E-09	0.061 U	6.1E-02	3.1E-09	0.069 UJ	6.9E-02	3.5E-09	0.063 U	6.3E-02	3.2E-09	0.053 U	5.3E-02	2.7E-09
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.048 UJ	4.8E-03	2.4E-10	0.061 U	6.1E-03	3.1E-10	0.069 UJ	6.9E-03	3.5E-10	0.063 U	6.3E-03	3.2E-10	0.053 U	5.3E-03	2.7E-10
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.048 UJ	4.8E-04	2.4E-11	0.061 U	6.1E-04	3.1E-11	0.069 UJ	6.9E-04	3.5E-11	0.063 U	6.3E-04	3.2E-11	0.053 U	5.3E-04	2.7E-11
Chrysene	1.0E-03	2.0E+04	0.048 UJ	4.8E-05	2.4E-12	0.13 J	1.3E-04	6.5E-12	0.069 UJ	6.9E-05	3.5E-12	0.063 U	6.3E-05	3.2E-12	0.053 U	5.3E-05	2.7E-12
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.048 UJ	4.8E-02	2.4E-09	0.061 U	6.1E-02	3.1E-09	0.069 UJ	6.9E-02	3.5E-09	0.063 U	6.3E-02	3.2E-09	0.053 U	5.3E-02	2.7E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.048 UJ	4.8E-03	2.4E-10	0.061 U	6.1E-03	3.1E-10	0.069 UJ	6.9E-03	3.5E-10	0.063 U	6.3E-03	3.2E-10	0.053 U	5.3E-03	2.7E-10
Totals																	
Total PAH Risk	-		-	-	5.6E-09	-	-	7.5E-09	-	-	8.0E-09	-	-	7.3E-09	-	-	6.1E-09
Sum BaP Equivalent	-		-	1.1E-01	5.6E-09	-	1.5E-01	7.5E-09	-	1.6E-01	8.0E-09	-	1.5E-01	7.3E-09	-	1.2E-01	6.1E-09

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-46			SS-47			SS-49			SS-53			SS-57		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.046 UJ	4.6E-03	2.3E-10	0.047 U	4.7E-03	2.4E-10	0.041 J	4.1E-03	2.1E-10	0.047 U	4.7E-03	2.4E-10	0.04 U	4.0E-03	2.0E-10
Benzo(a)pyrene	1.0E+00	2.0E+01	0.046 UJ	4.6E-02	2.3E-09	0.047 U	4.7E-02	2.4E-09	0.047 J	4.7E-02	2.4E-09	0.047 U	4.7E-02	2.4E-09	0.04 U	4.0E-02	2.0E-09
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.046 UJ	4.6E-03	2.3E-10	0.047 U	4.7E-03	2.4E-10	0.09 J	9.0E-03	4.5E-10	0.047 U	4.7E-03	2.4E-10	0.04 U	4.0E-03	2.0E-10
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.046 UJ	4.6E-04	2.3E-11	0.047 U	4.7E-04	2.4E-11	0.037 U	3.7E-04	1.9E-11	0.047 U	4.7E-04	2.4E-11	0.04 U	4.0E-04	2.0E-11
Chrysene	1.0E-03	2.0E+04	0.046 UJ	4.6E-05	2.3E-12	0.047 U	4.7E-05	2.4E-12	0.062 J	6.2E-05	3.1E-12	0.047 U	4.7E-05	2.4E-12	0.04 U	4.0E-05	2.0E-12
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.046 UJ	4.6E-02	2.3E-09	0.047 U	4.7E-02	2.4E-09	0.037 U	3.7E-02	1.9E-09	0.047 U	4.7E-02	2.4E-09	0.04 U	4.0E-02	2.0E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.046 UJ	4.6E-03	2.3E-10	0.047 U	4.7E-03	2.4E-10	0.042 J	4.2E-03	2.1E-10	0.047 U	4.7E-03	2.4E-10	0.04 U	4.0E-03	2.0E-10
Totals																	
Total PAH Risk	-		-	-	5.3E-09	-	-	5.4E-09	-	-	5.1E-09	-	-	5.4E-09	-	-	4.6E-09
Sum BaP Equivalent	-		-	1.1E-01	5.3E-09	-	1.1E-01	5.4E-09	-	1.0E-01	5.1E-09	-	1.1E-01	5.4E-09	-	9.2E-02	4.6E-09

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-3:
Risks and Hazards for Future Construction Worker by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-59			TP-120		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs								
Benzo(a)anthracene	1.0E-01	2.0E+02	0.18 J	1.8E-02	9.0E-10	0.56	5.6E-02	2.8E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.16 J	1.6E-01	8.0E-09	0.44	4.4E-01	2.2E-08
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.25 J	2.5E-02	1.3E-09	0.74	7.4E-02	3.7E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.085 J	8.5E-04	4.3E-11	0.28	2.8E-03	1.4E-10
Chrysene	1.0E-03	2.0E+04	0.26 J	2.6E-04	1.3E-11	0.68	6.8E-04	3.4E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.042 U	4.2E-02	2.1E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.13 J	1.3E-02	6.5E-10	NA	-	-
Totals								
Total PAH Risk	-		-	-	1.3E-08	-	-	2.9E-08
Sum BaP Equivalent	-		-	2.6E-01	1.3E-08	-	5.7E-01	2.9E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			A-03			B-03			B-05			C-02			C-03		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.035 U	3.5E-03	1.8E-10	0.4 U	4.0E-02	2.0E-09	0.11 J	1.1E-02	5.5E-10	0.36 U	3.6E-02	1.8E-09	0.042 U	4.2E-03	2.1E-10
Benzo(a)pyrene	1.0E+00	2.0E+01	0.035 U	3.5E-02	1.8E-09	0.4 U	4.0E-01	2.0E-08	0.076 J	7.6E-02	3.8E-09	0.36 U	3.6E-01	1.8E-08	0.042 U	4.2E-02	2.1E-09
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.035 U	3.5E-03	1.8E-10	0.4 U	4.0E-02	2.0E-09	0.13 J	1.3E-02	6.5E-10	0.36 U	3.6E-02	1.8E-09	0.068 J	6.8E-03	3.4E-10
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.035 U	3.5E-04	1.8E-11	0.4 U	4.0E-03	2.0E-10	0.56 U	5.6E-03	2.8E-10	0.36 U	3.6E-03	1.8E-10	0.042 UJ	4.2E-04	2.1E-11
Chrysene	1.0E-03	2.0E+04	0.035 U	3.5E-05	1.8E-12	0.4 U	4.0E-04	2.0E-11	0.17 J	1.7E-04	8.5E-12	0.36 U	3.6E-04	1.8E-11	0.05 J	5.0E-05	2.5E-12
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.035 U	3.5E-02	1.8E-09	0.4 U	4.0E-01	2.0E-08	0.56 U	5.6E-01	2.8E-08	0.36 U	3.6E-01	1.8E-08	0.042 U	4.2E-02	2.1E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.035 U	3.5E-03	1.8E-10	0.4 U	4.0E-02	2.0E-09	0.56 U	5.6E-02	2.8E-09	0.36 U	3.6E-02	1.8E-09	0.042 U	4.2E-03	2.1E-10
Totals																	
Total PAH Risk	-		-	-	4.1E-09	-	-	4.6E-08	-	-	3.6E-08	-	-	4.2E-08	-	-	5.0E-09
Sum BaP Equivalent	-		-	8.1E-02	4.1E-09	-	9.2E-01	4.6E-08	-	7.2E-01	3.6E-08	-	8.3E-01	4.2E-08	-	1.0E-01	5.0E-09

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			C-04			C-05			D-02			D-03			E-04		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.042 U	4.2E-03	2.1E-10	0.1 J	1.0E-02	5.0E-10	0.4 U	4.0E-02	2.0E-09	0.039 UJ	3.9E-03	2.0E-10	0.11 J	1.1E-02	5.5E-10
Benzo(a)pyrene	1.0E+00	2.0E+01	0.042 U	4.2E-02	2.1E-09	0.079 J	7.9E-02	4.0E-09	0.4 U	4.0E-01	2.0E-08	0.039 UJ	3.9E-02	2.0E-09	0.16 J	1.6E-01	8.0E-09
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.042 U	4.2E-03	2.1E-10	0.13 J	1.3E-02	6.5E-10	0.4 U	4.0E-02	2.0E-09	0.039 UJ	3.9E-03	2.0E-10	0.48 J	4.8E-02	2.4E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.042 U	4.2E-04	2.1E-11	0.046 J	4.6E-04	2.3E-11	0.4 U	4.0E-03	2.0E-10	0.039 UJ	3.9E-04	2.0E-11	0.18 J	1.8E-03	9.0E-11
Chrysene	1.0E-03	2.0E+04	0.042 U	4.2E-05	2.1E-12	0.13 J	1.3E-04	6.5E-12	0.4 U	4.0E-04	2.0E-11	0.039 UJ	3.9E-05	2.0E-12	0.21 J	2.1E-04	1.1E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.042 U	4.2E-02	2.1E-09	0.37 U	3.7E-01	1.9E-08	0.4 U	4.0E-01	2.0E-08	0.039 UJ	3.9E-02	2.0E-09	0.038 UJ	3.8E-02	1.9E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.042 U	4.2E-03	2.1E-10	0.049 J	4.9E-03	2.5E-10	0.4 U	4.0E-02	2.0E-09	0.039 UJ	3.9E-03	2.0E-10	0.17 J	1.7E-02	8.5E-10
Totals																	
Total PAH Risk	-		-	-	4.9E-09	-	-	2.4E-08	-	-	4.6E-08	-	-	4.5E-09	-	-	1.4E-08
Sum BaP Equivalent	-		-	9.7E-02	4.9E-09	-	4.8E-01	2.4E-08	-	9.2E-01	4.6E-08	-	9.0E-02	4.5E-09	-	2.8E-01	1.4E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			E-05			F-03			G-07			H-04			H-06		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	1.1	1.1E-01	5.5E-09	0.42 U	4.2E-02	2.1E-09	0.35 J	3.5E-02	1.8E-09	0.41 U	4.1E-02	2.1E-09	0.41 U	4.1E-02	2.1E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.79	7.9E-01	4.0E-08	0.42 U	4.2E-01	2.1E-08	0.23 J	2.3E-01	1.2E-08	0.41 U	4.1E-01	2.1E-08	0.41 U	4.1E-01	2.1E-08
Benzo(b)fluoranthene	1.0E-01	2.0E+02	1.2	1.2E-01	6.0E-09	0.42 U	4.2E-02	2.1E-09	0.28 J	2.8E-02	1.4E-09	0.41 U	4.1E-02	2.1E-09	0.41 U	4.1E-02	2.1E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.46 J	4.6E-03	2.3E-10	0.42 U	4.2E-03	2.1E-10	0.31 J	3.1E-03	1.6E-10	0.41 U	4.1E-03	2.1E-10	0.41 U	4.1E-03	2.1E-10
Chrysene	1.0E-03	2.0E+04	1.1	1.1E-03	5.5E-11	0.42 U	4.2E-04	2.1E-11	0.44	4.4E-04	2.2E-11	0.41 U	4.1E-04	2.1E-11	0.41 U	4.1E-04	2.1E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.42 U	4.2E-01	2.1E-08	0.42 U	4.2E-01	2.1E-08	0.032 J	3.2E-02	1.6E-09	0.41 U	4.1E-01	2.1E-08	0.41 U	4.1E-01	2.1E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.57	5.7E-02	2.9E-09	0.42 U	4.2E-02	2.1E-09	0.16 J	1.6E-02	8.0E-10	0.41 U	4.1E-02	2.1E-09	0.41 U	4.1E-02	2.1E-09
Totals																	
Total PAH Risk	-		-	-	7.5E-08	-	-	4.9E-08	-	-	1.7E-08	-	-	4.7E-08	-	-	4.7E-08
Sum BaP Equivalent	-		-	1.5E+00	7.5E-08	-	9.7E-01	4.9E-08	-	3.4E-01	1.7E-08	-	9.5E-01	4.7E-08	-	9.5E-01	4.7E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			H-07			I-07			I-09			J-01			J-08		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.041 U	4.1E-03	2.1E-10	0.39 UJ	3.9E-02	2.0E-09	0.38 U	3.8E-02	1.9E-09	0.37 U	3.7E-02	1.9E-09	0.044 UJ	4.4E-03	2.2E-10
Benzo(a)pyrene	1.0E+00	2.0E+01	0.041 U	4.1E-02	2.1E-09	0.39 UJ	3.9E-01	2.0E-08	0.38 U	3.8E-01	1.9E-08	0.37 U	3.7E-01	1.9E-08	0.044 UJ	4.4E-02	2.2E-09
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.041 U	4.1E-03	2.1E-10	0.39 UJ	3.9E-02	2.0E-09	0.38 U	3.8E-02	1.9E-09	0.37 U	3.7E-02	1.9E-09	0.044 UJ	4.4E-03	2.2E-10
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.041 U	4.1E-04	2.1E-11	0.39 UJ	3.9E-03	2.0E-10	0.38 U	3.8E-03	1.9E-10	0.37 U	3.7E-03	1.9E-10	0.044 UJ	4.4E-04	2.2E-11
Chrysene	1.0E-03	2.0E+04	0.041 U	4.1E-05	2.1E-12	0.39 UJ	3.9E-04	2.0E-11	0.38 U	3.8E-04	1.9E-11	0.37 U	3.7E-04	1.9E-11	0.044 UJ	4.4E-05	2.2E-12
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.041 U	4.1E-02	2.1E-09	0.39 UJ	3.9E-01	2.0E-08	0.38 U	3.8E-01	1.9E-08	0.37 U	3.7E-01	1.9E-08	0.044 UJ	4.4E-02	2.2E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.041 U	4.1E-03	2.1E-10	0.39 UJ	3.9E-02	2.0E-09	0.38 U	3.8E-02	1.9E-09	0.37 U	3.7E-02	1.9E-09	0.044 UJ	4.4E-03	2.2E-10
Totals																	
Total PAH Risk	-		-	-	4.7E-09	-	-	4.5E-08	-	-	4.4E-08	-	-	4.3E-08	-	-	5.1E-09
Sum BaP Equivalent	-		-	9.5E-02	4.7E-09	-	9.0E-01	4.5E-08	-	8.8E-01	4.4E-08	-	8.6E-01	4.3E-08	-	1.0E-01	5.1E-09

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PAHs = Polycyclic Aromatic Hydrocarbons
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Table C2-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			J-09			J-10			J-11			J-13			K-05		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.055 UJ	5.5E-03	2.8E-10	0.44 U	4.4E-02	2.2E-09	0.59 U	5.9E-02	3.0E-09	1.6 U	1.6E-01	8.0E-09	0.055 J	5.5E-03	2.8E-10
Benzo(a)pyrene	1.0E+00	2.0E+01	0.055 UJ	5.5E-02	2.8E-09	0.44 U	4.4E-01	2.2E-08	0.59 U	5.9E-01	3.0E-08	1.6 U	1.6E+00	8.0E-08	0.061 J	6.1E-02	3.1E-09
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.055 UJ	5.5E-03	2.8E-10	0.44 U	4.4E-02	2.2E-09	0.59 U	5.9E-02	3.0E-09	1.6 U	1.6E-01	8.0E-09	0.14 J	1.4E-02	7.0E-10
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.055 UJ	5.5E-04	2.8E-11	0.44 U	4.4E-03	2.2E-10	0.59 U	5.9E-03	3.0E-10	1.6 U	1.6E-02	8.0E-10	0.045 U	4.5E-04	2.3E-11
Chrysene	1.0E-03	2.0E+04	0.055 UJ	5.5E-05	2.8E-12	0.44 U	4.4E-04	2.2E-11	0.59 U	5.9E-04	3.0E-11	1.6 U	1.6E-03	8.0E-11	0.085 J	8.5E-05	4.3E-12
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.055 UJ	5.5E-02	2.8E-09	0.44 U	4.4E-01	2.2E-08	0.59 U	5.9E-01	3.0E-08	1.6 U	1.6E+00	8.0E-08	0.045 U	4.5E-02	2.3E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.055 UJ	5.5E-03	2.8E-10	0.44 U	4.4E-02	2.2E-09	0.59 U	5.9E-02	3.0E-09	1.6 U	1.6E-01	8.0E-09	0.045 U	4.5E-03	2.3E-10
Totals																	
Total PAH Risk	-		-	-	6.4E-09	-	-	5.1E-08	-	-	6.8E-08	-	-	1.9E-07	-	-	6.5E-09
Sum BaP Equivalent	-		-	1.3E-01	6.4E-09	-	1.0E+00	5.1E-08	-	1.4E+00	6.8E-08	-	3.7E+00	1.9E-07	-	1.3E-01	6.5E-09

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			L-02			L-03			L-04			M-01			M-02		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.2 J	2.0E-02	1.0E-09	0.34 U	3.4E-02	1.7E-09	0.22 J	2.2E-02	1.1E-09	0.068 U	6.8E-03	3.4E-10	0.36 J	3.6E-02	1.8E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.11 J	1.1E-01	5.5E-09	0.34 U	3.4E-01	1.7E-08	0.13 J	1.3E-01	6.5E-09	0.068 U	6.8E-02	3.4E-09	0.38 J	3.8E-01	1.9E-08
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.17 J	1.7E-02	8.5E-10	0.34 U	3.4E-02	1.7E-09	0.16 J	1.6E-02	8.0E-10	0.068 U	6.8E-03	3.4E-10	0.58	5.8E-02	2.9E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.15 J	1.5E-03	7.5E-11	0.34 U	3.4E-03	1.7E-10	0.15 J	1.5E-03	7.5E-11	0.068 U	6.8E-04	3.4E-11	0.22 J	2.2E-03	1.1E-10
Chrysene	1.0E-03	2.0E+04	0.26 J	2.6E-04	1.3E-11	0.34 U	3.4E-04	1.7E-11	0.3 J	3.0E-04	1.5E-11	0.068 U	6.8E-05	3.4E-12	0.47	4.7E-04	2.4E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.39 U	3.9E-01	2.0E-08	0.34 U	3.4E-01	1.7E-08	0.041 U	4.1E-02	2.1E-09	0.068 U	6.8E-02	3.4E-09	0.092 J	9.2E-02	4.6E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.066 J	6.6E-03	3.3E-10	0.34 U	3.4E-02	1.7E-09	0.051 J	5.1E-03	2.6E-10	0.068 U	6.8E-03	3.4E-10	0.27 J	2.7E-02	1.4E-09
Totals																	
Total PAH Risk	-		-	-	2.7E-08	-	-	3.9E-08	-	-	1.1E-08	-	-	7.9E-09	-	-	3.0E-08
Sum BaP Equivalent	-		-	5.5E-01	2.7E-08	-	7.9E-01	3.9E-08	-	2.2E-01	1.1E-08	-	1.6E-01	7.9E-09	-	6.0E-01	3.0E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			M-04			SB-09			SS-02			SS-03			SS-17A		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.28 J	2.8E-02	1.4E-09	0.4 U	4.0E-02	2.0E-09	0.045 U	4.5E-03	2.3E-10	1.2	1.2E-01	6.0E-09	0.47 J	4.7E-02	2.4E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.27 J	2.7E-01	1.4E-08	0.4 U	4.0E-01	2.0E-08	0.045 U	4.5E-02	2.3E-09	0.31 J	3.1E-01	1.6E-08	0.054 U	5.4E-02	2.7E-09
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.41 J	4.1E-02	2.1E-09	0.4 U	4.0E-02	2.0E-09	0.053 J	5.3E-03	2.7E-10	0.71	7.1E-02	3.6E-09	0.083 J	8.3E-03	4.2E-10
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.14 J	1.4E-03	7.0E-11	0.4 U	4.0E-03	2.0E-10	0.045 U	4.5E-04	2.3E-11	0.21 J	2.1E-03	1.1E-10	0.054 U	5.4E-04	2.7E-11
Chrysene	1.0E-03	2.0E+04	0.32 J	3.2E-04	1.6E-11	0.4 U	4.0E-04	2.0E-11	0.06 J	6.0E-05	3.0E-12	1.6	1.6E-03	8.0E-11	0.46 J	4.6E-04	2.3E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.057 J	5.7E-02	2.9E-09	NA	-	-	0.045 U	4.5E-02	2.3E-09	0.081 J	8.1E-02	4.1E-09	0.054 U	5.4E-02	2.7E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.15 J	1.5E-02	7.5E-10	0.4 U	4.0E-02	2.0E-09	0.045 U	4.5E-03	2.3E-10	0.15 J	1.5E-02	7.5E-10	0.054 U	5.4E-03	2.7E-10
Totals																	
Total PAH Risk	-		-	-	2.1E-08	-	-	2.6E-08	-	-	5.3E-09	-	-	3.0E-08	-	-	8.5E-09
Sum BaP Equivalent	-		-	4.1E-01	2.1E-08	-	5.2E-01	2.6E-08	-	1.0E-01	5.3E-09	-	6.0E-01	3.0E-08	-	1.7E-01	8.5E-09

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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HHCOPC = Human Health Chemicals of Potential Concern
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PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-50A			SS-51A			TP-100			TP-105			TP-107		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.15 J	1.5E-02	7.5E-10	0.051 U	5.1E-03	2.6E-10	0.4 U	4.0E-02	2.0E-09	0.4 U	4.0E-02	2.0E-09	0.39 U	3.9E-02	2.0E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.11 J	1.1E-01	5.5E-09	0.051 U	5.1E-02	2.6E-09	0.4 U	4.0E-01	2.0E-08	0.4 U	4.0E-01	2.0E-08	0.39 U	3.9E-01	2.0E-08
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.062 U	6.2E-03	3.1E-10	0.051 U	5.1E-03	2.6E-10	0.4 U	4.0E-02	2.0E-09	0.4 U	4.0E-02	2.0E-09	0.39 U	3.9E-02	2.0E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.062 U	6.2E-04	3.1E-11	0.051 U	5.1E-04	2.6E-11	0.4 U	4.0E-03	2.0E-10	0.4 U	4.0E-03	2.0E-10	0.39 U	3.9E-03	2.0E-10
Chrysene	1.0E-03	2.0E+04	0.25 J	2.5E-04	1.3E-11	0.051 U	5.1E-05	2.6E-12	0.4 U	4.0E-04	2.0E-11	0.4 U	4.0E-04	2.0E-11	0.39 U	3.9E-04	2.0E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	0.062 U	6.2E-02	3.1E-09	0.051 U	5.1E-02	2.6E-09	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.071 J	7.1E-03	3.6E-10	0.051 U	5.1E-03	2.6E-10	0.4 U	4.0E-02	2.0E-09	0.4 U	4.0E-02	2.0E-09	0.39 U	3.9E-02	2.0E-09
Totals																	
Total PAH Risk	-		-	-	1.0E-08	-	-	5.9E-09	-	-	2.6E-08	-	-	2.6E-08	-	-	2.6E-08
Sum BaP Equivalent	-		-	2.0E-01	1.0E-08	-	1.2E-01	5.9E-09	-	5.2E-01	2.6E-08	-	5.2E-01	2.6E-08	-	5.1E-01	2.6E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			TP-112			TP-113			TP-114			TP-116			TP-125		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	2.0E+02	0.39 U	3.9E-02	2.0E-09	0.49 U	4.9E-02	2.5E-09	0.44	4.4E-02	2.2E-09	0.22 U	2.2E-02	1.1E-09	0.2 U	2.0E-02	1.0E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.39 U	3.9E-01	2.0E-08	0.49 U	4.9E-01	2.5E-08	0.43 J	4.3E-01	2.2E-08	0.22 U	2.2E-01	1.1E-08	0.2 U	2.0E-01	1.0E-08
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.39 U	3.9E-02	2.0E-09	0.49 U	4.9E-02	2.5E-09	0.6	6.0E-02	3.0E-09	0.22 U	2.2E-02	1.1E-09	0.2 U	2.0E-02	1.0E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.39 U	3.9E-03	2.0E-10	0.49 U	4.9E-03	2.5E-10	0.49	4.9E-03	2.5E-10	0.22 U	2.2E-03	1.1E-10	0.2 U	2.0E-03	1.0E-10
Chrysene	1.0E-03	2.0E+04	0.39 U	3.9E-04	2.0E-11	0.49 U	4.9E-04	2.5E-11	0.58	5.8E-04	2.9E-11	0.22 U	2.2E-04	1.1E-11	0.2 U	2.0E-04	1.0E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	0.39 U	3.9E-02	2.0E-09	0.49 U	4.9E-02	2.5E-09	0.35 J	3.5E-02	1.8E-09	NA	-	-	NA	-	-
Totals																	
Total PAH Risk	-		-	-	2.6E-08	-	-	3.2E-08	-	-	2.9E-08	-	-	1.3E-08	-	-	1.2E-08
Sum BaP Equivalent	-		-	5.1E-01	2.6E-08	-	6.4E-01	3.2E-08	-	5.7E-01	2.9E-08	-	2.7E-01	1.3E-08	-	2.4E-01	1.2E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-4:
Risks and Hazards for Future Construction Worker by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			TP-128			W-13(S)			W-18(S)			W-19(S)		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs														
Benzo(a)anthracene	1.0E-01	2.0E+02	0.96 U	9.6E-02	4.8E-09	0.042 U	4.2E-03	2.1E-10	0.16 J	1.6E-02	8.0E-10	0.75	7.5E-02	3.8E-09
Benzo(a)pyrene	1.0E+00	2.0E+01	0.96 U	9.6E-01	4.8E-08	0.042 U	4.2E-02	2.1E-09	0.14 J	1.4E-01	7.0E-09	0.5	5.0E-01	2.5E-08
Benzo(b)fluoranthene	1.0E-01	2.0E+02	0.96 U	9.6E-02	4.8E-09	0.042 U	4.2E-03	2.1E-10	0.23 J	2.3E-02	1.2E-09	0.86	8.6E-02	4.3E-09
Benzo(k)fluoranthene	1.0E-02	2.0E+03	0.96 U	9.6E-03	4.8E-10	0.042 U	4.2E-04	2.1E-11	0.083 J	8.3E-04	4.2E-11	0.34 J	3.4E-03	1.7E-10
Chrysene	1.0E-03	2.0E+04	0.96 U	9.6E-04	4.8E-11	0.042 U	4.2E-05	2.1E-12	0.19 J	1.9E-04	9.5E-12	0.92	9.2E-04	4.6E-11
Dibenz(a,h)anthracene	1.0E+00	2.0E+01	NA	-	-	- U	-	-	0.042 UJ	4.2E-02	2.1E-09	0.12 J	1.2E-01	6.0E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	2.0E+02	NA	-	-	0.042 U	4.2E-03	2.1E-10	0.12 J	1.2E-02	6.0E-10	0.41	4.1E-02	2.1E-09
Totals														
Total PAH Risk	-		-	-	5.8E-08	-	-	2.8E-09	-	-	1.2E-08	-	-	4.1E-08
Sum BaP Equivalent	-		-	1.2E+00	5.8E-08	-	5.5E-02	2.8E-09	-	2.3E-01	1.2E-08	-	8.3E-01	4.1E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			D-06			D-07			E-02			E-06			F-01		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.42	4.2E-02	1.4E-09	0.23 J	2.3E-02	7.6E-10	0.064 J	6.4E-03	2.1E-10	5 U	5.0E-01	1.7E-08	0.39 U	3.9E-02	1.3E-09
Benzo(a)pyrene	1.0E+00	3.0E+01	0.3 J	3.0E-01	1.0E-08	0.17 J	1.7E-01	5.7E-09	0.047 J	4.7E-02	1.6E-09	5 U	5.0E+00	1.7E-07	0.39 U	3.9E-01	1.3E-08
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.76	7.6E-02	2.5E-09	0.4 J	4.0E-02	1.3E-09	0.082 J	8.2E-03	2.7E-10	5 U	5.0E-01	1.7E-08	0.39 U	3.9E-02	1.3E-09
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.25 J	2.5E-03	8.3E-11	0.13 J	1.3E-03	4.3E-11	0.038 J	3.8E-04	1.3E-11	5 U	5.0E-02	1.7E-09	0.39 U	3.9E-03	1.3E-10
Chrysene	1.0E-03	3.0E+04	0.54	5.4E-04	1.8E-11	0.4 J	4.0E-04	1.3E-11	0.098 J	9.8E-05	3.3E-12	5 U	5.0E-03	1.7E-10	0.39 U	3.9E-04	1.3E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.047 J	4.7E-02	1.6E-09	0.042 U	4.2E-02	1.4E-09	0.037 U	3.7E-02	1.2E-09	5 U	5.0E+00	1.7E-07	0.39 U	3.9E-01	1.3E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.27 J	2.7E-02	9.0E-10	0.14 J	1.4E-02	4.7E-10	0.037 U	3.7E-03	1.2E-10	5 U	5.0E-01	1.7E-08	0.39 U	3.9E-02	1.3E-09
Totals																	
Total PAH Risk	-		-	-	1.6E-08	-	-	9.7E-09	-	-	3.4E-09	-	-	3.8E-07	-	-	3.0E-08
Sum BaP Equivalent	-		-	5.0E-01	1.6E-08	-	2.9E-01	9.7E-09	-	1.0E-01	3.4E-09	-	1.2E+01	3.8E-07	-	9.0E-01	3.0E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			F-02			F-03			G-01			G-02			G-04		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.039 U	3.9E-03	1.3E-10	0.14 J	1.4E-02	4.7E-10	0.37 U	3.7E-02	1.2E-09	0.39 U	3.9E-02	1.3E-09	0.36 U	3.6E-02	1.2E-09
Benzo(a)pyrene	1.0E+00	3.0E+01	0.039 U	3.9E-02	1.3E-09	0.11 J	1.1E-01	3.7E-09	0.37 U	3.7E-01	1.2E-08	0.39 U	3.9E-01	1.3E-08	0.36 U	3.6E-01	1.2E-08
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.039 U	3.9E-03	1.3E-10	0.16 J	1.6E-02	5.3E-10	0.37 U	3.7E-02	1.2E-09	0.39 U	3.9E-02	1.3E-09	0.36 U	3.6E-02	1.2E-09
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.039 U	3.9E-04	1.3E-11	0.065 J	6.5E-04	2.2E-11	0.37 U	3.7E-03	1.2E-10	0.39 U	3.9E-03	1.3E-10	0.36 U	3.6E-03	1.2E-10
Chrysene	1.0E-03	3.0E+04	0.039 U	3.9E-05	1.3E-12	0.18 J	1.8E-04	6.0E-12	0.37 UJ	3.7E-04	1.2E-11	0.39 U	3.9E-04	1.3E-11	0.36 U	3.6E-04	1.2E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.039 U	3.9E-02	1.3E-09	0.038 U	3.8E-02	1.3E-09	0.37 U	3.7E-01	1.2E-08	0.39 U	3.9E-01	1.3E-08	0.36 U	3.6E-01	1.2E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.039 U	3.9E-03	1.3E-10	0.071 J	7.1E-03	2.4E-10	0.37 U	3.7E-02	1.2E-09	0.39 U	3.9E-02	1.3E-09	0.36 U	3.6E-02	1.2E-09
Totals																	
Total PAH Risk	-		-	-	3.0E-09	-	-	6.2E-09	-	-	2.8E-08	-	-	3.0E-08	-	-	2.8E-08
Sum BaP Equivalent	-		-	9.0E-02	3.0E-09	-	1.9E-01	6.2E-09	-	8.6E-01	2.8E-08	-	9.0E-01	3.0E-08	-	8.3E-01	2.8E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			H-07			H-08			I-02			I-03			I-05		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.39 U	3.9E-02	1.3E-09	0.56	5.6E-02	1.9E-09	0.4 U	4.0E-02	1.3E-09	0.39 U	3.9E-02	1.3E-09	0.38 U	3.8E-02	1.3E-09
Benzo(a)pyrene	1.0E+00	3.0E+01	0.39 U	3.9E-01	1.3E-08	0.42 J	4.2E-01	1.4E-08	0.4 U	4.0E-01	1.3E-08	0.39 U	3.9E-01	1.3E-08	0.38 U	3.8E-01	1.3E-08
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.39 U	3.9E-02	1.3E-09	0.62	6.2E-02	2.1E-09	0.4 U	4.0E-02	1.3E-09	0.39 U	3.9E-02	1.3E-09	0.38 U	3.8E-02	1.3E-09
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.39 U	3.9E-03	1.3E-10	0.26 J	2.6E-03	8.6E-11	0.4 U	4.0E-03	1.3E-10	0.39 U	3.9E-03	1.3E-10	0.38 U	3.8E-03	1.3E-10
Chrysene	1.0E-03	3.0E+04	0.39 U	3.9E-04	1.3E-11	0.58	5.8E-04	1.9E-11	0.4 U	4.0E-04	1.3E-11	0.39 U	3.9E-04	1.3E-11	0.38 U	3.8E-04	1.3E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.39 U	3.9E-01	1.3E-08	0.083 J	8.3E-02	2.8E-09	0.4 U	4.0E-01	1.3E-08	0.39 U	3.9E-01	1.3E-08	0.38 U	3.8E-01	1.3E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.39 U	3.9E-02	1.3E-09	0.26 J	2.6E-02	8.6E-10	0.4 U	4.0E-02	1.3E-09	0.39 U	3.9E-02	1.3E-09	0.38 U	3.8E-02	1.3E-09
Totals																	
Total PAH Risk	-		-	-	3.0E-08	-	-	2.2E-08	-	-	3.1E-08	-	-	3.0E-08	-	-	2.9E-08
Sum BaP Equivalent	-		-	9.0E-01	3.0E-08	-	6.5E-01	2.2E-08	-	9.2E-01	3.1E-08	-	9.0E-01	3.0E-08	-	8.8E-01	2.9E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			I-06			I-11			J-02			J-03			J-07		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.93	9.3E-02	3.1E-09	0.25 J	2.5E-02	8.3E-10	0.35 U	3.5E-02	1.2E-09	0.4 U	4.0E-02	1.3E-09	0.36 U	3.6E-02	1.2E-09
Benzo(a)pyrene	1.0E+00	3.0E+01	0.58	5.8E-01	1.9E-08	0.2 J	2.0E-01	6.6E-09	0.35 U	3.5E-01	1.2E-08	0.4 U	4.0E-01	1.3E-08	0.36 U	3.6E-01	1.2E-08
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.92	9.2E-02	3.1E-09	0.36 J	3.6E-02	1.2E-09	0.35 U	3.5E-02	1.2E-09	0.4 U	4.0E-02	1.3E-09	0.36 U	3.6E-02	1.2E-09
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.28 J	2.8E-03	9.3E-11	0.15 J	1.5E-03	5.0E-11	0.35 U	3.5E-03	1.2E-10	0.4 U	4.0E-03	1.3E-10	0.36 U	3.6E-03	1.2E-10
Chrysene	1.0E-03	3.0E+04	1.7	1.7E-03	5.7E-11	0.42	4.2E-04	1.4E-11	0.35 U	3.5E-04	1.2E-11	0.4 U	4.0E-04	1.3E-11	0.36 U	3.6E-04	1.2E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.16 J	1.6E-01	5.3E-09	0.053 J	5.3E-02	1.8E-09	0.35 U	3.5E-01	1.2E-08	0.4 U	4.0E-01	1.3E-08	0.36 U	3.6E-01	1.2E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.35 J	3.5E-02	1.2E-09	0.16 J	1.6E-02	5.3E-10	0.35 U	3.5E-02	1.2E-09	0.4 U	4.0E-02	1.3E-09	0.36 U	3.6E-02	1.2E-09
Totals																	
Total PAH Risk	-		-	-	3.2E-08	-	-	1.1E-08	-	-	2.7E-08	-	-	3.1E-08	-	-	2.8E-08
Sum BaP Equivalent	-		-	9.6E-01	3.2E-08	-	3.3E-01	1.1E-08	-	8.1E-01	2.7E-08	-	9.2E-01	3.1E-08	-	8.3E-01	2.8E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			J-13			K-01			P-03			P-04			PZ-02(S)		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.051 UJ	5.1E-03	1.7E-10	0.38 U	3.8E-02	1.3E-09	0.27 J	2.7E-02	9.0E-10	1.2	1.2E-01	4.0E-09	0.2 J	2.0E-02	6.6E-10
Benzo(a)pyrene	1.0E+00	3.0E+01	0.051 UJ	5.1E-02	1.7E-09	0.38 U	3.8E-01	1.3E-08	0.26 J	2.6E-01	8.6E-09	0.85	8.5E-01	2.8E-08	0.084 J	8.4E-02	2.8E-09
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.051 UJ	5.1E-03	1.7E-10	0.38 U	3.8E-02	1.3E-09	0.31 J	3.1E-02	1.0E-09	0.74	7.4E-02	2.5E-09	0.18 J	1.8E-02	6.0E-10
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.051 UJ	5.1E-04	1.7E-11	0.38 U	3.8E-03	1.3E-10	0.35 J	3.5E-03	1.2E-10	0.8	8.0E-03	2.7E-10	0.066 J	6.6E-04	2.2E-11
Chrysene	1.0E-03	3.0E+04	0.051 UJ	5.1E-05	1.7E-12	0.38 U	3.8E-04	1.3E-11	0.47	4.7E-04	1.6E-11	1.2	1.2E-03	4.0E-11	0.35 J	3.5E-04	1.2E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.051 UJ	5.1E-02	1.7E-09	0.38 U	3.8E-01	1.3E-08	0.4 U	4.0E-01	1.3E-08	0.47	4.7E-01	1.6E-08	0.041 U	4.1E-02	1.4E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.051 UJ	5.1E-03	1.7E-10	0.38 U	3.8E-02	1.3E-09	0.29 J	2.9E-02	9.6E-10	0.81	8.1E-02	2.7E-09	0.052 J	5.2E-03	1.7E-10
Totals																	
Total PAH Risk	-		-	-	3.9E-09	-	-	2.9E-08	-	-	2.5E-08	-	-	5.3E-08	-	-	5.6E-09
Sum BaP Equivalent	-		-	1.2E-01	3.9E-09	-	8.8E-01	2.9E-08	-	7.5E-01	2.5E-08	-	1.6E+00	5.3E-08	-	1.7E-01	5.6E-09

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			PZ-04(S)			SB-04			SL-D-1			SL-D-2			SS-01		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.037 U	3.7E-03	1.2E-10	0.41 U	4.1E-02	1.4E-09	0.61	6.1E-02	2.0E-09	0.43 J	4.3E-02	1.4E-09	0.043 U	4.3E-03	1.4E-10
Benzo(a)pyrene	1.0E+00	3.0E+01	0.037 U	3.7E-02	1.2E-09	0.41 U	4.1E-01	1.4E-08	0.44 J	4.4E-01	1.5E-08	0.25 J	2.5E-01	8.3E-09	0.043 U	4.3E-02	1.4E-09
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.037 U	3.7E-03	1.2E-10	0.41 U	4.1E-02	1.4E-09	0.84	8.4E-02	2.8E-09	0.57	5.7E-02	1.9E-09	0.043 U	4.3E-03	1.4E-10
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.037 U	3.7E-04	1.2E-11	0.41 U	4.1E-03	1.4E-10	0.2 J	2.0E-03	6.7E-11	0.17 J	1.7E-03	5.7E-11	0.043 U	4.3E-04	1.4E-11
Chrysene	1.0E-03	3.0E+04	0.037 U	3.7E-05	1.2E-12	0.41 U	4.1E-04	1.4E-11	0.95	9.5E-04	3.2E-11	0.7	7.0E-04	2.3E-11	0.055 J	5.5E-05	1.8E-12
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.037 U	3.7E-02	1.2E-09	NA	-	-	0.11 J	1.1E-01	3.7E-09	0.079 U	7.9E-02	2.6E-09	0.043 U	4.3E-02	1.4E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.037 U	3.7E-03	1.2E-10	0.41 U	4.1E-02	1.4E-09	0.26 J	2.6E-02	8.6E-10	0.17 J	1.7E-02	5.7E-10	0.043 U	4.3E-03	1.4E-10
Totals																	
Total PAH Risk	-		-	-	2.8E-09	-	-	1.8E-08	-	-	2.4E-08	-	-	1.5E-08	-	-	3.3E-09
Sum BaP Equivalent	-		-	8.6E-02	2.8E-09	-	5.4E-01	1.8E-08	-	7.2E-01	2.4E-08	-	4.5E-01	1.5E-08	-	9.9E-02	3.3E-09

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-04			SS-05			SS-06			SS-07			SS-08		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.077 J	7.7E-03	2.6E-10	0.1 J	1.0E-02	3.3E-10	0.047 U	4.7E-03	1.6E-10	0.41	4.1E-02	1.4E-09	2.6	2.6E-01	8.6E-09
Benzo(a)pyrene	1.0E+00	3.0E+01	0.069 J	6.9E-02	2.3E-09	0.084 J	8.4E-02	2.8E-09	0.047 U	4.7E-02	1.6E-09	0.41	4.1E-01	1.4E-08	2.3	2.3E+00	7.6E-08
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.091 J	9.1E-03	3.0E-10	0.16 J	1.6E-02	5.3E-10	0.047 U	4.7E-03	1.6E-10	0.76	7.6E-02	2.5E-09	4.7	4.7E-01	1.6E-08
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.042 U	4.2E-04	1.4E-11	0.053 J	5.3E-04	1.8E-11	0.047 U	4.7E-04	1.6E-11	0.2 J	2.0E-03	6.7E-11	1.6	1.6E-02	5.3E-10
Chrysene	1.0E-03	3.0E+04	0.11 J	1.1E-04	3.7E-12	0.14 J	1.4E-04	4.7E-12	0.047 U	4.7E-05	1.6E-12	0.97	9.7E-04	3.2E-11	3.3	3.3E-03	1.1E-10
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.042 U	4.2E-02	1.4E-09	0.039 U	3.9E-02	1.3E-09	0.047 U	4.7E-02	1.6E-09	0.25 J	2.5E-01	8.3E-09	0.65	6.5E-01	2.2E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.055 J	5.5E-03	1.8E-10	0.039 U	3.9E-03	1.3E-10	0.047 U	4.7E-03	1.6E-10	0.43	4.3E-02	1.4E-09	2.7	2.7E-01	9.0E-09
Totals																	
Total PAH Risk	-		-	-	4.4E-09	-	-	5.1E-09	-	-	3.6E-09	-	-	2.7E-08	-	-	1.3E-07
Sum BaP Equivalent	-		-	1.3E-01	4.4E-09	-	1.5E-01	5.1E-09	-	1.1E-01	3.6E-09	-	8.2E-01	2.7E-08	-	4.0E+00	1.3E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-09			SS-11A			SS-12			SS-13			SS-14		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.15 J	1.5E-02	5.0E-10	0.1 J	1.0E-02	3.3E-10	0.073 J	7.3E-03	2.4E-10	4.6	4.6E-01	1.5E-08	0.18 J	1.8E-02	6.0E-10
Benzo(a)pyrene	1.0E+00	3.0E+01	0.12 J	1.2E-01	4.0E-09	0.094 J	9.4E-02	3.1E-09	0.081 J	8.1E-02	2.7E-09	4.8	4.8E+00	1.6E-07	0.22 J	2.2E-01	7.3E-09
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.23 J	2.3E-02	7.6E-10	0.13 J	1.3E-02	4.3E-10	0.13 J	1.3E-02	4.3E-10	8.9	8.9E-01	3.0E-08	0.42	4.2E-02	1.4E-09
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.089 J	8.9E-04	3.0E-11	0.04 U	4.0E-04	1.3E-11	0.041 J	4.1E-04	1.4E-11	2.8	2.8E-02	9.3E-10	0.14 J	1.4E-03	4.7E-11
Chrysene	1.0E-03	3.0E+04	0.25 J	2.5E-04	8.3E-12	0.24 J	2.4E-04	8.0E-12	0.088 J	8.8E-05	2.9E-12	7.8	7.8E-03	2.6E-10	0.31 J	3.1E-04	1.0E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.041 U	4.1E-02	1.4E-09	0.04 U	4.0E-02	1.3E-09	0.039 U	3.9E-02	1.3E-09	1.2	1.2E+00	4.0E-08	0.066 J	6.6E-02	2.2E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.041 U	4.1E-03	1.4E-10	0.058 J	5.8E-03	1.9E-10	0.039 U	3.9E-03	1.3E-10	3.6	3.6E-01	1.2E-08	0.24 J	2.4E-02	8.0E-10
Totals																	
Total PAH Risk	-		-	-	6.8E-09	-	-	5.4E-09	-	-	4.8E-09	-	-	2.6E-07	-	-	1.2E-08
Sum BaP Equivalent	-		-	2.0E-01	6.8E-09	-	1.6E-01	5.4E-09	-	1.4E-01	4.8E-09	-	7.7E+00	2.6E-07	-	3.7E-01	1.2E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-16			SS-19			SS-20			SS-22			SS-23		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.069 U	6.9E-03	2.3E-10	0.043 UR	4.3E-03	1.4E-10	0.06 U	6.0E-03	2.0E-10	0.098 UJ	9.8E-03	3.3E-10	1.6	1.6E-01	5.3E-09
Benzo(a)pyrene	1.0E+00	3.0E+01	0.069 U	6.9E-02	2.3E-09	0.043 UR	4.3E-02	1.4E-09	0.06 U	6.0E-02	2.0E-09	0.098 UJ	9.8E-02	3.3E-09	0.59 J	5.9E-01	2.0E-08
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.069 U	6.9E-03	2.3E-10	0.043 UR	4.3E-03	1.4E-10	0.06 U	6.0E-03	2.0E-10	0.098 UJ	9.8E-03	3.3E-10	1.4	1.4E-01	4.7E-09
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.069 U	6.9E-04	2.3E-11	0.043 UR	4.3E-04	1.4E-11	0.06 U	6.0E-04	2.0E-11	0.098 UJ	9.8E-04	3.3E-11	0.4 J	4.0E-03	1.3E-10
Chrysene	1.0E-03	3.0E+04	0.069 U	6.9E-05	2.3E-12	0.043 UR	4.3E-05	1.4E-12	0.06 U	6.0E-05	2.0E-12	0.098 UJ	9.8E-05	3.3E-12	2.1	2.1E-03	7.0E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.069 U	6.9E-02	2.3E-09	0.043 UR	4.3E-02	1.4E-09	0.06 U	6.0E-02	2.0E-09	0.098 UJ	9.8E-02	3.3E-09	0.25 J	2.5E-01	8.3E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.069 U	6.9E-03	2.3E-10	0.043 UR	4.3E-03	1.4E-10	0.06 U	6.0E-03	2.0E-10	0.098 UJ	9.8E-03	3.3E-10	0.48 J	4.8E-02	1.6E-09
Totals																	
Total PAH Risk	-		-	-	5.3E-09	-	-	3.3E-09	-	-	4.6E-09	-	-	7.5E-09	-	-	4.0E-08
Sum BaP Equivalent	-		-	1.6E-01	5.3E-09	-	9.9E-02	3.3E-09	-	1.4E-01	4.6E-09	-	2.3E-01	7.5E-09	-	1.2E+00	4.0E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-24			SS-25			SS-29			SS-32			SS-34		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	1.4	1.4E-01	4.7E-09	0.059 U	5.9E-03	2.0E-10	0.059 U	5.9E-03	2.0E-10	0.051 U	5.1E-03	1.7E-10	0.04 U	4.0E-03	1.3E-10
Benzo(a)pyrene	1.0E+00	3.0E+01	0.32 J	3.2E-01	1.1E-08	0.059 U	5.9E-02	2.0E-09	0.059 U	5.9E-02	2.0E-09	0.051 U	5.1E-02	1.7E-09	0.04 U	4.0E-02	1.3E-09
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.85	8.5E-02	2.8E-09	0.059 U	5.9E-03	2.0E-10	0.059 U	5.9E-03	2.0E-10	0.051 U	5.1E-03	1.7E-10	0.04 U	4.0E-03	1.3E-10
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.33 J	3.3E-03	1.1E-10	0.059 U	5.9E-04	2.0E-11	0.059 U	5.9E-04	2.0E-11	0.051 U	5.1E-04	1.7E-11	0.04 U	4.0E-04	1.3E-11
Chrysene	1.0E-03	3.0E+04	2.2	2.2E-03	7.3E-11	0.059 U	5.9E-05	2.0E-12	0.059 U	5.9E-05	2.0E-12	0.051 U	5.1E-05	1.7E-12	0.04 U	4.0E-05	1.3E-12
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.17 J	1.7E-01	5.7E-09	0.059 U	5.9E-02	2.0E-09	0.059 U	5.9E-02	2.0E-09	0.051 U	5.1E-02	1.7E-09	0.04 U	4.0E-02	1.3E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.27 J	2.7E-02	9.0E-10	0.059 U	5.9E-03	2.0E-10	0.059 U	5.9E-03	2.0E-10	0.051 U	5.1E-03	1.7E-10	0.04 U	4.0E-03	1.3E-10
Totals																	
Total PAH Risk	-		-	-	2.5E-08	-	-	4.5E-09	-	-	4.5E-09	-	-	3.9E-09	-	-	3.1E-09
Sum BaP Equivalent	-		-	7.5E-01	2.5E-08	-	1.4E-01	4.5E-09	-	1.4E-01	4.5E-09	-	1.2E-01	3.9E-09	-	9.2E-02	3.1E-09

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-38			SS-40			SS-41			SS-42			SS-44		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.048 UR	4.8E-03	1.6E-10	0.14 J	1.4E-02	4.7E-10	0.069 UR	6.9E-03	2.3E-10	0.063 U	6.3E-03	2.1E-10	0.053 U	5.3E-03	1.8E-10
Benzo(a)pyrene	1.0E+00	3.0E+01	0.048 UR	4.8E-02	1.6E-09	0.061 U	6.1E-02	2.0E-09	0.069 UR	6.9E-02	2.3E-09	0.063 U	6.3E-02	2.1E-09	0.053 U	5.3E-02	1.8E-09
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.048 UR	4.8E-03	1.6E-10	0.061 U	6.1E-03	2.0E-10	0.069 UR	6.9E-03	2.3E-10	0.063 U	6.3E-03	2.1E-10	0.053 U	5.3E-03	1.8E-10
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.048 UR	4.8E-04	1.6E-11	0.061 U	6.1E-04	2.0E-11	0.069 UR	6.9E-04	2.3E-11	0.063 U	6.3E-04	2.1E-11	0.053 U	5.3E-04	1.8E-11
Chrysene	1.0E-03	3.0E+04	0.048 UR	4.8E-05	1.6E-12	0.13 J	1.3E-04	4.3E-12	0.069 UR	6.9E-05	2.3E-12	0.063 U	6.3E-05	2.1E-12	0.053 U	5.3E-05	1.8E-12
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.048 UR	4.8E-02	1.6E-09	0.061 U	6.1E-02	2.0E-09	0.069 UR	6.9E-02	2.3E-09	0.063 U	6.3E-02	2.1E-09	0.053 U	5.3E-02	1.8E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.048 UR	4.8E-03	1.6E-10	0.061 U	6.1E-03	2.0E-10	0.069 UR	6.9E-03	2.3E-10	0.063 U	6.3E-03	2.1E-10	0.053 U	5.3E-03	1.8E-10
Totals																	
Total PAH Risk	-		-	-	3.7E-09	-	-	5.0E-09	-	-	5.3E-09	-	-	4.8E-09	-	-	4.1E-09
Sum BaP Equivalent	-		-	1.1E-01	3.7E-09	-	1.5E-01	5.0E-09	-	1.6E-01	5.3E-09	-	1.5E-01	4.8E-09	-	1.2E-01	4.1E-09

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-46			SS-47			SS-49			SS-53			SS-57		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.046 UJ	4.6E-03	1.5E-10	0.047 UR	4.7E-03	1.6E-10	0.041 J	4.1E-03	1.4E-10	0.047 U	4.7E-03	1.6E-10	0.04 U	4.0E-03	1.3E-10
Benzo(a)pyrene	1.0E+00	3.0E+01	0.046 UJ	4.6E-02	1.5E-09	0.047 UR	4.7E-02	1.6E-09	0.047 J	4.7E-02	1.6E-09	0.047 U	4.7E-02	1.6E-09	0.04 U	4.0E-02	1.3E-09
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.046 UJ	4.6E-03	1.5E-10	0.047 UR	4.7E-03	1.6E-10	0.09 J	9.0E-03	3.0E-10	0.047 U	4.7E-03	1.6E-10	0.04 U	4.0E-03	1.3E-10
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.046 UJ	4.6E-04	1.5E-11	0.047 UR	4.7E-04	1.6E-11	0.037 U	3.7E-04	1.2E-11	0.047 U	4.7E-04	1.6E-11	0.04 U	4.0E-04	1.3E-11
Chrysene	1.0E-03	3.0E+04	0.046 UJ	4.6E-05	1.5E-12	0.047 UR	4.7E-05	1.6E-12	0.062 J	6.2E-05	2.1E-12	0.047 U	4.7E-05	1.6E-12	0.04 U	4.0E-05	1.3E-12
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.046 UJ	4.6E-02	1.5E-09	0.047 UR	4.7E-02	1.6E-09	0.037 U	3.7E-02	1.2E-09	0.047 U	4.7E-02	1.6E-09	0.04 U	4.0E-02	1.3E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.046 UJ	4.6E-03	1.5E-10	0.047 UR	4.7E-03	1.6E-10	0.042 J	4.2E-03	1.4E-10	0.047 U	4.7E-03	1.6E-10	0.04 U	4.0E-03	1.3E-10
Totals																	
Total PAH Risk	-		-	-	3.5E-09	-	-	3.6E-09	-	-	3.4E-09	-	-	3.6E-09	-	-	3.1E-09
Sum BaP Equivalent	-		-	1.1E-01	3.5E-09	-	1.1E-01	3.6E-09	-	1.0E-01	3.4E-09	-	1.1E-01	3.6E-09	-	9.2E-02	3.1E-09

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-5:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(0 - 3 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-59			TP-120		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs								
Benzo(a)anthracene	1.0E-01	3.0E+02	0.18 J	1.8E-02	6.0E-10	0.56	5.6E-02	1.9E-09
Benzo(a)pyrene	1.0E+00	3.0E+01	0.16 J	1.6E-01	5.3E-09	0.44	4.4E-01	1.5E-08
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.25 J	2.5E-02	8.3E-10	0.74	7.4E-02	2.5E-09
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.085 J	8.5E-04	2.8E-11	0.28	2.8E-03	9.3E-11
Chrysene	1.0E-03	3.0E+04	0.26 J	2.6E-04	8.6E-12	0.68	6.8E-04	2.3E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.042 U	4.2E-02	1.4E-09	NA	-	-
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.13 J	1.3E-02	4.3E-10	NA	-	-
Totals								
Total PAH Risk	-		-	-	8.6E-09	-	-	1.9E-08
Sum BaP Equivalent	-		-	2.6E-01	8.6E-09	-	5.7E-01	1.9E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
PRG = Preliminary Remediation Goal
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			A-03			B-03			B-05			C-02			C-03		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.035 U	3.5E-03	1.2E-10	0.4 U	4.0E-02	1.3E-09	0.11 J	1.1E-02	3.7E-10	0.36 U	3.6E-02	1.2E-09	0.042 U	4.2E-03	1.4E-10
Benzo(a)pyrene	1.0E+00	3.0E+01	0.035 U	3.5E-02	1.2E-09	0.4 U	4.0E-01	1.3E-08	0.076 J	7.6E-02	2.5E-09	0.36 U	3.6E-01	1.2E-08	0.042 U	4.2E-02	1.4E-09
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.035 U	3.5E-03	1.2E-10	0.4 U	4.0E-02	1.3E-09	0.13 J	1.3E-02	4.3E-10	0.36 U	3.6E-02	1.2E-09	0.068 J	6.8E-03	2.3E-10
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.035 U	3.5E-04	1.2E-11	0.4 U	4.0E-03	1.3E-10	0.56 U	5.6E-03	1.9E-10	0.36 U	3.6E-03	1.2E-10	0.042 UJ	4.2E-04	1.4E-11
Chrysene	1.0E-03	3.0E+04	0.035 U	3.5E-05	1.2E-12	0.4 U	4.0E-04	1.3E-11	0.17 J	1.7E-04	5.7E-12	0.36 U	3.6E-04	1.2E-11	0.05 J	5.0E-05	1.7E-12
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.035 U	3.5E-02	1.2E-09	0.4 U	4.0E-01	1.3E-08	0.56 U	5.6E-01	1.9E-08	0.36 U	3.6E-01	1.2E-08	0.042 U	4.2E-02	1.4E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.035 U	3.5E-03	1.2E-10	0.4 U	4.0E-02	1.3E-09	0.56 U	5.6E-02	1.9E-09	0.36 U	3.6E-02	1.2E-09	0.042 U	4.2E-03	1.4E-10
Totals																	
Total PAH Risk	-		-	-	2.7E-09	-	-	3.1E-08	-	-	2.4E-08	-	-	2.8E-08	-	-	3.3E-09
Sum BaP Equivalent	-		-	8.1E-02	2.7E-09	-	9.2E-01	3.1E-08	-	7.2E-01	2.4E-08	-	8.3E-01	2.8E-08	-	1.0E-01	3.3E-09

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			C-04			C-05			D-02			D-03			E-04		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.042 U	4.2E-03	1.4E-10	0.1 J	1.0E-02	3.3E-10	0.4 U	4.0E-02	1.3E-09	0.039 UJ	3.9E-03	1.3E-10	0.11 J	1.1E-02	3.7E-10
Benzo(a)pyrene	1.0E+00	3.0E+01	0.042 U	4.2E-02	1.4E-09	0.079 J	7.9E-02	2.6E-09	0.4 U	4.0E-01	1.3E-08	0.039 UJ	3.9E-02	1.3E-09	0.16 J	1.6E-01	5.3E-09
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.042 U	4.2E-03	1.4E-10	0.13 J	1.3E-02	4.3E-10	0.4 U	4.0E-02	1.3E-09	0.039 UJ	3.9E-03	1.3E-10	0.48 J	4.8E-02	1.6E-09
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.042 U	4.2E-04	1.4E-11	0.046 J	4.6E-04	1.5E-11	0.4 U	4.0E-03	1.3E-10	0.039 UJ	3.9E-04	1.3E-11	0.18 J	1.8E-03	6.0E-11
Chrysene	1.0E-03	3.0E+04	0.042 U	4.2E-05	1.4E-12	0.13 J	1.3E-04	4.3E-12	0.4 U	4.0E-04	1.3E-11	0.039 UJ	3.9E-05	1.3E-12	0.21 J	2.1E-04	7.0E-12
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.042 U	4.2E-02	1.4E-09	0.37 U	3.7E-01	1.2E-08	0.4 U	4.0E-01	1.3E-08	0.039 UJ	3.9E-02	1.3E-09	0.038 UJ	3.8E-02	1.3E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.042 U	4.2E-03	1.4E-10	0.049 J	4.9E-03	1.6E-10	0.4 U	4.0E-02	1.3E-09	0.039 UJ	3.9E-03	1.3E-10	0.17 J	1.7E-02	5.7E-10
Totals																	
Total PAH Risk	-		-	-	3.2E-09	-	-	1.6E-08	-	-	3.1E-08	-	-	3.0E-09	-	-	9.2E-09
Sum BaP Equivalent	-		-	9.7E-02	3.2E-09	-	4.8E-01	1.6E-08	-	9.2E-01	3.1E-08	-	9.0E-02	3.0E-09	-	2.8E-01	9.2E-09

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			E-05			F-03			G-07			H-04			H-06		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	1.1	1.1E-01	3.7E-09	0.42 U	4.2E-02	1.4E-09	0.35 J	3.5E-02	1.2E-09	0.41 U	4.1E-02	1.4E-09	0.41 U	4.1E-02	1.4E-09
Benzo(a)pyrene	1.0E+00	3.0E+01	0.79	7.9E-01	2.6E-08	0.42 U	4.2E-01	1.4E-08	0.23 J	2.3E-01	7.6E-09	0.41 U	4.1E-01	1.4E-08	0.41 U	4.1E-01	1.4E-08
Benzo(b)fluoranthene	1.0E-01	3.0E+02	1.2	1.2E-01	4.0E-09	0.42 U	4.2E-02	1.4E-09	0.28 J	2.8E-02	9.3E-10	0.41 U	4.1E-02	1.4E-09	0.41 U	4.1E-02	1.4E-09
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.46 J	4.6E-03	1.5E-10	0.42 U	4.2E-03	1.4E-10	0.31 J	3.1E-03	1.0E-10	0.41 U	4.1E-03	1.4E-10	0.41 U	4.1E-03	1.4E-10
Chrysene	1.0E-03	3.0E+04	1.1	1.1E-03	3.7E-11	0.42 U	4.2E-04	1.4E-11	0.44	4.4E-04	1.5E-11	0.41 U	4.1E-04	1.4E-11	0.41 U	4.1E-04	1.4E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.42 U	4.2E-01	1.4E-08	0.42 U	4.2E-01	1.4E-08	0.032 J	3.2E-02	1.1E-09	0.41 U	4.1E-01	1.4E-08	0.41 U	4.1E-01	1.4E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.57	5.7E-02	1.9E-09	0.42 U	4.2E-02	1.4E-09	0.16 J	1.6E-02	5.3E-10	0.41 U	4.1E-02	1.4E-09	0.41 U	4.1E-02	1.4E-09
Totals																	
Total PAH Risk	-		-	-	5.0E-08	-	-	3.2E-08	-	-	1.1E-08	-	-	3.1E-08	-	-	3.1E-08
Sum BaP Equivalent	-		-	1.5E+00	5.0E-08	-	9.7E-01	3.2E-08	-	3.4E-01	1.1E-08	-	9.5E-01	3.1E-08	-	9.5E-01	3.1E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
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PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			H-07			I-07			I-09			J-01			J-08		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.041 U	4.1E-03	1.4E-10	0.39 UJ	3.9E-02	1.3E-09	0.38 U	3.8E-02	1.3E-09	0.37 U	3.7E-02	1.2E-09	0.044 UJ	4.4E-03	1.5E-10
Benzo(a)pyrene	1.0E+00	3.0E+01	0.041 U	4.1E-02	1.4E-09	0.39 UJ	3.9E-01	1.3E-08	0.38 U	3.8E-01	1.3E-08	0.37 U	3.7E-01	1.2E-08	0.044 UJ	4.4E-02	1.5E-09
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.041 U	4.1E-03	1.4E-10	0.39 UJ	3.9E-02	1.3E-09	0.38 U	3.8E-02	1.3E-09	0.37 U	3.7E-02	1.2E-09	0.044 UJ	4.4E-03	1.5E-10
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.041 U	4.1E-04	1.4E-11	0.39 UJ	3.9E-03	1.3E-10	0.38 U	3.8E-03	1.3E-10	0.37 U	3.7E-03	1.2E-10	0.044 UJ	4.4E-04	1.5E-11
Chrysene	1.0E-03	3.0E+04	0.041 U	4.1E-05	1.4E-12	0.39 UJ	3.9E-04	1.3E-11	0.38 U	3.8E-04	1.3E-11	0.37 U	3.7E-04	1.2E-11	0.044 UJ	4.4E-05	1.5E-12
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.041 U	4.1E-02	1.4E-09	0.39 UJ	3.9E-01	1.3E-08	0.38 U	3.8E-01	1.3E-08	0.37 U	3.7E-01	1.2E-08	0.044 UJ	4.4E-02	1.5E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.041 U	4.1E-03	1.4E-10	0.39 UJ	3.9E-02	1.3E-09	0.38 U	3.8E-02	1.3E-09	0.37 U	3.7E-02	1.2E-09	0.044 UJ	4.4E-03	1.5E-10
Totals																	
Total PAH Risk	-		-	-	3.1E-09	-	-	3.0E-08	-	-	2.9E-08	-	-	2.8E-08	-	-	3.4E-09
Sum BaP Equivalent	-		-	9.5E-02	3.1E-09	-	9.0E-01	3.0E-08	-	8.8E-01	2.9E-08	-	8.6E-01	2.8E-08	-	1.0E-01	3.4E-09

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			J-09			J-10			J-11			J-13			K-05		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.055 UJ	5.5E-03	1.8E-10	0.44 U	4.4E-02	1.5E-09	0.59	5.9E-02	2.0E-09	1.6 U	1.6E-01	5.3E-09	0.055 J	5.5E-03	1.8E-10
Benzo(a)pyrene	1.0E+00	3.0E+01	0.055 UJ	5.5E-02	1.8E-09	0.44 U	4.4E-01	1.5E-08	0.59	5.9E-01	2.0E-08	1.6 U	1.6E+00	5.3E-08	0.061 J	6.1E-02	2.0E-09
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.055 UJ	5.5E-03	1.8E-10	0.44 U	4.4E-02	1.5E-09	0.59	5.9E-02	2.0E-09	1.6 U	1.6E-01	5.3E-09	0.14 J	1.4E-02	4.7E-10
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.055 UJ	5.5E-04	1.8E-11	0.44 U	4.4E-03	1.5E-10	0.59	5.9E-03	2.0E-10	1.6 U	1.6E-02	5.3E-10	0.045 U	4.5E-04	1.5E-11
Chrysene	1.0E-03	3.0E+04	0.055 UJ	5.5E-05	1.8E-12	0.44 U	4.4E-04	1.5E-11	0.59	5.9E-04	2.0E-11	1.6 U	1.6E-03	5.3E-11	0.085 J	8.5E-05	2.8E-12
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.055 UJ	5.5E-02	1.8E-09	0.44 U	4.4E-01	1.5E-08	0.59	5.9E-01	2.0E-08	1.6 U	1.6E+00	5.3E-08	0.045 U	4.5E-02	1.5E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.055 UJ	5.5E-03	1.8E-10	0.44 U	4.4E-02	1.5E-09	0.59	5.9E-02	2.0E-09	1.6 U	1.6E-01	5.3E-09	0.045 U	4.5E-03	1.5E-10
Totals																	
Total PAH Risk	-		-	-	4.2E-09	-	-	3.4E-08	-	-	4.5E-08	-	-	1.2E-07	-	-	4.3E-09
Sum BaP Equivalent	-		-	1.3E-01	4.2E-09	-	1.0E+00	3.4E-08	-	1.4E+00	4.5E-08	-	3.7E+00	1.2E-07	-	1.3E-01	4.3E-09

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			L-02			L-03			L-04			M-01			M-02		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.2 J	2.0E-02	6.6E-10	0.34 U	3.4E-02	1.1E-09	0.22 J	2.2E-02	7.3E-10	0.068 U	6.8E-03	2.3E-10	0.36 J	3.6E-02	1.2E-09
Benzo(a)pyrene	1.0E+00	3.0E+01	0.11 J	1.1E-01	3.7E-09	0.34 U	3.4E-01	1.1E-08	0.13 J	1.3E-01	4.3E-09	0.068 U	6.8E-02	2.3E-09	0.38 J	3.8E-01	1.3E-08
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.17 J	1.7E-02	5.7E-10	0.34 U	3.4E-02	1.1E-09	0.16 J	1.6E-02	5.3E-10	0.068 U	6.8E-03	2.3E-10	0.58	5.8E-02	1.9E-09
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.15 J	1.5E-03	5.0E-11	0.34 U	3.4E-03	1.1E-10	0.15 J	1.5E-03	5.0E-11	0.068 U	6.8E-04	2.3E-11	0.22 J	2.2E-03	7.3E-11
Chrysene	1.0E-03	3.0E+04	0.26 J	2.6E-04	8.6E-12	0.34 U	3.4E-04	1.1E-11	0.3 J	3.0E-04	1.0E-11	0.068 U	6.8E-05	2.3E-12	0.47	4.7E-04	1.6E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.39 U	3.9E-01	1.3E-08	0.34 U	3.4E-01	1.1E-08	0.041 U	4.1E-02	1.4E-09	0.068 U	6.8E-02	2.3E-09	0.092 J	9.2E-02	3.1E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.066 J	6.6E-03	2.2E-10	0.34 U	3.4E-02	1.1E-09	0.051 J	5.1E-03	1.7E-10	0.068 U	6.8E-03	2.3E-10	0.27 J	2.7E-02	9.0E-10
Totals																	
Total PAH Risk	-		-	-	1.8E-08	-	-	2.6E-08	-	-	7.2E-09	-	-	5.2E-09	-	-	2.0E-08
Sum BaP Equivalent	-		-	5.5E-01	1.8E-08	-	7.9E-01	2.6E-08	-	2.2E-01	7.2E-09	-	1.6E-01	5.2E-09	-	6.0E-01	2.0E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
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HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			M-04			SB-09			SS-02			SS-03			SS-17A		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.28 J	2.8E-02	9.3E-10	0.4 U	4.0E-02	1.3E-09	0.045 U	4.5E-03	1.5E-10	1.2	1.2E-01	4.0E-09	0.47 J	4.7E-02	1.6E-09
Benzo(a)pyrene	1.0E+00	3.0E+01	0.27 J	2.7E-01	9.0E-09	0.4 U	4.0E-01	1.3E-08	0.045 U	4.5E-02	1.5E-09	0.31 J	3.1E-01	1.0E-08	0.054 U	5.4E-02	1.8E-09
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.41 J	4.1E-02	1.4E-09	0.4 U	4.0E-02	1.3E-09	0.053 J	5.3E-03	1.8E-10	0.71	7.1E-02	2.4E-09	0.083 J	8.3E-03	2.8E-10
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.14 J	1.4E-03	4.7E-11	0.4 U	4.0E-03	1.3E-10	0.045 U	4.5E-04	1.5E-11	0.21 J	2.1E-03	7.0E-11	0.054 U	5.4E-04	1.8E-11
Chrysene	1.0E-03	3.0E+04	0.32 J	3.2E-04	1.1E-11	0.4 U	4.0E-04	1.3E-11	0.06 J	6.0E-05	2.0E-12	1.6	1.6E-03	5.3E-11	0.46 J	4.6E-04	1.5E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.057 J	5.7E-02	1.9E-09	NA	-	-	0.045 U	4.5E-02	1.5E-09	0.081 J	8.1E-02	2.7E-09	0.054 U	5.4E-02	1.8E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.15 J	1.5E-02	5.0E-10	0.4 U	4.0E-02	1.3E-09	0.045 U	4.5E-03	1.5E-10	0.15 J	1.5E-02	5.0E-10	0.054 U	5.4E-03	1.8E-10
Totals																	
Total PAH Risk	-		-	-	1.4E-08	-	-	1.7E-08	-	-	3.5E-09	-	-	2.0E-08	-	-	5.6E-09
Sum BaP Equivalent	-		-	4.1E-01	1.4E-08	-	5.2E-01	1.7E-08	-	1.0E-01	3.5E-09	-	6.0E-01	2.0E-08	-	1.7E-01	5.6E-09

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-50A			SS-51A			TP-100			TP-105			TP-107		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.15 J	1.5E-02	5.0E-10	0.051 U	5.1E-03	1.7E-10	0.4 U	4.0E-02	1.3E-09	0.4 U	4.0E-02	1.3E-09	0.39 U	3.9E-02	1.3E-09
Benzo(a)pyrene	1.0E+00	3.0E+01	0.11 J	1.1E-01	3.7E-09	0.051 U	5.1E-02	1.7E-09	0.4 U	4.0E-01	1.3E-08	0.4 U	4.0E-01	1.3E-08	0.39 U	3.9E-01	1.3E-08
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.062 U	6.2E-03	2.1E-10	0.051 U	5.1E-03	1.7E-10	0.4 U	4.0E-02	1.3E-09	0.4 U	4.0E-02	1.3E-09	0.39 U	3.9E-02	1.3E-09
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.062 U	6.2E-04	2.1E-11	0.051 U	5.1E-04	1.7E-11	0.4 U	4.0E-03	1.3E-10	0.4 U	4.0E-03	1.3E-10	0.39 U	3.9E-03	1.3E-10
Chrysene	1.0E-03	3.0E+04	0.25 J	2.5E-04	8.3E-12	0.051 U	5.1E-05	1.7E-12	0.4 U	4.0E-04	1.3E-11	0.4 U	4.0E-04	1.3E-11	0.39 U	3.9E-04	1.3E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	0.062 U	6.2E-02	2.1E-09	0.051 U	5.1E-02	1.7E-09	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.071 J	7.1E-03	2.4E-10	0.051 U	5.1E-03	1.7E-10	0.4 U	4.0E-02	1.3E-09	0.4 U	4.0E-02	1.3E-09	0.39 U	3.9E-02	1.3E-09
Totals																	
Total PAH Risk	-		-	-	6.7E-09	-	-	3.9E-09	-	-	1.7E-08	-	-	1.7E-08	-	-	1.7E-08
Sum BaP Equivalent	-		-	2.0E-01	6.7E-09	-	1.2E-01	3.9E-09	-	5.2E-01	1.7E-08	-	5.2E-01	1.7E-08	-	5.1E-01	1.7E-08

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
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PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			TP-112			TP-113			TP-114			TP-116			TP-125		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	3.0E+02	0.39 U	3.9E-02	1.3E-09	0.49 U	4.9E-02	1.6E-09	0.44	4.4E-02	1.5E-09	0.22 U	2.2E-02	7.3E-10	0.2 U	2.0E-02	6.6E-10
Benzo(a)pyrene	1.0E+00	3.0E+01	0.39 U	3.9E-01	1.3E-08	0.49 U	4.9E-01	1.6E-08	0.43 J	4.3E-01	1.4E-08	0.22 U	2.2E-01	7.3E-09	0.2 U	2.0E-01	6.6E-09
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.39 U	3.9E-02	1.3E-09	0.49 U	4.9E-02	1.6E-09	0.6	6.0E-02	2.0E-09	0.22 U	2.2E-02	7.3E-10	0.2 U	2.0E-02	6.6E-10
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.39 U	3.9E-03	1.3E-10	0.49 U	4.9E-03	1.6E-10	0.49	4.9E-03	1.6E-10	0.22 U	2.2E-03	7.3E-11	0.2 U	2.0E-03	6.7E-11
Chrysene	1.0E-03	3.0E+04	0.39 U	3.9E-04	1.3E-11	0.49 U	4.9E-04	1.6E-11	0.58	5.8E-04	1.9E-11	0.22 U	2.2E-04	7.3E-12	0.2 U	2.0E-04	6.7E-12
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	NA	-	-	NA	-	-	NA	-	-	NA	-	-	NA	-	-
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	0.39 U	3.9E-02	1.3E-09	0.49 U	4.9E-02	1.6E-09	0.35 J	3.5E-02	1.2E-09	NA	-	-	NA	-	-
Totals																	
Total PAH Risk	-		-	-	1.7E-08	-	-	2.1E-08	-	-	1.9E-08	-	-	8.9E-09	-	-	8.1E-09
Sum BaP Equivalent	-		-	5.1E-01	1.7E-08	-	6.4E-01	2.1E-08	-	5.7E-01	1.9E-08	-	2.7E-01	8.9E-09	-	2.4E-01	8.1E-09

Notes:

Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-6:
Risks and Hazards for Future Utility Worker Receptor by Sample Location
(3 - 10 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			TP-128			W-13(S)			W-18(S)			W-19(S)		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs														
Benzo(a)anthracene	1.0E-01	3.0E+02	0.96 U	9.6E-02	3.2E-09	0.042 U	4.2E-03	1.4E-10	0.16 J	1.6E-02	5.3E-10	0.75	7.5E-02	2.5E-09
Benzo(a)pyrene	1.0E+00	3.0E+01	0.96 U	9.6E-01	3.2E-08	0.042 U	4.2E-02	1.4E-09	0.14 J	1.4E-01	4.7E-09	0.5	5.0E-01	1.7E-08
Benzo(b)fluoranthene	1.0E-01	3.0E+02	0.96 U	9.6E-02	3.2E-09	0.042 U	4.2E-03	1.4E-10	0.23 J	2.3E-02	7.6E-10	0.86	8.6E-02	2.9E-09
Benzo(k)fluoranthene	1.0E-02	3.0E+03	0.96 U	9.6E-03	3.2E-10	0.042 U	4.2E-04	1.4E-11	0.083 J	8.3E-04	2.8E-11	0.34 J	3.4E-03	1.1E-10
Chrysene	1.0E-03	3.0E+04	0.96 U	9.6E-04	3.2E-11	0.042 U	4.2E-05	1.4E-12	0.19 J	1.9E-04	6.3E-12	0.92	9.2E-04	3.1E-11
Dibenz(a,h)anthracene	1.0E+00	3.0E+01	NA	-	-	0.042 U	4.2E-02	1.4E-09	0.042 UJ	4.2E-02	1.4E-09	0.12 J	1.2E-01	4.0E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	3.0E+02	NA	-	-	0.042 U	4.2E-03	1.4E-10	0.12 J	1.2E-02	4.0E-10	0.41	4.1E-02	1.4E-09
Totals														
Total PAH Risk	-		-	-	3.9E-08	-	-	3.2E-09	-	-	7.8E-09	-	-	2.7E-08
Sum BaP Equivalent	-		-	1.2E+00	3.9E-08	-	9.7E-02	3.2E-09	-	2.3E-01	7.8E-09	-	8.3E-01	2.7E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
UR = Compound was analyzed for but not detected. The result was considered unusable during the quality assurance review.
NA = Compund not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
mg/kg = milligrams per kilogram

Table C2-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			D-06			D-07			G-01			G-02			I-02		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	4.5E+01	0.42	4.2E-02	9.4E-09	0.23 J	2.3E-02	5.2E-09	0.37 U	3.7E-02	8.3E-09	0.39 U	3.9E-02	8.8E-09	0.4 U	4.0E-02	9.0E-09
Benzo(a)pyrene	1.0E+00	4.5E+00	0.3 J	3.0E-01	6.7E-08	0.17 J	1.7E-01	3.8E-08	0.37 U	3.7E-01	8.3E-08	0.39 U	3.9E-01	8.8E-08	0.4 U	4.0E-01	9.0E-08
Benzo(b)fluoranthene	1.0E-01	4.5E+01	0.76	7.6E-02	1.7E-08	0.4 J	4.0E-02	9.0E-09	0.37 U	3.7E-02	8.3E-09	0.39 U	3.9E-02	8.8E-09	0.4 U	4.0E-02	9.0E-09
Benzo(k)fluoranthene	1.0E-02	4.5E+02	0.25 J	2.5E-03	5.6E-10	0.13 J	1.3E-03	2.9E-10	0.37 U	3.7E-03	8.3E-10	0.39 U	3.9E-03	8.8E-10	0.4 U	4.0E-03	9.0E-10
Chrysene	1.0E-03	4.5E+03	0.54	5.4E-04	1.2E-10	0.4 J	4.0E-04	9.0E-11	0.37 UJ	3.7E-04	8.3E-11	0.39 U	3.9E-04	8.8E-11	0.4 U	4.0E-04	9.0E-11
Dibenz(a,h)anthracene	1.0E+00	4.5E+00	0.047 J	4.7E-02	1.1E-08	0.042 U	4.2E-02	9.4E-09	0.37 U	3.7E-01	8.3E-08	0.39 U	3.9E-01	8.8E-08	0.4 U	4.0E-01	9.0E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	4.5E+01	0.27 J	2.7E-02	6.1E-09	0.14 J	1.4E-02	3.1E-09	0.37 U	3.7E-02	8.3E-09	0.39 U	3.9E-02	8.8E-09	0.4 U	4.0E-02	9.0E-09
Totals																	
Total PAH Risk	-		-	-	1.1E-07	-	-	6.5E-08	-	-	1.9E-07	-	-	2.0E-07	-	-	2.1E-07
Sum BaP Equivalent	-		-	5.0E-01	1.1E-07	-	2.9E-01	6.5E-08	-	8.6E-01	1.9E-07	-	9.0E-01	2.0E-07	-	9.2E-01	2.1E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
NA = Compound not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
BaP = Benzo(a)pyrene
mg/kg = milligrams per kilogram

Table C2-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			I-03			J-02			J-07			J-13			SL-D-1		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	4.5E+01	0.39 U	3.9E-02	8.8E-09	0.35 U	3.5E-02	7.9E-09	0.036 UJ	3.6E-03	8.1E-10	0.051 UJ	5.1E-03	1.1E-09	0.61	6.1E-02	1.4E-08
Benzo(a)pyrene	1.0E+00	4.5E+00	0.39 U	3.9E-01	8.8E-08	0.35 U	3.5E-01	7.9E-08	0.036 UJ	3.6E-02	8.1E-09	0.051 UJ	5.1E-02	1.1E-08	0.44 J	4.4E-01	9.9E-08
Benzo(b)fluoranthene	1.0E-01	4.5E+01	0.39 U	3.9E-02	8.8E-09	0.35 U	3.5E-02	7.9E-09	0.036 UJ	3.6E-03	8.1E-10	0.051 UJ	5.1E-03	1.1E-09	0.84	8.4E-02	1.9E-08
Benzo(k)fluoranthene	1.0E-02	4.5E+02	0.39 U	3.9E-03	8.8E-10	0.35 U	3.5E-03	7.9E-10	0.036 UJ	3.6E-04	8.1E-11	0.051 UJ	5.1E-04	1.1E-10	0.2 J	2.0E-03	4.5E-10
Chrysene	1.0E-03	4.5E+03	0.39 U	3.9E-04	8.8E-11	0.35 U	3.5E-04	7.9E-11	0.036 UJ	3.6E-05	8.1E-12	0.051 UJ	5.1E-05	1.1E-11	0.95	9.5E-04	2.1E-10
Dibenz(a,h)anthracene	1.0E+00	4.5E+00	0.39 U	3.9E-01	8.8E-08	0.35 U	3.5E-01	7.9E-08	0.036 UJ	3.6E-02	8.1E-09	0.051 UJ	5.1E-02	1.1E-08	0.11 J	1.1E-01	2.5E-08
Indeno(1,2,3-cd)pyrene	1.0E-01	4.5E+01	0.39 U	3.9E-02	8.8E-09	0.35 U	3.5E-02	7.9E-09	0.036 UJ	3.6E-03	8.1E-10	0.051 UJ	5.1E-03	1.1E-09	0.26 J	2.6E-02	5.8E-09
Totals																	
Total PAH Risk	-		-	-	2.0E-07	-	-	1.8E-07	-	-	1.9E-08	-	-	2.6E-08	-	-	1.6E-07
Sum BaP Equivalent	-		-	9.0E-01	2.0E-07	-	8.1E-01	1.8E-07	-	8.3E-02	1.9E-08	-	1.2E-01	2.6E-08	-	7.2E-01	1.6E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
NA = Compound not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
BaP = Benzo(a)pyrene
mg/kg = milligrams per kilogram

Table C2-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SL-D-2			SS-05			SS-09			SS-12			SS-13		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs																	
Benzo(a)anthracene	1.0E-01	4.5E+01	0.43 J	4.3E-02	9.7E-09	0.1 J	1.0E-02	2.2E-09	0.15 J	1.5E-02	3.4E-09	0.073 J	7.3E-03	1.6E-09	4.6	4.6E-01	1.0E-07
Benzo(a)pyrene	1.0E+00	4.5E+00	0.25 J	2.5E-01	5.6E-08	0.084 J	8.4E-02	1.9E-08	0.12 J	1.2E-01	2.7E-08	0.081 J	8.1E-02	1.8E-08	4.8	4.8E+00	1.1E-06
Benzo(b)fluoranthene	1.0E-01	4.5E+01	0.57	5.7E-02	1.3E-08	0.16 J	1.6E-02	3.6E-09	0.23 J	2.3E-02	5.2E-09	0.13 J	1.3E-02	2.9E-09	8.9	8.9E-01	2.0E-07
Benzo(k)fluoranthene	1.0E-02	4.5E+02	0.17 J	1.7E-03	3.8E-10	0.053 J	5.3E-04	1.2E-10	0.089 J	8.9E-04	2.0E-10	0.041 J	4.1E-04	9.2E-11	2.8	2.8E-02	6.3E-09
Chrysene	1.0E-03	4.5E+03	0.7	7.0E-04	1.6E-10	0.14 J	1.4E-04	3.1E-11	0.25 J	2.5E-04	5.6E-11	0.088 J	8.8E-05	2.0E-11	7.8	7.8E-03	1.8E-09
Dibenz(a,h)anthracene	1.0E+00	4.5E+00	0.079 U	7.9E-02	1.8E-08	0.039 U	3.9E-02	8.8E-09	0.041 U	4.1E-02	9.2E-09	0.039 U	3.9E-02	8.8E-09	1.2	1.2E+00	2.7E-07
Indeno(1,2,3-cd)pyrene	1.0E-01	4.5E+01	0.17 J	1.7E-02	3.8E-09	0.039 U	3.9E-03	8.8E-10	0.041 U	4.1E-03	9.2E-10	0.039 U	3.9E-03	8.8E-10	3.6	3.6E-01	8.1E-08
Totals																	
Total PAH Risk	-		-	-	1.0E-07	-	-	3.4E-08	-	-	4.6E-08	-	-	3.2E-08	-	-	*1.7E-06*
Sum BaP Equivalent	-		-	4.5E-01	1.0E-07	-	1.5E-01	3.4E-08	-	2.0E-01	4.6E-08	-	1.4E-01	3.2E-08	-	7.7E+00	*1.7E-06*

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
NA = Compound not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
BaP = Benzo(a)pyrene
mg/kg = milligrams per kilogram

Table C2-7:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Former Plant Site Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-14			SS-44			SS-49		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK	Conc. (mg/kg)	BAP Equiva-lent	RISK
PAHs											
Benzo(a)anthracene	1.0E-01	4.5E+01	0.18 J	1.8E-02	4.0E-09	0.053 U	5.3E-03	1.2E-09	0.041 J	4.1E-03	9.2E-10
Benzo(a)pyrene	1.0E+00	4.5E+00	0.22 J	2.2E-01	4.9E-08	0.053 U	5.3E-02	1.2E-08	0.047 J	4.7E-02	1.1E-08
Benzo(b)fluoranthene	1.0E-01	4.5E+01	0.42	4.2E-02	9.4E-09	0.053 U	5.3E-03	1.2E-09	0.09 J	9.0E-03	2.0E-09
Benzo(k)fluoranthene	1.0E-02	4.5E+02	0.14 J	1.4E-03	3.1E-10	0.053 U	5.3E-04	1.2E-10	0.037 U	3.7E-04	8.3E-11
Chrysene	1.0E-03	4.5E+03	0.31 J	3.1E-04	7.0E-11	0.053 U	5.3E-05	1.2E-11	0.062 J	6.2E-05	1.4E-11
Dibenz(a,h)anthracene	1.0E+00	4.5E+00	0.066 J	6.6E-02	1.5E-08	0.053 U	5.3E-02	1.2E-08	0.037 U	3.7E-02	8.3E-09
Indeno(1,2,3-cd)pyrene	1.0E-01	4.5E+01	0.24 J	2.4E-02	5.4E-09	0.053 U	5.3E-03	1.2E-09	0.042 J	4.2E-03	9.4E-10
Totals											
Total PAH Risk	-		-	-	8.3E-08	-	-	2.8E-08	-	-	2.3E-08
Sum BaP Equivalent	-		-	3.7E-01	8.3E-08	-	1.2E-01	2.8E-08	-	1.0E-01	2.3E-08

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
UJ = Compound was analyzed for but not detected. The sample detection limit is an estimated value.
NA = Compound not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
BaP = Benzo(a)pyrene
mg/kg = milligrams per kilogram

Table C2-8:
Risks and Hazards for Adolescent Tresspasser Receptor by Sample Location
Bluff and Upland Portion of Southeast Area (0 - 0.5 feet below ground surface)
OU3 Human Health Risk Assessment
DePue Site
DePue, IL

HHCOPC			SS-59			TP-120		
	BAP Equivalent Factor	Cancer RSV (mg/kg)	Conc. (mg/kg)	BAP Equivalent	RISK	Conc. (mg/kg)	BAP Equivalent	RISK
PAHs								
Benzo(a)anthracene	1.0E-01	9.5E+00	0.18 J	1.8E-02	1.9E-08	0.56	5.6E-02	5.9E-08
Benzo(a)pyrene	1.0E+00	9.5E-01	0.16 J	1.6E-01	1.7E-07	0.44	4.4E-01	4.6E-07
Benzo(b)fluoranthene	1.0E-01	9.5E+00	0.25 J	2.5E-02	2.6E-08	0.74	7.4E-02	7.8E-08
Benzo(k)fluoranthene	1.0E-02	9.5E+01	0.085 J	8.5E-04	8.9E-10	0.28	2.8E-03	2.9E-09
Chrysene	1.0E-03	9.5E+02	0.26 J	2.6E-04	2.7E-10	0.68	6.8E-04	7.1E-10
Dibenz(a,h)anthracene	1.0E+00	9.5E-01	0.042 U	4.2E-02	4.4E-08	NA	-	-
Indeno(1,2,3-cd)pyrene	1.0E-01	9.5E+00	0.13 J	1.3E-02	1.4E-08	NA	-	-
Totals								
Total PAH Risk	-		-	-	2.7E-07	-	-	6.0E-07
Sum BaP Equivalent	-		-	2.6E-01	2.7E-07	-	5.7E-01	6.0E-07

Notes:
Risk:

> 1E-06 - ≤ 1E-05
> 1E-05 - ≤ 1E-04
> 1E-04

Italics = Carcinogenic risk greater than 1.E-6
U = Compound was analyzed for but not detected at or above the stated quantitation limit.
J = Estimated value
NA = Compound not included in laboratory analysis
HHCOPC = Human Health Chemicals of Potential Concern
RSV = Risk-based Screening Value
PAHs = Polycyclic Aromatic Hydrocarbons
BaP = Benzo(a)pyrene
mg/kg = milligrams per kilogram

Attachment D

Sample Concentrations Used to Produce Each Thiessen Polygon Figure

(see Microsoft Excel file 'DePue OU3 SLHHRE Attachment D' on CD)

Attachment E

Calculation of 95% UCLs using ProUCL

(see Microsoft Excel file 'DePue OU3 SLHHRE Attachment E' on CD)

The calculation of the 95% UCLs for the identified chemicals of concern, receptors, and depths is presented in the attached Microsoft Excel file, 'DePue UCL Final Evaluation.xlsx'. The sheet 'OriginalData' contains a listing of all available data for OU3. Field duplicates (FD) are highlighted in yellow with the associated field sample (FS) highlighted in light blue. The FD and FS samples were combined based upon the results of the relative percent difference (RPD) comparison to 25% as described in Section 9.6. The combined result row is highlighted in light orange. The sheet, 'Reduced', merely contains the results after the FD and FS rows have been removed leaving only the combined result row. The sheet, 'SortedByArea', sorts the data into the different areas. The remaining sheets contain the data used to estimate the 95% UCL for each of the areas and depths. Sheets beginning with 05 indicate the 0 to 6 inch bgs samples while those beginning with 3 indicate the 0 to 3 feet bgs. The area for which the samples apply are also listed in the sheet name (e.g., Bluff, FPS, etc.). Columns A through D of these sheets contain the full listing of the data while starting in column F the data is listed by chemical for input into ProUCL. The sheets ending in 'UCL' contain the ProUCL output.