Prepared for:
Sauget Area 2 Sites Group
Sauget, Illinois

Technical Memorandum

Sauget Area 2 Human Health Risk Assessment – Interim Deliverable

ENSR Corporation
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Sauget Area 2 Vapor Intrusion Human Health Risk Assessment

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HUMAN HEALTH RISK ASSESSMENT INTERIM DELVERABLE
SAUGET AREA 2, SAUGET ILLINOIS

This interim deliverable for the Human Health Risk Assessment (HHRA) is being submitted to the United States Environmental Protection Agency (USEPA) per USEPA request in a comment letter regarding the HHRA protocol dated June 5, 2007. In the letter, USEPA requested that Tables 1 through 6 of the Risk Assessment Guidance for Superfund (RAGS) Part D (USEPA, 2001a) be prepared and submitted for review. During a conference call between the USEPA and its consultant, CH2MHill, and the Sauget Area 2 Sites Group (SA2SG), and its consultant, ENSR, the SA2SG requested that the tables be prepared containing all the information required by the RAGS Part D guidance, but not using the exact formatting. In a memorandum received on March 5, 2007, USEPA agreed that the tables included in this deliverable do not need to adhere exactly to the RAGS Part D formatting requirements, but that all required information should be presented. USEPA noted that Tables 9 and 10 of the RAGS Part D guidance must be provided in the exact format specified by the guidance. These tables will be provided in the revised HHRA in the specified RAGS Part D format.

A draft HHRA was submitted to USEPA in August 2003 (ENSR, 2003), conducted in accordance with the USEPA approved HHRA Work Plan dated May 25, 2001 (URS, 2001, including September 2001 and May 2002 revised pages) and the USEPA approved Revised HHRA Protocol dated September 2007 (SA2SG, 2007). The revised HHRA will be conducted in accordance with the above and will also incorporate the additional data collected from the Sites since 2003 as part of the Supplemental RI. The Revised Protocol presents updated methods and guidance for the HHRA, where applicable. Comments on the draft Human HHRA)were received from USEPA on October 29, 2003. A conference call to discuss the comments was held on March 10, 2004. A follow-up memorandum was sent to USEPA on May 5, 2004 to clarify several items discussed during the conference call. The discussion regarding the comments was not formally documented. Therefore, the comments applicable to this technical memorandum have been incorporated based on the SA2SG understanding of the discussions regarding the comments. The remaining comments will be incorporated into the revised HHRA.

A brief description of the information presented on each table is provided in the following sections. Supporting information is provided in attachments. More detailed information on each table and on the site will be provided when the revised HHRA is submitted. Table numbers refer to the table numbers used in the RAGS Part D guidance document (USEPA, 2001a).

A Vapor Intrusion Technical Memorandum was submitted to USEPA on March 31, 2008 (ENSR, 2008). Therefore, this Interim Deliverable does not include information regarding the indoor air vapor intrusion pathway. The revised HHRA will incorporate information from this deliverable and the Vapor Intrusion Technical Memorandum. The tables presented in the Vapor Intrusion Technical Memorandum will be updated to comply with the agreed upon formatting at that time.

Table 0 Site Risk Assessment Identification Information

RAGS Part D Table 0 was not specifically requested. However, the table provides basic information regarding the site, such as contact information and location and is therefore included in this deliverable.

Table 1 Selection of Exposure Pathways Table

RAGS Part D Table 1 was previously submitted to USEPA with responses to comments on the HHRA protocol on December 1, 2006. Table 1 outlines the various exposure pathways for each scenario/receptor combination that will be evaluated in the revised HHRA. The exposure pathways were presented in the USEPA approved HHRA Work Plan (URS, 2001). Both Reasonable Maximum Exposure (RME) and Most Likely Exposure (MLE) scenarios are evaluated.

Table 2 Occurrence, Distribution and Selection of Constituents of Potential Concern

RAGS Part D Table 2 presents the selection of Constituents of Potential Concern (COPCs) for each medium. The COPC selection, or screening, process was outlined in the HHRA Work Plan (URS, 2001). A full discussion of available data is presented in the Remedial Investigation (RI) Report (URS, 2008). The screening methodology was presented in the HHRA Work Plan (URS, 2001) and the draft HHRA (ENSR, 2003). A more complete discussion will be included in the revised HHRA. The screening was conducted using the same methods as used in the draft HHRA (ENSR, 2003).

The COPC selection tables present the minimum, mean, and maximum detected concentration for each Site and medium combination. Constituents that were not detected in any sample in a given Site/Medium combination were not included. Data for samples and their duplicates were averaged before summary statistics were calculated, such that a sample and its duplicate were treated as one sample for calculation of summary statistics (including maximum detection and frequency of detection). Where both the sample and the duplicate are not detected, the resulting values are the average of the sample quantitation limits (SQLs). Where both the sample and the duplicate are detected, the resulting values are the average of the detected results. Where one of the pair is reported as not detected and the other is detected, the detected concentration was used. Note that hydrocarbon constituents collected to assess groundwater quality that lack human health dose response information are not included (i.e., methane, ethane, ethane, etc.) in the tables.

The steps used to identify COPCs are presented below. The COPC selection was conducted in accordance with the Work Plan (URS, 2001) and the Protocol (SA2SG, 2007). Maximum detected concentrations are used in the COPC selection process. The derivation of the lead screening level for soil and sediment (USEPA, 2003b) assumes average exposure to lead. Therefore, the arithmetic mean is used in comparison to lead screening levels for soil and sediment.

<u>Evaluation of Frequency of Detection and Essential Nutrient Status</u>

Any constituent detected in fewer than 5% of samples, where 20 samples are available, can be eliminated as a COPC, provided that the detections do not represent a hotspot. Based on the frequency of detection information presented in the summary statistics/screening tables, only five constituents were eliminated based on frequency of detection. These five constituents, listed below, were detected in one of 60 surface water samples collected from the Mississippi River (Table 2.4). To evaluate the concentrations of these constituents, the ratio of the detected concentration to the surface water screening level is presented below:

Constituent	Detected Concentration (ug/L)	Surface Water Screening Level* (ug/L)	Location	Ratio of Concentration: Screening Level
2,4,6-Trichlorophenol	17	10	R3AU	1.7
2,6-Dinitrotoluene	17	0.31	R4CM	54.8
MCPA	31	3.5	R5BM	8.9
MCPP	53	7	R5BM	7.6
Pentachlorophenol	1.9	1	R3AU	1.9

*Surface water screening levels and references are provided in Table A-5.

With the exception of 2,6-dinitrotoluene, the detected concentrations are less than 10 times greater than the screening levels and are therefore unlikely to represent a hotpot. The detection of 2,6-dinitrotoluene occurred at a different location than the other constituents listed above. 2,6-Dinitrotoluene was analyzed in groundwater, fish tissue, leachate, sediment, surface soil, subsurface soil, waste, and surface water samples. With the exception of the one detection in surface water, 2,6-dinitrotoluene was not detected (rejected in two groundwater samples, two sediment samples and a soil sample, and a leachate sample).

Essential nutrients (i.e., calcium, iron, magnesium, sodium and potassium) were not included as COPCs (HHRA Workplan [Appendix A], and USEPA, 1989). Because iron also has toxicity screening levels, a comparison of detected concentrations to screening levels is presented; however, iron is eliminated as a COPC as an essential nutrient.

Comparison to Background/Upgradient Data

The procedure for determining whether a constituent concentration is consistent with background follows that developed by USEPA Region 4 (USEPA, 2000). Maximum detected concentrations of constituents in environmental media at the site were compared to background levels, i.e., two times the arithmetic mean site-specific background concentration.

Data from the off-site soil samples were averaged together to derive the background concentrations. Separate background concentrations were derived for surface soil and combined soil. The majority of surface soil samples from the Sites were collected from 0 to 0.5 feet below ground surface (bgs). Several surface soil samples from the supplemental investigation were collected at depths from the ground surface to depths up to 2 feet. These samples have been treated as surface soil samples as deeper samples were collected as subsurface soil samples. The majority of subsurface soil samples were collected from 0.5 to 6 feet bgs; as with surface soil, depths varied slightly during the supplemental investigations. Continuous waste samples were collected from grade to 2 feet below the bottom of the waste material, which was between 5 and 30 feet below grade. Discrete samples were collected from various depths within the waste and analyzed for dioxins and furans and Volatile Organic Compounds (VOCs). Composite samples were collected from the top of the waste to the bottom of the waste and analyzed for metals, Polychlorinated Biphenyls (PCBs), pesticides, herbicides, and metals. The site waste sample identification numbers have the following format: medium -- site – location – depth (or COMP for composite samples), e.g., Waste-P-1-4FT or Waste-P-1-COMP, which would have been collected at location W-P-1. The waste samples are used in the evaluation of potential construction activities, which are assumed to occur to a depth of 15 feet

bgs. Because the waste interval started within the 0-15 feet bgs interval, then all of the waste analytical data, both composite and discrete samples, were included in the evaluation. Note that many of the discrete waste samples were collected below this range, where construction activities are not assumed to occur. However, because the composite samples were collected across the entire waste horizon, the discrete waste samples collected below 15 feet bgs are included in the HHRA as they represent potential concentrations of constituents in the waste. Combined soil includes surface soil, subsurface soil, and waste samples. Table A-1 presents the depth for each sample.

Data from upgradient sediment samples from the Mississippi River were averaged together to derive the upgradient concentrations for Mississippi River sediment, and data from upgradient surface water samples from the Mississippi River were averaged together to derive the upgradient concentrations for Mississippi River surface water. Surface soil background concentrations were used to evaluate the sediment data in the Site Q Ponds, which were dry at the time of sampling.

Fish fillet samples were collected from three locations in the Mississippi River – the Plume Discharge Area (PDA), the Downstream Discharge Area (DDA) and the Upstream Discharge Area (UDA). Detected concentrations were generally highest in the UDA fillet samples. The UDA data were not used as a reference dataset in the draft HHRA (ENSR, 2003) nor in this Interim Deliverable. However, in comments dated October 29, 2003, USEPA questioned whether the UDA location could be considered "background" for this study. If this dataset is used as a background dataset, fish filet in the Mississippi River will be eliminated as a medium of potential concern based on background concentrations in the UDA samples.

Each site groundwater location was matched to an off-site groundwater location based on location and physical characteristics of the site. Samples within each site groundwater location were then matched to the sample from the corresponding off-site groundwater location most closely matching the depth of the site sample, as indicated in Table A-2.

The calculation of background/upgradient concentrations is presented in Table A-3.

Constituents eliminated from further consideration as COPCs based on background concentrations include the following:

- Arsenic in surface soil: Sites O, O North, O South, R, and S (Table 2.1)
- Arsenic in combined soil: Sites O South and S (Table 2.2)
- Arsenic in sediment: Site Q South Large Pond, Site Q South Small Pond (Table 2.3)
- Thallium in surface water: Mississippi River (Table 2.4)
- Manganese in shallow groundwater: Site P (SA2-MW-2-S) and Site Q South (Table 2.6):
  AA-Q-10-18
  Piez-7S
  SA2-MW-10-S
  SA2-MW-9-S

SA-Q-13
SA-Q-15
SA-Q-16

Toxicity Screen

USEPA Region 9 Preliminary Remediation Goals (PRGs) (USEPA, 2004a) for industrial soils were used to identify COPCs in soil and sediment. Where PRGs were not available, structural similarity was used to assign a surrogate PRG. PRGs for noncarcinogens were adjusted by a factor of 0.1 to account for potential cumulative effects in the screening process. PRGs for potential carcinogens are based on a conservative target risk level of $1x10^{-6}$ and were not adjusted. The screening values are presented in Table A-4. No PRGs or other toxicity information are available for 4-bromophenyl ether, 2-nitrophenol, or methyl acetate. Therefore, as appropriate structural surrogates could not be identified, these constituents have been eliminated from further consideration.

Groundwater in Sauget Area 2 is classified as Class I by the Illinois Environmental Protection Agency (IEPA). Groundwater in Sauget Area 2 is not used as a source of drinking water and there are ordinances in effect in the Villages of Sauget and Cahokia (see information provided in Appendix O of the RI, URS, 2008) that prohibit the use of groundwater as drinking water. Therefore, groundwater will not be evaluated as a source of residential or industrial drinking water in the risk assessment. The risk assessment will evaluate potential incidental exposure to constituents in groundwater and/or leachate via volatilization of constituents to outdoor air, and via direct contact with groundwater and/or leachate during excavation activities. Groundwater/surface water screening levels are presented in Table A-5 were identified according to the following hierarchy:

1. Illinois Groundwater Quality Standards for Class I: Potable Resource Groundwater. 35 III. Adm. Code 620.410. February 2, 2002 (IEPA, 2002).

2. 2006 Edition of the Drinking Water Standards and Health Advisories. Office of Water. EPA 822-R-06-013. Maximum Contaminant Levels (USEPA, 2006a).

3. Tiered Approach to Corrective Action Objectives (TACO). Appendix B, Table E. Tier 1 Groundwater Remediation Objectives for the Groundwater Component of the Groundwater Ingestion Route. Class I values. February 23, 2007 (IEPA, 2007a).

4. Groundwater Remediation Objectives for Chemicals Not Listed in TACO. May 1, 2007. Prepared by the Illinois EPA Toxicity Assessment Unit, and February 1, 2008 Revisions/Additions to Tables for Non-TACO Chemical Remediation Objectives. (IEPA, 2007b). These values were not available at the time of the draft HHRA (ENSR, 2003).

5. Region 9 PRG Table. October 1, 2004. Value for Tap water. (USEPA, 2004a).

The selection of COPCs for groundwater/leachate was conducted on a location-by-location basis. Because groundwater in the area is not used a source of drinking water, exposure to COPCs in groundwater could

occur due to volatilization of COPCs into outdoor air, or contact with COPCs in groundwater exposed in an excavation trench. The volatilization to indoor pathway has been addressed separately in the Vapor Intrusion Technical Memorandum (ENSR, 2008). Per the HHRA Work Plan (URS, 2001), a 15-foot bgs excavation depth is assumed for contact with groundwater and inhalation in an excavation trench. Volatilization from groundwater through the soil column to outdoor air is generally assumed to occur at depths of up to 30 feet bgs. For the modeling to outdoor air pathways, VOCs have been defined as constituents with Henry's Law Constants greater than 10^{-5} atm m^3/mol and molecular weights less than 200 grams/mol (USEPA, 2004a).

Three hydrogeologic units are present at the site, the shallow hydrogeologic unit (SHU), the middle hydrogeologic unit (MHU), and the deep hydrogeologic unit (DHU). In addition, samples were collected from bedrock and alluvial aquifer (AA) profiling locations. The SHU is 30 feet thick, spanning from the ground surface to 30 feet bgs (URS, 2008). The MHU is 40 feet thick, spanning from 30-70 feet bgs (URS, 2008). The DHU is 40 feet thick, spanning from 70-110 feet bgs (URS, 2008). For the purposes of the HHRA, potential exposures exist where depth to groundwater is from the ground surface to 30 feet bgs, as discussed above. Therefore, samples from the MHU, DHU, and bedrock are not included in the evaluation of potential health risks. Data from these samples will be compared to groundwater screening levels in an appendix to the revised HHRA.

Groundwater samples from the SHU with depths to groundwater between 0 and 30 feet bgs were included in the evaluation. Depth to groundwater was estimated as the average of the depth to groundwater measurements listed in Table 4-5 of the Remedial Investigation Report (URS, 2008). Groundwater samples from the AA and SHU locations have been categorized as described below into either shallow groundwater (depth to groundwater 0-15 feet bgs) and mid groundwater (depth to groundwater >15-30 feet bgs). Leachate samples have been included as shallow groundwater.

- Samples were collected from the alluvial aquifer using direct push technology. Samples were collected every 10 feet. The sample identifier appends a depth designation to the sample location (e.g., AA-P-1-20FT). The first sample at each alluvial aquifer location was generally collected within 5 feet of encountering groundwater. To estimate the depth from the ground surface to groundwater, 5 feet is subtracted from the depth identified in the sample identification for the most shallow groundwater sample. Therefore, all samples collected to a depth of 20 feet have been defined as shallow (20 feet sample depth - 5 feet = 15 feet to groundwater), while samples collected from between 21 and 35 feet have been defined as shallow/mid depth. Samples collected from greater than 35 feet have been defined as deep. Deep groundwater samples are not included in the quantitative human health risk assessment; however, a separate comparison of deep groundwater concentrations to screening levels will be included in the revised HHRA.

- Groundwater samples from the SHU were defined as shallow where depth to groundwater is 0-15 feet bgs or mid where depth to groundwater is >15-30 feet bgs. However, the shallowest sample within that depth interval at a given location is used as the source term for modeling to outdoor air. Note that samples falling into the mid-depth category that have a corresponding sample collected from a more shallow depth have been defined as deep, such that the most shallow data-point collected from each location is used to evaluate potential volatilization from groundwater to outdoor air. This applies to the deeper samples collected from the following locations:

- AA-O-1
- AA-O-2
- AA-P-1
- AA-P-2
- AA-Q-6
- AA-Q-7
- AA-Q-8
- AA-S-1
- AA-S-3
- B-25B
- B-29B

USEPA Region 9 PRGs are not available for fish fillet. Therefore, fish fillet data were compared to the USEPA Region 3 Risk-Based Concentrations (RBCs) for fish (USEPA, 2007a). As fish fillet data were available for evaluation, a comparison of surface water data to human health Ambient Water Quality Criteria (AWQCs) for fish ingestion (USEPA, 2006b) was not required. As previously noted, surface water data were compared to the groundwater screening levels described above. The RBCs are presented in Table A-6.

COPC selection tables included in this deliverable include the following:

- Table 2.1 – Surface soil (ground surface to 2 feet bgs). The outdoor industrial worker and the trespassing teenager will be evaluated for potential exposure to these COPCs via incidental ingestion, dermal contact, and inhalation of particulates.

- Table 2.2 – Combined soil (ground surface to 15 feet bgs). The construction worker will be evaluated for potential exposure to these COPCs via incidental ingestion, dermal contact, and inhalation of particulates. The outdoor industrial worker and the trespassing teenager will be evaluated for potential exposure to these COPCs via inhalation of volatiles. This table also includes deep subsurface soil (>15 feet bgs). No receptors are assumed to be exposed to soils at this depth. However, the data were compared to screening levels and no constituents were identified with maximum detected concentrations above screening levels.

- Table 2.3 – Sediment. The recreational fisher and the trespassing teenager will be evaluated for potential exposure to these COPCs via incidental ingestion and dermal contact.

- Table 2.4 – Surface Water/Seep. The recreational fisher and the trespassing teenager will be evaluated for potential exposure to these COPCs via incidental ingestion and dermal contact. Surface water and seep will be evaluated as separate exposure media in the revised HHRA.

- Table 2.5 - Fish fillet. The recreational fisher will be evaluated for potential exposure to these COPCs via ingestion.

- Table 2.6 - Groundwater (depth to water less than or equal to 15 feet below ground surface (bgs)) and leachate. The construction worker will be evaluated for potential exposure to these COPCs via ingestion and dermal contact and inhalation in an excavation trench in the revised HHRA.

- Table 2.7 – Groundwater (depth to water less than or equal to 30 feet bgs). The outdoor industrial worker and the trespassing teenager will be evaluated for potential exposure to these COPCs via inhalation of volatiles in outdoor air.

It should be noted that the screening tables do not present Applicable or Relevant and Appropriate Requirements (ARARs). ARARs will be identified as part ot the feasibility study.

The draft HHRA (ENSR, 2003) also included several screens presented in appendices for media or pathways that were not evaluated quantitatively in the HHRA (i.e., ambient air, deep groundwater, soil-to-groundwater). These tables are not included in this deliverable because they are not relevant to the dose-response and exposure point concentration tables provided in this deliverable. These tables will be included as appendices in the revised HHRA.

Table 2.8 presents a summary of the COPCs selected in each medium. Note that not every COPC is a COPC in each Site; the tables in the next section show COPCs by Site and medium. COPCs are the same under both the RME and MLE scenarios.

Table 3 Exposure Point Concentration Summary

RAGS Part D Table 3 presents the Exposure Point Concentrations (EPCs) for both measured media and media that require modeling (i.e., soil to outdoor air). EPCs are provided for COPCs selected in each medium (see Table 2.8). Summary statistics, as described for the COPC selection, are provided for the COPCs.

EPCs for the RME scenario were generated following USEPA guidance (USEPA, 2002; USEPA, 2007b). USEPA's ProUCL Version 4.00.02 software (USEPA, 2007b) was used to calculate Upper Confidence Limits (UCLs). The ProUCL recommended UCL (95%, 97.5%, 99%) was used. Based on information presented in the ProUCL guidance (USEPA, 2007b) regarding minimum sample size and frequency of detection, UCLs were calculated where at least 10 samples and at least 5 detects are available. Where too few samples or detects are available, the maximum detected concentration is used. ProUCL version 4.00.02 recommends 10-15 or more distinct results for the most accurate and reliable UCL calculation. When fewer than 10 detects were present in the dataset, the calculations were reviewed individually to determine appropriate UCLs. Where these standards were not met, the maximum detected concentration was used as the EPC for the RME scenario. Attachment B provides the output from ProUCL, including histograms, goodness of fit testing, Q-Q Plots, and UCL calculation for each COPC meeting the minimum data requirements. Tables B-1 through B-4 summarize the distribution information from the ProUCL outputs. The final selected data distributions are presented on the tables listed below, where applicable.

UCLs were not calculated for groundwater, which is evaluated on a location-by-location basis. Where multiple rounds of samples were collected from the same well, the maximum detected concentration is selected as the RME EPC. UCLs were also not calculated for fish fillet data.

EPCs for the MLE scenario are the arithmetic mean, in accordance with the Work Plan (URS, 2001).

For each medium, the EPC selection table is presented, followed by a summary table for the RME scenario and a summary table for the MLE scenario. The summary tables show only the selected EPCs. EPC tables for measured media included in this deliverable include the following:

- Table 3.1 - Site Surface Soil EPC Selection. The outdoor industrial worker and the trespassing teenager will be evaluated for potential exposure to surface soil EPCs via incidental ingestion and dermal contact. These EPCs will also be used as inputs to the surface soil to outdoor air particulate pathway for the outdoor industrial worker and the trespassing teenager. Table 3.1RME presents the summary for the RME scenario, and Table 3.1MLE shows the summary for the MLE scenario.

- Table 3.2 – Site Combined Soil EPC Selection (surface soil, subsurface soil, and waste). Table 3.2RME presents the summary for the RME scenario, and Table 3.2MLE shows the summary for the MLE scenario. The construction worker will be evaluated for potential exposure to combined soil EPCs via incidental ingestion and dermal contact. These EPCs will also be used as inputs to the soil to outdoor air volatilization pathway for the outdoor industrial worker and the trespassing teenager and the soil to excavation air pathway for the construction worker.

- Table 3.3 – Q South Pond (Small and Large) and Mississippi River Sediment EPC Selection. Table 3.3RME presents the summary for the RME scenario, and Table 3.3MLE shows the summary for the MLE scenario. The recreational fisher will be evaluated for potential exposure to sediment EPCs via incidental ingestion and dermal contact.

- Table 3.4 – Mississippi River Surface Water/Seep and Q South Pond (Small and Large) Surface Water EPC Selection. Table 3.4RME presents the summary for the RME scenario, and Table 3.4MLE shows the summary for the MLE scenario. The recreational fisher and the trespassing teenager will be evaluated for potential exposure to surface water EPCs via incidental ingestion and dermal contact.

- Table 3.5 – Site Q Pond and Mississippi River Fish Fillet EPC Selection. Table 3.5RME presents the summary for the RME scenario, and Table 3.5MLE shows the summary for the MLE scenario. The recreational fisher and the trespassing teenager will be evaluated for potential exposure to fish fillet EPCs via ingestion.

- Table 3.6 – Shallow Groundwater and Leachate EPC Selection. Table 3.6RME presents the summary for the RME scenario, and Table 3.6MLE shows the summary for the MLE scenario. The construction worker will be evaluated for potential exposure to shallow groundwater and leachate EPCs via ingestion and dermal contact and inhalation in an excavation trench.

- Table 3.7 – Shallow to Mid Groundwater and Leachate EPC Selection. Table 3.7RME presents the summary for the RME scenario, and Table 3.7MLE shows the summary for the MLE scenario. These EPCs will be used as inputs to the groundwater to outdoor air model for the outdoor industrial worker and the trespassing teenager.

As discussed in the Work Plan (URS, 2001) and the Protocol (SA2SG, 2007), several pathways require modeling for EPCs, including soil and groundwater to outdoor air pathways.

Attachment C provides details regarding the soil to outdoor air modeling, Attachment D presents details regarding the groundwater to outdoor air modeling, and Attachment E presents details regarding the groundwater to excavation trench modeling. EPCs for each of the modeled pathways are presented in the following tables:

- Table 3-8 RME/3-8MLE – Summary of outdoor air EPCs for the on-site worker based on soil and waste concentrations. Concentrations of non-volatile constituents are derived from surface soil EPCs and concentrations of volatile constituents are derived from combined soil EPCs. Attachment C provides details regarding the soil to outdoor air modeling.

- Table 3-9 RME/3-9MLE – Summary of outdoor air EPCs for the trespassing teenager based on soil and waste concentrations. Concentrations of non-volatile constituents are derived from surface soil EPCs and concentrations of volatile constituents are derived from combined soil EPCs. Attachment C provides details regarding the soil to outdoor air modeling.

- Table 3-10RME/3-10MLE – Summary of excavation air EPCs for the construction worker based on soil and waste concentrations. Concentrations are derived from combined soil EPCs. Attachment C provides details regarding the soil to outdoor air modeling.

- Table 3-11RME/3-11MLE – Summary of outdoor air EPCs for VOCs for the on-site industrial worker and trespassing teenager, based on shallow/mid groundwater and leachate EPCs. Attachment D provides details regarding the groundwater to outdoor air modeling.

- Table 3-12RME/3-12MLE – Summary of excavation air EPCs for VOCs for the construction worker based on shallow groundwater and leachate EPCs. Attachment E provides details regarding the groundwater to excavation trench modeling.

Table F-1 presents the Toxicity Equivalency Factors (TEFs) used to calculate the 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health (Dioxin TEQ-HH) obtained from Van den Berg, et al. (2006).

Table 4 Values Used for Daily Intake Calculations

RAGS Part D Table 4 presents the exposure assumptions used to calculate daily intakes for both potentially carcinogenic and non-carcinogenic effects. The exposure assumption tables were originally presented in the Work Plan (URS, 2001). Some of the exposure assumptions were updated to reflect more recent guidance in the Protocol (SA2SG, 2007). The exposure assumptions as presented in the Protocol were approved by the USEPA. Exposure assumptions and daily intake equations for each pathway are presented in the following tables:

- Table 4.1 – Current/Future Outdoor Industrial Worker

- Table 4.2 – Current/Future Trespassing Teenager

- Table 4.3 – Future Construction Worker
- Table 4.4 – Current/Future Recreational Fisher
- Table 4.5 – Soil Adherence Factors and Surface Areas

Additional parameters used in the intake equations are presented in the following tables:

- Table G-1 – Absorption Fractions for Soil and Sediment
- Table H-1 – Constants and Variables Used in the Calculation of Dermal Dose for Groundwater and Surface Water
- Table H-2 – Constants and Variables Used in the Calculation of Dermal Dose for Groundwater and Surface Water – Calculated Values

Table 5 Non-Cancer Toxicity Data

RAGS Part D Table 5 presents toxicity data for COPCs with non-carcinogenic effects. USEPA's hierarchy was used to select the toxicity values (USEPA, 2003a). The revised HHRA will include a detailed discussion of the selection process. Table 5.1 presents oral and dermal toxicity values and Table 5.2 presents inhalation toxicity values. Dermal toxicity values were adjusted from oral toxicity values in accordance with USEPA (2004b).

Provisional Peer Reviewed Toxicity Values (PPRTVs) or other values provided by the National Center for Environmental Assessment (NCEA) were used where available. The SA2SG requests that USEPA review the PPRTVs presented in the tables to determine whether they are appropriate for use in the HHRA or if more recent values have been developed. In addition, the SA2SG requests that the USEPA review toxicity values that are from Tier 3 sources (CalEPA, 2005, CalEPA, 2008, ATSDR, 2007, USEPA, 1997b) or that are missing to determine if PPRTVs are available.

Lead is a COPC in combined soil, shallow groundwater, and surface water. Potential exposure to lead in soil will be evaluated using the Adult Lead Methodology (USEPA, 2003b). Potential exposure to lead in groundwater and surface water will be evaluated using the model of Bowers et al. (1994). Because lead is not evaluated using traditional dose-response methods, it is not listed in the dose-response tables.

Table 6 Cancer Toxicity Data

RAGS Part D Table 6 presents toxicity data for COPCs with potentially carcinogenic effects. USEPA's hierarchy was used to select the toxicity values (USEPA, 2003a). The revised HHRA will include a detailed discussion of the selection process. Table 6.1 presents oral and dermal toxicity values and Table 6.2 presents inhalation toxicity values. Dermal toxicity values were adjusted from oral toxicity values in

accordance with USEPA guidance (USEPA, 2004b).

PPRTVs or other values provided by the NCEA were used where available. The SA2SG requests that USEPA review the PPRTVs presented in the tables to determine whether they are appropriate for use in the HHRA or if more recent values have been developed. In addition, the SA2SG requests that the USEPA review toxicity values that are from Tier 3 sources (CalEPA, 2005, CalEPA, 2008, ATSDR, 2007, USEPA, 1997b) or that are missing to determine if PPRTVs are available.

Table I-1 presents further information regarding cancer slope factors for PCBs.

USEPA guidance for early life exposure to carcinogens (USEPA, 2005) requires that risks from constituents that act by a mutagenic mode of action be calculated differently than constituents that do not act via a mutagenic mode of action. The trespassing teenager (aged 7-18) is the only receptor to which an age-specific mutagenic mode of action evaluation is applicable. The followed Age-Dependant Adjustment Factors (ADAFs) will be used, in accordance with USEPA guidance (USEPA, 2005):

- Ages 7 < 16: ADAF = 3;
- Ages 16 to 18: ADAF = 1.

The exposure factors used to evaluate the trespassing teenager will be those presented in Table 4.2. The majority of the exposure period uses the same ADAF (3). Therefore an ADAF of 3 will be applied to COPCs acting via mutagenic mode of action for the trespassing teenager. This is also the approach taken by USEPA Region 3 in developing risk-based concentrations for potential carcinogens with potential mutagenic mode of action (USEPA, 2007a).

References

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Tables

TABLE 0
SITE RISK ASSESSMENT IDENTIFICATION INFORMATION
HUMAN HEALTH RISK ASSESSMENT INTERIM DELIVERABLE
SAUGET AREA 2
SAUGET, ILLINOIS

Site Name/OU:	**Sauget Area 2**
Region:	USEPA Region 5
EPA ID Number:	SR-J6
State:	Illinois
Status:	Ongoing
Federal Facility (Y/N):	N
EPA Project Manager:	Rosauro Delrosario
EPA Risk Assessor:	Barrie Selcoe, CH2MHill
Prepared by (Organization):	ENSR
Prepared for (Organization):	Sauget Area 2 Site Group
Document Title:	Sauget Area 2 Human Health Risk Assessment Interim Deliverable. RAGS Part D Tables 0 through 6
Document Date:	
Probabilistic Risk Assessment (Y/N):	N
Comments:	

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
HUMAN HEALTH RISK ASSESSMENT INTERIM DELIVERABLE
SAUGET AREA 2
SAUGET, ILLINOIS

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil (0-0.5 ft bgs)	Surface Soil (0-0.5 ft bgs)	Sites	Outdoor Industrial Worker	Adult	Ing/Derm	Quant	Potentially complete pathway
Current/Future	Surface Soil (0-0.5 ft bgs)	Ambient Air - Particulates	Sites	Outdoor Industrial Worker	Adult	Inhalation	Quant	Potentially complete pathway
Current/Future	Soil (0-15 ft bgs)	Ambient Air - Volatiles	Sites	Outdoor Industrial Worker	Adult	Inhalation	Quant	Potentially complete pathway
Current/Future	Groundwater (0-30 ft bgs)	Ambient Air - Volatiles	Sites	Outdoor Industrial Worker	Adult	Inhalation	Quant	Potentially complete pathway
Current/Future	Soil Gas (Subsurface Soil, Groundwater, NAPL)	Indoor Air	Existing Buildings (a)	Indoor Industrial Worker	Adult	Inhalation	Quant	Potentially complete pathway
Future	Indoor Air	Indoor Air	Future Buildings at Sites	Indoor Industrial Worker	Adult	Inhalation	None	Institutional controls will require vapor barriers for new construction
Current/Future	Soil (0-15 ft bgs)	Soil (0-15 ft bgs)	Sites	Construction Worker	Adult	Ing/Derm	Quant	Potentially complete pathway
Current/Future	Soil (0-15 ft bgs)	Excavation Air	Sites	Construction Worker	Adult	Inhalation	Quant	Potentially complete pathway
Current/Future	Groundwater (0-15 ft bgs)	Groundwater	Sites	Construction Worker	Adult	Ing/Derm	Quant	Potentially complete pathway
Current/Future	Groundwater (0-30 ft bgs)	Excavation Air	Sites	Construction Worker	Adult	Inhalation	Quant	Potentially complete pathway
Current/Future	Surface Soil (0-0.5 ft bgs)	Surface Soil (0-0.5 ft bgs)	Sites	Trespassing Teenager	7 to 18 years	Ing/Derm	Quant	Potentially complete pathway
Current/Future	Surface Soil (0-0.5 ft bgs)	Ambient Air - Particulates	Sites	Trespassing Teenager	7 to 18 years	Inhalation	Quant	Potentially complete pathway
Current/Future	Soil (0-15 ft bgs)	Ambient Air - Volatiles	Sites	Trespassing Teenager	7 to 18 years	Inhalation	Quant	Potentially complete pathway
Current/Future	Groundwater (0-30 ft bgs)	Ambient Air - Volatiles	Sites	Trespassing Teenager	7 to 18 years	Inhalation	Quant	Potentially complete pathway
Current/Future	Surface Water	Surface Water	Site Q Pond, Mis. River	Trespassing Teenager	7 to 18 years	Ing/Derm	Quant	Potentially complete pathway
Current/Future	Sediment (b)	Sediment (b)	Site Q Pond, Mis. River	Trespassing Teenager	7 to 18 years	Ing/Derm	Quant	Potentially complete pathway
Current/Future	Fish	Fish Fillets	Site Q Pond, Mis. River	Recreational Fisher	Adult	Ingestion	Quant	Potentially complete pathway
Current/Future	Surface Water	Surface Water	Site Q Pond, Mis. River	Recreational Fisher	Adult	Ing/Derm	Quant	Potentially complete pathway
Current/Future	Sediment (b)	Sediment (b)	Site Q Pond, Mis. River	Recreational Fisher	Adult	Ing/Derm	Quant	Potentially complete pathway

Notes:
bgs - below ground surface.
ft - feet.
Ing/Derm - Incidental Ingestion and Dermal Contact.
Mis. River - Mississippi River.
NAPL - Non-Aqueous Phase Liquid.
Quant - Quantitative.
Sites - O, O North, O South, P, Q North, Q Central, Q South, R, S.
(a) - Vapor Intrusion Technical Memorandum will be submitted separately.
(b) - Sediments that are under deep water are not relevant for human exposure, per USEPA (2004), Dermal Exposure Guidance.
Therefore, only sediments under shallow water (i.e., those close to the banks) will be considered in the human health risk assessment.

TABLE 2.1
COPC SELECTION - SURFACE SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Surface Soil	**Site O**													
VOCs														
2-Butanone (MEK)	78-93-3	1 : 5 : 5	20.00	0.019-0.049	1.70E-02	1.70E-02	1.70E-02	No	NA	--	1.13E+04	No	No	</=SL
Acetone	67-64-1	4 : 5 : 5	80.00	0.056-0.098	8.30E-03	1.30E-01	5.06E-02	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	2 : 5 : 5	40.00	.0038-0.009	1.10E-03	2.10E-03	1.60E-03	No	NA	--	1.40E+00	No	No	</=SL
Carbon Disulfide	75-15-0	2 : 5 : 5	40.00	.0038-0.009	1.70E-03	2.30E-03	2.00E-03	No	NA	--	1.20E+02	No	No	</=SL
Ethylbenzene	100-41-4	3 : 5 : 5	60.00	.0038-0.009	3.80E-04	1.50E-03	1.06E-03	No	1.07E-03	Yes	7.42E+02	No	No	</=SL
Tetrachloroethene	127-18-4	1 : 5 : 5	20.00	.0037-0.009	1.00E-03	1.00E-03	1.00E-03	No	8.80E-04	Yes	1.31E+00	No	No	</=SL
Toluene	108-88-3	2 : 5 : 5	40.00	.0038-0.009	2.20E-03	2.90E-03	2.55E-03	No	NA	--	2.21E+02	No	No	</=SL
Trichloroethene	79-01-6	1 : 5 : 5	20.00	.0037-0.009	5.80E-04	5.80E-04	5.80E-04	No	NA	--	1.10E-01	No	No	</=SL
Xylenes, Total	1330-20-7	3 : 5 : 5	60.00	0.0076-0.02	1.30E-03	7.10E-03	3.87E-03	No	1.61E-03	Yes	8.98E+01	No	No	</=SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	1 : 5 : 5	20.00	0.38-0.4	3.00E-02 J	3.00E-02 J	3.00E-02	No	NA	--	2.16E+01	No	No	</=SL
1,2-Dichlorobenzene	95-50-1	2 : 5 : 5	40.00	0.38-0.4	3.60E-02	4.90E-02 J	4.25E-02	No	NA	--	4.10E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 5 : 5	20.00	0.38-0.4	4.60E-02 J	4.60E-02 J	4.60E-02	No	NA	--	7.87E+00	No	No	</=SL
2,4-Dichlorophenol	120-83-2	1 : 5 : 5	20.00	0.38-0.4	3.50E-02	3.50E-02	3.50E-02	No	NA	--	1.85E+02	No	No	</=SL
2-Methylnaphthalene	91-57-6	1 : 5 : 5	20.00	0.38-0.4	3.80E-02 J	3.80E-02 J	3.80E-02	No	NA	--	1.88E+01	No	No	</=SL
2-Nitroaniline	88-74-4	1 : 5 : 5	20.00	1.9-2.1	5.30E-02	5.30E-02	5.30E-02	No	NA	--	1.83E+02	No	No	</=SL
Benzo(a)anthracene	56-55-3	2 : 5 : 5	40.00	0.38-0.4	3.70E-02 J	6.30E-02	5.00E-02	No	1.97E-01	No	2.11E+00	No	No	</=SL
Benzo(a)pyrene	50-32-8	1 : 5 : 5	20.00	0.38-0.4	3.70E-02 J	3.70E-02 J	3.70E-02	No	4.80E-01	No	2.10E-01	No	No	</=SL
Benzo(b)fluoranthene	205-99-2	3 : 5 : 5	60.00	0.38-0.4	4.00E-02 J	1.40E-01	9.27E-02	No	2.60E-01	No	2.11E+00	No	No	</=SL
Benzo(g,h,i)perylene	191-24-2	1 : 5 : 5	20.00	0.38-0.4	1.20E+00	1.20E+00	1.20E+00	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	1 : 5 : 5	20.00	0.38-0.4	1.00E-01	1.00E-01	1.00E-01	No	2.10E-01	No	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	4 : 5 : 5	80.00	0.38-0.39	3.50E-02	4.60E-01 J	2.81E-01	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	4 : 5 : 5	80.00	0.38-0.39	2.30E-02	7.10E-01 J	3.56E-01	No	3.53E-01	Yes	1.23E+02	No	No	</=SL
Chrysene	218-01-9	3 : 5 : 5	60.00	0.38-0.4	5.90E-02 J	2.00E-01	1.08E-01	No	2.35E-01	No	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	2 : 5 : 5	40.00	0.38-0.4	7.80E-02	1.30E-01	1.04E-01	No	1.20E-01	Yes	2.10E-01	No	No	</=SL
Di-n-butylphthalate	84-74-2	2 : 5 : 5	40.00	0.38-0.39	3.70E-02 J	4.90E-02	4.30E-02	No	NA	--	6.16E+03	No	No	</=SL
Fluoranthene	206-44-0	1 : 5 : 5	20.00	0.38-0.4	3.90E-02 J	3.90E-02 J	3.90E-02	No	4.42E-01	No	2.20E+03	No	No	</=SL

TABLE 2.1
COPC SELECTION - SURFACE SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Hexachlorobenzene	118-74-1	1 : 5 : 5	20.00	0.38-0.4	1.10E-01	1.10E-01	1.10E-01	No	NA	--	1.08E+00	No	No	</=SL
Phenanthrene	85-01-8	3 : 5 : 5	60.00	0.38-0.4	4.00E-02	6.80E-02 J	5.07E-02	No	2.89E-01	No	2.38E+04	No	No	</=SL
Pyrene	129-00-0	3 : 5 : 5	60.00	0.38-0.4	7.50E-02 J	1.30E-01	9.40E-02	No	4.09E-01	No	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDD	72-54-8	1 : 2 : 2	50.00	0.0038-0.039	8.60E-02 J	8.60E-02 J	8.60E-02	No	9.24E-03	Yes	9.95E+00	No	No	</=SL
4,4'-DDT	50-29-3	2 : 2 : 2	100.00	0.0038-0.039	8.10E-04 J	2.30E-01 J	1.15E-01	No	4.95E-02	Yes	7.00E+00	No	No	</=SL
alpha-Chlordane	5103-71-9	1 : 2 : 2	50.00	0.0019-0.02	9.40E-03 J	9.40E-03 J	9.40E-03	No	1.24E-02	No	6.50E+00	No	No	</=SL
Dieldrin	60-57-1	1 : 2 : 2	50.00	0.0038-0.039	1.80E-01 J	1.80E-01 J	1.80E-01	No	1.32E-02	Yes	1.10E-01	Yes	Yes	>SL
Endosulfan II	33213-65-9	1 : 2 : 2	50.00	0.0038-0.039	1.10E-02 J	1.10E-02 J	1.10E-02	No	1.16E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan Sulfate	1031-07-8	1 : 2 : 2	50.00	0.0038-0.039	1.70E-01 J	1.70E-01 J	1.70E-01	No	1.81E-03	Yes	3.69E+02	No	No	</=SL
Endrin Aldehyde	7421-93-4	1 : 2 : 2	50.00	0.0038-0.039	3.40E-03	3.40E-03	3.40E-03	No	8.80E-03	No	1.85E+01	No	No	</=SL
Endrin Ketone	53494-70-5	1 : 2 : 2	50.00	0.0038-0.039	2.20E-02 J	2.20E-02 J	2.20E-02	No	NA	--	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	1 : 2 : 2	50.00	0.0019-0.02	3.20E-02 J	3.20E-02 J	3.20E-02	No	NA	--	1.74E+00	No	No	</=SL
gamma-Chlordane	5103-74-2	1 : 2 : 2	50.00	0.0019-0.02	1.80E-01	1.80E-01	1.80E-01	No	9.97E-02	Yes	6.50E+00	No	No	</=SL
Heptachlor	76-44-8	1 : 2 : 2	50.00	0.0019-0.02	1.60E-02 J	1.60E-02 J	1.60E-02	No	1.48E-01	No	3.80E-01	No	No	</=SL
Methoxychlor	72-43-5	1 : 2 : 2	50.00	0.019-0.2	8.80E-04 J	8.80E-04 J	8.80E-04	No	5.60E-03	No	3.08E+02	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	3 : 5 : 5	60.00	0.0094-0.01	6.70E-03	1.70E-02 J	1.29E-02	No	NA	--	6.16E+02	No	No	</=SL
2,4-D	94-75-7	3 : 5 : 5	60.00	0.0094-0.01	1.00E-02	5.00E-02 J	3.03E-02	No	1.16E-02	Yes	7.68E+02	No	No	</=SL
2,4-DB	94-82-6	2 : 5 : 5	40.00	0.0094-0.01	1.30E-02 J	1.90E-02 J	1.60E-02	No	NA	--	4.92E+02	No	No	</=SL
Dicamba	1918-00-9	1 : 5 : 5	20.00	0.0097-0.024	2.40E-03 J	2.40E-03 J	2.40E-03	No	NA	--	1.85E+03	No	No	</=SL
Dichlorprop	120-36-5	2 : 5 : 5	40.00	0.11-0.12	1.00E-02 J	3.70E-02 J	2.35E-02	No	1.14E-01	No	4.92E+02	No	No	</=SL
MCPP	93-65-2	4 : 5 : 5	80.00	2.3-2.4	3.10E+00	1.20E+01 J	9.03E+00	No	8.80E+00	Yes	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	5 : 5 : 5	100.00	0.019-0.4	2.30E-02 J	9.30E+00 J	2.30E+00	No	4.57E-03	Yes	9.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	2 : 2 : 2	100.00	-	5.32E-02	1.08E+01	5.41E+00	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	2 : 2 : 2	100.00	-	6.37E-05	6.77E-03	3.42E-03	No	4.31E-05	Yes	1.00E-03	Yes	Yes	>SL

TABLE 2.1
COPC SELECTION - SURFACE SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Metals														
Aluminum	7429-90-5	5 : 5 : 5	100.00	21-23	7.40E+03 J	9.20E+03	8.48E+03	No	1.38E+04	No	9.21E+04	No	No	</=SL
Antimony	7440-36-0	2 : 5 : 5	40.00	2.1-2.3	6.00E-01	7.40E-01 J	6.70E-01	No	2.63E+00	No	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	5 : 5 : 5	100.00	1.1-1.1	4.50E+00	6.30E+00	5.40E+00	No	1.24E+01	No	1.59E+00	Yes	No	</=BKG
Barium	7440-39-3	5 : 5 : 5	100.00	1.1-1.1	8.20E+01	1.30E+02 J	1.03E+02	No	3.07E+02	No	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	5 : 5 : 5	100.00	0.43-0.45	4.50E-01	5.40E-01	4.88E-01	No	9.02E-01	No	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	3 : 5 : 5	60.00	0.54-0.57	5.40E-01 J	1.70E+00 J	1.01E+00	No	3.34E+00	No	4.51E+01	No	No	</=SL
Calcium	7440-70-2	5 : 5 : 5	100.00	54-57	6.60E+03	2.60E+04	1.97E+04	Yes	9.74E+04	No	NA	--	No	EN
Chromium	7440-47-3	5 : 5 : 5	100.00	1.1-1.1	1.30E+01	1.50E+01	1.42E+01	No	2.21E+01	No	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	5 : 5 : 5	100.00	1.1-1.1	6.00E+00	7.20E+00	6.66E+00	No	9.40E+00	No	1.33E+03	No	No	</=SL
Copper	7440-50-8	5 : 5 : 5	100.00	2.1-2.3	1.40E+01	4.00E+01	2.54E+01	No	8.58E+01	No	4.09E+03	No	No	</=SL
Iron	7439-89-6	5 : 5 : 5	100.00	5.4-5.7	1.30E+04	1.60E+04	1.48E+04	Yes	2.33E+04	No	7.20E+04	No	No	EN
Lead	7439-92-1	5 : 5 : 5	100.00	0.54-0.57	8.00E+00	2.10E+01	1.43E+01	No	1.30E+02	No	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	5 : 5 : 5	100.00	54-57	4.10E+03 J	8.90E+03	7.08E+03	Yes	1.23E+04	No	NA	--	No	EN
Manganese	7439-96-5	5 : 5 : 5	100.00	1.1-1.1	4.30E+02	5.60E+02	4.98E+02	No	5.52E+02	Yes	1.95E+03	No	No	</=SL
Mercury	7439-97-6	5 : 5 : 5	100.00	0.021-1.1	3.30E-02 J	2.90E+00	6.12E-01	No	1.34E-01	Yes	3.10E+01	No	No	</=SL
Nickel	7440-02-0	5 : 5 : 5	100.00	4.3-4.5	1.60E+01	1.80E+01	1.74E+01	No	3.30E+01	No	2.04E+03	No	No	</=SL
Potassium	7440-09-7	5 : 5 : 5	100.00	110-110	8.40E+02	1.30E+03	9.48E+02	Yes	3.01E+03	No	NA	--	No	EN
Sodium	7440-23-5	5 : 5 : 5	100.00	54-57	8.50E+01 J	2.20E+02	1.49E+02	Yes	4.60E+02	No	NA	--	No	EN
Vanadium	7440-62-2	5 : 5 : 5	100.00	1.1-1.1	2.70E+01	2.90E+01	2.80E+01	No	3.89E+01	No	1.02E+02	No	No	</=SL
Zinc	7440-66-6	5 : 5 : 5	100.00	2.1-2.3	3.90E+01	1.30E+02 J	7.96E+01	No	3.90E+02	No	3.06E+04	No	No	</=SL
Surface Soil	**Site O North**													
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 4 : 4	25.00	0.0042-0.51	8.60E-03 J	8.60E-03 J	8.60E-03	No	NA	--	6.94E+02	No	No	</=SL
2-Butanone (MEK)	78-93-3	2 : 4 : 4	50.00	2.1-2.6	7.60E-03 J	1.40E-02	1.08E-02	No	NA	--	1.13E+04	No	No	</=SL
Acetone	67-64-1	3 : 3 : 4	100.00	4.2-4.2	6.05E-02 J	1.20E+00	4.41E-01	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	3 : 4 : 4	75.00	0.0065-0.42	8.80E-03 J	1.10E+00	5.66E-01	No	NA	--	1.40E+00	No	No	</=SL
Carbon Disulfide	75-15-0	2 : 4 : 4	50.00	0.0042-0.51	2.60E-03 J	1.80E-01 J	9.13E-02	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	4 : 4 : 4	100.00	0.42-0.42	3.95E-03	1.40E+01	4.96E+00	No	NA	--	5.31E+01	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Dichloromethane	75-09-2	1 : 4 : 4	25.00	0.0042-0.42	3.00E-01	3.00E-01	3.00E-01	No	NA	--	2.05E+01	No	No	</=SL
Ethylbenzene	100-41-4	3 : 4 : 4	75.00	0.0065-0.42	4.00E-03 J	4.40E+00 J	1.90E+00	No	1.07E-03	Yes	7.42E+02	No	No	</=SL
Tetrachloroethene	127-18-4	3 : 4 : 4	75.00	0.0065-0.42	3.90E-03 J	2.90E-01 J	1.55E-01	No	8.80E-04	Yes	1.31E+00	No	No	</=SL
Toluene	108-88-3	4 : 4 : 4	100.00	0.42-0.42	3.65E-03 J	8.70E-01 J	4.02E-01	No	NA	--	2.21E+02	No	No	</=SL
Xylenes, Total	1330-20-7	3 : 4 : 4	75.00	0.013-0.85	2.30E-02 J	8.00E+01 J	2.87E+01	No	1.61E-03	Yes	8.98E+01	No	No	</=SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	2 : 4 : 4	50.00	0.35-0.4	1.50E-01 J	2.20E-01	1.85E-01	No	NA	--	2.16E+01	No	No	</=SL
1,2-Dichlorobenzene	95-50-1	4 : 4 : 4	100.00	0.35-0.4	3.40E-02	1.10E+00	4.25E-01	No	NA	--	4.10E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	2 : 4 : 4	50.00	0.35-0.4	2.45E-01 J	6.30E-01	4.38E-01	No	NA	--	7.87E+00	No	No	</=SL
2,4,6-Trichlorophenol	88-06-2	2 : 4 : 4	50.00	0.35-0.4	3.00E-01 J	1.30E+00	8.00E-01	No	NA	--	6.16E+00	No	No	</=SL
2,4-Dichlorophenol	120-83-2	2 : 4 : 4	50.00	0.35-0.4	3.10E-01 J	9.40E-01	6.25E-01	No	NA	--	1.85E+02	No	No	</=SL
2-Methylnaphthalene	91-57-6	1 : 4 : 4	25.00	0.35-2	4.95E-02 J	4.95E-02 J	4.95E-02	No	NA	--	1.88E+01	No	No	</=SL
2-Nitroaniline	88-74-4	2 : 4 : 4	50.00	1.8-2.1	3.30E-01 J	1.00E+00	6.65E-01	No	NA	--	1.83E+02	No	No	</=SL
4-Chloroaniline	106-47-8	1 : 4 : 4	25.00	0.7-3.9	7.70E-02 J	7.70E-02 J	7.70E-02	No	NA	--	2.46E+02	No	No	</=SL
4-Nitroaniline	100-01-6	2 : 4 : 4	50.00	1.8-2.1	1.00E+00	1.08E+00 J	1.04E+00	No	NA	--	8.20E+01	No	No	</=SL
Benzo(a)anthracene	56-55-3	2 : 4 : 4	50.00	0.35-2	4.10E-02	1.70E-01 J	1.06E-01	No	1.97E-01	No	2.11E+00	No	No	</=SL
Benzo(a)pyrene	50-32-8	2 : 4 : 4	50.00	0.35-2	4.60E-02	1.90E-01 J	1.18E-01	No	4.80E-01	No	2.10E-01	No	No	</=SL
Benzo(b)fluoranthene	205-99-2	2 : 4 : 4	50.00	0.35-2	8.90E-02	3.10E-01 J	2.00E-01	No	2.60E-01	Yes	2.11E+00	No	No	</=SL
Benzo(g,h,i)perylene	191-24-2	2 : 4 : 4	50.00	0.35-2	4.20E-02	7.50E-01 J	3.96E-01	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	1 : 4 : 4	25.00	0.35-2	3.00E-01 J	3.00E-01 J	3.00E-01	No	2.10E-01	Yes	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	2 : 4 : 4	50.00	0.35-0.4	2.44E+01 J	7.90E+01	5.17E+01	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	2 : 4 : 4	50.00	0.35-2	1.40E-01 J	2.50E-01	1.95E-01	No	3.53E-01	No	1.23E+02	No	No	</=SL
Chrysene	218-01-9	2 : 4 : 4	50.00	0.35-2	6.70E-02	5.10E-01 J	2.88E-01	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	1 : 4 : 4	25.00	0.35-2	1.60E-01 J	1.60E-01 J	1.60E-01	No	1.20E-01	Yes	2.10E-01	No	No	</=SL
Fluoranthene	206-44-0	2 : 4 : 4	50.00	0.35-2	3.65E-02	8.20E-02	5.92E-02	No	4.42E-01	No	2.20E+03	No	No	</=SL
Hexachlorobenzene	118-74-1	2 : 4 : 4	50.00	0.35-0.4	3.75E-01 J	5.10E-01	4.43E-01	No	NA	--	1.08E+00	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	2 : 4 : 4	50.00	0.35-2	3.20E-02	2.00E-01 J	1.16E-01	No	NA	--	2.11E+00	No	No	</=SL
Naphthalene	91-20-3	1 : 4 : 4	25.00	0.35-2	3.60E-02 J	3.60E-02 J	3.60E-02	No	NA	--	1.88E+01	No	No	</=SL
Phenanthrene	85-01-8	2 : 4 : 4	50.00	0.35-2	3.20E-02	1.65E-01 J	9.85E-02	No	2.89E-01	No	2.38E+04	No	No	</=SL
Pyrene	129-00-0	3 : 4 : 4	75.00	0.35-2	3.50E-02	5.20E-01 J	2.11E-01	No	4.09E-01	Yes	2.91E+03	No	No	</=SL

TABLE 2.1
COPC SELECTION - SURFACE SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Pesticide														
Dieldrin	60-57-1	1 : 1 : 1	100.00	.0035-0.003	1.40E-03 J	1.40E-03 J	1.40E-03	No	1.32E-02	No	1.10E-01	No	No	</=SL
gamma-Chlordane	5103-74-2	1 : 1 : 1	100.00	.0018-0.001	3.30E-04 J	3.30E-04 J	3.30E-04	No	9.97E-02	No	6.50E+00	No	No	</=SL
Herbicide														
Dichlorprop	120-36-5	1 : 4 : 4	25.00	0.43-240	1.10E-02 J	1.10E-02 J	1.10E-02	No	1.14E-01	No	4.92E+02	No	No	</=SL
MCPP	93-65-2	1 : 4 : 4	25.00	8.5-4700	4.30E+01 J	4.30E+01 J	4.30E+01	No	8.80E+00	Yes	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	4 : 4 : 4	100.00	0.072-0.072	3.35E-02	4.80E+02	1.24E+02	No	4.57E-03	Yes	9.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	1 : 1 : 1	100.00	-	7.09E+02	7.09E+02	7.09E+02	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	1 : 1 : 1	100.00	-	5.15E-02	5.15E-02	5.15E-02	No	4.31E-05	Yes	1.00E-03	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	4 : 4 : 4	100.00	21-21	4.90E+03	1.10E+04	6.68E+03	No	1.38E+04	No	9.21E+04	No	No	</=SL
Antimony	7440-36-0	4 : 4 : 4	100.00	2.1-2.1	7.30E-01	1.60E+00	1.05E+00	No	2.63E+00	No	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	4 : 4 : 4	100.00	1.1-1.1	8.25E+00	1.10E+01	9.71E+00	No	1.24E+01	No	1.59E+00	Yes	No	</=BKG
Barium	7440-39-3	4 : 4 : 4	100.00	1.1-1.1	2.10E+02	4.40E+02	3.30E+02	No	3.07E+02	Yes	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	4 : 4 : 4	100.00	0.43-0.43	3.45E-01	7.45E-01	4.98E-01	No	9.02E-01	No	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	4 : 4 : 4	100.00	0.53-0.53	5.60E+00	3.20E+01	1.70E+01	No	3.34E+00	Yes	4.51E+01	No	No	</=SL
Calcium	7440-70-2	4 : 4 : 4	100.00	53-53	4.70E+03	1.40E+04	7.59E+03	Yes	9.74E+04	No	NA	--	No	EN
Chromium	7440-47-3	4 : 4 : 4	100.00	1.1-1.1	1.50E+01	4.20E+01	2.24E+01	No	2.21E+01	Yes	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	4 : 4 : 4	100.00	1.1-1.1	4.15E+00	7.40E+00	6.04E+00	No	9.40E+00	No	1.33E+03	No	No	</=SL
Copper	7440-50-8	4 : 4 : 4	100.00	2.1-2.1	1.55E+02	6.80E+02	3.49E+02	No	8.58E+01	Yes	4.09E+03	No	No	</=SL
Iron	7439-89-6	4 : 4 : 4	100.00	5.3-5.3	9.45E+03	1.70E+04	1.24E+04	Yes	2.33E+04	No	7.20E+04	No	No	EN
Lead	7439-92-1	4 : 4 : 4	100.00	0.53-0.53	1.05E+02	1.50E+02	1.34E+02	No	1.30E+02	Yes	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	4 : 4 : 4	100.00	53-53	1.90E+03	3.30E+03	2.64E+03	Yes	1.23E+04	No	NA	--	No	EN
Manganese	7439-96-5	4 : 4 : 4	100.00	1.1-1.1	1.05E+02	4.20E+02	2.96E+02	No	5.52E+02	No	1.95E+03	No	No	</=SL
Mercury	7439-97-6	4 : 4 : 4	100.00	9.6-9.6	1.70E-01	1.80E+02 J	6.10E+01	No	1.34E-01	Yes	3.10E+01	Yes	Yes	>SL
Nickel	7440-02-0	4 : 4 : 4	100.00	4.3-4.3	2.10E+01	1.40E+02	5.29E+01	No	3.30E+01	Yes	2.04E+03	No	No	</=SL
Potassium	7440-09-7	4 : 4 : 4	100.00	110-110	5.80E+02	2.30E+03	1.13E+03	Yes	3.01E+03	No	NA	--	No	EN

TABLE 2.1
COPC SELECTION - SURFACE SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Selenium	7782-49-2	2 : 4 : 4	50.00	1.1-2.9	3.10E+00	6.15E+00	4.63E+00	No	1.24E+00	Yes	5.11E+02	No	No	</=SL
Silver	7440-22-4	4 : 4 : 4	100.00	1.1-1.1	6.20E-01	4.20E+00	2.89E+00	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	4 : 4 : 4	100.00	53-53	9.60E+01 J	3.00E+02	1.87E+02	Yes	4.60E+02	No	NA	--	No	EN
Vanadium	7440-62-2	4 : 4 : 4	100.00	1.1-1.1	1.60E+01	2.90E+01	2.00E+01	No	3.89E+01	No	1.02E+02	No	No	</=SL
Zinc	7440-66-6	4 : 4 : 4	100.00	2.1-2.1	4.90E+02	2.40E+03	1.18E+03	No	3.90E+02	Yes	3.06E+04	No	No	</=SL
Surface Soil	**Site O South**													
VOCs														
2-Butanone (MEK)	78-93-3	1 : 2 : 2	50.00	0.022-0.022	1.20E-02	1.20E-02	1.20E-02	No	NA	--	1.13E+04	No	No	</=SL
Acetone	67-64-1	1 : 2 : 2	50.00	0.044-0.044	2.20E-02	2.20E-02	2.20E-02	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	2 : 2 : 2	100.00	-	1.30E-03	2.10E-03	1.70E-03	No	NA	--	1.40E+00	No	No	</=SL
Carbon Disulfide	75-15-0	1 : 2 : 2	50.00	.0044-0.004	6.80E-03	6.80E-03	6.80E-03	No	NA	--	1.20E+02	No	No	</=SL
Ethylbenzene	100-41-4	1 : 2 : 2	50.00	.0044-0.004	1.30E-03	1.30E-03	1.30E-03	No	1.07E-03	Yes	7.42E+02	No	No	</=SL
Toluene	108-88-3	2 : 2 : 2	100.00	-	1.90E-03	4.20E-03	3.05E-03	No	NA	--	2.21E+02	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 2 : 2	50.00	.0088-0.008	4.70E-03	4.70E-03	4.70E-03	No	1.61E-03	Yes	8.98E+01	No	No	</=SL
SVOCs														
bis(2-Ethylhexyl)phthalate	117-81-7	1 : 2 : 2	50.00	0.4-0.4	1.40E-01 J	1.40E-01 J	1.40E-01	No	3.53E-01	No	1.23E+02	No	No	</=SL
Di-n-butylphthalate	84-74-2	1 : 2 : 2	50.00	0.4-0.4	3.70E-02 J	3.70E-02 J	3.70E-02	No	NA	--	6.16E+03	No	No	</=SL
Fluoranthene	206-44-0	1 : 2 : 2	50.00	0.4-0.4	3.50E-02 J	3.50E-02 J	3.50E-02	No	4.42E-01	No	2.20E+03	No	No	</=SL
Pyrene	129-00-0	1 : 2 : 2	50.00	0.4-0.4	3.00E-02 J	3.00E-02 J	3.00E-02	No	4.09E-01	No	2.91E+03	No	No	</=SL
Herbicide														
Pentachlorophenol	87-86-5	2 : 2 : 2	100.00	-	1.30E-02	3.90E-02	2.60E-02	No	4.57E-03	Yes	9.00E+00	No	No	</=SL
Metals														
Aluminum	7429-90-5	2 : 2 : 2	100.00	-	6.10E+03	6.70E+03	6.40E+03	No	1.38E+04	No	9.21E+04	No	No	</=SL
Arsenic	7440-38-2	2 : 2 : 2	100.00	-	5.30E+00	5.30E+00	5.30E+00	No	1.24E+01	No	1.59E+00	Yes	No	</=BKG
Barium	7440-39-3	2 : 2 : 2	100.00	-	1.50E+02	1.80E+02	1.65E+02	No	3.07E+02	No	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	2 : 2 : 2	100.00	-	4.00E-01	4.20E-01	4.10E-01	No	9.02E-01	No	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	2 : 2 : 2	100.00	-	4.00E-01	8.00E-01	6.00E-01	No	3.34E+00	No	4.51E+01	No	No	</=SL
Calcium	7440-70-2	2 : 2 : 2	100.00	-	1.30E+04	1.50E+04	1.40E+04	Yes	9.74E+04	No	NA	--	No	EN
Chromium	7440-47-3	2 : 2 : 2	100.00	-	1.00E+01	1.00E+01	1.00E+01	No	2.21E+01	No	4.48E+02	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Cobalt	7440-48-4	2 : 2 : 2	100.00	-	5.20E+00	5.30E+00	5.25E+00	No	9.40E+00	No	1.33E+03	No	No	</=SL
Copper	7440-50-8	2 : 2 : 2	100.00	-	1.50E+01	2.10E+01	1.80E+01	No	8.58E+01	No	4.09E+03	No	No	</=SL
Iron	7439-89-6	2 : 2 : 2	100.00	-	1.10E+04	1.10E+04	1.10E+04	Yes	2.33E+04	No	7.20E+04	No	No	EN
Lead	7439-92-1	2 : 2 : 2	100.00	-	1.40E+01	2.10E+01	1.75E+01	No	1.30E+02	No	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	2 : 2 : 2	100.00	-	5.10E+03	5.80E+03	5.45E+03	Yes	1.23E+04	No	NA	--	No	EN
Manganese	7439-96-5	2 : 2 : 2	100.00	-	2.60E+02	2.90E+02	2.75E+02	No	5.52E+02	No	1.95E+03	No	No	</=SL
Mercury	7439-97-6	2 : 2 : 2	100.00	-	2.90E-02	4.60E-02	3.75E-02	No	1.34E-01	No	3.10E+01	No	No	</=SL
Nickel	7440-02-0	2 : 2 : 2	100.00	-	1.30E+01	1.40E+01	1.35E+01	No	3.30E+01	No	2.04E+03	No	No	</=SL
Potassium	7440-09-7	2 : 2 : 2	100.00	-	1.30E+03	1.40E+03	1.35E+03	Yes	3.01E+03	No	NA	--	No	EN
Sodium	7440-23-5	2 : 2 : 2	100.00	-	1.50E+02	1.50E+02	1.50E+02	Yes	4.60E+02	No	NA	--	No	EN
Vanadium	7440-62-2	2 : 2 : 2	100.00	-	1.80E+01	2.00E+01	1.90E+01	No	3.89E+01	No	1.02E+02	No	No	</=SL
Zinc	7440-66-6	2 : 2 : 2	100.00	-	5.80E+01	1.10E+02	8.40E+01	No	3.90E+02	No	3.06E+04	No	No	</=SL
Surface Soil	**Site P**													
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 10 : 10	10.00	).0034-0.01	8.90E-04	8.90E-04	8.90E-04	No	NA	--	6.94E+02	No	No	</=SL
2-Butanone (MEK)	78-93-3	5 : 10 : 10	50.00	0.017-0.07	4.80E-03	1.20E-02	8.50E-03	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone (MI	108-10-1	3 : 10 : 10	30.00	0.017-0.07	1.70E-02 J	3.90E-02	2.57E-02	No	NA	--	4.70E+03	No	No	</=SL
Acetone	67-64-1	6 : 10 : 10	60.00	0.071-0.14	1.60E-02	8.50E-02	3.98E-02	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	5 : 10 : 10	50.00	).0034-0.01	1.26E-03	9.40E-03	4.73E-03	No	NA	--	1.40E+00	No	No	</=SL
Carbon Disulfide	75-15-0	3 : 10 : 10	30.00	).0034-0.01	1.40E-03 J	2.20E-03	1.67E-03	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	4 : 11 : 11	36.36	).0034-0.01	3.00E-03 J	5.40E-01 J	1.38E-01	No	NA	--	5.31E+01	No	No	</=SL
Ethylbenzene	100-41-4	6 : 11 : 11	54.55	).0034-0.01	2.60E-04 J	8.00E-01 J	1.36E-01	No	1.07E-03	Yes	7.42E+02	No	No	</=SL
Methyl N-Butyl Ketone	591-78-6	1 : 10 : 10	10.00	0.017-0.07	5.90E-03 J	5.90E-03 J	5.90E-03	No	NA	--	1.13E+04	No	No	</=SL
Styrene (Monomer)	100-42-5	1 : 10 : 10	10.00	).0034-0.01	3.40E-04	3.40E-04	3.40E-04	No	3.37E-03	No	1.81E+03	No	No	</=SL
Tetrachloroethene	127-18-4	5 : 11 : 11	45.45	).0034-0.01	1.90E-03 J	5.90E+01 J	1.18E+01	No	8.80E-04	Yes	1.31E+00	Yes	Yes	>SL
Toluene	108-88-3	5 : 11 : 11	45.45	).0055-0.01	1.20E-03 J	9.30E-01 J	1.94E-01	No	NA	--	2.21E+02	No	No	</=SL
Trichloroethene	79-01-6	2 : 10 : 10	20.00	).0034-0.01	7.90E-04	1.50E-03 J	1.15E-03	No	NA	--	1.10E-01	No	No	</=SL
Xylenes, Total	1330-20-7	5 : 11 : 11	45.45	).0068-0.02	9.70E-04	3.70E+00 J	7.53E-01	No	1.61E-03	Yes	8.98E+01	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
SVOCs														
4-Chloroaniline	106-47-8	1 : 11 : 11	9.09	0.72-7.6	2.10E+01 J	2.10E+01 J	2.10E+01	No	NA	--	2.46E+02	No	No	</=SL
Acenaphthene	83-32-9	1 : 11 : 11	9.09	0.36-8.6	7.50E-02	7.50E-02	7.50E-02	No	4.20E-02	Yes	2.92E+03	No	No	</=SL
Anthracene	120-12-7	3 : 11 : 11	27.27	0.36-8.6	5.20E-02 J	2.30E-01	1.18E-01	No	1.20E-01	Yes	2.38E+04	No	No	</=SL
Benzo(a)anthracene	56-55-3	6 : 11 : 11	54.55	0.38-8.6	2.90E-02	6.80E-01	2.50E-01	No	1.97E-01	Yes	2.11E+00	No	No	</=SL
Benzo(a)pyrene	50-32-8	6 : 11 : 11	54.55	0.38-8.6	4.20E-02	6.70E-01	2.60E-01	No	4.80E-01	Yes	2.10E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	6 : 11 : 11	54.55	0.38-8.6	3.20E-02	6.80E-01	2.85E-01	No	2.60E-01	Yes	2.11E+00	No	No	</=SL
Benzo(g,h,i)perylene	191-24-2	5 : 11 : 11	45.45	0.38-8.6	7.20E-02	3.20E-01	1.92E-01	No	5.20E-01	No	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	6 : 11 : 11	54.55	0.38-8.6	3.00E-02	5.70E-01	2.50E-01	No	2.10E-01	Yes	2.11E+01	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	7 : 11 : 11	63.64	0.36-8.6	3.50E-02	7.65E-01 J	2.33E-01	No	3.53E-01	Yes	1.23E+02	No	No	</=SL
Carbazole	86-74-8	1 : 11 : 11	9.09	0.36-8.6	7.30E-02	7.30E-02	7.30E-02	No	NA	--	8.62E+01	No	No	</=SL
Chrysene	218-01-9	7 : 11 : 11	63.64	0.38-8.6	3.00E-02 J	7.70E-01	2.59E-01	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	2 : 11 : 11	18.18	0.36-8.6	5.90E-02	1.10E-01	8.45E-02	No	1.20E-01	No	2.10E-01	No	No	</=SL
Dibenzofuran	132-64-9	1 : 11 : 11	9.09	0.36-8.6	2.90E-02	2.90E-02	2.90E-02	No	NA	--	1.56E+02	No	No	</=SL
Di-n-butylphthalate	84-74-2	1 : 11 : 11	9.09	0.36-8.6	6.20E-02 J	6.20E-02 J	6.20E-02	No	NA	--	6.16E+03	No	No	</=SL
Fluoranthene	206-44-0	6 : 11 : 11	54.55	0.38-8.6	4.00E-02	1.70E+00	6.18E-01	No	4.42E-01	Yes	2.20E+03	No	No	</=SL
Fluorene	86-73-7	1 : 11 : 11	9.09	0.36-8.6	6.50E-02	6.50E-02	6.50E-02	No	NA	--	2.63E+03	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	6 : 11 : 11	54.55	0.38-8.6	5.30E-02 J	2.40E-01 J	1.35E-01	No	NA	--	2.11E+00	No	No	</=SL
Phenanthrene	85-01-8	7 : 11 : 11	63.64	0.38-8.6	2.40E-02	1.10E+00	3.13E-01	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Phenol	108-95-2	1 : 11 : 11	9.09	0.36-8.6	3.60E-01	3.60E-01	3.60E-01	No	NA	--	1.85E+04	No	No	</=SL
Pyrene	129-00-0	7 : 11 : 11	63.64	0.38-8.6	3.95E-02 J	1.80E+00	4.97E-01	No	4.09E-01	Yes	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDE	72-55-9	1 : 4 : 4	25.00	).0041-0.08	3.00E-03 J	3.00E-03 J	3.00E-03	No	1.45E-02	No	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	4 : 4 : 4	100.00	).0041-0.08	8.10E-03 J	1.10E+00 J	2.84E-01	No	4.95E-02	Yes	7.00E+00	No	No	</=SL
alpha-Chlordane	5103-71-9	2 : 4 : 4	50.00	).0021-0.04	1.50E-03 J	1.80E-02	9.75E-03	No	1.24E-02	Yes	6.50E+00	No	No	</=SL
Dieldrin	60-57-1	2 : 4 : 4	50.00	).0041-0.08	2.00E-03 J	3.00E-03 J	2.50E-03	No	1.32E-02	No	1.10E-01	No	No	</=SL
Endosulfan Sulfate	1031-07-8	1 : 4 : 4	25.00	).0041-0.08	3.60E-02 J	3.60E-02 J	3.60E-02	No	1.81E-03	Yes	3.69E+02	No	No	</=SL
Endrin Aldehyde	7421-93-4	1 : 4 : 4	25.00	).0041-0.08	1.40E-01 J	1.40E-01 J	1.40E-01	No	8.80E-03	Yes	1.85E+01	No	No	</=SL
Endrin Ketone	53494-70-5	1 : 4 : 4	25.00	).0041-0.08	9.70E-03 J	9.70E-03 J	9.70E-03	No	NA	--	1.85E+01	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Heptachlor Epoxide	1024-57-3	1 : 4 : 4	25.00	).0021-0.042	1.50E-02 J	1.50E-02 J	1.50E-02	No	1.27E-02	Yes	1.90E-01	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	1 : 11 : 11	9.09	).0091-0.096	1.40E-03 J	1.40E-03 J	1.40E-03	No	NA	--	6.16E+02	No	No	</=SL
2,4-D	94-75-7	2 : 11 : 11	18.18	).0091-0.096	4.60E-03	1.00E-02 J	7.30E-03	No	1.16E-02	No	7.68E+02	No	No	</=SL
Dichlorprop	120-36-5	3 : 11 : 11	27.27	0.11-1.2	1.20E-03 J	9.50E-03 J	4.37E-03	No	1.14E-01	No	4.92E+02	No	No	</=SL
MCPP	93-65-2	3 : 11 : 11	27.27	2.2-23	5.60E-01 J	4.30E+00	2.39E+00	No	8.80E+00	No	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	10 : 11 : 11	90.91	).0092-0.021	4.30E-03	5.80E-01	1.29E-01	No	4.57E-03	Yes	9.00E+00	No	No	</=SL
PCBs														
TOTAL PCBs	Total PCBs	3 : 4 : 4	75.00	-	4.82E-02	7.02E+00	2.38E+00	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	3 : 4 : 4	75.00	-	1.79E-05	3.74E-04	1.48E-04	No	4.31E-05	Yes	1.00E-03	No	No	</=SL
Metals														
Aluminum	7429-90-5	11 : 11 : 11	100.00	19-25	2.90E+03	8.50E+03	5.40E+03	No	1.38E+04	No	9.21E+04	No	No	</=SL
Antimony	7440-36-0	9 : 11 : 11	81.82	1.9-2.5	5.40E-01	1.60E+00 J	9.54E-01	No	2.63E+00	No	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	11 : 11 : 11	100.00	0.94-1.2	4.00E+00 J	2.60E+01 J	1.13E+01	No	1.24E+01	Yes	1.59E+00	Yes	Yes	>SL
Barium	7440-39-3	11 : 11 : 11	100.00	0.94-1.2	7.70E+01	7.20E+02 J	1.68E+02	No	3.07E+02	Yes	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	11 : 11 : 11	100.00	0.38-0.49	3.30E-01	1.80E+00	9.01E-01	No	9.02E-01	Yes	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	10 : 11 : 11	90.91	0.47-0.62	6.20E-01	2.50E+01	4.76E+00	No	3.34E+00	Yes	4.51E+01	No	No	</=SL
Calcium	7440-70-2	11 : 11 : 11	100.00	47-62	3.20E+03	1.90E+05	5.49E+04	Yes	9.74E+04	Yes	NA	--	No	EN
Chromium	7440-47-3	11 : 11 : 11	100.00	0.94-1.2	1.30E+01	1.00E+02	2.36E+01	No	2.21E+01	Yes	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	11 : 11 : 11	100.00	0.94-1.2	3.50E+00	1.30E+01 J	7.40E+00	No	9.40E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	11 : 11 : 11	100.00	1.9-2.5	1.85E+01	2.50E+02	6.91E+01	No	8.58E+01	Yes	4.09E+03	No	No	</=SL
Iron	7439-89-6	11 : 11 : 11	100.00	4.7-6.2	6.30E+03	3.20E+04	1.24E+04	Yes	2.33E+04	Yes	7.20E+04	No	No	EN
Lead	7439-92-1	11 : 11 : 11	100.00	0.47-0.62	1.50E+01	1.04E+03 J	1.91E+02	No	1.30E+02	Yes	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	11 : 11 : 11	100.00	47-62	4.60E+02	1.20E+04	5.15E+03	Yes	1.23E+04	No	NA	--	No	EN
Manganese	7439-96-5	11 : 11 : 11	100.00	0.94-1.2	3.10E+01	2.70E+03	4.50E+02	No	5.52E+02	Yes	1.95E+03	Yes	Yes	>SL
Mercury	7439-97-6	11 : 11 : 11	100.00	0.02-0.023	6.60E-02	5.60E+00	9.11E-01	No	1.34E-01	Yes	3.10E+01	No	No	</=SL
Nickel	7440-02-0	11 : 11 : 11	100.00	3.8-4.9	1.20E+01	1.30E+02 J	3.13E+01	No	3.30E+01	Yes	2.04E+03	No	No	</=SL
Potassium	7440-09-7	11 : 11 : 11	100.00	94-120	5.50E+02 J	1.75E+03	1.06E+03	Yes	3.01E+03	No	NA	--	No	EN

TABLE 2.1
COPC SELECTION - SURFACE SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Selenium	7782-49-2	5 : 11 : 11	45.45	0.95-3.2	1.60E+00	7.00E+00	2.84E+00	No	1.24E+00	Yes	5.11E+02	No	No	</=SL
Silver	7440-22-4	8 : 11 : 11	72.73	0.95-1.2	1.30E-01	1.40E+00	4.97E-01	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	9 : 11 : 11	81.82	47-62	1.80E+02	5.50E+02 J	3.21E+02	Yes	4.60E+02	Yes	NA	--	No	EN
Thallium	7440-28-0	1 : 11 : 11	9.09	0.95-3.3	1.30E+00	1.30E+00	1.30E+00	No	NA	--	6.75E+00	No	No	</=SL
Vanadium	7440-62-2	11 : 11 : 11	100.00	0.94-1.2	1.50E+01	2.60E+02	4.65E+01	No	3.89E+01	Yes	1.02E+02	Yes	Yes	>SL
Zinc	7440-66-6	11 : 11 : 11	100.00	1.9-2.5	8.50E+01 J	3.10E+03	7.50E+02	No	3.90E+02	Yes	3.06E+04	No	No	</=SL
Surface Soil	**Site Q Central**													
VOCs														
2-Butanone (MEK)	78-93-3	8 : 19 : 19	42.11	0.016-0.069	5.40E-03	3.80E-02	1.96E-02	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone (MI	108-10-1	1 : 19 : 19	5.26	0.016-0.069	1.02E-02	1.02E-02	1.02E-02	No	NA	--	4.70E+03	No	No	</=SL
Acetone	67-64-1	16 : 19 : 19	84.21	0.036-0.14	8.85E-03	7.10E-01	1.40E-01	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	10 : 19 : 19	52.63	0.0043-0.014	9.30E-04	7.85E-03	2.63E-03	No	NA	--	1.40E+00	No	No	</=SL
Carbon Disulfide	75-15-0	6 : 19 : 19	31.58	0.0032-0.014	8.70E-04	5.60E-03	3.68E-03	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	5 : 19 : 19	26.32	0.0036-0.014	1.30E-03 J	1.31E-01 J	3.50E-02	No	NA	--	5.31E+01	No	No	</=SL
Dichloromethane	75-09-2	1 : 19 : 19	5.26	0.0036-0.014	1.90E-03	1.90E-03	1.90E-03	No	NA	--	2.05E+01	No	No	</=SL
Ethylbenzene	100-41-4	15 : 19 : 19	78.95	0.0043-0.014	3.10E-04 J	3.50E-02 J	4.41E-03	No	1.07E-03	Yes	7.42E+02	No	No	</=SL
Tetrachloroethene	127-18-4	6 : 19 : 19	31.58	0.0032-0.014	4.10E-04	5.00E-02	1.02E-02	No	8.80E-04	Yes	1.31E+00	No	No	</=SL
Toluene	108-88-3	13 : 19 : 19	68.42	0.0043-0.014	1.90E-03	1.50E-02	4.58E-03	No	NA	--	2.21E+02	No	No	</=SL
Trichloroethene	79-01-6	4 : 19 : 19	21.05	0.0032-0.014	5.40E-04	2.00E-03	1.13E-03	No	NA	--	1.10E-01	No	No	</=SL
Xylenes, Total	1330-20-7	12 : 19 : 19	63.16	0.0087-0.028	1.20E-03	1.75E-01	1.96E-02	No	1.61E-03	Yes	8.98E+01	No	No	</=SL
SVOCs														
1,4-Dichlorobenzene	106-46-7	3 : 19 : 19	15.79	0.34-3.9	4.50E-02	3.00E-01	1.62E-01	No	NA	--	7.87E+00	No	No	</=SL
2,4-Dinitrotoluene	121-14-2	1 : 19 : 19	5.26	0.35-3.9	4.10E-01	4.10E-01	4.10E-01	No	NA	--	1.23E+02	No	No	</=SL
2,6-Dinitrotoluene	606-20-2	1 : 19 : 19	5.26	0.35-3.9	6.00E-01	6.00E-01	6.00E-01	No	NA	--	6.16E+01	No	No	</=SL
2-Methylnaphthalene	91-57-6	3 : 19 : 19	15.79	0.34-3.9	2.90E-02	6.90E-02	4.43E-02	No	NA	--	1.88E+01	No	No	</=SL
3-Methylphenol/4-Methylp	106-44-5	1 : 19 : 19	5.26	0.34-3.9	6.60E-02	6.60E-02	6.60E-02	No	NA	--	3.08E+02	No	No	</=SL
4-Bromophenyl Phenyl Et	101-55-3	1 : 19 : 19	5.26	0.35-3.9	5.80E-02	5.80E-02	5.80E-02	No	NA	--	NA	--	No	SL NA
Acenaphthene	83-32-9	9 : 19 : 19	47.37	0.34-3.9	3.00E-02	3.60E-01	1.14E-01	No	4.20E-02	Yes	2.92E+03	No	No	</=SL
Acenaphthylene	208-96-8	2 : 19 : 19	10.53	0.34-3.9	2.40E-02	2.90E-01	1.57E-01	No	NA	--	2.92E+03	No	No	</=SL

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Anthracene	120-12-7	13 : 19 : 19	68.42	0.34-3.9	2.80E-02	1.20E+00	2.72E-01	No	1.20E-01	Yes	2.38E+04	No	No	</=SL
Benzo(a)anthracene	56-55-3	15 : 19 : 19	78.95	0.34-3.9	3.50E-02 J	3.60E+00	6.23E-01	No	1.97E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(a)pyrene	50-32-8	15 : 19 : 19	78.95	0.34-3.9	2.80E-02 J	3.20E+00	5.94E-01	No	4.80E-01	Yes	2.10E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	15 : 19 : 19	78.95	0.34-3.9	3.90E-02 J	3.20E+00	5.70E-01	No	2.60E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	14 : 19 : 19	73.68	0.34-3.9	2.60E-02 J	2.10E+00	3.59E-01	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	13 : 19 : 19	68.42	0.34-3.9	9.40E-02	2.30E+00	5.76E-01	No	2.10E-01	Yes	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	4 : 19 : 19	21.05	0.34-3.9	2.30E-02	2.50E+00 J	6.95E-01	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	12 : 19 : 19	63.16	0.34-3.9	5.20E-02 J	4.80E+01	4.21E+00	No	3.53E-01	Yes	1.23E+02	No	No	</=SL
Carbazole	86-74-8	6 : 19 : 19	31.58	0.34-3.9	4.60E-02 J	4.10E-01	1.94E-01	No	NA	--	8.62E+01	No	No	</=SL
Chrysene	218-01-9	15 : 19 : 19	78.95	0.34-3.9	4.50E-02 J	3.80E+00	7.05E-01	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	5 : 19 : 19	26.32	0.34-3.9	3.60E-02	7.20E-02	4.84E-02	No	1.20E-01	No	2.10E-01	No	No	</=SL
Dibenzofuran	132-64-9	8 : 19 : 19	42.11	0.34-3.9	2.20E-02	2.50E-01	9.25E-02	No	NA	--	1.56E+02	No	No	</=SL
Di-n-butylphthalate	84-74-2	2 : 19 : 19	10.53	0.34-3.9	8.50E-02 J	2.40E-01	1.63E-01	No	NA	--	6.16E+03	No	No	</=SL
Fluoranthene	206-44-0	16 : 19 : 19	84.21	0.34-3.9	5.50E-02 J	7.60E+00	1.45E+00	No	4.42E-01	Yes	2.20E+03	No	No	</=SL
Fluorene	86-73-7	9 : 19 : 19	47.37	0.34-3.9	3.40E-02	4.00E-01	1.41E-01	No	NA	--	2.63E+03	No	No	</=SL
Hexachlorobenzene	118-74-1	1 : 19 : 19	5.26	0.34-3.9	2.90E-02	2.90E-02	2.90E-02	No	NA	--	1.08E+00	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	13 : 19 : 19	68.42	0.34-3.9	4.20E-02	1.60E+00	3.14E-01	No	NA	--	2.11E+00	No	No	</=SL
Naphthalene	91-20-3	4 : 19 : 19	21.05	0.34-3.9	4.60E-02	7.30E-01	2.24E-01	No	NA	--	1.88E+01	No	No	</=SL
N-Nitroso-di-n-propylamin	621-64-7	1 : 19 : 19	5.26	0.35-3.9	1.80E-01	1.80E-01	1.80E-01	No	NA	--	2.50E-01	No	No	</=SL
Phenanthrene	85-01-8	15 : 19 : 19	78.95	0.34-3.9	4.90E-02 J	4.40E+00	9.48E-01	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Pyrene	129-00-0	16 : 19 : 19	84.21	0.34-3.9	5.00E-02 J	7.50E+00	1.29E+00	No	4.09E-01	Yes	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDD	72-54-8	1 : 15 : 15	6.67	).0034-0.02	2.90E-02 J	2.90E-02 J	2.90E-02	No	9.24E-03	Yes	9.95E+00	No	No	</=SL
4,4'-DDE	72-55-9	3 : 15 : 15	20.00	).0034-0.02	1.10E-03	2.50E-03 J	1.70E-03	No	1.45E-02	No	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	6 : 15 : 15	40.00	).0034-0.02	8.60E-04	1.05E-01 J	2.04E-02	No	4.95E-02	Yes	7.00E+00	No	No	</=SL
Aldrin	309-00-2	2 : 15 : 15	13.33	).0018-0.01	2.10E-03 J	2.80E-03	2.45E-03	No	9.80E-03	No	1.00E-01	No	No	</=SL
alpha-BHC	319-84-6	1 : 15 : 15	6.67	).0018-0.01	6.05E-02 J	6.05E-02 J	6.05E-02	No	2.40E-01	No	3.60E-01	No	No	</=SL
alpha-Chlordane	5103-71-9	3 : 15 : 15	20.00	).0018-0.01	2.90E-03	8.00E-03	4.92E-03	No	1.24E-02	No	6.50E+00	No	No	</=SL
Dieldrin	60-57-1	7 : 15 : 15	46.67	).0035-0.02	5.20E-04	4.80E-02 J	1.24E-02	No	1.32E-02	Yes	1.10E-01	No	No	</=SL
Endosulfan I	959-98-8	2 : 15 : 15	13.33	).0018-0.01	1.40E-03	1.90E-03	1.65E-03	No	2.29E-03	No	3.69E+02	No	No	</=SL

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Endosulfan Sulfate	1031-07-8	1 : 15 : 15	6.67	).0034-0.02	2.40E-03 J	2.40E-03 J	2.40E-03	No	1.81E-03	Yes	3.69E+02	No	No	</=SL
Endrin Ketone	53494-70-5	1 : 15 : 15	6.67	).0034-0.02	1.10E-03 J	1.10E-03 J	1.10E-03	No	NA	--	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	1 : 15 : 15	6.67	).0018-0.01	2.80E-04	2.80E-04	2.80E-04	No	NA	--	1.74E+00	No	No	</=SL
gamma-Chlordane	5103-74-2	3 : 15 : 15	20.00	).0018-0.01	7.20E-04	7.20E-03	2.97E-03	No	9.97E-02	No	6.50E+00	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	1 : 19 : 19	5.26	0.0085-0.23	3.55E-03	3.55E-03	3.55E-03	No	NA	--	6.16E+02	No	No	</=SL
2,4-D	94-75-7	1 : 19 : 19	5.26	0.0085-0.23	4.70E-03 J	4.70E-03 J	4.70E-03	No	1.16E-02	No	7.68E+02	No	No	</=SL
2,4-DB	94-82-6	1 : 19 : 19	5.26	0.0085-0.23	3.50E-02 J	3.50E-02 J	3.50E-02	No	NA	--	4.92E+02	No	No	</=SL
MCPP	93-65-2	2 : 19 : 19	10.53	2.1-55	9.10E-01	4.10E+00	2.50E+00	No	8.80E+00	No	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	7 : 19 : 19	36.84	0.0091-0.47	3.30E-03 J	2.30E+00	3.71E-01	No	4.57E-03	Yes	9.00E+00	No	No	</=SL
PCBs														
TOTAL PCBs	Total PCBs	5 : 16 : 16	31.25	-	1.40E-01	2.58E+00	8.98E-01	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	10 : 14 : 14	71.43	-	5.78E-05	3.87E-03	4.94E-04	No	4.31E-05	Yes	1.00E-03	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	19 : 19 : 19	100.00	20-24	1.30E+03	1.70E+04	6.01E+03	No	1.38E+04	Yes	9.21E+04	No	No	</=SL
Antimony	7440-36-0	11 : 19 : 19	57.89	1.8-2.6	5.70E-01	3.25E+00 J	1.24E+00	No	2.63E+00	Yes	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	19 : 19 : 19	100.00	1-1.2	1.10E+00	8.10E+01	9.53E+00	No	1.24E+01	Yes	1.59E+00	Yes	Yes	>SL
Barium	7440-39-3	19 : 19 : 19	100.00	1-1.2	2.30E+01	3.80E+02 J	1.17E+02	No	3.07E+02	Yes	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	19 : 19 : 19	100.00	0.4-0.49	1.00E-01	3.20E+00	5.49E-01	No	9.02E-01	Yes	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	17 : 19 : 19	89.47	0.5-0.64	2.40E-01	4.50E+00	1.27E+00	No	3.34E+00	Yes	4.51E+01	No	No	</=SL
Calcium	7440-70-2	19 : 19 : 19	100.00	50-610	1.70E+03	2.80E+05	1.34E+05	Yes	9.74E+04	Yes	NA	--	No	EN
Chromium	7440-47-3	19 : 19 : 19	100.00	1-1.2	6.30E+00	4.00E+01	1.56E+01	No	2.21E+01	Yes	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	19 : 19 : 19	100.00	1-1.2	7.40E-01	1.00E+01	4.23E+00	No	9.40E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	19 : 19 : 19	100.00	2-2.4	4.20E+00	3.40E+02	4.53E+01	No	8.58E+01	Yes	4.09E+03	No	No	</=SL
Iron	7439-89-6	19 : 19 : 19	100.00	5-6.1	2.40E+03	3.10E+04	1.12E+04	Yes	2.33E+04	Yes	7.20E+04	No	No	EN
Lead	7439-92-1	19 : 19 : 19	100.00	0.5-0.61	4.40E+00	3.60E+02 J	7.97E+01	No	1.30E+02	Yes	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	19 : 19 : 19	100.00	50-61	3.60E+02	2.80E+04	1.07E+04	Yes	1.23E+04	Yes	NA	--	No	EN
Manganese	7439-96-5	19 : 19 : 19	100.00	1-1.2	3.00E+01	9.00E+02	2.71E+02	No	5.52E+02	Yes	1.95E+03	No	No	</=SL

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Mercury	7439-97-6	19 : 19 : 19	100.00	0.02-0.27	4.20E-03	5.70E-01	1.40E-01	No	1.34E-01	Yes	3.10E+01	No	No	</=SL
Nickel	7440-02-0	19 : 19 : 19	100.00	4-4.9	6.00E+00	3.70E+01	1.36E+01	No	3.30E+01	Yes	2.04E+03	No	No	</=SL
Potassium	7440-09-7	19 : 19 : 19	100.00	100-120	6.50E+02	2.40E+03	1.23E+03	Yes	3.01E+03	No	NA	--	No	EN
Selenium	7782-49-2	1 : 19 : 19	5.26	1-3.3	5.40E+00	5.40E+00	5.40E+00	No	1.24E+00	Yes	5.11E+02	No	No	</=SL
Silver	7440-22-4	10 : 19 : 19	52.63	0.91-1.3	1.10E-01	1.10E+00	2.76E-01	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	16 : 19 : 19	84.21	50-110	2.40E+02	6.70E+02	4.08E+02	Yes	4.60E+02	Yes	NA	--	No	EN
Thallium	7440-28-0	1 : 19 : 19	5.26	1-3.3	2.70E+00	2.70E+00	2.70E+00	No	NA	--	6.75E+00	No	No	</=SL
Vanadium	7440-62-2	19 : 19 : 19	100.00	1-1.2	6.10E+00	7.10E+01	2.03E+01	No	3.89E+01	Yes	1.02E+02	No	No	</=SL
Zinc	7440-66-6	19 : 19 : 19	100.00	2-2.4	2.40E+01	1.06E+03 J	2.57E+02	No	3.90E+02	Yes	3.06E+04	No	No	</=SL
Surface Soil	**Site Q North**													
VOCs														
2-Butanone (MEK)	78-93-3	4 : 11 : 11	36.36	0.025-0.93	1.50E-03	1.50E-02 J	8.30E-03	No	NA	--	1.13E+04	No	No	</=SL
Acetone	67-64-1	5 : 11 : 11	45.45	0.051-1.9	2.30E-02 J	9.10E-02 J	4.77E-02	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	5 : 11 : 11	45.45	.0052-0.009	7.60E-04 J	5.00E-01	1.01E-01	No	NA	--	1.40E+00	No	No	</=SL
Carbon Disulfide	75-15-0	4 : 11 : 11	36.36	0.0051-0.19	8.40E-04	3.60E-03 J	2.39E-03	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	2 : 11 : 11	18.18	0.0051-0.19	5.20E-04	2.40E-03 J	1.46E-03	No	NA	--	5.31E+01	No	No	</=SL
Chloroethane	75-00-3	1 : 11 : 11	9.09	0.0051-0.19	4.10E-03 J	4.10E-03 J	4.10E-03	No	NA	--	6.49E+00	No	No	</=SL
Chloromethane	74-87-3	1 : 11 : 11	9.09	0.0051-0.19	4.50E-03 J	4.50E-03 J	4.50E-03	No	9.00E-04	Yes	1.56E+01	No	No	</=SL
Ethylbenzene	100-41-4	5 : 11 : 11	45.45	.0051-0.009	1.90E-04	7.40E-01	1.49E-01	No	1.07E-03	Yes	7.42E+02	No	No	</=SL
Methyl N-Butyl Ketone	591-78-6	1 : 11 : 11	9.09	0.025-0.93	3.10E-03	3.10E-03	3.10E-03	No	NA	--	1.13E+04	No	No	</=SL
Tetrachloroethene	127-18-4	5 : 11 : 11	45.45	0.0051-0.19	4.40E-04	1.10E-02 J	3.63E-03	No	8.80E-04	Yes	1.31E+00	No	No	</=SL
Toluene	108-88-3	5 : 11 : 11	45.45	.0052-0.009	3.30E-03 J	3.50E+00	7.04E-01	No	NA	--	2.21E+02	No	No	</=SL
Trichloroethene	79-01-6	4 : 11 : 11	36.36	0.0051-0.19	4.90E-04	1.50E-03 J	9.75E-04	No	NA	--	1.10E-01	No	No	</=SL
Xylenes, Total	1330-20-7	9 : 11 : 11	81.82	0.01-0.019	3.90E-04	6.30E+00	7.07E-01	No	1.61E-03	Yes	8.98E+01	No	No	</=SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	1 : 11 : 11	9.09	0.23-2	4.90E-02	4.90E-02	4.90E-02	No	NA	--	2.16E+01	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	2 : 11 : 11	18.18	0.24-2	1.70E-01	6.30E-01	4.00E-01	No	NA	--	7.87E+00	No	No	</=SL
2,4-Dichlorophenol	120-83-2	1 : 11 : 11	9.09	0.25-2	1.00E+00 J	1.00E+00 J	1.00E+00	No	NA	--	1.85E+02	No	No	</=SL
2-Methylnaphthalene	91-57-6	8 : 11 : 11	72.73	0.26-2	2.70E-02	4.10E-01	1.43E-01	No	NA	--	1.88E+01	No	No	</=SL

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Acenaphthene	83-32-9	4 : 11 : 11	36.36	0.2-2	9.00E-02	2.00E-01	1.58E-01	No	4.20E-02	Yes	2.92E+03	No	No	</=SL
Anthracene	120-12-7	6 : 11 : 11	54.55	0.25-2	4.50E-02 J	6.10E-01	3.10E-01	No	1.20E-01	Yes	2.38E+04	No	No	</=SL
Benzo(a)anthracene	56-55-3	8 : 11 : 11	72.73	0.33-2	6.20E-02 J	1.70E+00 J	8.36E-01	No	1.97E-01	Yes	2.11E+00	No	No	</=SL
Benzo(a)pyrene	50-32-8	10 : 11 : 11	90.91	0.2-2	2.40E-02 J	1.80E+00	6.98E-01	No	4.80E-01	Yes	2.10E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	9 : 11 : 11	81.82	0.28-2	1.10E-01 J	1.80E+00	7.73E-01	No	2.60E-01	Yes	2.11E+00	No	No	</=SL
Benzo(g,h,i)perylene	191-24-2	9 : 11 : 11	81.82	0.25-2	6.40E-02 J	1.10E+00	4.48E-01	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	9 : 11 : 11	81.82	0.35-2	7.10E-02 J	1.90E+00	7.11E-01	No	2.10E-01	Yes	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	3 : 11 : 11	27.27	0.35-2	3.30E-02	5.00E-01	1.91E-01	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	8 : 11 : 11	72.73	0.35-2	3.50E-02	3.40E+00	5.06E-01	No	3.53E-01	Yes	1.23E+02	No	No	</=SL
Carbazole	86-74-8	3 : 11 : 11	27.27	0.3-2	9.80E-02	2.80E-01	1.86E-01	No	NA	--	8.62E+01	No	No	</=SL
Chrysene	218-01-9	8 : 11 : 11	72.73	0.27-2	1.20E-01 J	1.80E+00 J	9.71E-01	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	5 : 11 : 11	45.45	0.26-2	6.60E-02	3.70E-01	1.97E-01	No	1.20E-01	Yes	2.10E-01	Yes	Yes	>SL
Dibenzofuran	132-64-9	7 : 11 : 11	63.64	0.2-2	2.50E-02 J	1.80E-01	8.27E-02	No	NA	--	1.56E+02	No	No	</=SL
Di-n-octylphthalate	117-84-0	1 : 11 : 11	9.09	0.33-2	6.60E-02	6.60E-02	6.60E-02	No	NA	--	2.46E+03	No	No	</=SL
Fluoranthene	206-44-0	10 : 11 : 11	90.91	0.28-2	4.90E-02 J	3.80E+00	1.13E+00	No	4.42E-01	Yes	2.20E+03	No	No	</=SL
Fluorene	86-73-7	3 : 11 : 11	27.27	0.24-2	5.30E-02	2.10E-01	1.51E-01	No	NA	--	2.63E+03	No	No	</=SL
Hexachlorobenzene	118-74-1	1 : 11 : 11	9.09	0.28-2	3.00E-02	3.00E-02	3.00E-02	No	NA	--	1.08E+00	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	8 : 11 : 11	72.73	0.28-2	3.50E-02 J	1.00E+00	4.04E-01	No	NA	--	2.11E+00	No	No	</=SL
Naphthalene	91-20-3	5 : 11 : 11	45.45	0.2-2	5.60E-02	2.60E-01	1.34E-01	No	NA	--	1.88E+01	No	No	</=SL
Phenanthrene	85-01-8	10 : 11 : 11	90.91	0.31-2	4.00E-02 J	2.70E+00	9.53E-01	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Pyrene	129-00-0	10 : 11 : 11	90.91	0.22-2	6.40E-02 J	3.80E+00 J	1.25E+00	No	4.09E-01	Yes	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDD	72-54-8	2 : 5 : 5	40.00	0.0037-0.08	3.40E-02	3.90E-02 J	3.65E-02	No	9.24E-03	Yes	9.95E+00	No	No	</=SL
4,4'-DDE	72-55-9	2 : 4 : 5	50.00	0.0037-0.08	1.10E-02 J	5.00E-02	3.05E-02	No	1.45E-02	Yes	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	3 : 5 : 5	60.00	0.007-0.08	2.90E-02 J	2.60E-01 J	1.36E-01	No	4.95E-02	Yes	7.00E+00	No	No	</=SL
alpha-Chlordane	5103-71-9	3 : 4 : 5	75.00	0.0019-0.04	8.60E-04 J	2.00E-01	6.92E-02	No	1.24E-02	Yes	6.50E+00	No	No	</=SL
beta-BHC	319-85-7	2 : 5 : 5	40.00	0.0019-0.04	1.30E-03 J	4.00E-02 J	2.07E-02	No	NA	--	1.26E+00	No	No	</=SL
Dieldrin	60-57-1	3 : 5 : 5	60.00	0.0037-0.08	6.40E-03 J	7.70E-02 J	3.38E-02	No	1.32E-02	Yes	1.10E-01	No	No	</=SL
Endosulfan II	33213-65-9	1 : 5 : 5	20.00	0.0037-0.08	1.40E-02 J	1.40E-02 J	1.40E-02	No	1.16E-03	Yes	3.69E+02	No	No	</=SL
Endrin	72-20-8	2 : 5 : 5	40.00	0.0037-0.08	2.40E-03 J	1.80E-02 J	1.02E-02	No	9.60E-03	Yes	1.85E+01	No	No	</=SL

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Endrin Aldehyde	7421-93-4	1 : 5 : 5	20.00	0.0037-0.08	1.60E-03 J	1.60E-03 J	1.60E-03	No	8.80E-03	No	1.85E+01	No	No	</=SL
Endrin Ketone	53494-70-5	2 : 5 : 5	40.00	0.0037-0.08	2.40E-03 J	6.10E-03	4.25E-03	No	NA	--	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	1 : 5 : 5	20.00	0.0019-0.04	5.70E-03 J	5.70E-03 J	5.70E-03	No	NA	--	1.74E+00	No	No	</=SL
gamma-Chlordane	5103-74-2	3 : 5 : 5	60.00	0.0019-0.04	1.00E-02	2.10E-01	7.73E-02	No	9.97E-02	Yes	6.50E+00	No	No	</=SL
Heptachlor	76-44-8	2 : 5 : 5	40.00	0.0019-0.04	1.00E-03 J	1.10E-02 J	6.00E-03	No	1.48E-01	No	3.80E-01	No	No	</=SL
Heptachlor Epoxide	1024-57-3	1 : 5 : 5	20.00	0.0019-0.04	3.80E-03 J	3.80E-03 J	3.80E-03	No	1.27E-02	No	1.90E-01	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	2 : 11 : 11	18.18	0.0088-0.01	2.00E-03	2.10E-03	2.05E-03	No	NA	--	6.16E+02	No	No	</=SL
2,4-D	94-75-7	4 : 11 : 11	36.36	0.0088-0.01	4.20E-03 J	1.70E-02	8.77E-03	No	1.16E-02	Yes	7.68E+02	No	No	</=SL
Dicamba	1918-00-9	1 : 11 : 11	9.09	0.009-0.024	2.00E-03	2.00E-03	2.00E-03	No	NA	--	1.85E+03	No	No	</=SL
Dichlorprop	120-36-5	1 : 11 : 11	9.09	0.11-0.13	1.30E-02	1.30E-02	1.30E-02	No	1.14E-01	No	4.92E+02	No	No	</=SL
MCPP	93-65-2	2 : 11 : 11	18.18	2.1-2.6	1.60E-01 J	1.20E+00 J	6.80E-01	No	8.80E+00	No	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	8 : 11 : 11	72.73	0.009-0.082	5.50E-03	4.20E-01	9.81E-02	No	4.57E-03	Yes	9.00E+00	No	No	</=SL
PCBs														
TOTAL PCBs	Total PCBs	5 : 5 : 5	100.00	-	2.43E-01	2.43E+00	8.99E-01	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	4 : 5 : 5	80.00	-	1.52E-05	1.25E-03	3.37E-04	No	4.31E-05	Yes	1.00E-03	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	11 : 11 : 11	100.00	19-24	5.80E+02	1.10E+04	2.65E+03	No	1.38E+04	No	9.21E+04	No	No	</=SL
Antimony	7440-36-0	7 : 11 : 11	63.64	1.9-2.4	5.40E-01 J	3.80E+00	1.33E+00	No	2.63E+00	Yes	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	11 : 11 : 11	100.00	0.97-1.2	2.30E+00	1.00E+02	1.38E+01	No	1.24E+01	Yes	1.59E+00	Yes	Yes	>SL
Barium	7440-39-3	11 : 11 : 11	100.00	0.97-2.2	1.70E+01	2.90E+03	3.16E+02	No	3.07E+02	Yes	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	11 : 11 : 11	100.00	0.39-0.48	2.30E-01	3.40E+00	8.54E-01	No	9.02E-01	Yes	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	10 : 11 : 11	90.91	0.48-0.6	4.90E-01	9.20E+01	1.09E+01	No	3.34E+00	Yes	4.51E+01	Yes	Yes	>SL
Calcium	7440-70-2	11 : 11 : 11	100.00	51-240	8.90E+02	3.20E+05	7.75E+04	Yes	9.74E+04	Yes	NA	--	No	EN
Chromium	7440-47-3	11 : 11 : 11	100.00	0.97-1.2	5.60E+00	2.00E+01	1.06E+01	No	2.21E+01	No	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	11 : 11 : 11	100.00	0.97-1.2	1.00E+00	1.60E+01 J	5.62E+00	No	9.40E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	11 : 11 : 11	100.00	1.9-2.4	8.30E+00	2.30E+02 J	4.92E+01	No	8.58E+01	Yes	4.09E+03	No	No	</=SL
Iron	7439-89-6	11 : 11 : 11	100.00	4.8-6	4.00E+03	2.40E+04	9.29E+03	Yes	2.33E+04	Yes	7.20E+04	No	No	EN

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Lead	7439-92-1	10 : 11 : 11	90.91	0.48-0.6	7.60E+00	4.80E+02	1.14E+02	No	1.30E+02	Yes	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	11 : 11 : 11	100.00	48-60	1.60E+02	2.70E+04	5.90E+03	Yes	1.23E+04	Yes	NA	--	No	EN
Manganese	7439-96-5	11 : 11 : 11	100.00	0.97-1.2	7.90E+00	5.30E+02	1.79E+02	No	5.52E+02	No	1.95E+03	No	No	</=SL
Mercury	7439-97-6	11 : 11 : 11	100.00	0.019-0.043	1.60E-02	5.00E-01	1.40E-01	No	1.34E-01	Yes	3.10E+01	No	No	</=SL
Nickel	7440-02-0	11 : 11 : 11	100.00	3.9-4.8	4.40E+00	4.40E+01	1.57E+01	No	3.30E+01	Yes	2.04E+03	No	No	</=SL
Potassium	7440-09-7	11 : 11 : 11	100.00	97-120	2.10E+02	2.30E+03 J	7.89E+02	Yes	3.01E+03	No	NA	--	No	EN
Selenium	7782-49-2	5 : 11 : 11	45.45	0.97-3	7.10E-01 J	2.10E+01	5.34E+00	No	1.24E+00	Yes	5.11E+02	No	No	</=SL
Silver	7440-22-4	4 : 11 : 11	36.36	0.97-1.2	1.90E-01	5.20E+00	1.50E+00	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	9 : 11 : 11	81.82	48-60	1.80E+02	5.60E+02	3.23E+02	Yes	4.60E+02	Yes	NA	--	No	EN
Vanadium	7440-62-2	11 : 11 : 11	100.00	0.97-1.2	7.70E+00	4.10E+01	1.59E+01	No	3.89E+01	Yes	1.02E+02	No	No	</=SL
Zinc	7440-66-6	11 : 11 : 11	100.00	2-9.6	1.20E+01	8.00E+03 J	9.65E+02	No	3.90E+02	Yes	3.06E+04	No	No	</=SL
Surface Soil	**Site Q South**													
VOCs														
1,2-Dichloroethene (total)	540-59-0	2 : 24 : 24	8.33	0.008-0.025	6.90E-03 J	1.60E-02	1.15E-02	No	NA	--	1.46E+01	No	No	</=SL
2-Butanone (MEK)	78-93-3	14 : 24 : 24	58.33	0.023-0.062	2.30E-03	2.40E-02	1.16E-02	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone (MI	108-10-1	6 : 24 : 24	25.00	0.02-0.061	3.65E-03	2.05E-02 J	1.01E-02	No	NA	--	4.70E+03	No	No	</=SL
Acetone	67-64-1	17 : 24 : 24	70.83	0.058-0.12	1.30E-02 J	2.60E-01 J	1.07E-01	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	13 : 24 : 24	54.17	0.004-0.012	1.10E-03	1.40E-02 J	3.86E-03	No	NA	--	1.40E+00	No	No	</=SL
Carbon Disulfide	75-15-0	14 : 24 : 24	58.33	0.0045-0.01	6.60E-04	7.60E-03	3.82E-03	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	7 : 24 : 24	29.17	0.004-0.012	3.60E-04	2.75E-02 J	6.30E-03	No	NA	--	5.31E+01	No	No	</=SL
Chloroform	67-66-3	1 : 24 : 24	4.17	0.004-0.012	1.80E-03	1.80E-03	1.80E-03	No	NA	--	4.70E-01	No	No	</=SL
Dichloromethane	75-09-2	2 : 24 : 24	8.33	0.004-0.012	2.90E-03	3.60E-03	3.25E-03	No	NA	--	2.05E+01	No	No	</=SL
Ethylbenzene	100-41-4	14 : 24 : 24	58.33	0.004-0.012	2.30E-04	1.30E-02	1.80E-03	No	1.07E-03	Yes	7.42E+02	No	No	</=SL
Methyl N-Butyl Ketone	591-78-6	6 : 24 : 24	25.00	0.02-0.062	5.70E-03	1.90E-01	8.61E-02	No	NA	--	1.13E+04	No	No	</=SL
Tetrachloroethene	127-18-4	9 : 24 : 24	37.50	0.004-0.012	5.35E-04	1.70E+00	2.33E-01	No	8.80E-04	Yes	1.31E+00	Yes	Yes	>SL
Toluene	108-88-3	19 : 24 : 24	79.17	0.004-0.012	1.00E-03	2.37E-01	1.91E-02	No	NA	--	2.21E+02	No	No	</=SL
Trichloroethene	79-01-6	8 : 24 : 24	33.33	0.004-0.012	1.25E-03	5.75E-02 J	1.41E-02	No	NA	--	1.10E-01	No	No	</=SL
Xylenes, Total	1330-20-7	18 : 24 : 24	75.00	0.008-0.025	5.60E-04	1.59E-01 J	1.59E-02	No	1.61E-03	Yes	8.98E+01	No	No	</=SL

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SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 24 : 24	4.17	0.36-3.9	3.10E-02	3.10E-02	3.10E-02	No	NA	--	4.10E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	2 : 24 : 24	8.33	0.36-3.9	8.20E-02	3.50E-01	2.16E-01	No	NA	--	7.87E+00	No	No	</=SL
2-Methylnaphthalene	91-57-6	2 : 24 : 24	8.33	0.36-3.9	5.50E-02	9.40E-02 J	7.45E-02	No	NA	--	1.88E+01	No	No	</=SL
4-Chloroaniline	106-47-8	1 : 24 : 24	4.17	0.73-7.8	3.30E-01	3.30E-01	3.30E-01	No	NA	--	2.46E+02	No	No	</=SL
Acenaphthene	83-32-9	5 : 24 : 24	20.83	0.36-3.9	5.10E-02 J	2.90E-01 J	1.28E-01	No	4.20E-02	Yes	2.92E+03	No	No	</=SL
Anthracene	120-12-7	8 : 24 : 24	33.33	0.36-3.9	3.80E-02	9.20E-01 J	3.87E-01	No	1.20E-01	Yes	2.38E+04	No	No	</=SL
Benzo(a)anthracene	56-55-3	19 : 24 : 24	79.17	0.36-3.9	3.00E-02	2.52E+00	5.55E-01	No	1.97E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(a)pyrene	50-32-8	20 : 24 : 24	83.33	0.38-3.9	2.30E-02 J	2.98E+00	5.18E-01	No	4.80E-01	Yes	2.10E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	17 : 24 : 24	70.83	0.36-3.9	3.30E-02	3.30E+00 J	6.65E-01	No	2.60E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	18 : 24 : 24	75.00	0.38-3.9	3.70E-02	2.09E+00	3.05E-01	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	20 : 24 : 24	83.33	0.38-3.9	3.20E-02	2.50E+00	3.85E-01	No	2.10E-01	Yes	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	6 : 24 : 24	25.00	0.36-3.9	1.00E-01 J	8.70E-01 J	3.39E-01	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	16 : 24 : 24	66.67	0.38-3.9	3.20E-02	8.60E+00 J	1.08E+00	No	3.53E-01	Yes	1.23E+02	No	No	</=SL
Carbazole	86-74-8	5 : 24 : 24	20.83	0.36-3.9	6.30E-02	5.20E-01 J	2.43E-01	No	NA	--	8.62E+01	No	No	</=SL
Chrysene	218-01-9	22 : 24 : 24	91.67	0.38-3.9	2.30E-02	2.85E+00	5.36E-01	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	5 : 24 : 24	20.83	0.38-3.9	3.00E-02	4.40E-01 J	1.58E-01	No	1.20E-01	Yes	2.10E-01	Yes	Yes	>SL
Dibenzofuran	132-64-9	4 : 24 : 24	16.67	0.36-3.9	2.40E-02	2.50E-01 J	9.65E-02	No	NA	--	1.56E+02	No	No	</=SL
Diethyl Phthalate	84-66-2	1 : 24 : 24	4.17	0.36-3.9	7.80E-02	7.80E-02	7.80E-02	No	NA	--	4.92E+04	No	No	</=SL
Di-n-butylphthalate	84-74-2	6 : 24 : 24	25.00	0.36-3.9	5.10E-02	1.13E-01	8.13E-02	No	NA	--	6.16E+03	No	No	</=SL
Fluoranthene	206-44-0	21 : 24 : 24	87.50	0.36-3.9	3.40E-02 J	4.80E+00 J	1.00E+00	No	4.42E-01	Yes	2.20E+03	No	No	</=SL
Fluorene	86-73-7	5 : 24 : 24	20.83	0.36-3.9	3.40E-02	3.40E-01 J	1.31E-01	No	NA	--	2.63E+03	No	No	</=SL
Hexachlorobenzene	118-74-1	1 : 24 : 24	4.17	0.36-3.9	5.50E-02	5.50E-02	5.50E-02	No	NA	--	1.08E+00	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	13 : 24 : 24	54.17	0.36-3.9	3.70E-02	1.20E+00 J	2.22E-01	No	NA	--	2.11E+00	No	No	</=SL
Isophorone	78-59-1	2 : 24 : 24	8.33	0.36-3.9	1.80E-01	4.90E-01	3.35E-01	No	NA	--	5.12E+02	No	No	</=SL
Naphthalene	91-20-3	4 : 24 : 24	16.67	0.36-3.9	2.80E-02	3.30E-01	1.60E-01	No	NA	--	1.88E+01	No	No	</=SL
Phenanthrene	85-01-8	17 : 24 : 24	70.83	0.36-3.9	2.60E-02 J	3.80E+00 J	7.70E-01	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Pyrene	129-00-0	19 : 24 : 24	79.17	0.38-3.9	2.90E-02	4.95E+00	1.07E+00	No	4.09E-01	Yes	2.91E+03	No	No	</=SL

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Pesticide														
4,4'-DDD	72-54-8	5 : 22 : 22	22.73	).0036-0.09(	1.20E-03 J	1.80E-02	6.70E-03	No	9.24E-03	Yes	9.95E+00	No	No	</=SL
4,4'-DDE	72-55-9	9 : 21 : 22	42.86	).0036-0.09(	7.10E-04	5.65E-01 J	8.19E-02	No	1.45E-02	Yes	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	19 : 22 : 22	86.36	0.0038-0.17	1.80E-03 J	2.60E+00 J	3.92E-01	No	4.95E-02	Yes	7.00E+00	No	No	</=SL
Aldrin	309-00-2	1 : 22 : 22	4.55	).0019-0.04(	2.50E-03	2.50E-03	2.50E-03	No	9.80E-03	No	1.00E-01	No	No	</=SL
alpha-BHC	319-84-6	1 : 22 : 22	4.55	).0019-0.04(	1.85E-01 J	1.85E-01 J	1.85E-01	No	2.40E-01	No	3.60E-01	No	No	</=SL
alpha-Chlordane	5103-71-9	9 : 22 : 22	40.91	).0019-0.04(	1.50E-04 J	5.65E-02 J	1.46E-02	No	1.24E-02	Yes	6.50E+00	No	No	</=SL
beta-BHC	319-85-7	1 : 22 : 22	4.55	).0019-0.04(	1.10E-02 J	1.10E-02 J	1.10E-02	No	NA	--	1.26E+00	No	No	</=SL
Dieldrin	60-57-1	14 : 22 : 22	63.64	).0038-0.09(	3.90E-04 J	3.75E-01 J	7.08E-02	No	1.32E-02	Yes	1.10E-01	Yes	Yes	>SL
Endosulfan II	33213-65-9	1 : 22 : 22	4.55	).0036-0.09(	1.25E-03 J	1.25E-03 J	1.25E-03	No	1.16E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan Sulfate	1031-07-8	3 : 22 : 22	13.64	).0036-0.09(	5.50E-03 J	3.75E-02 J	2.10E-02	No	1.81E-03	Yes	3.69E+02	No	No	</=SL
Endrin	72-20-8	2 : 22 : 22	9.09	).0036-0.09(	2.40E-03	1.70E-01 J	8.62E-02	No	9.60E-03	Yes	1.85E+01	No	No	</=SL
Endrin Aldehyde	7421-93-4	4 : 22 : 22	18.18	).0036-0.09(	9.20E-04 J	1.70E-02 J	9.53E-03	No	8.80E-03	Yes	1.85E+01	No	No	</=SL
Endrin Ketone	53494-70-5	5 : 22 : 22	22.73	).0036-0.09(	5.20E-04 J	1.10E-01 J	2.35E-02	No	NA	--	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	1 : 22 : 22	4.55	).0019-0.04(	7.40E-03 J	7.40E-03 J	7.40E-03	No	NA	--	1.74E+00	No	No	</=SL
gamma-Chlordane	5103-74-2	6 : 22 : 22	27.27	).0019-0.04(	5.30E-04 J	4.00E-01 J	9.44E-02	No	9.97E-02	Yes	6.50E+00	No	No	</=SL
Heptachlor Epoxide	1024-57-3	10 : 22 : 22	45.45	).0019-0.04(	2.30E-04 J	7.60E-02 J	1.73E-02	No	1.27E-02	Yes	1.90E-01	No	No	</=SL
Methoxychlor	72-43-5	1 : 22 : 22	4.55	0.019-0.49	9.20E-02 J	9.20E-02 J	9.20E-02	No	5.60E-03	Yes	3.08E+02	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	4 : 24 : 24	16.67	0.0092-0.24	1.30E-03 J	8.90E-03	6.25E-03	No	NA	--	6.16E+02	No	No	</=SL
2,4,5-TP (Silvex)	93-72-1	1 : 24 : 24	4.17	0.0092-0.24	2.30E-03	2.30E-03	2.30E-03	No	NA	--	4.92E+02	No	No	</=SL
2,4-D	94-75-7	11 : 24 : 24	45.83	0.0092-0.24	4.70E-03 J	2.00E-02	9.72E-03	No	1.16E-02	Yes	7.68E+02	No	No	</=SL
2,4-DB	94-82-6	1 : 24 : 24	4.17	0.0092-0.24	2.80E-02 J	2.80E-02 J	2.80E-02	No	NA	--	4.92E+02	No	No	</=SL
Dicamba	1918-00-9	1 : 24 : 24	4.17	0.0092-0.57	2.00E-03	2.00E-03	2.00E-03	No	NA	--	1.85E+03	No	No	</=SL
Dichlorprop	120-36-5	7 : 24 : 24	29.17	0.11-2.8	1.50E-03 J	2.50E-02	7.67E-03	No	1.14E-01	No	4.92E+02	No	No	</=SL
MCPA (2-Methyl-4-Chloro	94-74-6	7 : 24 : 24	29.17	2.2-57	6.00E-01 J	3.70E+00 J	1.61E+00	No	NA	--	3.08E+01	No	No	</=SL
MCPP	93-65-2	14 : 24 : 24	58.33	2.3-57	5.70E-01	1.50E+01	3.65E+00	No	8.80E+00	Yes	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	19 : 24 : 24	79.17	0.0095-0.49	1.10E-03 J	2.95E+00 J	1.69E-01	No	4.57E-03	Yes	9.00E+00	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
PCBs														
TOTAL PCBs	Total PCBs	16 : 22 : 22	72.73	-	9.30E-02	1.39E+01	3.15E+00	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	22 : 22 : 22	100.00	-	5.27E-05	7.11E-03	5.55E-04	No	4.31E-05	Yes	1.00E-03	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	24 : 24 : 24	100.00	20.9-29	3.80E+03	1.40E+04	9.00E+03	No	1.38E+04	Yes	9.21E+04	No	No	</=SL
Antimony	7440-36-0	12 : 24 : 24	50.00	2-2.9	5.20E-01	4.70E+01 J	7.16E+00	No	2.63E+00	Yes	4.09E+01	Yes	Yes	>SL
Arsenic	7440-38-2	24 : 24 : 24	100.00	1-1.4	3.30E+00	3.30E+01	8.29E+00	No	1.24E+01	Yes	1.59E+00	Yes	Yes	>SL
Barium	7440-39-3	24 : 24 : 24	100.00	1-1.4	8.60E+01	1.40E+03	4.21E+02	No	3.07E+02	Yes	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	24 : 24 : 24	100.00	0.42-0.57	2.80E-01	9.90E-01	6.34E-01	No	9.02E-01	Yes	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	24 : 24 : 24	100.00	0.52-0.71	4.10E-01	8.00E+03	3.39E+02	No	3.34E+00	Yes	4.51E+01	Yes	Yes	>SL
Calcium	7440-70-2	24 : 24 : 24	100.00	52.3-71	6.40E+03	7.15E+04	1.53E+04	Yes	9.74E+04	No	NA	--	No	EN
Chromium	7440-47-3	24 : 24 : 24	100.00	1-1.4	8.00E+00	6.60E+02	6.00E+01	No	2.21E+01	Yes	4.48E+02	Yes	Yes	>SL
Cobalt	7440-48-4	24 : 24 : 24	100.00	1-1.4	5.00E+00 J	2.00E+01	8.94E+00	No	9.40E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	24 : 24 : 24	100.00	2.1-2.9	7.00E+00	1.74E+03	2.25E+02	No	8.58E+01	Yes	4.09E+03	No	No	</=SL
Iron	7439-89-6	24 : 24 : 24	100.00	5.2-7.1	9.20E+03	9.00E+04	2.36E+04	Yes	2.33E+04	Yes	7.20E+04	Yes	No	EN
Lead	7439-92-1	24 : 24 : 24	100.00	0.52-0.71	1.50E+01	3.10E+03	4.03E+02	No	1.30E+02	Yes	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	24 : 24 : 24	100.00	52.3-71	2.70E+03	5.80E+03	4.18E+03	Yes	1.23E+04	No	NA	--	No	EN
Manganese	7439-96-5	24 : 24 : 24	100.00	1-1.4	2.40E+02	2.10E+03	5.29E+02	No	5.52E+02	Yes	1.95E+03	Yes	Yes	>SL
Mercury	7439-97-6	23 : 23 : 23	100.00	0.022-0.52	2.10E-02	1.40E+02	6.63E+00	No	1.34E-01	Yes	3.10E+01	Yes	Yes	>SL
Nickel	7440-02-0	24 : 24 : 24	100.00	4.2-5.7	1.10E+01	5.00E+02	4.77E+01	No	3.30E+01	Yes	2.04E+03	No	No	</=SL
Potassium	7440-09-7	24 : 24 : 24	100.00	104-140	7.10E+02	2.30E+03	1.32E+03	Yes	3.01E+03	No	NA	--	No	EN
Selenium	7782-49-2	3 : 24 : 24	12.50	1-3.5	1.40E+00	2.75E+00 J	1.98E+00	No	1.24E+00	Yes	5.11E+02	No	No	</=SL
Silver	7440-22-4	15 : 24 : 24	62.50	1-1.4	1.10E-01	1.27E+01	2.60E+00	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	13 : 24 : 24	54.17	52.3-71	1.10E+02	8.70E+02	3.14E+02	Yes	4.60E+02	Yes	NA	--	No	EN
Thallium	7440-28-0	5 : 24 : 24	20.83	1-6.6	7.90E-01	3.30E+00	1.61E+00	No	NA	--	6.75E+00	No	No	</=SL
Vanadium	7440-62-2	24 : 24 : 24	100.00	1-1.4	1.30E+01	3.60E+01	2.45E+01	No	3.89E+01	No	1.02E+02	No	No	</=SL
Zinc	7440-66-6	24 : 24 : 24	100.00	2.1-2.9	1.00E+02	1.20E+04	1.17E+03	No	3.90E+02	Yes	3.06E+04	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Surface Soil	**Site R**													
VOCs														
1,2-Dichloroethane	107-06-2	2 : 4 : 4	50.00	.0053-0.007	1.50E-03	2.60E-03	2.05E-03	No	NA	--	6.00E-01	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	1 : 4 : 4	25.00	0.011-0.014	9.40E-04	9.40E-04	9.40E-04	No	NA	--	1.46E+01	No	No	</=SL
2-Butanone (MEK)	78-93-3	4 : 4 : 4	100.00	0.027-0.035	3.10E-03	1.60E-02	1.23E-02	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone (MI	108-10-1	1 : 4 : 4	25.00	0.027-0.035	1.00E-02	1.00E-02	1.00E-02	No	NA	--	4.70E+03	No	No	</=SL
Acetone	67-64-1	4 : 4 : 4	100.00	0.053-0.071	1.10E-02	1.50E-01	9.73E-02	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	4 : 4 : 4	100.00	.0053-0.007	6.80E-04	2.10E-03	1.44E-03	No	NA	--	1.40E+00	No	No	</=SL
Chlorobenzene	108-90-7	3 : 4 : 4	75.00	.0053-0.007	1.80E-03	6.40E-02	2.28E-02	No	NA	--	5.31E+01	No	No	</=SL
Ethylbenzene	100-41-4	4 : 4 : 4	100.00	.0053-0.007	2.40E-04	1.90E-03	7.08E-04	No	1.07E-03	Yes	7.42E+02	No	No	</=SL
Tetrachloroethene	127-18-4	3 : 4 : 4	75.00	.0053-0.007	2.60E-03	1.20E-02	8.20E-03	No	8.80E-04	Yes	1.31E+00	No	No	</=SL
Toluene	108-88-3	1 : 4 : 4	25.00	.0053-0.007	1.80E-03	1.80E-03	1.80E-03	No	NA	--	2.21E+02	No	No	</=SL
Trichloroethene	79-01-6	3 : 4 : 4	75.00	.0053-0.007	3.00E-04	1.90E-02	1.04E-02	No	NA	--	1.10E-01	No	No	</=SL
Xylenes, Total	1330-20-7	3 : 4 : 4	75.00	0.011-0.014	9.50E-04	9.10E-03	3.78E-03	No	1.61E-03	Yes	8.98E+01	No	No	</=SL
SVOCs														
Benzo(a)anthracene	56-55-3	2 : 4 : 4	50.00	0.35-0.37	3.00E-02	3.30E-02	3.15E-02	No	1.97E-01	No	2.11E+00	No	No	</=SL
Benzo(a)pyrene	50-32-8	2 : 4 : 4	50.00	0.35-0.37	2.60E-02	3.30E-02	2.95E-02	No	4.80E-01	No	2.10E-01	No	No	</=SL
Benzo(b)fluoranthene	205-99-2	2 : 4 : 4	50.00	0.35-0.37	3.00E-02	3.20E-02	3.10E-02	No	2.60E-01	No	2.11E+00	No	No	</=SL
Benzo(g,h,i)perylene	191-24-2	2 : 4 : 4	50.00	0.35-0.37	2.50E-02	4.50E-02	3.50E-02	No	5.20E-01	No	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	2 : 4 : 4	50.00	0.35-0.37	2.60E-02	3.50E-02	3.05E-02	No	2.10E-01	No	2.11E+01	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	1 : 4 : 4	25.00	0.35-0.37	7.80E-02	7.80E-02	7.80E-02	No	3.53E-01	No	1.23E+02	No	No	</=SL
Chrysene	218-01-9	3 : 4 : 4	75.00	0.35-0.37	2.00E-02	5.10E-02	3.43E-02	No	2.35E-01	No	2.11E+02	No	No	</=SL
Fluoranthene	206-44-0	1 : 4 : 4	25.00	0.35-0.37	3.90E-02	3.90E-02	3.90E-02	No	4.42E-01	No	2.20E+03	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	1 : 4 : 4	25.00	0.35-0.37	4.30E-02	4.30E-02	4.30E-02	No	NA	--	2.11E+00	No	No	</=SL
Phenanthrene	85-01-8	2 : 4 : 4	50.00	0.35-0.37	2.10E-02	3.00E-02	2.55E-02	No	2.89E-01	No	2.38E+04	No	No	</=SL
Pyrene	129-00-0	1 : 4 : 4	25.00	0.35-0.37	4.80E-02	4.80E-02	4.80E-02	No	4.09E-01	No	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDT	50-29-3	1 : 4 : 4	25.00	.0035-0.007	2.70E-03 J	2.70E-03 J	2.70E-03	No	4.95E-02	No	7.00E+00	No	No	</=SL
Dieldrin	60-57-1	3 : 4 : 4	75.00	.0035-0.007	3.70E-04 J	1.40E-03 J	9.23E-04	No	1.32E-02	No	1.10E-01	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
gamma-Chlordane	5103-74-2	1 : 4 : 4	25.00	.0018-0.003	2.30E-04 J	2.30E-04 J	2.30E-04	No	9.97E-02	No	6.50E+00	No	No	</=SL
Herbicide														
2,4,5-TP (Silvex)	93-72-1	1 : 4 : 4	25.00	0.009-0.045	9.30E-03 J	9.30E-03 J	9.30E-03	No	NA	--	4.92E+02	No	No	</=SL
2,4-D	94-75-7	1 : 4 : 4	25.00	0.018-0.045	5.50E-02 J	5.50E-02 J	5.50E-02	No	1.16E-02	Yes	7.68E+02	No	No	</=SL
2,4-DB	94-82-6	3 : 4 : 4	75.00	0.009-0.045	2.60E-02 J	6.00E-02 J	3.83E-02	No	NA	--	4.92E+02	No	No	</=SL
Dichlorprop	120-36-5	4 : 4 : 4	100.00	0.11-0.54	4.40E-02 J	1.00E-01 J	7.75E-02	No	1.14E-01	No	4.92E+02	No	No	</=SL
MCPP	93-65-2	4 : 4 : 4	100.00	2.2-11	5.20E+00 J	5.10E+01 J	3.70E+01	No	8.80E+00	Yes	6.16E+01	No	No	</=SL
PCBs														
TOTAL PCBs	Total PCBs	1 : 4 : 4	25.00	-	6.62E-03	6.62E-03	6.62E-03	No	2.50E-01	No	1.00E+00	No	No	</=SL
Metals														
Aluminum	7429-90-5	4 : 4 : 4	100.00	19-22	7.60E+03 J	1.00E+04 J	8.75E+03	No	1.38E+04	No	9.21E+04	No	No	</=SL
Antimony	7440-36-0	1 : 4 : 4	25.00	1.9-2.2	4.40E-01 J	4.40E-01 J	4.40E-01	No	2.63E+00	No	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	4 : 4 : 4	100.00	0.97-1.1	5.50E+00	7.20E+00	6.35E+00	No	1.24E+01	No	1.59E+00	Yes	No	</=BKG
Barium	7440-39-3	4 : 4 : 4	100.00	0.97-1.1	1.10E+02 J	1.50E+02 J	1.25E+02	No	3.07E+02	No	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	4 : 4 : 4	100.00	0.39-0.45	4.80E-01	6.80E-01	5.63E-01	No	9.02E-01	No	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	2 : 4 : 4	50.00	0.48-0.56	4.90E-01 J	7.60E-01 J	6.25E-01	No	3.34E+00	No	4.51E+01	No	No	</=SL
Calcium	7440-70-2	4 : 4 : 4	100.00	48-56	4.40E+03	6.40E+03	5.60E+03	Yes	9.74E+04	No	NA	--	No	EN
Chromium	7440-47-3	4 : 4 : 4	100.00	0.97-1.1	1.30E+01	1.70E+01	1.53E+01	No	2.21E+01	No	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	4 : 4 : 4	100.00	0.97-1.1	6.80E+00	1.50E+01 J	9.25E+00	No	9.40E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	4 : 4 : 4	100.00	1.9-2.2	1.50E+01	2.50E+01	1.95E+01	No	8.58E+01	No	4.09E+03	No	No	</=SL
Iron	7439-89-6	4 : 4 : 4	100.00	4.8-5.6	1.50E+04	1.80E+04	1.68E+04	Yes	2.33E+04	No	7.20E+04	No	No	EN
Lead	7439-92-1	4 : 4 : 4	100.00	0.48-0.56	8.60E+00 J	3.30E+01 J	1.76E+01	No	1.30E+02	No	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	4 : 4 : 4	100.00	48-56	3.40E+03 J	4.80E+03 J	4.33E+03	Yes	1.23E+04	No	NA	--	No	EN
Manganese	7439-96-5	4 : 4 : 4	100.00	0.97-1.1	5.50E+02	1.20E+03	7.50E+02	No	5.52E+02	Yes	1.95E+03	No	No	</=SL
Mercury	7439-97-6	4 : 4 : 4	100.00	0.019-0.02	3.70E-02	7.60E-02	5.90E-02	No	1.34E-01	No	3.10E+01	No	No	</=SL
Nickel	7440-02-0	4 : 4 : 4	100.00	3.9-4.5	1.70E+01	2.10E+01	1.90E+01	No	3.30E+01	No	2.04E+03	No	No	</=SL
Potassium	7440-09-7	4 : 4 : 4	100.00	97-110	7.90E+02 J	1.00E+03 J	8.73E+02	Yes	3.01E+03	No	NA	--	No	EN
Sodium	7440-23-5	4 : 4 : 4	100.00	48-56	8.70E+01 J	1.20E+02 J	1.02E+02	Yes	4.60E+02	No	NA	--	No	EN
Vanadium	7440-62-2	4 : 4 : 4	100.00	0.97-1.1	2.70E+01 J	3.40E+01 J	3.00E+01	No	3.89E+01	No	1.02E+02	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Zinc	7440-66-6	4 : 4 : 4	100.00	1.9-2.2	4.30E+01 J	1.20E+02 J	7.53E+01	No	3.90E+02	No	3.06E+04	No	No	</=SL
Surface Soil	**Site S**													
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 4 : 4	25.00	.0045-0.006	6.60E-03	6.60E-03	6.60E-03	No	NA	--	6.94E+02	No	No	</=SL
1,1-Dichloroethane	75-34-3	2 : 4 : 4	50.00	.0045-0.006	6.60E-04	5.60E-03	3.13E-03	No	NA	--	1.74E+02	No	No	</=SL
2-Butanone (MEK)	78-93-3	3 : 4 : 4	75.00	0.027-0.034	2.40E-03	2.60E-02	1.22E-02	No	NA	--	1.13E+04	No	No	</=SL
Acetone	67-64-1	3 : 4 : 4	75.00	0.054-0.068	1.40E-02	1.70E-01	7.67E-02	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	2 : 4 : 4	50.00	.0054-0.006	1.40E-03	1.50E-03	1.45E-03	No	NA	--	1.40E+00	No	No	</=SL
Carbon Disulfide	75-15-0	1 : 4 : 4	25.00	.0045-0.006	4.80E-03	4.80E-03	4.80E-03	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	1 : 4 : 4	25.00	.0045-0.006	4.70E-04	4.70E-04	4.70E-04	No	NA	--	5.31E+01	No	No	</=SL
Ethylbenzene	100-41-4	3 : 4 : 4	75.00	.0054-0.006	1.10E-03	1.30E-02	5.07E-03	No	1.07E-03	Yes	7.42E+02	No	No	</=SL
Styrene (Monomer)	100-42-5	1 : 4 : 4	25.00	.0045-0.006	3.70E-04	3.70E-04	3.70E-04	No	3.37E-03	No	1.81E+03	No	No	</=SL
Tetrachloroethene	127-18-4	3 : 4 : 4	75.00	.0054-0.006	8.30E-04	3.00E-03	2.08E-03	No	8.80E-04	Yes	1.31E+00	No	No	</=SL
Toluene	108-88-3	2 : 4 : 4	50.00	.0054-0.006	6.20E-03	3.00E-02	1.81E-02	No	NA	--	2.21E+02	No	No	</=SL
Trichloroethene	79-01-6	2 : 4 : 4	50.00	.0045-0.006	4.70E-04	1.90E-03	1.19E-03	No	NA	--	1.10E-01	No	No	</=SL
Xylenes, Total	1330-20-7	3 : 4 : 4	75.00	0.011-0.014	4.20E-03	7.10E-02	2.65E-02	No	1.61E-03	Yes	8.98E+01	No	No	</=SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	1 : 4 : 4	25.00	0.37-14	3.60E+01	3.60E+01	3.60E+01	No	NA	--	2.16E+01	Yes	Yes	>SL
1,2-Dichlorobenzene	95-50-1	1 : 4 : 4	25.00	0.37-14	3.70E+01	3.70E+01	3.70E+01	No	NA	--	4.10E+02	No	No	</=SL
1,3-Dichlorobenzene	541-73-1	1 : 4 : 4	25.00	0.37-14	1.00E+00	1.00E+00	1.00E+00	No	NA	--	2.09E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 4 : 4	25.00	0.37-14	7.50E+00	7.50E+00	7.50E+00	No	NA	--	7.87E+00	No	No	</=SL
2,4,5-Trichlorophenol	95-95-4	1 : 4 : 4	25.00	0.37-14	1.10E+00	1.10E+00	1.10E+00	No	NA	--	6.16E+03	No	No	</=SL
2,4,6-Trichlorophenol	88-06-2	1 : 4 : 4	25.00	0.37-14	8.20E+00	8.20E+00	8.20E+00	No	NA	--	6.16E+00	Yes	Yes	>SL
2,4-Dichlorophenol	120-83-2	1 : 4 : 4	25.00	0.37-14	2.30E+00	2.30E+00	2.30E+00	No	NA	--	1.85E+02	No	No	</=SL
2-Methylnaphthalene	91-57-6	1 : 4 : 4	25.00	0.37-14	1.10E+01	1.10E+01	1.10E+01	No	NA	--	1.88E+01	No	No	</=SL
2-Nitroaniline	88-74-4	1 : 4 : 4	25.00	1.9-74	4.60E+00	4.60E+00	4.60E+00	No	NA	--	1.83E+02	No	No	</=SL
4-Nitroaniline	100-01-6	1 : 4 : 4	25.00	1.9-74	5.70E+01	5.70E+01	5.70E+01	No	NA	--	8.20E+01	No	No	</=SL
Acenaphthene	83-32-9	1 : 4 : 4	25.00	0.37-14	1.20E+00	1.20E+00	1.20E+00	No	4.20E-02	Yes	2.92E+03	No	No	</=SL
Benzo(a)anthracene	56-55-3	2 : 4 : 4	50.00	0.37-14	9.50E-02	8.00E+00	4.05E+00	No	1.97E-01	Yes	2.11E+00	Yes	Yes	>SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Benzo(a)pyrene	50-32-8	2 : 4 : 4	50.00	0.37-14	1.30E-01	5.40E+00	2.77E+00	No	4.80E-01	Yes	2.10E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	2 : 4 : 4	50.00	0.37-14	2.40E-01	6.60E+00	3.42E+00	No	2.60E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	3 : 4 : 4	75.00	0.37-14	3.70E-02 J	4.20E+00	1.45E+00	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	1 : 4 : 4	25.00	0.37-14	6.40E+00	6.40E+00	6.40E+00	No	2.10E-01	Yes	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	1 : 4 : 4	25.00	0.37-14	1.20E+02	1.20E+02	1.20E+02	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	4 : 4 : 4	100.00	0.37-14	5.40E-01 J	3.90E+00	1.69E+00	No	3.53E-01	Yes	1.23E+02	No	No	</=SL
Chrysene	218-01-9	2 : 4 : 4	50.00	0.37-14	1.40E-01	2.00E+01	1.01E+01	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	1 : 4 : 4	25.00	0.37-14	1.80E+00	1.80E+00	1.80E+00	No	1.20E-01	Yes	2.10E-01	Yes	Yes	>SL
Di-n-butylphthalate	84-74-2	1 : 4 : 4	25.00	0.37-14	4.10E-02	4.10E-02	4.10E-02	No	NA	--	6.16E+03	No	No	</=SL
Di-n-octylphthalate	117-84-0	2 : 4 : 4	50.00	0.37-14	2.80E-02	1.30E+00	6.64E-01	No	NA	--	2.46E+03	No	No	</=SL
Dinoseb	88-85-7	1 : 4 : 4	25.00	0.37-14	1.70E+00	1.70E+00	1.70E+00	No	NA	--	6.16E+01	No	No	</=SL
Fluoranthene	206-44-0	2 : 4 : 4	50.00	0.37-14	1.60E-01	4.20E+00	2.18E+00	No	4.42E-01	Yes	2.20E+03	No	No	</=SL
Fluorene	86-73-7	1 : 4 : 4	25.00	0.37-14	1.20E+00	1.20E+00	1.20E+00	No	NA	--	2.63E+03	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	3 : 4 : 4	75.00	0.37-14	3.10E-02 J	1.30E+00	4.80E-01	No	NA	--	2.11E+00	No	No	</=SL
Naphthalene	91-20-3	1 : 4 : 4	25.00	0.37-14	2.10E+00	2.10E+00	2.10E+00	No	NA	--	1.88E+01	No	No	</=SL
Phenanthrene	85-01-8	2 : 4 : 4	50.00	0.37-14	5.60E-02	9.20E+00	4.63E+00	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Pyrene	129-00-0	2 : 4 : 4	50.00	0.37-14	1.60E-01	2.80E+01	1.41E+01	No	4.09E-01	Yes	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDD	72-54-8	2 : 2 : 2	100.00	0.0037-3.6	2.80E-03 J	1.70E+00 J	8.51E-01	No	9.24E-03	Yes	9.95E+00	No	No	</=SL
4,4'-DDE	72-55-9	2 : 2 : 2	100.00	0.0037-3.6	3.60E-03 J	3.30E+00 J	1.65E+00	No	1.45E-02	Yes	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	2 : 2 : 2	100.00	0.0037-3.6	1.10E-02 J	1.60E+01 J	8.01E+00	No	4.95E-02	Yes	7.00E+00	Yes	Yes	>SL
beta-BHC	319-85-7	2 : 2 : 2	100.00	0.0019-1.8	7.70E-04 J	2.60E+01 J	1.30E+01	No	NA	--	1.26E+00	Yes	Yes	>SL
delta-BHC	319-86-8	1 : 2 : 2	50.00	0.0019-1.8	7.40E-01 J	7.40E-01 J	7.40E-01	No	6.80E-02	Yes	3.60E-01	Yes	Yes	>SL
Dieldrin	60-57-1	1 : 2 : 2	50.00	0.0037-3.6	1.40E-02	1.40E-02	1.40E-02	No	1.32E-02	Yes	1.10E-01	No	No	</=SL
Endosulfan II	33213-65-9	2 : 2 : 2	100.00	0.0037-3.6	1.20E-03 J	5.40E+00	2.70E+00	No	1.16E-03	Yes	3.69E+02	No	No	</=SL
Endrin	72-20-8	2 : 2 : 2	100.00	0.0037-3.6	4.60E-03 J	1.00E+01	5.00E+00	No	9.60E-03	Yes	1.85E+01	No	No	</=SL
Endrin Aldehyde	7421-93-4	1 : 2 : 2	50.00	0.0037-3.6	7.40E-03	7.40E-03	7.40E-03	No	8.80E-03	No	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	1 : 2 : 2	50.00	0.0019-1.8	7.50E+00 J	7.50E+00 J	7.50E+00	No	NA	--	1.74E+00	Yes	Yes	>SL
gamma-Chlordane	5103-74-2	2 : 2 : 2	100.00	0.0019-1.8	1.30E-03 J	2.70E+00 J	1.35E+00	No	9.97E-02	Yes	6.50E+00	No	No	</=SL
Heptachlor	76-44-8	1 : 2 : 2	50.00	0.0019-1.8	1.50E+00 J	1.50E+00 J	1.50E+00	No	1.48E-01	Yes	3.80E-01	Yes	Yes	>SL

TABLE 2.1
COPC SELECTION - SURFACE SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Herbicide														
2,4,5-TP (Silvex)	93-72-1	1 : 4 : 4	25.00	0.0092-0.18	2.50E-01 J	2.50E-01 J	2.50E-01	No	NA	--	4.92E+02	No	No	</=SL
2,4-D	94-75-7	1 : 4 : 4	25.00	0.0092-0.18	3.30E+00 J	3.30E+00 J	3.30E+00	No	1.16E-02	Yes	7.68E+02	No	No	</=SL
Dicamba	1918-00-9	1 : 4 : 4	25.00	0.0095-0.43	2.20E-03	2.20E-03	2.20E-03	No	NA	--	1.85E+03	No	No	</=SL
MCPP	93-65-2	1 : 4 : 4	25.00	2.2-43	8.40E+00	8.40E+00	8.40E+00	No	8.80E+00	No	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	3 : 4 : 4	75.00	0.0095-74	1.10E-02 J	4.40E+02	1.47E+02	No	4.57E-03	Yes	9.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	2 : 2 : 2	100.00	-	1.38E-01	1.01E+03	5.04E+02	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	2 : 2 : 2	100.00	-	7.94E-06	1.64E-04	8.61E-05	No	4.31E-05	Yes	1.00E-03	No	No	</=SL
Metals														
Aluminum	7429-90-5	4 : 4 : 4	100.00	20-20	3.30E+03	9.40E+03	6.33E+03	No	1.38E+04	No	9.21E+04	No	No	</=SL
Antimony	7440-36-0	2 : 4 : 4	50.00	2-2.4	5.80E-01 J	8.00E-01 J	6.90E-01	No	2.63E+00	No	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	4 : 4 : 4	100.00	0.99-1	3.60E+00	6.60E+00	5.45E+00	No	1.24E+01	No	1.59E+00	Yes	No	</=BKG
Barium	7440-39-3	4 : 4 : 4	100.00	0.99-1	7.90E+01	1.20E+02 J	9.83E+01	No	3.07E+02	No	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	4 : 4 : 4	100.00	0.4-0.4	2.40E-01	4.80E-01	3.80E-01	No	9.02E-01	No	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	4 : 4 : 4	100.00	0.49-0.51	3.30E-01	1.60E+00 J	8.85E-01	No	3.34E+00	No	4.51E+01	No	No	</=SL
Calcium	7440-70-2	4 : 4 : 4	100.00	49-250	4.90E+03	2.00E+05	5.60E+04	Yes	9.74E+04	Yes	NA	--	No	EN
Chromium	7440-47-3	4 : 4 : 4	100.00	0.99-1	7.30E+00	2.30E+01	1.73E+01	No	2.21E+01	Yes	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	4 : 4 : 4	100.00	0.99-1	3.80E+00	9.40E+00 J	6.15E+00	No	9.40E+00	No	1.33E+03	No	No	</=SL
Copper	7440-50-8	4 : 4 : 4	100.00	2-2	1.20E+01	4.60E+01	2.53E+01	No	8.58E+01	No	4.09E+03	No	No	</=SL
Iron	7439-89-6	4 : 4 : 4	100.00	4.9-5.1	7.20E+03	1.50E+04	1.12E+04	Yes	2.33E+04	No	7.20E+04	No	No	EN
Lead	7439-92-1	4 : 4 : 4	100.00	0.49-0.51	1.90E+01	7.50E+01 J	4.58E+01	No	1.30E+02	No	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	4 : 4 : 4	100.00	49-51	2.60E+03 J	8.90E+03 J	4.78E+03	Yes	1.23E+04	No	NA	--	No	EN
Manganese	7439-96-5	4 : 4 : 4	100.00	0.99-1	9.10E+01	6.70E+02	4.00E+02	No	5.52E+02	Yes	1.95E+03	No	No	</=SL
Mercury	7439-97-6	4 : 4 : 4	100.00	0.02-0.022	2.10E-02	1.70E-01	8.20E-02	No	1.34E-01	Yes	3.10E+01	No	No	</=SL
Nickel	7440-02-0	4 : 4 : 4	100.00	4-4	1.00E+01	2.00E+01	1.48E+01	No	3.30E+01	No	2.04E+03	No	No	</=SL
Potassium	7440-09-7	4 : 4 : 4	100.00	99-100	6.60E+02	1.10E+03	8.85E+02	Yes	3.01E+03	No	NA	--	No	EN
Sodium	7440-23-5	4 : 4 : 4	100.00	49-51	7.90E+01 J	1.70E+02 J	1.27E+02	Yes	4.60E+02	No	NA	--	No	EN

TABLE 2.1
COPC SELECTION - SURFACE SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Vanadium	7440-62-2	4 : 4 : 4	100.00	0.99-1	1.10E+01	2.70E+01	1.98E+01	No	3.89E+01	No	1.02E+02	No	No	</=SL
Zinc	7440-66-6	4 : 4 : 4	100.00	2-2	7.40E+01	2.20E+02 J	1.20E+02	No	3.90E+02	No	3.06E+04	No	No	</=SL

Notes:
Bkg - Background concentration.
CAS - Chemical Abstracts Service.
COPC - Constituent of potential concern.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration, Human Health Calculated using Toxicity Equivalency Factors (TEFs) from Van den Berg, et al., 2006. TEFs presented in Table F-1.
EN - Essential nutrient.
J - Estimated value.
NA - Not available.
PCB - Polychlorinated Biphenyl.
SL - Screening Level.
SVOC - Semivolatile organic compound.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.
-- Not applicable.

(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.
(b) Percent detected out of valid samples. Constituents detected in fewer than 5 percent of samples, provided 20 samples are available, will not be included as COPCs.
(c) Range of reporting limits (sample quantitation limits) is based on available information; not available for all samples with positive detections. Range not presented for calculated parameters (i.e., PCBs and Dioxins).
(d) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.The validation qualifier is presented for the minimum and maximum. Only detected results are included in the mean calculation.
(e) Equal to two times the average detected concentration in off-site sampling locations. Calculated in Table A-3a.
(f) USEPA, 2004. Region 9 Preliminary Remediation Goal (PRG) Table. October 1, 2004. Value for industrial soil. PRGs for noncarcinogenic constituents were adjusted for a hazard index of 0.1 to account for cumulative effects.
(g) For all constituents with the exception of lead, the maximum detected concentration is compared to the screening level. For lead, the mean concentration was compared to the screening level.
(h) A constituent is identified as a COPC if it is detected in greater than 5 percent of samples, provided 20 samples are available, if it is not an essential nutrient, if the maximum detected concentration is greater than the background concentration and if the maximum detected concentration is greater than the surface soil screening level.
(i) Only constituents detected at least once in the specified area/medium are included here.

TABLE 2.2
COPC SELECTION - COMBINED SOIL (SURFACE SOIL, SUBSURFACE SOIL, WASTE) AND DEEP SUBSURFACE SOI
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Combined Soil	**Site O**													
VOCs														
1,1,1-Trichloroethane	71-55-6	4 : 14 : 14	28.57	0.0037-17	6.30E-03	1.70E+01	4.73E+00	No	NA	--	6.94E+02	No	No	</=SL
2-Butanone	78-93-3	3 : 14 : 14	21.43	0.019-87	5.80E-03	2.30E-02	1.53E-02	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	1 : 14 : 14	7.14	0.019-87	2.21E-01 J	2.21E-01 J	2.21E-01	No	2.00E-03	Yes	4.70E+03	No	No	</=SL
Acetone	67-64-1	6 : 13 : 14	46.15	0.042-170	8.30E-03	1.15E+00	2.28E-01	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	10 : 14 : 14	71.43	0.0038-3.2	1.10E-03	5.00E+02	6.34E+01	No	NA	--	1.40E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	2 : 14 : 14	14.29	0.0038-17	1.70E-03	2.30E-03	2.00E-03	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	8 : 14 : 14	57.14	0.0037-25	6.50E-02	7.60E+02	1.89E+02	No	NA	--	5.31E+01	Yes	Yes	>SL
Chloroform	67-66-3	2 : 14 : 14	14.29	0.0037-17	3.00E-03	6.60E-03	4.80E-03	No	NA	--	4.70E-01	No	No	</=SL
Chloromethane	74-87-3	1 : 14 : 14	7.14	0.0037-17	1.80E+00	1.80E+00	1.80E+00	No	9.00E-04	Yes	1.56E+01	No	No	</=SL
Dichloromethane	75-09-2	2 : 14 : 14	14.29	0.0037-17	9.20E+00	1.40E+01	1.16E+01	No	6.50E-03	Yes	2.05E+01	No	No	</=SL
Ethylbenzene	100-41-4	11 : 14 : 14	78.57	0.0038-3.2	3.80E-04	2.80E+03	3.30E+02	No	9.52E-04	Yes	7.42E+02	Yes	Yes	>SL
Tetrachloroethene	127-18-4	3 : 14 : 14	21.43	0.0037-17	1.00E-03	3.00E+00	1.80E+00	No	9.50E-04	Yes	1.31E+00	Yes	Yes	>SL
Toluene	108-88-3	11 : 14 : 14	78.57	0.0038-3.2	1.60E-03	3.90E+02	4.16E+01	No	NA	--	2.21E+02	Yes	Yes	>SL
Trichloroethylene	79-01-6	1 : 14 : 14	7.14	0.0037-17	5.80E-04	5.80E-04	5.80E-04	No	NA	--	1.10E-01	No	No	</=SL
Xylenes, Total	1330-20-7	11 : 14 : 14	78.57	0.0076-50	1.30E-03	1.40E+04	1.60E+03	No	1.54E-03	Yes	8.98E+01	Yes	Yes	>SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	5 : 13 : 14	38.46	0.38-40	3.00E-02 J	2.30E+01	1.12E+01	No	NA	--	2.16E+01	Yes	Yes	>SL
1,2-Dichlorobenzene	95-50-1	7 : 13 : 14	53.85	0.38-40	3.60E-02	7.85E+01 J	2.71E+01	No	NA	--	4.10E+02	No	No	</=SL
1,3-Dichlorobenzene	541-73-1	2 : 13 : 14	15.38	0.38-110	3.00E+00	5.20E+00	4.10E+00	No	NA	--	2.09E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	6 : 13 : 14	46.15	0.38-40	4.60E-02 J	4.70E+01 J	1.94E+01	No	NA	--	7.87E+00	Yes	Yes	>SL
2,4,5-Trichlorophenol	95-95-4	2 : 13 : 14	15.38	0.38-110	5.00E-01	1.00E+00 J	7.50E-01	No	NA	--	6.16E+03	No	No	</=SL
2,4,6-Trichlorophenol	88-06-2	5 : 13 : 14	38.46	0.38-40	1.10E+00 J	6.90E+00	3.50E+00	No	NA	--	6.16E+00	Yes	Yes	>SL
2,4-Dichlorophenol	120-83-2	3 : 13 : 14	23.08	0.38-110	3.50E-02	8.10E+00	5.11E+00	No	NA	--	1.85E+02	No	No	</=SL
2-Chlorophenol	95-57-8	2 : 13 : 14	15.38	0.38-110	4.80E+00	9.60E+00	7.20E+00	No	NA	--	2.36E+01	No	No	</=SL
2-Methylnaphthalene	91-57-6	7 : 13 : 14	53.85	0.38-40	3.80E-02 J	2.95E+01 J	1.12E+01	No	NA	--	1.88E+01	Yes	Yes	>SL
2-Nitroaniline	88-74-4	2 : 13 : 14	15.38	1.9-570	5.30E-02	2.50E+00	1.28E+00	No	NA	--	1.83E+02	No	No	</=SL
3&4-Methylphenol	106-44-5	4 : 13 : 14	30.77	0.38-40	4.80E-01 J	3.77E+00 J	1.90E+00	No	NA	--	3.08E+02	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
4-Chloroaniline	106-47-8	3 : 13 : 14	23.08	0.75-220	6.30E-02 J	5.80E+00 J	2.45E+00	No	NA	--	2.46E+02	No	No	</=SL
4-Nitroaniline	100-01-6	1 : 13 : 14	7.69	1.9-570	1.80E+00	1.80E+00	1.80E+00	No	NA	--	8.20E+01	No	No	</=SL
Acenaphthene	83-32-9	1 : 13 : 14	7.69	0.38-110	9.70E-01	9.70E-01	9.70E-01	No	4.20E-02	Yes	2.92E+03	No	No	</=SL
Anthracene	120-12-7	3 : 13 : 14	23.08	0.38-110	1.50E+00	4.70E+00 J	3.03E+00	No	1.20E-01	Yes	2.38E+04	No	No	</=SL
Benzo(a)anthracene	56-55-3	6 : 13 : 14	46.15	0.38-110	3.70E-02 J	1.44E+01 J	6.21E+00	No	1.97E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(a)pyrene	50-32-8	6 : 13 : 14	46.15	0.38-40	3.70E-02 J	1.02E+01 J	4.36E+00	No	4.80E-01	Yes	2.10E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	9 : 13 : 14	69.23	0.38-40	4.00E-02 J	8.95E+00 J	3.06E+00	No	2.60E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	7 : 13 : 14	53.85	0.38-40	9.60E-02	6.90E+00 J	3.00E+00	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	1 : 13 : 14	7.69	0.38-110	1.00E-01	1.00E-01	1.00E-01	No	2.10E-01	No	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	8 : 13 : 14	61.54	0.38-40	3.50E-02	5.90E+01 J	1.03E+01	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	9 : 13 : 14	69.23	0.38-40	2.30E-02	7.80E+00 J	1.55E+00	No	2.57E-01	Yes	1.23E+02	No	No	</=SL
Carbazole	86-74-8	1 : 13 : 14	7.69	0.38-110	7.70E-01 J	7.70E-01 J	7.70E-01	No	NA	--	8.62E+01	No	No	</=SL
Chrysene	218-01-9	9 : 13 : 14	69.23	0.38-40	5.90E-02 J	3.55E+01 J	1.04E+01	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	5 : 13 : 14	38.46	0.38-40	7.80E-02	6.00E+00 J	2.00E+00	No	1.20E-01	Yes	2.10E-01	Yes	Yes	>SL
Di-n-butylphthalate	84-74-2	2 : 13 : 14	15.38	0.38-110	3.70E-02 J	4.90E-02	4.30E-02	No	NA	--	6.16E+03	No	No	</=SL
Fluoranthene	206-44-0	6 : 13 : 14	46.15	0.38-40	3.90E-02 J	9.20E+00 J	3.05E+00	No	4.42E-01	Yes	2.20E+03	No	No	</=SL
Fluorene	86-73-7	2 : 13 : 14	15.38	0.38-110	1.90E+00	3.80E+00 J	2.85E+00	No	NA	--	2.63E+03	No	No	</=SL
Hexachlorobenzene	118-74-1	3 : 13 : 14	23.08	0.38-40	1.10E-01	3.70E+00 J	1.60E+00	No	NA	--	1.08E+00	Yes	Yes	>SL
Indeno(1,2,3-cd)pyrene	193-39-5	2 : 13 : 14	15.38	0.38-110	1.50E+00	2.30E+00 J	1.90E+00	No	NA	--	2.11E+00	Yes	Yes	>SL
Naphthalene	91-20-3	5 : 13 : 14	38.46	0.38-40	1.20E+00 J	8.35E+00 J	5.33E+00	No	NA	--	1.88E+01	No	No	</=SL
Nitrobenzene	98-95-3	1 : 13 : 14	7.69	0.38-110	1.60E+00	1.60E+00	1.60E+00	No	NA	--	1.03E+01	No	No	</=SL
Phenanthrene	85-01-8	9 : 13 : 14	69.23	0.38-40	4.00E-02	3.05E+01 J	8.11E+00	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Phenol	108-95-2	5 : 13 : 14	38.46	0.38-40	1.40E+00 J	7.90E+00	5.46E+00	No	NA	--	1.85E+04	No	No	</=SL
Pyrene	129-00-0	9 : 13 : 14	69.23	0.38-40	7.50E-02 J	3.70E+01 J	1.01E+01	No	4.09E-01	Yes	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDD	72-54-8	2 : 11 : 11	18.18	0.0033-25	5.10E-03 J	8.60E-02 J	4.55E-02	No	9.24E-03	Yes	9.95E+00	No	No	</=SL
4,4'-DDE	72-55-9	2 : 11 : 11	18.18	0.0033-25	1.20E-02 J	6.90E-01 J	3.51E-01	No	1.45E-02	Yes	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	6 : 11 : 11	54.55	0.0033-25	8.10E-04 J	3.03E+00 J	9.63E-01	No	3.98E-02	Yes	7.00E+00	No	No	</=SL
Aldrin	309-00-2	2 : 11 : 11	18.18	0.0017-13	1.30E-02 J	7.20E-01 J	3.66E-01	No	9.80E-03	Yes	1.00E-01	Yes	Yes	>SL
alpha-BHC	319-84-6	1 : 11 : 11	9.09	0.0017-13	7.60E-02	7.60E-02	7.60E-02	No	2.40E-01	No	3.60E-01	No	No	</=SL

TABLE 2.2
COPC SELECTION - COMBINED SOIL (SURFACE SOIL, SUBSURFACE SOIL, WASTE) AND DEEP SUBSURFACE SOI
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
alpha-Chlordane	5103-71-9	1 : 11 : 11	9.09	0.0017-13	9.40E-03 J	9.40E-03 J	9.40E-03	No	1.24E-02	No	6.50E+00	No	No	</=SL
beta-BHC	319-85-7	2 : 11 : 11	18.18	0.0017-13	1.20E-02 J	8.94E-01 J	4.53E-01	No	NA	--	1.26E+00	No	No	</=SL
delta-BHC	319-86-8	4 : 11 : 11	36.36	0.0017-13	1.30E-02 J	2.85E+00 J	1.37E+00	No	6.80E-02	Yes	3.60E-01	Yes	Yes	>SL
Dieldrin	60-57-1	5 : 11 : 11	45.45	0.0033-25	5.00E-03 J	3.80E+00	1.52E+00	No	1.32E-02	Yes	1.10E-01	Yes	Yes	>SL
Endosulfan II	33213-65-9	3 : 11 : 11	27.27	0.0033-25	2.70E-03 J	4.20E-01 J	1.45E-01	No	1.16E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan Sulfate	1031-07-8	3 : 11 : 11	27.27	0.0033-25	2.80E-03 J	2.20E-01 J	1.31E-01	No	1.81E-03	Yes	3.69E+02	No	No	</=SL
Endrin Aldehyde	7421-93-4	2 : 11 : 11	18.18	0.0033-25	3.40E-03	1.60E+00 J	8.02E-01	No	8.80E-03	Yes	1.85E+01	No	No	</=SL
Endrin Ketone	53494-70-5	2 : 11 : 11	18.18	0.0033-25	1.60E-03 J	2.20E-02 J	1.18E-02	No	NA	--	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	4 : 11 : 11	36.36	0.0017-13	1.80E-02 J	2.88E+00 J	8.44E-01	No	NA	--	1.74E+00	Yes	Yes	>SL
gamma-Chlordane	5103-74-2	1 : 11 : 11	9.09	0.0017-13	1.80E-01	1.80E-01	1.80E-01	No	6.66E-02	Yes	6.50E+00	No	No	</=SL
Heptachlor	76-44-8	6 : 11 : 11	54.55	0.0017-13	7.30E-03 J	2.78E+00 J	9.83E-01	No	1.48E-01	Yes	3.80E-01	Yes	Yes	>SL
Heptachlor Epoxide	1024-57-3	3 : 11 : 11	27.27	0.0017-13	3.40E-04 J	4.70E-01 J	2.87E-01	No	1.03E-02	Yes	1.90E-01	Yes	Yes	>SL
Methoxychlor	72-43-5	1 : 11 : 11	9.09	0.017-130	8.80E-04 J	8.80E-04 J	8.80E-04	No	3.31E-03	No	3.08E+02	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	8 : 14 : 14	57.14	).0094-1200	6.70E-03	5.75E+00	1.14E+00	No	NA	--	6.16E+02	No	No	</=SL
2,4-D	94-75-7	7 : 14 : 14	50.00	).0094-1200	1.00E-02	2.70E+01 J	4.21E+00	No	1.16E-02	Yes	7.68E+02	No	No	</=SL
2,4-DB	94-82-6	2 : 13 : 13	15.38	).0094-1200	1.30E-02 J	1.90E-02 J	1.60E-02	No	NA	--	4.92E+02	No	No	</=SL
Dicamba	1918-00-9	1 : 13 : 13	7.69	).0097-1200	2.40E-03 J	2.40E-03 J	2.40E-03	No	NA	--	1.85E+03	No	No	</=SL
Dichlorprop	120-36-5	2 : 13 : 13	15.38	0.11-15000	1.00E-02 J	3.70E-02 J	2.35E-02	No	7.82E-02	No	4.92E+02	No	No	</=SL
MCPP	93-65-2	6 : 13 : 13	46.15	2.3-300000	1.60E+00	1.20E+01 J	6.92E+00	No	8.80E+00	Yes	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	9 : 14 : 14	64.29	0.011-470	2.30E-02 J	7.90E+03	1.26E+03	No	4.57E-03	Yes	9.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	9 : 11 : 11	81.82	-	5.32E-02	2.98E+02	5.15E+01	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	9 : 9 : 9	100.00	-	6.38E-05	4.69E-02	1.58E-02	No	3.39E-05	Yes	1.00E-03	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	14 : 14 : 14	100.00	20-23	3.40E+03	9.30E+03	7.92E+03	No	1.09E+04	No	9.21E+04	No	No	</=SL
Antimony	7440-36-0	5 : 14 : 14	35.71	2-2.5	6.00E-01	6.80E+00	2.57E+00	No	1.92E+00	Yes	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	14 : 14 : 14	100.00	1-1.1	4.40E+00	1.60E+02	1.87E+01	No	1.08E+01	Yes	1.59E+00	Yes	Yes	>SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Barium	7440-39-3	14 : 14 : 14	100.00	1-1.1	8.20E+01	8.40E+02	1.83E+02	No	3.17E+02	Yes	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	14 : 14 : 14	100.00	0.4-0.45	3.30E-01	2.40E+00	6.25E-01	No	7.65E-01	Yes	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	10 : 14 : 14	71.43	0.51-0.63	5.40E-01 J	2.50E+02	3.95E+01	No	1.81E+00	Yes	4.51E+01	Yes	Yes	>SL
Calcium	7440-70-2	14 : 14 : 14	100.00	51-57	4.10E+03	1.10E+05	2.86E+04	Yes	6.11E+04	Yes	NA	--	No	EN
Chromium	7440-47-3	14 : 14 : 14	100.00	1-1.1	1.20E+01	2.60E+02	4.12E+01	No	1.89E+01	Yes	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	14 : 14 : 14	100.00	1-1.1	5.45E+00	2.70E+01	8.92E+00	No	9.27E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	14 : 14 : 14	100.00	2-2.3	1.30E+01	3.50E+03	5.25E+02	No	4.96E+01	Yes	4.09E+03	No	No	</=SL
Iron	7439-89-6	14 : 14 : 14	100.00	5.1-5.7	1.25E+04	4.60E+04	1.74E+04	Yes	2.10E+04	Yes	7.20E+04	No	No	EN
Lead	7439-92-1	14 : 14 : 14	100.00	0.51-0.57	7.50E+00	1.50E+03	1.68E+02	No	7.18E+01	Yes	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	14 : 14 : 14	100.00	51-57	3.30E+03	1.40E+04	6.58E+03	Yes	1.13E+04	Yes	NA	--	No	EN
Manganese	7439-96-5	14 : 14 : 14	100.00	1-1.1	3.45E+02	2.00E+03	6.20E+02	No	5.01E+02	Yes	1.95E+03	Yes	Yes	>SL
Mercury	7439-97-6	11 : 11 : 11	100.00	0.019-2.2	2.40E-02 J	1.00E+01 J	1.36E+00	No	7.72E-02	Yes	3.10E+01	No	No	</=SL
Nickel	7440-02-0	14 : 14 : 14	100.00	4-4.5	1.50E+01	2.50E+03	2.30E+02	No	2.83E+01	Yes	2.04E+03	Yes	Yes	>SL
Potassium	7440-09-7	14 : 14 : 14	100.00	100-110	7.20E+02	1.40E+03	9.90E+02	Yes	2.38E+03	No	NA	--	No	EN
Selenium	7782-49-2	3 : 14 : 14	21.43	1-3.1	4.75E+00	5.60E+01	2.93E+01	No	1.24E+00	Yes	5.11E+02	No	No	</=SL
Silver	7440-22-4	3 : 14 : 14	21.43	1-1.3	2.10E+00	3.10E+01	1.31E+01	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	13 : 14 : 14	92.86	51-57	8.50E+01 J	2.30E+03	4.15E+02	Yes	3.40E+02	Yes	NA	--	No	EN
Vanadium	7440-62-2	14 : 14 : 14	100.00	1-1.1	1.50E+01	3.10E+01	2.63E+01	No	3.44E+01	No	1.02E+02	No	No	</=SL
Zinc	7440-66-6	14 : 14 : 14	100.00	2-2.3	3.60E+01	2.90E+04	2.65E+03	No	2.24E+02	Yes	3.06E+04	No	No	</=SL
Combined Soil	**Site O North**													
VOCs														
1,1,1-Trichloroethane	71-55-6	2 : 9 : 9	22.22	0.0042-21	8.60E-03 J	4.10E+00	2.05E+00	No	NA	--	6.94E+02	No	No	</=SL
2-Butanone	78-93-3	3 : 9 : 9	33.33	2.1-100	7.60E-03 J	1.40E-02	9.90E-03	No	NA	--	1.13E+04	No	No	</=SL
Acetone	67-64-1	5 : 8 : 9	62.50	4.2-210	1.70E-02	2.60E+01	5.47E+00	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	7 : 9 : 9	77.78	0.0046-21	8.80E-03 J	6.90E+01	2.03E+01	No	NA	--	1.40E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	3 : 9 : 9	33.33	0.0042-21	2.60E-03 J	2.20E+00	7.94E-01	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	8 : 9 : 9	88.89	0.0046-21	3.95E-03	4.80E+02	1.71E+02	No	NA	--	5.31E+01	Yes	Yes	>SL
Dichloromethane	75-09-2	4 : 9 : 9	44.44	0.0042-21	3.00E-01	8.70E+01	2.86E+01	No	6.50E-03	Yes	2.05E+01	Yes	Yes	>SL
Ethylbenzene	100-41-4	7 : 9 : 9	77.78	0.0046-21	4.00E-03 J	7.60E+02	2.42E+02	No	9.52E-04	Yes	7.42E+02	Yes	Yes	>SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Styrene	100-42-5	1 : 9 : 9	11.11	0.0042-21	8.80E+00	8.80E+00	8.80E+00	No	3.64E-03	Yes	1.81E+03	No	No	</=SL
Tetrachloroethene	127-18-4	4 : 9 : 9	44.44	0.0046-21	3.90E-03 J	6.80E+00	1.82E+00	No	9.50E-04	Yes	1.31E+00	Yes	Yes	>SL
Toluene	108-88-3	8 : 9 : 9	88.89	0.0046-21	3.65E-03 J	9.00E+01	2.50E+01	No	NA	--	2.21E+02	No	No	</=SL
Xylenes, Total	1330-20-7	7 : 9 : 9	77.78	0.0092-42	2.30E-02 J	3.90E+03	1.29E+03	No	1.54E-03	Yes	8.98E+01	Yes	Yes	>SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	6 : 9 : 9	66.67	0.35-82	1.50E-01 J	2.90E+02	8.58E+01	No	NA	--	2.16E+01	Yes	Yes	>SL
1,2-Dichlorobenzene	95-50-1	8 : 9 : 9	88.89	0.35-210	3.40E-02	5.20E+02	1.25E+02	No	NA	--	4.10E+02	Yes	Yes	>SL
1,3-Dichlorobenzene	541-73-1	2 : 9 : 9	22.22	0.35-120	5.60E+00 J	1.20E+01	8.80E+00	No	NA	--	2.09E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	6 : 9 : 9	66.67	0.35-82	2.45E-01 J	1.80E+02	6.23E+01	No	NA	--	7.87E+00	Yes	Yes	>SL
2,4,5-Trichlorophenol	95-95-4	1 : 9 : 9	11.11	0.35-120	8.10E+00	8.10E+00	8.10E+00	No	NA	--	6.16E+03	No	No	</=SL
2,4,6-Trichlorophenol	88-06-2	5 : 9 : 9	55.56	0.35-120	3.00E-01 J	6.10E+01	1.97E+01	No	NA	--	6.16E+00	Yes	Yes	>SL
2,4-Dichlorophenol	120-83-2	5 : 9 : 9	55.56	0.35-120	3.10E-01 J	3.30E+01	1.37E+01	No	NA	--	1.85E+02	No	No	</=SL
2-Chlorophenol	95-57-8	2 : 9 : 9	22.22	0.35-120	3.00E+00 J	6.20E+00	4.60E+00	No	NA	--	2.36E+01	No	No	</=SL
2-Methylnaphthalene	91-57-6	5 : 9 : 9	55.56	0.35-82	4.95E-02 J	2.00E+02	5.29E+01	No	NA	--	1.88E+01	Yes	Yes	>SL
2-Methylphenol	95-48-7	1 : 9 : 9	11.11	0.35-120	4.00E+00	4.00E+00	4.00E+00	No	NA	--	3.08E+03	No	No	</=SL
2-Nitroaniline	88-74-4	4 : 9 : 9	44.44	1.8-610	3.30E-01 J	6.20E+01	1.66E+01	No	NA	--	1.83E+02	No	No	</=SL
2-Nitrophenol	88-75-5	2 : 9 : 9	22.22	0.35-120	2.20E+00 J	1.20E+01	7.10E+00	No	NA	--	NA	--	No	SL NA
3&4-Methylphenol	106-44-5	2 : 9 : 9	22.22	0.35-120	3.20E+00 J	1.40E+01	8.60E+00	No	NA	--	3.08E+02	No	No	</=SL
4-Chloroaniline	106-47-8	1 : 9 : 9	11.11	0.7-240	7.70E-02 J	7.70E-02 J	7.70E-02	No	NA	--	2.46E+02	No	No	</=SL
4-Nitroaniline	100-01-6	5 : 9 : 9	55.56	1.8-1100	1.00E+00	1.00E+03	2.10E+02	No	NA	--	8.20E+01	Yes	Yes	>SL
Acenaphthene	83-32-9	2 : 9 : 9	22.22	0.35-120	1.80E+00 J	1.20E+01	6.90E+00	No	4.20E-02	Yes	2.92E+03	No	No	</=SL
Anthracene	120-12-7	3 : 9 : 9	33.33	0.35-21	1.50E+00 J	2.80E+01 J	1.32E+01	No	1.20E-01	Yes	2.38E+04	No	No	</=SL
Benzo(a)anthracene	56-55-3	5 : 9 : 9	55.56	0.35-21	4.10E-02	3.60E+01	1.04E+01	No	1.97E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(a)pyrene	50-32-8	5 : 9 : 9	55.56	0.35-21	4.60E-02	1.10E+01 J	4.63E+00	No	4.80E-01	Yes	2.10E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	5 : 9 : 9	55.56	0.35-21	8.90E-02	1.20E+01	4.48E+00	No	2.60E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	5 : 9 : 9	55.56	0.35-21	4.20E-02	4.70E+00	1.90E+00	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	4 : 9 : 9	44.44	0.35-21	3.00E-01 J	3.80E+00	2.15E+00	No	2.10E-01	Yes	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	5 : 9 : 9	55.56	0.35-21	2.44E+01 J	7.90E+01	4.77E+01	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Chloroethyl)ether	111-44-4	1 : 9 : 9	11.11	0.35-120	2.10E+00	2.10E+00	2.10E+00	No	NA	--	5.80E-01	Yes	Yes	>SL
bis(2-Ethylhexyl)phthalate	117-81-7	4 : 9 : 9	44.44	0.35-21	1.40E-01 J	8.20E+00	2.60E+00	No	2.57E-01	Yes	1.23E+02	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Carbazole	86-74-8	1 : 9 : 9	11.11	0.35-120	4.90E+00	4.90E+00	4.90E+00	No	NA	--	8.62E+01	No	No	</=SL
Chrysene	218-01-9	6 : 9 : 9	66.67	0.35-21	6.70E-02	6.90E+01	1.84E+01	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	3 : 9 : 9	33.33	0.35-120	1.60E-01 J	4.60E+00	2.12E+00	No	1.20E-01	Yes	2.10E-01	Yes	Yes	>SL
Di-n-octylphthalate	117-84-0	1 : 9 : 9	11.11	0.35-120	3.40E+00	3.40E+00	3.40E+00	No	NA	--	2.46E+03	No	No	</=SL
Fluoranthene	206-44-0	5 : 9 : 9	55.56	0.35-21	3.65E-02	1.30E+01 J	3.86E+00	No	4.42E-01	Yes	2.20E+03	No	No	</=SL
Fluorene	86-73-7	3 : 9 : 9	33.33	0.35-120	8.50E-01	2.00E+01	8.08E+00	No	NA	--	2.63E+03	No	No	</=SL
Hexachlorobenzene	118-74-1	4 : 9 : 9	44.44	0.35-120	3.75E-01 J	4.50E+00 J	1.87E+00	No	NA	--	1.08E+00	Yes	Yes	>SL
Indeno(1,2,3-cd)pyrene	193-39-5	4 : 9 : 9	44.44	0.35-21	3.20E-02	6.20E-01 J	3.68E-01	No	NA	--	2.11E+00	No	No	</=SL
Naphthalene	91-20-3	5 : 9 : 9	55.56	0.35-21	3.60E-02 J	4.10E+01	1.20E+01	No	NA	--	1.88E+01	Yes	Yes	>SL
Nitrobenzene	98-95-3	1 : 9 : 9	11.11	0.35-120	1.10E+01	1.10E+01	1.10E+01	No	NA	--	1.03E+01	Yes	Yes	>SL
Phenanthrene	85-01-8	6 : 9 : 9	66.67	0.35-21	3.20E-02	9.30E+01 J	2.24E+01	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Phenol	108-95-2	2 : 9 : 9	22.22	0.35-120	7.70E+00 J	2.20E+01	1.49E+01	No	NA	--	1.85E+04	No	No	</=SL
Pyrene	129-00-0	7 : 9 : 9	77.78	0.35-21	3.50E-02	1.20E+02	2.36E+01	No	4.09E-01	Yes	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDD	72-54-8	1 : 6 : 6	16.67	0.0035-39	3.30E+01	3.30E+01	3.30E+01	No	9.24E-03	Yes	9.95E+00	Yes	Yes	>SL
4,4'-DDE	72-55-9	2 : 6 : 6	33.33	0.0035-49	1.80E+01	3.30E+01	2.55E+01	No	1.45E-02	Yes	7.02E+00	Yes	Yes	>SL
4,4'-DDT	50-29-3	3 : 6 : 6	50.00	0.0035-39	3.30E+00 J	1.30E+02	6.38E+01	No	3.98E-02	Yes	7.00E+00	Yes	Yes	>SL
Aldrin	309-00-2	2 : 6 : 6	33.33	0.0018-25	2.10E+00 J	4.50E+00 J	3.30E+00	No	9.80E-03	Yes	1.00E-01	Yes	Yes	>SL
alpha-BHC	319-84-6	1 : 6 : 6	16.67	0.0018-25	1.50E+00 J	1.50E+00 J	1.50E+00	No	2.40E-01	Yes	3.60E-01	Yes	Yes	>SL
beta-BHC	319-85-7	2 : 6 : 6	33.33	0.0018-25	7.70E-01 J	2.10E+01 J	1.09E+01	No	NA	--	1.26E+00	Yes	Yes	>SL
Dieldrin	60-57-1	3 : 6 : 6	50.00	0.0035-49	1.40E-03 J	5.00E+01 J	1.95E+01	No	1.32E-02	Yes	1.10E-01	Yes	Yes	>SL
Endosulfan II	33213-65-9	2 : 6 : 6	33.33	0.0035-49	6.40E+00 J	9.60E+00 J	8.00E+00	No	1.16E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan Sulfate	1031-07-8	2 : 6 : 6	33.33	0.0035-49	2.10E+01 J	2.40E+01 J	2.25E+01	No	1.81E-03	Yes	3.69E+02	No	No	</=SL
gamma-Chlordane	5103-74-2	1 : 6 : 6	16.67	0.0018-25	3.30E-04 J	3.30E-04 J	3.30E-04	No	6.66E-02	No	6.50E+00	No	No	</=SL
Heptachlor	76-44-8	2 : 6 : 6	33.33	0.0018-20	9.90E+00 J	2.30E+01	1.64E+01	No	1.48E-01	Yes	3.80E-01	Yes	Yes	>SL
Heptachlor Epoxide	1024-57-3	1 : 6 : 6	16.67	0.0018-25	2.70E+00 J	2.70E+00 J	2.70E+00	No	1.03E-02	Yes	1.90E-01	Yes	Yes	>SL
Herbicide														
2,4,5-T	93-76-5	2 : 9 : 9	22.22	0.011-200	7.70E+00 J	1.70E+01 J	1.24E+01	No	NA	--	6.16E+02	No	No	</=SL
2,4-D	94-75-7	2 : 9 : 9	22.22	0.011-200	2.00E+01	4.60E+01	3.30E+01	No	1.16E-02	Yes	7.68E+02	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Dichlorprop	120-36-5	1 : 9 : 9	11.11	0.13-2400	1.10E-02 J	1.10E-02 J	1.10E-02	No	7.82E-02	No	4.92E+02	No	No	</=SL
MCPP	93-65-2	1 : 9 : 9	11.11	2.6-48000	4.30E+01 J	4.30E+01 J	4.30E+01	No	8.80E+00	Yes	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	6 : 9 : 9	66.67	0.011-630	3.35E-02	1.30E+03 J	4.44E+02	No	4.57E-03	Yes	9.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	6 : 6 : 6	100.00	-	5.98E-02	3.05E+03	8.96E+02	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	5 : 5 : 5	100.00	-	5.15E-02	6.08E-01	3.07E-01	No	3.39E-05	Yes	1.00E-03	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	9 : 9 : 9	100.00	21-23	1.50E+03	1.30E+04	6.67E+03	No	1.09E+04	Yes	9.21E+04	No	No	</=SL
Antimony	7440-36-0	8 : 9 : 9	88.89	2.1-2.4	5.50E-01	4.40E+00	1.62E+00	No	1.92E+00	Yes	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	9 : 9 : 9	100.00	1-1.2	5.60E+00	1.30E+02	2.74E+01	No	1.08E+01	Yes	1.59E+00	Yes	Yes	>SL
Barium	7440-39-3	9 : 9 : 9	100.00	1-1.2	1.80E+02	1.20E+04	1.74E+03	No	3.17E+02	Yes	6.66E+03	Yes	Yes	>SL
Beryllium	7440-41-7	9 : 9 : 9	100.00	0.42-0.46	1.40E-01 J	7.45E-01	4.44E-01	No	7.65E-01	No	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	8 : 9 : 9	88.89	0.52-0.61	5.60E+00	8.60E+01	3.00E+01	No	1.81E+00	Yes	4.51E+01	Yes	Yes	>SL
Calcium	7440-70-2	9 : 9 : 9	100.00	52-58	4.70E+03	3.80E+04	1.28E+04	Yes	6.11E+04	No	NA	--	No	EN
Chromium	7440-47-3	9 : 9 : 9	100.00	1-1.2	1.10E+01	6.20E+01	2.92E+01	No	1.89E+01	Yes	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	9 : 9 : 9	100.00	1-1.2	4.10E+00	9.60E+00	6.37E+00	No	9.27E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	9 : 9 : 9	100.00	2.1-2.3	1.00E+01	5.10E+03	1.06E+03	No	4.96E+01	Yes	4.09E+03	Yes	Yes	>SL
Iron	7439-89-6	9 : 9 : 9	100.00	5.2-5.8	8.50E+03	3.00E+04	1.51E+04	Yes	2.10E+04	Yes	7.20E+04	No	No	EN
Lead	7439-92-1	9 : 9 : 9	100.00	0.52-0.58	8.20E+00	1.20E+03	3.48E+02	No	7.18E+01	Yes	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	9 : 9 : 9	100.00	52-58	9.50E+02	5.70E+03	2.91E+03	Yes	1.13E+04	No	NA	--	No	EN
Manganese	7439-96-5	9 : 9 : 9	100.00	1-1.2	1.05E+02	1.80E+03	5.51E+02	No	5.01E+02	Yes	1.95E+03	No	No	</=SL
Mercury	7439-97-6	7 : 7 : 7	100.00	9.6-60	2.40E-02 J	3.60E+02 J	9.95E+01	No	7.72E-02	Yes	3.10E+01	Yes	Yes	>SL
Nickel	7440-02-0	9 : 9 : 9	100.00	4.2-4.6	1.30E+01	1.40E+02	4.12E+01	No	2.83E+01	Yes	2.04E+03	No	No	</=SL
Potassium	7440-09-7	9 : 9 : 9	100.00	100-120	3.00E+02	2.30E+03	1.13E+03	Yes	2.38E+03	No	NA	--	No	EN
Selenium	7782-49-2	6 : 9 : 9	66.67	1-3	1.60E+00	2.40E+01	7.41E+00	No	1.24E+00	Yes	5.11E+02	No	No	</=SL
Silver	7440-22-4	8 : 9 : 9	88.89	1-1.2	6.20E-01	2.60E+01	7.50E+00	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	9 : 9 : 9	100.00	52-58	9.60E+01 J	5.20E+02	2.34E+02	Yes	3.40E+02	Yes	NA	--	No	EN
Vanadium	7440-62-2	9 : 9 : 9	100.00	1-1.2	1.10E+01	3.70E+01	2.33E+01	No	3.44E+01	Yes	1.02E+02	No	No	</=SL

TABLE 2.2
COPC SELECTION - COMBINED SOIL (SURFACE SOIL, SUBSURFACE SOIL, WASTE) AND DEEP SUBSURFACE SOI
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Zinc	7440-66-6	9 : 9 : 9	100.00	2.1-4.2	3.90E+01	3.90E+03	1.51E+03	No	2.24E+02	Yes	3.06E+04	No	No	</=SL
Combined Soil	**Site O South**													
VOCs														
2-Butanone	78-93-3	3 : 4 : 4	75.00	0.022-0.022	1.20E-02	2.90E-02 J	1.83E-02	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	1 : 4 : 4	25.00	0.022-0.031	3.40E-02 J	3.40E-02 J	3.40E-02	No	2.00E-03	Yes	4.70E+03	No	No	</=SL
Acetone	67-64-1	3 : 4 : 4	75.00	0.044-0.044	2.20E-02	4.90E-01 J	1.78E-01	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	4 : 4 : 4	100.00	-	1.30E-03	5.40E-02 J	1.47E-02	No	NA	--	1.40E+00	No	No	</=SL
Carbon Disulfide	75-15-0	2 : 4 : 4	50.00	.0044-0.005	3.90E-03 J	6.80E-03	5.35E-03	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	1 : 4 : 4	25.00	.0044-0.006	2.40E-01 J	2.40E-01 J	2.40E-01	No	NA	--	5.31E+01	No	No	</=SL
Chloromethane	74-87-3	1 : 4 : 4	25.00	.0044-0.006	5.50E-02 J	5.50E-02 J	5.50E-02	No	9.00E-04	Yes	1.56E+01	No	No	</=SL
Ethylbenzene	100-41-4	3 : 4 : 4	75.00	.0044-0.004	1.10E-03	1.10E+00	3.67E-01	No	9.52E-04	Yes	7.42E+02	No	No	</=SL
Toluene	108-88-3	4 : 4 : 4	100.00	-	1.90E-03	1.50E-01 J	3.99E-02	No	NA	--	2.21E+02	No	No	</=SL
Xylenes, Total	1330-20-7	2 : 4 : 4	50.00	0.0088-0.01	4.70E-03	6.70E+00	3.35E+00	No	1.54E-03	Yes	8.98E+01	No	No	</=SL
SVOCs														
2-Chloronaphthalene	91-58-7	1 : 4 : 4	25.00	0.38-0.4	1.20E-01 J	1.20E-01 J	1.20E-01	No	NA	--	2.34E+03	No	No	</=SL
4-Chloroaniline	106-47-8	1 : 4 : 4	25.00	0.76-0.81	8.30E-02 J	8.30E-02 J	8.30E-02	No	NA	--	2.46E+02	No	No	</=SL
Acenaphthene	83-32-9	1 : 4 : 4	25.00	0.38-0.42	3.60E-02	3.60E-02	3.60E-02	No	4.20E-02	No	2.92E+03	No	No	</=SL
Anthracene	120-12-7	1 : 4 : 4	25.00	0.38-0.42	5.30E-02	5.30E-02	5.30E-02	No	1.20E-01	No	2.38E+04	No	No	</=SL
Benzo(a)anthracene	56-55-3	1 : 4 : 4	25.00	0.38-0.42	1.30E-01	1.30E-01	1.30E-01	No	1.97E-01	No	2.11E+00	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	1 : 4 : 4	25.00	0.38-0.4	6.30E-01 J	6.30E-01 J	6.30E-01	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	1 : 4 : 4	25.00	0.39-0.42	1.40E-01 J	1.40E-01 J	1.40E-01	No	2.57E-01	No	1.23E+02	No	No	</=SL
Carbazole	86-74-8	1 : 4 : 4	25.00	0.38-0.42	3.70E-02	3.70E-02	3.70E-02	No	NA	--	8.62E+01	No	No	</=SL
Chrysene	218-01-9	1 : 4 : 4	25.00	0.38-0.42	1.70E-01	1.70E-01	1.70E-01	No	2.35E-01	No	2.11E+02	No	No	</=SL
Di-n-butylphthalate	84-74-2	1 : 4 : 4	25.00	0.39-0.42	3.70E-02 J	3.70E-02 J	3.70E-02	No	NA	--	6.16E+03	No	No	</=SL
Di-n-octylphthalate	117-84-0	1 : 4 : 4	25.00	0.38-0.4	4.30E-01 J	4.30E-01 J	4.30E-01	No	NA	--	2.46E+03	No	No	</=SL
Fluoranthene	206-44-0	2 : 4 : 4	50.00	0.4-0.42	3.50E-02 J	3.80E-01	2.08E-01	No	4.42E-01	No	2.20E+03	No	No	</=SL
Phenanthrene	85-01-8	1 : 4 : 4	25.00	0.38-0.42	3.70E-01	3.70E-01	3.70E-01	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Pyrene	129-00-0	2 : 4 : 4	50.00	0.4-0.42	3.00E-02 J	2.80E-01	1.55E-01	No	4.09E-01	No	2.91E+03	No	No	</=SL

TABLE 2.2
COPC SELECTION - COMBINED SOIL (SURFACE SOIL, SUBSURFACE SOIL, WASTE) AND DEEP SUBSURFACE SOI
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Herbicide														
Pentachlorophenol	87-86-5	3 : 4 : 4	75.00	.0098-0.009	1.30E-02	2.00E+01	6.68E+00	No	4.57E-03	Yes	9.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	1 : 1 : 1	100.00	-	2.20E-03	2.20E-03	2.20E-03	No	2.50E-01	No	1.00E+00	No	No	</=SL
Metals														
Aluminum	7429-90-5	4 : 4 : 4	100.00	-	5.60E+03	6.70E+03	6.10E+03	No	1.09E+04	No	9.21E+04	No	No	</=SL
Arsenic	7440-38-2	4 : 4 : 4	100.00	-	4.60E+00	5.30E+00	5.10E+00	No	1.08E+01	No	1.59E+00	Yes	No	</=BKG
Barium	7440-39-3	4 : 4 : 4	100.00	-	8.60E+01	1.80E+02	1.44E+02	No	3.17E+02	No	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	4 : 4 : 4	100.00	-	3.30E-01	4.20E-01	3.85E-01	No	7.65E-01	No	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	3 : 4 : 4	75.00	0.64-0.64	3.30E-01	8.00E-01	5.10E-01	No	1.81E+00	No	4.51E+01	No	No	</=SL
Calcium	7440-70-2	4 : 4 : 4	100.00	-	1.20E+04	2.90E+04	1.73E+04	Yes	6.11E+04	No	NA	--	No	EN
Chromium	7440-47-3	4 : 4 : 4	100.00	-	9.60E+00	1.10E+01	1.02E+01	No	1.89E+01	No	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	4 : 4 : 4	100.00	-	5.00E+00	5.30E+00	5.20E+00	No	9.27E+00	No	1.33E+03	No	No	</=SL
Copper	7440-50-8	4 : 4 : 4	100.00	-	1.20E+01	2.10E+01	1.55E+01	No	4.96E+01	No	4.09E+03	No	No	</=SL
Iron	7439-89-6	4 : 4 : 4	100.00	-	1.00E+04	1.10E+04	1.08E+04	Yes	2.10E+04	No	7.20E+04	No	No	EN
Lead	7439-92-1	4 : 4 : 4	100.00	-	1.00E+01	2.10E+01	1.40E+01	No	7.18E+01	No	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	4 : 4 : 4	100.00	-	5.10E+03	1.30E+04	7.30E+03	Yes	1.13E+04	Yes	NA	--	No	EN
Manganese	7439-96-5	4 : 4 : 4	100.00	-	2.60E+02	4.80E+02	3.23E+02	No	5.01E+02	No	1.95E+03	No	No	</=SL
Mercury	7439-97-6	4 : 4 : 4	100.00	-	1.80E-02	7.00E-02	4.08E-02	No	7.72E-02	No	3.10E+01	No	No	</=SL
Nickel	7440-02-0	4 : 4 : 4	100.00	-	1.30E+01	1.40E+01	1.35E+01	No	2.83E+01	No	2.04E+03	No	No	</=SL
Potassium	7440-09-7	4 : 4 : 4	100.00	-	9.80E+02	1.40E+03	1.22E+03	Yes	2.38E+03	No	NA	--	No	EN
Sodium	7440-23-5	4 : 4 : 4	100.00	-	1.40E+02	1.90E+02	1.58E+02	Yes	3.40E+02	No	NA	--	No	EN
Vanadium	7440-62-2	4 : 4 : 4	100.00	-	1.80E+01	2.00E+01	1.88E+01	No	3.44E+01	No	1.02E+02	No	No	</=SL
Zinc	7440-66-6	4 : 4 : 4	100.00	-	4.70E+01	1.10E+02	6.60E+01	No	2.24E+02	No	3.06E+04	No	No	</=SL
Combined Soil	**Site P**													
VOCs														
1,1,1-Trichloroethane	71-55-6	3 : 33 : 33	9.09	0.0034-5.6	8.90E-04	3.60E-01	1.41E-01	No	NA	--	6.94E+02	No	No	</=SL
1,1-Dichloroethane	75-34-3	3 : 33 : 33	9.09	0.0034-5.6	2.40E-03	3.30E-01	1.33E-01	No	NA	--	1.74E+02	No	No	</=SL
1,2,4-Trimethylbenzene	95-63-6	1 : 1 : 1	100.00	2-2	4.80E+00	4.80E+00	4.80E+00	No	NA	--	1.70E+01	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
1,2-Dichloroethene (total)	540-59-0	2 : 30 : 30	6.67	0.0068-11	1.20E-01	7.50E-01 J	4.35E-01	No	NA	--	1.46E+01	No	No	</=SL
1,3,5-Trimethylbenzene	108-67-8	1 : 1 : 1	100.00	10-10	5.30E+00	5.30E+00	5.30E+00	No	NA	--	7.00E+00	No	No	</=SL
2-Butanone	78-93-3	13 : 33 : 33	39.39	0.017-50	4.80E-03	5.60E+00	8.72E-01	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	11 : 33 : 33	33.33	0.017-50	1.70E-02 J	4.50E+01	6.14E+00	No	2.00E-03	Yes	4.70E+03	No	No	</=SL
Acetone	67-64-1	20 : 32 : 33	62.50	0.071-100	1.60E-02	3.80E+01	3.64E+00	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	21 : 33 : 33	63.64	0.0034-10	1.26E-03	1.40E+01	1.19E+00	No	NA	--	1.40E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	7 : 33 : 33	21.21	0.0034-10	1.40E-03 J	2.00E+00	3.20E-01	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	22 : 34 : 34	64.71	0.0034-10	3.00E-03 J	5.50E+00	1.03E+00	No	NA	--	5.31E+01	No	No	</=SL
Chloroform	67-66-3	3 : 33 : 33	9.09	0.0034-10	2.00E-03	3.10E+00 J	1.17E+00	No	NA	--	4.70E-01	Yes	Yes	>SL
Chloromethane	74-87-3	1 : 33 : 33	3.03	0.0034-10	1.30E-02 J	1.30E-02 J	1.30E-02	No	9.00E-04	Yes	1.56E+01	No	No	</=SL
Dichloromethane	75-09-2	4 : 33 : 33	12.12	0.0034-10	1.20E-01 J	2.30E+00	1.08E+00	No	6.50E-03	Yes	2.05E+01	No	No	</=SL
Ethylbenzene	100-41-4	27 : 34 : 34	79.41	0.0034-10	2.60E-04 J	2.00E+02	1.26E+01	No	9.52E-04	Yes	7.42E+02	No	No	</=SL
Hexane	110-54-3	2 : 2 : 2	100.00	10-10	6.00E+00	8.00E+01	4.30E+01	No	NA	--	4.00E+01	Yes	Yes	>SL
Methyl N-Butyl Ketone	591-78-6	2 : 33 : 33	6.06	0.017-50	5.90E-03 J	4.80E-02 J	2.70E-02	No	NA	--	1.13E+04	No	No	</=SL
o-Xylene	95-47-6	1 : 1 : 1	100.00	10-10	2.90E+00	2.90E+00	2.90E+00	No	NA	--	8.98E+01	No	No	</=SL
p-Isopropyltoluene	99-87-6	1 : 1 : 1	100.00	10-10	3.10E+00	3.10E+00	3.10E+00	No	NA	--	8.98E+01	No	No	</=SL
p-Xylene/m-Xylene	108-38-3	1 : 1 : 1	100.00	20-20	1.20E+01	1.20E+01	1.20E+01	No	NA	--	8.98E+01	No	No	</=SL
Styrene	100-42-5	5 : 33 : 33	15.15	0.0034-10	3.40E-04	4.90E+00	1.07E+00	No	3.64E-03	Yes	1.81E+03	No	No	</=SL
Tetrachloroethene	127-18-4	17 : 34 : 34	50.00	0.0034-10	1.90E-03 J	1.40E+02 J	1.22E+01	No	9.50E-04	Yes	1.31E+00	Yes	Yes	>SL
Toluene	108-88-3	27 : 34 : 34	79.41	0.0055-10	1.20E-03 J	2.00E+02	1.40E+01	No	NA	--	2.21E+02	No	No	</=SL
Trichloroethylene	79-01-6	7 : 33 : 33	21.21	0.0034-10	7.90E-04	9.90E-01 J	1.97E-01	No	NA	--	1.10E-01	Yes	Yes	>SL
Xylenes, Total	1330-20-7	26 : 34 : 34	76.47	0.0068-20	9.70E-04	6.00E+02	4.80E+01	No	1.54E-03	Yes	8.98E+01	Yes	Yes	>SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	3 : 33 : 33	9.09	0.36-2000	1.00E-01 J	8.70E-01 J	3.57E-01	No	NA	--	2.16E+01	No	No	</=SL
1,2-Dichlorobenzene	95-50-1	10 : 33 : 33	30.30	0.36-2000	4.20E-02 J	1.40E+01 J	2.54E+00	No	NA	--	4.10E+02	No	No	</=SL
1,3-Dichlorobenzene	541-73-1	1 : 33 : 33	3.03	0.36-2000	4.60E-01 J	4.60E-01 J	4.60E-01	No	NA	--	2.09E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	9 : 33 : 33	27.27	0.36-2000	3.30E-02 J	1.60E+02	2.99E+01	No	NA	--	7.87E+00	Yes	Yes	>SL
2,4-Dichlorophenol	120-83-2	2 : 33 : 33	6.06	0.36-2000	3.00E-01	1.60E+01	8.15E+00	No	NA	--	1.85E+02	No	No	</=SL
2-Chlorophenol	95-57-8	1 : 33 : 33	3.03	0.36-2000	4.30E-01	4.30E-01	4.30E-01	No	NA	--	2.36E+01	No	No	</=SL
2-Methylnaphthalene	91-57-6	3 : 33 : 33	9.09	0.36-2000	4.40E-02 J	4.70E-01	1.94E-01	No	NA	--	1.88E+01	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
3&4-Methylphenol	106-44-5	1 : 33 : 33	3.03	0.36-2000	1.30E-01 J	1.30E-01 J	1.30E-01	No	NA	--	3.08E+02	No	No	</=SL
4-Chloroaniline	106-47-8	7 : 33 : 33	21.21	0.72-4000	2.20E-01 J	9.30E+02	1.38E+02	No	NA	--	2.46E+02	Yes	Yes	>SL
Acenaphthene	83-32-9	3 : 33 : 33	9.09	0.36-2000	4.60E-02	7.20E-01	2.80E-01	No	4.20E-02	Yes	2.92E+03	No	No	</=SL
Anthracene	120-12-7	5 : 33 : 33	15.15	0.36-2000	5.20E-02 J	3.40E-01 J	1.69E-01	No	1.20E-01	Yes	2.38E+04	No	No	</=SL
Benzo(a)anthracene	56-55-3	9 : 33 : 33	27.27	0.38-2000	2.90E-02	6.80E-01	2.74E-01	No	1.97E-01	Yes	2.11E+00	No	No	</=SL
Benzo(a)pyrene	50-32-8	8 : 33 : 33	24.24	0.38-2000	4.20E-02	6.70E-01	2.58E-01	No	4.80E-01	Yes	2.10E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	9 : 33 : 33	27.27	0.38-2000	3.20E-02	6.80E-01	3.24E-01	No	2.60E-01	Yes	2.11E+00	No	No	</=SL
Benzo(g,h,i)perylene	191-24-2	8 : 33 : 33	24.24	0.38-2000	7.20E-02	3.20E-01	1.99E-01	No	5.20E-01	No	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	9 : 33 : 33	27.27	0.38-2000	3.00E-02	5.70E-01	2.67E-01	No	2.10E-01	Yes	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	3 : 33 : 33	9.09	0.36-2000	3.70E-01	3.60E+00	1.92E+00	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	15 : 33 : 33	45.45	0.36-2000	3.50E-02	4.30E+00 J	1.17E+00	No	2.57E-01	Yes	1.23E+02	No	No	</=SL
Carbazole	86-74-8	1 : 33 : 33	3.03	0.36-2000	7.30E-02	7.30E-02	7.30E-02	No	NA	--	8.62E+01	No	No	</=SL
Chrysene	218-01-9	10 : 33 : 33	30.30	0.38-2000	3.00E-02 J	7.70E-01	3.28E-01	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	2 : 33 : 33	6.06	0.36-2000	5.90E-02	1.10E-01	8.45E-02	No	1.20E-01	No	2.10E-01	No	No	</=SL
Dibenzofuran	132-64-9	4 : 33 : 33	12.12	0.36-2000	2.90E-02	9.80E-01	4.77E-01	No	NA	--	1.56E+02	No	No	</=SL
Diethyl Phthalate	84-66-2	4 : 33 : 33	12.12	0.36-2000	1.40E-01 J	4.40E+02	1.14E+02	No	NA	--	4.92E+04	No	No	</=SL
Di-n-butylphthalate	84-74-2	2 : 33 : 33	6.06	0.36-2000	6.20E-02 J	1.70E-01 J	1.16E-01	No	NA	--	6.16E+03	No	No	</=SL
Di-n-octylphthalate	117-84-0	1 : 33 : 33	3.03	0.36-2000	5.90E-01 J	5.90E-01 J	5.90E-01	No	NA	--	2.46E+03	No	No	</=SL
Fluoranthene	206-44-0	9 : 33 : 33	27.27	0.38-2000	4.00E-02	1.70E+00	7.16E-01	No	4.42E-01	Yes	2.20E+03	No	No	</=SL
Fluorene	86-73-7	2 : 33 : 33	6.06	0.36-2000	6.50E-02	6.30E-01	3.48E-01	No	NA	--	2.63E+03	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	7 : 33 : 33	21.21	0.38-2000	5.30E-02 J	2.40E-01 J	1.44E-01	No	NA	--	2.11E+00	No	No	</=SL
Naphthalene	91-20-3	3 : 33 : 33	9.09	0.36-2000	4.90E-01	8.00E+00	3.08E+00	No	NA	--	1.88E+01	No	No	</=SL
Phenanthrene	85-01-8	18 : 33 : 33	54.55	0.38-2000	2.40E-02	1.80E+00	5.13E-01	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Phenol	108-95-2	9 : 33 : 33	27.27	0.36-2000	1.70E-01 J	2.60E+01	3.94E+00	No	NA	--	1.85E+04	No	No	</=SL
Pyrene	129-00-0	11 : 33 : 33	33.33	0.38-2000	3.95E-02 J	1.80E+00	5.87E-01	No	4.09E-01	Yes	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDD	72-54-8	1 : 24 : 24	4.17	0.0041-4.5	1.90E-02 J	1.90E-02 J	1.90E-02	No	9.24E-03	Yes	9.95E+00	No	No	</=SL
4,4'-DDE	72-55-9	8 : 23 : 24	34.78	0.0041-4.5	3.00E-03 J	4.10E-01 J	8.86E-02	No	1.45E-02	Yes	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	13 : 24 : 24	54.17	0.0041-4.5	8.10E-03 J	1.40E+01	1.50E+00	No	3.98E-02	Yes	7.00E+00	Yes	Yes	>SL
Aldrin	309-00-2	1 : 24 : 24	4.17	0.0021-2.3	8.90E-02 J	8.90E-02 J	8.90E-02	No	9.80E-03	Yes	1.00E-01	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
alpha-BHC	319-84-6	5 : 24 : 24	20.83	0.0021-2.3	1.00E-02 J	3.30E-02 J	1.82E-02	No	2.40E-01	No	3.60E-01	No	No	</=SL
alpha-Chlordane	5103-71-9	4 : 21 : 22	19.05	0.0021-2.3	1.50E-03 J	2.80E-02	1.61E-02	No	1.24E-02	Yes	6.50E+00	No	No	</=SL
beta-BHC	319-85-7	6 : 24 : 24	25.00	0.0021-2.3	3.30E-02 J	2.60E-01 J	1.17E-01	No	NA	--	1.26E+00	No	No	</=SL
Dieldrin	60-57-1	10 : 24 : 24	41.67	0.0041-4.5	2.00E-03 J	1.30E+00	2.71E-01	No	1.32E-02	Yes	1.10E-01	Yes	Yes	>SL
Endosulfan I	959-98-8	3 : 24 : 24	12.50	0.0021-2.3	8.70E-03 J	1.00E-01 J	4.22E-02	No	2.29E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan II	33213-65-9	2 : 24 : 24	8.33	0.0041-4.5	2.80E-02 J	4.60E-02 J	3.70E-02	No	1.16E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan Sulfate	1031-07-8	5 : 24 : 24	20.83	0.0041-4.5	2.80E-02	9.50E-02 J	4.88E-02	No	1.81E-03	Yes	3.69E+02	No	No	</=SL
Endrin	72-20-8	1 : 24 : 24	4.17	0.0041-4.5	6.80E-02 J	6.80E-02 J	6.80E-02	No	9.60E-03	Yes	1.85E+01	No	No	</=SL
Endrin Aldehyde	7421-93-4	2 : 24 : 24	8.33	0.0041-4.5	5.90E-02 J	1.40E-01 J	9.95E-02	No	8.80E-03	Yes	1.85E+01	No	No	</=SL
Endrin Ketone	53494-70-5	2 : 24 : 24	8.33	0.0041-4.5	9.70E-03 J	2.10E-02 J	1.54E-02	No	NA	--	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	4 : 24 : 24	16.67	0.0021-2.3	1.80E-02	8.40E-02 J	4.83E-02	No	NA	--	1.74E+00	No	No	</=SL
gamma-Chlordane	5103-74-2	6 : 22 : 22	27.27	0.0021-2.3	1.60E-02 J	2.30E-01 J	1.33E-01	No	6.66E-02	Yes	6.50E+00	No	No	</=SL
Heptachlor	76-44-8	1 : 24 : 24	4.17	0.0021-2.3	9.00E-03	9.00E-03	9.00E-03	No	1.48E-01	No	3.80E-01	No	No	</=SL
Heptachlor Epoxide	1024-57-3	6 : 24 : 24	25.00	0.0021-2.3	7.90E-03	2.10E+00	3.66E-01	No	1.03E-02	Yes	1.90E-01	Yes	Yes	>SL
Methoxychlor	72-43-5	2 : 24 : 24	8.33	0.021-23	9.60E-02 J	1.00E-01 J	9.80E-02	No	3.31E-03	Yes	3.08E+02	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	6 : 33 : 33	18.18	0.0091-25	1.40E-03 J	6.20E-01	1.21E-01	No	NA	--	6.16E+02	No	No	</=SL
2,4,5-TP (Silvex)	93-72-1	1 : 33 : 33	3.03	0.0091-25	2.60E-03	2.60E-03	2.60E-03	No	NA	--	4.92E+02	No	No	</=SL
2,4-D	94-75-7	7 : 33 : 33	21.21	0.0091-25	4.60E-03	4.40E-01	8.38E-02	No	1.16E-02	Yes	7.68E+02	No	No	</=SL
Dalapon	75-99-0	4 : 33 : 33	12.12	0.36-500	3.00E-03	8.30E-03 J	6.90E-03	No	NA	--	1.85E+03	No	No	</=SL
Dicamba	1918-00-9	2 : 33 : 33	6.06	0.0091-60	3.10E-03 J	3.30E-03	3.20E-03	No	NA	--	1.85E+03	No	No	</=SL
Dichlorprop	120-36-5	4 : 33 : 33	12.12	0.11-25	1.10E-03 J	9.50E-03 J	3.55E-03	No	7.82E-02	No	4.92E+02	No	No	</=SL
MCPA	94-74-6	1 : 33 : 33	3.03	2.2-6000	2.10E+02 J	2.10E+02 J	2.10E+02	No	NA	--	3.08E+01	Yes	No	<5%FOD
MCPP	93-65-2	6 : 33 : 33	18.18	2.2-6000	5.60E-01 J	1.40E+01	5.44E+00	No	8.80E+00	Yes	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	31 : 34 : 34	91.18	0.0092-13	4.30E-03	8.80E+01	3.47E+00	No	4.57E-03	Yes	9.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	16 : 20 : 20	80.00	-	5.19E-02	4.03E+02	3.55E+01	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	18 : 21 : 21	85.71	-	1.79E-04	7.01E-03	1.73E-03	No	3.39E-05	Yes	1.00E-03	Yes	Yes	>SL

TABLE 2.2
COPC SELECTION - COMBINED SOIL (SURFACE SOIL, SUBSURFACE SOIL, WASTE) AND DEEP SUBSURFACE SOI
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Metals														
Aluminum	7429-90-5	35 : 35 : 35	100.00	19-27	1.60E+01	9.80E+03	4.89E+03	No	1.09E+04	No	9.21E+04	No	No	</=SL
Antimony	7440-36-0	26 : 35 : 35	74.29	1.9-2.7	5.40E-01	2.70E+00	1.12E+00	No	1.92E+00	Yes	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	34 : 35 : 35	97.14	0.94-1.4	1.60E+00	2.70E+01 J	1.09E+01	No	1.08E+01	Yes	1.59E+00	Yes	Yes	>SL
Barium	7440-39-3	35 : 35 : 35	100.00	0.94-1.4	3.60E+00	7.20E+02 J	1.44E+02	No	3.17E+02	Yes	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	34 : 35 : 35	97.14	0.38-0.54	2.10E-02	3.10E+00	7.68E-01	No	7.65E-01	Yes	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	30 : 35 : 35	85.71	0.47-0.68	6.20E-01	9.30E+01	6.99E+00	No	1.81E+00	Yes	4.51E+01	Yes	Yes	>SL
Calcium	7440-70-2	35 : 35 : 35	100.00	47-510	5.10E+02	3.00E+05	5.60E+04	Yes	6.11E+04	Yes	NA	--	No	EN
Chromium	7440-47-3	35 : 35 : 35	100.00	0.94-1.4	1.80E-01	1.00E+02	2.17E+01	No	1.89E+01	Yes	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	33 : 35 : 35	94.29	0.94-1.4	6.30E-01	1.30E+01 J	5.93E+00	No	9.27E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	35 : 35 : 35	100.00	1.9-2.7	3.20E-01	2.70E+02	6.71E+01	No	4.96E+01	Yes	4.09E+03	No	No	</=SL
Iron	7439-89-6	35 : 35 : 35	100.00	4.7-6.8	6.00E+00	9.30E+04	1.46E+04	Yes	2.10E+04	Yes	7.20E+04	Yes	No	EN
Lead	7439-92-1	34 : 35 : 35	97.14	0.47-0.68	7.10E-01	1.04E+03 J	1.37E+02	No	7.18E+01	Yes	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	35 : 35 : 35	100.00	47-68	1.70E+01	2.20E+04	3.91E+03	Yes	1.13E+04	Yes	NA	--	No	EN
Manganese	7439-96-5	35 : 35 : 35	100.00	0.94-1.4	1.20E+00	2.70E+03	2.59E+02	No	5.01E+02	Yes	1.95E+03	Yes	Yes	>SL
Mercury	7439-97-6	28 : 28 : 28	100.00	0.02-5.3	4.30E-03 J	1.90E+01	2.94E+00	No	7.72E-02	Yes	3.10E+01	No	No	</=SL
Nickel	7440-02-0	34 : 35 : 35	97.14	3.8-5.4	2.70E+00	1.30E+02 J	2.41E+01	No	2.83E+01	Yes	2.04E+03	No	No	</=SL
Potassium	7440-09-7	35 : 35 : 35	100.00	94-140	9.10E+00	7.30E+03	1.23E+03	Yes	2.38E+03	Yes	NA	--	No	EN
Selenium	7782-49-2	18 : 35 : 35	51.43	0.95-3.2	7.50E-01	1.20E+01	3.17E+00	No	1.24E+00	Yes	5.11E+02	No	No	</=SL
Silver	7440-22-4	21 : 35 : 35	60.00	0.95-1.4	1.30E-01	2.90E+00	7.56E-01	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	31 : 35 : 35	88.57	47-290	1.80E+02	1.00E+04	1.46E+03	Yes	3.40E+02	Yes	NA	--	No	EN
Thallium	7440-28-0	5 : 35 : 35	14.29	0.95-4.3	8.20E-01 J	3.60E+00	1.82E+00	No	NA	--	6.75E+00	No	No	</=SL
Vanadium	7440-62-2	35 : 35 : 35	100.00	0.94-1.4	6.30E-01	2.60E+02	2.96E+01	No	3.44E+01	Yes	1.02E+02	Yes	Yes	>SL
Zinc	7440-66-6	35 : 35 : 35	100.00	1.9-10	9.70E+00	4.70E+03	8.14E+02	No	2.24E+02	Yes	3.06E+04	No	No	</=SL
Combined Soil	**Site Q Central**													
VOCs														
1,2-Dichloroethene (total)	540-59-0	2 : 42 : 42	4.76	0.0064-4	1.35E-03	1.20E-01 J	6.07E-02	No	NA	--	1.46E+01	No	No	</=SL
2-Butanone	78-93-3	18 : 44 : 44	40.91	0.016-10	5.40E-03	5.10E-02	2.31E-02	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	2 : 44 : 44	4.55	0.016-10	1.02E-02	4.30E-02	2.66E-02	No	2.00E-03	Yes	4.70E+03	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Acetone	67-64-1	34 : 45 : 45	75.56	0.036-20	7.20E-03	1.55E+00 J	1.52E-01	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	25 : 44 : 44	56.82	0.004-2	9.30E-04	1.30E+00 J	8.99E-02	No	NA	--	1.40E+00	No	No	</=SL
Carbon Disulfide	75-15-0	20 : 44 : 44	45.45	0.0032-2	8.70E-04	2.70E-01	2.08E-02	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	20 : 45 : 45	44.44	0.0036-0.61	1.30E-03 J	2.40E+02	1.60E+01	No	NA	--	5.31E+01	Yes	Yes	>SL
Chloroform	67-66-3	1 : 45 : 45	2.22	0.0032-2	1.10E-02 J	1.10E-02 J	1.10E-02	No	NA	--	4.70E-01	No	No	</=SL
Dichloromethane	75-09-2	1 : 44 : 44	2.27	0.0036-2	1.90E-03	1.90E-03	1.90E-03	No	6.50E-03	No	2.05E+01	No	No	</=SL
Ethylbenzene	100-41-4	29 : 44 : 44	65.91	0.0038-0.63	3.10E-04 J	1.30E+02	5.00E+00	No	9.52E-04	Yes	7.42E+02	No	No	</=SL
Tetrachloroethene	127-18-4	12 : 44 : 44	27.27	0.0032-2	4.10E-04	5.00E-02	7.98E-03	No	9.50E-04	Yes	1.31E+00	No	No	</=SL
Toluene	108-88-3	25 : 44 : 44	56.82	0.0038-0.63	1.90E-03	5.00E+01 J	3.44E+00	No	NA	--	2.21E+02	No	No	</=SL
Trichloroethylene	79-01-6	8 : 44 : 44	18.18	0.0032-2	5.40E-04	2.90E-02 J	4.77E-03	No	NA	--	1.10E-01	No	No	</=SL
Vinyl chloride	75-01-4	1 : 44 : 44	2.27	0.0032-2	3.10E-03 J	3.10E-03 J	3.10E-03	No	NA	--	7.50E-01	No	No	</=SL
Xylenes, Total	1330-20-7	27 : 44 : 44	61.36	0.0076-1.3	1.20E-03	6.30E+02	2.65E+01	No	1.54E-03	Yes	8.98E+01	Yes	Yes	>SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	1 : 44 : 44	2.27	0.34-4.2	2.70E-02	2.70E-02	2.70E-02	No	NA	--	2.16E+01	No	No	</=SL
1,2-Dichlorobenzene	95-50-1	2 : 44 : 44	4.55	0.34-4.2	2.20E-01 J	5.20E-01 J	3.70E-01	No	NA	--	4.10E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	14 : 45 : 45	31.11	0.34-4.2	4.50E-02	2.40E+01 J	2.65E+00	No	NA	--	7.87E+00	Yes	Yes	>SL
2,4,5-Trichlorophenol	95-95-4	1 : 44 : 44	2.27	0.34-4.2	1.34E-01	1.34E-01	1.34E-01	No	NA	--	6.16E+03	No	No	</=SL
2,4,6-Trichlorophenol	88-06-2	1 : 44 : 44	2.27	0.34-4.2	1.17E+00	1.17E+00	1.17E+00	No	NA	--	6.16E+00	No	No	</=SL
2,4-Dichlorophenol	120-83-2	1 : 44 : 44	2.27	0.34-4.2	3.40E-01	3.40E-01	3.40E-01	No	NA	--	1.85E+02	No	No	</=SL
2,4-Dimethylphenol	105-67-9	1 : 44 : 44	2.27	0.34-4.2	2.30E-01	2.30E-01	2.30E-01	No	NA	--	1.23E+03	No	No	</=SL
2,4-Dinitrotoluene	121-14-2	1 : 44 : 44	2.27	0.34-4.2	4.10E-01	4.10E-01	4.10E-01	No	NA	--	1.23E+02	No	No	</=SL
2,6-Dinitrotoluene	606-20-2	1 : 44 : 44	2.27	0.34-4.2	6.00E-01	6.00E-01	6.00E-01	No	NA	--	6.16E+01	No	No	</=SL
2-Chlorophenol	95-57-8	2 : 44 : 44	4.55	0.34-4.2	3.40E-02	1.50E-01	9.20E-02	No	NA	--	2.36E+01	No	No	</=SL
2-Methylnaphthalene	91-57-6	16 : 45 : 45	35.56	0.34-4.2	2.90E-02	1.30E+00	2.67E-01	No	NA	--	1.88E+01	No	No	</=SL
3&4-Methylphenol	106-44-5	3 : 44 : 44	6.82	0.34-4.2	5.80E-02	5.50E-01 J	2.25E-01	No	NA	--	3.08E+02	No	No	</=SL
4-Bromophenyl Phenyl Et	101-55-3	1 : 44 : 44	2.27	0.34-4.2	5.80E-02	5.80E-02	5.80E-02	No	NA	--	NA	--	No	<5%FOD
4-Chloroaniline	106-47-8	1 : 44 : 44	2.27	0.68-8.5	1.10E+00	1.10E+00	1.10E+00	No	NA	--	2.46E+02	No	No	</=SL
Acenaphthene	83-32-9	15 : 44 : 44	34.09	0.34-4.2	3.00E-02	2.00E+00	2.70E-01	No	4.20E-02	Yes	2.92E+03	No	No	</=SL
Acenaphthylene	208-96-8	4 : 44 : 44	9.09	0.34-4.2	2.40E-02	2.90E-01	1.29E-01	No	NA	--	2.92E+03	No	No	</=SL
Anthracene	120-12-7	20 : 44 : 44	45.45	0.34-4.2	2.80E-02	3.20E+00	4.15E-01	No	1.20E-01	Yes	2.38E+04	No	No	</=SL

TABLE 2.2
COPC SELECTION - COMBINED SOIL (SURFACE SOIL, SUBSURFACE SOIL, WASTE) AND DEEP SUBSURFACE SOI
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Benzo(a)anthracene	56-55-3	28 : 44 : 44	63.64	0.34-4.2	2.90E-02	3.60E+00	6.43E-01	No	1.97E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(a)pyrene	50-32-8	27 : 44 : 44	61.36	0.34-4.2	2.40E-02	3.20E+00	6.19E-01	No	4.80E-01	Yes	2.10E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	25 : 44 : 44	56.82	0.34-4.2	3.10E-02	3.20E+00	6.02E-01	No	2.60E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	26 : 44 : 44	59.09	0.34-4.2	2.60E-02 J	2.10E+00	3.44E-01	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	22 : 44 : 44	50.00	0.34-4.2	2.90E-02	2.65E+00	6.26E-01	No	2.10E-01	Yes	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	9 : 43 : 43	20.93	0.34-4.2	2.30E-02	3.05E+00	1.06E+00	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	28 : 44 : 44	63.64	0.34-4.2	5.20E-02 J	4.80E+01	4.04E+00	No	2.57E-01	Yes	1.23E+02	No	No	</=SL
Carbazole	86-74-8	9 : 44 : 44	20.45	0.34-4.2	4.60E-02 J	2.30E+00	4.10E-01	No	NA	--	8.62E+01	No	No	</=SL
Chrysene	218-01-9	31 : 44 : 44	70.45	0.34-4.2	3.20E-02	3.80E+00	6.50E-01	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	7 : 44 : 44	15.91	0.34-4.2	3.60E-02	2.10E-01 J	6.97E-02	No	1.20E-01	Yes	2.10E-01	No	No	</=SL
Dibenzofuran	132-64-9	14 : 44 : 44	31.82	0.34-4.2	2.20E-02	1.65E+00	2.32E-01	No	NA	--	1.56E+02	No	No	</=SL
Di-n-butylphthalate	84-74-2	8 : 44 : 44	18.18	0.34-4.2	7.40E-02 J	2.60E+00 J	5.17E-01	No	NA	--	6.16E+03	No	No	</=SL
Di-n-octylphthalate	117-84-0	3 : 44 : 44	6.82	0.34-4.2	1.10E-01 J	5.50E-01 J	3.70E-01	No	NA	--	2.46E+03	No	No	</=SL
Dinoseb	88-85-7	1 : 44 : 44	2.27	0.34-4.2	8.80E-02	8.80E-02	8.80E-02	No	NA	--	6.16E+01	No	No	</=SL
Fluoranthene	206-44-0	34 : 44 : 44	77.27	0.34-4.2	4.30E-02	7.60E+00	1.25E+00	No	4.42E-01	Yes	2.20E+03	No	No	</=SL
Fluorene	86-73-7	15 : 44 : 44	34.09	0.34-4.2	3.40E-02	2.80E+00	3.31E-01	No	NA	--	2.63E+03	No	No	</=SL
Hexachlorobenzene	118-74-1	1 : 44 : 44	2.27	0.34-4.2	2.90E-02	2.90E-02	2.90E-02	No	NA	--	1.08E+00	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	21 : 44 : 44	47.73	0.34-4.2	3.80E-02	1.60E+00	3.37E-01	No	NA	--	2.11E+00	No	No	</=SL
Naphthalene	91-20-3	17 : 44 : 44	38.64	0.34-4.2	3.00E-02	4.35E+00	5.72E-01	No	NA	--	1.88E+01	No	No	</=SL
N-Nitroso-di-n-propylamin	621-64-7	1 : 44 : 44	2.27	0.34-4.2	1.80E-01	1.80E-01	1.80E-01	No	NA	--	2.50E-01	No	No	</=SL
N-Nitrosodiphenylamine	86-30-6	1 : 44 : 44	2.27	0.34-4.2	2.20E-01	2.20E-01	2.20E-01	No	NA	--	3.52E+02	No	No	</=SL
Phenanthrene	85-01-8	31 : 44 : 44	70.45	0.34-4.2	4.50E-02	1.35E+01 J	1.21E+00	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Phenol	108-95-2	2 : 44 : 44	4.55	0.34-4.2	8.50E-02	4.30E-01 J	2.58E-01	No	NA	--	1.85E+04	No	No	</=SL
Pyrene	129-00-0	37 : 44 : 44	84.09	0.34-4.2	3.20E-02 J	8.75E+00 J	1.14E+00	No	4.09E-01	Yes	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDD	72-54-8	7 : 37 : 37	18.92	0.0003-0.21	1.10E-03 J	8.90E-02 J	3.03E-02	No	9.24E-03	Yes	9.95E+00	No	No	</=SL
4,4'-DDE	72-55-9	9 : 36 : 37	25.00	0.0003-0.21	7.10E-04	1.20E-01	2.90E-02	No	1.45E-02	Yes	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	14 : 37 : 37	37.84	0.0003-0.21	8.60E-04	1.05E-01 J	2.68E-02	No	3.98E-02	Yes	7.00E+00	No	No	</=SL
Aldrin	309-00-2	4 : 37 : 37	10.81	0.00016-0.1	9.10E-04	1.10E-01 J	2.90E-02	No	9.80E-03	Yes	1.00E-01	Yes	Yes	>SL
alpha-BHC	319-84-6	2 : 37 : 37	5.41	0.00016-0.1	9.70E-04 J	6.05E-02 J	3.07E-02	No	2.40E-01	No	3.60E-01	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
alpha-Chlordane	5103-71-9	10 : 37 : 37	27.03	).00016-0.1	1.80E-03 J	1.20E-01	2.28E-02	No	1.24E-02	Yes	6.50E+00	No	No	</=SL
beta-BHC	319-85-7	1 : 37 : 37	2.70	).00016-0.1	1.60E-02 J	1.60E-02 J	1.60E-02	No	NA	--	1.26E+00	No	No	</=SL
delta-BHC	319-86-8	1 : 37 : 37	2.70	).00016-0.1	2.30E-02 J	2.30E-02 J	2.30E-02	No	6.80E-02	No	3.60E-01	No	No	</=SL
Dieldrin	60-57-1	17 : 37 : 37	45.95	0.0003-0.21	5.20E-04	3.90E-01	4.36E-02	No	1.32E-02	Yes	1.10E-01	Yes	Yes	>SL
Endosulfan I	959-98-8	4 : 37 : 37	10.81	0.0018-0.11	4.45E-04	3.70E-02 J	1.02E-02	No	2.29E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan II	33213-65-9	1 : 37 : 37	2.70	0.0003-0.21	3.40E-03 J	3.40E-03 J	3.40E-03	No	1.16E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan Sulfate	1031-07-8	4 : 37 : 37	10.81	0.0003-0.21	2.40E-03 J	9.60E-02 J	4.09E-02	No	1.81E-03	Yes	3.69E+02	No	No	</=SL
Endrin Aldehyde	7421-93-4	3 : 37 : 37	8.11	0.0003-0.21	6.40E-03 J	4.80E-02 J	2.35E-02	No	8.80E-03	Yes	1.85E+01	No	No	</=SL
Endrin Ketone	53494-70-5	4 : 37 : 37	10.81	0.0003-0.21	1.10E-03 J	9.10E-02 J	2.60E-02	No	NA	--	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	2 : 37 : 37	5.41	).00016-0.1	2.80E-04	8.80E-04	5.80E-04	No	NA	--	1.74E+00	No	No	</=SL
gamma-Chlordane	5103-74-2	7 : 37 : 37	18.92	).00016-0.1	7.20E-04	8.90E-02	2.43E-02	No	6.66E-02	Yes	6.50E+00	No	No	</=SL
Heptachlor	76-44-8	1 : 37 : 37	2.70	).00016-0.1	2.30E-03	2.30E-03	2.30E-03	No	1.48E-01	No	3.80E-01	No	No	</=SL
Heptachlor Epoxide	1024-57-3	1 : 37 : 37	2.70	).00016-0.1	8.70E-03 J	8.70E-03 J	8.70E-03	No	1.03E-02	No	1.90E-01	No	No	</=SL
Methoxychlor	72-43-5	2 : 37 : 37	5.41	0.0016-1.1	5.50E-02 J	1.50E-01 J	1.02E-01	No	3.31E-03	Yes	3.08E+02	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	4 : 45 : 45	8.89	0.00076-1	3.55E-03	3.30E-01 J	8.76E-02	No	NA	--	6.16E+02	No	No	</=SL
2,4-D	94-75-7	5 : 45 : 45	11.11	0.00076-1	3.50E-03 J	7.50E-03	5.60E-03	No	1.16E-02	No	7.68E+02	No	No	</=SL
2,4-DB	94-82-6	1 : 45 : 45	2.22	0.00076-1	3.50E-02 J	3.50E-02 J	3.50E-02	No	NA	--	4.92E+02	No	No	</=SL
Dalapon	75-99-0	3 : 45 : 45	6.67	0.18-240	5.30E-03	6.80E-02 J	3.11E-02	No	NA	--	1.85E+03	No	No	</=SL
Dicamba	1918-00-9	2 : 45 : 45	4.44	0.0018-2.4	2.90E-03	3.60E-03	3.25E-03	No	NA	--	1.85E+03	No	No	</=SL
Dichlorprop	120-36-5	1 : 45 : 45	2.22	0.0091-12	4.70E-03	4.70E-03	4.70E-03	No	7.82E-02	No	4.92E+02	No	No	</=SL
MCPP	93-65-2	5 : 45 : 45	11.11	0.18-240	6.60E-01	4.10E+00	1.55E+00	No	8.80E+00	No	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	21 : 45 : 45	46.67	0.0016-2	3.30E-03 J	1.02E+01	8.40E-01	No	4.57E-03	Yes	9.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	18 : 38 : 38	47.37	-	6.87E-02	1.14E+01	2.06E+00	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	20 : 25 : 25	80.00	-	6.66E-05	1.82E-02	2.41E-03	No	3.39E-05	Yes	1.00E-03	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	45 : 45 : 45	100.00	20-43	9.05E+02	2.80E+04	7.72E+03	No	1.09E+04	Yes	9.21E+04	No	No	</=SL

TABLE 2.2
COPC SELECTION - COMBINED SOIL (SURFACE SOIL, SUBSURFACE SOIL, WASTE) AND DEEP SUBSURFACE SOI
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Antimony	7440-36-0	26 : 45 : 45	57.78	1.8-19	5.70E-01	5.80E+00 J	1.59E+00	No	1.92E+00	Yes	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	45 : 45 : 45	100.00	1-2.1	1.10E+00	1.00E+02	1.78E+01	No	1.08E+01	Yes	1.59E+00	Yes	Yes	>SL
Barium	7440-39-3	45 : 45 : 45	100.00	1-2.1	1.30E+01	3.95E+02 J	1.47E+02	No	3.17E+02	Yes	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	45 : 45 : 45	100.00	0.4-0.85	6.80E-02	7.20E+00	1.01E+00	No	7.65E-01	Yes	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	37 : 45 : 45	82.22	0.48-1.1	2.40E-01	9.65E+00	1.96E+00	No	1.81E+00	Yes	4.51E+01	No	No	</=SL
Calcium	7440-70-2	45 : 45 : 45	100.00	50-610	1.60E+03	2.80E+05	7.46E+04	Yes	6.11E+04	Yes	NA	--	No	EN
Chromium	7440-47-3	45 : 45 : 45	100.00	1-2.1	2.20E+00	8.00E+03	1.99E+02	No	1.89E+01	Yes	4.48E+02	Yes	Yes	>SL
Cobalt	7440-48-4	45 : 45 : 45	100.00	1-2.1	7.40E-01	1.50E+01 J	5.66E+00	No	9.27E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	45 : 45 : 45	100.00	1.9-2.5	1.75E+00	2.00E+04 J	5.13E+02	No	4.96E+01	Yes	4.09E+03	Yes	Yes	>SL
Iron	7439-89-6	45 : 45 : 45	100.00	5-11	9.30E+02	5.40E+04	1.55E+04	Yes	2.10E+04	Yes	7.20E+04	No	No	EN
Lead	7439-92-1	45 : 45 : 45	100.00	0.5-2.5	2.80E+00	6.60E+02	1.21E+02	No	7.18E+01	Yes	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	45 : 45 : 45	100.00	50-250	3.60E+02	2.80E+04	6.64E+03	Yes	1.13E+04	Yes	NA	--	No	EN
Manganese	7439-96-5	45 : 45 : 45	100.00	1-5	2.90E+01 J	5.45E+03 J	3.96E+02	No	5.01E+02	Yes	1.95E+03	Yes	Yes	>SL
Mercury	7439-97-6	39 : 40 : 40	97.50	0.017-0.48	4.20E-03	1.80E+00	3.16E-01	No	7.72E-02	Yes	3.10E+01	No	No	</=SL
Nickel	7440-02-0	45 : 45 : 45	100.00	4-8.5	4.25E+00	2.90E+02	2.86E+01	No	2.83E+01	Yes	2.04E+03	No	No	</=SL
Potassium	7440-09-7	45 : 45 : 45	100.00	100-210	1.75E+02	3.05E+03	1.35E+03	Yes	2.38E+03	Yes	NA	--	No	EN
Selenium	7782-49-2	7 : 45 : 45	15.56	1-7.2	9.70E-01 J	6.40E+00	2.95E+00	No	1.24E+00	Yes	5.11E+02	No	No	</=SL
Silver	7440-22-4	24 : 45 : 45	53.33	0.91-2.1	1.10E-01	3.75E+00	5.45E-01	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	34 : 45 : 45	75.56	50-110	1.70E+02	2.00E+03	4.81E+02	Yes	3.40E+02	Yes	NA	--	No	EN
Thallium	7440-28-0	8 : 45 : 45	17.78	1-24	1.50E+00	4.80E+00	3.04E+00	No	NA	--	6.75E+00	No	No	</=SL
Vanadium	7440-62-2	45 : 45 : 45	100.00	1-5	3.45E+00	9.85E+01	2.83E+01	No	3.44E+01	Yes	1.02E+02	No	No	</=SL
Zinc	7440-66-6	45 : 45 : 45	100.00	2-4.3	2.20E+01	1.06E+03 J	2.63E+02	No	2.24E+02	Yes	3.06E+04	No	No	</=SL
Combined Soil	**Site Q North**													
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 28 : 28	3.57	0.0042-1.2	2.50E-01	2.50E-01	2.50E-01	No	NA	--	6.94E+02	No	No	</=SL
1,1-Dichloroethane	75-34-3	1 : 28 : 28	3.57	0.0042-1.2	6.60E-01 J	6.60E-01 J	6.60E-01	No	NA	--	1.74E+02	No	No	</=SL
1,1-Dichloroethylene	75-35-4	1 : 28 : 28	3.57	0.0042-1.2	5.20E-01	5.20E-01	5.20E-01	No	NA	--	4.13E+01	No	No	</=SL
1,2-Dichloroethane	107-06-2	1 : 28 : 28	3.57	0.0042-1.2	4.00E+00	4.00E+00	4.00E+00	No	NA	--	6.00E-01	Yes	No	<5%FOD
1,2-Dichloroethene (total)	540-59-0	3 : 28 : 28	10.71	0.0086-2.4	1.90E-03 J	1.40E+00	4.68E-01	No	NA	--	1.46E+01	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
1,3-Dichloropropene (cis)	10061-01-5	1 : 28 : 28	3.57	0.0042-1.2	3.60E-01	3.60E-01	3.60E-01	No	NA	--	1.80E+00	No	No	</=SL
1,3-Dichloropropene (tran	10061-02-6	1 : 28 : 28	3.57	0.0042-1.2	3.10E-01	3.10E-01	3.10E-01	No	NA	--	1.80E+00	No	No	</=SL
2-Butanone	78-93-3	15 : 28 : 28	53.57	0.025-6	1.50E-03	2.00E+00	2.30E-01	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	3 : 28 : 28	10.71	0.021-6	9.90E-04	5.80E-01	2.16E-01	No	2.00E-03	Yes	4.70E+03	No	No	</=SL
Acetone	67-64-1	18 : 28 : 29	64.29	0.051-12	1.70E-02 J	3.00E+00 J	3.85E-01	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	17 : 29 : 29	58.62	0.0043-1.2	7.60E-04 J	8.80E+00	6.35E-01	No	NA	--	1.40E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	15 : 28 : 28	53.57	0.0042-1.2	8.40E-04	9.70E-01	7.04E-02	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	10 : 28 : 28	35.71	0.0043-1.2	5.20E-04	3.60E+01 J	7.05E+00	No	NA	--	5.31E+01	No	No	</=SL
Chloroethane	75-00-3	1 : 28 : 28	3.57	0.0042-2.4	4.10E-03 J	4.10E-03 J	4.10E-03	No	NA	--	6.49E+00	No	No	</=SL
Chloroform	67-66-3	1 : 28 : 28	3.57	0.0042-1.2	9.00E-04	9.00E-04	9.00E-04	No	NA	--	4.70E-01	No	No	</=SL
Chloromethane	74-87-3	2 : 28 : 28	7.14	0.0042-2.4	4.50E-03 J	9.00E-01 J	4.52E-01	No	9.00E-04	Yes	1.56E+01	No	No	</=SL
Dichloromethane	75-09-2	1 : 28 : 28	3.57	0.0042-1.2	9.10E-03 J	9.10E-03 J	9.10E-03	No	6.50E-03	Yes	2.05E+01	No	No	</=SL
Ethylbenzene	100-41-4	15 : 28 : 28	53.57	0.0042-1.2	1.90E-04	4.00E+01	3.52E+00	No	9.52E-04	Yes	7.42E+02	No	No	</=SL
Methyl N-Butyl Ketone	591-78-6	2 : 28 : 28	7.14	0.021-6	3.10E-03	5.00E-01	2.52E-01	No	NA	--	1.13E+04	No	No	</=SL
Styrene	100-42-5	2 : 28 : 28	7.14	0.0042-1.2	3.90E-04	6.90E-04	5.40E-04	No	3.64E-03	No	1.81E+03	No	No	</=SL
Tetrachloroethene	127-18-4	16 : 29 : 29	55.17	0.0043-1.2	4.30E-04	2.80E+01 J	1.82E+00	No	9.50E-04	Yes	1.31E+00	Yes	Yes	>SL
Toluene	108-88-3	14 : 28 : 28	50.00	0.0043-1.2	2.40E-03 J	4.70E+01	4.78E+00	No	NA	--	2.21E+02	No	No	</=SL
Trichloroethylene	79-01-6	14 : 28 : 28	50.00	0.0042-1.2	4.90E-04	7.30E-01	1.00E-01	No	NA	--	1.10E-01	Yes	Yes	>SL
Vinyl chloride	75-01-4	1 : 28 : 28	3.57	0.0042-2.4	6.00E-01	6.00E-01	6.00E-01	No	NA	--	7.50E-01	No	No	</=SL
Xylenes, Total	1330-20-7	19 : 28 : 28	67.86	0.0083-2.4	3.90E-04	3.00E+02	2.04E+01	No	1.54E-03	Yes	8.98E+01	Yes	Yes	>SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	5 : 29 : 29	17.24	0.23-230	4.90E-02	1.00E+01	3.13E+00	No	NA	--	2.16E+01	No	No	</=SL
1,2-Dichlorobenzene	95-50-1	3 : 29 : 29	10.34	0.25-230	1.00E-01	9.70E+00	3.48E+00	No	NA	--	4.10E+02	No	No	</=SL
1,3-Dichlorobenzene	541-73-1	3 : 29 : 29	10.34	0.28-230	2.10E-02	1.10E-01 J	6.07E-02	No	NA	--	2.09E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	6 : 29 : 29	20.69	0.24-230	1.70E-01	3.20E+00	1.36E+00	No	NA	--	7.87E+00	No	No	</=SL
2,4,5-Trichlorophenol	95-95-4	1 : 29 : 29	3.45	0.34-230	1.80E-01	1.80E-01	1.80E-01	No	NA	--	6.16E+03	No	No	</=SL
2,4,6-Trichlorophenol	88-06-2	2 : 29 : 29	6.90	0.22-230	1.40E+00	4.70E+01	2.42E+01	No	NA	--	6.16E+00	Yes	Yes	>SL
2,4-Dichlorophenol	120-83-2	5 : 29 : 29	17.24	0.25-230	3.00E-02	2.70E+02	6.78E+01	No	NA	--	1.85E+02	Yes	Yes	>SL
2,4-Dimethylphenol	105-67-9	1 : 29 : 29	3.45	0.35-230	3.70E-02	3.70E-02	3.70E-02	No	NA	--	1.23E+03	No	No	</=SL
2-Chlorophenol	95-57-8	2 : 29 : 29	6.90	0.29-230	1.70E+00	1.70E+00	1.70E+00	No	NA	--	2.36E+01	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
2-Methylnaphthalene	91-57-6	16 : 29 : 29	55.17	0.26-230	2.40E-02	8.60E-01 J	2.14E-01	No	NA	--	1.88E+01	No	No	</=SL
2-Nitroaniline	88-74-4	1 : 29 : 29	3.45	0.25-1200	2.00E+01	2.00E+01	2.00E+01	No	NA	--	1.83E+02	No	No	</=SL
3&4-Methylphenol	106-44-5	1 : 29 : 29	3.45	0.31-230	1.70E-01	1.70E-01	1.70E-01	No	NA	--	3.08E+02	No	No	</=SL
4-Chloroaniline	106-47-8	3 : 29 : 29	10.34	0.28-460	1.00E+01	3.00E+01 J	2.07E+01	No	NA	--	2.46E+02	No	No	</=SL
Acenaphthene	83-32-9	12 : 29 : 29	41.38	0.2-230	6.40E-02	7.35E-01 J	2.40E-01	No	4.20E-02	Yes	2.92E+03	No	No	</=SL
Acenaphthylene	208-96-8	2 : 29 : 29	6.90	0.18-230	5.30E-02 J	6.90E-02	6.10E-02	No	NA	--	2.92E+03	No	No	</=SL
Anthracene	120-12-7	16 : 29 : 29	55.17	0.25-230	4.30E-02 J	2.30E+00 J	5.40E-01	No	1.20E-01	Yes	2.38E+04	No	No	</=SL
Benzo(a)anthracene	56-55-3	21 : 29 : 29	72.41	0.33-230	6.00E-02 J	4.85E+00 J	1.27E+00	No	1.97E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(a)pyrene	50-32-8	23 : 29 : 29	79.31	0.2-230	2.40E-02 J	3.90E+00 J	1.07E+00	No	4.80E-01	Yes	2.10E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	22 : 29 : 29	75.86	0.28-230	9.00E-02 J	3.60E+00 J	1.14E+00	No	2.60E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	21 : 29 : 29	72.41	0.25-230	5.40E-02 J	1.90E+00 J	6.38E-01	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	22 : 29 : 29	75.86	0.35-230	7.10E-02 J	3.75E+00 J	1.08E+00	No	2.10E-01	Yes	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	5 : 29 : 29	17.24	0.35-230	2.30E-02	5.00E-01	1.43E-01	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Chloroethyl)ether	111-44-4	1 : 29 : 29	3.45	0.3-230	4.40E-02	4.40E-02	4.40E-02	No	NA	--	5.80E-01	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	19 : 29 : 29	65.52	0.35-230	3.50E-02	1.00E+01	1.71E+00	No	2.57E-01	Yes	1.23E+02	No	No	</=SL
Carbazole	86-74-8	10 : 29 : 29	34.48	0.3-230	4.10E-02	9.30E-01 J	2.92E-01	No	NA	--	8.62E+01	No	No	</=SL
Chrysene	218-01-9	23 : 29 : 29	79.31	0.27-230	6.40E-02 J	5.10E+00 J	1.47E+00	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	10 : 29 : 29	34.48	0.26-230	6.60E-02	4.00E-01	2.05E-01	No	1.20E-01	Yes	2.10E-01	Yes	Yes	>SL
Dibenzofuran	132-64-9	14 : 29 : 29	48.28	0.2-230	2.50E-02 J	5.15E-01 J	1.53E-01	No	NA	--	1.56E+02	No	No	</=SL
Diethyl Phthalate	84-66-2	2 : 29 : 29	6.90	0.24-230	5.40E-01	1.60E+00	1.07E+00	No	NA	--	4.92E+04	No	No	</=SL
Di-n-butylphthalate	84-74-2	1 : 29 : 29	3.45	0.3-230	3.60E-02	3.60E-02	3.60E-02	No	NA	--	6.16E+03	No	No	</=SL
Di-n-octylphthalate	117-84-0	2 : 29 : 29	6.90	0.33-230	6.60E-02	2.00E+00 J	1.03E+00	No	NA	--	2.46E+03	No	No	</=SL
Fluoranthene	206-44-0	26 : 29 : 29	89.66	0.28-230	4.90E-02 J	1.50E+01 J	2.31E+00	No	4.42E-01	Yes	2.20E+03	No	No	</=SL
Fluorene	86-73-7	10 : 29 : 29	34.48	0.24-230	5.30E-02	8.10E-01 J	2.67E-01	No	NA	--	2.63E+03	No	No	</=SL
Hexachlorobenzene	118-74-1	1 : 29 : 29	3.45	0.28-230	3.00E-02	3.00E-02	3.00E-02	No	NA	--	1.08E+00	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	19 : 29 : 29	65.52	0.28-230	3.20E-02 J	2.10E+00 J	6.17E-01	No	NA	--	2.11E+00	No	No	</=SL
Naphthalene	91-20-3	11 : 29 : 29	37.93	0.2-230	3.80E-02	5.60E+00	6.91E-01	No	NA	--	1.88E+01	No	No	</=SL
Nitrobenzene	98-95-3	1 : 29 : 29	3.45	0.35-230	1.90E+00	1.90E+00	1.90E+00	No	NA	--	1.03E+01	No	No	</=SL
Phenanthrene	85-01-8	25 : 29 : 29	86.21	0.31-230	4.00E-02 J	1.15E+01 J	1.89E+00	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Phenol	108-95-2	6 : 29 : 29	20.69	0.32-230	1.60E-01	2.90E+01	5.33E+00	No	NA	--	1.85E+04	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Pyrene	129-00-0	26 : 29 : 29	89.66	0.22-230	4.40E-02 J	1.25E+01 J	2.37E+00	No	4.09E-01	Yes	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDD	72-54-8	6 : 22 : 22	27.27	0.0037-0.93	7.10E-03 J	1.30E-01	4.14E-02	No	9.24E-03	Yes	9.95E+00	No	No	</=SL
4,4'-DDE	72-55-9	9 : 21 : 22	42.86	0.0037-0.93	2.00E-03 J	4.90E+00	5.63E-01	No	1.45E-02	Yes	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	16 : 22 : 22	72.73	0.004-0.93	7.60E-03 J	5.00E+00 J	4.96E-01	No	3.98E-02	Yes	7.00E+00	No	No	</=SL
alpha-BHC	319-84-6	5 : 22 : 22	22.73	0.0019-0.48	4.00E-03 J	2.40E-01	8.64E-02	No	2.40E-01	No	3.60E-01	No	No	</=SL
alpha-Chlordane	5103-71-9	6 : 21 : 22	28.57	0.0019-0.48	8.60E-04 J	2.00E-01	4.22E-02	No	1.24E-02	Yes	6.50E+00	No	No	</=SL
beta-BHC	319-85-7	8 : 22 : 22	36.36	0.0019-0.48	1.30E-03 J	1.30E+00 J	1.74E-01	No	NA	--	1.26E+00	Yes	Yes	>SL
delta-BHC	319-86-8	1 : 22 : 22	4.55	0.0019-0.48	6.60E-01	6.60E-01	6.60E-01	No	6.80E-02	Yes	3.60E-01	Yes	No	<5%FOD
Dieldrin	60-57-1	11 : 22 : 22	50.00	0.0037-0.93	3.95E-03 J	3.20E+00 J	4.58E-01	No	1.32E-02	Yes	1.10E-01	Yes	Yes	>SL
Endosulfan II	33213-65-9	3 : 22 : 22	13.64	0.0037-0.93	4.90E-04 J	2.20E-01 J	7.82E-02	No	1.16E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan Sulfate	1031-07-8	2 : 22 : 22	9.09	0.0037-0.93	1.30E-02 J	1.00E+00 J	5.06E-01	No	1.81E-03	Yes	3.69E+02	No	No	</=SL
Endrin	72-20-8	4 : 22 : 22	18.18	0.0037-0.93	2.40E-03 J	1.70E+00 J	5.80E-01	No	9.60E-03	Yes	1.85E+01	No	No	</=SL
Endrin Aldehyde	7421-93-4	4 : 22 : 22	18.18	0.0037-0.93	1.60E-03 J	7.30E-01	1.90E-01	No	8.80E-03	Yes	1.85E+01	No	No	</=SL
Endrin Ketone	53494-70-5	6 : 22 : 22	27.27	0.0037-0.93	2.40E-03 J	6.30E-01 J	1.18E-01	No	NA	--	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	5 : 22 : 22	22.73	0.0019-0.48	5.70E-03 J	3.10E-01 J	1.16E-01	No	NA	--	1.74E+00	No	No	</=SL
gamma-Chlordane	5103-74-2	11 : 22 : 22	50.00	0.0019-0.48	2.10E-04 J	1.20E+00 J	1.39E-01	No	6.66E-02	Yes	6.50E+00	No	No	</=SL
Heptachlor	76-44-8	3 : 22 : 22	13.64	0.0019-0.48	1.00E-03 J	1.10E-02 J	6.77E-03	No	1.48E-01	No	3.80E-01	No	No	</=SL
Heptachlor Epoxide	1024-57-3	5 : 22 : 22	22.73	0.0019-0.48	3.80E-03 J	1.60E-01	1.12E-01	No	1.03E-02	Yes	1.90E-01	No	No	</=SL
Methoxychlor	72-43-5	6 : 22 : 22	27.27	0.019-4.8	8.00E-03 J	1.80E+00 J	3.56E-01	No	3.31E-03	Yes	3.08E+02	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	3 : 28 : 28	10.71	0.0088-520	2.00E-03	1.00E-02	4.70E-03	No	NA	--	6.16E+02	No	No	</=SL
2,4-D	94-75-7	7 : 28 : 28	25.00	0.0088-520	4.20E-03 J	1.70E+02	4.00E+01	No	1.16E-02	Yes	7.68E+02	No	No	</=SL
Dalapon	75-99-0	1 : 28 : 28	3.57	0.35-21000	9.20E-03	9.20E-03	9.20E-03	No	NA	--	1.85E+03	No	No	</=SL
Dicamba	1918-00-9	1 : 28 : 28	3.57	0.009-520	2.00E-03	2.00E-03	2.00E-03	No	NA	--	1.85E+03	No	No	</=SL
Dichlorprop	120-36-5	2 : 28 : 28	7.14	0.11-6300	2.70E-03 J	1.30E-02	7.85E-03	No	7.82E-02	No	4.92E+02	No	No	</=SL
MCPA	94-74-6	1 : 28 : 28	3.57	2.1-130000	2.50E-01 J	2.50E-01 J	2.50E-01	No	NA	--	3.08E+01	No	No	</=SL
MCPP	93-65-2	3 : 28 : 28	10.71	2.1-130000	1.60E-01 J	3.60E+00 J	1.65E+00	No	8.80E+00	No	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	22 : 28 : 28	78.57	0.009-120	2.00E-03	2.30E+03 J	1.64E+02	No	4.57E-03	Yes	9.00E+00	Yes	Yes	>SL

TABLE 2.2
COPC SELECTION - COMBINED SOIL (SURFACE SOIL, SUBSURFACE SOIL, WASTE) AND DEEP SUBSURFACE SOI
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
PCBs														
TOTAL PCBs	Total PCBs	17 : 22 : 22	77.27	-	4.51E-01	2.21E+02	3.12E+01	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	15 : 17 : 17	88.24	-	5.88E-05	6.78E-02	7.04E-03	No	3.39E-05	Yes	1.00E-03	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	29 : 29 : 29	100.00	19-26	5.80E+02	1.20E+04	5.27E+03	No	1.09E+04	Yes	9.21E+04	No	No	</=SL
Antimony	7440-36-0	20 : 29 : 29	68.97	1.8-3.3	5.40E-01 J	8.40E+01 J	7.58E+00	No	1.92E+00	Yes	4.09E+01	Yes	Yes	>SL
Arsenic	7440-38-2	29 : 29 : 29	100.00	0.97-1.3	2.30E+00	1.00E+02	1.29E+01	No	1.08E+01	Yes	1.59E+00	Yes	Yes	>SL
Barium	7440-39-3	29 : 29 : 29	100.00	0.97-55	1.70E+01	7.20E+03	7.81E+02	No	3.17E+02	Yes	6.66E+03	Yes	Yes	>SL
Beryllium	7440-41-7	29 : 29 : 29	100.00	0.39-0.51	2.30E-01	3.40E+00	9.44E-01	No	7.65E-01	Yes	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	28 : 29 : 29	96.55	0.48-0.64	4.00E-01	9.20E+01	1.03E+01	No	1.81E+00	Yes	4.51E+01	Yes	Yes	>SL
Calcium	7440-70-2	29 : 29 : 29	100.00	50-240	8.90E+02	3.20E+05	5.04E+04	Yes	6.11E+04	Yes	NA	--	No	EN
Chromium	7440-47-3	29 : 29 : 29	100.00	0.97-1.3	5.60E+00	1.40E+02	2.69E+01	No	1.89E+01	Yes	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	29 : 29 : 29	100.00	0.97-1.3	1.00E+00	2.40E+01	7.49E+00	No	9.27E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	29 : 29 : 29	100.00	1.9-2.6	8.30E+00	1.70E+04	8.55E+02	No	4.96E+01	Yes	4.09E+03	Yes	Yes	>SL
Iron	7439-89-6	29 : 29 : 29	100.00	4.8-6.4	4.00E+03	9.70E+04	2.42E+04	Yes	2.10E+04	Yes	7.20E+04	Yes	No	EN
Lead	7439-92-1	28 : 29 : 29	96.55	0.48-0.6	7.60E+00	2.40E+04	1.20E+03	No	7.18E+01	Yes	8.00E+02	Yes	Yes	>SL
Magnesium	7439-95-4	29 : 29 : 29	100.00	48-64	1.60E+02	2.70E+04	4.43E+03	Yes	1.13E+04	Yes	NA	--	No	EN
Manganese	7439-96-5	29 : 29 : 29	100.00	0.97-1.3	7.90E+00	9.60E+02	2.77E+02	No	5.01E+02	Yes	1.95E+03	No	No	</=SL
Mercury	7439-97-6	27 : 27 : 27	100.00	0.019-2.2	1.60E-02	1.70E+02	7.54E+00	No	7.72E-02	Yes	3.10E+01	Yes	Yes	>SL
Nickel	7440-02-0	29 : 29 : 29	100.00	3.9-5.1	4.40E+00	5.70E+02	6.08E+01	No	2.83E+01	Yes	2.04E+03	No	No	</=SL
Potassium	7440-09-7	29 : 29 : 29	100.00	97-130	2.10E+02	2.30E+03 J	9.08E+02	Yes	2.38E+03	No	NA	--	No	EN
Selenium	7782-49-2	10 : 29 : 29	34.48	0.97-4.1	7.10E-01 J	2.10E+01	3.92E+00	No	1.24E+00	Yes	5.11E+02	No	No	</=SL
Silver	7440-22-4	19 : 29 : 29	65.52	0.97-1.6	1.60E-01	5.20E+00	1.27E+00	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	27 : 29 : 29	93.10	48-64	1.80E+02	1.40E+03	4.77E+02	Yes	3.40E+02	Yes	NA	--	No	EN
Thallium	7440-28-0	1 : 29 : 29	3.45	0.97-4.1	2.50E+00	2.50E+00	2.50E+00	No	NA	--	6.75E+00	No	No	</=SL
Vanadium	7440-62-2	29 : 29 : 29	100.00	0.97-1.3	7.70E+00	3.80E+02	4.75E+01	No	3.44E+01	Yes	1.02E+02	Yes	Yes	>SL
Zinc	7440-66-6	29 : 29 : 29	100.00	2-9.6	1.20E+01	1.10E+04 J	1.38E+03	No	2.24E+02	Yes	3.06E+04	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Combined Soil	**Site Q South**													
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 45 : 45	2.22	0.004-0.27	4.70E-01	4.70E-01	4.70E-01	No	NA	--	6.94E+02	No	No	</=SL
1,1-Dichloroethane	75-34-3	2 : 45 : 45	4.44	0.004-0.27	9.70E-04	7.60E-01 J	3.80E-01	No	NA	--	1.74E+02	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	8 : 45 : 45	17.78	0.008-0.53	1.20E-03	8.50E+00	1.07E+00	No	NA	--	1.46E+01	No	No	</=SL
2-Butanone	78-93-3	28 : 45 : 45	62.22	0.022-1.3	2.30E-03	3.30E-01	2.88E-02	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	9 : 45 : 45	20.00	0.02-1.3	3.65E-03	2.60E-02	1.20E-02	No	2.00E-03	Yes	4.70E+03	No	No	</=SL
Acetone	67-64-1	31 : 44 : 45	70.45	0.044-2.7	1.30E-02 J	2.80E-01 J	1.14E-01	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	29 : 45 : 45	64.44	0.004-0.27	8.60E-04 J	2.00E+00	9.68E-02	No	NA	--	1.40E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	23 : 45 : 45	51.11	0.0044-0.27	6.60E-04	7.80E-03	4.27E-03	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	16 : 45 : 45	35.56	0.004-0.27	3.60E-04	3.50E+00	3.72E-01	No	NA	--	5.31E+01	No	No	</=SL
Chloroethane	75-00-3	3 : 45 : 45	6.67	0.004-0.53	2.60E-02	1.90E-01	8.27E-02	No	NA	--	6.49E+00	No	No	</=SL
Chloroform	67-66-3	2 : 45 : 45	4.44	0.004-0.27	1.30E-03	1.80E-03	1.55E-03	No	NA	--	4.70E-01	No	No	</=SL
Chloromethane	74-87-3	1 : 45 : 45	2.22	0.004-0.53	7.60E-03	7.60E-03	7.60E-03	No	9.00E-04	Yes	1.56E+01	No	No	</=SL
Dichloromethane	75-09-2	2 : 45 : 45	4.44	0.004-0.27	2.90E-03	3.60E-03	3.25E-03	No	6.50E-03	No	2.05E+01	No	No	</=SL
Ethylbenzene	100-41-4	29 : 45 : 45	64.44	0.004-11	2.30E-04	2.70E+02	9.36E+00	No	9.52E-04	Yes	7.42E+02	No	No	</=SL
Methyl N-Butyl Ketone	591-78-6	6 : 45 : 45	13.33	0.02-1.3	5.70E-03	1.90E-01	8.61E-02	No	NA	--	1.13E+04	No	No	</=SL
Styrene	100-42-5	3 : 45 : 45	6.67	0.004-0.27	7.20E-04	1.13E-03	9.78E-04	No	3.64E-03	No	1.81E+03	No	No	</=SL
Tetrachloroethene	127-18-4	25 : 45 : 45	55.56	0.004-0.27	5.35E-04	8.80E+00	4.83E-01	No	9.50E-04	Yes	1.31E+00	Yes	Yes	>SL
Toluene	108-88-3	34 : 45 : 45	75.56	0.004-11	1.00E-03	1.30E+03	3.83E+01	No	NA	--	2.21E+02	Yes	Yes	>SL
Trichloroethylene	79-01-6	25 : 45 : 45	55.56	0.004-0.27	1.10E-03	3.80E-01	2.80E-02	No	NA	--	1.10E-01	Yes	Yes	>SL
Xylenes, Total	1330-20-7	32 : 45 : 45	71.11	0.008-22	5.60E-04	1.90E+03 J	5.96E+01	No	1.54E-03	Yes	8.98E+01	Yes	Yes	>SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	3 : 45 : 45	6.67	0.34-14	5.60E-02	1.05E-01	7.67E-02	No	NA	--	2.16E+01	No	No	</=SL
1,2-Dichlorobenzene	95-50-1	1 : 45 : 45	2.22	0.34-14	3.10E-02	3.10E-02	3.10E-02	No	NA	--	4.10E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	6 : 45 : 45	13.33	0.34-14	5.20E-02	1.20E+00	3.22E-01	No	NA	--	7.87E+00	No	No	</=SL
2,4,5-Trichlorophenol	95-95-4	1 : 39 : 39	2.56	0.34-14	1.10E+00	1.10E+00	1.10E+00	No	NA	--	6.16E+03	No	No	</=SL
2,4,6-Trichlorophenol	88-06-2	1 : 45 : 45	2.22	0.34-14	1.90E-01 J	1.90E-01 J	1.90E-01	No	NA	--	6.16E+00	No	No	</=SL
2,4-Dichlorophenol	120-83-2	1 : 45 : 45	2.22	0.34-14	1.00E-01 J	1.00E-01 J	1.00E-01	No	NA	--	1.85E+02	No	No	</=SL

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2,4-Dimethylphenol	105-67-9	1 : 45 : 45	2.22	0.34-14	8.90E-02	8.90E-02	8.90E-02	No	NA	--	1.23E+03	No	No	</=SL
2-Methylnaphthalene	91-57-6	7 : 45 : 45	15.56	0.34-14	4.30E-02	5.40E-01	2.14E-01	No	NA	--	1.88E+01	No	No	</=SL
2-Methylphenol	95-48-7	1 : 45 : 45	2.22	0.34-14	3.90E-02	3.90E-02	3.90E-02	No	NA	--	3.08E+03	No	No	</=SL
3&4-Methylphenol	106-44-5	2 : 45 : 45	4.44	0.34-14	4.10E-02	3.80E-01	2.10E-01	No	NA	--	3.08E+02	No	No	</=SL
4-Chloroaniline	106-47-8	2 : 45 : 45	4.44	0.69-28	1.60E-01	3.30E-01	2.45E-01	No	NA	--	2.46E+02	No	No	</=SL
Acenaphthene	83-32-9	11 : 45 : 45	24.44	0.34-14	4.70E-02	1.30E+00	3.37E-01	No	4.20E-02	Yes	2.92E+03	No	No	</=SL
Acenaphthylene	208-96-8	5 : 45 : 45	11.11	0.34-14	4.00E-02 J	4.70E-01	1.42E-01	No	NA	--	2.92E+03	No	No	</=SL
Anthracene	120-12-7	19 : 45 : 45	42.22	0.34-14	3.80E-02	4.80E+00	6.71E-01	No	1.20E-01	Yes	2.38E+04	No	No	</=SL
Benzo(a)anthracene	56-55-3	34 : 45 : 45	75.56	0.34-14	3.00E-02	1.30E+01	1.02E+00	No	1.97E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(a)pyrene	50-32-8	33 : 45 : 45	73.33	0.34-14	2.30E-02 J	1.10E+01	9.17E-01	No	4.80E-01	Yes	2.10E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	30 : 45 : 45	66.67	0.34-14	3.30E-02	7.80E+00	9.56E-01	No	2.60E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	29 : 45 : 45	64.44	0.34-14	3.70E-02	7.60E+00	6.64E-01	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	34 : 45 : 45	75.56	0.34-14	3.20E-02	1.10E+01	8.18E-01	No	2.10E-01	Yes	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	18 : 45 : 45	40.00	0.34-14	8.10E-02 J	1.00E+01	1.31E+00	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	30 : 45 : 45	66.67	0.34-14	3.20E-02	2.40E+01	3.05E+00	No	2.57E-01	Yes	1.23E+02	No	No	</=SL
Carbazole	86-74-8	10 : 45 : 45	22.22	0.34-14	5.10E-02	1.50E+00	3.13E-01	No	NA	--	8.62E+01	No	No	</=SL
Chrysene	218-01-9	37 : 45 : 45	82.22	0.34-14	2.30E-02	1.30E+01	1.00E+00	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	13 : 45 : 45	28.89	0.34-14	3.00E-02	2.80E+00	3.62E-01	No	1.20E-01	Yes	2.10E-01	Yes	Yes	>SL
Dibenzofuran	132-64-9	9 : 45 : 45	20.00	0.34-14	2.40E-02	8.20E-01	2.31E-01	No	NA	--	1.56E+02	No	No	</=SL
Diethyl Phthalate	84-66-2	3 : 45 : 45	6.67	0.34-14	3.10E-02	7.80E-02	5.40E-02	No	NA	--	4.92E+04	No	No	</=SL
Dimethyl Phthalate	131-11-3	1 : 45 : 45	2.22	0.34-14	2.60E-02	2.60E-02	2.60E-02	No	NA	--	6.16E+05	No	No	</=SL
Di-n-butylphthalate	84-74-2	16 : 45 : 45	35.56	0.34-14	3.90E-02	2.30E+00	2.62E-01	No	NA	--	6.16E+03	No	No	</=SL
Fluoranthene	206-44-0	37 : 45 : 45	82.22	0.34-14	3.40E-02 J	3.10E+01	2.05E+00	No	4.42E-01	Yes	2.20E+03	No	No	</=SL
Fluorene	86-73-7	12 : 45 : 45	26.67	0.34-14	3.40E-02	1.40E+00	3.45E-01	No	NA	--	2.63E+03	No	No	</=SL
Hexachlorobenzene	118-74-1	1 : 45 : 45	2.22	0.34-14	5.50E-02	5.50E-02	5.50E-02	No	NA	--	1.08E+00	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	21 : 45 : 45	46.67	0.34-14	3.70E-02	6.80E+00	6.44E-01	No	NA	--	2.11E+00	Yes	Yes	>SL
Isophorone	78-59-1	3 : 45 : 45	6.67	0.34-14	1.80E-01	4.90E-01	3.17E-01	No	NA	--	5.12E+02	No	No	</=SL
Naphthalene	91-20-3	10 : 45 : 45	22.22	0.34-14	2.80E-02	5.20E+00	6.55E-01	No	NA	--	1.88E+01	No	No	</=SL
Phenanthrene	85-01-8	33 : 45 : 45	73.33	0.34-14	2.60E-02 J	1.70E+01	1.49E+00	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Phenol	108-95-2	2 : 45 : 45	4.44	0.34-14	1.30E-01	1.00E+00	5.65E-01	No	NA	--	1.85E+04	No	No	</=SL

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Pyrene	129-00-0	35 : 45 : 45	77.78	0.34-14	2.90E-02	2.40E+01	1.97E+00	No	4.09E-01	Yes	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDD	72-54-8	10 : 41 : 41	24.39	0.0034-0.49	1.20E-03 J	1.40E+00 J	1.49E-01	No	9.24E-03	Yes	9.95E+00	No	No	</=SL
4,4'-DDE	72-55-9	19 : 40 : 41	47.50	0.0034-0.49	4.30E-04 J	1.20E+00 J	1.36E-01	No	1.45E-02	Yes	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	32 : 41 : 41	78.05	0.0034-0.49	1.80E-03 J	3.75E+00 J	5.47E-01	No	3.98E-02	Yes	7.00E+00	No	No	</=SL
Aldrin	309-00-2	5 : 41 : 41	12.20	0.0018-0.25	1.10E-03	3.00E-01 J	1.29E-01	No	9.80E-03	Yes	1.00E-01	Yes	Yes	>SL
alpha-BHC	319-84-6	4 : 41 : 41	9.76	0.0018-0.25	2.90E-03	1.85E-01 J	6.16E-02	No	2.40E-01	No	3.60E-01	No	No	</=SL
alpha-Chlordane	5103-71-9	19 : 40 : 41	47.50	0.0018-0.25	1.50E-04 J	1.60E-01 J	2.74E-02	No	1.24E-02	Yes	6.50E+00	No	No	</=SL
beta-BHC	319-85-7	2 : 41 : 41	4.88	0.0018-0.25	2.10E-04 J	1.10E-02 J	5.60E-03	No	NA	--	1.26E+00	No	No	</=SL
delta-BHC	319-86-8	2 : 41 : 41	4.88	0.0018-0.25	5.20E-04 J	2.40E-01	1.20E-01	No	6.80E-02	Yes	3.60E-01	No	No	</=SL
Dieldrin	60-57-1	27 : 41 : 41	65.85	0.0034-0.28	3.90E-04 J	8.25E-01 J	1.13E-01	No	1.32E-02	Yes	1.10E-01	Yes	Yes	>SL
Endosulfan I	959-98-8	2 : 41 : 41	4.88	0.0018-0.25	1.10E-03 J	2.25E-01 J	1.13E-01	No	2.29E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan II	33213-65-9	7 : 41 : 41	17.07	0.0034-0.49	1.25E-03 J	3.55E-01 J	7.81E-02	No	1.16E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan Sulfate	1031-07-8	7 : 41 : 41	17.07	0.0034-0.49	5.50E-03 J	1.80E+00 J	2.89E-01	No	1.81E-03	Yes	3.69E+02	No	No	</=SL
Endrin	72-20-8	6 : 41 : 41	14.63	0.0034-0.49	2.40E-03	3.45E-01 J	1.04E-01	No	9.60E-03	Yes	1.85E+01	No	No	</=SL
Endrin Aldehyde	7421-93-4	8 : 41 : 41	19.51	0.0034-0.49	9.20E-04 J	2.60E+00 J	6.29E-01	No	8.80E-03	Yes	1.85E+01	No	No	</=SL
Endrin Ketone	53494-70-5	8 : 41 : 41	19.51	0.0034-0.49	5.20E-04 J	7.20E-01 J	1.60E-01	No	NA	--	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	6 : 41 : 41	14.63	0.0018-0.25	7.20E-04 J	9.60E-02 J	2.25E-02	No	NA	--	1.74E+00	No	No	</=SL
gamma-Chlordane	5103-74-2	17 : 41 : 41	41.46	0.0018-0.25	5.30E-04 J	7.40E-01 J	1.27E-01	No	6.66E-02	Yes	6.50E+00	No	No	</=SL
Heptachlor	76-44-8	1 : 41 : 41	2.44	0.0018-0.25	5.80E-03 J	5.80E-03 J	5.80E-03	No	1.48E-01	No	3.80E-01	No	No	</=SL
Heptachlor Epoxide	1024-57-3	19 : 41 : 41	46.34	0.0018-0.25	2.30E-04 J	2.30E-01 J	4.20E-02	No	1.03E-02	Yes	1.90E-01	Yes	Yes	>SL
Methoxychlor	72-43-5	2 : 41 : 41	4.88	0.018-2.5	5.40E-03 J	9.20E-02 J	4.87E-02	No	3.31E-03	Yes	3.08E+02	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	5 : 45 : 45	11.11	0.0087-17	1.30E-03 J	7.30E-02	1.96E-02	No	NA	--	6.16E+02	No	No	</=SL
2,4,5-TP (Silvex)	93-72-1	2 : 45 : 45	4.44	0.0087-17	2.30E-03	1.20E-02	7.15E-03	No	NA	--	4.92E+02	No	No	</=SL
2,4-D	94-75-7	15 : 45 : 45	33.33	0.0087-17	4.70E-03 J	1.50E-01	1.95E-02	No	1.16E-02	Yes	7.68E+02	No	No	</=SL
2,4-DB	94-82-6	1 : 45 : 45	2.22	0.0086-17	2.80E-02 J	2.80E-02 J	2.80E-02	No	NA	--	4.92E+02	No	No	</=SL
Dicamba	1918-00-9	1 : 45 : 45	2.22	0.0086-42	2.00E-03	2.00E-03	2.00E-03	No	NA	--	1.85E+03	No	No	</=SL
Dichlorprop	120-36-5	9 : 45 : 45	20.00	0.1-210	1.50E-03 J	7.70E-02	1.52E-02	No	7.82E-02	No	4.92E+02	No	No	</=SL

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MCPA	94-74-6	8 : 45 : 45	17.78	2.1-4200	2.90E-01 J	3.70E+00 J	1.44E+00	No	NA	--	3.08E+01	No	No	</=SL
MCPP	93-65-2	18 : 45 : 45	40.00	2.1-4200	5.40E-01 J	1.50E+01	3.37E+00	No	8.80E+00	Yes	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	32 : 45 : 45	71.11	0.0086-60	1.10E-03 J	4.70E+02 J	2.23E+01	No	4.57E-03	Yes	9.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	31 : 41 : 41	75.61	-	4.34E-02	3.80E+01	5.13E+00	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	32 : 32 : 32	100.00	-	5.27E-05	3.20E-02	1.61E-03	No	3.39E-05	Yes	1.00E-03	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	45 : 45 : 45	100.00	20.9-42	1.85E+03	1.70E+04	9.05E+03	No	1.09E+04	Yes	9.21E+04	No	No	</=SL
Antimony	7440-36-0	28 : 45 : 45	62.22	1.1-4.2	5.20E-01	4.70E+01 J	1.05E+01	No	1.92E+00	Yes	4.09E+01	Yes	Yes	>SL
Arsenic	7440-38-2	45 : 45 : 45	100.00	1-2.1	2.00E+00	3.60E+01	1.13E+01	No	1.08E+01	Yes	1.59E+00	Yes	Yes	>SL
Barium	7440-39-3	45 : 45 : 45	100.00	1-63	4.60E+01	1.60E+04	1.09E+03	No	3.17E+02	Yes	6.66E+03	Yes	Yes	>SL
Beryllium	7440-41-7	45 : 45 : 45	100.00	0.42-0.83	1.15E-01	9.90E-01	5.53E-01	No	7.65E-01	Yes	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	43 : 45 : 45	95.56	0.47-1.1	1.30E-01 J	8.00E+03	3.31E+02	No	1.81E+00	Yes	4.51E+01	Yes	Yes	>SL
Calcium	7440-70-2	45 : 45 : 45	100.00	1.1-100	3.25E+03	7.15E+04	1.60E+04	Yes	6.11E+04	Yes	NA	--	No	EN
Chromium	7440-47-3	45 : 45 : 45	100.00	1-2.1	4.00E+00	6.60E+02	8.05E+01	No	1.89E+01	Yes	4.48E+02	Yes	Yes	>SL
Cobalt	7440-48-4	45 : 45 : 45	100.00	1-2.1	3.00E+00	4.20E+01	1.13E+01	No	9.27E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	45 : 45 : 45	100.00	1.1-4.2	1.25E+00	3.70E+03 J	4.73E+02	No	4.96E+01	Yes	4.09E+03	No	No	</=SL
Iron	7439-89-6	45 : 45 : 45	100.00	1.1-21	4.85E+03	2.10E+05	4.36E+04	Yes	2.10E+04	Yes	7.20E+04	Yes	No	EN
Lead	7439-92-1	45 : 45 : 45	100.00	0.52-2.8	3.60E+00	3.40E+03	6.52E+02	No	7.18E+01	Yes	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	45 : 45 : 45	100.00	52.3-100	1.60E+03	6.70E+03	3.92E+03	Yes	1.13E+04	No	NA	--	No	EN
Manganese	7439-96-5	45 : 45 : 45	100.00	1-2.1	9.60E+01	2.10E+03	5.80E+02	No	5.01E+02	Yes	1.95E+03	Yes	Yes	>SL
Mercury	7439-97-6	40 : 41 : 41	97.56	0.021-9.6	2.10E-02	1.40E+02	5.82E+00	No	7.72E-02	Yes	3.10E+01	Yes	Yes	>SL
Nickel	7440-02-0	45 : 45 : 45	100.00	2.8-8.3	6.95E+00	2.73E+03 J	1.19E+02	No	2.83E+01	Yes	2.04E+03	Yes	Yes	>SL
Potassium	7440-09-7	45 : 45 : 45	100.00	104-210	4.00E+02	2.30E+03	1.23E+03	Yes	2.38E+03	No	NA	--	No	EN
Selenium	7782-49-2	11 : 45 : 45	24.44	0.8-3.6	9.20E-01 J	3.70E+00	2.08E+00	No	1.24E+00	Yes	5.11E+02	No	No	</=SL
Silver	7440-22-4	32 : 45 : 45	71.11	0.93-2.1	1.10E-01	2.70E+01 J	3.88E+00	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	30 : 45 : 45	66.67	52.3-100	1.10E+02	2.25E+03	4.35E+02	Yes	3.40E+02	Yes	NA	--	No	EN
Thallium	7440-28-0	6 : 45 : 45	13.33	1-6.6	7.90E-01	7.00E+00	2.51E+00	No	NA	--	6.75E+00	Yes	Yes	>SL

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Vanadium	7440-62-2	45 : 45 : 45	100.00	1-2.1	6.65E+00	1.00E+02	2.45E+01	No	3.44E+01	Yes	1.02E+02	No	No	</=SL
Zinc	7440-66-6	45 : 45 : 45	100.00	2.1-63	1.55E+01	1.20E+04	1.80E+03	No	2.24E+02	Yes	3.06E+04	No	No	</=SL
Combined Soil	**Site R**													
VOCs														
1,1,2-Trichloroethane	79-00-5	1 : 12 : 12	8.33	0.0047-16	9.50E+00	9.50E+00	9.50E+00	No	NA	--	1.60E+00	Yes	Yes	>SL
1,1-Dichloroethane	75-34-3	1 : 12 : 12	8.33	0.0047-16	1.10E+01 J	1.10E+01 J	1.10E+01	No	NA	--	1.74E+02	No	No	</=SL
1,1-Dichloroethylene	75-35-4	1 : 12 : 12	8.33	0.0047-16	3.90E+00	3.90E+00	3.90E+00	No	NA	--	4.13E+01	No	No	</=SL
1,2-Dichloroethane	107-06-2	7 : 12 : 12	58.33	0.0049-16	1.40E-03	8.70E+01	2.86E+01	No	NA	--	6.00E-01	Yes	Yes	>SL
1,2-Dichloroethene (total)	540-59-0	5 : 12 : 12	41.67	0.0094-32	4.80E-04	5.10E+01	1.35E+01	No	NA	--	1.46E+01	Yes	Yes	>SL
2-Butanone	78-93-3	11 : 12 : 12	91.67	0.024-80	2.30E-03	8.40E+01	9.59E+00	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	4 : 12 : 12	33.33	0.024-80	1.00E-02	4.30E+01	1.12E+01	No	2.00E-03	Yes	4.70E+03	No	No	</=SL
Acetone	67-64-1	9 : 11 : 12	81.82	0.047-160	1.10E-02	1.80E+02 J	2.78E+01	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	12 : 12 : 12	100.00	0.0047-16	6.80E-04	1.50E+02	2.62E+01	No	NA	--	1.40E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	11 : 12 : 12	91.67	0.0047-16	1.40E-03	2.40E+03	2.54E+02	No	NA	--	5.31E+01	Yes	Yes	>SL
Chloroform	67-66-3	5 : 12 : 12	41.67	0.0047-16	2.80E-03	1.10E+01	6.36E+00	No	NA	--	4.70E-01	Yes	Yes	>SL
Ethylbenzene	100-41-4	12 : 12 : 12	100.00	0.0047-16	2.40E-04	4.20E+01	9.04E+00	No	9.52E-04	Yes	7.42E+02	No	No	</=SL
Tetrachloroethene	127-18-4	10 : 12 : 12	83.33	0.0047-16	2.60E-03	1.20E+03	2.69E+02	No	9.50E-04	Yes	1.31E+00	Yes	Yes	>SL
Toluene	108-88-3	8 : 12 : 12	66.67	0.0047-16	1.80E-03	8.30E+02	2.68E+02	No	NA	--	2.21E+02	Yes	Yes	>SL
Trichloroethylene	79-01-6	9 : 12 : 12	75.00	0.0047-16	3.00E-04	2.20E+03	3.38E+02	No	NA	--	1.10E-01	Yes	Yes	>SL
Xylenes, Total	1330-20-7	11 : 12 : 12	91.67	0.0094-32	9.50E-04	2.80E+02	4.95E+01	No	1.54E-03	Yes	8.98E+01	Yes	Yes	>SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	3 : 12 : 12	25.00	0.35-82	5.10E+00	1.20E+02	4.70E+01	No	NA	--	2.16E+01	Yes	Yes	>SL
1,2-Dichlorobenzene	95-50-1	5 : 12 : 12	41.67	0.35-82	1.00E-01	1.20E+02	3.40E+01	No	NA	--	4.10E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	3 : 12 : 12	25.00	0.35-82	5.80E-01	2.40E+01	8.73E+00	No	NA	--	7.87E+00	Yes	Yes	>SL
2,4,5-Trichlorophenol	95-95-4	1 : 12 : 12	8.33	0.35-82	1.80E+00	1.80E+00	1.80E+00	No	NA	--	6.16E+03	No	No	</=SL
2,4,6-Trichlorophenol	88-06-2	5 : 12 : 12	41.67	0.35-82	1.00E-01	6.50E+02	1.76E+02	No	NA	--	6.16E+00	Yes	Yes	>SL
2,4-Dichlorophenol	120-83-2	6 : 12 : 12	50.00	0.35-210	3.00E-02	3.50E+03	6.55E+02	No	NA	--	1.85E+02	Yes	Yes	>SL
2,4-Dimethylphenol	105-67-9	1 : 12 : 12	8.33	0.35-82	1.00E-01	1.00E-01	1.00E-01	No	NA	--	1.23E+03	No	No	</=SL
2-Chlorophenol	95-57-8	4 : 12 : 12	33.33	0.35-82	7.30E+00	3.90E+02	1.12E+02	No	NA	--	2.36E+01	Yes	Yes	>SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
2-Methylnaphthalene	91-57-6	1 : 12 : 12	8.33	0.35-82	7.90E+00	7.90E+00	7.90E+00	No	NA	--	1.88E+01	No	No	</=SL
2-Nitroaniline	88-74-4	2 : 12 : 12	16.67	1.8-420	2.80E-02	7.00E+00	3.51E+00	No	NA	--	1.83E+02	No	No	</=SL
3&4-Methylphenol	106-44-5	5 : 12 : 12	41.67	0.35-82	6.50E-02	2.10E+01	5.79E+00	No	NA	--	3.08E+02	No	No	</=SL
4-Chloroaniline	106-47-8	6 : 12 : 12	50.00	0.7-160	4.90E-02	3.60E+01	1.43E+01	No	NA	--	2.46E+02	No	No	</=SL
4-Nitroaniline	100-01-6	1 : 12 : 12	8.33	1.8-420	2.30E+01	2.30E+01	2.30E+01	No	NA	--	8.20E+01	No	No	</=SL
Benzo(a)anthracene	56-55-3	2 : 12 : 12	16.67	0.35-82	3.00E-02	3.30E-02	3.15E-02	No	1.97E-01	No	2.11E+00	No	No	</=SL
Benzo(a)pyrene	50-32-8	2 : 12 : 12	16.67	0.35-82	2.60E-02	3.30E-02	2.95E-02	No	4.80E-01	No	2.10E-01	No	No	</=SL
Benzo(b)fluoranthene	205-99-2	2 : 12 : 12	16.67	0.35-82	3.00E-02	3.20E-02	3.10E-02	No	2.60E-01	No	2.11E+00	No	No	</=SL
Benzo(g,h,i)perylene	191-24-2	3 : 12 : 12	25.00	0.35-82	2.50E-02	2.00E+00	6.90E-01	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	2 : 12 : 12	16.67	0.35-82	2.60E-02	3.50E-02	3.05E-02	No	2.10E-01	No	2.11E+01	No	No	</=SL
Benzyl Butyl Phthalate	85-68-7	2 : 12 : 12	16.67	0.35-82	4.10E-02	6.00E+00	3.02E+00	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	7 : 12 : 12	58.33	0.35-82	3.80E-02	2.30E+01	5.36E+00	No	2.57E-01	Yes	1.23E+02	No	No	</=SL
Chrysene	218-01-9	4 : 11 : 12	36.36	0.35-82	2.00E-02	3.20E-01 J	1.06E-01	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Diethyl Phthalate	84-66-2	2 : 12 : 12	16.67	0.35-82	1.10E-01	2.00E+01	1.01E+01	No	NA	--	4.92E+04	No	No	</=SL
Dimethyl Phthalate	131-11-3	2 : 12 : 12	16.67	0.35-82	3.30E-02	6.20E+00	3.12E+00	No	NA	--	6.16E+05	No	No	</=SL
Di-n-butylphthalate	84-74-2	2 : 12 : 12	16.67	0.35-82	4.80E-02	6.20E+00	3.12E+00	No	NA	--	6.16E+03	No	No	</=SL
Fluoranthene	206-44-0	1 : 12 : 12	8.33	0.35-82	3.90E-02	3.90E-02	3.90E-02	No	4.42E-01	No	2.20E+03	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	2 : 12 : 12	16.67	0.35-82	4.30E-02	2.00E+00	1.02E+00	No	NA	--	2.11E+00	No	No	</=SL
Naphthalene	91-20-3	4 : 12 : 12	33.33	0.35-82	4.60E+00	1.20E+02	3.47E+01	No	NA	--	1.88E+01	Yes	Yes	>SL
Nitrobenzene	98-95-3	3 : 12 : 12	25.00	0.35-82	1.10E+00	4.80E+01	2.54E+01	No	NA	--	1.03E+01	Yes	Yes	>SL
N-Nitrosodiphenylamine	86-30-6	1 : 11 : 12	9.09	0.35-82	2.70E+00 J	2.70E+00 J	2.70E+00	No	NA	--	3.52E+02	No	No	</=SL
Phenanthrene	85-01-8	2 : 12 : 12	16.67	0.35-82	2.10E-02	3.00E-02	2.55E-02	No	2.89E-01	No	2.38E+04	No	No	</=SL
Phenol	108-95-2	4 : 12 : 12	33.33	0.35-82	2.30E+01	8.00E+02	2.74E+02	No	NA	--	1.85E+04	No	No	</=SL
Pyrene	129-00-0	1 : 12 : 12	8.33	0.35-82	4.80E-02	4.80E-02	4.80E-02	No	4.09E-01	No	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDE	72-55-9	2 : 12 : 12	16.67	0.0035-0.84	6.60E-04 J	1.60E-03 J	1.13E-03	No	1.45E-02	No	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	2 : 11 : 12	18.18	0.0035-0.84	2.70E-03 J	1.20E-02 J	7.35E-03	No	3.98E-02	No	7.00E+00	No	No	</=SL
Aldrin	309-00-2	1 : 11 : 12	9.09	0.0018-0.43	6.00E-03 J	6.00E-03 J	6.00E-03	No	9.80E-03	No	1.00E-01	No	No	</=SL
alpha-BHC	319-84-6	1 : 11 : 12	9.09	0.0018-0.43	6.10E-04 J	6.10E-04 J	6.10E-04	No	2.40E-01	No	3.60E-01	No	No	</=SL
alpha-Chlordane	5103-71-9	3 : 12 : 12	25.00	0.0018-0.43	1.30E-04 J	5.50E-03 J	2.00E-03	No	1.24E-02	No	6.50E+00	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
beta-BHC	319-85-7	2 : 11 : 12	18.18	0.0018-0.43	1.40E+00	2.20E+00 J	1.80E+00	No	NA	--	1.26E+00	Yes	Yes	>SL
Dieldrin	60-57-1	7 : 11 : 12	63.64	0.0035-0.84	3.70E-04 J	1.80E+00 J	5.03E-01	No	1.32E-02	Yes	1.10E-01	Yes	Yes	>SL
Endosulfan I	959-98-8	2 : 11 : 12	18.18	0.0018-0.43	9.80E-04	1.80E+00 J	9.00E-01	No	2.29E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan II	33213-65-9	1 : 11 : 12	9.09	0.0035-0.84	1.70E-01 J	1.70E-01 J	1.70E-01	No	1.16E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan Sulfate	1031-07-8	2 : 11 : 12	18.18	0.0035-0.84	3.80E-01 J	2.00E+00 J	1.19E+00	No	1.81E-03	Yes	3.69E+02	No	No	</=SL
Endrin	72-20-8	1 : 11 : 12	9.09	0.0035-0.84	1.90E-03 J	1.90E-03 J	1.90E-03	No	9.60E-03	No	1.85E+01	No	No	</=SL
Endrin Aldehyde	7421-93-4	1 : 11 : 12	9.09	0.0035-0.84	1.60E-02 J	1.60E-02 J	1.60E-02	No	8.80E-03	Yes	1.85E+01	No	No	</=SL
Endrin Ketone	53494-70-5	2 : 12 : 12	16.67	0.0035-0.84	5.00E-03 J	4.80E+00 J	2.40E+00	No	NA	--	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	2 : 11 : 12	18.18	0.0018-0.43	3.60E-01 J	6.80E-01 J	5.20E-01	No	NA	--	1.74E+00	No	No	</=SL
gamma-Chlordane	5103-74-2	5 : 11 : 12	45.45	0.0018-0.43	2.30E-04 J	5.30E-01 J	1.08E-01	No	6.66E-02	Yes	6.50E+00	No	No	</=SL
Heptachlor	76-44-8	1 : 11 : 12	9.09	0.0018-0.43	1.60E+00 J	1.60E+00 J	1.60E+00	No	1.48E-01	Yes	3.80E-01	Yes	Yes	>SL
Heptachlor Epoxide	1024-57-3	3 : 12 : 12	25.00	0.0018-0.43	1.20E-03 J	3.60E-02	1.28E-02	No	1.03E-02	Yes	1.90E-01	No	No	</=SL
Methoxychlor	72-43-5	1 : 12 : 12	8.33	0.018-4.3	7.20E-03 J	7.20E-03 J	7.20E-03	No	3.31E-03	Yes	3.08E+02	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	1 : 12 : 12	8.33	0.009-42	7.60E-03 J	7.60E-03 J	7.60E-03	No	NA	--	6.16E+02	No	No	</=SL
2,4,5-TP (Silvex)	93-72-1	1 : 12 : 12	8.33	0.009-42	9.30E-03 J	9.30E-03 J	9.30E-03	No	NA	--	4.92E+02	No	No	</=SL
2,4-D	94-75-7	8 : 12 : 12	66.67	0.018-42	5.50E-02 J	5.80E+02	1.01E+02	No	1.16E-02	Yes	7.68E+02	No	No	</=SL
2,4-DB	94-82-6	5 : 12 : 12	41.67	0.009-42	2.60E-02 J	6.00E-02 J	3.74E-02	No	NA	--	4.92E+02	No	No	</=SL
Dichlorprop	120-36-5	12 : 12 : 12	100.00	0.11-500	1.80E-02 J	3.90E+01	3.85E+00	No	7.82E-02	Yes	4.92E+02	No	No	</=SL
MCPP	93-65-2	8 : 12 : 12	66.67	2.2-10000	5.20E+00 J	8.50E+01 J	4.95E+01	No	8.80E+00	Yes	6.16E+01	Yes	Yes	>SL
Pentachlorophenol	87-86-5	2 : 12 : 12	16.67	0.018-86	9.30E-02 J	3.30E+00 J	1.70E+00	No	4.57E-03	Yes	9.00E+00	No	No	</=SL
PCBs														
TOTAL PCBs	Total PCBs	8 : 12 : 12	66.67	-	7.91E-02	2.78E+02	6.41E+01	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	5 : 12 : 12	41.67	-	1.23E-04	1.28E-02	3.23E-03	No	3.39E-05	Yes	1.00E-03	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	12 : 12 : 12	100.00	19-25	2.30E+03	1.00E+04 J	7.20E+03	No	1.09E+04	No	9.21E+04	No	No	</=SL
Antimony	7440-36-0	2 : 12 : 12	16.67	1.9-2.5	4.40E-01 J	4.00E+00 J	2.22E+00	No	1.92E+00	Yes	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	12 : 12 : 12	100.00	0.97-1.3	2.50E+00	1.20E+01	6.12E+00	No	1.08E+01	Yes	1.59E+00	Yes	Yes	>SL

TABLE 2.2
COPC SELECTION - COMBINED SOIL (SURFACE SOIL, SUBSURFACE SOIL, WASTE) AND DEEP SUBSURFACE SOI
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Barium	7440-39-3	12 : 12 : 12	100.00	0.97-1.3	1.10E+02 J	2.20E+02	1.44E+02	No	3.17E+02	No	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	12 : 12 : 12	100.00	0.39-0.51	2.90E-01	7.80E-01	5.52E-01	No	7.65E-01	Yes	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	9 : 12 : 12	75.00	0.48-0.63	5.90E-02 J	3.80E+00 J	9.49E-01	No	1.81E+00	Yes	4.51E+01	No	No	</=SL
Calcium	7440-70-2	12 : 12 : 12	100.00	48-63	4.40E+03	3.80E+04	9.53E+03	Yes	6.11E+04	No	NA	--	No	EN
Chromium	7440-47-3	12 : 12 : 12	100.00	0.97-1.3	7.20E+00	2.60E+02	3.91E+01	No	1.89E+01	Yes	4.48E+02	No	No	</=SL
Cobalt	7440-48-4	12 : 12 : 12	100.00	0.97-1.3	6.80E+00	7.80E+01	2.20E+01	No	9.27E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	12 : 12 : 12	100.00	1.9-2.5	8.70E+00	1.30E+02	3.70E+01	No	4.96E+01	Yes	4.09E+03	No	No	</=SL
Iron	7439-89-6	12 : 12 : 12	100.00	4.8-6.3	5.50E+03	3.90E+04	1.68E+04	Yes	2.10E+04	Yes	7.20E+04	No	No	EN
Lead	7439-92-1	12 : 12 : 12	100.00	0.48-0.63	8.10E+00 J	1.10E+02 J	2.26E+01	No	7.18E+01	Yes	8.00E+02	No	No	</=SL
Magnesium	7439-95-4	12 : 12 : 12	100.00	48-63	1.20E+03 J	5.50E+03 J	3.69E+03	Yes	1.13E+04	No	NA	--	No	EN
Manganese	7439-96-5	12 : 12 : 12	100.00	0.97-1.3	1.00E+02 J	1.20E+03	4.70E+02	No	5.01E+02	Yes	1.95E+03	No	No	</=SL
Mercury	7439-97-6	12 : 12 : 12	100.00	0.019-300	3.70E-02	3.00E+03 J	2.51E+02	No	7.72E-02	Yes	3.10E+01	Yes	Yes	>SL
Nickel	7440-02-0	12 : 12 : 12	100.00	3.9-5.1	7.20E+00	1.50E+02	3.20E+01	No	2.83E+01	Yes	2.04E+03	No	No	</=SL
Potassium	7440-09-7	12 : 12 : 12	100.00	97-130	4.10E+02 J	2.20E+03 J	9.31E+02	Yes	2.38E+03	No	NA	--	No	EN
Silver	7440-22-4	1 : 12 : 12	8.33	0.97-1.3	1.10E+00	1.10E+00	1.10E+00	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	12 : 12 : 12	100.00	48-63	8.70E+01 J	1.70E+03 J	4.42E+02	Yes	3.40E+02	Yes	NA	--	No	EN
Vanadium	7440-62-2	12 : 12 : 12	100.00	0.97-1.3	9.30E+00 J	3.60E+01 J	2.62E+01	No	3.44E+01	Yes	1.02E+02	No	No	</=SL
Zinc	7440-66-6	12 : 12 : 12	100.00	1.9-10	3.00E+01 J	5.90E+03 J	6.32E+02	No	2.24E+02	Yes	3.06E+04	No	No	</=SL
Combined Soil	**Site S**													
VOCs														
1,1,1-Trichloroethane	71-55-6	8 : 11 : 11	72.73	0.0045-7.7	6.60E-03	2.20E+02	3.83E+01	No	NA	--	6.94E+02	No	No	</=SL
1,1-Dichloroethane	75-34-3	6 : 11 : 11	54.55	0.0045-7.7	6.60E-04	6.60E+00 J	2.63E+00	No	NA	--	1.74E+02	No	No	</=SL
1,1-Dichloroethylene	75-35-4	1 : 11 : 11	9.09	0.0045-7.7	4.80E+00	4.80E+00	4.80E+00	No	NA	--	4.13E+01	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	5 : 11 : 11	45.45	0.0089-15	1.10E+00	3.30E+00	2.60E+00	No	NA	--	1.46E+01	No	No	</=SL
2-Butanone	78-93-3	7 : 11 : 11	63.64	0.027-39	2.40E-03	2.90E+02	8.22E+01	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	5 : 11 : 11	45.45	0.022-39	2.90E+00	4.00E+02	1.30E+02	No	2.00E-03	Yes	4.70E+03	No	No	</=SL
Acetone	67-64-1	7 : 10 : 11	70.00	0.054-77	1.40E-02	1.50E+02 J	3.87E+01	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	5 : 11 : 11	45.45	0.0054-7.7	1.40E-03	3.50E+01	1.43E+01	No	NA	--	1.40E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	1 : 11 : 11	9.09	0.0045-7.7	4.80E-03	4.80E-03	4.80E-03	No	NA	--	1.20E+02	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Chlorobenzene	108-90-7	4 : 11 : 11	36.36	0.0045-10	4.70E-04	1.20E+03	3.98E+02	No	NA	--	5.31E+01	Yes	Yes	>SL
Dichloromethane	75-09-2	5 : 11 : 11	45.45	0.0045-7.7	2.10E+00	5.70E+01	2.01E+01	No	6.50E-03	Yes	2.05E+01	Yes	Yes	>SL
Ethylbenzene	100-41-4	10 : 11 : 11	90.91	0.0054-7.7	1.10E-03	1.10E+03	2.33E+02	No	9.52E-04	Yes	7.42E+02	Yes	Yes	>SL
Styrene	100-42-5	1 : 11 : 11	9.09	0.0045-7.7	3.70E-04	3.70E-04	3.70E-04	No	3.64E-03	No	1.81E+03	No	No	</=SL
Tetrachloroethene	127-18-4	9 : 11 : 11	81.82	0.0054-7.7	8.30E-04	3.30E+01	1.16E+01	No	9.50E-04	Yes	1.31E+00	Yes	Yes	>SL
Toluene	108-88-3	9 : 11 : 11	81.82	0.0054-32	6.20E-03	6.00E+03	1.07E+03	No	NA	--	2.21E+02	Yes	Yes	>SL
Trichloroethylene	79-01-6	7 : 11 : 11	63.64	0.0045-7.7	4.70E-04	2.40E+02	4.74E+01	No	NA	--	1.10E-01	Yes	Yes	>SL
Xylenes, Total	1330-20-7	10 : 11 : 11	90.91	0.011-64	4.20E-03	7.30E+03	1.37E+03	No	1.54E-03	Yes	8.98E+01	Yes	Yes	>SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	2 : 11 : 11	18.18	0.36-44	7.30E+00	3.60E+01	2.16E+01	No	NA	--	2.16E+01	Yes	Yes	>SL
1,2-Dichlorobenzene	95-50-1	3 : 11 : 11	27.27	0.36-44	3.00E+00	1.10E+02	5.00E+01	No	NA	--	4.10E+02	No	No	</=SL
1,3-Dichlorobenzene	541-73-1	2 : 11 : 11	18.18	0.36-44	1.00E+00	1.20E+01	6.50E+00	No	NA	--	2.09E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	3 : 11 : 11	27.27	0.36-44	4.50E+00	2.00E+02	7.07E+01	No	NA	--	7.87E+00	Yes	Yes	>SL
2,4,5-Trichlorophenol	95-95-4	1 : 11 : 11	9.09	0.36-44	1.10E+00	1.10E+00	1.10E+00	No	NA	--	6.16E+03	No	No	</=SL
2,4,6-Trichlorophenol	88-06-2	1 : 11 : 11	9.09	0.36-44	8.20E+00	8.20E+00	8.20E+00	No	NA	--	6.16E+00	Yes	Yes	>SL
2,4-Dichlorophenol	120-83-2	1 : 11 : 11	9.09	0.36-44	2.30E+00	2.30E+00	2.30E+00	No	NA	--	1.85E+02	No	No	</=SL
2,4-Dimethylphenol	105-67-9	1 : 11 : 11	9.09	0.36-44	1.30E+00 J	1.30E+00 J	1.30E+00	No	NA	--	1.23E+03	No	No	</=SL
2-Methylnaphthalene	91-57-6	7 : 11 : 11	63.64	0.36-44	5.00E-02	1.10E+01	5.66E+00	No	NA	--	1.88E+01	No	No	</=SL
2-Methylphenol	95-48-7	3 : 11 : 11	27.27	0.36-44	4.40E-01	1.60E+00	1.18E+00	No	NA	--	3.08E+03	No	No	</=SL
2-Nitroaniline	88-74-4	2 : 11 : 11	18.18	1.8-230	9.20E-01	4.60E+00	2.76E+00	No	NA	--	1.83E+02	No	No	</=SL
3&4-Methylphenol	106-44-5	4 : 11 : 11	36.36	0.36-44	4.40E-02 J	4.20E+00 J	2.14E+00	No	NA	--	3.08E+02	No	No	</=SL
4-Chloroaniline	106-47-8	2 : 11 : 11	18.18	0.71-88	7.60E+00	7.00E+01	3.88E+01	No	NA	--	2.46E+02	No	No	</=SL
4-Nitroaniline	100-01-6	1 : 11 : 11	9.09	1.8-230	5.70E+01	5.70E+01	5.70E+01	No	NA	--	8.20E+01	No	No	</=SL
Acenaphthene	83-32-9	1 : 11 : 11	9.09	0.36-44	1.20E+00	1.20E+00	1.20E+00	No	4.20E-02	Yes	2.92E+03	No	No	</=SL
Anthracene	120-12-7	2 : 11 : 11	18.18	0.36-44	7.60E-02 J	1.10E+00	5.88E-01	No	1.20E-01	Yes	2.38E+04	No	No	</=SL
Benzo(a)anthracene	56-55-3	3 : 11 : 11	27.27	0.36-44	3.60E-02	8.00E+00	2.71E+00	No	1.97E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(a)pyrene	50-32-8	4 : 11 : 11	36.36	0.36-44	3.70E-02	5.40E+00	1.41E+00	No	4.80E-01	Yes	2.10E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	3 : 11 : 11	27.27	0.36-44	2.40E-01	6.60E+00	2.37E+00	No	2.60E-01	Yes	2.11E+00	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	5 : 11 : 11	45.45	0.36-44	3.70E-02 J	4.20E+00	9.16E-01	No	5.20E-01	Yes	2.91E+03	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	2 : 11 : 11	18.18	0.36-44	2.50E-01	6.40E+00	3.33E+00	No	2.10E-01	Yes	2.11E+01	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Benzyl Butyl Phthalate	85-68-7	5 : 11 : 11	45.45	0.36-44	1.10E-01	1.20E+02	2.54E+01	No	NA	--	1.23E+04	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	11 : 11 : 11	100.00	0.37-44	5.30E-01 J	1.30E+02	3.31E+01	No	2.57E-01	Yes	1.23E+02	Yes	Yes	>SL
Chrysene	218-01-9	3 : 11 : 11	27.27	0.36-44	1.40E-01	2.00E+01	6.77E+00	No	2.35E-01	Yes	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	1 : 11 : 11	9.09	0.36-44	1.80E+00	1.80E+00	1.80E+00	No	1.20E-01	Yes	2.10E-01	Yes	Yes	>SL
Diethyl Phthalate	84-66-2	3 : 11 : 11	27.27	0.36-44	5.60E-02	7.30E-01	3.59E-01	No	NA	--	4.92E+04	No	No	</=SL
Di-n-butylphthalate	84-74-2	7 : 11 : 11	63.64	0.37-44	4.10E-02	2.30E+01	8.05E+00	No	NA	--	6.16E+03	No	No	</=SL
Di-n-octylphthalate	117-84-0	4 : 11 : 11	36.36	0.36-44	2.80E-02	2.90E+00 J	1.53E+00	No	NA	--	2.46E+03	No	No	</=SL
Dinoseb	88-85-7	1 : 11 : 11	9.09	0.36-44	1.70E+00	1.70E+00	1.70E+00	No	NA	--	6.16E+01	No	No	</=SL
Fluoranthene	206-44-0	4 : 11 : 11	36.36	0.36-44	4.40E-02	4.20E+00	1.16E+00	No	4.42E-01	Yes	2.20E+03	No	No	</=SL
Fluorene	86-73-7	2 : 11 : 11	18.18	0.36-44	3.60E-01 J	1.20E+00	7.80E-01	No	NA	--	2.63E+03	No	No	</=SL
Indeno(1,2,3-cd)pyrene	193-39-5	5 : 11 : 11	45.45	0.36-44	3.10E-02 J	1.30E+00	3.18E-01	No	NA	--	2.11E+00	No	No	</=SL
Isophorone	78-59-1	5 : 11 : 11	45.45	0.36-44	4.90E-01 J	7.10E+01	2.23E+01	No	NA	--	5.12E+02	No	No	</=SL
Naphthalene	91-20-3	7 : 11 : 11	63.64	0.36-44	1.50E-01	4.80E+01	2.19E+01	No	NA	--	1.88E+01	Yes	Yes	>SL
N-Nitrosodiphenylamine	86-30-6	1 : 11 : 11	9.09	0.36-44	4.80E-01	4.80E-01	4.80E-01	No	NA	--	3.52E+02	No	No	</=SL
Phenanthrene	85-01-8	5 : 11 : 11	45.45	0.36-44	5.60E-02	9.20E+00	2.35E+00	No	2.89E-01	Yes	2.38E+04	No	No	</=SL
Phenol	108-95-2	2 : 11 : 11	18.18	0.36-44	1.60E+00	1.80E+00	1.70E+00	No	NA	--	1.85E+04	No	No	</=SL
Pyrene	129-00-0	5 : 11 : 11	45.45	0.36-44	7.70E-02	2.80E+01	5.85E+00	No	4.09E-01	Yes	2.91E+03	No	No	</=SL
Pesticide														
4,4'-DDD	72-54-8	3 : 8 : 8	37.50	0.0036-3.6	2.80E-03 J	1.70E+00 J	5.78E-01	No	9.24E-03	Yes	9.95E+00	No	No	</=SL
4,4'-DDE	72-55-9	4 : 8 : 8	50.00	0.0036-3.6	3.60E-03 J	3.30E+00 J	8.62E-01	No	1.45E-02	Yes	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	6 : 8 : 8	75.00	0.0036-3.6	1.10E-02 J	1.60E+01 J	2.82E+00	No	3.98E-02	Yes	7.00E+00	Yes	Yes	>SL
Aldrin	309-00-2	2 : 8 : 8	25.00	0.0018-1.8	9.70E-02	1.90E-01 J	1.44E-01	No	9.80E-03	Yes	1.00E-01	Yes	Yes	>SL
alpha-BHC	319-84-6	2 : 8 : 8	25.00	0.0018-1.8	3.30E-03 J	6.80E-03 J	5.05E-03	No	2.40E-01	No	3.60E-01	No	No	</=SL
beta-BHC	319-85-7	4 : 8 : 8	50.00	0.0018-1.8	7.70E-04 J	2.60E+01 J	6.55E+00	No	NA	--	1.26E+00	Yes	Yes	>SL
delta-BHC	319-86-8	5 : 8 : 8	62.50	0.0018-1.8	5.80E-03 J	7.40E-01 J	2.24E-01	No	6.80E-02	Yes	3.60E-01	Yes	Yes	>SL
Dieldrin	60-57-1	5 : 8 : 8	62.50	0.0036-3.6	1.40E-02	3.80E-01	9.88E-02	No	1.32E-02	Yes	1.10E-01	Yes	Yes	>SL
Endosulfan I	959-98-8	1 : 8 : 8	12.50	0.0019-1.8	2.20E-04	2.20E-04	2.20E-04	No	2.29E-03	No	3.69E+02	No	No	</=SL
Endosulfan II	33213-65-9	4 : 8 : 8	50.00	0.0036-3.6	1.20E-03 J	5.40E+00	1.38E+00	No	1.16E-03	Yes	3.69E+02	No	No	</=SL
Endosulfan Sulfate	1031-07-8	1 : 8 : 8	12.50	0.0036-3.6	4.90E-01	4.90E-01	4.90E-01	No	1.81E-03	Yes	3.69E+02	No	No	</=SL
Endrin	72-20-8	3 : 8 : 8	37.50	0.0037-3.6	8.40E-04	1.00E+01	3.34E+00	No	9.60E-03	Yes	1.85E+01	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Endrin Aldehyde	7421-93-4	1 : 8 : 8	12.50	0.0036-3.6	7.40E-03	7.40E-03	7.40E-03	No	8.80E-03	No	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	3 : 8 : 8	37.50	0.0018-1.8	1.10E-02 J	7.50E+00 J	2.54E+00	No	NA	--	1.74E+00	Yes	Yes	>SL
gamma-Chlordane	5103-74-2	5 : 8 : 8	62.50	0.0018-1.8	1.30E-03 J	2.70E+00 J	5.64E-01	No	6.66E-02	Yes	6.50E+00	No	No	</=SL
Heptachlor	76-44-8	4 : 8 : 8	50.00	0.0018-1.8	6.10E-03	1.50E+00 J	3.95E-01	No	1.48E-01	Yes	3.80E-01	Yes	Yes	>SL
Heptachlor Epoxide	1024-57-3	4 : 8 : 8	50.00	0.0018-1.8	2.20E-02 J	1.20E-01 J	6.75E-02	No	1.03E-02	Yes	1.90E-01	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	4 : 11 : 11	36.36	0.0091-36	7.80E-03	2.50E+00 J	6.78E-01	No	NA	--	6.16E+02	No	No	</=SL
2,4,5-TP (Silvex)	93-72-1	2 : 11 : 11	18.18	0.0091-4.8	2.50E-01 J	3.50E-01	3.00E-01	No	NA	--	4.92E+02	No	No	</=SL
2,4-D	94-75-7	3 : 11 : 11	27.27	0.0091-4.8	4.80E-03 J	3.30E+00 J	1.70E+00	No	1.16E-02	Yes	7.68E+02	No	No	</=SL
Dicamba	1918-00-9	1 : 11 : 11	9.09	0.0091-12	2.20E-03	2.20E-03	2.20E-03	No	NA	--	1.85E+03	No	No	</=SL
MCPP	93-65-2	2 : 11 : 11	18.18	2.2-1200	2.40E-01 J	8.40E+00	4.32E+00	No	8.80E+00	No	6.16E+01	No	No	</=SL
Pentachlorophenol	87-86-5	6 : 11 : 11	54.55	0.0095-91	1.10E-02 J	4.40E+02	7.36E+01	No	4.57E-03	Yes	9.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	7 : 8 : 8	87.50	-	1.38E-01	1.01E+03	1.52E+02	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	8 : 8 : 8	100.00	-	1.93E-05	2.75E-02	3.96E-03	No	3.39E-05	Yes	1.00E-03	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	11 : 11 : 11	100.00	20-24	1.70E+03	9.40E+03	4.27E+03	No	1.09E+04	No	9.21E+04	No	No	</=SL
Antimony	7440-36-0	7 : 11 : 11	63.64	1.8-2.4	5.80E-01 J	4.10E+00	2.28E+00	No	1.92E+00	Yes	4.09E+01	No	No	</=SL
Arsenic	7440-38-2	11 : 11 : 11	100.00	0.99-1.2	1.70E+00	6.60E+00	3.91E+00	No	1.08E+01	No	1.59E+00	Yes	No	</=BKG
Barium	7440-39-3	11 : 11 : 11	100.00	0.99-1.2	5.00E+01	2.90E+02	1.31E+02	No	3.17E+02	No	6.66E+03	No	No	</=SL
Beryllium	7440-41-7	11 : 11 : 11	100.00	0.4-0.49	1.10E-01	4.80E-01	2.91E-01	No	7.65E-01	No	1.94E+02	No	No	</=SL
Cadmium	7440-43-9	10 : 11 : 11	90.91	0.45-0.61	3.30E-01	3.20E+01	5.41E+00	No	1.81E+00	Yes	4.51E+01	No	No	</=SL
Calcium	7440-70-2	11 : 11 : 11	100.00	49-300	3.40E+03	2.50E+05	1.17E+05	Yes	6.11E+04	Yes	NA	--	No	EN
Chromium	7440-47-3	11 : 11 : 11	100.00	0.99-1.2	6.20E+00	4.80E+02	1.32E+02	No	1.89E+01	Yes	4.48E+02	Yes	Yes	>SL
Cobalt	7440-48-4	11 : 11 : 11	100.00	0.99-1.2	2.50E+00	9.40E+00 J	5.50E+00	No	9.27E+00	Yes	1.33E+03	No	No	</=SL
Copper	7440-50-8	11 : 11 : 11	100.00	2-2.4	2.00E+00	2.00E+02	4.75E+01	No	4.96E+01	Yes	4.09E+03	No	No	</=SL
Iron	7439-89-6	11 : 11 : 11	100.00	4.9-6.1	4.10E+03	1.50E+04	7.84E+03	Yes	2.10E+04	No	7.20E+04	No	No	EN
Lead	7439-92-1	11 : 11 : 11	100.00	0.49-0.61	1.50E+01	2.40E+03	5.96E+02	No	7.18E+01	Yes	8.00E+02	No	No	</=SL

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason
Magnesium	7439-95-4	11 : 11 : 11	100.00	49-61	1.70E+03	1.60E+04	7.23E+03	Yes	1.13E+04	Yes	NA	--	No	EN
Manganese	7439-96-5	11 : 11 : 11	100.00	0.99-1.2	5.50E+01	6.70E+02	2.25E+02	No	5.01E+02	Yes	1.95E+03	No	No	</=SL
Mercury	7439-97-6	9 : 9 : 9	100.00	0.02-0.67	2.10E-02	2.60E+00 J	4.84E-01	No	7.72E-02	Yes	3.10E+01	No	No	</=SL
Nickel	7440-02-0	11 : 11 : 11	100.00	4-4.9	5.80E+00	2.00E+01	1.21E+01	No	2.83E+01	No	2.04E+03	No	No	</=SL
Potassium	7440-09-7	11 : 11 : 11	100.00	99-120	3.60E+02	1.10E+03	7.77E+02	Yes	2.38E+03	No	NA	--	No	EN
Selenium	7782-49-2	4 : 11 : 11	36.36	0.99-3	6.60E-01	1.80E+00	1.03E+00	No	1.24E+00	Yes	5.11E+02	No	No	</=SL
Silver	7440-22-4	1 : 11 : 11	9.09	0.86-1.2	2.80E+00	2.80E+00	2.80E+00	No	9.10E-01	Yes	5.11E+02	No	No	</=SL
Sodium	7440-23-5	11 : 11 : 11	100.00	49-61	7.90E+01 J	3.40E+02	1.93E+02	Yes	3.40E+02	No	NA	--	No	EN
Vanadium	7440-62-2	11 : 11 : 11	100.00	0.99-1.2	6.30E+00	2.70E+01	1.34E+01	No	3.44E+01	No	1.02E+02	No	No	</=SL
Zinc	7440-66-6	11 : 11 : 11	100.00	2-2.4	1.80E+01	1.80E+03	2.84E+02	No	2.24E+02	Yes	3.06E+04	No	No	</=SL
Subsurface Soil - D Site Q North														
VOCs														
1,1,2-Trichloroethane	79-00-5	1 : 7 : 7	14.29	.0031-0.008	5.10E-03	5.10E-03	5.10E-03	No	NA	--	1.60E+00	No	No	</=SL
2-Butanone	78-93-3	4 : 7 : 7	57.14	0.015-0.042	6.20E-03	1.40E-02	1.10E-02	No	NA	--	1.13E+04	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	1 : 7 : 7	14.29	0.015-0.042	1.70E-02	1.70E-02	1.70E-02	No	NA	--	4.70E+03	No	No	</=SL
Acetone	67-64-1	7 : 7 : 7	100.00	0.031-0.084	1.50E-02	6.40E-02	3.71E-02	No	NA	--	5.43E+03	No	No	</=SL
Benzene	71-43-2	6 : 7 : 7	85.71	.0031-0.008	1.50E-03	1.00E-01	1.93E-02	No	NA	--	1.40E+00	No	No	</=SL
Carbon Disulfide	75-15-0	5 : 7 : 7	71.43	.0031-0.008	2.30E-03	6.40E-03	4.68E-03	No	NA	--	1.20E+02	No	No	</=SL
Chlorobenzene	108-90-7	6 : 7 : 7	85.71	0.0031-1.2	1.60E-03	7.60E+00 J	1.30E+00	No	NA	--	5.31E+01	No	No	</=SL
Ethylbenzene	100-41-4	6 : 7 : 7	85.71	.0031-0.008	8.30E-04	2.50E-02	6.21E-03	No	NA	--	7.42E+02	No	No	</=SL
Toluene	108-88-3	5 : 7 : 7	71.43	.0031-0.008	1.90E-03	3.30E-02	9.62E-03	No	NA	--	2.21E+02	No	No	</=SL
Xylenes, Total	1330-20-7	4 : 7 : 7	57.14	.0062-0.01	2.00E-03	3.40E-02	1.29E-02	No	NA	--	8.98E+01	No	No	</=SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 7 : 7	14.29	0.36-0.45	6.40E-02	6.40E-02	6.40E-02	No	NA	--	4.10E+02	No	No	</=SL
4-Chloroaniline	106-47-8	3 : 7 : 7	42.86	0.72-0.91	4.30E-02	2.60E+00	9.27E-01	No	NA	--	2.46E+02	No	No	</=SL

TABLE 2.2
COPC SELECTION - COMBINED SOIL (SURFACE SOIL, SUBSURFACE SOIL, WASTE) AND DEEP SUBSURFACE SOI
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil SL (f) (mg/kg)	Is Max > SL? (g)	COPC? (h)	Reason

Notes:
Bkg - Background concentration.
CAS - Chemical Abstracts Service.
COPC - Constituent of potential concern.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration, Human Health Calculated using Toxicity Equivalency Factors (TEFs) from Van den Berg, et al., 2006. TEFs presented in Table F-1.
EN - Essential nutrient.
J - Estimated value
NA - Not available.
PCB - Polychlorinated Biphenyl.
SL - Screening Level.
SVOC - Semivolatile organic compound.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.
-- Not applicable.

(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.
(b) Percent detected out of valid samples. Constituents detected in fewer than 5 percent of samples, provided 20 samples are available, will not be included as COPCs.
(c) Range of reporting limits (sample quantitation limits) is based on available information; not available for all samples with positive detections. Range not presented for calculated parameters (i.e., PCBs and Dioxins).
(d) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.The validation qualifier is presented for the minimum and maximum. Only detected results are included in the mean calculation.
(e) Equal to two times the average detected concentration in off-site sampling locations. Calculated in Table A-3b.
(f) USEPA, 2004. Region 9 Preliminary Remediation Goal (PRG) Table. October 1, 2004. Value for industrial soil. PRGs for noncarcinogenic constituents were adjusted for a hazard index of 0.1 to account for cumulative effects.
(g) For all constituents with the exception of lead, the maximum detected concentration is compared to the screening level. For lead, the mean concentration was compared to the screening level.
(h) A constituent is identified as a COPC if it is detected in greater than 5 percent of samples, provided 20 samples are available, if it is not an essential nutrient, if the maximum detected concentration is greater than the background concentration and if the maximum detected concentration is greater than the soil screening level.
(i) Only constituents detected at least once in the specified area/medium are included here.

TABLE 2.3
COPC SELECTION - SEDIMENT
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason
Sediment	**Site Q - South - Pond (Large)**													
PCBs														
TOTAL PCBs	Total PCBs	4 : 4 : 4	100.00	-	6.82E-01	3.55E+01	9.70E+00	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Sediment	**Site Q - South - Pond (Small)**													
Pesticide														
Dieldrin	60-57-1	3 : 3 : 3	100.00	0.0048-0.056	2.55E-02 J	4.60E-01 J	2.32E-01	No	1.32E-02	Yes	1.10E-01	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	3 : 3 : 3	100.00	-	1.88E+00	2.00E+01	1.05E+01	No	2.50E-01	Yes	1.00E+00	Yes	Yes	>SL
Sediment	**Site River**													
VOCs														
Acrolein	107-02-8	1 : 1 : 1	100.00	0.29-0.29	5.70E-02	5.70E-02	5.70E-02	No	NA	--	3.40E-02	Yes	Yes	>SL
Metals														
Arsenic	7440-38-2	56 : 56 : 56	100.00	0.01-2.1	9.80E-01	7.50E+00	2.81E+00	No	4.66E+00	Yes	1.59E+00	Yes	Yes	>SL

TABLE 2.3
COPC SELECTION - SEDIMENT
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (i)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Soil Screening Level (f) (mg/kg)	Is Max > Screening Level? (g)	COPC? (h)	Reason

Notes:
Bkg - Background concentration.
CAS - Chemical Abstracts Service.
COPC - Constituent of potential concern.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration, Human Health Calculated using Toxicity Equivalency Factors (TEFs) from Van den Berg, et al., 2006. TEFs presented in Table F-1.
EN - Essential nutrient.
J - Estimated value.
NA - Not available.
PCB - Polychlorinated Biphenyl.
SL - Screening Level.
SVOC - Semivolatile organic compound.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.
-- Not applicable.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.
(b) Percent detected out of valid samples. Constituents detected in fewer than 5 percent of samples, provided 20 samples are available, will not be included as COPCs.
(c) Range of reporting limits (sample quantitation limits) is based on available information; not available for all samples with positive detections. Range not presented for calculated parameters (i.e., PCBs and Dioxins).
(d) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.The validation qualifier is presented for the minimum and maximum. Only detected results are included in the mean calculation.
(e) Equal to two times the average detected concentration in upgradient sampling locations for the river, calculated in Table A-3c. For the ponds, which were dry, surface soil background is used, as calculated in Table A-3a.
(g) For all constituents with the exception of lead, the maximum detected concentration is compared to the screening level. For lead, the mean concentration was compared to the screening level.
(h) A constituent is identified as a COPC if it is detected in greater than 5 percent of samples, provided 20 samples are available, if it is not an essential nutrient, if the maximum detected concentration is greater than the background concentration and if the maximum detected concentration is greater than the surface soil screening level.
(i) Only constituents detected at least once in the specified area/medium are included here.

TABLE 2.4
COPC SELECTION - SURFACE WATER/SEEP
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Surface WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Seep	**Site Q**													
VOCs														
Acetone	67-64-1	1 : 2 : 2	50.00	25-25	1.00E+01	1.00E+01	1.00E+01	No	NA	--	6.30E+03	No	No	</=SL
Chloromethane	74-87-3	1 : 2 : 2	50.00	1-1	9.70E-01 J	9.70E-01 J	9.70E-01	No	NA	--	1.60E+02	No	No	</=SL
Pesticide														
delta-BHC	319-86-8	1 : 2 : 2	50.00	0.05-0.05	5.10E-02 J	5.10E-02 J	5.10E-02	No	NA	--	2.00E-01	No	No	</=SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	1 : 2 : 2	50.00	-	1.17E-04	1.17E-04	1.17E-04	No	NA	--	3.00E-05	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	2 : 2 : 2	100.00	200-200	1.70E+04	1.20E+05	6.85E+04	No	NA	--	3.50E+03	Yes	Yes	>SL
Arsenic	7440-38-2	2 : 2 : 2	100.00	10-10	2.70E+01	1.20E+02	7.35E+01	No	NA	--	1.00E+01	Yes	Yes	>SL
Barium	7440-39-3	2 : 2 : 2	100.00	10-10	4.00E+02	3.00E+03	1.70E+03	No	NA	--	2.00E+03	Yes	Yes	>SL
Beryllium	7440-41-7	2 : 2 : 2	100.00	4-4	8.30E-01	1.20E+01	6.42E+00	No	NA	--	4.00E+00	Yes	Yes	>SL
Cadmium	7440-43-9	2 : 2 : 2	100.00	5-5	7.30E-01	2.40E+01	1.24E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
Calcium	7440-70-2	2 : 2 : 2	100.00	500-500	2.00E+05	6.40E+05	4.20E+05	Yes	NA	--	NA	--	No	EN
Chromium	7440-47-3	2 : 2 : 2	100.00	10-10	2.20E+01	1.70E+02	9.60E+01	No	NA	--	1.00E+02	Yes	Yes	>SL
Cobalt	7440-48-4	2 : 2 : 2	100.00	10-10	8.50E+00	1.50E+02	7.93E+01	No	NA	--	1.00E+03	No	No	</=SL
Copper	7440-50-8	2 : 2 : 2	100.00	20-20	2.30E+01	3.70E+02	1.97E+02	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	2 : 2 : 2	100.00	50-50	2.30E+04	2.40E+05	1.32E+05	Yes	NA	--	5.00E+03	Yes	No	EN
Lead	7439-92-1	2 : 2 : 2	100.00	5-5	1.80E+01	3.30E+02	1.74E+02	No	NA	--	7.50E+00	Yes	Yes	>SL
Magnesium	7439-95-4	2 : 2 : 2	100.00	500-500	4.80E+04	1.80E+05	1.14E+05	Yes	NA	--	NA	--	No	EN
Manganese	7439-96-5	2 : 2 : 2	100.00	10-10	5.30E+03	1.40E+04	9.65E+03	No	NA	--	1.50E+02	Yes	Yes	>SL
Mercury	7439-97-6	1 : 2 : 2	50.00	0.2-0.2	8.60E-01	8.60E-01	8.60E-01	No	NA	--	2.00E+00	No	No	</=SL
Nickel	7440-02-0	2 : 2 : 2	100.00	40-40	2.30E+01	3.50E+02	1.87E+02	No	NA	--	1.00E+02	Yes	Yes	>SL
Potassium	7440-09-7	2 : 2 : 2	100.00	1000-1000	1.20E+04	2.90E+04	2.05E+04	Yes	NA	--	NA	--	No	EN
Sodium	7440-23-5	2 : 2 : 2	100.00	500-500	2.60E+04	4.80E+04	3.70E+04	Yes	NA	--	NA	--	No	EN
Vanadium	7440-62-2	2 : 2 : 2	100.00	10-10	4.40E+01	4.50E+02	2.47E+02	No	NA	--	4.90E+01	Yes	Yes	>SL
Zinc	7440-66-6	2 : 2 : 2	100.00	20-20	1.20E+02	2.20E+03	1.16E+03	No	NA	--	5.00E+03	No	No	</=SL

TABLE 2.4
COPC SELECTION - SURFACE WATER/SEEP
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Surface WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Seep	**Site R**													
VOCs														
Benzene	71-43-2	1 : 1 : 1	100.00	5-5	2.70E+02	2.70E+02	2.70E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	5-5	6.40E+02	6.40E+02	6.40E+02	No	NA	--	1.00E+02	Yes	Yes	>SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	5-5	8.10E+00	8.10E+00	8.10E+00	No	NA	--	7.00E+02	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	5-5	2.40E+01	2.40E+01	2.40E+01	No	NA	--	1.00E+03	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	10-10	2.10E+01	2.10E+01	2.10E+01	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	250-250	6.90E+01	6.90E+01	6.90E+01	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	250-250	1.20E+02	1.20E+02	1.20E+02	No	NA	--	7.50E+01	Yes	Yes	>SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	250-250	6.80E+02	6.80E+02	6.80E+02	No	NA	--	3.50E+01	Yes	Yes	>SL
4-Chloroaniline	106-47-8	1 : 1 : 1	100.00	1000-1000	5.80E+03	5.80E+03	5.80E+03	No	NA	--	2.80E+01	Yes	Yes	>SL
Naphthalene	91-20-3	1 : 1 : 1	100.00	250-250	6.20E+02	6.20E+02	6.20E+02	No	NA	--	1.40E+02	Yes	Yes	>SL
Pesticide														
Aldrin	309-00-2	1 : 1 : 1	100.00	0.1-0.1	3.20E-01 J	3.20E-01 J	3.20E-01	No	NA	--	1.40E+01	No	No	</=SL
alpha-BHC	319-84-6	1 : 1 : 1	100.00	0.1-0.1	6.20E-02 J	6.20E-02 J	6.20E-02	No	NA	--	1.10E-01	No	No	</=SL
Endrin Aldehyde	7421-93-4	1 : 1 : 1	100.00	0.2-0.2	8.10E-02 J	8.10E-02 J	8.10E-02	No	NA	--	2.00E+00	No	No	</=SL
gamma-Chlordane	5103-74-2	1 : 1 : 1	100.00	0.1-0.1	5.60E-02 J	5.60E-02 J	5.60E-02	No	NA	--	2.00E+00	No	No	</=SL
Heptachlor Epoxide	1024-57-3	1 : 1 : 1	100.00	0.1-0.1	4.70E-01 J	4.70E-01 J	4.70E-01	No	NA	--	2.00E-01	Yes	Yes	>SL
Methoxychlor	72-43-5	1 : 1 : 1	100.00	1-1	7.20E-02 J	7.20E-02 J	7.20E-02	No	NA	--	4.00E+01	No	No	</=SL
Herbicide														
2,4-D	94-75-7	1 : 1 : 1	100.00	12-12	1.20E+01 J	1.20E+01 J	1.20E+01	No	NA	--	7.00E+01	No	No	</=SL
Dichlorprop	120-36-5	1 : 1 : 1	100.00	150-150	1.60E+02	1.60E+02	1.60E+02	No	NA	--	2.90E+02	No	No	</=SL
Pentachlorophenol	87-86-5	1 : 1 : 1	100.00	1-1	4.20E-01 J	4.20E-01 J	4.20E-01	No	NA	--	1.00E+00	No	No	</=SL
PCBs														
TOTAL PCBs	Total PCBs	1 : 1 : 1	100.00	-	1.80E-01	1.80E-01	1.80E-01	No	NA	--	5.00E-01	No	No	</=SL
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	200-200	9.20E+03	9.20E+03	9.20E+03	No	NA	--	3.50E+03	Yes	Yes	>SL

TABLE 2.4
COPC SELECTION - SURFACE WATER/SEEP
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Surface WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Arsenic	7440-38-2	1 : 1 : 1	100.00	10-10	2.40E+01	2.40E+01	2.40E+01	No	NA	--	1.00E+01	Yes	Yes	>SL
Barium	7440-39-3	1 : 1 : 1	100.00	10-10	3.60E+02	3.60E+02	3.60E+02	No	NA	--	2.00E+03	No	No	</=SL
Beryllium	7440-41-7	1 : 1 : 1	100.00	4-4	4.90E-01	4.90E-01	4.90E-01	No	NA	--	4.00E+00	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	500-500	4.50E+05	4.50E+05	4.50E+05	Yes	NA	--	NA	--	No	EN
Chromium	7440-47-3	1 : 1 : 1	100.00	10-10	1.30E+01	1.30E+01	1.30E+01	No	NA	--	1.00E+02	No	No	</=SL
Cobalt	7440-48-4	1 : 1 : 1	100.00	10-10	4.10E+00	4.10E+00	4.10E+00	No	NA	--	1.00E+03	No	No	</=SL
Copper	7440-50-8	1 : 1 : 1	100.00	20-20	1.40E+01	1.40E+01	1.40E+01	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	50-50	2.50E+04	2.50E+04	2.50E+04	Yes	NA	--	5.00E+03	Yes	No	EN
Lead	7439-92-1	1 : 1 : 1	100.00	5-5	1.40E+01	1.40E+01	1.40E+01	No	NA	--	7.50E+00	Yes	Yes	>SL
Magnesium	7439-95-4	1 : 1 : 1	100.00	500-500	3.10E+04	3.10E+04	3.10E+04	Yes	NA	--	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	10-10	4.20E+03	4.20E+03	4.20E+03	No	NA	--	1.50E+02	Yes	Yes	>SL
Nickel	7440-02-0	1 : 1 : 1	100.00	40-40	1.30E+01	1.30E+01	1.30E+01	No	NA	--	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	1000-1000	3.30E+04	3.30E+04	3.30E+04	Yes	NA	--	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	500-500	6.00E+04 J	6.00E+04 J	6.00E+04	Yes	NA	--	NA	--	No	EN
Vanadium	7440-62-2	1 : 1 : 1	100.00	10-10	2.40E+01	2.40E+01	2.40E+01	No	NA	--	4.90E+01	No	No	</=SL
Zinc	7440-66-6	1 : 1 : 1	100.00	20-20	5.70E+01	5.70E+01	5.70E+01	No	NA	--	5.00E+03	No	No	</=SL
Surface Water	**Site Q - South - Pond (Large)**													
VOCs														
1,1-Dichloroethane	75-34-3	1 : 4 : 4	25.00	1-1	2.10E-01	2.10E-01	2.10E-01	No	NA	--	7.00E+02	No	No	</=SL
Benzene	71-43-2	1 : 4 : 4	25.00	1-1	1.20E-01	1.20E-01	1.20E-01	No	NA	--	5.00E+00	No	No	</=SL
Ethylbenzene	100-41-4	1 : 4 : 4	25.00	1-1	1.40E-01	1.40E-01	1.40E-01	No	NA	--	7.00E+02	No	No	</=SL
Pesticide														
4,4'-DDT	50-29-3	1 : 4 : 4	25.00	0.1-0.1	2.80E-02 J	2.80E-02 J	2.80E-02	No	NA	--	6.00E+00	No	No	</=SL
Dieldrin	60-57-1	1 : 4 : 4	25.00	0.1-0.1	1.00E-02 J	1.00E-02 J	1.00E-02	No	NA	--	9.00E+00	No	No	</=SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	2 : 2 : 2	100.00	-	1.40E-06	5.08E-06	3.24E-06	No	NA	--	3.00E-05	No	No	</=SL
Metals														
Aluminum	7429-90-5	1 : 4 : 4	25.00	20-200	7.70E+03 J	7.70E+03 J	7.70E+03	No	NA	--	3.50E+03	Yes	Yes	>SL
Arsenic	7440-38-2	1 : 4 : 4	25.00	10-10	5.40E+00	5.40E+00	5.40E+00	No	NA	--	1.00E+01	No	No	</=SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Surface WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Barium	7440-39-3	4 : 4 : 4	100.00	10-10	1.20E+02	2.00E+02	1.45E+02	No	NA	--	2.00E+03	No	No	</=SL
Cadmium	7440-43-9	1 : 4 : 4	25.00	5-5	6.50E-01	6.50E-01	6.50E-01	No	NA	--	5.00E+00	No	No	</=SL
Calcium	7440-70-2	4 : 4 : 4	100.00	500-500	5.70E+04	9.10E+04	7.60E+04	Yes	NA	--	NA	--	No	EN
Chromium	7440-47-3	1 : 4 : 4	25.00	10-10	1.00E+01	1.00E+01	1.00E+01	No	NA	--	1.00E+02	No	No	</=SL
Cobalt	7440-48-4	1 : 4 : 4	25.00	10-10	3.60E+00	3.60E+00	3.60E+00	No	NA	--	1.00E+03	No	No	</=SL
Copper	7440-50-8	2 : 4 : 4	50.00	10-20	3.20E+00 J	1.30E+01	8.10E+00	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	4 : 4 : 4	100.00	50-50	5.20E+01	8.90E+03	2.34E+03	Yes	NA	--	5.00E+03	Yes	No	EN
Lead	7439-92-1	2 : 4 : 4	50.00	5-5	2.70E+00 J	1.40E+01	8.35E+00	No	NA	--	7.50E+00	Yes	Yes	>SL
Magnesium	7439-95-4	4 : 4 : 4	100.00	500-500	1.50E+04	2.40E+04	2.13E+04	Yes	NA	--	NA	--	No	EN
Manganese	7439-96-5	4 : 4 : 4	100.00	10-10	3.90E+01	4.60E+02	1.91E+02	No	NA	--	1.50E+02	Yes	Yes	>SL
Nickel	7440-02-0	2 : 4 : 4	50.00	40-40	3.10E+00 J	9.30E+00	6.20E+00	No	NA	--	1.00E+02	No	No	</=SL
Potassium	7440-09-7	4 : 4 : 4	100.00	10-1000	4.90E+02	5.60E+03	1.81E+03	Yes	NA	--	NA	--	No	EN
Sodium	7440-23-5	4 : 4 : 4	100.00	500-80000	5.80E+03	7.60E+03	6.80E+03	Yes	NA	--	NA	--	No	EN
Vanadium	7440-62-2	2 : 4 : 4	50.00	10-10	8.40E-01 J	2.30E+01	1.19E+01	No	NA	--	4.90E+01	No	No	</=SL
Zinc	7440-66-6	4 : 4 : 4	100.00	20-20	1.30E+01	5.20E+01	2.40E+01	No	NA	--	5.00E+03	No	No	</=SL
Surface Water	**Site Q - South - Pond (Small)**													
VOCs														
2-Butanone	78-93-3	1 : 3 : 3	33.33	10-10	1.20E+00	1.20E+00	1.20E+00	No	NA	--	4.20E+03	No	No	</=SL
Benzene	71-43-2	2 : 3 : 3	66.67	1-1	9.90E-02	7.20E-01	4.09E-01	No	NA	--	5.00E+00	No	No	</=SL
Ethylbenzene	100-41-4	1 : 3 : 3	33.33	1-1	4.50E-01	4.50E-01	4.50E-01	No	NA	--	7.00E+02	No	No	</=SL
Styrene	100-42-5	1 : 3 : 3	33.33	1-1	2.80E+00	2.80E+00	2.80E+00	No	NA	--	1.00E+02	No	No	</=SL
SVOCs														
Benzo(a)pyrene	50-32-8	2 : 3 : 3	66.67	10-10	1.50E+00	4.60E+00 J	3.05E+00	No	NA	--	2.00E-01	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	2 : 3 : 3	66.67	10-10	2.70E+00	3.40E+00 J	3.05E+00	No	NA	--	2.10E+02	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	1 : 3 : 3	33.33	10-10	7.20E+00 J	7.20E+00 J	7.20E+00	No	NA	--	1.70E-01	Yes	Yes	>SL
Indeno(1,2,3-cd)pyrene	193-39-5	1 : 3 : 3	33.33	10-10	3.00E+00 J	3.00E+00 J	3.00E+00	No	NA	--	4.30E-01	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	1 : 3 : 3	33.33	-	5.00E-02	5.00E-02	5.00E-02	No	NA	--	5.00E-01	No	No	</=SL
Metals														

TABLE 2.4
COPC SELECTION - SURFACE WATER/SEEP
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Surface WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Barium	7440-39-3	3 : 3 : 3	100.00	10-10	1.20E+02	1.50E+02	1.37E+02	No	NA	--	2.00E+03	No	No	</=SL
Calcium	7440-70-2	3 : 3 : 3	100.00	500-500	7.80E+04	1.10E+05	9.52E+04	Yes	NA	--	NA	--	No	EN
Copper	7440-50-8	3 : 3 : 3	100.00	20-20	5.15E+00	6.70E+00	5.72E+00	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	3 : 3 : 3	100.00	50-50	2.70E+01	5.00E+01	3.70E+01	Yes	NA	--	5.00E+03	No	No	EN
Magnesium	7439-95-4	3 : 3 : 3	100.00	500-500	2.00E+04	2.70E+04	2.37E+04	Yes	NA	--	NA	--	No	EN
Manganese	7439-96-5	3 : 3 : 3	100.00	10-10	2.00E+01	4.20E+01	2.80E+01	No	NA	--	1.50E+02	No	No	</=SL
Mercury	7439-97-6	3 : 3 : 3	100.00	0.2-0.2	8.80E-02	1.00E-01	9.27E-02	No	NA	--	2.00E+00	No	No	</=SL
Nickel	7440-02-0	1 : 3 : 3	33.33	40-40	2.20E+00	2.20E+00	2.20E+00	No	NA	--	1.00E+02	No	No	</=SL
Potassium	7440-09-7	3 : 3 : 3	100.00	1000-1000	1.90E+03	2.40E+03	2.17E+03	Yes	NA	--	NA	--	No	EN
Sodium	7440-23-5	3 : 3 : 3	100.00	500-500	9.80E+03	1.10E+04	1.06E+04	Yes	NA	--	NA	--	No	EN
Zinc	7440-66-6	3 : 3 : 3	100.00	20-20	1.60E+01	2.00E+01	1.87E+01	No	NA	--	5.00E+03	No	No	</=SL
Surface Water	**Site River**													
VOCs														
1,1-Dichloroethylene	75-35-4	3 : 60 : 60	5.00	1-1	3.00E-01	4.20E-01	3.57E-01	No	NA	--	7.00E+00	No	No	</=SL
1,2-Dichloroethane	107-06-2	11 : 60 : 60	18.33	1-1	1.30E-01 J	7.00E-01 J	3.30E-01	No	NA	--	5.00E+00	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	3 : 55 : 55	5.45	2-2	2.20E-01	3.60E-01	2.73E-01	No	NA	--	7.00E+01	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	1 : 60 : 60	1.67	8.8-10	3.80E+00	3.80E+00	3.80E+00	No	NA	--	2.00E+03	No	No	</=SL
Acetone	67-64-1	1 : 60 : 60	1.67	18-25	4.00E+01	4.00E+01	4.00E+01	No	NA	--	6.30E+03	No	No	</=SL
Benzene	71-43-2	13 : 60 : 60	21.67	1-1	1.90E-01	4.50E+00	6.59E-01	No	NA	--	5.00E+00	No	No	</=SL
Carbon Disulfide	75-15-0	5 : 60 : 60	8.33	1-2	2.80E-01	6.90E-01	3.78E-01	No	NA	--	7.00E+02	No	No	</=SL
Carbon Tetrachloride	56-23-5	1 : 60 : 60	1.67	1-1	1.70E-01 J	1.70E-01 J	1.70E-01	No	NA	--	5.00E+00	No	No	</=SL
Chlorobenzene	108-90-7	32 : 60 : 60	53.33	1-1	4.90E-01	5.60E+01	3.85E+00	No	NA	--	1.00E+02	No	No	</=SL
Chloromethane	74-87-3	5 : 60 : 60	8.33	0.5-1	2.00E-01 J	9.60E-01 J	5.22E-01	No	1.00E+00	No	1.60E+02	No	No	</=SL
Ethylbenzene	100-41-4	1 : 60 : 60	1.67	0.83-1	1.30E+00	1.30E+00	1.30E+00	No	NA	--	7.00E+02	No	No	</=SL
Methyl N-Butyl Ketone	591-78-6	1 : 60 : 60	1.67	8.8-10	3.30E-01	3.30E-01	3.30E-01	No	NA	--	2.00E+03	No	No	</=SL
Tetrachloroethene	127-18-4	1 : 60 : 60	1.67	1-1	4.50E-01	4.50E-01	4.50E-01	No	NA	--	5.00E+00	No	No	</=SL
Toluene	108-88-3	10 : 60 : 60	16.67	1-1	2.90E-01	4.50E+00	9.34E-01	No	NA	--	1.00E+03	No	No	</=SL
Trichloroethylene	79-01-6	1 : 60 : 60	1.67	1-1	5.80E-01	5.80E-01	5.80E-01	No	NA	--	5.00E+00	No	No	</=SL
Xylenes, Total	1330-20-7	3 : 60 : 60	5.00	2-2	2.00E-01 J	3.00E+00 J	1.35E+00	No	NA	--	1.00E+04	No	No	</=SL

TABLE 2.4
COPC SELECTION - SURFACE WATER/SEEP
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Surface WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
SVOCs														
1,2-Dichlorobenzene	95-50-1	2 : 60 : 60	3.33	9.4-10	1.20E+00	4.00E+01	2.06E+01	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 60 : 60	1.67	9.4-10	3.90E+00	3.90E+00	3.90E+00	No	NA	--	7.50E+01	No	No	</=SL
2,4,6-Trichlorophenol	88-06-2	1 : 60 : 60	1.67	9.4-10	1.70E+01	1.70E+01	1.70E+01	No	NA	--	1.00E+01	Yes	No	<5%FOD
2,4-Dichlorophenol	120-83-2	11 : 60 : 60	18.33	9.4-10	1.20E+00	6.90E+01	8.31E+00	No	NA	--	2.10E+01	Yes	Yes	>SL
2,4-Dimethylphenol	105-67-9	1 : 60 : 60	1.67	9.4-10	8.30E+00	8.30E+00	8.30E+00	No	NA	--	1.40E+02	No	No	</=SL
2,6-Dinitrotoluene	606-20-2	1 : 60 : 60	1.67	9.4-10	1.70E+01	1.70E+01	1.70E+01	No	NA	--	3.10E-01	Yes	No	<5%FOD
2-Chlorophenol	95-57-8	6 : 60 : 60	10.00	9.4-10	1.40E+00	3.10E+01	6.80E+00	No	NA	--	3.50E+01	No	No	</=SL
3&4-Methylphenol	106-44-5	2 : 60 : 60	3.33	9.4-10	1.30E+00	2.70E+01	1.42E+01	No	NA	--	3.50E+02	No	No	</=SL
4-Chloroaniline	106-47-8	17 : 60 : 60	28.33	19-20	1.20E+00	1.60E+02	1.47E+01	No	NA	--	2.80E+01	Yes	Yes	>SL
bis(2-Ethylhexyl)phthalate	117-81-7	1 : 60 : 60	1.67	9.4-10	1.70E+00	1.70E+00	1.70E+00	No	2.80E+01	No	6.00E+00	No	No	</=SL
Naphthalene	91-20-3	1 : 60 : 60	1.67	9.4-10	2.10E+01	2.10E+01	2.10E+01	No	NA	--	1.40E+02	No	No	</=SL
Nitrobenzene	98-95-3	1 : 60 : 60	1.67	9.4-10	2.50E+00	2.50E+00	2.50E+00	No	NA	--	3.50E+00	No	No	</=SL
Phenol	108-95-2	10 : 60 : 60	16.67	9.4-10	1.00E+00	1.40E+01	6.71E+00	No	NA	--	1.00E+02	No	No	</=SL
Pesticide														
beta-BHC	319-85-7	2 : 59 : 60	3.39	0.047-0.05	8.00E-03 J	9.20E-03 J	8.60E-03	No	NA	--	2.00E-01	No	No	</=SL
Endrin Ketone	53494-70-5	2 : 59 : 60	3.39	0.094-0.1	1.90E-02	2.30E-02	2.10E-02	No	3.74E-02	No	2.00E+00	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	1 : 60 : 60	1.67	0.48-0.5	3.00E-01 J	3.00E-01 J	3.00E-01	No	NA	--	2.80E+02	No	No	</=SL
2,4-D	94-75-7	34 : 60 : 60	56.67	0.48-0.5	1.10E-01	2.90E+01 J	2.28E+00	No	NA	--	7.00E+01	No	No	</=SL
Dichlorprop	120-36-5	21 : 60 : 60	35.00	0.48-6	8.70E-02 J	2.20E+00 J	4.81E-01	No	NA	--	2.90E+02	No	No	</=SL
MCPA	94-74-6	1 : 60 : 60	1.67	110-120	3.10E+01	3.10E+01	3.10E+01	No	NA	--	3.50E+00	Yes	No	<5%FOD
MCPP	93-65-2	1 : 60 : 60	1.67	110-120	5.30E+01 J	5.30E+01 J	5.30E+01	No	NA	--	7.00E+00	Yes	No	<5%FOD
Pentachlorophenol	87-86-5	1 : 60 : 60	1.67	0.24-1	1.90E+00 J	1.90E+00 J	1.90E+00	No	6.00E-01	Yes	1.00E+00	Yes	No	<5%FOD
Metals														
Aluminum	7429-90-5	50 : 50 : 50	100.00	20-750	1.50E+02 J	3.80E+03	1.18E+03	No	1.41E+03	Yes	3.50E+03	Yes	Yes	>SL
Antimony	7440-36-0	1 : 50 : 50	2.00	20-20	5.10E+00	5.10E+00	5.10E+00	No	NA	--	6.00E+00	No	No	</=SL
Arsenic	7440-38-2	12 : 50 : 50	24.00	10-10	3.10E+00	6.60E+00	4.92E+00	No	NA	--	1.00E+01	No	No	</=SL
Barium	7440-39-3	50 : 50 : 50	100.00	10-10	5.80E+01	1.20E+02	6.95E+01	No	1.17E+02	Yes	2.00E+03	No	No	</=SL

TABLE 2.4
COPC SELECTION - SURFACE WATER/SEEP
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Surface WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Beryllium	7440-41-7	5 : 50 : 50	10.00	4-4	1.30E-01	1.70E-01	1.44E-01	No	NA	--	4.00E+00	No	No	</=SL
Calcium	7440-70-2	50 : 50 : 50	100.00	500-500	4.30E+04	6.40E+04	5.12E+04	Yes	1.02E+05	No	NA	--	No	EN
Chromium	7440-47-3	14 : 50 : 50	28.00	10-10	1.80E+00	4.70E+00	2.96E+00	No	NA	--	1.00E+02	No	No	</=SL
Cobalt	7440-48-4	19 : 50 : 50	38.00	10-20	7.50E-01	1.60E+00	1.03E+00	No	2.20E+00	No	1.00E+03	No	No	</=SL
Copper	7440-50-8	16 : 50 : 50	32.00	10-20	1.90E+00	3.90E+01	5.40E+00	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	50 : 50 : 50	100.00	50-50	4.50E+02	3.50E+03	1.40E+03	Yes	1.94E+03	Yes	5.00E+03	No	No	EN
Lead	7439-92-1	19 : 50 : 50	38.00	5-5	2.20E+00	4.90E+00	3.75E+00	No	NA	--	7.50E+00	No	No	</=SL
Magnesium	7439-95-4	50 : 50 : 50	100.00	500-500	1.80E+04	2.70E+04	2.12E+04	Yes	4.11E+04	No	NA	--	No	EN
Manganese	7439-96-5	49 : 50 : 50	98.00	10-10	7.70E+01	2.50E+02	1.13E+02	No	1.62E+02	Yes	1.50E+02	Yes	Yes	>SL
Mercury	7439-97-6	4 : 50 : 50	8.00	0.2-0.2	8.00E-02 J	2.00E-01 J	1.27E-01	No	NA	--	2.00E+00	No	No	</=SL
Nickel	7440-02-0	14 : 50 : 50	28.00	40-40	2.40E+00	6.50E+00	4.60E+00	No	NA	--	1.00E+02	No	No	</=SL
Potassium	7440-09-7	50 : 50 : 50	100.00	10-1000	3.30E+03	5.50E+03	3.84E+03	Yes	6.73E+03	No	NA	--	No	EN
Silver	7440-22-4	1 : 50 : 50	2.00	10-10	8.40E-01	8.40E-01	8.40E-01	No	NA	--	5.00E+01	No	No	</=SL
Sodium	7440-23-5	50 : 50 : 50	100.00	1000-80000	1.80E+04 J	3.70E+04	2.38E+04	Yes	3.69E+04	Yes	NA	--	No	EN
Thallium	7440-28-0	1 : 55 : 55	1.82	10-25	1.00E+01	1.00E+01	1.00E+01	No	1.04E+01	No	2.00E+00	Yes	No	</=BKG
Vanadium	7440-62-2	17 : 50 : 50	34.00	10-10	3.40E+00	1.10E+01	6.52E+00	No	6.60E+00	Yes	4.90E+01	No	No	</=SL
Zinc	7440-66-6	28 : 50 : 50	56.00	20-20	3.90E+00	6.50E+01	1.60E+01	No	9.20E+00	Yes	5.00E+03	No	No	</=SL

TABLE 2.4
COPC SELECTION - SURFACE WATER/SEEP
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Surface WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason

Notes:
Bkg- Background concentration.
CAS - Chemical Abstracts Service.
COPC - Constituent of potential concern.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration, Human Health Calculated using Toxicity Equivalency Factors (TEFs) from Van den Berg, et al., 2006. TEFs presented in Table F-1.
EN - Essential nutrient.
J - Estimated value.
NA - Not available.
PCB - Polychlorinated Biphenyl.
SL - Screening Level.
SVOC - Semivolatile organic compound.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.
-- Not applicable.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.
(b) Percent detected out of valid samples. Constituents detected in fewer than 5 percent of samples, provided 20 samples are available, will not be included as COPCs.
(c) Range of reporting limits (sample quantitation limits) is based on available information; not available for all samples with positive detections. Range not presented for calculated parameters (i.e., PCBs and Dioxins).
(d) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.The validation qualifier is presented for the minimum and maximum. Only detected results are included in the mean calculation.
(e) Equal to two times the average detected concentration in off-site sampling locations. Calculated in Table A-3e. Not available for pond or seep data.
(f) Surface water screening levels were used according to the following hierarchy:
1) Illinois Groundwater Quality Standards for Class I: Potable Resource Groundwater. 35 III. Adm. Code 620.410. February 2, 2002.
2) USEPA, 2006. 2006 Edition of the Drinking Water Standards and Health Advisories. Office of Water. EPA 822-R-06-013. Maximum Contaminant Levels.
3) IEPA, 2002. Tiered Approach to Corrective Action Objectives. Appendix B, Table E. Tier 1 Groundwater Remediation Objectives for the Groundwater Component of the Groundwater Ingestion Route. Class I values. February 5, 2002.
4) Groundwater Remediation Objectives for Chemicals Not Listed in TACO. May 1, 2007. Prepared by the Illinois EPA Toxicity (IEPA) Assessment Unit, and February 1, 2008 Revisions/Additions to Tables for Non-TACO Chemical Remediation Objectives.
5) USEPA, 2004. Region 9 Preliminary Remediation Goal (PRG) Table. October 1, 2004. Value for Tap water
(g) A constituent is identified as a COPC if it is detected in greater than 5 percent of samples, provided 20 samples are available, if it is not an essential nutrient, if the maximum detected concentration is greater than the background concentration and if the maximum detected concentration is greater than the surface water screening level.
(h) Only constituents detected at least once in the specified area/medium are included here.

TABLE 2.5
COPC SELECTION - FISH FILLET
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Fish Filletl (f) (mg/kg)	Is Max > Screening Level?	COPC? (g)	Reason
Fillet	**Site Pond (Site Q) (Black Bullhead Fillet)**													
Pesticide														
4,4'-DDT	50-29-3	1 : 1 : 1	100.00	0.04-0.04	3.60E-01	3.60E-01	3.60E-01	No	NA	--	7.00E+00	No	No	</=SL
alpha-Chlordane	5103-71-9	1 : 1 : 1	100.00	.0051-0.005	1.00E-02 J	1.00E-02 J	1.00E-02	No	NA	--	6.50E+00	No	No	</=SL
Dieldrin	60-57-1	1 : 1 : 1	100.00	.0099-0.009	1.00E-01	1.00E-01	1.00E-01	No	NA	--	1.10E-01	No	No	</=SL
PCBs														
TOTAL PCBs	Total PCBs	1 : 1 : 1	100.00	-	3.87E+00	3.87E+00	3.87E+00	No	NA	--	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	1 : 1 : 1	100.00	-	2.65E-06	2.65E-06	2.65E-06	No	NA	--	1.00E-03	No	No	</=SL
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	20-20	2.40E+01	2.40E+01	2.40E+01	No	NA	--	9.21E+04	No	No	</=SL
Arsenic	7440-38-2	1 : 1 : 1	100.00	0.83-0.83	7.80E-01 J	7.80E-01 J	7.80E-01	No	NA	--	1.59E+00	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	1.1-1.1	8.80E+01 J	8.80E+01 J	8.80E+01	Yes	NA	--	NA	--	No	EN
Copper	7440-50-8	1 : 1 : 1	100.00	0.01-0.01	2.40E-01 J	2.40E-01 J	2.40E-01	No	NA	--	4.09E+03	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	0.05-0.05	4.20E+00 J	4.20E+00 J	4.20E+00	Yes	NA	--	7.20E+04	No	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	47-47	2.20E+02	2.20E+02	2.20E+02	Yes	NA	--	NA	--	No	EN
Mercury	7439-97-6	1 : 1 : 1	100.00	0.19-0.19	2.50E-01	2.50E-01	2.50E-01	No	NA	--	3.10E+01	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	94-94	4.00E+03	4.00E+03	4.00E+03	Yes	NA	--	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	45-45	3.90E+02	3.90E+02	3.90E+02	Yes	NA	--	NA	--	No	EN
Fillet	**Site Pond (Site Q) (Carp Fillet)**													
SVOCs														
Benzo(a)anthracene	56-55-3	1 : 1 : 1	100.00	0.99-0.99	1.40E-01 J	1.40E-01 J	1.40E-01	No	NA	--	2.11E+00	No	No	</=SL
Benzo(a)pyrene	50-32-8	1 : 1 : 1	100.00	0.99-0.99	1.80E-01 J	1.80E-01 J	1.80E-01	No	NA	--	2.10E-01	No	No	</=SL
bis(2-Ethylhexyl)phthalate	117-81-7	1 : 1 : 1	100.00	0.99-0.99	5.00E-01 J	5.00E-01 J	5.00E-01	No	NA	--	1.23E+02	No	No	</=SL
Chrysene	218-01-9	1 : 1 : 1	100.00	0.99-0.99	1.40E-01 J	1.40E-01 J	1.40E-01	No	NA	--	2.11E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	1 : 1 : 1	100.00	0.99-0.99	1.40E-01 J	1.40E-01 J	1.40E-01	No	NA	--	2.10E-01	No	No	</=SL
Fluoranthene	206-44-0	1 : 1 : 1	100.00	0.99-0.99	1.10E-01 J	1.10E-01 J	1.10E-01	No	NA	--	2.20E+03	No	No	</=SL
Pesticide														

TABLE 2.5
COPC SELECTION - FISH FILLET
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Fish Filletl (f) (mg/kg)	Is Max > Screening Level?	COPC? (g)	Reason
4,4'-DDT	50-29-3	1 : 1 : 1	100.00	0.04-0.04	3.30E-01	3.30E-01	3.30E-01	No	NA	--	7.00E+00	No	No	</=SL
alpha-Chlordane	5103-71-9	1 : 1 : 1	100.00	.0051-0.005	1.60E-02 J	1.60E-02 J	1.60E-02	No	NA	--	6.50E+00	No	No	</=SL
beta-BHC	319-85-7	1 : 1 : 1	100.00	.0051-0.005	1.70E-02 J	1.70E-02 J	1.70E-02	No	NA	--	1.26E+00	No	No	</=SL
Dieldrin	60-57-1	1 : 1 : 1	100.00	.0099-0.009	1.90E-01	1.90E-01	1.90E-01	No	NA	--	1.10E-01	Yes	Yes	>SL
Methoxychlor	72-43-5	1 : 1 : 1	100.00	0.051-0.051	3.50E-02 J	3.50E-02 J	3.50E-02	No	NA	--	3.08E+02	No	No	</=SL
Herbicide														
2,4-DB	94-82-6	1 : 1 : 1	100.00	0.025-0.025	2.50E-02 J	2.50E-02 J	2.50E-02	No	NA	--	4.92E+02	No	No	</=SL
PCBs														
TOTAL PCBs	Total PCBs	1 : 1 : 1	100.00	-	1.00E+01	1.00E+01	1.00E+01	No	NA	--	1.00E+00	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	1 : 1 : 1	100.00	-	1.53E-05	1.53E-05	1.53E-05	No	NA	--	1.00E-03	No	No	</=SL
Metals														
Arsenic	7440-38-2	1 : 1 : 1	100.00	0.83-0.83	8.20E-01 J	8.20E-01 J	8.20E-01	No	NA	--	1.59E+00	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	1.1-1.1	2.20E+02 J	2.20E+02 J	2.20E+02	Yes	NA	--	NA	--	No	EN
Copper	7440-50-8	1 : 1 : 1	100.00	0.01-0.01	3.70E-01 J	3.70E-01 J	3.70E-01	No	NA	--	4.09E+03	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	0.05-0.05	1.10E+01	1.10E+01	1.10E+01	Yes	NA	--	7.20E+04	No	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	47-47	2.10E+02	2.10E+02	2.10E+02	Yes	NA	--	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	0.91-0.91	2.00E-01 J	2.00E-01 J	2.00E-01	No	NA	--	1.95E+03	No	No	</=SL
Mercury	7439-97-6	1 : 1 : 1	100.00	0.19-0.19	7.10E-02	7.10E-02	7.10E-02	No	NA	--	3.10E+01	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	94-94	3.60E+03	3.60E+03	3.60E+03	Yes	NA	--	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	45-45	4.00E+02	4.00E+02	4.00E+02	Yes	NA	--	NA	--	No	EN
Fillet	**Site River-DDA**													
Pesticide														
4,4'-DDE	72-55-9	1 : 1 : 1	100.00	0.025-0.025	7.30E-03 J	7.30E-03 J	7.30E-03	No	NA	--	7.02E+00	No	No	</=SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	1 : 1 : 1	100.00	-	6.96E-07	6.96E-07	6.96E-07	No	NA	--	1.00E-03	No	No	</=SL
Fillet	**Site River-PDA**													
Pesticide														

TABLE 2.5
COPC SELECTION - FISH FILLET
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Fish Filletl (f) (mg/kg)	Is Max > Screening Level?	COPC? (g)	Reason
4,4'-DDE	72-55-9	2 : 3 : 3	66.67	0.025-0.025	7.60E-03 J	8.20E-03 J	7.90E-03	No	NA	--	7.02E+00	No	No	</=SL
Methoxychlor	72-43-5	1 : 3 : 3	33.33	0.025-0.1	4.40E-02 J	4.40E-02 J	4.40E-02	No	NA	--	3.08E+02	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	1 : 3 : 3	33.33	.0083-0.008	4.80E-03 J	4.80E-03 J	4.80E-03	No	NA	--	6.16E+02	No	No	</=SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	3 : 3 : 3	100.00	-	3.71E-07	5.83E-07	5.04E-07	No	NA	--	1.00E-03	No	No	</=SL
Fillet	**Site River-UDA**													
Pesticide														
4,4'-DDE	72-55-9	1 : 1 : 1	100.00	0.025-0.025	1.70E-02 J	1.70E-02 J	1.70E-02	No	NA	--	7.02E+00	No	No	</=SL
4,4'-DDT	50-29-3	1 : 1 : 1	100.00	0.025-0.025	8.60E-03 J	8.60E-03 J	8.60E-03	No	NA	--	7.00E+00	No	No	</=SL
alpha-Chlordane	5103-71-9	1 : 1 : 1	100.00	0.025-0.025	5.80E-03 J	5.80E-03 J	5.80E-03	No	NA	--	6.50E+00	No	No	</=SL
Dieldrin	60-57-1	1 : 1 : 1	100.00	0.025-0.025	8.10E-03 J	8.10E-03 J	8.10E-03	No	NA	--	1.10E-01	No	No	</=SL
Endrin Aldehyde	7421-93-4	1 : 1 : 1	100.00	0.025-0.025	7.30E-03 J	7.30E-03 J	7.30E-03	No	NA	--	1.85E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	1 : 1 : 1	100.00	0.025-0.025	1.20E-03 J	1.20E-03 J	1.20E-03	No	NA	--	1.74E+00	No	No	</=SL
gamma-Chlordane	5103-74-2	1 : 1 : 1	100.00	0.025-0.025	5.20E-03 J	5.20E-03 J	5.20E-03	No	NA	--	6.50E+00	No	No	</=SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	1 : 1 : 1	100.00	-	4.42E-06	4.42E-06	4.42E-06	No	NA	--	1.00E-03	No	No	</=SL

TABLE 2.5
COPC SELECTION - FISH FILLET
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (mg/kg)	Minimum Detect and Qualifier(d) (mg/kg)	Maximum Detect and Qualifier (d) (mg/kg)	Mean Detected (d) (mg/kg)	EN?	Bkg (e) (mg/kg)	Is Max > Bkg?	Fish Filletl (f) (mg/kg)	Is Max > Screening Level?	COPC? (g)	Reason

Notes:
Bkg - Background concentration.
CAS - Chemical Abstracts Service.
COPC - Constituent of potential concern.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration, Human Health Calculated using Toxicity Equivalency Factors (TEFs) from Van den Berg, et al., 2006. TEFs presented in Table F-1.
EN - Essential nutrient.
J - Estimated value.
NA - Not available.
PCB - Polychlorinated Biphenyl.
SL - Screening Level.
SVOC - Semivolatile organic compound.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.
-- Not applicable.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.
(b) Percent detected out of valid samples. Constituents detected in fewer than 5 percent of samples, provided 20 samples are available, will not be included as COPCs.
(c) Range of reporting limits (sample quantitation limits) is based on available information; not available for all samples with positive detections. Range not presented for calculated parameters (i.e., PCBs and Dioxins).
(d) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.The validation qualifier is presented for the minimum and maximum. Only detected results are included in the mean calculation.
(e) Fish fillet from the upstream discharge area (UDA) are being considered for use as an updgradient/backgound dataset.
(f) USEPA, 2007. Region 3 Risk-Based Concentration (RBC) Table. October 2007. Value for fish tissue.
(g) A constituent is identified as a COPC if it is detected in greater than 5 percent of samples, provided 20 samples are available, if it is not an essential nutrient, if the maximum detected concentration is greater than the background concentration and if the maximum detected concentration is greater than the screening level.
(h) Only constituents detected at least once in the specified area/medium are included here.

TABLE 2.6
COPC SELECTION - SHALLOW GROUNDWATER AND LEACHATE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Leachate	**Site O - LEACH-0-1**													
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 1 : 1	100.00	5-5	9.60E+00	9.60E+00	9.60E+00	No	NA	--	2.00E+02	No	No	</=SL
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	5-5	3.20E+00	3.20E+00	3.20E+00	No	NA	--	7.00E+02	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	10-10	2.00E+00	2.00E+00	2.00E+00	No	NA	--	7.00E+01	No	No	</=SL
2-Butanone	78-93-3	1 : 1 : 1	100.00	50-50	2.00E+01 J	2.00E+01 J	2.00E+01	No	NA	--	4.20E+03	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	1 : 1 : 1	100.00	50-50	2.10E+02	2.10E+02	2.10E+02	No	NA	--	2.00E+03	No	No	</=SL
Acetone	67-64-1	1 : 1 : 1	100.00	125-125	1.60E+02	1.60E+02	1.60E+02	No	NA	--	6.30E+03	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	5-5	9.20E+02	9.20E+02	9.20E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	1 : 1 : 1	100.00	5-5	2.10E+00	2.10E+00	2.10E+00	No	NA	--	7.00E+02	No	No	</=SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	10-10	1.70E+03 J	1.70E+03 J	1.70E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroform	67-66-3	1 : 1 : 1	100.00	5-5	8.00E+00	8.00E+00	8.00E+00	No	NA	--	8.00E+01	No	No	</=SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	5-5	2.90E+02	2.90E+02	2.90E+02	No	NA	--	7.00E+02	No	No	</=SL
Tetrachloroethene	127-18-4	1 : 1 : 1	100.00	5-5	2.10E+00	2.10E+00	2.10E+00	No	NA	--	5.00E+00	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	5-5	1.00E+02	1.00E+02	1.00E+02	No	NA	--	1.00E+03	No	No	</=SL
Trichloroethylene	79-01-6	1 : 1 : 1	100.00	5-5	2.10E+00	2.10E+00	2.10E+00	No	NA	--	5.00E+00	No	No	</=SL
Vinyl chloride	75-01-4	1 : 1 : 1	100.00	5-5	1.50E+00	1.50E+00	1.50E+00	No	NA	--	2.00E+00	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	10-10	1.70E+03	1.70E+03	1.70E+03	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	250-250	3.80E+02	3.80E+02	3.80E+02	No	NA	--	6.00E+02	No	No	</=SL
2,4,5-Trichlorophenol	95-95-4	1 : 1 : 1	100.00	250-250	4.30E+01	4.30E+01	4.30E+01	No	NA	--	7.00E+02	No	No	</=SL
2,4,6-Trichlorophenol	88-06-2	1 : 1 : 1	100.00	250-250	3.80E+02	3.80E+02	3.80E+02	No	NA	--	1.00E+01	Yes	Yes	>SL
2,4-Dichlorophenol	120-83-2	1 : 1 : 1	100.00	250-250	3.20E+02	3.20E+02	3.20E+02	No	NA	--	2.10E+01	Yes	Yes	>SL
2,4-Dimethylphenol	105-67-9	1 : 1 : 1	100.00	250-250	6.30E+01	6.30E+01	6.30E+01	No	NA	--	1.40E+02	No	No	</=SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	250-250	3.30E+02	3.30E+02	3.30E+02	No	NA	--	3.50E+01	Yes	Yes	>SL
2-Nitroaniline	88-74-4	1 : 1 : 1	100.00	1250-1250	2.60E+02	2.60E+02	2.60E+02	No	NA	--	2.10E+01	Yes	Yes	>SL
3&4-Methylphenol	106-44-5	1 : 1 : 1	100.00	250-250	6.40E+02	6.40E+02	6.40E+02	No	NA	--	3.50E+02	Yes	Yes	>SL
4-Chloroaniline	106-47-8	1 : 1 : 1	100.00	500-500	4.20E+03	4.20E+03	4.20E+03	No	NA	--	2.80E+01	Yes	Yes	>SL
4-Nitroaniline	100-01-6	1 : 1 : 1	100.00	1250-1250	7.00E+02	7.00E+02	7.00E+02	No	NA	--	2.10E+01	Yes	Yes	>SL

TABLE 2.6
COPC SELECTION - SHALLOW GROUNDWATER AND LEACHATE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Naphthalene	91-20-3	1 : 1 : 1	100.00	250-250	5.70E+02	5.70E+02	5.70E+02	No	NA	--	1.40E+02	Yes	Yes	>SL
Nitrobenzene	98-95-3	1 : 1 : 1	100.00	250-250	8.00E+01	8.00E+01	8.00E+01	No	NA	--	3.50E+00	Yes	Yes	>SL
Phenol	108-95-2	1 : 1 : 1	100.00	250-250	3.80E+03	3.80E+03	3.80E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
Pesticide														
beta-BHC	319-85-7	1 : 1 : 1	100.00	1.2-1.2	2.50E+00 J	2.50E+00 J	2.50E+00	No	NA	--	2.00E-01	Yes	Yes	>SL
Dieldrin	60-57-1	1 : 1 : 1	100.00	2.5-2.5	2.60E-01 J	2.60E-01 J	2.60E-01	No	NA	--	9.00E+00	No	No	</=SL
Heptachlor	76-44-8	1 : 1 : 1	100.00	1.2-1.2	2.30E-01 J	2.30E-01 J	2.30E-01	No	NA	--	4.00E-01	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	1 : 1 : 1	100.00	50-50	4.80E+02	4.80E+02	4.80E+02	No	NA	--	2.80E+02	Yes	Yes	>SL
2,4-D	94-75-7	1 : 1 : 1	100.00	50-50	9.30E+02 J	9.30E+02 J	9.30E+02	No	NA	--	7.00E+01	Yes	Yes	>SL
Dichlorprop	120-36-5	1 : 1 : 1	100.00	600-600	9.70E+01	9.70E+01	9.70E+01	No	NA	--	2.90E+02	No	No	</=SL
Pentachlorophenol	87-86-5	1 : 1 : 1	100.00	100-100	7.80E+02 J	7.80E+02 J	7.80E+02	No	NA	--	1.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	1 : 1 : 1	100.00	-	5.49E+01	5.49E+01	5.49E+01	No	NA	--	5.00E-01	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	1 : 1 : 1	100.00	-	7.20E-04	7.20E-04	7.20E-04	No	NA	--	3.00E-05	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	200-200	6.00E+02	6.00E+02	6.00E+02	No	NA	--	3.50E+03	No	No	</=SL
Arsenic	7440-38-2	1 : 1 : 1	100.00	10-10	2.80E+01	2.80E+01	2.80E+01	No	NA	--	1.00E+01	Yes	Yes	>SL
Barium	7440-39-3	1 : 1 : 1	100.00	10-10	2.30E+02	2.30E+02	2.30E+02	No	NA	--	2.00E+03	No	No	</=SL
Cadmium	7440-43-9	1 : 1 : 1	100.00	5-5	1.00E+00	1.00E+00	1.00E+00	No	NA	--	5.00E+00	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	500-500	4.60E+05	4.60E+05	4.60E+05	Yes	NA	--	NA	--	No	EN
Cobalt	7440-48-4	1 : 1 : 1	100.00	10-10	2.40E+00 J	2.40E+00 J	2.40E+00	No	NA	--	1.00E+03	No	No	</=SL
Copper	7440-50-8	1 : 1 : 1	100.00	20-20	1.00E+01	1.00E+01	1.00E+01	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	50-50	2.70E+03	2.70E+03	2.70E+03	Yes	NA	--	5.00E+03	No	No	EN
Lead	7439-92-1	1 : 1 : 1	100.00	5-5	4.50E+00	4.50E+00	4.50E+00	No	NA	--	7.50E+00	No	No	</=SL
Magnesium	7439-95-4	1 : 1 : 1	100.00	500-500	2.00E+05	2.00E+05	2.00E+05	Yes	NA	--	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	10-10	1.80E+04	1.80E+04	1.80E+04	No	NA	--	1.50E+02	Yes	Yes	>SL
Mercury	7439-97-6	1 : 1 : 1	100.00	0.2-0.2	1.20E+00	1.20E+00	1.20E+00	No	NA	--	2.00E+00	No	No	</=SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Nickel	7440-02-0	1 : 1 : 1	100.00	40-40	1.40E+01	1.40E+01	1.40E+01	No	NA	--	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	1000-1000	1.60E+04	1.60E+04	1.60E+04	Yes	NA	--	NA	--	No	EN
Silver	7440-22-4	1 : 1 : 1	100.00	10-10	8.00E-01	8.00E-01	8.00E-01	No	NA	--	5.00E+01	No	No	</=SL
Sodium	7440-23-5	1 : 1 : 1	100.00	500-500	7.00E+04	7.00E+04	7.00E+04	Yes	NA	--	NA	--	No	EN
Thallium	7440-28-0	1 : 1 : 1	100.00	10-10	3.70E+00	3.70E+00	3.70E+00	No	NA	--	2.00E+00	Yes	Yes	>SL
Zinc	7440-66-6	1 : 1 : 1	100.00	20-20	2.20E+02	2.20E+02	2.20E+02	No	NA	--	5.00E+03	No	No	</=SL
Leachate	**Site Q North - LEACH-Q-1**													
VOCs														
1,1,1-Trichloroethane	71-55-6	5 : 5 : 5	100.00	20-20	7.35E+00	1.50E+01	1.25E+01	No	NA	--	2.00E+02	No	No	</=SL
1,1,2-Trichloroethane	79-00-5	2 : 5 : 5	40.00	10-20	2.60E+00	3.60E+00	3.10E+00	No	NA	--	5.00E+00	No	No	</=SL
1,1-Dichloroethane	75-34-3	1 : 5 : 5	20.00	10-20	3.10E+00	3.10E+00	3.10E+00	No	NA	--	7.00E+02	No	No	</=SL
1,2-Dichloroethane	107-06-2	5 : 5 : 5	100.00	20-20	1.20E+03	2.30E+03	1.95E+03	No	NA	--	5.00E+00	Yes	Yes	>SL
1,2-Dichloroethene (total)	540-59-0	4 : 5 : 5	80.00	20-40	8.25E+00 J	1.30E+01	1.06E+01	No	NA	--	7.00E+01	No	No	</=SL
2-Butanone	78-93-3	3 : 5 : 5	60.00	100-200	3.40E+01 J	4.70E+01	4.07E+01	No	NA	--	4.20E+03	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	5 : 5 : 5	100.00	200-200	3.70E+02	9.95E+02	7.51E+02	No	NA	--	2.00E+03	No	No	</=SL
Acetone	67-64-1	5 : 5 : 5	100.00	500-500	3.40E+02	2.10E+03	1.06E+03	No	NA	--	6.30E+03	No	No	</=SL
Benzene	71-43-2	5 : 5 : 5	100.00	20-20	3.50E+02	5.10E+02	4.39E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	1 : 5 : 5	20.00	10-20	3.30E+01	3.30E+01	3.30E+01	No	NA	--	7.00E+02	No	No	</=SL
Chlorobenzene	108-90-7	5 : 5 : 5	100.00	20-20	9.00E+02	1.80E+03	1.39E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroform	67-66-3	5 : 5 : 5	100.00	20-20	4.50E+01	7.00E+01	5.83E+01	No	NA	--	8.00E+01	No	No	</=SL
Chloromethane	74-87-3	1 : 5 : 5	20.00	10-20	9.20E+00 J	9.20E+00 J	9.20E+00	No	NA	--	1.60E+02	No	No	</=SL
Dichloromethane	75-09-2	5 : 5 : 5	100.00	100-100	3.40E+01	5.50E+01	4.63E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
Ethylbenzene	100-41-4	5 : 5 : 5	100.00	20-20	3.25E+01	5.45E+01	4.74E+01	No	NA	--	7.00E+02	No	No	</=SL
Tetrachloroethene	127-18-4	5 : 5 : 5	100.00	20-20	8.25E+01	1.40E+02	1.07E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Toluene	108-88-3	5 : 5 : 5	100.00	20-20	9.25E+02 J	1.20E+03	1.07E+03	No	NA	--	1.00E+03	Yes	Yes	>SL
Trichloroethylene	79-01-6	5 : 5 : 5	100.00	20-20	1.80E+01	3.00E+01	2.18E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
Vinyl chloride	75-01-4	2 : 4 : 5	50.00	10-20	4.10E+00	5.60E+00	4.85E+00	No	NA	--	2.00E+00	Yes	Yes	>SL
Xylenes, Total	1330-20-7	5 : 5 : 5	100.00	40-40	3.05E+02	5.70E+02	4.33E+02	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
1,2,4-Trichlorobenzene	120-82-1	1 : 4 : 5	25.00	100-3800	4.70E+01	4.70E+01	4.70E+01	No	NA	--	7.00E+01	No	No	</=SL
1,2-Dichlorobenzene	95-50-1	4 : 5 : 5	80.00	100-3800	1.95E+02	4.00E+02	2.94E+02	No	NA	--	6.00E+02	No	No	</=SL
1,3-Dichlorobenzene	541-73-1	1 : 4 : 5	25.00	100-3800	3.65E+01	3.65E+01	3.65E+01	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 4 : 5	25.00	100-3800	8.15E+01	8.15E+01	8.15E+01	No	NA	--	7.50E+01	Yes	Yes	>SL
2,4,6-Trichlorophenol	88-06-2	5 : 5 : 5	100.00	2000-10000	9.80E+03	1.40E+04 J	1.21E+04	No	NA	--	1.00E+01	Yes	Yes	>SL
2,4-Dichlorophenol	120-83-2	5 : 5 : 5	100.00	2000-20000	9.80E+04	1.80E+05	1.47E+05	No	NA	--	2.10E+01	Yes	Yes	>SL
2,4-Dimethylphenol	105-67-9	3 : 4 : 4	75.00	100-3800	2.40E+02	3.10E+02	2.63E+02	No	NA	--	1.40E+02	Yes	Yes	>SL
2-Chlorophenol	95-57-8	5 : 5 : 5	100.00	100-2000	5.00E+03	1.30E+04 J	8.96E+03	No	NA	--	3.50E+01	Yes	Yes	>SL
2-Methylphenol	95-48-7	1 : 4 : 5	25.00	100-3800	4.90E+01	4.90E+01	4.90E+01	No	NA	--	3.50E+02	No	No	</=SL
2-Nitroaniline	88-74-4	5 : 5 : 5	100.00	500-10000	8.00E+03	2.20E+04	1.72E+04	No	NA	--	2.10E+01	Yes	Yes	>SL
3&4-Methylphenol	106-44-5	5 : 5 : 5	100.00	100-2000	8.20E+02	2.60E+03 J	1.78E+03	No	NA	--	3.50E+02	Yes	Yes	>SL
4-Chloroaniline	106-47-8	4 : 5 : 5	80.00	200-7500	9.30E+03	1.50E+04 J	1.24E+04	No	NA	--	2.80E+01	Yes	Yes	>SL
4-Nitroaniline	100-01-6	4 : 5 : 5	80.00	500-19000	1.07E+03	3.10E+03	2.00E+03	No	NA	--	2.10E+01	Yes	Yes	>SL
4-Nitrophenol	100-02-7	1 : 5 : 5	20.00	500-19000	5.70E+02	5.70E+02	5.70E+02	No	NA	--	5.60E+01	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	2 : 5 : 5	40.00	100-3800	1.00E+01	1.40E+02	7.50E+01	No	NA	--	2.10E+02	No	No	</=SL
Dibenzo(a,h)anthracene	53-70-3	1 : 5 : 5	20.00	100-3800	9.60E+00	9.60E+00	9.60E+00	No	NA	--	3.00E-01	Yes	Yes	>SL
Diethyl Phthalate	84-66-2	1 : 5 : 5	20.00	100-3800	7.00E+01 J	7.00E+01 J	7.00E+01	No	NA	--	5.60E+03	No	No	</=SL
Dinoseb	88-85-7	1 : 5 : 5	20.00	100-3800	4.50E+02	4.50E+02	4.50E+02	No	NA	--	7.00E+00	Yes	Yes	>SL
Indeno(1,2,3-cd)pyrene	193-39-5	1 : 4 : 5	25.00	100-3800	9.00E+00	9.00E+00	9.00E+00	No	NA	--	4.30E-01	Yes	Yes	>SL
Naphthalene	91-20-3	3 : 4 : 5	75.00	100-3800	1.20E+03	1.90E+03	1.47E+03	No	NA	--	1.40E+02	Yes	Yes	>SL
Nitrobenzene	98-95-3	5 : 5 : 5	100.00	100-2000	8.10E+02	1.70E+03	1.42E+03	No	NA	--	3.50E+00	Yes	Yes	>SL
N-Nitrosodiphenylamine	86-30-6	1 : 5 : 5	20.00	100-3800	2.40E+01	2.40E+01	2.40E+01	No	NA	--	3.20E+00	Yes	Yes	>SL
Phenol	108-95-2	5 : 5 : 5	100.00	100-2000	4.00E+03 J	1.90E+04 J	1.05E+04	No	NA	--	1.00E+02	Yes	Yes	>SL
Pesticide														
beta-BHC	319-85-7	2 : 4 : 4	50.00	0.5-25	1.35E+01 J	1.70E+01 J	1.53E+01	No	NA	--	2.00E-01	Yes	Yes	>SL
Endrin Ketone	53494-70-5	1 : 4 : 4	25.00	1-50	3.20E+00 J	3.20E+00 J	3.20E+00	No	NA	--	2.00E+00	Yes	Yes	>SL
Herbicide														
2,4,5-T	93-76-5	1 : 5 : 5	20.00	500-25000	3.10E+02 J	3.10E+02 J	3.10E+02	No	NA	--	2.80E+02	Yes	Yes	>SL
2,4-D	94-75-7	4 : 5 : 5	80.00	500-25000	4.30E+04	1.40E+05	8.20E+04	No	NA	--	7.00E+01	Yes	Yes	>SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Dicamba	1918-00-9	1 : 5 : 5	20.00	500-60000	4.55E+02	4.55E+02	4.55E+02	No	NA	--	2.10E+02	Yes	Yes	>SL
Dichlorprop	120-36-5	3 : 5 : 5	60.00	6000-300000	1.10E+03	1.35E+03	1.22E+03	No	NA	--	2.90E+02	Yes	Yes	>SL
Pentachlorophenol	87-86-5	4 : 5 : 5	80.00	1000-50000	5.00E+02	6.30E+03 J	2.99E+03	No	NA	--	1.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	4 : 4 : 4	100.00	-	1.25E+00	4.79E+01	1.67E+01	No	NA	--	5.00E-01	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	4 : 4 : 4	100.00	-	2.14E-05	1.58E-03	4.75E-04	No	NA	--	3.00E-05	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	5 : 5 : 5	100.00	200-200	4.00E+01	3.60E+04	9.03E+03	No	NA	--	3.50E+03	Yes	Yes	>SL
Antimony	7440-36-0	5 : 5 : 5	100.00	20-20	1.10E+01	3.90E+01	2.08E+01	No	NA	--	6.00E+00	Yes	Yes	>SL
Arsenic	7440-38-2	2 : 5 : 5	40.00	10-10	9.90E+00 J	5.80E+01	3.40E+01	No	NA	--	1.00E+01	Yes	Yes	>SL
Barium	7440-39-3	5 : 5 : 5	100.00	10-10	5.80E+01	5.60E+03 J	1.33E+03	No	NA	--	2.00E+03	Yes	Yes	>SL
Beryllium	7440-41-7	2 : 5 : 5	40.00	4-4	7.95E-01	2.30E+00	1.55E+00	No	NA	--	4.00E+00	No	No	</=SL
Cadmium	7440-43-9	2 : 5 : 5	40.00	5-5	5.90E+00	2.30E+01	1.44E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
Calcium	7440-70-2	5 : 5 : 5	100.00	500-1000	1.90E+05	6.70E+05 J	3.50E+05	Yes	NA	--	NA	--	No	EN
Chromium	7440-47-3	5 : 5 : 5	100.00	10-10	1.30E+01	2.30E+02 J	6.58E+01	No	NA	--	1.00E+02	Yes	Yes	>SL
Cobalt	7440-48-4	5 : 5 : 5	100.00	10-10	6.60E+01	1.75E+02	1.12E+02	No	NA	--	1.00E+03	No	No	</=SL
Copper	7440-50-8	3 : 5 : 5	60.00	20-20	2.30E+00	6.60E+03	2.37E+03	No	NA	--	6.50E+02	Yes	Yes	>SL
Iron	7439-89-6	5 : 5 : 5	100.00	50-50	1.50E+04	1.10E+05	3.90E+04	Yes	NA	--	5.00E+03	Yes	No	EN
Lead	7439-92-1	2 : 5 : 5	40.00	5-5	4.15E+02 J	2.80E+03	1.61E+03	No	NA	--	7.50E+00	Yes	Yes	>SL
Magnesium	7439-95-4	5 : 5 : 5	100.00	500-500	2.20E+04	5.45E+04 J	3.47E+04	Yes	NA	--	NA	--	No	EN
Manganese	7439-96-5	5 : 5 : 5	100.00	10-10	1.40E+03	2.30E+03	1.89E+03	No	NA	--	1.50E+02	Yes	Yes	>SL
Mercury	7439-97-6	2 : 5 : 5	40.00	0.2-1	1.90E+00	5.90E+00 J	3.90E+00	No	NA	--	2.00E+00	Yes	Yes	>SL
Nickel	7440-02-0	5 : 5 : 5	100.00	40-40	3.00E+02	1.85E+03	8.04E+02	No	NA	--	1.00E+02	Yes	Yes	>SL
Potassium	7440-09-7	5 : 5 : 5	100.00	1000-1000	1.10E+04	1.80E+04 J	1.45E+04	Yes	NA	--	NA	--	No	EN
Selenium	7782-49-2	1 : 5 : 5	20.00	10-10	8.60E+00	8.60E+00	8.60E+00	No	NA	--	5.00E+01	No	No	</=SL
Silver	7440-22-4	3 : 5 : 5	60.00	10-10	9.20E-01	7.10E+00	3.44E+00	No	NA	--	5.00E+01	No	No	</=SL
Sodium	7440-23-5	5 : 5 : 5	100.00	500-5000	6.20E+04	9.70E+04	7.50E+04	Yes	NA	--	NA	--	No	EN
Vanadium	7440-62-2	5 : 5 : 5	100.00	10-10	1.80E+01	3.10E+02	9.65E+01	No	NA	--	4.90E+01	Yes	Yes	>SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Zinc	7440-66-6	5 : 5 : 5	100.00	20-20	6.50E+03	2.20E+04	1.27E+04	No	NA	--	5.00E+03	Yes	Yes	>SL
Leachate	**Site R - LEACH-R-1**													
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 4 : 4	25.00	10-200000	2.30E+01	2.30E+01	2.30E+01	No	NA	--	2.00E+02	No	No	</=SL
1,1,2-Trichloroethane	79-00-5	1 : 4 : 4	25.00	10-200000	1.20E+02	1.20E+02	1.20E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
1,1-Dichloroethylene	75-35-4	2 : 4 : 4	50.00	10-200000	1.80E+02	3.10E+02	2.45E+02	No	NA	--	7.00E+00	Yes	Yes	>SL
1,2-Dichloroethane	107-06-2	4 : 4 : 4	100.00	000-200000	4.70E+04	1.97E+06	5.31E+05	No	NA	--	5.00E+00	Yes	Yes	>SL
1,2-Dichloroethene (total)	540-59-0	4 : 4 : 4	100.00	000-400000	1.30E+04	1.20E+06	3.12E+05	No	NA	--	7.00E+01	Yes	Yes	>SL
1,2-Dichloropropane	78-87-5	1 : 4 : 4	25.00	10-200000	1.00E+01	1.00E+01	1.00E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
2-Butanone	78-93-3	3 : 4 : 4	75.00	000-200000	7.90E+03	1.20E+04	9.72E+03	No	NA	--	4.20E+03	Yes	Yes	>SL
4-Methyl-2-pentanone	108-10-1	1 : 4 : 4	25.00	00-2000000	2.10E+03	2.10E+03	2.10E+03	No	NA	--	2.00E+03	Yes	Yes	>SL
Acetone	67-64-1	3 : 4 : 4	75.00	000-500000	3.20E+04	8.00E+04	5.10E+04	No	NA	--	6.30E+03	Yes	Yes	>SL
Benzene	71-43-2	4 : 4 : 4	100.00	000-200000	5.90E+03	1.47E+06	3.72E+05	No	NA	--	5.00E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	1 : 4 : 4	25.00	10-200000	5.20E+02	5.20E+02	5.20E+02	No	NA	--	7.00E+02	No	No	</=SL
Chlorobenzene	108-90-7	4 : 4 : 4	100.00	10-200000	1.10E+03	1.03E+06	2.59E+05	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroform	67-66-3	4 : 4 : 4	100.00	000-200000	2.00E+03	3.07E+05	7.85E+04	No	NA	--	8.00E+01	Yes	Yes	>SL
Chloromethane	74-87-3	1 : 4 : 4	25.00	10-200000	1.51E+05	1.51E+05	1.51E+05	No	NA	--	1.60E+02	Yes	Yes	>SL
Dichloromethane	75-09-2	3 : 4 : 4	75.00	000-100000	1.90E+03	2.50E+03	2.28E+03	No	NA	--	5.00E+00	Yes	Yes	>SL
Ethylbenzene	100-41-4	2 : 4 : 4	50.00	10-200000	1.70E+02	3.67E+05	1.83E+05	No	NA	--	7.00E+02	Yes	Yes	>SL
Styrene	100-42-5	1 : 4 : 4	25.00	10-200000	1.90E+01	1.90E+01	1.90E+01	No	NA	--	1.00E+02	No	No	</=SL
Tetrachloroethene	127-18-4	4 : 4 : 4	100.00	000-100000	1.80E+04	6.87E+07	1.72E+07	No	NA	--	5.00E+00	Yes	Yes	>SL
Toluene	108-88-3	4 : 4 : 4	100.00	000-200000	1.60E+04	1.73E+07	4.35E+06	No	NA	--	1.00E+03	Yes	Yes	>SL
Trichloroethylene	79-01-6	4 : 4 : 4	100.00	000-100000	1.00E+05	7.97E+07	2.00E+07	No	NA	--	5.00E+00	Yes	Yes	>SL
Vinyl chloride	75-01-4	1 : 4 : 4	25.00	10-200000	1.50E+02	1.50E+02	1.50E+02	No	NA	--	2.00E+00	Yes	Yes	>SL
Xylenes, Total	1330-20-7	3 : 4 : 4	75.00	20-400000	4.70E+02 J	1.07E+06	3.56E+05	No	NA	--	1.00E+04	Yes	Yes	>SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	1 : 4 : 4	25.00	1000-25000	2.77E+04	2.77E+04	2.77E+04	No	NA	--	7.00E+01	Yes	Yes	>SL
1,2-Dichlorobenzene	95-50-1	2 : 4 : 4	50.00	1000-25000	2.70E+03	2.33E+04	1.30E+04	No	NA	--	6.00E+02	Yes	Yes	>SL
1,4-Dichlorobenzene	106-46-7	2 : 4 : 4	50.00	1000-25000	7.60E+03	3.77E+04	2.26E+04	No	NA	--	7.50E+01	Yes	Yes	>SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
2,4,6-Trichlorophenol	88-06-2	3 : 4 : 4	75.00	1000-25000	3.00E+02	3.23E+04	1.23E+04	No	NA	--	1.00E+01	Yes	Yes	>SL
2,4-Dichlorophenol	120-83-2	3 : 4 : 4	75.00	1000-25000	5.20E+02	2.43E+04 J	9.58E+03	No	NA	--	2.10E+01	Yes	Yes	>SL
2,4-Dimethylphenol	105-67-9	2 : 4 : 4	50.00	1000-25000	1.02E+03	1.90E+04	1.00E+04	No	NA	--	1.40E+02	Yes	Yes	>SL
2-Chlorophenol	95-57-8	4 : 4 : 4	100.00	1000-25000	1.10E+04	1.09E+05 J	3.86E+04	No	NA	--	3.50E+01	Yes	Yes	>SL
2-Methylnaphthalene	91-57-6	2 : 4 : 4	50.00	1000-25000	8.20E+02	1.62E+04	8.53E+03	No	NA	--	2.80E+01	Yes	Yes	>SL
2-Methylphenol	95-48-7	1 : 4 : 4	25.00	1000-25000	1.55E+04	1.55E+04	1.55E+04	No	NA	--	3.50E+02	Yes	Yes	>SL
2-Nitroaniline	88-74-4	3 : 4 : 4	75.00	5000-125000	6.90E+03	4.87E+04 J	2.10E+04	No	NA	--	2.10E+01	Yes	Yes	>SL
3&4-Methylphenol	106-44-5	4 : 4 : 4	100.00	100-25000	4.50E+03	2.59E+04 J	1.12E+04	No	NA	--	3.50E+02	Yes	Yes	>SL
3,3'-Dichlorobenzidine	91-94-1	1 : 4 : 4	25.00	2000-50000	2.40E+02	2.40E+02	2.40E+02	No	NA	--	2.00E+01	Yes	Yes	>SL
4-Chloroaniline	106-47-8	4 : 4 : 4	100.00	000-100000	2.00E+04	5.39E+05 J	1.75E+05	No	NA	--	2.80E+01	Yes	Yes	>SL
4-Nitroaniline	100-01-6	3 : 4 : 4	75.00	0000-50000	1.80E+04	5.40E+04	4.13E+04	No	NA	--	2.10E+01	Yes	Yes	>SL
Benzo(a)pyrene	50-32-8	1 : 4 : 4	25.00	1000-25000	1.80E+02	1.80E+02	1.80E+02	No	NA	--	2.00E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	1 : 4 : 4	25.00	1000-25000	1.42E+04	1.42E+04	1.42E+04	No	NA	--	1.80E-01	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	3 : 4 : 4	75.00	1000-25000	2.00E+02	1.42E+04	5.27E+03	No	NA	--	2.10E+02	Yes	Yes	>SL
Benzo(k)fluoranthene	207-08-9	2 : 4 : 4	50.00	1000-25000	2.00E+02	1.41E+04	7.13E+03	No	NA	--	1.70E-01	Yes	Yes	>SL
Benzyl Butyl Phthalate	85-68-7	2 : 4 : 4	50.00	1000-25000	1.20E+04 J	6.67E+04	3.93E+04	No	NA	--	1.40E+03	Yes	Yes	>SL
bis(2-Ethylhexyl)phthalate	117-81-7	1 : 4 : 4	25.00	1000-25000	1.20E+03	1.20E+03	1.20E+03	No	NA	--	6.00E+00	Yes	Yes	>SL
Chrysene	218-01-9	1 : 4 : 4	25.00	1000-25000	1.40E+03	1.40E+03	1.40E+03	No	NA	--	1.50E+00	Yes	Yes	>SL
Dibenzo(a,h)anthracene	53-70-3	1 : 4 : 4	25.00	1000-25000	1.90E+02	1.90E+02	1.90E+02	No	NA	--	3.00E-01	Yes	Yes	>SL
Diethyl Phthalate	84-66-2	3 : 4 : 4	75.00	1000-25000	2.30E+03	1.26E+05 J	5.24E+04	No	NA	--	5.60E+03	Yes	Yes	>SL
Dimethyl Phthalate	131-11-3	4 : 4 : 4	100.00	1000-25000	4.20E+03	5.65E+04 J	1.87E+04	No	NA	--	3.60E+05	No	No	</=SL
Di-n-butylphthalate	84-74-2	3 : 4 : 4	75.00	1000-25000	1.93E+03	6.67E+04	2.82E+04	No	NA	--	7.00E+02	Yes	Yes	>SL
Di-n-octylphthalate	117-84-0	3 : 4 : 4	75.00	1000-25000	2.40E+02	2.40E+04	8.88E+03	No	NA	--	1.40E+02	Yes	Yes	>SL
Indeno(1,2,3-cd)pyrene	193-39-5	1 : 4 : 4	25.00	1000-25000	2.80E+02	2.80E+02	2.80E+02	No	NA	--	4.30E-01	Yes	Yes	>SL
Naphthalene	91-20-3	1 : 4 : 4	25.00	1000-25000	5.60E+03	5.60E+03	5.60E+03	No	NA	--	1.40E+02	Yes	Yes	>SL
N-Nitrosodiphenylamine	86-30-6	2 : 4 : 4	50.00	1000-25000	1.30E+03	1.90E+04	1.02E+04	No	NA	--	3.20E+00	Yes	Yes	>SL
Phenol	108-95-2	4 : 4 : 4	100.00	0000-50000	6.80E+05	3.43E+06 J	1.64E+06	No	NA	--	1.00E+02	Yes	Yes	>SL
Pesticide														
4,4'-DDT	50-29-3	2 : 4 : 4	50.00	20-330000	2.10E+02 J	8.20E+02 J	5.15E+02	No	NA	--	6.00E+00	Yes	Yes	>SL
beta-BHC	319-85-7	2 : 4 : 4	50.00	10-160000	2.00E+02 J	3.40E+02	2.70E+02	No	NA	--	2.00E-01	Yes	Yes	>SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Dieldrin	60-57-1	1 : 4 : 4	25.00	20-330000	1.90E+02 J	1.90E+02 J	1.90E+02	No	NA	--	9.00E+00	Yes	Yes	>SL
Endosulfan II	33213-65-9	1 : 4 : 4	25.00	20-330000	3.10E+01 J	3.10E+01 J	3.10E+01	No	NA	--	4.20E+01	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	1 : 4 : 4	25.00	10-160000	2.80E+01 J	2.80E+01 J	2.80E+01	No	NA	--	2.00E-01	Yes	Yes	>SL
Heptachlor	76-44-8	1 : 4 : 4	25.00	10-160000	2.10E+02 J	2.10E+02 J	2.10E+02	No	NA	--	4.00E-01	Yes	Yes	>SL
Herbicide														
2,4,5-T	93-76-5	2 : 4 : 4	50.00	50-800	6.60E+01 J	1.14E+03	6.03E+02	No	NA	--	2.80E+02	Yes	Yes	>SL
2,4,5-TP (Silvex)	93-72-1	1 : 4 : 4	25.00	50-800	6.90E+01 J	6.90E+01 J	6.90E+01	No	NA	--	5.00E+01	Yes	Yes	>SL
2,4-D	94-75-7	2 : 4 : 4	50.00	50-1600	3.80E+03	9.70E+03	6.75E+03	No	NA	--	7.00E+01	Yes	Yes	>SL
2,4-DB	94-82-6	2 : 4 : 4	50.00	50-1600	1.50E+02 J	8.13E+03 J	4.14E+03	No	NA	--	2.90E+02	Yes	Yes	>SL
Dichlorprop	120-36-5	1 : 4 : 4	25.00	600-15000	8.00E+02 J	8.00E+02 J	8.00E+02	No	NA	--	2.90E+02	Yes	Yes	>SL
MCPA	94-74-6	1 : 4 : 4	25.00	2000-38400	1.09E+06 J	1.09E+06 J	1.09E+06	No	NA	--	3.50E+00	Yes	Yes	>SL
MCPP	93-65-2	1 : 4 : 4	25.00	2000-19000	4.50E+03 J	4.50E+03 J	4.50E+03	No	NA	--	7.00E+00	Yes	Yes	>SL
Pentachlorophenol	87-86-5	2 : 4 : 4	50.00	100-1600	9.40E+01	7.10E+02	4.02E+02	No	NA	--	1.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	4 : 4 : 4	100.00	-	4.06E+03	1.75E+05	8.90E+04	No	NA	--	5.00E-01	Yes	Yes	>SL
Dioxin														
Dioxin TEQ-HH	Dioxin TEQ	3 : 4 : 4	75.00	-	1.53E-05	2.81E-03	1.30E-03	No	NA	--	3.00E-05	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	4 : 4 : 4	100.00	200-2000	9.00E+03	1.50E+04 J	1.10E+04	No	NA	--	3.50E+03	Yes	Yes	>SL
Arsenic	7440-38-2	4 : 4 : 4	100.00	10-100	2.10E+01 J	5.10E+01	4.02E+01	No	NA	--	1.00E+01	Yes	Yes	>SL
Barium	7440-39-3	4 : 4 : 4	100.00	10-100	8.87E+01 J	1.40E+02	1.16E+02	No	NA	--	2.00E+03	No	No	</=SL
Beryllium	7440-41-7	4 : 4 : 4	100.00	4-40	2.50E+01	3.10E+01	2.70E+01	No	NA	--	4.00E+00	Yes	Yes	>SL
Cadmium	7440-43-9	3 : 4 : 4	75.00	5-50	3.20E+00	6.40E+01	2.64E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
Calcium	7440-70-2	4 : 4 : 4	100.00	2500-5000	1.47E+06 J	1.80E+06	1.63E+06	Yes	NA	--	NA	--	No	EN
Chromium	7440-47-3	4 : 4 : 4	100.00	10-100	4.07E+02 J	6.00E+02	4.72E+02	No	NA	--	1.00E+02	Yes	Yes	>SL
Cobalt	7440-48-4	4 : 4 : 4	100.00	10-100	1.70E+03	2.60E+03	2.19E+03	No	NA	--	1.00E+03	Yes	Yes	>SL
Copper	7440-50-8	3 : 4 : 4	75.00	20-200	2.33E+01	3.00E+02 J	1.16E+02	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	4 : 4 : 4	100.00	50-500	1.50E+05	3.70E+05	2.33E+05	Yes	NA	--	5.00E+03	Yes	No	EN
Lead	7439-92-1	2 : 4 : 4	50.00	25-120	2.33E+01	7.00E+01 J	4.67E+01	No	NA	--	7.50E+00	Yes	Yes	>SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Magnesium	7439-95-4	4 : 4 : 4	100.00	2500-12000	2.00E+05	2.50E+05	2.20E+05	Yes	NA	--	NA	--	No	EN
Manganese	7439-96-5	4 : 4 : 4	100.00	50-250	9.20E+04	2.50E+05	1.49E+05	No	NA	--	1.50E+02	Yes	Yes	>SL
Mercury	7439-97-6	3 : 4 : 4	75.00	0.2-2	2.50E+00 J	3.00E+01	1.52E+01	No	NA	--	2.00E+00	Yes	Yes	>SL
Nickel	7440-02-0	4 : 4 : 4	100.00	40-400	1.67E+03 J	2.20E+03 J	1.95E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
Potassium	7440-09-7	4 : 4 : 4	100.00	5000-10000	3.20E+05 J	4.20E+05	3.68E+05	Yes	NA	--	NA	--	No	EN
Selenium	7782-49-2	2 : 4 : 4	50.00	50-250	2.97E+01	5.50E+01	4.23E+01	No	NA	--	5.00E+01	Yes	Yes	>SL
Silver	7440-22-4	2 : 4 : 4	50.00	10-100	3.30E+00	8.80E+00	6.05E+00	No	NA	--	5.00E+01	No	No	</=SL
Sodium	7440-23-5	4 : 4 : 4	100.00	50000-50000	2.90E+06	3.65E+06	3.14E+06	Yes	NA	--	NA	--	No	EN
Thallium	7440-28-0	1 : 4 : 4	25.00	50-250	1.20E+02	1.20E+02	1.20E+02	No	NA	--	2.00E+00	Yes	Yes	>SL
Vanadium	7440-62-2	4 : 4 : 4	100.00	50-250	3.60E+02	1.50E+03	7.75E+02	No	NA	--	4.90E+01	Yes	Yes	>SL
Zinc	7440-66-6	4 : 4 : 4	100.00	100-200	4.80E+04	1.09E+05	7.72E+04	No	NA	--	5.00E+03	Yes	Yes	>SL
Shallow Groundwater	**Site O - AA-O-1-16**													
VOCs														
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	1-1	2.40E+00	2.40E+00	2.40E+00	No	NA	--	7.00E+02	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	2-2	3.00E+00	3.00E+00	3.00E+00	No	NA	--	7.00E+01	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	1-1	1.00E-01	1.00E-01	1.00E-01	No	NA	--	5.00E+00	No	No	</=SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	1-1	7.80E+00	7.80E+00	7.80E+00	No	NA	--	1.00E+02	No	No	</=SL
Vinyl chloride	75-01-4	1 : 1 : 1	100.00	1-1	3.50E-01	3.50E-01	3.50E-01	No	NA	--	2.00E+00	No	No	</=SL
SVOCs														
Benzo(a)pyrene	50-32-8	1 : 1 : 1	100.00	10-10	1.60E+00	1.60E+00	1.60E+00	No	NA	--	2.00E-01	Yes	Yes	>SL
Benzo(b)fluoranthene	205-99-2	1 : 1 : 1	100.00	10-10	1.10E+00	1.10E+00	1.10E+00	No	NA	--	1.80E-01	Yes	Yes	>SL
Benzo(g,h,i)perylene	191-24-2	1 : 1 : 1	100.00	10-10	2.80E+00	2.80E+00	2.80E+00	No	NA	--	2.10E+02	No	No	</=SL
Benzo(k)fluoranthene	207-08-9	1 : 1 : 1	100.00	10-10	1.20E+00	1.20E+00	1.20E+00	No	NA	--	1.70E-01	Yes	Yes	>SL
Dibenzo(a,h)anthracene	53-70-3	1 : 1 : 1	100.00	10-10	2.70E+00	2.70E+00	2.70E+00	No	NA	--	3.00E-01	Yes	Yes	>SL
Indeno(1,2,3-cd)pyrene	193-39-5	1 : 1 : 1	100.00	10-10	3.00E+00	3.00E+00	3.00E+00	No	NA	--	4.30E-01	Yes	Yes	>SL
Pesticide														
alpha-BHC	319-84-6	1 : 1 : 1	100.00	0.05-0.05	8.30E-02 J	8.30E-02 J	8.30E-02	No	NA	--	1.10E-01	No	No	</=SL
beta-BHC	319-85-7	1 : 1 : 1	100.00	0.05-0.05	2.70E-02	2.70E-02	2.70E-02	No	NA	--	2.00E-01	No	No	</=SL
delta-BHC	319-86-8	1 : 1 : 1	100.00	0.05-0.05	1.70E-02 J	1.70E-02 J	1.70E-02	No	NA	--	2.00E-01	No	No	</=SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Dieldrin	60-57-1	1 : 1 : 1	100.00	0.1-0.1	6.50E-03 J	6.50E-03 J	6.50E-03	No	NA	--	9.00E+00	No	No	</=SL
gamma-BHC (Lindane)	58-89-9	1 : 1 : 1	100.00	0.05-0.05	6.70E-03 J	6.70E-03 J	6.70E-03	No	NA	--	2.00E-01	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	1 : 1 : 1	100.00	0.5-0.5	7.20E-01	7.20E-01	7.20E-01	No	NA	--	2.80E+02	No	No	</=SL
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	200-200	5.00E+03	5.00E+03	5.00E+03	No	1.62E+01	Yes	3.50E+03	Yes	Yes	>SL
Arsenic	7440-38-2	1 : 1 : 1	100.00	10-10	7.00E+01	7.00E+01	7.00E+01	No	NA	--	1.00E+01	Yes	Yes	>SL
Barium	7440-39-3	1 : 1 : 1	100.00	10-10	3.00E+02	3.00E+02	3.00E+02	No	2.40E+02	Yes	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	500-500	3.00E+05	3.00E+05	3.00E+05	Yes	2.60E+05	Yes	NA	--	No	EN
Chromium	7440-47-3	1 : 1 : 1	100.00	10-10	8.90E+00	8.90E+00	8.90E+00	No	NA	--	1.00E+02	No	No	</=SL
Cobalt	7440-48-4	1 : 1 : 1	100.00	10-10	2.10E+01	2.10E+01	2.10E+01	No	NA	--	1.00E+03	No	No	</=SL
Copper	7440-50-8	1 : 1 : 1	100.00	20-20	4.30E+00	4.30E+00	4.30E+00	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	50-50	4.10E+04	4.10E+04	4.10E+04	Yes	3.80E+03	Yes	5.00E+03	Yes	No	EN
Iron, Ferrous (2+)	C-FE+2	1 : 1 : 1	100.00	500-500	1.10E+04	1.10E+04	1.10E+04	Yes	1.02E+02	Yes	NA	--	No	EN
Lead	7439-92-1	1 : 1 : 1	100.00	5-5	1.90E+01	1.90E+01	1.90E+01	No	NA	--	7.50E+00	Yes	Yes	>SL
Magnesium	7439-95-4	1 : 1 : 1	100.00	500-500	5.70E+04	5.70E+04	5.70E+04	Yes	7.20E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	10-10	4.10E+03	4.10E+03	4.10E+03	No	3.60E+01	Yes	1.50E+02	Yes	Yes	>SL
Nickel	7440-02-0	1 : 1 : 1	100.00	40-40	4.80E+01	4.80E+01	4.80E+01	No	1.44E+01	Yes	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	5000-5000	6.00E+03	6.00E+03	6.00E+03	Yes	2.60E+03	Yes	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	2500-2500	1.30E+05	1.30E+05	1.30E+05	Yes	1.62E+04	Yes	NA	--	No	EN
Vanadium	7440-62-2	1 : 1 : 1	100.00	10-10	1.60E+01	1.60E+01	1.60E+01	No	NA	--	4.90E+01	No	No	</=SL
Zinc	7440-66-6	1 : 1 : 1	100.00	20-20	6.50E+01	6.50E+01	6.50E+01	No	5.20E+01	Yes	5.00E+03	No	No	</=SL
Shallow Groundwater	**Site O - AA-O-2-13**													
VOCs														
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	1-1	1.90E-01	1.90E-01	1.90E-01	No	NA	--	7.00E+02	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	1-1	3.60E-01	3.60E-01	3.60E-01	No	NA	--	1.00E+03	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	2-2	4.90E-01	4.90E-01	4.90E-01	No	NA	--	1.00E+04	No	No	</=SL
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	200-200	1.90E+03	1.90E+03	1.90E+03	No	1.62E+01	Yes	3.50E+03	No	No	</=SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Barium	7440-39-3	1 : 1 : 1	100.00	10-10	1.30E+02	1.30E+02	1.30E+02	No	2.40E+02	No	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	500-500	1.90E+05	1.90E+05	1.90E+05	Yes	2.60E+05	No	NA	--	No	EN
Chromium	7440-47-3	1 : 1 : 1	100.00	10-10	8.90E+00	8.90E+00	8.90E+00	No	NA	--	1.00E+02	No	No	</=SL
Cobalt	7440-48-4	1 : 1 : 1	100.00	10-10	1.30E+00	1.30E+00	1.30E+00	No	NA	--	1.00E+03	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	50-50	2.90E+03	2.90E+03	2.90E+03	Yes	3.80E+03	No	5.00E+03	No	No	EN
Iron, Ferrous (2+)	C-FE+2	1 : 1 : 1	100.00	100-100	1.40E+01	1.40E+01	1.40E+01	Yes	1.02E+02	No	NA	--	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	500-500	2.90E+04	2.90E+04	2.90E+04	Yes	7.20E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	10-10	6.50E+01	6.50E+01	6.50E+01	No	3.60E+01	Yes	1.50E+02	No	No	</=SL
Nickel	7440-02-0	1 : 1 : 1	100.00	40-40	1.20E+01	1.20E+01	1.20E+01	No	1.44E+01	No	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	1000-1000	7.00E+03	7.00E+03	7.00E+03	Yes	2.60E+03	Yes	NA	--	No	EN
Selenium	7782-49-2	1 : 1 : 1	100.00	10-10	2.20E+01	2.20E+01	2.20E+01	No	NA	--	5.00E+01	No	No	</=SL
Sodium	7440-23-5	1 : 1 : 1	100.00	2500-2500	2.90E+05	2.90E+05	2.90E+05	Yes	1.62E+04	Yes	NA	--	No	EN
Vanadium	7440-62-2	1 : 1 : 1	100.00	10-10	6.30E+00	6.30E+00	6.30E+00	No	NA	--	4.90E+01	No	No	</=SL
Zinc	7440-66-6	1 : 1 : 1	100.00	20-20	1.10E+01	1.10E+01	1.10E+01	No	5.20E+01	No	5.00E+03	No	No	</=SL
Shallow Groundwater	**Site O - GM-19A**													
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 1 : 1	100.00	-	8.80E+00	8.80E+00	8.80E+00	No	NA	--	2.00E+02	No	No	</=SL
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	-	1.45E+01	1.45E+01	1.45E+01	No	9.70E+00	Yes	7.00E+02	No	No	</=SL
1,1-Dichloroethylene	75-35-4	1 : 1 : 1	100.00	-	3.65E+00	3.65E+00	3.65E+00	No	6.90E+00	No	7.00E+00	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	-	6.45E+01	6.45E+01	6.45E+01	No	3.40E+01	Yes	7.00E+01	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	-	6.35E+00	6.35E+00	6.35E+00	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	1.30E+01	1.30E+01	1.30E+01	No	NA	--	1.00E+02	No	No	</=SL
Chloroform	67-66-3	1 : 1 : 1	100.00	-	9.50E-01	9.50E-01	9.50E-01	No	NA	--	8.00E+01	No	No	</=SL
Dichloromethane	75-09-2	1 : 1 : 1	100.00	5-5	1.50E+00	1.50E+00	1.50E+00	No	NA	--	5.00E+00	No	No	</=SL
Tetrachloroethene	127-18-4	1 : 1 : 1	100.00	-	1.10E+02	1.10E+02	1.10E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Trichloroethylene	79-01-6	1 : 1 : 1	100.00	-	5.30E+01	5.30E+01	5.30E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
Vinyl chloride	75-01-4	1 : 1 : 1	100.00	-	1.65E+00	1.65E+00	1.65E+00	No	8.00E-01	Yes	2.00E+00	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	-	3.60E+00	3.60E+00	3.60E+00	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														

TABLE 2.6
COPC SELECTION - SHALLOW GROUNDWATER AND LEACHATE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	-	2.45E+00	2.45E+00	2.45E+00	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	-	1.30E+00	1.30E+00	1.30E+00	No	NA	--	7.50E+01	No	No	</=SL
2,4,5-Trichlorophenol	95-95-4	1 : 1 : 1	100.00	-	1.40E+01	1.40E+01	1.40E+01	No	NA	--	7.00E+02	No	No	</=SL
2,4,6-Trichlorophenol	88-06-2	1 : 1 : 1	100.00	-	4.35E+00	4.35E+00	4.35E+00	No	NA	--	1.00E+01	No	No	</=SL
2,4-Dichlorophenol	120-83-2	1 : 1 : 1	100.00	-	3.90E+00	3.90E+00	3.90E+00	No	NA	--	2.10E+01	No	No	</=SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	-	4.15E+00	4.15E+00	4.15E+00	No	NA	--	3.50E+01	No	No	</=SL
2-Nitroaniline	88-74-4	1 : 1 : 1	100.00	-	2.00E+00	2.00E+00	2.00E+00	No	NA	--	2.10E+01	No	No	</=SL
4-Chloroaniline	106-47-8	1 : 1 : 1	100.00	-	4.95E+00 J	4.95E+00 J	4.95E+00	No	NA	--	2.80E+01	No	No	</=SL
4-Nitroaniline	100-01-6	1 : 1 : 1	100.00	-	3.55E+00	3.55E+00	3.55E+00	No	NA	--	2.10E+01	No	No	</=SL
Pesticide														
delta-BHC	319-86-8	1 : 1 : 1	100.00	-	1.30E-01	1.30E-01	1.30E-01	No	NA	--	2.00E-01	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	1 : 1 : 1	100.00	-	2.25E+00	2.25E+00	2.25E+00	No	NA	--	2.80E+02	No	No	</=SL
2,4,5-TP (Silvex)	93-72-1	1 : 1 : 1	100.00	2.4-2.4	4.50E-01	4.50E-01	4.50E-01	No	NA	--	5.00E+01	No	No	</=SL
2,4-D	94-75-7	1 : 1 : 1	100.00	-	2.50E+00	2.50E+00	2.50E+00	No	NA	--	7.00E+01	No	No	</=SL
Dichlorprop	120-36-5	1 : 1 : 1	100.00	2.4-2.4	1.50E+00	1.50E+00	1.50E+00	No	NA	--	2.90E+02	No	No	</=SL
Pentachlorophenol	87-86-5	1 : 1 : 1	100.00	-	7.75E+01	7.75E+01	7.75E+01	No	NA	--	1.00E+00	Yes	Yes	>SL
PCBs														
TOTAL PCBs	Total PCBs	1 : 1 : 1	100.00	-	2.23E+00	2.23E+00	2.23E+00	No	NA	--	5.00E-01	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	200-200	4.00E+01	4.00E+01	4.00E+01	No	NA	--	3.50E+03	No	No	</=SL
Barium	7440-39-3	1 : 1 : 1	100.00	-	1.35E+02	1.35E+02	1.35E+02	No	NA	--	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	-	2.35E+05	2.35E+05	2.35E+05	Yes	NA	--	NA	--	No	EN
Cobalt	7440-48-4	1 : 1 : 1	100.00	-	5.20E+00	5.20E+00	5.20E+00	No	NA	--	1.00E+03	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	-	2.02E+02	2.02E+02	2.02E+02	Yes	NA	--	5.00E+03	No	No	EN
Lead	7439-92-1	1 : 1 : 1	100.00	5-5	2.60E+00	2.60E+00	2.60E+00	No	NA	--	7.50E+00	No	No	</=SL
Magnesium	7439-95-4	1 : 1 : 1	100.00	-	4.20E+04	4.20E+04	4.20E+04	Yes	NA	--	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	-	1.40E+03	1.40E+03	1.40E+03	No	NA	--	1.50E+02	Yes	Yes	>SL
Nickel	7440-02-0	1 : 1 : 1	100.00	-	1.55E+01	1.55E+01	1.55E+01	No	NA	--	1.00E+02	No	No	</=SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Potassium	7440-09-7	1 : 1 : 1	100.00	-	8.15E+03	8.15E+03	8.15E+03	Yes	NA	--	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	-	4.25E+04	4.25E+04	4.25E+04	Yes	NA	--	NA	--	No	EN
Zinc	7440-66-6	1 : 1 : 1	100.00	-	5.95E+00	5.95E+00	5.95E+00	No	NA	--	5.00E+03	No	No	</=SL
Shallow Groundwater	**Site O - SA2-MW-4-S**													
VOCs														
1,2,4-Trimethylbenzene	95-63-6	1 : 1 : 1	100.00	-	3.90E+01	3.90E+01	3.90E+01	No	NA	--	3.50E+02	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	50-50	4.40E+03	4.40E+03	4.40E+03	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	100-100	1.10E+04	1.10E+04	1.10E+04	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroethane	75-00-3	1 : 1 : 1	100.00	50-50	6.50E+02	6.50E+02	6.50E+02	No	NA	--	4.60E+00	Yes	Yes	>SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	50-50	6.90E+01	6.90E+01	6.90E+01	No	NA	--	7.00E+02	No	No	</=SL
Isopropylbenzene	98-82-8	1 : 1 : 1	100.00	-	1.30E+01	1.30E+01	1.30E+01	No	NA	--	7.00E+02	No	No	</=SL
n-Propylbenzene	103-65-1	1 : 1 : 1	100.00	-	5.20E+00	5.20E+00	5.20E+00	No	NA	--	2.40E+02	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	100-100	3.10E+03	3.10E+03	3.10E+03	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	9.4-9.4	1.00E+01	1.00E+01	1.00E+01	No	NA	--	6.00E+02	No	No	</=SL
1,3-Dichlorobenzene	541-73-1	1 : 1 : 1	100.00	9.4-9.4	2.70E+01	2.70E+01	2.70E+01	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	9.4-9.4	5.30E+01	5.30E+01	5.30E+01	No	NA	--	7.50E+01	No	No	</=SL
1,4-Dioxane	123-91-1	1 : 1 : 1	100.00	9.4-9.4	4.40E+00	4.40E+00	4.40E+00	No	NA	--	1.00E+00	Yes	Yes	>SL
1-Methylnaphthalene	90-12-0	1 : 1 : 1	100.00	9.4-9.4	6.80E+00	6.80E+00	6.80E+00	No	NA	--	4.90E+02	No	No	</=SL
2,4 & 2,5-Dimethylphenol	dimeth	1 : 1 : 1	100.00	19-19	1.20E+01	1.20E+01	1.20E+01	No	NA	--	1.40E+02	No	No	</=SL
2,4-Dimethylphenol	105-67-9	1 : 1 : 1	100.00	9.4-9.4	1.20E+01	1.20E+01	1.20E+01	No	NA	--	1.40E+02	No	No	</=SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	9.4-9.4	5.50E+01	5.50E+01	5.50E+01	No	NA	--	3.50E+01	Yes	Yes	>SL
2-Methylnaphthalene	91-57-6	1 : 1 : 1	100.00	9.4-9.4	6.10E+00	6.10E+00	6.10E+00	No	NA	--	2.80E+01	No	No	</=SL
4-Chlorophenol	106-48-9	1 : 1 : 1	100.00	-	5.70E+01	5.70E+01	5.70E+01	No	NA	--	3.00E+01	Yes	Yes	>SL
Benzyl Butyl Phthalate	85-68-7	1 : 1 : 1	100.00	9.4-9.4	7.80E-01	7.80E-01	7.80E-01	No	NA	--	1.40E+03	No	No	</=SL
Diethyl Phthalate	84-66-2	1 : 1 : 1	100.00	9.4-9.4	1.30E+00	1.30E+00	1.30E+00	No	NA	--	5.60E+03	No	No	</=SL
Naphthalene	91-20-3	1 : 1 : 1	100.00	9.4-9.4	5.30E+01	5.30E+01	5.30E+01	No	NA	--	1.40E+02	No	No	</=SL
Phenol	108-95-2	1 : 1 : 1	100.00	9.4-9.4	8.00E+01	8.00E+01	8.00E+01	No	NA	--	1.00E+02	No	No	</=SL
Herbicide														

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
2,4,5-TP (Silvex)	93-72-1	1 : 1 : 1	100.00	0.48-0.48	4.80E-02	4.80E-02	4.80E-02	No	NA	--	5.00E+01	No	No	</=SL
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	200-200	3.30E+01	3.30E+01	3.30E+01	No	1.62E+01	Yes	3.50E+03	No	No	</=SL
Arsenic	7440-38-2	1 : 1 : 1	100.00	10-10	9.70E+01	9.70E+01	9.70E+01	No	NA	--	1.00E+01	Yes	Yes	>SL
Barium	7440-39-3	1 : 1 : 1	100.00	10-10	2.30E+02	2.30E+02	2.30E+02	No	2.40E+02	No	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	500-500	1.20E+05	1.20E+05	1.20E+05	Yes	2.60E+05	No	NA	--	No	EN
Cobalt	7440-48-4	1 : 1 : 1	100.00	10-10	1.50E+00	1.50E+00	1.50E+00	No	NA	--	1.00E+03	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	50-50	2.70E+04	2.70E+04	2.70E+04	Yes	3.80E+03	Yes	5.00E+03	Yes	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	500-500	2.30E+04	2.30E+04	2.30E+04	Yes	7.20E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	10-10	4.60E+03	4.60E+03	4.60E+03	No	3.60E+01	Yes	1.50E+02	Yes	Yes	>SL
Nickel	7440-02-0	1 : 1 : 1	100.00	40-40	1.70E+01	1.70E+01	1.70E+01	No	1.44E+01	Yes	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	1000-1000	6.30E+03	6.30E+03	6.30E+03	Yes	2.60E+03	Yes	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	20000-20000	8.60E+04	8.60E+04	8.60E+04	Yes	1.62E+04	Yes	NA	--	No	EN
Zinc	7440-66-6	1 : 1 : 1	100.00	20-20	5.40E+00	5.40E+00	5.40E+00	No	5.20E+01	No	5.00E+03	No	No	</=SL
Shallow Groundwater	**Site P - SA2-MW-1-S**													
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	200-200	3.10E+01	3.10E+01	3.10E+01	No	2.80E+03	No	3.50E+03	No	No	</=SL
Barium	7440-39-3	1 : 1 : 1	100.00	10-10	1.80E+02	1.80E+02	1.80E+02	No	6.00E+02	No	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	500-500	1.20E+05	1.20E+05	1.20E+05	Yes	3.80E+05	No	NA	--	No	EN
Iron	7439-89-6	1 : 1 : 1	100.00	50-50	1.30E+02	1.30E+02	1.30E+02	Yes	9.40E+03	No	5.00E+03	No	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	500-500	1.60E+04	1.60E+04	1.60E+04	Yes	8.60E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	10-10	3.80E+01	3.80E+01	3.80E+01	No	3.40E+03	No	1.50E+02	No	No	</=SL
Nickel	7440-02-0	1 : 1 : 1	100.00	40-40	3.50E+00	3.50E+00	3.50E+00	No	4.20E+01	No	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	1000-1000	5.90E+03	5.90E+03	5.90E+03	Yes	1.72E+04	No	NA	--	No	EN
Selenium	7782-49-2	1 : 1 : 1	100.00	10-10	7.10E+00	7.10E+00	7.10E+00	No	NA	--	5.00E+01	No	No	</=SL
Sodium	7440-23-5	1 : 1 : 1	100.00	1000-1000	5.00E+03	5.00E+03	5.00E+03	Yes	9.60E+04	No	NA	--	No	EN
Zinc	7440-66-6	1 : 1 : 1	100.00	20-20	6.80E+00	6.80E+00	6.80E+00	No	4.40E+01	No	5.00E+03	No	No	</=SL
Shallow Groundwater	**Site P - SA2-MW-2-S**													
Metals														

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Aluminum	7429-90-5	1 : 1 : 1	100.00	200-200	4.10E+01	4.10E+01	4.10E+01	No	2.80E+03	No	3.50E+03	No	No	</=SL
Barium	7440-39-3	1 : 1 : 1	100.00	10-10	8.90E+01	8.90E+01	8.90E+01	No	6.00E+02	No	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	500-500	2.80E+05	2.80E+05	2.80E+05	Yes	3.80E+05	No	NA	--	No	EN
Cobalt	7440-48-4	1 : 1 : 1	100.00	10-10	5.10E+00	5.10E+00	5.10E+00	No	9.20E+00	No	1.00E+03	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	50-50	2.40E+02	2.40E+02	2.40E+02	Yes	9.40E+03	No	5.00E+03	No	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	500-500	4.50E+04	4.50E+04	4.50E+04	Yes	8.60E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	10-10	9.10E+02	9.10E+02	9.10E+02	No	3.40E+03	No	1.50E+02	Yes	No	</=BKG
Nickel	7440-02-0	1 : 1 : 1	100.00	40-40	1.80E+01	1.80E+01	1.80E+01	No	4.20E+01	No	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	1000-1000	8.40E+03	8.40E+03	8.40E+03	Yes	1.72E+04	No	NA	--	No	EN
Selenium	7782-49-2	1 : 1 : 1	100.00	10-10	1.40E+01	1.40E+01	1.40E+01	No	NA	--	5.00E+01	No	No	</=SL
Sodium	7440-23-5	1 : 1 : 1	100.00	1000-1000	5.30E+04	5.30E+04	5.30E+04	Yes	9.60E+04	No	NA	--	No	EN
Zinc	7440-66-6	1 : 1 : 1	100.00	20-20	1.50E+01	1.50E+01	1.50E+01	No	4.40E+01	No	5.00E+03	No	No	</=SL
Shallow Groundwater	**Site P - SA2-MW-3-S**													
SVOCs														
Di-n-butylphthalate	84-74-2	1 : 1 : 1	100.00	9.8-10	9.40E-01	9.40E-01	9.40E-01	No	NA	--	7.00E+02	No	No	</=SL
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	200-200	6.35E+01	6.35E+01	6.35E+01	No	2.80E+03	No	3.50E+03	No	No	</=SL
Barium	7440-39-3	1 : 1 : 1	100.00	10-10	1.40E+02	1.40E+02	1.40E+02	No	6.00E+02	No	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	500-500	2.50E+05	2.50E+05	2.50E+05	Yes	3.80E+05	No	NA	--	No	EN
Cobalt	7440-48-4	1 : 1 : 1	100.00	10-10	1.65E+00	1.65E+00	1.65E+00	No	9.20E+00	No	1.00E+03	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	50-50	1.20E+02	1.20E+02	1.20E+02	Yes	9.40E+03	No	5.00E+03	No	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	500-500	3.55E+04	3.55E+04	3.55E+04	Yes	8.60E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	10-10	4.30E+01	4.30E+01	4.30E+01	No	3.40E+03	No	1.50E+02	No	No	</=SL
Nickel	7440-02-0	1 : 1 : 1	100.00	40-40	1.10E+01	1.10E+01	1.10E+01	No	4.20E+01	No	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	1000-1000	9.55E+03	9.55E+03	9.55E+03	Yes	1.72E+04	No	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	1000-1000	5.65E+04	5.65E+04	5.65E+04	Yes	9.60E+04	No	NA	--	No	EN
Zinc	7440-66-6	1 : 1 : 1	100.00	20-20	1.09E+01	1.09E+01	1.09E+01	No	4.40E+01	No	5.00E+03	No	No	</=SL
Shallow Groundwater	**Site Q Central - SA-Q-5**													
VOCs														

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	1.80E+00	1.80E+00	1.80E+00	No	NA	--	1.00E+02	No	No	</=SL
Dichloromethane	75-09-2	1 : 1 : 1	100.00	-	1.60E+00	1.60E+00	1.60E+00	No	NA	--	5.00E+00	No	No	</=SL
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	-	6.80E+03	6.80E+03	6.80E+03	No	9.60E+03	No	3.50E+03	Yes	No	</=BKG
Arsenic	7440-38-2	1 : 1 : 1	100.00	-	1.30E+02	1.30E+02	1.30E+02	No	1.40E+01	Yes	1.00E+01	Yes	Yes	>SL
Barium	7440-39-3	1 : 1 : 1	100.00	-	5.30E+02	5.30E+02	5.30E+02	No	4.20E+02	Yes	2.00E+03	No	No	</=SL
Beryllium	7440-41-7	1 : 1 : 1	100.00	-	6.90E-01	6.90E-01	6.90E-01	No	8.60E-01	No	4.00E+00	No	No	</=SL
Cadmium	7440-43-9	1 : 1 : 1	100.00	-	1.20E+00	1.20E+00	1.20E+00	No	NA	--	5.00E+00	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	-	3.80E+05	3.80E+05	3.80E+05	Yes	6.80E+05	No	NA	--	No	EN
Chromium	7440-47-3	1 : 1 : 1	100.00	-	2.70E+01	2.70E+01	2.70E+01	No	1.18E+02	No	1.00E+02	No	No	</=SL
Cobalt	7440-48-4	1 : 1 : 1	100.00	-	3.90E+00	3.90E+00	3.90E+00	No	4.00E+01	No	1.00E+03	No	No	</=SL
Copper	7440-50-8	1 : 1 : 1	100.00	-	1.00E+01	1.00E+01	1.00E+01	No	3.80E+01	No	6.50E+02	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	-	5.20E+04	5.20E+04	5.20E+04	Yes	4.80E+04	Yes	5.00E+03	Yes	No	EN
Lead	7439-92-1	1 : 1 : 1	100.00	-	8.40E+00	8.40E+00	8.40E+00	No	2.80E+01	No	7.50E+00	Yes	No	</=BKG
Magnesium	7439-95-4	1 : 1 : 1	100.00	-	7.20E+04	7.20E+04	7.20E+04	Yes	1.66E+05	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	-	5.90E+03	5.90E+03	5.90E+03	No	1.70E+03	Yes	1.50E+02	Yes	Yes	>SL
Nickel	7440-02-0	1 : 1 : 1	100.00	-	1.70E+01	1.70E+01	1.70E+01	No	1.38E+02	No	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	-	1.40E+04	1.40E+04	1.40E+04	Yes	2.20E+04	No	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	-	1.90E+05	1.90E+05	1.90E+05	Yes	5.20E+04	Yes	NA	--	No	EN
Vanadium	7440-62-2	1 : 1 : 1	100.00	-	2.00E+01	2.00E+01	2.00E+01	No	2.80E+01	No	4.90E+01	No	No	</=SL
Zinc	7440-66-6	1 : 1 : 1	100.00	-	6.00E+01	6.00E+01	6.00E+01	No	1.34E+02	No	5.00E+03	No	No	</=SL
Shallow Groundwater	**Site Q South - AA-Q-10-18**													
VOCs														
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	6.55E-01	6.55E-01	6.55E-01	No	NA	--	1.00E+02	No	No	</=SL
SVOCs														
bis(2-Ethylhexyl)phthalate	117-81-7	1 : 1 : 1	100.00	9.8-9.8	2.20E+00	2.20E+00	2.20E+00	No	NA	--	6.00E+00	No	No	</=SL
Herbicide														
2,4,5-T	93-76-5	1 : 1 : 1	100.00	-	1.80E+00	1.80E+00	1.80E+00	No	NA	--	2.80E+02	No	No	</=SL
2,4-D	94-75-7	1 : 1 : 1	100.00	-	1.20E+00	1.20E+00	1.20E+00	No	NA	--	7.00E+01	No	No	</=SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Pentachlorophenol	87-86-5	1 : 1 : 1	100.00	-	5.20E+00	5.20E+00	5.20E+00	No	NA	--	1.00E+00	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	-	1.35E+04	1.35E+04	1.35E+04	No	6.90E+02	Yes	3.50E+03	Yes	Yes	>SL
Arsenic	7440-38-2	1 : 1 : 1	100.00	-	1.40E+01	1.40E+01	1.40E+01	No	NA	--	1.00E+01	Yes	Yes	>SL
Barium	7440-39-3	1 : 1 : 1	100.00	-	6.55E+02	6.55E+02	6.55E+02	No	3.60E+02	Yes	2.00E+03	No	No	</=SL
Beryllium	7440-41-7	1 : 1 : 1	100.00	-	9.55E-01	9.55E-01	9.55E-01	No	NA	--	4.00E+00	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	-	1.70E+05	1.70E+05	1.70E+05	Yes	2.60E+05	No	NA	--	No	EN
Chromium	7440-47-3	1 : 1 : 1	100.00	-	1.30E+02	1.30E+02	1.30E+02	No	NA	--	1.00E+02	Yes	Yes	>SL
Cobalt	7440-48-4	1 : 1 : 1	100.00	-	3.10E+01	3.10E+01	3.10E+01	No	4.80E+00	Yes	1.00E+03	No	No	</=SL
Copper	7440-50-8	1 : 1 : 1	100.00	-	1.55E+01	1.55E+01	1.55E+01	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	-	3.45E+04	3.45E+04	3.45E+04	Yes	4.60E+03	Yes	5.00E+03	Yes	No	EN
Lead	7439-92-1	1 : 1 : 1	100.00	-	2.75E+01	2.75E+01	2.75E+01	No	NA	--	7.50E+00	Yes	Yes	>SL
Magnesium	7439-95-4	1 : 1 : 1	100.00	-	3.85E+04	3.85E+04	3.85E+04	Yes	5.80E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	-	9.45E+02	9.45E+02	9.45E+02	No	2.80E+03	No	1.50E+02	Yes	No	</=BKG
Nickel	7440-02-0	1 : 1 : 1	100.00	-	1.25E+02	1.25E+02	1.25E+02	No	2.50E+01	Yes	1.00E+02	Yes	Yes	>SL
Potassium	7440-09-7	1 : 1 : 1	100.00	-	8.50E+03	8.50E+03	8.50E+03	Yes	1.16E+04	No	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	-	1.10E+04	1.10E+04	1.10E+04	Yes	2.30E+04	No	NA	--	No	EN
Vanadium	7440-62-2	1 : 1 : 1	100.00	-	3.95E+01	3.95E+01	3.95E+01	No	3.20E+00	Yes	4.90E+01	No	No	</=SL
Zinc	7440-66-6	1 : 1 : 1	100.00	-	1.25E+02	1.25E+02	1.25E+02	No	NA	--	5.00E+03	No	No	</=SL
Shallow Groundwater	**Site Q South - SA2-MW-10-S**													
VOCs														
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	1-1	4.30E-01	4.30E-01	4.30E-01	No	NA	--	1.00E+02	No	No	</=SL
Metals														
Barium	7440-39-3	1 : 1 : 1	100.00	10-10	7.90E+02	7.90E+02	7.90E+02	No	3.60E+02	Yes	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	500-500	1.90E+05	1.90E+05	1.90E+05	Yes	2.60E+05	No	NA	--	No	EN
Cobalt	7440-48-4	1 : 1 : 1	100.00	10-10	1.30E+01	1.30E+01	1.30E+01	No	4.80E+00	Yes	1.00E+03	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	50-50	4.40E+03	4.40E+03	4.40E+03	Yes	4.60E+03	No	5.00E+03	No	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	500-500	5.10E+04	5.10E+04	5.10E+04	Yes	5.80E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	10-10	2.70E+03	2.70E+03	2.70E+03	No	2.80E+03	No	1.50E+02	Yes	No	</=BKG

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Nickel	7440-02-0	1 : 1 : 1	100.00	40-40	3.40E+01	3.40E+01	3.40E+01	No	2.50E+01	Yes	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	0000-10000	7.10E+04	7.10E+04	7.10E+04	Yes	1.16E+04	Yes	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	1000-1000	3.90E+04	3.90E+04	3.90E+04	Yes	2.30E+04	Yes	NA	--	No	EN
Zinc	7440-66-6	1 : 1 : 1	100.00	20-20	1.30E+01	1.30E+01	1.30E+01	No	NA	--	5.00E+03	No	No	</=SL
Shallow Groundwater	**Site Q South - SA-Q-10**													
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	-	1.20E+02	1.20E+02	1.20E+02	No	6.90E+02	No	3.50E+03	No	No	</=SL
Barium	7440-39-3	1 : 1 : 1	100.00	-	2.90E+02	2.90E+02	2.90E+02	No	3.60E+02	No	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	-	1.50E+05	1.50E+05	1.50E+05	Yes	2.60E+05	No	NA	--	No	EN
Chromium	7440-47-3	1 : 1 : 1	100.00	-	1.50E+01	1.50E+01	1.50E+01	No	NA	--	1.00E+02	No	No	</=SL
Copper	7440-50-8	1 : 1 : 1	100.00	-	2.00E+00	2.00E+00	2.00E+00	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	-	8.40E+02	8.40E+02	8.40E+02	Yes	4.60E+03	No	5.00E+03	No	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	-	3.30E+04	3.30E+04	3.30E+04	Yes	5.80E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	-	5.10E+01	5.10E+01	5.10E+01	No	2.80E+03	No	1.50E+02	No	No	</=SL
Nickel	7440-02-0	1 : 1 : 1	100.00	-	1.40E+01	1.40E+01	1.40E+01	No	2.50E+01	No	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	-	5.00E+03	5.00E+03	5.00E+03	Yes	1.16E+04	No	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	-	8.20E+03	8.20E+03	8.20E+03	Yes	2.30E+04	No	NA	--	No	EN
Vanadium	7440-62-2	1 : 1 : 1	100.00	-	1.70E+00	1.70E+00	1.70E+00	No	3.20E+00	No	4.90E+01	No	No	</=SL
Shallow Groundwater	**Site Q South - SA-Q-13**													
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	-	3.40E+01	3.40E+01	3.40E+01	No	6.90E+02	No	3.50E+03	No	No	</=SL
Barium	7440-39-3	1 : 1 : 1	100.00	-	2.80E+02	2.80E+02	2.80E+02	No	3.60E+02	No	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	-	1.30E+05	1.30E+05	1.30E+05	Yes	2.60E+05	No	NA	--	No	EN
Cobalt	7440-48-4	1 : 1 : 1	100.00	-	8.60E-01	8.60E-01	8.60E-01	No	4.80E+00	No	1.00E+03	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	-	8.90E+01	8.90E+01	8.90E+01	Yes	4.60E+03	No	5.00E+03	No	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	-	3.00E+04	3.00E+04	3.00E+04	Yes	5.80E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	-	1.70E+02	1.70E+02	1.70E+02	No	2.80E+03	No	1.50E+02	Yes	No	</=BKG
Nickel	7440-02-0	1 : 1 : 1	100.00	-	8.90E+00	8.90E+00	8.90E+00	No	2.50E+01	No	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	-	4.20E+03	4.20E+03	4.20E+03	Yes	1.16E+04	No	NA	--	No	EN

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Sodium	7440-23-5	1 : 1 : 1	100.00	-	9.30E+03	9.30E+03	9.30E+03	Yes	2.30E+04	No	NA	--	No	EN
Shallow Groundwater	**Site Q South - SA-Q-15**													
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	-	1.10E+02	1.10E+02	1.10E+02	No	6.90E+02	No	3.50E+03	No	No	</=SL
Barium	7440-39-3	1 : 1 : 1	100.00	-	8.10E+01	8.10E+01	8.10E+01	No	3.60E+02	No	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	-	4.30E+05	4.30E+05	4.30E+05	Yes	2.60E+05	Yes	NA	--	No	EN
Chromium	7440-47-3	1 : 1 : 1	100.00	-	7.30E+00	7.30E+00	7.30E+00	No	NA	--	1.00E+02	No	No	</=SL
Cobalt	7440-48-4	1 : 1 : 1	100.00	-	2.60E+00	2.60E+00	2.60E+00	No	4.80E+00	No	1.00E+03	No	No	</=SL
Copper	7440-50-8	1 : 1 : 1	100.00	-	2.30E+00	2.30E+00	2.30E+00	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	-	1.70E+03	1.70E+03	1.70E+03	Yes	4.60E+03	No	5.00E+03	No	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	-	8.40E+04	8.40E+04	8.40E+04	Yes	5.80E+04	Yes	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	-	1.80E+03	1.80E+03	1.80E+03	No	2.80E+03	No	1.50E+02	Yes	No	</=BKG
Nickel	7440-02-0	1 : 1 : 1	100.00	-	1.50E+01	1.50E+01	1.50E+01	No	2.50E+01	No	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	-	2.00E+04	2.00E+04	2.00E+04	Yes	1.16E+04	Yes	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	-	1.10E+05	1.10E+05	1.10E+05	Yes	2.30E+04	Yes	NA	--	No	EN
Zinc	7440-66-6	1 : 1 : 1	100.00	-	1.30E+01	1.30E+01	1.30E+01	No	NA	--	5.00E+03	No	No	</=SL
Shallow Groundwater	**Site Q South - SA-Q-16**													
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	-	2.30E+02	2.30E+02	2.30E+02	No	6.90E+02	No	3.50E+03	No	No	</=SL
Barium	7440-39-3	1 : 1 : 1	100.00	-	2.70E+02	2.70E+02	2.70E+02	No	3.60E+02	No	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	-	1.30E+05	1.30E+05	1.30E+05	Yes	2.60E+05	No	NA	--	No	EN
Chromium	7440-47-3	1 : 1 : 1	100.00	-	1.50E+00	1.50E+00	1.50E+00	No	NA	--	1.00E+02	No	No	</=SL
Copper	7440-50-8	1 : 1 : 1	100.00	-	1.70E+00	1.70E+00	1.70E+00	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	-	4.20E+02	4.20E+02	4.20E+02	Yes	4.60E+03	No	5.00E+03	No	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	-	2.00E+04	2.00E+04	2.00E+04	Yes	5.80E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	-	1.70E+02	1.70E+02	1.70E+02	No	2.80E+03	No	1.50E+02	Yes	No	</=BKG
Nickel	7440-02-0	1 : 1 : 1	100.00	-	4.20E+00	4.20E+00	4.20E+00	No	2.50E+01	No	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	-	5.40E+03	5.40E+03	5.40E+03	Yes	1.16E+04	No	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	-	1.30E+04	1.30E+04	1.30E+04	Yes	2.30E+04	No	NA	--	No	EN

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Vanadium	7440-62-2	1 : 1 : 1	100.00	-	2.40E+00	2.40E+00	2.40E+00	No	3.20E+00	No	4.90E+01	No	No	</=SL
Shallow Groundwater	**Site Q South - SA-Q-9**													
VOCs														
Chlorodibromomethane	124-48-1	1 : 1 : 1	100.00	-	4.40E-01	4.40E-01	4.40E-01	No	NA	--	8.00E+01	No	No	</=SL
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	-	1.00E+02	1.00E+02	1.00E+02	No	6.90E+02	No	3.50E+03	No	No	</=SL
Barium	7440-39-3	1 : 1 : 1	100.00	-	1.90E+02	1.90E+02	1.90E+02	No	3.60E+02	No	2.00E+03	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	-	1.20E+05	1.20E+05	1.20E+05	Yes	2.60E+05	No	NA	--	No	EN
Copper	7440-50-8	1 : 1 : 1	100.00	-	1.70E+00	1.70E+00	1.70E+00	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	-	3.00E+02	3.00E+02	3.00E+02	Yes	4.60E+03	No	5.00E+03	No	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	-	3.00E+04	3.00E+04	3.00E+04	Yes	5.80E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	-	2.90E+01	2.90E+01	2.90E+01	No	2.80E+03	No	1.50E+02	No	No	</=SL
Nickel	7440-02-0	1 : 1 : 1	100.00	-	5.30E+00	5.30E+00	5.30E+00	No	2.50E+01	No	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	-	5.00E+03	5.00E+03	5.00E+03	Yes	1.16E+04	No	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	-	7.80E+03	7.80E+03	7.80E+03	Yes	2.30E+04	No	NA	--	No	EN
Vanadium	7440-62-2	1 : 1 : 1	100.00	-	2.60E+00	2.60E+00	2.60E+00	No	3.20E+00	No	4.90E+01	No	No	</=SL
Shallow Groundwater	**Site R - B-24A**													
VOCs														
1,2-Dichloroethane	107-06-2	1 : 1 : 1	100.00	-	2.20E+02	2.20E+02	2.20E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Acetone	67-64-1	1 : 1 : 1	100.00	-	2.20E+04	2.20E+04	2.20E+04	No	NA	--	6.30E+03	Yes	Yes	>SL
Benzene	71-43-2	1 : 1 : 1	100.00	-	8.30E+02	8.30E+02	8.30E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	1.00E+03	1.00E+03	1.00E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroform	67-66-3	1 : 1 : 1	100.00	-	6.50E+01	6.50E+01	6.50E+01	No	NA	--	8.00E+01	No	No	</=SL
Dichloromethane	75-09-2	1 : 1 : 1	100.00	-	1.40E+02	1.40E+02	1.40E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Toluene	108-88-3	1 : 1 : 1	100.00	-	1.60E+02	1.60E+02	1.60E+02	No	NA	--	1.00E+03	No	No	</=SL
SVOCs														
2,4,5-Trichlorophenol	95-95-4	1 : 1 : 1	100.00	-	1.30E+04	1.30E+04	1.30E+04	No	NA	--	7.00E+02	Yes	Yes	>SL
2,4,6-Trichlorophenol	88-06-2	1 : 1 : 1	100.00	-	1.50E+04	1.50E+04	1.50E+04	No	NA	--	1.00E+01	Yes	Yes	>SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
2,4-Dichlorophenol	120-83-2	1 : 1 : 1	100.00	-	2.10E+04	2.10E+04	2.10E+04	No	NA	--	2.10E+01	Yes	Yes	>SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	-	1.40E+05	1.40E+05	1.40E+05	No	NA	--	3.50E+01	Yes	Yes	>SL
3&4-Methylphenol	106-44-5	1 : 1 : 1	100.00	-	1.80E+03	1.80E+03	1.80E+03	No	NA	--	3.50E+02	Yes	Yes	>SL
Nitrobenzene	98-95-3	1 : 1 : 1	100.00	-	1.30E+03	1.30E+03	1.30E+03	No	NA	--	3.50E+00	Yes	Yes	>SL
Phenol	108-95-2	1 : 1 : 1	100.00	-	1.00E+05	1.00E+05	1.00E+05	No	NA	--	1.00E+02	Yes	Yes	>SL
Herbicide														
2,4-D	94-75-7	1 : 1 : 1	100.00	-	4.10E+04	4.10E+04	4.10E+04	No	NA	--	7.00E+01	Yes	Yes	>SL
Dichlorprop	120-36-5	1 : 1 : 1	100.00	-	3.40E+03	3.40E+03	3.40E+03	No	NA	--	2.90E+02	Yes	Yes	>SL
Metals														
Aluminum	7429-90-5	1 : 1 : 1	100.00	-	2.60E+03	2.60E+03	2.60E+03	No	1.62E+01	Yes	3.50E+03	No	No	</=SL
Arsenic	7440-38-2	1 : 1 : 1	100.00	-	3.20E+01	3.20E+01	3.20E+01	No	NA	--	1.00E+01	Yes	Yes	>SL
Barium	7440-39-3	1 : 1 : 1	100.00	-	1.40E+02	1.40E+02	1.40E+02	No	2.40E+02	No	2.00E+03	No	No	</=SL
Beryllium	7440-41-7	1 : 1 : 1	100.00	-	7.80E-01	7.80E-01	7.80E-01	No	NA	--	4.00E+00	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	-	5.80E+05	5.80E+05	5.80E+05	Yes	2.60E+05	Yes	NA	--	No	EN
Chromium	7440-47-3	1 : 1 : 1	100.00	-	1.10E+02	1.10E+02	1.10E+02	No	NA	--	1.00E+02	Yes	Yes	>SL
Cobalt	7440-48-4	1 : 1 : 1	100.00	-	3.80E+01	3.80E+01	3.80E+01	No	NA	--	1.00E+03	No	No	</=SL
Copper	7440-50-8	1 : 1 : 1	100.00	-	1.60E+01	1.60E+01	1.60E+01	No	NA	--	6.50E+02	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	-	5.20E+03	5.20E+03	5.20E+03	Yes	3.80E+03	Yes	5.00E+03	Yes	No	EN
Lead	7439-92-1	1 : 1 : 1	100.00	-	6.10E+00	6.10E+00	6.10E+00	No	NA	--	7.50E+00	No	No	</=SL
Magnesium	7439-95-4	1 : 1 : 1	100.00	-	4.00E+04	4.00E+04	4.00E+04	Yes	7.20E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	-	2.70E+03	2.70E+03	2.70E+03	No	3.60E+01	Yes	1.50E+02	Yes	Yes	>SL
Nickel	7440-02-0	1 : 1 : 1	100.00	-	9.10E+01	9.10E+01	9.10E+01	No	1.44E+01	Yes	1.00E+02	No	No	</=SL
Potassium	7440-09-7	1 : 1 : 1	100.00	-	4.90E+04	4.90E+04	4.90E+04	Yes	2.60E+03	Yes	NA	--	No	EN
Selenium	7782-49-2	1 : 1 : 1	100.00	-	7.20E+00	7.20E+00	7.20E+00	No	NA	--	5.00E+01	No	No	</=SL
Sodium	7440-23-5	1 : 1 : 1	100.00	-	1.50E+06	1.50E+06	1.50E+06	Yes	1.62E+04	Yes	NA	--	No	EN
Vanadium	7440-62-2	1 : 1 : 1	100.00	-	3.80E+01	3.80E+01	3.80E+01	No	NA	--	4.90E+01	No	No	</=SL
Zinc	7440-66-6	1 : 1 : 1	100.00	-	4.10E+02	4.10E+02	4.10E+02	No	5.20E+01	Yes	5.00E+03	No	No	</=SL
Shallow Groundwater	**Site S - SA-S-2**													
VOCs														

TABLE 2.6
COPC SELECTION - SHALLOW GROUNDWATER AND LEACHATE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Benzene	71-43-2	1 : 1 : 1	100.00	-	1.60E+00	1.60E+00	1.60E+00	No	NA	--	5.00E+00	No	No	</=SL
Chloroethane	75-00-3	1 : 1 : 1	100.00	-	4.60E+00	4.60E+00	4.60E+00	No	NA	--	4.60E+00	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	-	1.90E+00	1.90E+00	1.90E+00	No	NA	--	1.00E+03	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	-	3.00E+00	3.00E+00	3.00E+00	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
Diethyl Phthalate	84-66-2	1 : 1 : 1	100.00	-	1.60E+00	1.60E+00	1.60E+00	No	NA	--	5.60E+03	No	No	</=SL
Herbicide														
2,4-D	94-75-7	1 : 1 : 1	100.00	-	2.90E-01	2.90E-01	2.90E-01	No	NA	--	7.00E+01	No	No	</=SL
Pentachlorophenol	87-86-5	1 : 1 : 1	100.00	-	3.00E-01	3.00E-01	3.00E-01	No	NA	--	1.00E+00	No	No	</=SL
Metals														
Arsenic	7440-38-2	1 : 1 : 1	100.00	-	7.10E+01	7.10E+01	7.10E+01	No	NA	--	1.00E+01	Yes	Yes	>SL
Barium	7440-39-3	1 : 1 : 1	100.00	-	3.40E+02	3.40E+02	3.40E+02	No	3.60E+02	No	2.00E+03	No	No	</=SL
Cadmium	7440-43-9	1 : 1 : 1	100.00	-	1.20E+00	1.20E+00	1.20E+00	No	NA	--	5.00E+00	No	No	</=SL
Calcium	7440-70-2	1 : 1 : 1	100.00	-	1.90E+05	1.90E+05	1.90E+05	Yes	2.00E+05	No	NA	--	No	EN
Copper	7440-50-8	1 : 1 : 1	100.00	-	3.90E+00	3.90E+00	3.90E+00	No	3.80E+00	Yes	6.50E+02	No	No	</=SL
Iron	7439-89-6	1 : 1 : 1	100.00	-	4.60E+04	4.60E+04	4.60E+04	Yes	4.00E+03	Yes	5.00E+03	Yes	No	EN
Magnesium	7439-95-4	1 : 1 : 1	100.00	-	2.40E+04	2.40E+04	2.40E+04	Yes	6.40E+04	No	NA	--	No	EN
Manganese	7439-96-5	1 : 1 : 1	100.00	-	2.60E+03	2.60E+03	2.60E+03	No	1.84E+02	Yes	1.50E+02	Yes	Yes	>SL
Potassium	7440-09-7	1 : 1 : 1	100.00	-	2.20E+03	2.20E+03	2.20E+03	Yes	8.80E+04	No	NA	--	No	EN
Sodium	7440-23-5	1 : 1 : 1	100.00	-	2.30E+03	2.30E+03	2.30E+03	Yes	4.80E+03	No	NA	--	No	EN
Zinc	7440-66-6	1 : 1 : 1	100.00	-	4.50E+00	4.50E+00	4.50E+00	No	1.88E+01	No	5.00E+03	No	No	</=SL

TABLE 2.6
COPC SELECTION - SHALLOW GROUNDWATER AND LEACHATE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason

Notes:
Bkg - Background concentration.
CAS - Chemical Abstracts Service.
COPC - Constituent of potential concern.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration, Human Health Calculated using Toxicity Equivalency Factors (TEFs) from Van den Berg, et al., 2006. TEFs presented in Table F-1.
EN - Essential nutrient.
J - Estimated value.
NA - Not available.
PCB - Polychlorinated Biphenyl.
SL - Screening Level.
SVOC - Semivolatile organic compound.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.
-- Not applicable.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.
(b) Percent detected out of valid samples. Constituents detected in fewer than 5 percent of samples, provided 20 samples are available, will not be included as COPCs.
(c) Range of reporting limits (sample quantitation limits) is based on available information; not available for all samples with positive detections. Range not presented for calculated parameters (i.e., PCBs and Dioxins).
(d) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.The validation qualifier is presented for the minimum and maximum. Only detected results are included in the mean calculation.
(e) Equal to two times the average detected concentration in off-site sampling location listed for Site well in Table A-2. Calculated in Table A-3d.
(f) Groundwater screening levels were used according to the following hierarchy:
1) Illinois Groundwater Quality Standards for Class I: Potable Resource Groundwater. 35 III. Adm. Code 620.410. February 2, 2002.
2) USEPA, 2006. 2006 Edition of the Drinking Water Standards and Health Advisories. Office of Water. EPA 822-R-06-013. Maximum Contaminant Levels.
3) IEPA, 2002. Tiered Approach to Corrective Action Objectives. Appendix B, Table E. Tier 1 Groundwater Remediation Objectives for the Groundwater Component of the Groundwater Ingestion Route. Class I values. February 5, 2002.
4) Groundwater Remediation Objectives for Chemicals Not Listed in TACO. May 1, 2007. Prepared by the Illinois EPA (IEPA) Toxicity Assessment Unit, and February 1, 2008 Revisions/Additions to Tables for Non-TACO Chemical Remediation Objectives.
5) USEPA, 2004. Region 9 Preliminary Remediation Goal (PRG) Table. October 1, 2004. Value for Tap water
(g) A constituent is identified as a COPC if it is detected in greater than 5 percent of samples, provided 20 samples are available, if it is not an essential nutrient, if the maximum detected concentration is greater than the background concentration and if the maximum detected concentration is greater than the groundwater screening level.
(h) Only constituents detected at least once in the specified area/medium are included here.

TABLE 2.7
COPC SELECTION - SHALLOW AND MID GROUNDWATER AND LEACHATE SCREEN **
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Leachate	**Site O - LEACH-0-1**													
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 1 : 1	100.00	5-5	9.60E+00	9.60E+00	9.60E+00	No	NA	--	2.00E+02	No	No	</=SL
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	5-5	3.20E+00	3.20E+00	3.20E+00	No	NA	--	7.00E+02	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	10-10	2.00E+00	2.00E+00	2.00E+00	No	NA	--	7.00E+01	No	No	</=SL
2-Butanone	78-93-3	1 : 1 : 1	100.00	50-50	2.00E+01 J	2.00E+01 J	2.00E+01	No	NA	--	4.20E+03	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	1 : 1 : 1	100.00	50-50	2.10E+02	2.10E+02	2.10E+02	No	NA	--	2.00E+03	No	No	</=SL
Acetone	67-64-1	1 : 1 : 1	100.00	125-125	1.60E+02	1.60E+02	1.60E+02	No	NA	--	6.30E+03	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	5-5	9.20E+02	9.20E+02	9.20E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	1 : 1 : 1	100.00	5-5	2.10E+00	2.10E+00	2.10E+00	No	NA	--	7.00E+02	No	No	</=SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	10-10	1.70E+03 J	1.70E+03 J	1.70E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroform	67-66-3	1 : 1 : 1	100.00	5-5	8.00E+00	8.00E+00	8.00E+00	No	NA	--	8.00E+01	No	No	</=SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	5-5	2.90E+02	2.90E+02	2.90E+02	No	NA	--	7.00E+02	No	No	</=SL
Tetrachloroethene	127-18-4	1 : 1 : 1	100.00	5-5	2.10E+00	2.10E+00	2.10E+00	No	NA	--	5.00E+00	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	5-5	1.00E+02	1.00E+02	1.00E+02	No	NA	--	1.00E+03	No	No	</=SL
Trichloroethylene	79-01-6	1 : 1 : 1	100.00	5-5	2.10E+00	2.10E+00	2.10E+00	No	NA	--	5.00E+00	No	No	</=SL
Vinyl chloride	75-01-4	1 : 1 : 1	100.00	5-5	1.50E+00	1.50E+00	1.50E+00	No	NA	--	2.00E+00	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	10-10	1.70E+03	1.70E+03	1.70E+03	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	250-250	3.80E+02	3.80E+02	3.80E+02	No	NA	--	6.00E+02	No	No	</=SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	250-250	3.30E+02	3.30E+02	3.30E+02	No	NA	--	3.50E+01	Yes	Yes	>SL
Naphthalene	91-20-3	1 : 1 : 1	100.00	250-250	5.70E+02	5.70E+02	5.70E+02	No	NA	--	1.40E+02	Yes	Yes	>SL
Nitrobenzene	98-95-3	1 : 1 : 1	100.00	250-250	8.00E+01	8.00E+01	8.00E+01	No	NA	--	3.50E+00	Yes	Yes	>SL
Leachate	**Site Q North - LEACH-Q-1**													
VOCs														
1,1,1-Trichloroethane	71-55-6	5 : 5 : 5	100.00	20-20	7.35E+00	1.50E+01	1.25E+01	No	NA	--	2.00E+02	No	No	</=SL
1,1,2-Trichloroethane	79-00-5	2 : 5 : 5	40.00	10-20	2.60E+00	3.60E+00	3.10E+00	No	NA	--	5.00E+00	No	No	</=SL
1,1-Dichloroethane	75-34-3	1 : 5 : 5	20.00	10-20	3.10E+00	3.10E+00	3.10E+00	No	NA	--	7.00E+02	No	No	</=SL

TABLE 2.7
COPC SELECTION - SHALLOW AND MID GROUNDWATER AND LEACHATE SCREEN **
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
1,2-Dichloroethane	107-06-2	5 : 5 : 5	100.00	20-20	1.20E+03	2.30E+03	1.95E+03	No	NA	--	5.00E+00	Yes	Yes	>SL
1,2-Dichloroethene (total)	540-59-0	4 : 5 : 5	80.00	20-40	8.25E+00 J	1.30E+01	1.06E+01	No	NA	--	7.00E+01	No	No	</=SL
2-Butanone	78-93-3	3 : 5 : 5	60.00	100-200	3.40E+01 J	4.70E+01	4.07E+01	No	NA	--	4.20E+03	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	5 : 5 : 5	100.00	200-200	3.70E+02	9.95E+02	7.51E+02	No	NA	--	2.00E+03	No	No	</=SL
Acetone	67-64-1	5 : 5 : 5	100.00	500-500	3.40E+02	2.10E+03	1.06E+03	No	NA	--	6.30E+03	No	No	</=SL
Benzene	71-43-2	5 : 5 : 5	100.00	20-20	3.50E+02	5.10E+02	4.39E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	1 : 5 : 5	20.00	10-20	3.30E+01	3.30E+01	3.30E+01	No	NA	--	7.00E+02	No	No	</=SL
Chlorobenzene	108-90-7	5 : 5 : 5	100.00	20-20	9.00E+02	1.80E+03	1.39E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroform	67-66-3	5 : 5 : 5	100.00	20-20	4.50E+01	7.00E+01	5.83E+01	No	NA	--	8.00E+01	No	No	</=SL
Chloromethane	74-87-3	1 : 5 : 5	20.00	10-20	9.20E+00 J	9.20E+00 J	9.20E+00	No	NA	--	1.60E+02	No	No	</=SL
Dichloromethane	75-09-2	5 : 5 : 5	100.00	100-100	3.40E+01	5.50E+01	4.63E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
Ethylbenzene	100-41-4	5 : 5 : 5	100.00	20-20	3.25E+01	5.45E+01	4.74E+01	No	NA	--	7.00E+02	No	No	</=SL
Tetrachloroethene	127-18-4	5 : 5 : 5	100.00	20-20	8.25E+01	1.40E+02	1.07E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Toluene	108-88-3	5 : 5 : 5	100.00	20-20	9.25E+02 J	1.20E+03	1.07E+03	No	NA	--	1.00E+03	Yes	Yes	>SL
Trichloroethylene	79-01-6	5 : 5 : 5	100.00	20-20	1.80E+01	3.00E+01	2.18E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
Vinyl chloride	75-01-4	2 : 4 : 5	50.00	10-20	4.10E+00	5.60E+00	4.85E+00	No	NA	--	2.00E+00	Yes	Yes	>SL
Xylenes, Total	1330-20-7	5 : 5 : 5	100.00	40-40	3.05E+02	5.70E+02	4.33E+02	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	1 : 4 : 5	25.00	100-3800	4.70E+01	4.70E+01	4.70E+01	No	NA	--	7.00E+01	No	No	</=SL
1,2-Dichlorobenzene	95-50-1	4 : 5 : 5	80.00	100-3800	1.95E+02	4.00E+02	2.94E+02	No	NA	--	6.00E+02	No	No	</=SL
1,3-Dichlorobenzene	541-73-1	1 : 4 : 5	25.00	100-3800	3.65E+01	3.65E+01	3.65E+01	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 4 : 5	25.00	100-3800	8.15E+01	8.15E+01	8.15E+01	No	NA	--	7.50E+01	Yes	Yes	>SL
2-Chlorophenol	95-57-8	5 : 5 : 5	100.00	100-2000	5.00E+03	1.30E+04 J	8.96E+03	No	NA	--	3.50E+01	Yes	Yes	>SL
Naphthalene	91-20-3	3 : 4 : 5	75.00	100-3800	1.20E+03	1.90E+03	1.47E+03	No	NA	--	1.40E+02	Yes	Yes	>SL
Nitrobenzene	98-95-3	5 : 5 : 5	100.00	100-2000	8.10E+02	1.70E+03	1.42E+03	No	NA	--	3.50E+00	Yes	Yes	>SL
Leachate	**Site R - LEACH-R-1**													
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 4 : 4	25.00	10-200000	2.30E+01	2.30E+01	2.30E+01	No	NA	--	2.00E+02	No	No	</=SL
1,1,2-Trichloroethane	79-00-5	1 : 4 : 4	25.00	10-200000	1.20E+02	1.20E+02	1.20E+02	No	NA	--	5.00E+00	Yes	Yes	>SL

TABLE 2.7
COPC SELECTION - SHALLOW AND MID GROUNDWATER AND LEACHATE SCREEN **
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
1,1-Dichloroethylene	75-35-4	2 : 4 : 4	50.00	10-200000	1.80E+02	3.10E+02	2.45E+02	No	NA	--	7.00E+00	Yes	Yes	>SL
1,2-Dichloroethane	107-06-2	4 : 4 : 4	100.00	000-200000	4.70E+04	1.97E+06	5.31E+05	No	NA	--	5.00E+00	Yes	Yes	>SL
1,2-Dichloroethene (total)	540-59-0	4 : 4 : 4	100.00	000-400000	1.30E+04	1.20E+06	3.12E+05	No	NA	--	7.00E+01	Yes	Yes	>SL
1,2-Dichloropropane	78-87-5	1 : 4 : 4	25.00	10-200000	1.00E+01	1.00E+01	1.00E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
2-Butanone	78-93-3	3 : 4 : 4	75.00	000-200000	7.90E+03	1.20E+04	9.72E+03	No	NA	--	4.20E+03	Yes	Yes	>SL
4-Methyl-2-pentanone	108-10-1	1 : 4 : 4	25.00	00-2000000	2.10E+03	2.10E+03	2.10E+03	No	NA	--	2.00E+03	Yes	Yes	>SL
Acetone	67-64-1	3 : 4 : 4	75.00	000-500000	3.20E+04	8.00E+04	5.10E+04	No	NA	--	6.30E+03	Yes	Yes	>SL
Benzene	71-43-2	4 : 4 : 4	100.00	000-200000	5.90E+03	1.47E+06	3.72E+05	No	NA	--	5.00E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	1 : 4 : 4	25.00	10-200000	5.20E+02	5.20E+02	5.20E+02	No	NA	--	7.00E+02	No	No	</=SL
Chlorobenzene	108-90-7	4 : 4 : 4	100.00	10-200000	1.10E+03	1.03E+06	2.59E+05	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroform	67-66-3	4 : 4 : 4	100.00	000-200000	2.00E+03	3.07E+05	7.85E+04	No	NA	--	8.00E+01	Yes	Yes	>SL
Chloromethane	74-87-3	1 : 4 : 4	25.00	10-200000	1.51E+05	1.51E+05	1.51E+05	No	NA	--	1.60E+02	Yes	Yes	>SL
Dichloromethane	75-09-2	3 : 4 : 4	75.00	000-100000	1.90E+03	2.50E+03	2.28E+03	No	NA	--	5.00E+00	Yes	Yes	>SL
Ethylbenzene	100-41-4	2 : 4 : 4	50.00	10-200000	1.70E+02	3.67E+05	1.83E+05	No	NA	--	7.00E+02	Yes	Yes	>SL
Styrene	100-42-5	1 : 4 : 4	25.00	10-200000	1.90E+01	1.90E+01	1.90E+01	No	NA	--	1.00E+02	No	No	</=SL
Tetrachloroethene	127-18-4	4 : 4 : 4	100.00	000-100000	1.80E+04	6.87E+07	1.72E+07	No	NA	--	5.00E+00	Yes	Yes	>SL
Toluene	108-88-3	4 : 4 : 4	100.00	000-200000	1.60E+04	1.73E+07	4.35E+06	No	NA	--	1.00E+03	Yes	Yes	>SL
Trichloroethylene	79-01-6	4 : 4 : 4	100.00	000-100000	1.00E+05	7.97E+07	2.00E+07	No	NA	--	5.00E+00	Yes	Yes	>SL
Vinyl chloride	75-01-4	1 : 4 : 4	25.00	10-200000	1.50E+02	1.50E+02	1.50E+02	No	NA	--	2.00E+00	Yes	Yes	>SL
Xylenes, Total	1330-20-7	3 : 4 : 4	75.00	20-400000	4.70E+02 J	1.07E+06	3.56E+05	No	NA	--	1.00E+04	Yes	Yes	>SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	1 : 4 : 4	25.00	1000-25000	2.77E+04	2.77E+04	2.77E+04	No	NA	--	7.00E+01	Yes	Yes	>SL
1,2-Dichlorobenzene	95-50-1	2 : 4 : 4	50.00	1000-25000	2.70E+03	2.33E+04	1.30E+04	No	NA	--	6.00E+02	Yes	Yes	>SL
1,4-Dichlorobenzene	106-46-7	2 : 4 : 4	50.00	1000-25000	7.60E+03	3.77E+04	2.26E+04	No	NA	--	7.50E+01	Yes	Yes	>SL
2-Chlorophenol	95-57-8	4 : 4 : 4	100.00	1000-25000	1.10E+04	1.09E+05 J	3.86E+04	No	NA	--	3.50E+01	Yes	Yes	>SL
2-Methylnaphthalene	91-57-6	2 : 4 : 4	50.00	1000-25000	8.20E+02	1.62E+04	8.53E+03	No	NA	--	2.80E+01	Yes	Yes	>SL
Naphthalene	91-20-3	1 : 4 : 4	25.00	1000-25000	5.60E+03	5.60E+03	5.60E+03	No	NA	--	1.40E+02	Yes	Yes	>SL
Mid Groundwater	**Site O - AA-CLAY-2-22**													
VOCs														

TABLE 2.7
COPC SELECTION - SHALLOW AND MID GROUNDWATER AND LEACHATE SCREEN **
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
1,1,1-Trichloroethane	71-55-6	1 : 1 : 1	100.00	-	2.30E+04	2.30E+04	2.30E+04	No	NA	--	2.00E+02	Yes	Yes	>SL
1,1,2,2-Tetrachloroethane	79-34-5	1 : 1 : 1	100.00	-	4.00E+02	4.00E+02	4.00E+02	No	NA	--	4.20E+02	No	No	</=SL
1,1,2-Trichloroethane	79-00-5	1 : 1 : 1	100.00	-	6.70E+02	6.70E+02	6.70E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	-	1.20E+04	1.20E+04	1.20E+04	No	NA	--	7.00E+02	Yes	Yes	>SL
1,1-Dichloroethylene	75-35-4	1 : 1 : 1	100.00	-	2.10E+03	2.10E+03	2.10E+03	No	NA	--	7.00E+00	Yes	Yes	>SL
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	-	4.00E+04	4.00E+04	4.00E+04	No	NA	--	7.00E+01	Yes	Yes	>SL
4-Methyl-2-pentanone	108-10-1	1 : 1 : 1	100.00	-	1.50E+03	1.50E+03	1.50E+03	No	NA	--	2.00E+03	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	-	6.30E+04	6.30E+04	6.30E+04	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	4.80E+03	4.80E+03	4.80E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroform	67-66-3	1 : 1 : 1	100.00	-	6.10E+02	6.10E+02	6.10E+02	No	NA	--	8.00E+01	Yes	Yes	>SL
Dichloromethane	75-09-2	1 : 1 : 1	100.00	-	2.70E+02	2.70E+02	2.70E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	-	1.60E+03	1.60E+03	1.60E+03	No	NA	--	7.00E+02	Yes	Yes	>SL
Toluene	108-88-3	1 : 1 : 1	100.00	-	3.40E+04	3.40E+04	3.40E+04	No	NA	--	1.00E+03	Yes	Yes	>SL
Trichloroethylene	79-01-6	1 : 1 : 1	100.00	-	6.90E+02	6.90E+02	6.90E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Vinyl chloride	75-01-4	1 : 1 : 1	100.00	-	5.10E+02	5.10E+02	5.10E+02	No	NA	--	2.00E+00	Yes	Yes	>SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	-	6.70E+03	6.70E+03	6.70E+03	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
1,2,4-Trichlorobenzene	120-82-1	1 : 1 : 1	100.00	-	4.20E+01	4.20E+01	4.20E+01	No	NA	--	7.00E+01	No	No	</=SL
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	-	1.90E+03	1.90E+03	1.90E+03	No	NA	--	6.00E+02	Yes	Yes	>SL
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	-	1.60E+03	1.60E+03	1.60E+03	No	NA	--	7.50E+01	Yes	Yes	>SL
2-Methylnaphthalene	91-57-6	1 : 1 : 1	100.00	-	7.30E+01	7.30E+01	7.30E+01	No	NA	--	2.80E+01	Yes	Yes	>SL
Acenaphthene	83-32-9	1 : 1 : 1	100.00	-	3.60E+00	3.60E+00	3.60E+00	No	NA	--	4.20E+02	No	No	</=SL
Fluorene	86-73-7	1 : 1 : 1	100.00	-	3.50E+00	3.50E+00	3.50E+00	No	NA	--	2.80E+02	No	No	</=SL
Naphthalene	91-20-3	1 : 1 : 1	100.00	-	1.10E+02	1.10E+02	1.10E+02	No	NA	--	1.40E+02	No	No	</=SL
Phenanthrene	85-01-8	1 : 1 : 1	100.00	-	1.30E+01	1.30E+01	1.30E+01	No	NA	--	2.10E+03	No	No	</=SL
Mid Groundwater	**Site O - AA-O-3-28**													
VOCs														
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	1-1	4.80E-01	4.80E-01	4.80E-01	No	NA	--	1.00E+02	No	No	</=SL
Mid Groundwater	**Site O - SA-O-2**													

TABLE 2.7
COPC SELECTION - SHALLOW AND MID GROUNDWATER AND LEACHATE SCREEN **
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 1 : 1	100.00	-	1.20E+00	1.20E+00	1.20E+00	No	NA	--	2.00E+02	No	No	</=SL
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	-	5.50E+00	5.50E+00	5.50E+00	No	NA	--	7.00E+02	No	No	</=SL
1,2-Dichloroethane	107-06-2	1 : 1 : 1	100.00	-	4.50E-01	4.50E-01	4.50E-01	No	NA	--	5.00E+00	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	-	3.00E+00	3.00E+00	3.00E+00	No	NA	--	5.00E+00	No	No	</=SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	4.40E+00	4.40E+00	4.40E+00	No	NA	--	1.00E+02	No	No	</=SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	-	4.00E+00	4.00E+00	4.00E+00	No	NA	--	7.00E+02	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	-	9.70E-01	9.70E-01	9.70E-01	No	NA	--	1.00E+03	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	-	2.10E+01	2.10E+01	2.10E+01	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	-	3.00E+00	3.00E+00	3.00E+00	No	NA	--	6.00E+02	No	No	</=SL
1,3-Dichlorobenzene	541-73-1	1 : 1 : 1	100.00	-	6.20E-01	6.20E-01	6.20E-01	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	-	1.20E+00	1.20E+00	1.20E+00	No	NA	--	7.50E+01	No	No	</=SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	-	1.50E+00	1.50E+00	1.50E+00	No	NA	--	3.50E+01	No	No	</=SL
2-Methylnaphthalene	91-57-6	1 : 1 : 1	100.00	-	9.50E-01	9.50E-01	9.50E-01	No	NA	--	2.80E+01	No	No	</=SL
Phenanthrene	85-01-8	1 : 1 : 1	100.00	-	8.30E-01	8.30E-01	8.30E-01	No	NA	--	2.10E+03	No	No	</=SL
Mid Groundwater	**Site O - SA-O-3**													
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 1 : 1	100.00	-	3.75E+00	3.75E+00	3.75E+00	No	NA	--	2.00E+02	No	No	</=SL
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	-	1.05E+01	1.05E+01	1.05E+01	No	9.70E+00	Yes	7.00E+02	No	No	</=SL
1,1-Dichloroethylene	75-35-4	1 : 1 : 1	100.00	-	1.95E+00	1.95E+00	1.95E+00	No	6.90E+00	No	7.00E+00	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	-	4.50E+01	4.50E+01	4.50E+01	No	3.40E+01	Yes	7.00E+01	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	-	7.35E+00	7.35E+00	7.35E+00	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	2.15E+01	2.15E+01	2.15E+01	No	NA	--	1.00E+02	No	No	</=SL
Chloroform	67-66-3	1 : 1 : 1	100.00	-	1.10E+00	1.10E+00	1.10E+00	No	NA	--	8.00E+01	No	No	</=SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	-	4.90E+00	4.90E+00	4.90E+00	No	NA	--	7.00E+02	No	No	</=SL
Tetrachloroethene	127-18-4	1 : 1 : 1	100.00	-	2.35E+01	2.35E+01	2.35E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
Trichloroethylene	79-01-6	1 : 1 : 1	100.00	-	2.20E+01	2.20E+01	2.20E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	-	1.90E+01	1.90E+01	1.90E+01	No	NA	--	1.00E+04	No	No	</=SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	-	3.05E+00	3.05E+00	3.05E+00	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	-	1.65E+00	1.65E+00	1.65E+00	No	NA	--	7.50E+01	No	No	</=SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	-	1.55E+00	1.55E+00	1.55E+00	No	NA	--	3.50E+01	No	No	</=SL
Mid Groundwater	**Site O - SA-O-4**													
VOCs														
Benzene	71-43-2	1 : 1 : 1	100.00	-	5.90E-01	5.90E-01	5.90E-01	No	NA	--	5.00E+00	No	No	</=SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	4.30E+00	4.30E+00	4.30E+00	No	NA	--	1.00E+02	No	No	</=SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	-	1.20E+00	1.20E+00	1.20E+00	No	NA	--	7.00E+02	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	-	7.30E+00	7.30E+00	7.30E+00	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	-	3.20E+00	3.20E+00	3.20E+00	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	-	2.60E+00	2.60E+00	2.60E+00	No	NA	--	7.50E+01	No	No	</=SL
Mid Groundwater	**Site O North - AA-CLAY-1-26**													
VOCs														
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	-	1.80E+00	1.80E+00	1.80E+00	No	9.70E+00	No	7.00E+02	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	-	1.00E+01	1.00E+01	1.00E+01	No	3.40E+01	No	7.00E+01	No	No	</=SL
Trichloroethylene	79-01-6	1 : 1 : 1	100.00	-	1.70E+00	1.70E+00	1.70E+00	No	NA	--	5.00E+00	No	No	</=SL
Mid Groundwater	**Site O North - GM-60A**													
VOCs														
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	1.00E+00	1.00E+00	1.00E+00	No	NA	--	1.00E+02	No	No	</=SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	-	1.90E+00	1.90E+00	1.90E+00	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	-	1.40E+00	1.40E+00	1.40E+00	No	NA	--	7.50E+01	No	No	</=SL
Mid Groundwater	**Site O South - AA-O-5-22**													
SVOCs														
Anthracene	120-12-7	1 : 1 : 1	100.00	-	9.60E-01	9.60E-01	9.60E-01	No	NA	--	2.10E+03	No	No	</=SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Phenanthrene	85-01-8	1 : 1 : 1	100.00	-	1.30E+01	1.30E+01	1.30E+01	No	NA	--	2.10E+03	No	No	</=SL
Mid Groundwater	**Site P - AA-P-1-24**													
VOCs														
2-Butanone	78-93-3	1 : 1 : 1	100.00	10-10	7.50E+00	7.50E+00	7.50E+00	No	NA	--	4.20E+03	No	No	</=SL
Acetone	67-64-1	1 : 1 : 1	100.00	25-25	3.40E+01	3.40E+01	3.40E+01	No	NA	--	6.30E+03	No	No	</=SL
Chloromethane	74-87-3	1 : 1 : 1	100.00	1-1	3.30E-01 J	3.30E-01 J	3.30E-01	No	NA	--	1.60E+02	No	No	</=SL
Mid Groundwater	**Site P - AA-P-2-24**													
VOCs														
Chloromethane	74-87-3	1 : 1 : 1	100.00	1-1	3.40E-01 J	3.40E-01 J	3.40E-01	No	NA	--	1.60E+02	No	No	</=SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	1-1	8.60E-01	8.60E-01	8.60E-01	No	NA	--	7.00E+02	No	No	</=SL
Mid Groundwater	**Site P - AA-P-4-22**													
VOCs														
Benzene	71-43-2	1 : 1 : 1	100.00	-	9.70E-01	9.70E-01	9.70E-01	No	NA	--	5.00E+00	No	No	</=SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	1.40E+00	1.40E+00	1.40E+00	No	NA	--	1.00E+02	No	No	</=SL
Mid Groundwater	**Site P - AA-P-5-34**													
VOCs														
Carbon Disulfide	75-15-0	1 : 1 : 1	100.00	-	8.40E-01	8.40E-01	8.40E-01	No	NA	--	7.00E+02	No	No	</=SL
Mid Groundwater	**Site P - OSAA-1-26**													
VOCs														
2-Butanone	78-93-3	1 : 1 : 1	100.00	10-10	1.90E+00	1.90E+00	1.90E+00	No	NA	--	4.20E+03	No	No	</=SL
Mid Groundwater	**Site P - SA-P-1**													
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	-	1.20E+00 J	1.20E+00 J	1.20E+00	No	NA	--	6.00E+02	No	No	</=SL
Mid Groundwater	**Site P - SA-P-2**													
VOCs														
2-Butanone	78-93-3	1 : 1 : 1	100.00	-	7.30E+00	7.30E+00	7.30E+00	No	NA	--	4.20E+03	No	No	</=SL

TABLE 2.7
COPC SELECTION - SHALLOW AND MID GROUNDWATER AND LEACHATE SCREEN **
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
4-Methyl-2-pentanone	108-10-1	1 : 1 : 1	100.00	-	7.70E+00	7.70E+00	7.70E+00	No	NA	--	2.00E+03	No	No	</=SL
Acetone	67-64-1	1 : 1 : 1	100.00	-	1.90E+02	1.90E+02	1.90E+02	No	NA	--	6.30E+03	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	-	4.20E+00	4.20E+00	4.20E+00	No	NA	--	5.00E+00	No	No	</=SL
Carbon Disulfide	75-15-0	1 : 1 : 1	100.00	-	1.80E+00	1.80E+00	1.80E+00	No	NA	--	7.00E+02	No	No	</=SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	8.70E+00	8.70E+00	8.70E+00	No	NA	--	1.00E+02	No	No	</=SL
Dichloromethane	75-09-2	1 : 1 : 1	100.00	-	4.30E+00	4.30E+00	4.30E+00	No	NA	--	5.00E+00	No	No	</=SL
Mid Groundwater	**Site P - SA-P-3**													
VOCs														
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	-	9.60E-01	9.60E-01	9.60E-01	No	NA	--	7.00E+02	No	No	</=SL
Mid Groundwater	**Site Q Central - SA-Q-6**													
VOCs														
Benzene	71-43-2	1 : 1 : 1	100.00	-	2.20E+02	2.20E+02	2.20E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Carbon Disulfide	75-15-0	1 : 1 : 1	100.00	-	2.20E+00	2.20E+00	2.20E+00	No	NA	--	7.00E+02	No	No	</=SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	2.80E+02	2.80E+02	2.80E+02	No	NA	--	1.00E+02	Yes	Yes	>SL
Toluene	108-88-3	1 : 1 : 1	100.00	-	9.20E-01	9.20E-01	9.20E-01	No	NA	--	1.00E+03	No	No	</=SL
Vinyl chloride	75-01-4	1 : 1 : 1	100.00	-	9.30E-01	9.30E-01	9.30E-01	No	NA	--	2.00E+00	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	-	1.90E+01	1.90E+01	1.90E+01	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	-	6.30E+00 J	6.30E+00 J	6.30E+00	No	NA	--	7.50E+01	No	No	</=SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	-	1.00E+00 J	1.00E+00 J	1.00E+00	No	NA	--	3.50E+01	No	No	</=SL
Naphthalene	91-20-3	1 : 1 : 1	100.00	-	9.60E+00 J	9.60E+00 J	9.60E+00	No	NA	--	1.40E+02	No	No	</=SL
Mid Groundwater	**Site Q Central - SA-Q-7**													
VOCs														
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	2.20E+00	2.20E+00	2.20E+00	No	NA	--	1.00E+02	No	No	</=SL
Mid Groundwater	**Site Q North - SA-Q-1**													
VOCs														
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	-	1.60E+02	1.60E+02	1.60E+02	No	NA	--	7.00E+02	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	-	1.00E+03	1.00E+03	1.00E+03	No	NA	--	5.00E+00	Yes	Yes	>SL

TABLE 2.7
COPC SELECTION - SHALLOW AND MID GROUNDWATER AND LEACHATE SCREEN **
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	1.20E+03	1.20E+03	1.20E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroethane	75-00-3	1 : 1 : 1	100.00	-	3.50E+01	3.50E+01	3.50E+01	No	NA	--	4.60E+00	Yes	Yes	>SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	-	2.30E+01	2.30E+01	2.30E+01	No	NA	--	6.00E+02	No	No	</=SL
1,3-Dichlorobenzene	541-73-1	1 : 1 : 1	100.00	-	3.20E+00	3.20E+00	3.20E+00	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	-	3.60E+01	3.60E+01	3.60E+01	No	NA	--	7.50E+01	No	No	</=SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	-	8.80E+00 J	8.80E+00 J	8.80E+00	No	NA	--	3.50E+01	No	No	</=SL
Mid Groundwater	**Site Q South - AA-Q-6-24**													
VOCs														
Acetone	67-64-1	1 : 1 : 1	100.00	62-120	5.70E+01	5.70E+01	5.70E+01	No	NA	--	6.30E+03	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	2.5-5	4.75E+02	4.75E+02	4.75E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	2.5-5	6.10E+01	6.10E+01	6.10E+01	No	NA	--	7.00E+02	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	2.5-5	6.80E+01	6.80E+01	6.80E+01	No	NA	--	1.00E+03	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	5-10	2.55E+01	2.55E+01	2.55E+01	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
2-Methylnaphthalene	91-57-6	1 : 1 : 1	100.00	40-40	4.55E+02 J	4.55E+02 J	4.55E+02	No	NA	--	2.80E+01	Yes	Yes	>SL
Acenaphthene	83-32-9	1 : 1 : 1	100.00	10-10	7.40E+00	7.40E+00	7.40E+00	No	NA	--	4.20E+02	No	No	</=SL
Anthracene	120-12-7	1 : 1 : 1	100.00	10-10	6.50E-01	6.50E-01	6.50E-01	No	NA	--	2.10E+03	No	No	</=SL
Dibenzofuran	132-64-9	1 : 1 : 1	100.00	10-10	4.90E+00	4.90E+00	4.90E+00	No	NA	--	1.40E+01	No	No	</=SL
Fluorene	86-73-7	1 : 1 : 1	100.00	10-10	9.10E+00	9.10E+00	9.10E+00	No	NA	--	2.80E+02	No	No	</=SL
Naphthalene	91-20-3	1 : 1 : 1	100.00	10-10	9.55E+01 J	9.55E+01 J	9.55E+01	No	NA	--	1.40E+02	No	No	</=SL
Phenanthrene	85-01-8	1 : 1 : 1	100.00	10-10	1.70E+01	1.70E+01	1.70E+01	No	NA	--	2.10E+03	No	No	</=SL
Mid Groundwater	**Site Q South - AA-Q-7-24**													
VOCs														
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	2-2	2.20E-01	2.20E-01	2.20E-01	No	NA	--	7.00E+01	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	1-1	7.10E-01	7.10E-01	7.10E-01	No	NA	--	5.00E+00	No	No	</=SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	1-1	9.50E+01	9.50E+01	9.50E+01	No	NA	--	1.00E+02	No	No	</=SL
Chloroethane	75-00-3	1 : 1 : 1	100.00	1-1	8.70E-01	8.70E-01	8.70E-01	No	NA	--	4.60E+00	No	No	</=SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	1-1	8.80E-01	8.80E-01	8.80E-01	No	NA	--	7.00E+02	No	No	</=SL
SVOCs														
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	10-10	3.60E+00	3.60E+00	3.60E+00	No	NA	--	3.50E+01	No	No	</=SL
Naphthalene	91-20-3	1 : 1 : 1	100.00	10-10	2.20E+00	2.20E+00	2.20E+00	No	NA	--	1.40E+02	No	No	</=SL
Mid Groundwater	**Site Q South - AA-Q-8-24**													
VOCs														
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	2-2	2.80E+00	2.80E+00	2.80E+00	No	NA	--	7.00E+01	No	No	</=SL
Trichloroethylene	79-01-6	1 : 1 : 1	100.00	1-1	1.70E-01	1.70E-01	1.70E-01	No	NA	--	5.00E+00	No	No	</=SL
Mid Groundwater	**Site Q South - Piez-7S**													
VOCs														
Trichloroethylene	79-01-6	1 : 1 : 1	100.00	-	1.00E+00	1.00E+00	1.00E+00	No	NA	--	5.00E+00	No	No	</=SL
Mid Groundwater	**Site Q South - SA2-MW-9-S**													
VOCs														
Carbon Disulfide	75-15-0	1 : 1 : 1	100.00	2-2	1.80E+00 J	1.80E+00 J	1.80E+00	No	NA	--	7.00E+02	No	No	</=SL
Chloroform	67-66-3	1 : 1 : 1	100.00	1-1	1.00E+00	1.00E+00	1.00E+00	No	NA	--	8.00E+01	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	1-1	6.30E-01	6.30E-01	6.30E-01	No	NA	--	1.00E+03	No	No	</=SL
Mid Groundwater	**Site Q South - SA-Q-11**													
VOCs														
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	-	5.60E-01	5.60E-01	5.60E-01	No	NA	--	7.00E+02	No	No	</=SL
Mid Groundwater	**Site Q South - SA-Q-12**													
VOCs														
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	7.40E+00	7.40E+00	7.40E+00	No	NA	--	1.00E+02	No	No	</=SL
Mid Groundwater	**Site Q South - SA-Q-14**													
VOCs														
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	6.50E+01	6.50E+01	6.50E+01	No	NA	--	1.00E+02	No	No	</=SL
Chloroethane	75-00-3	1 : 1 : 1	100.00	-	1.50E+00	1.50E+00	1.50E+00	No	NA	--	4.60E+00	No	No	</=SL
Vinyl chloride	75-01-4	1 : 1 : 1	100.00	-	1.20E+00	1.20E+00	1.20E+00	No	NA	--	2.00E+00	No	No	</=SL

TABLE 2.7
COPC SELECTION - SHALLOW AND MID GROUNDWATER AND LEACHATE SCREEN **
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
SVOCs														
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	-	1.20E+00	1.20E+00	1.20E+00	No	NA	--	7.50E+01	No	No	</=SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	-	1.20E+00	1.20E+00	1.20E+00	No	NA	--	3.50E+01	No	No	</=SL
Mid Groundwater	**Site R - AA-R-1-28**													
VOCs														
Benzene	71-43-2	1 : 1 : 1	100.00	10-10	5.10E+02	5.10E+02	5.10E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	10-10	2.00E+03	2.00E+03	2.00E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloromethane	74-87-3	1 : 1 : 1	100.00	10-10	3.20E+00	3.20E+00	3.20E+00	No	NA	--	1.60E+02	No	No	</=SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	10-10	4.60E+01	4.60E+01	4.60E+01	No	NA	--	7.00E+02	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	10-10	1.10E+01	1.10E+01	1.10E+01	No	NA	--	1.00E+03	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	20-20	1.20E+01	1.20E+01	1.20E+01	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
bis(2-Chloroethyl)ether	111-44-4	1 : 1 : 1	100.00	500-500	3.60E+02	3.60E+02	3.60E+02	No	NA	--	1.00E+01	Yes	Yes	>SL
Mid Groundwater	**Site R - B-22A**													
VOCs														
Benzene	71-43-2	1 : 1 : 1	100.00	-	7.80E+01	7.80E+01	7.80E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	1.70E+03	1.70E+03	1.70E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	-	1.20E+02	1.20E+02	1.20E+02	No	NA	--	6.00E+02	No	No	</=SL
1,3-Dichlorobenzene	541-73-1	1 : 1 : 1	100.00	-	1.80E+00	1.80E+00	1.80E+00	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	-	3.00E+02	3.00E+02	3.00E+02	No	NA	--	7.50E+01	Yes	Yes	>SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	-	8.00E+01	8.00E+01	8.00E+01	No	NA	--	3.50E+01	Yes	Yes	>SL
Fluorene	86-73-7	1 : 1 : 1	100.00	-	3.90E+00	3.90E+00	3.90E+00	No	NA	--	2.80E+02	No	No	</=SL
Mid Groundwater	**Site R - B-25A**													
VOCs														
1,2-Dichloroethane	107-06-2	1 : 1 : 1	100.00	-	9.10E+03	9.10E+03	9.10E+03	No	NA	--	5.00E+00	Yes	Yes	>SL
4-Methyl-2-pentanone	108-10-1	1 : 1 : 1	100.00	-	2.60E+02	2.60E+02	2.60E+02	No	NA	--	2.00E+03	No	No	</=SL
Acetone	67-64-1	1 : 1 : 1	100.00	-	5.00E+03	5.00E+03	5.00E+03	No	NA	--	6.30E+03	No	No	</=SL

TABLE 2.7
COPC SELECTION - SHALLOW AND MID GROUNDWATER AND LEACHATE SCREEN **
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	3.50E+03	3.50E+03	3.50E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroethane	75-00-3	1 : 1 : 1	100.00	-	1.60E+02	1.60E+02	1.60E+02	No	NA	--	4.60E+00	Yes	Yes	>SL
Toluene	108-88-3	1 : 1 : 1	100.00	-	1.70E+02	1.70E+02	1.70E+02	No	NA	--	1.00E+03	No	No	</=SL
SVOCs														
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	-	5.00E+04	5.00E+04	5.00E+04	No	NA	--	3.50E+01	Yes	Yes	>SL
Nitrobenzene	98-95-3	1 : 1 : 1	100.00	-	3.20E+03	3.20E+03	3.20E+03	No	NA	--	3.50E+00	Yes	Yes	>SL
Mid Groundwater	**Site R - B-28A**													
VOCs														
Benzene	71-43-2	1 : 1 : 1	100.00	-	1.40E+02	1.40E+02	1.40E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	3.40E+02	3.40E+02	3.40E+02	No	NA	--	1.00E+02	Yes	Yes	>SL
SVOCs														
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	-	8.90E+00	8.90E+00	8.90E+00	No	NA	--	3.50E+01	No	No	</=SL
Mid Groundwater	**Site S - AA-S-1-24**													
VOCs														
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	2-2	3.00E-01	3.00E-01	3.00E-01	No	NA	--	7.00E+01	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	1-1	3.00E+00	3.00E+00	3.00E+00	No	NA	--	5.00E+00	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	1-1	4.10E-01	4.10E-01	4.10E-01	No	NA	--	1.00E+03	No	No	</=SL
Vinyl chloride	75-01-4	1 : 1 : 1	100.00	1-1	3.20E-01	3.20E-01	3.20E-01	No	NA	--	2.00E+00	No	No	</=SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	10-10	1.50E+00 J	1.50E+00 J	1.50E+00	No	NA	--	6.00E+02	No	No	</=SL
bis(2-Chloroethyl)ether	111-44-4	1 : 1 : 1	100.00	10-10	1.80E+00 J	1.80E+00 J	1.80E+00	No	NA	--	1.00E+01	No	No	</=SL
Mid Groundwater	**Site S - AA-S-2-28**													
VOCs														
2-Butanone	78-93-3	1 : 1 : 1	100.00	10-10	6.80E+00	6.80E+00	6.80E+00	No	NA	--	4.20E+03	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	1 : 1 : 1	100.00	10-10	1.80E+00	1.80E+00	1.80E+00	No	NA	--	2.00E+03	No	No	</=SL
Methyl N-Butyl Ketone	591-78-6	1 : 1 : 1	100.00	10-10	2.00E+00	2.00E+00	2.00E+00	No	NA	--	2.00E+03	No	No	</=SL
Mid Groundwater	**Site S - AA-S-3-24**													

TABLE 2.7
COPC SELECTION - SHALLOW AND MID GROUNDWATER AND LEACHATE SCREEN **
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
VOCs														
2-Butanone	78-93-3	1 : 1 : 1	100.00	10-10	6.80E+00	6.80E+00	6.80E+00	No	NA	--	4.20E+03	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	1 : 1 : 1	100.00	10-10	1.30E+00	1.30E+00	1.30E+00	No	NA	--	2.00E+03	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	1-1	1.80E-01	1.80E-01	1.80E-01	No	NA	--	5.00E+00	No	No	</=SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	1-1	1.80E+00	1.80E+00	1.80E+00	No	NA	--	1.00E+02	No	No	</=SL
Methyl N-Butyl Ketone	591-78-6	1 : 1 : 1	100.00	10-10	1.90E+00	1.90E+00	1.90E+00	No	NA	--	2.00E+03	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	1-1	4.10E-01	4.10E-01	4.10E-01	No	NA	--	1.00E+03	No	No	</=SL
Mid Groundwater Site S - SA-S-1														
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 1 : 1	100.00	-	8.45E+00	8.45E+00	8.45E+00	No	NA	--	2.00E+02	No	No	</=SL
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	-	7.60E+00	7.60E+00	7.60E+00	No	NA	--	7.00E+02	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	-	6.70E+00	6.70E+00	6.70E+00	No	NA	--	7.00E+01	No	No	</=SL
4-Methyl-2-pentanone	108-10-1	1 : 1 : 1	100.00	-	2.10E+01	2.10E+01	2.10E+01	No	NA	--	2.00E+03	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	-	7.35E+00	7.35E+00	7.35E+00	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	1.55E+00	1.55E+00	1.55E+00	No	NA	--	1.00E+02	No	No	</=SL
Chloroethane	75-00-3	1 : 1 : 1	100.00	-	7.35E+00	7.35E+00	7.35E+00	No	NA	--	4.60E+00	Yes	Yes	>SL
Dichloromethane	75-09-2	1 : 1 : 1	100.00	-	1.80E+00	1.80E+00	1.80E+00	No	NA	--	5.00E+00	No	No	</=SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	-	2.30E+01	2.30E+01	2.30E+01	No	NA	--	7.00E+02	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	-	2.60E+02	2.60E+02	2.60E+02	No	NA	--	1.00E+03	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	-	1.80E+02	1.80E+02	1.80E+02	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	-	2.20E+00	2.20E+00	2.20E+00	No	NA	--	6.00E+02	No	No	</=SL
bis(2-Chloroethyl)ether	111-44-4	1 : 1 : 1	100.00	-	2.80E+00	2.80E+00	2.80E+00	No	NA	--	1.00E+01	No	No	</=SL
Naphthalene	91-20-3	1 : 1 : 1	100.00	9.4-9.4	1.30E+00	1.30E+00	1.30E+00	No	NA	--	1.40E+02	No	No	</=SL
Shallow Groundwater Site O - AA-O-1-16														
VOCs														
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	1-1	2.40E+00	2.40E+00	2.40E+00	No	NA	--	7.00E+02	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	2-2	3.00E+00	3.00E+00	3.00E+00	No	NA	--	7.00E+01	No	No	</=SL

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Benzene	71-43-2	1 : 1 : 1	100.00	1-1	1.00E-01	1.00E-01	1.00E-01	No	NA	--	5.00E+00	No	No	</=SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	1-1	7.80E+00	7.80E+00	7.80E+00	No	NA	--	1.00E+02	No	No	</=SL
Vinyl chloride	75-01-4	1 : 1 : 1	100.00	1-1	3.50E-01	3.50E-01	3.50E-01	No	NA	--	2.00E+00	No	No	</=SL
Shallow Groundwater Site O - AA-O-2-13														
VOCs														
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	1-1	1.90E-01	1.90E-01	1.90E-01	No	NA	--	7.00E+02	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	1-1	3.60E-01	3.60E-01	3.60E-01	No	NA	--	1.00E+03	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	2-2	4.90E-01	4.90E-01	4.90E-01	No	NA	--	1.00E+04	No	No	</=SL
Shallow Groundwater Site O - GM-19A														
VOCs														
1,1,1-Trichloroethane	71-55-6	1 : 1 : 1	100.00	-	8.80E+00	8.80E+00	8.80E+00	No	NA	--	2.00E+02	No	No	</=SL
1,1-Dichloroethane	75-34-3	1 : 1 : 1	100.00	-	1.45E+01	1.45E+01	1.45E+01	No	9.70E+00	Yes	7.00E+02	No	No	</=SL
1,1-Dichloroethylene	75-35-4	1 : 1 : 1	100.00	-	3.65E+00	3.65E+00	3.65E+00	No	6.90E+00	No	7.00E+00	No	No	</=SL
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	100.00	-	6.45E+01	6.45E+01	6.45E+01	No	3.40E+01	Yes	7.00E+01	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	-	6.35E+00	6.35E+00	6.35E+00	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	1.30E+01	1.30E+01	1.30E+01	No	NA	--	1.00E+02	No	No	</=SL
Chloroform	67-66-3	1 : 1 : 1	100.00	-	9.50E-01	9.50E-01	9.50E-01	No	NA	--	8.00E+01	No	No	</=SL
Dichloromethane	75-09-2	1 : 1 : 1	100.00	5-5	1.50E+00	1.50E+00	1.50E+00	No	NA	--	5.00E+00	No	No	</=SL
Tetrachloroethene	127-18-4	1 : 1 : 1	100.00	-	1.10E+02	1.10E+02	1.10E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Trichloroethylene	79-01-6	1 : 1 : 1	100.00	-	5.30E+01	5.30E+01	5.30E+01	No	NA	--	5.00E+00	Yes	Yes	>SL
Vinyl chloride	75-01-4	1 : 1 : 1	100.00	-	1.65E+00	1.65E+00	1.65E+00	No	8.00E-01	Yes	2.00E+00	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	-	3.60E+00	3.60E+00	3.60E+00	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	-	2.45E+00	2.45E+00	2.45E+00	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	-	1.30E+00	1.30E+00	1.30E+00	No	NA	--	7.50E+01	No	No	</=SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	-	4.15E+00	4.15E+00	4.15E+00	No	NA	--	3.50E+01	No	No	</=SL
Shallow Groundwater Site O - SA2-MW-4-S														
VOCs														

TABLE 2.7
COPC SELECTION - SHALLOW AND MID GROUNDWATER AND LEACHATE SCREEN **
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
1,2,4-Trimethylbenzene	95-63-6	1 : 1 : 1	100.00	-	3.90E+01	3.90E+01	3.90E+01	No	NA	--	3.50E+02	No	No	</=SL
Benzene	71-43-2	1 : 1 : 1	100.00	50-50	4.40E+03	4.40E+03	4.40E+03	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	100-100	1.10E+04	1.10E+04	1.10E+04	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroethane	75-00-3	1 : 1 : 1	100.00	50-50	6.50E+02	6.50E+02	6.50E+02	No	NA	--	4.60E+00	Yes	Yes	>SL
Ethylbenzene	100-41-4	1 : 1 : 1	100.00	50-50	6.90E+01	6.90E+01	6.90E+01	No	NA	--	7.00E+02	No	No	</=SL
Isopropylbenzene	98-82-8	1 : 1 : 1	100.00	-	1.30E+01	1.30E+01	1.30E+01	No	NA	--	7.00E+02	No	No	</=SL
n-Propylbenzene	103-65-1	1 : 1 : 1	100.00	-	5.20E+00	5.20E+00	5.20E+00	No	NA	--	2.40E+02	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	100-100	3.10E+03	3.10E+03	3.10E+03	No	NA	--	1.00E+04	No	No	</=SL
SVOCs														
1,2-Dichlorobenzene	95-50-1	1 : 1 : 1	100.00	9.4-9.4	1.00E+01	1.00E+01	1.00E+01	No	NA	--	6.00E+02	No	No	</=SL
1,3-Dichlorobenzene	541-73-1	1 : 1 : 1	100.00	9.4-9.4	2.70E+01	2.70E+01	2.70E+01	No	NA	--	6.00E+02	No	No	</=SL
1,4-Dichlorobenzene	106-46-7	1 : 1 : 1	100.00	9.4-9.4	5.30E+01	5.30E+01	5.30E+01	No	NA	--	7.50E+01	No	No	</=SL
1,4-Dioxane	123-91-1	1 : 1 : 1	100.00	9.4-9.4	4.40E+00	4.40E+00	4.40E+00	No	NA	--	1.00E+00	Yes	Yes	>SL
1-Methylnaphthalene	90-12-0	1 : 1 : 1	100.00	9.4-9.4	6.80E+00	6.80E+00	6.80E+00	No	NA	--	4.90E+02	No	No	</=SL
2,4 & 2,5-Dimethylphenol	dimeth	1 : 1 : 1	100.00	19-19	1.20E+01	1.20E+01	1.20E+01	No	NA	--	1.40E+02	No	No	</=SL
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	9.4-9.4	5.50E+01	5.50E+01	5.50E+01	No	NA	--	3.50E+01	Yes	Yes	>SL
2-Methylnaphthalene	91-57-6	1 : 1 : 1	100.00	9.4-9.4	6.10E+00	6.10E+00	6.10E+00	No	NA	--	2.80E+01	No	No	</=SL
4-Chlorophenol	106-48-9	1 : 1 : 1	100.00	-	5.70E+01	5.70E+01	5.70E+01	No	NA	--	3.00E+01	Yes	Yes	>SL
Naphthalene	91-20-3	1 : 1 : 1	100.00	9.4-9.4	5.30E+01	5.30E+01	5.30E+01	No	NA	--	1.40E+02	No	No	</=SL
Shallow Groundwater Site Q Central - SA-Q-5														
VOCs														
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	1.80E+00	1.80E+00	1.80E+00	No	NA	--	1.00E+02	No	No	</=SL
Dichloromethane	75-09-2	1 : 1 : 1	100.00	-	1.60E+00	1.60E+00	1.60E+00	No	NA	--	5.00E+00	No	No	</=SL
Shallow Groundwater Site Q South - AA-Q-10-18														
VOCs														
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	6.55E-01	6.55E-01	6.55E-01	No	NA	--	1.00E+02	No	No	</=SL
Shallow Groundwater Site Q South - SA2-MW-10-S														
VOCs														

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	1-1	4.30E-01	4.30E-01	4.30E-01	No	NA	--	1.00E+02	No	No	</=SL
Shallow Groundwater Site R - B-24A														
VOCs														
1,2-Dichloroethane	107-06-2	1 : 1 : 1	100.00	-	2.20E+02	2.20E+02	2.20E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Acetone	67-64-1	1 : 1 : 1	100.00	-	2.20E+04	2.20E+04	2.20E+04	No	NA	--	6.30E+03	Yes	Yes	>SL
Benzene	71-43-2	1 : 1 : 1	100.00	-	8.30E+02	8.30E+02	8.30E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Chlorobenzene	108-90-7	1 : 1 : 1	100.00	-	1.00E+03	1.00E+03	1.00E+03	No	NA	--	1.00E+02	Yes	Yes	>SL
Chloroform	67-66-3	1 : 1 : 1	100.00	-	6.50E+01	6.50E+01	6.50E+01	No	NA	--	8.00E+01	No	No	</=SL
Dichloromethane	75-09-2	1 : 1 : 1	100.00	-	1.40E+02	1.40E+02	1.40E+02	No	NA	--	5.00E+00	Yes	Yes	>SL
Toluene	108-88-3	1 : 1 : 1	100.00	-	1.60E+02	1.60E+02	1.60E+02	No	NA	--	1.00E+03	No	No	</=SL
SVOCs														
2-Chlorophenol	95-57-8	1 : 1 : 1	100.00	-	1.40E+05	1.40E+05	1.40E+05	No	NA	--	3.50E+01	Yes	Yes	>SL
Nitrobenzene	98-95-3	1 : 1 : 1	100.00	-	1.30E+03	1.30E+03	1.30E+03	No	NA	--	3.50E+00	Yes	Yes	>SL
Shallow Groundwater Site S - SA-S-2														
VOCs														
Benzene	71-43-2	1 : 1 : 1	100.00	-	1.60E+00	1.60E+00	1.60E+00	No	NA	--	5.00E+00	No	No	</=SL
Chloroethane	75-00-3	1 : 1 : 1	100.00	-	4.60E+00	4.60E+00	4.60E+00	No	NA	--	4.60E+00	No	No	</=SL
Toluene	108-88-3	1 : 1 : 1	100.00	-	1.90E+00	1.90E+00	1.90E+00	No	NA	--	1.00E+03	No	No	</=SL
Xylenes, Total	1330-20-7	1 : 1 : 1	100.00	-	3.00E+00	3.00E+00	3.00E+00	No	NA	--	1.00E+04	No	No	</=SL

TABLE 2.7
COPC SELECTION - SHALLOW AND MID GROUNDWATER AND LEACHATE SCREEN **
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (h)	CAS	FOD (a)	% FOD (b)	Range of Reporting Limits (c) (ug/L)	Minimum Detect and Qualifier(d) (ug/L)	Maximum Detect and Qualifier (d) (ug/L)	Mean Detected (d) (ug/L)	EN?	Bkg (e) (ug/L)	Is Max > Bkg?	Ground WaterSL (f) (ug/L)	Is Max > Screening Level?	COPC? (g)	Reason

Notes:
** Screen for volatilization to trench and outdoor air pathways. Therefore, only volatile constituents (defined per USEPA, 2004 as constituents with Henry's Law Constants greater than 1E-5 atm/m3-mol and Molecular Weight less than 200 g/mol) are included on this table.
Bkg - Background concentration.
CAS - Chemical Abstracts Service.
COPC - Constituent of potential concern.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration, Human Health Calculated using Toxicity Equivalency Factors (TEFs) from Van den Berg, et al., 2006. TEFs presented in Table F-1.
EN - Essential nutrient.
J - Estimated value.
NA - Not available.
PCB - Polychlorinated Biphenyl.
SL - Screening Level.
SVOC - Semivolatile organic compound.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.
-- Not applicable.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.
(b) Percent detected out of valid samples. Constituents detected in fewer than 5 percent of samples, provided 20 samples are available, will not be included as COPCs.
(c) Range of reporting limits (sample quantitation limits) is based on available information; not available for all samples with positive detections. Range not presented for calculated parameters (i.e., PCBs and Dioxins).
(d) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged.The validation qualifier is presented for the minimum and maximum. Only detected results are included in the mean calculation.
(e) Equal to two times the average detected concentration in off-site sampling location listed for Site well in Table A-2. Calculated in Table A-3d.
(f) Groundwater screening levels were used according to the following hierarchy:
1) Illinois Groundwater Quality Standards for Class I: Potable Resource Groundwater. 35 III. Adm. Code 620.410. February 2, 2002.
2) USEPA, 2006. 2006 Edition of the Drinking Water Standards and Health Advisories. Office of Water. EPA 822-R-06-013. Maximum Contaminant Levels.
3) IEPA, 2002. Tiered Approach to Corrective Action Objectives. Appendix B, Table E. Tier 1 Groundwater Remediation Objectives for the Groundwater Component of the Groundwater Ingestion Route. Class I values. February 5, 2002.
4) Groundwater Remediation Objectives for Chemicals Not Listed in TACO. May 1, 2007. Prepared by the Illinois EPA (IEPA) Toxicity Assessment Unit, and February 1, 2008 Revisions/Additions to Tables for Non-TACO Chemical Remediation Objectives.
5) USEPA, 2004. Region 9 Preliminary Remediation Goal (PRG) Table. October 1, 2004. Value for Tap water
(g) A constituent is identified as a COPC if it is detected in greater than 5 percent of samples, provided 20 samples are available, if it is not an essential nutrient, if the maximum detected concentration is greater than the background concentration and if the maximum detected concentration is greater than the groundwater screening level.
(h) Only constituents detected at least once in the specified area/medium are included here.

TABLE 2.8
SUMMARY OF CONSITUTENTS OF POTENTIAL CONCERN
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	Surface Soil	Combined Soil	Shallow Groundwater (cw)	Shallow/Mid Groundwater (vol to air)	Sediment	Surface Water	Seep	Fish
VOCs									
1,1,1-Trichloroethane	71-55-6				X				
1,1,2-Trichloroethane	79-00-5		X	X	X				
1,1-Dichloroethane	75-34-3				X				
1,1-Dichloroethylene	75-35-4			X	X				
1,2-Dichloroethane	107-06-2		X	X	X				
1,2-Dichloroethene (total)	540-59-0		X	X	X				
1,2-Dichloropropane	78-87-5			X	X				
2-Butanone	78-93-3			X	X				
4-Methyl-2-pentanone	108-10-1			X	X				
Acetone	67-64-1			X	X				
Acrolein	107-02-8					X			
Benzene	71-43-2		X	X	X			X	
Chlorobenzene	108-90-7		X	X	X			X	
Chloroethane	75-00-3			X	X				
Chloroform	67-66-3		X	X	X				
Chloromethane	74-87-3			X	X				
Dichloromethane	75-09-2		X	X	X				
Ethylbenzene	100-41-4		X	X	X				
Hexane	110-54-3		X						
Tetrachloroethene	127-18-4	X	X	X	X				
Toluene	108-88-3		X	X	X				
Trichloroethene	79-01-6		X	X	X				
Vinyl chloride	75-01-4			X	X				
Xylenes, Total	1330-20-7		X	X	X				
SVOCs									
1,2,4-Trichlorobenzene	120-82-1	X	X	X	X				
1,2-Dichlorobenzene	95-50-1		X	X	X				
1,4-Dichlorobenzene	106-46-7		X	X	X			X	
1,4-Dioxane	123-91-1			X	X				
2,4,5-Trichlorophenol	95-95-4			X					
2,4,6-Trichlorophenol	88-06-2	X	X	X					
2,4-Dichlorophenol	120-83-2		X	X			X		
2,4-Dimethylphenol	105-67-9			X					

TABLE 2.8
SUMMARY OF CONSITUTENTS OF POTENTIAL CONCERN
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	Surface Soil	Combined Soil	Shallow Groundwater (cw)	Shallow/Mid Groundwater (vol to air)	Sediment	Surface Water	Seep	Fish
2-Chlorophenol	95-57-8		X	X	X			X	
2-Methylnaphthalene	91-57-6		X	X	X				
2-Methylphenol	95-48-7			X					
2-Nitroaniline	88-74-4			X					
3&4Methylphenol	106-44-5			X					
3,3'-Dichlorobenzidine	91-94-1			X					
4-Chloroaniline	106-47-8		X	X			X	X	
4-Chlorophenol	106-48-9			X	X				
4-Nitroaniline	100-01-6		X	X					
4-Nitrophenol	100-02-7			X					
Benzo(a)anthracene	56-55-3	X	X						X
Benzo(a)pyrene	50-32-8	X	X	X			X		X
Benzo(b)fluoranthene	205-99-2	X	X	X					
Benzo(g,h,i)perylene	191-24-2			X					
Benzo(k)fluoranthene	207-08-9			X			X		
Benzyl Butyl Phthalate	85-68-7			X					
bis(2-Chloroethyl)ether	111-44-4		X		X				
bis(2-Ethylhexyl)phthalate	117-81-7		X	X					X
Chrysene	218-01-9			X					
Dibenzo(a,h)anthracene	53-70-3	X	X	X					X
Diethyl Phthalate	84-66-2			X					
Di-n-butylphthalate	84-74-2			X					
Di-n-octylphthalate	117-84-0			X					
Dinoseb	88-85-7			X					
Hexachlorobenzene	118-74-1		X						
Indeno(1,2,3-cd)pyrene	193-39-5		X	X			X		
Naphthalene	91-20-3		X	X	X			X	
Nitrobenzene	98-95-3		X	X	X				
N-Nitrosodiphenylamine	86-30-6			X					
Phenol	108-95-2			X					
Pesticides									
4,4'-DDD	72-54-8		X						
4,4'-DDE	72-55-9		X						X
4,4'-DDT	50-29-3	X	X	X					X

TABLE 2.8
SUMMARY OF CONSITUTENTS OF POTENTIAL CONCERN
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	Surface Soil	Combined Soil	Shallow Groundwater (cw)	Shallow/Mid Groundwater (vol to air)	Sediment	Surface Water	Seep	Fish
Aldrin	309-00-2		X						
alpha-BHC	319-84-6		X						
alpha-Chlordane	5103-71-9								X
beta-BHC	319-85-7	X	X	X					X
delta-BHC	319-86-8	X	X						
Dieldrin	60-57-1	X	X	X		X			X
Endrin Ketone	53494-70-5			X					
gamma-BHC (Lindane)	58-89-9	X	X	X					
Heptachlor	76-44-8	X	X	X					
Heptachlor Epoxide	1024-57-3		X					X	
Herbicides									
2,4,5-T	93-76-5			X					
2,4,5-TP (Silvex)	93-72-1			X					
2,4-D	94-75-7			X					
2,4-DB	94-82-6			X					
Dicamba	1918-00-9			X					
Dichlorprop	120-36-5			X					
MCPA	94-74-6			X					
MCPP	93-65-2		X	X					
Pentachlorophenol	87-86-5	X	X	X					
PCBs									
PCBs, Total	Total PCBs	X	X	X		X			X
Dioxin									
Dioxin TEQ-HH	Dioxin TEQ-HH	X	X	X				X	X
Metals									
Aluminum	7429-90-5			X			X	X	
Antimony	7440-36-0	X	X	X					
Arsenic	7440-38-2	X	X	X		X		X	X
Barium	7440-39-3		X	X				X	
Beryllium	7440-41-7			X				X	
Cadmium	7440-43-9	X	X	X				X	
Chromium	7440-47-3	X	X	X				X	
Cobalt	7440-48-4			X					
Copper	7440-50-8		X	X					

TABLE 2.8
SUMMARY OF CONSITUTENTS OF POTENTIAL CONCERN
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	Surface Soil	Combined Soil	Shallow Groundwater (cw)	Shallow/Mid Groundwater (vol to air)	Sediment	Surface Water	Seep	Fish
Lead	7439-92-1		X	X			X	X	
Manganese	7439-96-5	X	X	X			X	X	
Mercury	7439-97-6	X	X	X					X
Nickel	7440-02-0		X	X				X	
Selenium	7782-49-2			X					
Thallium	7440-28-0		X	X					
Vanadium	7440-62-2	X	X	X				X	
Zinc	7440-66-6			X					
Total:		23	59	89	32	4	8	18	13

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
PCBs - Polychlorinated Biphenyls.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.

TABLE 3.1
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR SURFACE SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/kg)	Max (c) (mg/kg)	MLE EPC Mean (d) (mg/kg)	Location of Max	Distribution (h)	UCL Selected (e)	UCL (f) (mg/kg)	RME EPC (g) (mg/kg)	EPC Type
O	Pesticide	Dieldrin	1 : 2 : 2	50	1.80E-01 J	1.80E-01 J	1.80E-01	SOIL-O-3	--	--	--	1.80E-01	Max
O	Herbicide	Pentachlorophenol	5 : 5 : 5	100	2.30E-02 J	9.30E+00 J	2.30E+00	SA-O-4	--	--	--	9.30E+00	Max
O	PCBs	PCBs, Total	2 : 2 : 2	100	5.32E-02	1.08E+01	5.41E+00	SOIL-O-3	--	--	--	1.08E+01	Max
O	Dioxin	Dioxin TEQ-HH	2 : 2 : 2	100	6.37E-05	6.77E-03	3.42E-03	SOIL-O-3	--	--	--	6.77E-03	Max
O North	Herbicide	Pentachlorophenol	4 : 4 : 4	100	3.35E-02	4.80E+02	1.24E+02	Soil-O-5	--	--	--	4.80E+02	Max
O North	PCBs	PCBs, Total	1 : 1 : 1	100	7.09E+02	7.09E+02	7.09E+02	SOIL-O-1	--	--	--	7.09E+02	Max
O North	Dioxin	Dioxin TEQ-HH	1 : 1 : 1	100	5.15E-02	5.15E-02	5.15E-02	SOIL-O-1	--	--	--	5.15E-02	Max
O North	Metals	Mercury	4 : 4 : 4	100	1.70E-01	1.80E+02 J	6.10E+01	SA-O-1	--	--	--	1.80E+02	Max
P	VOCs	Tetrachloroethene	5 : 11 : 11	45	1.90E-03 J	5.90E+01 J	5.37E+00	SA-P-2	NDS	99% KM (Chebyshev) UCL	6.23E+01	6.23E+01	UCL
P	SVOCs	Benzo(a)pyrene	6 : 11 : 11	55	4.20E-02	6.70E-01	2.40E-01	SOIL-P-2	NDS	95% KM (t) UCL	3.69E-01	3.69E-01	UCL
P	PCBs	PCBs, Total	3 : 4 : 4	75	4.82E-02	7.02E+00	2.38E+00	SOIL-P-4	--	--	--	7.02E+00	Max
P	Metals	Arsenic	11 : 11 : 11	100	4.00E+00 J	2.60E+01 J	1.13E+01	SOIL-P-1	Normal	95% Student's-t UCL	1.50E+01	1.50E+01	UCL
P	Metals	Manganese	11 : 11 : 11	100	3.10E+01	2.70E+03	4.50E+02	AT-P-4	Gamma (approx.	95% Chebyshev (MVUE) UCL	1.03E+03	1.03E+03	UCL
P	Metals	Vanadium	11 : 11 : 11	100	1.50E+01	2.60E+02	4.65E+01	AT-P-4	NDS	95% Chebyshev (Mean, Sd) UCL	1.40E+02	1.40E+02	UCL
Q Central	SVOCs	Benzo(a)anthracene	15 : 19 : 19	79	3.50E-02 J	3.60E+00	5.31E-01	SOIL-Q-21	Lognormal	95% KM (Chebyshev) UCL	1.37E+00	1.37E+00	UCL
Q Central	SVOCs	Benzo(a)pyrene	15 : 19 : 19	79	2.80E-02 J	3.20E+00	5.03E-01	SOIL-Q-21	Lognormal	95% KM (Chebyshev) UCL	1.27E+00	1.27E+00	UCL
Q Central	SVOCs	Benzo(b)fluoranthene	15 : 19 : 19	79	3.90E-02 J	3.20E+00	4.86E-01	SOIL-Q-21	Lognormal	95% KM (Chebyshev) UCL	1.23E+00	1.23E+00	UCL
Q Central	PCBs	PCBs, Total	5 : 16 : 16	31	1.40E-01	2.58E+00	4.34E-01	SOIL-Q-7	NDS	95% KM (Percentile Bootstrap) UCL	9.25E-01	9.25E-01	UCL
Q Central	Dioxin	Dioxin TEQ-HH	10 : 14 : 14	71	5.78E-05	3.87E-03	3.73E-04	SOIL-Q-7	NDS	97.5% KM (Chebyshev) UCL	2.09E-03	2.09E-03	UCL
Q Central	Metals	Arsenic	19 : 19 : 19	100	1.10E+00	8.10E+01	9.53E+00	AT-Q-23	NDS	99% Chebyshev (Mean, Sd) UCL	5.75E+01	5.75E+01	UCL
Q North	SVOCs	Benzo(a)pyrene	10 : 11 : 11	91	2.40E-02 J	1.80E+00	6.98E-01	SOIL-Q-2	Lognormal	95% KM (Chebyshev) UCL	1.73E+00	1.73E+00	UCL
Q North	SVOCs	Dibenzo(a,h)anthracene	5 : 11 : 11	45	6.60E-02	3.70E-01	1.85E-01	SOIL-Q-2	Lognormal	95% KM (t) UCL	2.71E-01	2.71E-01	UCL
Q North	PCBs	PCBs, Total	5 : 5 : 5	100	2.43E-01	2.43E+00	8.99E-01	SOIL-Q-3	--	--	--	2.43E+00	Max
Q North	Dioxin	Dioxin TEQ-HH	4 : 5 : 5	80	1.52E-05	1.25E-03	3.37E-04	SOIL-Q-4	--	--	--	1.25E-03	Max
Q North	Metals	Arsenic	11 : 11 : 11	100	2.30E+00	1.00E+02	1.38E+01	SA-Q-1	NDS	99% Chebyshev (Mean, Sd) UCL	1.00E+02	1.00E+02	UCL
Q North	Metals	Cadmium	10 : 11 : 11	91	4.90E-01	9.20E+01	9.99E+00	SOIL-Q-2	Lognormal	99% KM (Chebyshev) UCL	9.22E+01	9.22E+01	UCL
Q South	VOCs	Tetrachloroethene	9 : 24 : 24	38	5.35E-04	1.70E+00	8.88E-02	AT-Q-33	NDS	99% KM (Chebyshev) UCL	8.27E-01	8.27E-01	UCL
Q South	SVOCs	Benzo(a)anthracene	19 : 24 : 24	79	3.00E-02	2.52E+00	4.56E-01	SOIL-Q-10	NDS	99% KM (Chebyshev) UCL	2.04E+00	2.04E+00	UCL
Q South	SVOCs	Benzo(a)pyrene	20 : 24 : 24	83	2.30E-02 J	2.98E+00	4.44E-01	SOIL-Q-10	NDS	99% KM (Chebyshev) UCL	2.06E+00	2.06E+00	UCL
Q South	SVOCs	Benzo(b)fluoranthene	17 : 24 : 24	71	3.30E-02	3.30E+00 J	4.97E-01	SOIL-Q-9	Gamma (approx.	99% KM (Chebyshev) UCL	2.35E+00	2.35E+00	UCL
Q South	SVOCs	Dibenzo(a,h)anthracene	5 : 24 : 24	21	3.00E-02	4.40E-01 J	1.03E-01	AT-Q-35	Lognormal	95% KM (Percentile Bootstrap) UCL	1.72E-01	1.72E-01	UCL
Q South	Pesticide	Dieldrin	14 : 22 : 22	64	3.90E-04	3.75E-01 J	4.64E-02	SOIL-Q-11	Gamma	95% KM (BCA) UCL	8.34E-02	8.34E-02	UCL
Q South	PCBs	PCBs, Total	16 : 22 : 22	73	9.30E-02	1.39E+01	2.38E+00	SOIL-Q-11	Lognormal	95% KM (Chebyshev) UCL	6.07E+00	6.07E+00	UCL
Q South	Dioxin	Dioxin TEQ-HH	22 : 22 : 22	100	5.27E-05	7.11E-03	5.55E-04	SOIL-Q-11	NDS	99% Chebyshev (Mean, Sd) UCL	3.70E-03	3.70E-03	UCL
Q South	Metals	Antimony	12 : 24 : 24	50	5.20E-01	4.70E+01 J	4.15E+00	SOIL-Q-9	NDS	95% KM (BCA) UCL	8.01E+00	8.01E+00	UCL
Q South	Metals	Arsenic	24 : 24 : 24	100	3.30E+00	3.30E+01	8.29E+00	SOIL-Q-9	NDS	95% Chebyshev (Mean, Sd) UCL	1.40E+01	1.40E+01	UCL
Q South	Metals	Cadmium	24 : 24 : 24	100	4.10E-01	8.00E+03	3.39E+02	AT-Q-33	NDS	99% Chebyshev (Mean, Sd) UCL	3.65E+03	3.65E+03	UCL
Q South	Metals	Chromium	24 : 24 : 24	100	8.00E+00	6.60E+02	6.00E+01	SOIL-Q-9	NDS	99% Chebyshev (Mean, Sd) UCL	3.30E+02	3.30E+02	UCL
Q South	Metals	Manganese	24 : 24 : 24	100	2.40E+02	2.10E+03	5.29E+02	SOIL-Q-9	NDS	95% Modified-t UCL	6.67E+02	6.67E+02	UCL
Q South	Metals	Mercury	23 : 23 : 23	100	2.10E-02	1.40E+02	6.63E+00	AT-Q-35	NDS	99% KM (Chebyshev) UCL	6.70E+01	6.70E+01	UCL
S	SVOCs	1,2,4-Trichlorobenzene	1 : 4 : 4	25	3.60E+01	3.60E+01	3.60E+01	SOIL-S-1	--	--	--	3.60E+01	Max
S	SVOCs	2,4,6-Trichlorophenol	1 : 4 : 4	25	8.20E+00	8.20E+00	8.20E+00	SOIL-S-1	--	--	--	8.20E+00	Max
S	SVOCs	Benzo(a)anthracene	2 : 4 : 4	50	9.50E-02	8.00E+00	4.05E+00	SOIL-S-1	--	--	--	8.00E+00	Max
S	SVOCs	Benzo(a)pyrene	2 : 4 : 4	50	1.30E-01	5.40E+00	2.77E+00	SOIL-S-1	--	--	--	5.40E+00	Max
S	SVOCs	Benzo(b)fluoranthene	2 : 4 : 4	50	2.40E-01	6.60E+00	3.42E+00	SOIL-S-1	--	--	--	6.60E+00	Max
S	SVOCs	Dibenzo(a,h)anthracene	1 : 4 : 4	25	1.80E+00	1.80E+00	1.80E+00	SOIL-S-1	--	--	--	1.80E+00	Max
S	Pesticide	4,4'-DDT	2 : 2 : 2	100	1.10E-02 J	1.60E+01 J	8.01E+00	SOIL-S-1	--	--	--	1.60E+01	Max

TABLE 3.1
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR SURFACE SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/kg)	Max (c) (mg/kg)	MLE EPC Mean (d) (mg/kg)	Location of Max	Distribution (h)	UCL Selected (e)	UCL (f) (mg/kg)	RME EPC (g) (mg/kg)	EPC Type
S	Pesticide	beta-BHC	2 : 2 : 2	100	7.70E-04 J	2.60E+01 J	1.30E+01	SOIL-S-1	--	--	--	2.60E+01	Max
S	Pesticide	delta-BHC	1 : 2 : 2	50	7.40E-01 J	7.40E-01 J	7.40E-01	SOIL-S-1	--	--	--	7.40E-01	Max
S	Pesticide	gamma-BHC (Lindane)	1 : 2 : 2	50	7.50E+00 J	7.50E+00 J	7.50E+00	SOIL-S-1	--	--	--	7.50E+00	Max
S	Pesticide	Heptachlor	1 : 2 : 2	50	1.50E+00 J	1.50E+00 J	1.50E+00	SOIL-S-1	--	--	--	1.50E+00	Max
S	Herbicide	Pentachlorophenol	3 : 4 : 4	75	1.10E-02 J	4.40E+02	1.47E+02	SOIL-S-1	--	--	--	4.40E+02	Max
S	PCBs	PCBs, Total	2 : 2 : 2	100	1.38E-01	1.01E+03	5.04E+02	SOIL-S-1	--	--	--	1.01E+03	Max

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
FOD - Frequency of detection.
J - Estimated value.
KM - Kaplan Meier
MLE - Most Likely Exposure.
MVUE - Minimum Variance Unbiased Estimate.
NDS - No distribution selected.
PCB - Polycyclic Biphenyl.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
UCL - Upper confidence limit.
VOCs - Volatile Organic Compounds.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples. Percentage calculated based on number of detects and number of valid results.
(b) Minimum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(c) Maximum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(d) When FOD = 100% and when too few samples and detects were available to calculate reliable UCLs (g), the mean was calculated using detected results only. When FOD was less than 100%, the nonparametric mean given by ProUCL (see Attachment B) was used. All means calculated after results from duplicate samples have been averaged.
(e) UCL recommended for use by ProUCL Version 4.00.02 (U.S. EPA, 2007). If more than one UCL was recommended, the higher UCL was used. See Attachment B.
(f) UCL on the arithmetic mean for each constituent, after duplicates have been averaged. Confidence level listed with UCL selected. ProUCL selects the appropriate substitution method for non-detects.
(g) UCLs calculated where at least 10 samples and at least 5 detects are available. Where too few samples or detects are available, the maximum detected concentration is used. ProUCL 4.00.02 recommends 10-15 or more distinct results for the most accurate and reliable UCL calculation. When fewer than 10 detects were present in the dataset, the calculations were reviewed individually to determine appropriate UCLs.
(h) Distribution selection shown in Attachment B-1.

TABLE 3.1 MLE
EXPOSURE POINT CONCENTRATIONS - SURFACE SOIL (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - MLE Scenario (mg/kg) (a)						
		O	O North	P	Q Central	Q North	Q South	S
VOCs								
Tetrachloroethene	127-18-4	NCOPC	NCOPC	5.37E+00	NCOPC	NCOPC	8.88E-02	NCOPC
SVOCs								
1,2,4-Trichlorobenzene	120-82-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.60E+01
2,4,6-Trichlorophenol	88-06-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.20E+00
Benzo(a)anthracene	56-55-3	NCOPC	NCOPC	NCOPC	5.31E-01	NCOPC	4.56E-01	4.05E+00
Benzo(a)pyrene	50-32-8	NCOPC	NCOPC	2.40E-01	5.03E-01	6.98E-01	4.44E-01	2.77E+00
Benzo(b)fluoranthene	205-99-2	NCOPC	NCOPC	NCOPC	4.86E-01	NCOPC	4.97E-01	3.42E+00
Dibenzo(a,h)anthracene	53-70-3	NCOPC	NCOPC	NCOPC	NCOPC	1.85E-01	1.03E-01	1.80E+00
Pesticides								
4,4'-DDT	50-29-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.01E+00
beta-BHC	319-85-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.30E+01
delta-BHC	319-86-8	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.40E-01
Dieldrin	60-57-1	1.80E-01	NCOPC	NCOPC	NCOPC	NCOPC	4.64E-02	NCOPC
gamma-BHC (Lindane)	58-89-9	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.50E+00
Heptachlor	76-44-8	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.50E+00
Herbicides								
Pentachlorophenol	87-86-5	2.30E+00	1.24E+02	NCOPC	NCOPC	NCOPC	NCOPC	1.47E+02
PCBs								
PCBs, Total	Total PCBs	5.41E+00	7.09E+02	2.38E+00	4.34E-01	8.99E-01	2.38E+00	5.04E+02
Dioxin								
Dioxin TEQ-HH	Dioxin TEQ-HH	3.42E-03	5.15E-02	NCOPC	3.73E-04	3.37E-04	5.55E-04	NCOPC
Metals								
Antimony	7440-36-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.15E+00	NCOPC
Arsenic	7440-38-2	NCOPC	NCOPC	1.13E+01	9.53E+00	1.38E+01	8.29E+00	NCOPC
Cadmium	7440-43-9	NCOPC	NCOPC	NCOPC	NCOPC	9.99E+00	3.39E+02	NCOPC
Chromium	7440-47-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.00E+01	NCOPC
Manganese	7439-96-5	NCOPC	NCOPC	4.50E+02	NCOPC	NCOPC	5.29E+02	NCOPC
Mercury	7439-97-6	NCOPC	6.10E+01	NCOPC	NCOPC	NCOPC	6.63E+00	NCOPC
Vanadium	7440-62-2	NCOPC	NCOPC	4.65E+01	NCOPC	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure Point Concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
MLE - Most Likely Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Average detected concentration. Summary statistics shown in Table 3.1.

TABLE 3.1 RME
EXPOSURE POINT CONCENTRATIONS - SURFACE SOIL (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - RME Scenario (mg/kg) (a)						
		O	O North	P	Q Central	Q North	Q South	S
VOCs								
Tetrachloroethene	127-18-4	NCOPC	NCOPC	6.23E+01	NCOPC	NCOPC	8.27E-01	NCOPC
SVOCs								
1,2,4-Trichlorobenzene	120-82-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.60E+01
2,4,6-Trichlorophenol	88-06-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.20E+00
Benzo(a)anthracene	56-55-3	NCOPC	NCOPC	NCOPC	1.37E+00	NCOPC	2.04E+00	8.00E+00
Benzo(a)pyrene	50-32-8	NCOPC	NCOPC	3.69E-01	1.27E+00	1.73E+00	2.06E+00	5.40E+00
Benzo(b)fluoranthene	205-99-2	NCOPC	NCOPC	NCOPC	1.23E+00	NCOPC	2.35E+00	6.60E+00
Dibenzo(a,h)anthracene	53-70-3	NCOPC	NCOPC	NCOPC	NCOPC	2.71E-01	1.72E-01	1.80E+00
Pesticides								
4,4'-DDT	50-29-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.60E+01
beta-BHC	319-85-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.60E+01
delta-BHC	319-86-8	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.40E-01
Dieldrin	60-57-1	1.80E-01	NCOPC	NCOPC	NCOPC	NCOPC	8.34E-02	NCOPC
gamma-BHC (Lindane)	58-89-9	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.50E+00
Heptachlor	76-44-8	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.50E+00
Herbicides								
Pentachlorophenol	87-86-5	9.30E+00	4.80E+02	NCOPC	NCOPC	NCOPC	NCOPC	4.40E+02
PCBs								
PCBs, Total	Total PCBs	1.08E+01	7.09E+02	7.02E+00	9.25E-01	2.43E+00	6.07E+00	1.01E+03
Dioxin								
Dioxin TEQ-HH	Dioxin TEQ-HH	6.77E-03	5.15E-02	NCOPC	2.09E-03	1.25E-03	3.70E-03	NCOPC
Metals								
Antimony	7440-36-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.01E+00	NCOPC
Arsenic	7440-38-2	NCOPC	NCOPC	1.50E+01	5.75E+01	1.00E+02	1.40E+01	NCOPC
Cadmium	7440-43-9	NCOPC	NCOPC	NCOPC	NCOPC	9.22E+01	3.65E+03	NCOPC
Chromium	7440-47-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.30E+02	NCOPC
Manganese	7439-96-5	NCOPC	NCOPC	1.03E+03	NCOPC	NCOPC	6.67E+02	NCOPC
Mercury	7439-97-6	NCOPC	1.80E+02	NCOPC	NCOPC	NCOPC	6.70E+01	NCOPC
Vanadium	7440-62-2	NCOPC	NCOPC	1.40E+02	NCOPC	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure Point Concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Lower of the ProUCL recommended upper confidence limit (UCL) and the maximum detected concentration. Selection shown in Table 3.1.

TABLE 3.2
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR COMBINED SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/kg)	Max (c) (mg/kg)	MLE EPC Mean (d) (mg/kg)	Location of Max	Distribution (i)	UCL Selected (e)	UCL (f) (mg/kg)	RME EPC (g) (mg/kg)	EPC Type
O	VOCs	Benzene	10 : 14 : 14	71	1.10E-03	5.00E+02	4.53E+01	WASTE-O-2	Gamma	95% KM (Chebyshev) UCL	2.02E+02	2.02E+02	UCL
O	VOCs	Chlorobenzene	8 : 14 : 14	57	6.50E-02	7.60E+02	1.08E+02	WASTE-O-2	NDS	95% KM (BCA) UCL	2.32E+02	2.32E+02	UCL
O	VOCs	Ethylbenzene	11 : 14 : 14	79	3.80E-04	2.80E+03	2.59E+02	WASTE-O-2	Gamma	95% KM (Chebyshev) UCL	1.13E+03	1.13E+03	UCL
O	VOCs	Tetrachloroethene	3 : 14 : 14	21	1.00E-03	3.00E+00	1.80E+00	WASTE-O-2	--	--	--	3.00E+00	Max
O	VOCs	Toluene	11 : 14 : 14	79	1.60E-03	3.90E+02	3.27E+01	WASTE-O-2	Gamma	95% KM (Chebyshev) UCL	1.54E+02	1.54E+02	UCL
O	VOCs	Xylenes, Total	11 : 14 : 14	79	1.30E-03	1.40E+04	1.26E+03	WASTE-O-2	Gamma	95% KM (Chebyshev) UCL	5.61E+03	5.61E+03	UCL
O	SVOCs	1,2,4-Trichlorobenzene	5 : 13 : 14	38	3.00E-02	2.30E+01	4.70E+00	WASTE-O-3	NDS	UCL	1.20E+01	1.20E+01	UCL
O	SVOCs	1,4-Dichlorobenzene	6 : 13 : 14	46	4.60E-02 J	4.70E+01 J	8.99E+00	SOIL-O-3	NDS	95% KM (t) UCL	1.79E+01	1.79E+01	UCL
O	SVOCs	2,4,6-Trichlorophenol	5 : 13 : 14	38	1.10E+00 J	6.90E+00 J	2.02E+00	SOIL-O-3	Gamma	UCL	3.44E+00	3.44E+00	UCL
O	SVOCs	2-Methylnaphthalene	7 : 13 : 14	54	3.80E-02 J	2.95E+01 J	6.09E+00	SA-O-2	NDS	UCL	1.19E+01	1.19E+01	UCL
O	SVOCs	Benzo(a)anthracene	6 : 13 : 14	46	3.70E-02 J	1.44E+01 J	3.43E+00	SA-O-2	NDS	95% KM (t) UCL	6.67E+00	6.67E+00	UCL
O	SVOCs	Benzo(a)pyrene	6 : 13 : 14	46	3.70E-02 J	1.02E+01 J	2.22E+00	SA-O-2	NDS	UCL	4.59E+00	4.59E+00	UCL
O	SVOCs	Benzo(b)fluoranthene	9 : 13 : 14	69	4.00E-02 J	8.95E+00 J	2.15E+00	SA-O-2	Gamma	95% KM (BCA) UCL	3.63E+00	3.63E+00	UCL
O	SVOCs	Dibenzo(a,h)anthracene	5 : 13 : 14	38	7.80E-02	6.00E+00 J	9.65E-01	SA-O-2	NDS	UCL	2.30E+00	2.30E+00	UCL
O	SVOCs	Hexachlorobenzene	3 : 13 : 14	23	1.10E-01	3.70E+00 J	1.60E+00	SA-O-3	--	--	--	3.70E+00	Max
O	SVOCs	Indeno(1,2,3-cd)pyrene	2 : 13 : 14	15	1.50E+00	2.30E+00 J	1.90E+00	SA-O-2	--	--	--	2.30E+00	Max
O	Pesticide	Aldrin	2 : 11 : 11	18	1.30E-02 J	7.20E-01 J	3.67E-01	WASTE-O-3	--	--	--	7.20E-01	Max
O	Pesticide	delta-BHC	4 : 11 : 11	36	1.30E-02 J	2.85E+00	1.37E+00	SOIL-O-3	--	--	--	2.85E+00	Max
O	Pesticide	Dieldrin	5 : 11 : 11	45	5.00E-03 J	3.80E+00	8.46E-01	SOIL-O-3	Lognormal	95% KM (t) UCL	1.88E+00	1.88E+00	UCL
O	Pesticide	gamma-BHC (Lindane)	4 : 11 : 11	36	1.80E-02 J	2.88E+00 J	8.44E-01	SOIL-O-3	--	--	--	2.88E+00	Max
O	Pesticide	Heptachlor	6 : 11 : 11	55	7.30E-03 J	2.78E+00 J	6.58E-01	SOIL-O-3	Normal	UCL	1.39E+00	1.39E+00	UCL
O	Pesticide	Heptachlor Epoxide	3 : 11 : 11	27	3.40E-04 J	4.70E-01 J	2.87E-01	WASTE-O-3	--	--	--	4.70E-01	Max
O	Herbicide	Pentachlorophenol	9 : 14 : 14	64	2.30E-02 J	7.90E+03	8.10E+02	SA-O-3	Lognormal	95% KM (BCA) UCL	1.87E+03	1.87E+03	UCL
O	PCBs	PCBs, Total	9 : 11 : 11	82	5.32E-02	2.98E+02	4.22E+01	SOIL-O-3	Gamma	95% KM (Chebyshev) UCL	1.63E+02	1.63E+02	UCL
O	Dioxin	Dioxin TEQ-HH	9 : 9 : 9	100	6.38E-05	4.69E-02	1.58E-02	SA-O-3	--	--	--	4.69E-02	Max
O	Metals	Arsenic	14 : 14 : 14	100	4.40E+00	1.60E+02	1.87E+01	SA-O-3	NDS	UCL	6.66E+01	6.66E+01	UCL
O	Metals	Cadmium	10 : 14 : 14	71	5.40E-01 J	2.50E+02	6.08E+00	SA-O-3	NDS	99% KM (Chebyshev) UCL	2.15E+02	2.15E+02	UCL
O	Metals	Manganese	14 : 14 : 14	100	3.45E+02	2.00E+03	6.20E+02	SA-O-3	NDS	95% KM (Chebyshev) UCL	1.10E+03	1.10E+03	UCL
O	Metals	Nickel	14 : 14 : 14	100	1.50E+01	2.50E+03	2.30E+02	SA-O-4	NDS	99% Chebyshev (Mean, Sd) UCL	2.00E+03	2.00E+03	UCL
O North	VOCs	Benzene	7 : 9 : 9	78	8.80E-03 J	6.90E+01	2.03E+01	WASTE-O-1	--	--	--	6.90E+01	Max
O North	VOCs	Chlorobenzene	8 : 9 : 9	89	3.95E-03	4.80E+02	1.71E+02	WASTE-O-1	--	--	--	4.80E+02	Max
O North	VOCs	Dichloromethane	4 : 9 : 9	44	3.00E-01	8.70E+01	2.87E+01	SOIL-O-1	--	--	--	8.70E+01	Max
O North	VOCs	Ethylbenzene	7 : 9 : 9	78	4.00E-03 J	7.60E+02	2.42E+02	SOIL-O-1	--	--	--	7.60E+02	Max
O North	VOCs	Tetrachloroethene	4 : 9 : 9	44	3.90E-03 J	6.80E+00	1.82E+00	WASTE-O-1	--	--	--	6.80E+00	Max
O North	VOCs	Xylenes, Total	7 : 9 : 9	78	2.30E-02 J	3.90E+03	1.29E+03	WASTE-O-1	--	--	--	3.90E+03	Max
O North	SVOCs	1,2,4-Trichlorobenzene	6 : 9 : 9	67	1.50E-01 J	2.90E+02	8.58E+01	SOIL-O-1	--	--	--	2.90E+02	Max
O North	SVOCs	1,2-Dichlorobenzene	8 : 9 : 9	89	3.40E-02	5.20E+02	1.25E+02	SOIL-O-1	--	--	--	5.20E+02	Max
O North	SVOCs	1,4-Dichlorobenzene	6 : 9 : 9	67	2.45E-01 J	1.80E+02	6.23E+01	Soil-O-5	--	--	--	1.80E+02	Max
O North	SVOCs	2,4,6-Trichlorophenol	5 : 9 : 9	56	3.00E-01 J	6.10E+01	1.97E+01	SOIL-O-1	--	--	--	6.10E+01	Max
O North	SVOCs	2-Methylnaphthalene	5 : 9 : 9	56	4.95E-02 J	2.00E+02	5.29E+01	SOIL-O-1	--	--	--	2.00E+02	Max
O North	SVOCs	4-Nitroaniline	5 : 9 : 9	56	1.00E+00	1.00E+03	2.10E+02	SOIL-O-1	--	--	--	1.00E+03	Max
O North	SVOCs	Benzo(a)anthracene	5 : 9 : 9	56	4.10E-02	3.60E+01	1.04E+01	SOIL-O-1	--	--	--	3.60E+01	Max
O North	SVOCs	Benzo(a)pyrene	5 : 9 : 9	56	4.60E-02	1.10E+01 J	4.63E+00	WASTE-O-1	--	--	--	1.10E+01	Max
O North	SVOCs	Benzo(b)fluoranthene	5 : 9 : 9	56	8.90E-02	1.20E+01	4.48E+00	SOIL-O-1	--	--	--	1.20E+01	Max
O North	SVOCs	bis(2-Chloroethyl)ether	1 : 9 : 9	11	2.10E+00	2.10E+00	2.10E+00	SOIL-O-1	--	--	--	2.10E+00	Max
O North	SVOCs	Dibenzo(a,h)anthracene	3 : 9 : 9	33	1.60E-01 J	4.60E+00	2.12E+00	SOIL-O-1	--	--	--	4.60E+00	Max

TABLE 3.2
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR COMBINED SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/kg)	Max (c) (mg/kg)	MLE EPC Mean (d) (mg/kg)	Location of Max	Distribution (i)	UCL Selected (e)	UCL (f) (mg/kg)	RME EPC (g) (mg/kg)	EPC Type
O North	SVOCs	Hexachlorobenzene	4 : 9 : 9	44	3.75E-01 J	4.50E+00 J	1.87E+00	SOIL-O-1	--	--	--	4.50E+00	Max
O North	SVOCs	Naphthalene	5 : 9 : 9	56	3.60E-02 J	4.10E+01	1.20E+01	SOIL-O-1	--	--	--	4.10E+01	Max
O North	SVOCs	Nitrobenzene	1 : 9 : 9	11	1.10E+01	1.10E+01	1.10E+01	SOIL-O-1	--	--	--	1.10E+01	Max
O North	Pesticide	4,4'-DDD	1 : 6 : 6	17	3.30E+01	3.30E+01	3.30E+01	Soil-O-5	--	--	--	3.30E+01	Max
O North	Pesticide	4,4'-DDE	2 : 6 : 6	33	1.80E+01	3.30E+01	2.55E+01	SOIL-O-1	--	--	--	3.30E+01	Max
O North	Pesticide	4,4'-DDT	3 : 6 : 6	50	3.30E+00 J	1.30E+02	6.38E+01	Soil-O-5	--	--	--	1.30E+02	Max
O North	Pesticide	Aldrin	2 : 6 : 6	33	2.10E+00 J	4.50E+00 J	3.30E+00	SOIL-O-1	--	--	--	4.50E+00	Max
O North	Pesticide	alpha-BHC	1 : 6 : 6	17	1.50E+00 J	1.50E+00 J	1.50E+00	SOIL-O-1	--	--	--	1.50E+00	Max
O North	Pesticide	beta-BHC	2 : 6 : 6	33	7.70E-01 J	2.10E+01 J	1.09E+01	SOIL-O-1	--	--	--	2.10E+01	Max
O North	Pesticide	Dieldrin	3 : 6 : 6	50	1.40E-03 J	5.00E+01 J	1.95E+01	SOIL-O-1	--	--	--	5.00E+01	Max
O North	Pesticide	Heptachlor	2 : 6 : 6	33	9.90E+00 J	2.30E+01	1.65E+01	Soil-O-5	--	--	--	2.30E+01	Max
O North	Pesticide	Heptachlor Epoxide	1 : 6 : 6	17	2.70E+00 J	2.70E+00 J	2.70E+00	WASTE-O-1	--	--	--	2.70E+00	Max
O North	Herbicide	Pentachlorophenol	6 : 9 : 9	67	3.35E-02	1.30E+03 J	4.44E+02	SA-O-1	--	--	--	1.30E+03	Max
O North	PCBs	PCBs, Total	6 : 6 : 6	100	5.98E-02	3.05E+03	8.96E+02	SOIL-O-1	--	--	--	3.05E+03	Max
O North	Dioxin	Dioxin TEQ-HH	5 : 5 : 5	100	5.15E-02	6.08E-01	3.07E-01	WASTE-O-1	--	--	--	6.08E-01	Max
O North	Metals	Arsenic	9 : 9 : 9	100	5.60E+00	1.30E+02	2.74E+01	Soil-O-5	--	--	--	1.30E+02	Max
O North	Metals	Barium	9 : 9 : 9	100	1.80E+02	1.20E+04	1.74E+03	Soil-O-5	--	--	--	1.20E+04	Max
O North	Metals	Cadmium	8 : 9 : 9	89	5.60E+00	8.60E+01	3.00E+01	SOIL-O-1	--	--	--	8.60E+01	Max
O North	Metals	Copper	9 : 9 : 9	100	1.00E+01	5.10E+03	1.06E+03	Soil-O-5	--	--	--	5.10E+03	Max
O North	Metals	Mercury	7 : 7 : 7	100	2.40E-02 J	3.60E+02 J	9.95E+01	SOIL-O-1	--	--	--	3.60E+02	Max
O South	Herbicide	Pentachlorophenol	3 : 4 : 4	75	1.30E-02	2.00E+01	6.68E+00	Soil-O-6	--	--	--	2.00E+01	Max
P	VOCs	Benzene	21 : 33 : 33	64	1.26E-03	1.40E+01	8.06E-01	AT-P-5	Lognormal	95% KM (BCA) UCL	1.67E+00	1.67E+00	UCL
P	VOCs	Chloroform	3 : 33 : 33	9	2.00E-03 J	3.10E+00 J	1.17E+00	SA-P-3	--	--	--	3.10E+00	Max
P	VOCs	Hexane	2 : 2 : 2	100	6.00E+00	8.00E+01	4.30E+01	LEACH-P-1	--	--	--	8.00E+01	Max
P	VOCs	Tetrachloroethene	17 : 34 : 34	50	1.90E-03 J	1.40E+02 J	6.15E+00	WASTE-P-2	NDS	99% KM (Chebyshev) UCL	5.07E+01	5.07E+01	UCL
P	VOCs	Trichloroethene	7 : 33 : 33	21	7.90E-04	9.90E-01 J	6.17E-02	WASTE-P-2	NDS	95% KM (t) UCL	1.32E-01	1.32E-01	UCL
P	VOCs	Xylenes, Total	26 : 34 : 34	76	9.70E-04	6.00E+02	3.68E+01	SA-P-1	Lognormal	95% KM (Chebyshev) UCL	1.27E+02	1.27E+02	UCL
P	SVOCs	1,4-Dichlorobenzene	9 : 33 : 33	27	3.30E-02 J	1.60E+02	8.83E+00	SOIL-P-2	NDS	95% KM (t) UCL	1.87E+01	1.87E+01	UCL
P	SVOCs	4-Chloroaniline	7 : 33 : 33	21	2.20E-01 J	9.30E+02	3.07E+01	LEACH-P-1	NDS	95% KM (t) UCL	8.30E+01	8.30E+01	UCL
P	SVOCs	Benzo(a)pyrene	8 : 33 : 33	24	4.20E-02	6.70E-01	2.28E-01	SOIL-P-2	NDS	95% KM (t) UCL	3.06E-01	3.06E-01	UCL
P	Pesticide	4,4'-DDT	13 : 24 : 24	54	8.10E-03 J	1.40E+01	8.58E-01	SA-P-2	NDS	95% KM (BCA) UCL	2.05E+00	2.05E+00	UCL
P	Pesticide	Dieldrin	10 : 24 : 24	42	2.00E-03 J	1.30E+00	1.36E-01	SA-P-2	NDS	95% KM (t) UCL	2.56E-01	2.56E-01	UCL
P	Pesticide	Heptachlor Epoxide	6 : 24 : 24	25	7.90E-03	2.10E+00	1.05E-01	SA-P-2	NDS	99% KM (Chebyshev) UCL	1.07E+00	1.07E+00	UCL
P	Herbicide	Pentachlorophenol	31 : 34 : 34	91	4.30E-03	8.80E+01	3.16E+00	LEACH-P-1	Lognormal	99% KM (Chebyshev) UCL	2.89E+01	2.89E+01	UCL
P	PCBs	PCBs, Total	16 : 20 : 20	80	5.19E-02	4.03E+02	3.02E+01	LEACH-P-1	Lognormal	95% KM (Chebyshev) UCL	1.22E+02	1.22E+02	UCL
P	Dioxin	Dioxin TEQ-HH	18 : 21 : 21	86	1.79E-04	7.01E-03	1.65E-03	AT-P-5	Lognormal	97.5% KM (Chebyshev) UCL	4.58E-03	4.58E-03	UCL
P	Metals	Arsenic	34 : 35 : 35	97	1.60E+00	2.70E+01 J	1.07E+01	SOIL-P-1	Normal	95% KM (t) UCL	1.25E+01	1.25E+01	UCL
P	Metals	Cadmium	30 : 35 : 35	86	6.20E-01	9.30E+01	6.08E+00	WASTE-P-3	Lognormal	97.5% KM (Chebyshev) UCL	2.29E+01	2.29E+01	UCL
P	Metals	Manganese	35 : 35 : 35	100	1.20E+00	2.70E+03	2.59E+02	AT-P-4	Gamma (approx.)	95% Approximate Gamma UCL	3.62E+02	3.62E+02	UCL
P	Metals	Vanadium	35 : 35 : 35	100	6.30E-01	2.60E+02	2.96E+01	AT-P-4	NDS	95% Chebyshev (Mean, Sd) UCL	6.00E+01	6.00E+01	UCL
Q Central	VOCs	Chlorobenzene	20 : 45 : 45	44	1.30E-03 J	2.40E+02	7.12E+00	AT-Q-32	NDS	99% KM (Chebyshev) UCL	6.17E+01	6.17E+01	UCL
Q Central	VOCs	Xylenes, Total	27 : 44 : 44	61	1.20E-03	6.30E+02	1.63E+01	SA-Q-6	NDS	99% KM (Chebyshev) UCL	1.60E+02	1.60E+02	UCL
Q Central	SVOCs	1,4-Dichlorobenzene	14 : 45 : 45	31	4.50E-02	2.40E+01 J	9.31E-01	AT-Q-32	NDS	95% KM (Chebyshev) UCL	3.37E+00	3.37E+00	UCL
Q Central	SVOCs	Benzo(a)anthracene	28 : 44 : 44	64	2.90E-02	3.60E+00	3.43E+00	SOIL-Q-21	Gamma	95% KM (BCA) UCL	6.75E-01	6.75E-01	UCL
Q Central	SVOCs	Benzo(a)pyrene	27 : 44 : 44	61	2.40E-02	3.20E+00	4.48E-01	SOIL-Q-21	Lognormal	95% KM (BCA) UCL	6.43E-01	6.43E-01	UCL
Q Central	SVOCs	Benzo(b)fluoranthene	25 : 44 : 44	57	3.10E-02	3.20E+00	4.32E-01	SOIL-Q-21	Lognormal	95% KM (BCA) UCL	5.95E-01	5.95E-01	UCL
Q Central	Pesticide	Aldrin	4 : 37 : 37	11	9.10E-04	1.10E-01 J	2.90E-02	WASTE-Q-7	--	--	--	1.10E-01	Max

TABLE 3.2
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR COMBINED SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/kg)	Max (c) (mg/kg)	MLE EPC Mean (d) (mg/kg)	Location of Max	Distribution (i)	UCL Selected (e)	UCL (f) (mg/kg)	RME EPC (g) (mg/kg)	EPC Type
Q Central	Pesticide	Dieldrin	17 : 37 : 37	46	5.20E-04	3.90E-01	2.12E-02	WASTE-Q-7	NDS	95% KM (t) UCL	3.95E-02	3.95E-02	UCL
Q Central	Herbicide	Pentachlorophenol	21 : 45 : 45	47	3.30E-03 J	1.02E+01	3.96E-01	WASTE-Q-6	NDS	99% KM (Chebyshev) UCL	2.75E+00	2.75E+00	UCL
Q Central	PCBs	PCBs, Total	18 : 38 : 38	47	6.87E-02	1.14E+01	1.13E+00	WASTE-Q-6	NDS	95% KM (t) UCL	1.72E+00	1.72E+00	UCL
Q Central	Dioxin	Dioxin TEQ-HH	20 : 25 : 25	80	6.66E-05	1.82E-02	1.96E-03	AT-Q-32	NDS	97.5% KM (Chebyshev) UCL	7.98E-03	7.98E-03	UCL
Q Central	Metals	Arsenic	45 : 45 : 45	100	1.10E+00	1.00E+02	1.78E+01	AT-Q-22	NDS	99% Chebyshev (Mean, Sd) UCL	5.75E+01	5.75E+01	UCL
Q Central	Metals	Chromium	45 : 45 : 45	100	2.20E+00	8.00E+03	1.99E+02	SA-Q-8	NDS	99% Chebyshev (Mean, Sd) UCL	1.96E+03	1.96E+03	UCL
Q Central	Metals	Copper	45 : 45 : 45	100	1.75E+00	2.00E+04 J	5.13E+02	SOIL-Q-7	NDS	99% Chebyshev (Mean, Sd) UCL	4.92E+03	4.92E+03	UCL
Q Central	Metals	Manganese	45 : 45 : 45	100	2.90E+01 J	5.45E+03 J	3.96E+02	SOIL-Q-8	NDS	95% Chebyshev (Mean, Sd) UCL	9.16E+02	9.16E+02	UCL
Q North	VOCs	Benzene	17 : 29 : 29	59	7.60E-04 J	8.80E+00	3.73E-01	SOIL-Q-1	NDS	99% KM (Chebyshev) UCL	3.43E+00	3.43E+00	UCL
Q North	VOCs	Tetrachloroethene	16 : 29 : 29	55	4.30E-04	2.80E+01 J	1.01E+00	SOIL-Q-1	NDS	99% KM (Chebyshev) UCL	1.08E+01	1.08E+01	UCL
Q North	VOCs	Trichloroethene	14 : 28 : 28	50	4.90E-04	7.30E-01	5.06E-02	SOIL-Q-1	NDS	99% KM (Chebyshev) UCL	4.00E-01	4.00E-01	UCL
Q North	VOCs	Xylenes, Total	19 : 28 : 28	68	3.90E-04	3.00E+02	1.39E+01	WASTE-Q-2	NDS	99% KM (Chebyshev) UCL	1.24E+02	1.24E+02	UCL
Q North	SVOCs	2,4,6-Trichlorophenol	2 : 29 : 29	7	1.40E+00	4.70E+01	2.42E+01	WASTE-Q-1	--	--	--	4.70E+01	Max
Q North	SVOCs	2,4-Dichlorophenol	5 : 29 : 29	17	3.00E-02	2.70E+02	1.17E+01	WASTE-Q-1	NDS	95% KM (t) UCL	2.95E+01	2.95E+01	UCL
Q North	SVOCs	Benzo(a)anthracene	21 : 29 : 29	72	6.00E-02 J	4.85E+00 J	1.06E+00	SA-Q-3	Lognormal	95% KM (Chebyshev) UCL	2.07E+00	2.07E+00	UCL
Q North	SVOCs	Benzo(a)pyrene	23 : 29 : 29	79	2.40E-02 J	3.90E+00 J	9.97E-01	SA-Q-3	Gamma	95% KM (Chebyshev) UCL	1.89E+00	1.89E+00	UCL
Q North	SVOCs	Benzo(b)fluoranthene	22 : 29 : 29	76	9.00E-02 J	3.60E+00 J	1.00E+00	AT-Q-21	Lognormal	95% KM (BCA) UCL	1.32E+00	1.32E+00	UCL
Q North	SVOCs	Dibenzo(a,h)anthracene	10 : 29 : 29	34	6.60E-02	4.00E-01	1.94E-01	SOIL-Q-5	NDS	95% KM (t) UCL	2.45E-01	2.45E-01	UCL
Q North	Pesticide	beta-BHC	8 : 22 : 22	36	1.30E-03 J	1.30E+00 J	6.49E-02	WASTE-Q-1	Gamma	99% KM (Chebyshev) UCL	6.77E-01	6.77E-01	UCL
Q North	Pesticide	Dieldrin	11 : 22 : 22	50	3.95E-03 J	3.20E+00 J	2.32E-01	WASTE-Q-2	Lognormal	99% KM (Chebyshev) UCL	1.78E+00	1.78E+00	UCL
Q North	Herbicide	Pentachlorophenol	22 : 28 : 28	79	2.00E-03	2.30E+03 J	1.29E+02	AT-Q-21	NDS	99% KM (Chebyshev) UCL	9.67E+02	9.67E+02	UCL
Q North	PCBs	PCBs, Total	17 : 22 : 22	77	4.51E-01	2.21E+02	2.43E+01	SOIL-Q-1	Lognormal	99% KM (Chebyshev) UCL	1.49E+02	1.49E+02	UCL
Q North	Dioxin	Dioxin TEQ-HH	15 : 17 : 17	88	5.88E-05	6.78E-02	6.22E-03	SOIL-Q-1	Lognormal	99% KM (Chebyshev) UCL	4.59E-02	4.59E-02	UCL
Q North	Metals	Antimony	20 : 29 : 29	69	5.40E-01 J	8.40E+01 J	5.56E+00	SOIL-Q-1	NDS	97.5% KM (Chebyshev) UCL	2.42E+01	2.42E+01	UCL
Q North	Metals	Arsenic	29 : 29 : 29	100	2.30E+00	1.00E+02	1.29E+01	SA-Q-1	Lognormal	95% H-UCL	1.67E+01	1.67E+01	UCL
Q North	Metals	Barium	29 : 29 : 29	100	1.70E+01	7.20E+03	7.81E+02	SOIL-Q-1	NDS	99% Chebyshev (Mean, Sd) UCL	4.12E+03	4.12E+03	UCL
Q North	Metals	Cadmium	28 : 29 : 29	97	4.00E-01	9.20E+01	1.00E+01	SOIL-Q-2	Lognormal	97.5% KM (Chebyshev) UCL	3.44E+01	3.44E+01	UCL
Q North	Metals	Copper	29 : 29 : 29	100	8.30E+00	1.70E+04	8.55E+02	SA-Q-4	NDS	99% Chebyshev (Mean, Sd) UCL	6.75E+03	6.75E+03	UCL
Q North	Metals	Lead	28 : 29 : 29	97	7.60E+00	2.40E+04	1.16E+03	SOIL-Q-1	--	--	--	1.16E+03	Average (h)
Q North	Metals	Mercury	27 : 27 : 27	100	1.60E-02	1.70E+02	7.54E+00	SA-Q-4	Lognormal	97.5% Chebyshev (MVUE) UCL	1.16E+01	1.16E+01	UCL
Q North	Metals	Vanadium	29 : 29 : 29	100	7.70E+00	3.80E+02	4.75E+01	SA-Q-1	NDS	95% Chebyshev (Mean, Sd) UCL	1.13E+02	1.13E+02	UCL
Q South	VOCs	Benzene	29 : 45 : 45	64	8.60E-04 J	2.00E+00	6.34E-02	SOIL-Q-12	NDS	97.5% KM (Chebyshev) UCL	3.48E-01	3.48E-01	UCL
Q South	VOCs	Tetrachloroethene	25 : 45 : 45	56	5.35E-04	8.80E+00	2.70E-01	AT-Q-33	NDS	99% KM (Chebyshev) UCL	2.26E+00	2.26E+00	UCL
Q South	VOCs	Toluene	34 : 45 : 45	76	1.00E-03	1.30E+03	2.89E+01	SOIL-Q-12	NDS	99% KM (Chebyshev) UCL	3.17E+02	3.17E+02	UCL
Q South	VOCs	Trichloroethene	25 : 45 : 45	56	1.10E-03	3.80E-01	1.67E-02	SOIL-Q-12	NDS	95% KM (Chebyshev) UCL	5.58E-02	5.58E-02	UCL
Q South	VOCs	Xylenes, Total	32 : 45 : 45	71	5.60E-04	1.90E+03	4.24E+01	SOIL-Q-12	NDS	99% KM (Chebyshev) UCL	4.64E+02	4.64E+02	UCL
Q South	SVOCs	Benzo(a)anthracene	34 : 45 : 45	76	3.00E-02	1.30E+01	7.94E-01	SA-Q-11	Gamma (approx.)	97.5% KM (Chebyshev) UCL	2.66E+00	2.66E+00	UCL
Q South	SVOCs	Benzo(a)pyrene	33 : 45 : 45	73	2.30E-02 J	1.10E+01	7.09E-01	SA-Q-11	NDS	97.5% KM (Chebyshev) UCL	2.31E+00	2.31E+00	UCL
Q South	SVOCs	Benzo(b)fluoranthene	30 : 45 : 45	67	3.30E-02	7.80E+00	6.73E-01	SA-Q-11	NDS	97.5% KM (Chebyshev) UCL	1.92E+00	1.92E+00	UCL
Q South	SVOCs	Dibenzo(a,h)anthracene	13 : 45 : 45	29	3.00E-02	2.80E+00	2.03E-01	SA-Q-11	NDS	95% KM (t) UCL	3.22E-01	3.22E-01	UCL
Q South	SVOCs	Indeno(1,2,3-cd)pyrene	21 : 45 : 45	47	3.70E-02	6.80E+00	3.74E-01	SA-Q-11	NDS	95% KM (BCA) UCL	6.76E-01	6.76E-01	UCL
Q South	Pesticide	Aldrin	5 : 41 : 41	12	1.10E-03	3.00E-01 J	1.69E-02	WASTE-Q-11	NDS	UCL	1.48E-01	1.48E-01	UCL
Q South	Pesticide	Dieldrin	27 : 41 : 41	66	3.90E-04 J	8.25E-01 J	7.61E-02	WASTE-Q-12	Lognormal	95% KM (BCA) UCL	1.23E-01	1.23E-01	UCL
Q South	Pesticide	Heptachlor Epoxide	19 : 41 : 41	46	2.30E-04 J	2.30E-01 J	2.12E-02	WASTE-Q-12	Gamma	95% KM (t) UCL	3.42E-02	3.42E-02	UCL
Q South	Herbicide	Pentachlorophenol	32 : 45 : 45	71	1.10E-03 J	4.70E+02 J	1.59E+01	WASTE-Q-11	NDS	99% KM (Chebyshev) UCL	1.32E+02	1.32E+02	UCL
Q South	PCBs	PCBs, Total	31 : 41 : 41	76	4.34E-02	3.80E+01	3.98E+00	WASTE-Q-9	Lognormal	95% KM (Chebyshev) UCL	9.12E+00	9.12E+00	UCL
Q South	Dioxin	Dioxin TEQ-HH	32 : 32 : 32	100	5.27E-05	3.20E-02	1.61E-03	SOIL-Q-11	NDS	99% Chebyshev (Mean, Sd) UCL	1.16E-02	1.16E-02	UCL

TABLE 3.2
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR COMBINED SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/kg)	Max (c) (mg/kg)	MLE EPC Mean (d) (mg/kg)	Location of Max	Distribution (i)	UCL Selected (e)	UCL (f) (mg/kg)	RME EPC (g) (mg/kg)	EPC Type
Q South	Metals	Antimony	28 : 45 : 45	62	5.20E-01	4.70E+01 J	6.98E+00	SOIL-Q-9	Gamma	95% KM (BCA) UCL	9.67E+00	9.67E+00	UCL
Q South	Metals	Arsenic	45 : 45 : 45	100	2.00E+00	3.60E+01	1.13E+01	SA-Q-12	Lognormal	95% Approximate Gamma UCL	1.35E+01	1.35E+01	UCL
Q South	Metals	Barium	45 : 45 : 45	100	4.60E+01	1.60E+04	1.09E+03	AT-Q-35	Lognormal	95% H-UCL	1.50E+03	1.50E+03	UCL
Q South	Metals	Cadmium	43 : 45 : 45	96	1.30E-01 J	8.00E+03	3.16E+02	AT-Q-33	NDS	99% KM (Chebyshev) UCL	2.46E+03	2.46E+03	UCL
Q South	Metals	Chromium	45 : 45 : 45	100	4.00E+00	6.60E+02	8.05E+01	SOIL-Q-9	Lognormal	95% H-UCL	1.24E+02	1.24E+02	UCL
Q South	Metals	Manganese	45 : 45 : 45	100	9.60E+01	2.10E+03	5.80E+02	SOIL-Q-9	Lognormal	95% Approximate Gamma UCL	6.69E+02	6.69E+02	UCL
Q South	Metals	Mercury	40 : 41 : 41	98	2.10E-02	1.40E+02	5.68E+00	AT-Q-35	Lognormal	97.5% KM (Chebyshev) UCL	2.77E+01	2.77E+01	UCL
Q South	Metals	Nickel	45 : 45 : 45	100	6.95E+00	2.73E+03 J	1.19E+02	WASTE-Q-10	NDS	99% Chebyshev (Mean, Sd) UCL	7.22E+02	7.22E+02	UCL
Q South	Metals	Thallium	6 : 45 : 45	13	7.90E-01	7.00E+00	1.18E+00	AT-Q-33	NDS	95% KM (t) UCL	1.49E+00	1.49E+00	UCL
R	VOCs	1,1,2-Trichloroethane	1 : 12 : 12	8	9.50E+00	9.50E+00	9.50E+00	WASTE-R-1	--	--	--	9.50E+00	Max
R	VOCs	1,2-Dichloroethane	7 : 12 : 12	58	1.40E-03	8.70E+01	1.67E+01	SOIL-R-3	NDS	95% KM (BCA) UCL	3.25E+01	3.25E+01	UCL
R	VOCs	1,2-Dichloroethene (total)	5 : 12 : 12	42	4.80E-04	5.10E+01	5.73E+00	SOIL-R-3	NDS	95% KM (t) UCL	1.39E+01	1.39E+01	UCL
R	VOCs	Benzene	12 : 12 : 12	100	6.80E-04	1.50E+02	2.62E+01	WASTE-R-1	NDS	97.5% Chebyshev(Mean, Sd) UCL	1.17E+02	1.17E+02	UCL
R	VOCs	Chlorobenzene	11 : 12 : 12	92	1.40E-03	2.40E+03	2.33E+02	WASTE-R-1	Gamma	95% KM (Chebyshev) UCL	1.10E+03	1.10E+03	UCL
R	VOCs	Chloroform	5 : 12 : 12	42	2.80E-03	1.10E+01	2.65E+00	WASTE-R-3	NDS	UCL	7.27E+00	7.27E+00	UCL
R	VOCs	Tetrachloroethene	10 : 12 : 12	83	2.60E-03	1.20E+03	2.25E+02	WASTE-R-3	Gamma (approx.)	95% KM (Chebyshev) UCL	7.64E+02	7.64E+02	UCL
R	VOCs	Toluene	8 : 12 : 12	67	1.80E-03	8.30E+02	1.78E+02	WASTE-R-3	NDS	UCL	3.21E+02	3.21E+02	UCL
R	VOCs	Trichloroethene	9 : 12 : 12	75	3.00E-04	2.20E+03	2.53E+02	WASTE-R-3	Gamma	95% KM (Chebyshev) UCL	1.09E+03	1.09E+03	UCL
R	VOCs	Xylenes, Total	11 : 12 : 12	92	9.50E-04	2.80E+02	4.53E+01	WASTE-R-2	Gamma	95% KM (Chebyshev) UCL	1.51E+02	1.51E+02	UCL
R	SVOCs	1,2,4-Trichlorobenzene	3 : 12 : 12	25	5.10E+00	1.20E+02	4.70E+01	WASTE-R-2	--	--	--	1.20E+02	Max
R	SVOCs	1,4-Dichlorobenzene	3 : 12 : 12	25	5.80E-01	2.40E+01	8.73E+00	WASTE-R-1	--	--	--	2.40E+01	Max
R	SVOCs	2,4,6-Trichlorophenol	5 : 12 : 12	42	1.00E-01	6.50E+02	7.34E+01	WASTE-R-2	NDS	95% KM (t) UCL	1.77E+02	1.77E+02	UCL
R	SVOCs	2,4-Dichlorophenol	6 : 12 : 12	50	3.00E-02	3.50E+03	3.27E+02	WASTE-R-2	Gamma	95% KM (t) UCL	8.72E+02	8.72E+02	UCL
R	SVOCs	2-Chlorophenol	4 : 12 : 12	33	7.30E+00	3.90E+02	1.12E+02	WASTE-R-2	--	--	--	3.90E+02	Max
R	SVOCs	Naphthalene	4 : 12 : 12	33	4.60E+00	1.20E+02	3.47E+01	WASTE-R-2	--	--	--	1.20E+02	Max
R	SVOCs	Nitrobenzene	3 : 12 : 12	25	1.10E+00	4.80E+01	2.54E+01	WASTE-R-1	--	--	--	4.80E+01	Max
R	Pesticide	beta-BHC	2 : 11 : 12	18	1.40E+00	2.20E+00 J	1.80E+00	WASTE-R-2	--	--	--	2.20E+00	Max
R	Pesticide	Dieldrin	7 : 11 : 12	64	3.70E-04 J	1.80E+00 J	3.22E-01	WASTE-R-3	Gamma	95% KM (BCA) UCL	6.61E-01	6.61E-01	UCL
R	Pesticide	Heptachlor	1 : 11 : 12	9	1.60E+00 J	1.60E+00 J	1.60E+00	WASTE-R-3	--	--	--	1.60E+00	Max
R	Herbicide	MCPP	8 : 12 : 12	67	5.20E+00 J	8.50E+01 J	4.71E+01	SOIL-R-2	Normal	95% KM (t) UCL	6.25E+01	6.25E+01	UCL
R	PCBs	PCBs, Total	8 : 12 : 12	67	7.91E-02	2.78E+02	4.27E+01	WASTE-R-2	Lognormal	95% KM (BCA) UCL	9.53E+01	9.53E+01	UCL
R	Dioxin	Dioxin TEQ-HH	5 : 12 : 12	42	1.23E-04	1.28E-02	1.42E-03	WASTE-R-2	NDS	95% KM (t) UCL	3.43E-03	3.43E-03	UCL
R	Metals	Arsenic	12 : 12 : 12	100	2.50E+00	1.20E+01	6.12E+00	SOIL-R-3	Lognormal	95% Student's-t UCL	7.32E+00	7.32E+00	UCL
R	Metals	Mercury	12 : 12 : 12	100	3.70E-02	3.00E+03 J	2.51E+02	WASTE-R-3	NDS	99% Chebyshev(Mean, Sd) UCL	2.74E+03	2.74E+03	UCL
S	VOCs	Benzene	5 : 11 : 11	45	1.40E-03	3.50E+01	6.55E+00	SOIL-S-1	NDS	95% KM (t) UCL	1.46E+01	1.46E+01	UCL
S	VOCs	Chlorobenzene	4 : 11 : 11	36	4.70E-04	1.20E+03	3.98E+02	SOIL-S-1	--	--	--	1.20E+03	Max
S	VOCs	Dichloromethane	5 : 11 : 11	45	2.10E+00	5.70E+01	1.03E+01	WASTE-S-1	Normal	UCL	2.34E+01	2.34E+01	UCL
S	VOCs	Ethylbenzene	10 : 11 : 11	91	1.10E-03	1.10E+03	2.12E+02	WASTE-S-1	Gamma	95% KM (Chebyshev) UCL	6.55E+02	6.55E+02	UCL
S	VOCs	Tetrachloroethene	9 : 11 : 11	82	8.30E-04	3.30E+01	9.53E+00	SOIL-S-2	Gamma	95% KM (t) UCL	1.63E+01	1.63E+01	UCL
S	VOCs	Toluene	9 : 11 : 11	82	6.20E-03	6.00E+03	8.77E+02	WASTE-S-1	Gamma	95% KM (Chebyshev) UCL	3.23E+03	3.23E+03	UCL
S	VOCs	Trichloroethene	7 : 11 : 11	64	4.70E-04	2.40E+02	3.02E+01	WASTE-S-1	Gamma	95% KM (BCA) UCL	6.72E+01	6.72E+01	UCL
S	VOCs	Xylenes, Total	10 : 11 : 11	91	4.20E-03	7.30E+03	1.24E+03	WASTE-S-1	Gamma	95% KM (Chebyshev) UCL	4.09E+03	4.09E+03	UCL
S	SVOCs	1,2,4-Trichlorobenzene	2 : 11 : 11	18	7.30E+00	3.60E+01	2.17E+01	SOIL-S-1	--	--	--	3.60E+01	Max
S	SVOCs	1,4-Dichlorobenzene	3 : 11 : 11	27	4.50E+00	2.00E+02	7.07E+01	SOIL-S-1	--	--	--	2.00E+02	Max
S	SVOCs	2,4,6-Trichlorophenol	1 : 11 : 11	9	8.20E+00	8.20E+00	8.20E+00	SOIL-S-1	--	--	--	8.20E+00	Max
S	SVOCs	Benzo(a)anthracene	3 : 11 : 11	27	3.60E-02	8.00E+00	2.71E+00	SOIL-S-1	--	--	--	8.00E+00	Max
S	SVOCs	Benzo(a)pyrene	4 : 11 : 11	36	3.70E-02	5.40E+00	1.41E+00	SOIL-S-1	--	--	--	5.40E+00	Max

TABLE 3.2
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR COMBINED SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/kg)	Max (c) (mg/kg)	MLE EPC Mean (d) (mg/kg)	Location of Max	Distribution (i)	UCL Selected (e)	UCL (f) (mg/kg)	RME EPC (g) (mg/kg)	EPC Type
S	SVOCs	Benzo(b)fluoranthene	3 : 11 : 11	27	2.40E-01	6.60E+00	2.37E+00	SOIL-S-1	--	--	--	6.60E+00	Max
S	SVOCs	bis(2-Ethylhexyl)phthalate	11 : 11 : 11	100	5.30E-01 J	1.30E+02	3.31E+01	WASTE-S-2	Lognormal	95% Adjusted Gamma UCL	1.17E+02	1.17E+02	UCL
S	SVOCs	Dibenzo(a,h)anthracene	1 : 11 : 11	9	1.80E+00	1.80E+00	1.80E+00	SOIL-S-1	--	--	--	1.80E+00	Max
S	SVOCs	Naphthalene	7 : 11 : 11	64	1.50E-01	4.80E+01	1.40E+01	SOIL-S-2	Gamma	UCL	2.59E+01	2.59E+01	UCL
S	Pesticide	4,4'-DDT	6 : 8 : 8	75	1.10E-02 J	1.60E+01 J	2.82E+00	SOIL-S-1	--	--	--	1.60E+01	Max
S	Pesticide	Aldrin	2 : 8 : 8	25	9.70E-02	1.90E-01 J	1.44E-01	SOIL-S-1	--	--	--	1.90E-01	Max
S	Pesticide	beta-BHC	4 : 8 : 8	50	7.70E-04 J	2.60E+01 J	6.55E+00	SOIL-S-1	--	--	--	2.60E+01	Max
S	Pesticide	delta-BHC	5 : 8 : 8	63	5.80E-03 J	7.40E-01 J	2.24E-01	SOIL-S-1	--	--	--	7.40E-01	Max
S	Pesticide	Dieldrin	5 : 8 : 8	63	1.40E-02	3.80E-01	9.88E-02	WASTE-S-1	--	--	--	3.80E-01	Max
S	Pesticide	gamma-BHC (Lindane)	3 : 8 : 8	38	1.10E-02 J	7.50E+00 J	2.54E+00	SOIL-S-1	--	--	--	7.50E+00	Max
S	Pesticide	Heptachlor	4 : 8 : 8	50	6.10E-03	1.50E+00 J	3.95E-01	SOIL-S-1	--	--	--	1.50E+00	Max
S	Herbicide	Pentachlorophenol	6 : 11 : 11	55	1.10E-02 J	4.40E+02	4.02E+01	SOIL-S-1	Gamma	99% KM (Chebyshev) UCL	4.56E+02	4.56E+02	UCL
S	PCBs	PCBs, Total	7 : 8 : 8	88	1.38E-01	1.01E+03	1.52E+02	SOIL-S-1	--	--	--	1.01E+03	Max
S	Dioxin	Dioxin TEQ-HH	8 : 8 : 8	100	1.93E-05	2.75E-02	3.96E-03	SOIL-S-1	--	--	--	2.75E-02	Max
S	Metals	Chromium	11 : 11 : 11	100	6.20E+00	4.80E+02	1.32E+02	SOIL-S-1	Gamma	Use 95% Approximate Gamma UCL	2.92E+02	2.92E+02	UCL

Notes:
BCA - Bias-Corrected Accelerated Bootstrap Method.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
FOD - Frequency of detection.
J - Estimated value.
KM - Kaplan Meier
MLE - Most Likely Exposure.
NDS - No distribution selected.
PCB - Polycyclic Biphenyl.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
UCL - Upper confidence limit.
VOCs - Volatile Organic Compounds.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples. Percentage calculated based on number of detects and number of valid results.
(b) Minimum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(c) Maximum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(d) When FOD = 100% and when too few samples and detects were available to calculate reliable UCLs (g), the mean was calculated using detected results only. When FOD was less than 100%, the nonparametric mean given by ProUCL (see Attachment B) was used. All means calculated after results from duplicate samples have been averaged.
(e) UCL recommended for use by ProUCL Version 4.00.02 (U.S. EPA, 2007). If more than one UCL was recommended, the higher UCL was used. See Attachment B.
(f) UCL on the arithmetic mean for each constituent, after duplicates have been averaged. Confidence level listed with UCL selected. ProUCL selects the appropriate substitution method for non-detects.
(g) UCLs calculated where at least 10 samples and at least 5 detects are available. Where too few samples or detects are available, the maximum detected concentration is used. ProUCL 4.00.02 recommends 10-15 or more distinct results for the most accurate and reliable UCL calculation. When fewer than 10 detects were present in the dataset, the calculations were reviewed individually to determine appropriate UCLs.
(h) The average is selected as the EPC for lead based on the model used to evaluate lead exposure.
(i) Distribution selection shown in Attachment B-2.

TABLE 3.2 MLE
EXPOSURE POINT CONCENTRATIONS - COMBINED SOIL (MLE) (a)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - MLE Scenario (mg/kg) (b)								
		O	O North	O South	P	Q Central	Q North	Q South	R	S
VOCs										
1,1,2-Trichloroethane	79-00-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.50E+00	NCOPC
1,2-Dichloroethane	107-06-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.67E+01	NCOPC
1,2-Dichloroethene (total)	540-59-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.73E+00	NCOPC
Benzene	71-43-2	4.53E+01	2.03E+01	NCOPC	8.06E-01	NCOPC	3.73E-01	6.34E-02	2.62E+01	6.55E+00
Chlorobenzene	108-90-7	1.08E+02	1.71E+02	NCOPC	NCOPC	7.12E+00	NCOPC	NCOPC	2.33E+02	3.98E+02
Chloroform	67-66-3	NCOPC	NCOPC	NCOPC	1.17E+00	NCOPC	NCOPC	NCOPC	2.65E+00	NCOPC
Dichloromethane	75-09-2	NCOPC	2.87E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.03E+01
Ethylbenzene	100-41-4	2.59E+02	2.42E+02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.12E+02
Hexane	110-54-3	NCOPC	NCOPC	NCOPC	4.30E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Tetrachloroethene	127-18-4	1.80E+00	1.82E+00	NCOPC	6.15E+00	NCOPC	1.01E+00	2.70E-01	2.25E+02	9.53E+00
Toluene	108-88-3	3.27E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.89E+01	1.78E+02	8.77E+02
Trichloroethene	79-01-6	NCOPC	NCOPC	NCOPC	6.17E-02	NCOPC	5.06E-02	1.67E-02	2.53E+02	3.02E+01
Xylenes, Total	1330-20-7	1.26E+03	1.29E+03	NCOPC	3.68E+01	1.63E+01	1.39E+01	4.24E+01	4.53E+01	1.24E+03
SVOCs										
1,2,4-Trichlorobenzene	120-82-1	4.70E+00	8.58E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.70E+01	2.17E+01
1,2-Dichlorobenzene	95-50-1	NCOPC	1.25E+02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,4-Dichlorobenzene	106-46-7	8.99E+00	6.23E+01	NCOPC	8.83E+00	9.31E-01	NCOPC	NCOPC	8.73E+00	7.07E+01
2,4,6-Trichlorophenol	88-06-2	2.02E+00	1.97E+01	NCOPC	NCOPC	NCOPC	2.42E+01	NCOPC	7.34E+01	8.20E+00
2,4-Dichlorophenol	120-83-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.17E+01	NCOPC	3.27E+02	NCOPC
2-Chlorophenol	95-57-8	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.12E+02	NCOPC
2-Methylnaphthalene	91-57-6	6.09E+00	5.29E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Chloroaniline	106-47-8	NCOPC	NCOPC	NCOPC	3.07E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Nitroaniline	100-01-6	NCOPC	2.10E+02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Benzo(a)anthracene	56-55-3	3.43E+00	1.04E+01	NCOPC	NCOPC	3.43E+00	1.06E+00	7.94E-01	NCOPC	2.71E+00
Benzo(a)pyrene	50-32-8	2.22E+00	4.63E+00	NCOPC	2.28E-01	4.48E-01	9.97E-01	7.09E-01	NCOPC	1.41E+00
Benzo(b)fluoranthene	205-99-2	2.15E+00	4.48E+00	NCOPC	NCOPC	4.32E-01	1.00E+00	6.73E-01	NCOPC	2.37E+00
bis(2-Chloroethyl)ether	111-44-4	NCOPC	2.10E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
bis(2-Ethylhexyl)phthalate	117-81-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.31E+01
Dibenzo(a,h)anthracene	53-70-3	9.65E-01	2.12E+00	NCOPC	NCOPC	NCOPC	1.94E-01	2.03E-01	NCOPC	1.80E+00
Hexachlorobenzene	118-74-1	1.60E+00	1.87E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Indeno(1,2,3-cd)pyrene	193-39-5	1.90E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.74E-01	NCOPC	NCOPC
Naphthalene	91-20-3	NCOPC	1.20E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.47E+01	1.40E+01
Nitrobenzene	98-95-3	NCOPC	1.10E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.54E+01	NCOPC
Pesticides										
4,4'-DDD	72-54-8	NCOPC	3.30E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDE	72-55-9	NCOPC	2.55E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDT	50-29-3	NCOPC	6.38E+01	NCOPC	8.58E-01	NCOPC	NCOPC	NCOPC	NCOPC	2.82E+00
Aldrin	309-00-2	3.67E-01	3.30E+00	NCOPC	NCOPC	2.90E-02	NCOPC	1.69E-02	NCOPC	1.44E-01

TABLE 3.2 MLE
EXPOSURE POINT CONCENTRATIONS - COMBINED SOIL (MLE) (a)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - MLE Scenario (mg/kg) (b)								
		O	O North	O South	P	Q Central	Q North	Q South	R	S
alpha-BHC	319-84-6	NCOPC	1.50E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
beta-BHC	319-85-7	NCOPC	1.09E+01	NCOPC	NCOPC	NCOPC	6.49E-02	NCOPC	1.80E+00	6.55E+00
delta-BHC	319-86-8	1.37E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.24E-01
Dieldrin	60-57-1	8.46E-01	1.95E+01	NCOPC	1.36E-01	2.12E-02	2.32E-01	7.61E-02	3.22E-01	9.88E-02
gamma-BHC (Lindane)	58-89-9	8.44E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.54E+00
Heptachlor	76-44-8	6.58E-01	1.65E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.60E+00	3.95E-01
Heptachlor Epoxide	1024-57-3	2.87E-01	2.70E+00	NCOPC	1.05E-01	NCOPC	NCOPC	2.12E-02	NCOPC	NCOPC
Herbicides										
MCPP	93-65-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.71E+01	NCOPC
Pentachlorophenol	87-86-5	8.10E+02	4.44E+02	6.68E+00	3.16E+00	3.96E-01	1.29E+02	1.59E+01	NCOPC	4.02E+01
PCBs										
PCBs, Total	Total PCBs	4.22E+01	8.96E+02	NCOPC	3.02E+01	1.13E+00	2.43E+01	3.98E+00	4.27E+01	1.52E+02
Dioxin										
Dioxin TEQ-HH	Dioxin TEQ-HH	1.58E-02	3.07E-01	NCOPC	1.65E-03	1.96E-03	6.22E-03	1.61E-03	1.42E-03	3.96E-03
Metals										
Antimony	7440-36-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.56E+00	6.98E+00	NCOPC	NCOPC
Arsenic	7440-38-2	1.87E+01	2.74E+01	NCOPC	1.07E+01	1.78E+01	1.29E+01	1.13E+01	6.12E+00	NCOPC
Barium	7440-39-3	NCOPC	1.74E+03	NCOPC	NCOPC	NCOPC	7.81E+02	1.09E+03	NCOPC	NCOPC
Cadmium	7440-43-9	6.08E+00	3.00E+01	NCOPC	6.08E+00	NCOPC	1.00E+01	3.16E+02	NCOPC	NCOPC
Chromium	7440-47-3	NCOPC	NCOPC	NCOPC	NCOPC	1.99E+02	NCOPC	8.05E+01	NCOPC	1.32E+02
Copper	7440-50-8	NCOPC	1.06E+03	NCOPC	NCOPC	5.13E+02	8.55E+02	NCOPC	NCOPC	NCOPC
Lead	7439-92-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.16E+03	NCOPC	NCOPC	NCOPC
Manganese	7439-96-5	6.20E+02	NCOPC	NCOPC	2.59E+02	3.96E+02	NCOPC	5.80E+02	NCOPC	NCOPC
Mercury	7439-97-6	NCOPC	9.95E+01	NCOPC	NCOPC	NCOPC	7.54E+00	5.68E+00	2.51E+02	NCOPC
Nickel	7440-02-0	2.30E+02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.19E+02	NCOPC	NCOPC
Thallium	7440-28-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.18E+00	NCOPC	NCOPC
Vanadium	7440-62-2	NCOPC	NCOPC	NCOPC	2.96E+01	NCOPC	4.75E+01	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
MLE - Most Likely Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Combined soil is comprised of surface soil, subsurface soil and waste.
(b) Average detected concentration. Summary statistics shown in Table 3.2.

TABLE 3.2 RME
EXPOSURE POINT CONCENTRATIONS - COMBINED SOIL (RME) (a)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - RME Scenario (mg/kg) (b)								
		O	O North	O South	P	Q Central	Q North	Q South	R	S
VOCs										
1,1,2-Trichloroethane	79-00-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.50E+00	NCOPC
1,2-Dichloroethane	107-06-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.25E+01	NCOPC
1,2-Dichloroethene (total)	540-59-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.39E+01	NCOPC
Benzene	71-43-2	2.02E+02	6.90E+01	NCOPC	1.67E+00	NCOPC	3.43E+00	3.48E-01	1.17E+02	1.46E+01
Chlorobenzene	108-90-7	2.32E+02	4.80E+02	NCOPC	NCOPC	6.17E+01	NCOPC	NCOPC	1.10E+03	1.20E+03
Chloroform	67-66-3	NCOPC	NCOPC	NCOPC	3.10E+00	NCOPC	NCOPC	NCOPC	7.27E+00	NCOPC
Dichloromethane	75-09-2	NCOPC	8.70E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.34E+01
Ethylbenzene	100-41-4	1.13E+03	7.60E+02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.55E+02
Hexane	110-54-3	NCOPC	NCOPC	NCOPC	8.00E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Tetrachloroethene	127-18-4	3.00E+00	6.80E+00	NCOPC	5.07E+01	NCOPC	1.08E+01	2.26E+00	7.64E+02	1.63E+01
Toluene	108-88-3	1.54E+02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.17E+02	3.21E+02	3.23E+03
Trichloroethene	79-01-6	NCOPC	NCOPC	NCOPC	1.32E-01	NCOPC	4.00E-01	5.58E-02	1.09E+03	6.72E+01
Xylenes, Total	1330-20-7	5.61E+03	3.90E+03	NCOPC	1.27E+02	1.60E+02	1.24E+02	4.64E+02	1.51E+02	4.09E+03
SVOCs										
1,2,4-Trichlorobenzene	120-82-1	1.20E+01	2.90E+02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E+02	3.60E+01
1,2-Dichlorobenzene	95-50-1	NCOPC	5.20E+02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,4-Dichlorobenzene	106-46-7	1.79E+01	1.80E+02	NCOPC	1.87E+01	3.37E+00	NCOPC	NCOPC	2.40E+01	2.00E+02
2,4,6-Trichlorophenol	88-06-2	3.44E+00	6.10E+01	NCOPC	NCOPC	NCOPC	4.70E+01	NCOPC	1.77E+02	8.20E+00
2,4-Dichlorophenol	120-83-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.95E+01	NCOPC	8.72E+02	NCOPC
2-Chlorophenol	95-57-8	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.90E+02	NCOPC
2-Methylnaphthalene	91-57-6	1.19E+01	2.00E+02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Chloroaniline	106-47-8	NCOPC	NCOPC	NCOPC	8.30E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Nitroaniline	100-01-6	NCOPC	1.00E+03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Benzo(a)anthracene	56-55-3	6.67E+00	3.60E+01	NCOPC	NCOPC	6.75E-01	2.07E+00	2.66E+00	NCOPC	8.00E+00
Benzo(a)pyrene	50-32-8	4.59E+00	1.10E+01	NCOPC	3.06E-01	6.43E-01	1.89E+00	2.31E+00	NCOPC	5.40E+00
Benzo(b)fluoranthene	205-99-2	3.63E+00	1.20E+01	NCOPC	NCOPC	5.95E-01	1.32E+00	1.92E+00	NCOPC	6.60E+00
bis(2-Chloroethyl)ether	111-44-4	NCOPC	2.10E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
bis(2-Ethylhexyl)phthalate	117-81-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.17E+02
Dibenzo(a,h)anthracene	53-70-3	2.30E+00	4.60E+00	NCOPC	NCOPC	NCOPC	2.45E-01	3.22E-01	NCOPC	1.80E+00
Hexachlorobenzene	118-74-1	3.70E+00	4.50E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Indeno(1,2,3-cd)pyrene	193-39-5	2.30E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.76E-01	NCOPC	NCOPC
Naphthalene	91-20-3	NCOPC	4.10E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E+02	2.59E+01
Nitrobenzene	98-95-3	NCOPC	1.10E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.80E+01	NCOPC
Pesticides										
4,4'-DDD	72-54-8	NCOPC	3.30E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDE	72-55-9	NCOPC	3.30E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDT	50-29-3	NCOPC	1.30E+02	NCOPC	2.05E+00	NCOPC	NCOPC	NCOPC	NCOPC	1.60E+01

TABLE 3.2 RME
EXPOSURE POINT CONCENTRATIONS - COMBINED SOIL (RME) (a)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - RME Scenario (mg/kg) (b)								
		O	O North	O South	P	Q Central	Q North	Q South	R	S
Aldrin	309-00-2	7.20E-01	4.50E+00	NCOPC	NCOPC	1.10E-01	NCOPC	1.48E-01	NCOPC	1.90E-01
alpha-BHC	319-84-6	NCOPC	1.50E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
beta-BHC	319-85-7	NCOPC	2.10E+01	NCOPC	NCOPC	NCOPC	6.77E-01	NCOPC	2.20E+00	2.60E+01
delta-BHC	319-86-8	2.85E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.40E-01
Dieldrin	60-57-1	1.88E+00	5.00E+01	NCOPC	2.56E-01	3.95E-02	1.78E+00	1.23E-01	6.61E-01	3.80E-01
gamma-BHC (Lindane)	58-89-9	2.88E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.50E+00
Heptachlor	76-44-8	1.39E+00	2.30E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.60E+00	1.50E+00
Heptachlor Epoxide	1024-57-3	4.70E-01	2.70E+00	NCOPC	1.07E+00	NCOPC	NCOPC	3.42E-02	NCOPC	NCOPC
Herbicides										
MCPP	93-65-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.25E+01	NCOPC
Pentachlorophenol	87-86-5	1.87E+03	1.30E+03	2.00E+01	2.89E+01	2.75E+00	9.67E+02	1.32E+02	NCOPC	4.56E+02
PCBs										
PCBs, Total	Total PCBs	1.63E+02	3.05E+03	NCOPC	1.22E+02	1.72E+00	1.49E+02	9.12E+00	9.53E+01	1.01E+03
Dioxin										
Dioxin TEQ-HH	Dioxin TEQ-HH	4.69E-02	6.08E-01	NCOPC	4.58E-03	7.98E-03	4.59E-02	1.16E-02	3.43E-03	2.75E-02
Metals										
Antimony	7440-36-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.42E+01	9.67E+00	NCOPC	NCOPC
Arsenic	7440-38-2	6.66E+01	1.30E+02	NCOPC	1.25E+01	5.75E+01	1.67E+01	1.35E+01	7.32E+00	NCOPC
Barium	7440-39-3	NCOPC	1.20E+04	NCOPC	NCOPC	NCOPC	4.12E+03	1.50E+03	NCOPC	NCOPC
Cadmium	7440-43-9	2.15E+02	8.60E+01	NCOPC	2.29E+01	NCOPC	3.44E+01	2.46E+03	NCOPC	NCOPC
Chromium	7440-47-3	NCOPC	NCOPC	NCOPC	NCOPC	1.96E+03	NCOPC	1.24E+02	NCOPC	2.92E+02
Copper	7440-50-8	NCOPC	5.10E+03	NCOPC	NCOPC	4.92E+03	6.75E+03	NCOPC	NCOPC	NCOPC
Lead	7439-92-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E+03	NCOPC	NCOPC	NCOPC
Manganese	7439-96-5	1.10E+03	NCOPC	NCOPC	3.62E+02	9.16E+02	NCOPC	6.69E+02	NCOPC	NCOPC
Mercury	7439-97-6	NCOPC	3.60E+02	NCOPC	NCOPC	NCOPC	1.16E+01	2.77E+01	2.74E+03	NCOPC
Nickel	7440-02-0	2.00E+03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.22E+02	NCOPC	NCOPC
Thallium	7440-28-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.49E+00	NCOPC	NCOPC
Vanadium	7440-62-2	NCOPC	NCOPC	NCOPC	6.00E+01	NCOPC	1.13E+02	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Combined soil is comprised of surface soil, subsurface soil and waste.
(b) Lower of the ProUCL recommended upper confidence limit (UCL) and the maximum detected concentration. Selection shown in Table 3.2.

TABLE 3.3
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR SEDIMENT
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/kg)	Max (c) (mg/kg)	MLE EPC Mean (d) (mg/kg)	Location of Max	Distribution (h)	UCL Selected (e)	UCL (f) (mg/kg)	RME EPC (g) (mg/kg)	EPC Type
River	VOCs	Acrolein	1 : 1 : 1	100	5.70E-02	5.70E-02	5.7E-02	PDA2	--	--	--	5.70E-02	Max
River	Metals	Arsenic	56 : 56 : 56	100	9.80E-01	7.50E+00	2.81E+00	R2AD	Lognormal	95% Approximate Gamma UCL	3.16E+00	3.16E+00	UCL
Q - South - Pond (Large)	PCBs	PCBs, Total	4 : 4 : 4	100	6.82E-01	3.55E+01	9.70E+00	Large Pond 1	--	--	--	3.55E+01	Max
Q - South - Pond (Small)	Pesticide	Dieldrin	3 : 3 : 3	100	2.55E-02 J	4.60E-01 J	2.32E-01	Small Pond 1	--	--	--	4.60E-01	Max
Q - South - Pond (Small)	PCBs	PCBs, Total	3 : 3 : 3	100	1.88E+00	2.00E+01	1.05E+01	Small Pond 1	--	--	--	2.00E+01	Max

Notes:
EPC - Exposure point concentration.
FOD - Frequency of detection.
J - Estimated value.
PCB - Polycyclic Biphenyl.
UCL - Upper confidence limit.
VOCs - Volatile Organic Compounds.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples. Percentage calculated based on number of detects and number of valid results.
(b) Minimum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(c) Maximum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(d) When FOD = 100% and when too few samples and detects were available to calculate reliable UCLs (g), the mean was calculated using detected results only. When FOD was less than 100%, the nonparametric mean given by ProUCL (see Attachment B) was used. All means calculated after results from duplicate samples have been averaged.
(e) UCL recommended for use by ProUCL Version 4.00.02 (U.S. EPA, 2007). If more than one UCL was recommended, the higher UCL was used. See Attachment B.
(f) UCL on the arithmetic mean for each constituent, after duplicates have been averaged. Confidence level listed with UCL selected. ProUCL selects the appropriate substitution method for non-detects.
(g) UCLs calculated where at least 10 samples and at least 5 detects are available. Where too few samples or detects are available, the maximum detected concentration is used. ProUCL 4.00.02 recommends 10-15 or more distinct results for the most accurate and reliable UCL calculation. When fewer than 10 detects were present in the dataset, the calculations were reviewed individually to determine appropriate UCLs.
(h) Distribution selection shown in Attachment B-3.

TABLE 3.3. MLE
EXPOSURE POINT CONCENTRATIONS - SEDIMENT (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - MLE Scenario (mg/kg) (a)		
		Q - South - Pond (Large)	Q - South - Pond (Small)	Mississippi River
VOCs				
Acrolein	107-02-8	NCOPC	NCOPC	5.70E-02
Pesticides				
Dieldrin	60-57-1	NCOPC	2.32E-01	NCOPC
PCBs				
PCBs, Total	Total PCBs	9.70E+00	1.05E+01	NCOPC
Metals				
Arsenic	7440-38-2	NCOPC	NCOPC	2.81E+00

Notes:
CAS - Chemical Abstracts Service.
EPC - Exposure point concentration.
MLE - Most Likely Exposure.
NCOPC - Not a constituent of potential concern in this location.
PCB - Polychlorinated Biphenyls.
VOCs - Volatile Organic Compounds.
(a) Average detected concentration. Summary statistics shown in Table 3.3.

TABLE 3.3 RME
EXPOSURE POINT CONCENTRATIONS - SEDIMENT (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - RME Scenario (mg/kg) (a)		
		Q - South - Pond (Large)	Q - South - Pond (Small)	Mississippi River
VOCs				
Acrolein	107-02-8	NCOPC	NCOPC	5.70E-02
Pesticides				
Dieldrin	60-57-1	NCOPC	4.60E-01	NCOPC
PCBs				
PCBs, Total	Total PCBs	3.55E+01	2.00E+01	NCOPC
Metals				
Arsenic	7440-38-2	NCOPC	NCOPC	3.16E+00

Notes:
CAS - Chemical Abstracts Service.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCB - Polychlorinated Biphenyls.
RME - Reasonable Maximum Exposure.
VOCs - Volatile Organic Compounds.
(a) Lower of the ProUCL recommended upper confidence limit (UCL) and the maximum detected concentration. Selection shown in Table 3.3.

TABLE 3.4
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR SURFACE WATER AND SEEP
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/L)	Max(c) (mg/L)	MLE EPC Mean (d) (mg/L)	Location of Max	Distribution (i)	UCL Selected (e)	UCL (f) (mg/L)	RME EPC (g) (mg/L)	EPC Type
Q - South - Pond (Large)	Metals	Aluminum	1 : 4 : 4	25	7.70E+00 J	7.70E+00 J	7.70E+00	Large Pond	--	--	--	7.70E+00	Max
Q - South - Pond (Large)	Metals	Lead	2 : 4 : 4	50	2.70E-03 J	1.40E-02	8.35E-03	Large Pond	--	--	--	8.35E-03	Average (h)
Q - South - Pond (Large)	Metals	Manganese	4 : 4 : 4	100	3.90E-02	4.60E-01	1.91E-01	Large Pond	--	--	--	4.60E-01	Max
Q - South - Pond (Small)	SVOCs	Benzo(a)pyrene	2 : 3 : 3	67	1.50E-03	4.60E-03 J	3.05E-03	Small Pond 3	--	--	--	4.60E-03	Max
Q - South - Pond (Small)	SVOCs	Benzo(k)fluoranthene	1 : 3 : 3	33	7.20E-03 J	7.20E-03 J	7.20E-03	Small Pond 3	--	--	--	7.20E-03	Max
Q - South - Pond (Small)	SVOCs	Indeno(1,2,3-cd)pyrene	1 : 3 : 3	33	3.00E-03 J	3.00E-03 J	3.00E-03	Small Pond 3	--	--	--	3.00E-03	Max
Q (Seep)	Dioxin	Dioxin TEQ-HH	1 : 2 : 2	50	1.17E-07	1.17E-07	1.17E-07	SEEP-Q-1	--	--	--	1.17E-07	Max
Q (Seep)	Metals	Aluminum	2 : 2 : 2	100	1.70E+01	1.20E+02	6.85E+01	SEEP-Q-2	--	--	--	1.20E+02	Max
Q (Seep)	Metals	Arsenic	2 : 2 : 2	100	2.70E-02	1.20E-01	7.35E-02	SEEP-Q-2	--	--	--	1.20E-01	Max
Q (Seep)	Metals	Barium	2 : 2 : 2	100	4.00E-01	3.00E+00	1.70E+00	SEEP-Q-2	--	--	--	3.00E+00	Max
Q (Seep)	Metals	Beryllium	2 : 2 : 2	100	8.30E-04	1.20E-02	6.42E-03	SEEP-Q-2	--	--	--	1.20E-02	Max
Q (Seep)	Metals	Cadmium	2 : 2 : 2	100	7.30E-04	2.40E-02	1.24E-02	SEEP-Q-2	--	--	--	2.40E-02	Max
Q (Seep)	Metals	Chromium	2 : 2 : 2	100	2.20E-02	1.70E-01	9.60E-02	SEEP-Q-2	--	--	--	1.70E-01	Max
Q (Seep)	Metals	Lead	2 : 2 : 2	100	1.80E-02	3.30E-01	1.74E-01	SEEP-Q-2	--	--	--	1.74E-01	Average (h)
Q (Seep)	Metals	Manganese	2 : 2 : 2	100	5.30E+00	1.40E+01	9.65E+00	SEEP-Q-2	--	--	--	1.40E+01	Max
Q (Seep)	Metals	Nickel	2 : 2 : 2	100	2.30E-02	3.50E-01	1.87E-01	SEEP-Q-2	--	--	--	3.50E-01	Max
Q (Seep)	Metals	Vanadium	2 : 2 : 2	100	4.40E-02	4.50E-01	2.47E-01	SEEP-Q-2	--	--	--	4.50E-01	Max
R (Seep)	VOCs	Benzene	1 : 1 : 1	100	2.70E-01	2.70E-01	2.70E-01	SEEP-R-1	--	--	--	2.70E-01	Max
R (Seep)	VOCs	Chlorobenzene	1 : 1 : 1	100	6.40E-01	6.40E-01	6.40E-01	SEEP-R-1	--	--	--	6.40E-01	Max
R (Seep)	SVOCs	1,4-Dichlorobenzene	1 : 1 : 1	100	1.20E-01	1.20E-01	1.20E-01	SEEP-R-1	--	--	--	1.20E-01	Max
R (Seep)	SVOCs	2-Chlorophenol	1 : 1 : 1	100	6.80E-01	6.80E-01	6.80E-01	SEEP-R-1	--	--	--	6.80E-01	Max
R (Seep)	SVOCs	4-Chloroaniline	1 : 1 : 1	100	5.80E+00	5.80E+00	5.80E+00	SEEP-R-1	--	--	--	5.80E+00	Max
R (Seep)	SVOCs	Naphthalene	1 : 1 : 1	100	6.20E-01	6.20E-01	6.20E-01	SEEP-R-1	--	--	--	6.20E-01	Max
R (Seep)	Pesticide	Heptachlor Epoxide	1 : 1 : 1	100	4.70E-04 J	4.70E-04 J	4.70E-04	SEEP-R-1	--	--	--	4.70E-04	Max
R (Seep)	Metals	Aluminum	1 : 1 : 1	100	9.20E+00	9.20E+00	9.20E+00	SEEP-R-1	--	--	--	9.20E+00	Max
R (Seep)	Metals	Arsenic	1 : 1 : 1	100	2.40E-02	2.40E-02	2.40E-02	SEEP-R-1	--	--	--	2.40E-02	Max
R (Seep)	Metals	Lead	1 : 1 : 1	100	1.40E-02	1.40E-02	1.40E-02	SEEP-R-1	--	--	--	1.40E-02	Average (h)
R (Seep)	Metals	Manganese	1 : 1 : 1	100	4.20E+00	4.20E+00	4.20E+00	SEEP-R-1	--	--	--	4.20E+00	Max
River	SVOCs	2,4-Dichlorophenol	11 : 60 : 60	18	1.20E-03	6.90E-02	3.35E-03	R3AU	Lognormal	95% KM (BCA) UCL	5.71E-03	5.71E-03	UCL
River	SVOCs	4-Chloroaniline	17 : 60 : 60	28	1.20E-03	1.60E-01	8.19E-03	R3AU	Lognormal	95% KM (BCA) UCL	1.41E-02	1.41E-02	UCL
River	Metals	Aluminum	50 : 50 : 50	100	1.50E-01 J	3.80E+00	1.18E+00	Station 5 - PDA5	NDS	95% KM (Chebyshev) UCL	1.70E+00	1.70E+00	UCL
River	Metals	Manganese	49 : 50 : 50	98	7.70E-02	2.50E-01	1.13E-01	Station 5 - PDA5	NDS	95% KM (Chebyshev) UCL	1.42E-01	1.42E-01	UCL

Notes:
BCA - Bias-Corrected Accelerated Bootstrap Method.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
FOD - Frequency of detection.
J - Estimated value.
KM - Kaplan Meier.
NDS - No distribution selected.
PCB - Polycyclic Biphenyl.
SVOCs - Semivolatile Organic Compounds.
UCL - Upper confidence limit.
VOCs - Volatile Organic Compounds.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples. Percentage calculated based on number of detects and number of valid results.
(b) Minimum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(c) Maximum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(d) When FOD = 100% and when too few samples and detects were available to calculate reliable UCLs (g), the mean was calculated using detected results only. When FOD was less than 100%, the nonparametric mean given by ProUCL (see Attachment B) was used. All means calculated after results from duplicate samples have been averaged.
(e) UCL recommended for use by ProUCL Version 4.00.02 (U.S. EPA, 2007). If more than one UCL was recommended, the higher UCL was used. See Attachment B.
(f) UCL on the arithmetic mean for each constituent, after duplicates have been averaged. Confidence level listed with UCL selected. ProUCL selects the appropriate substitution method for non-detects.
(g) UCLs calculated where at least 10 samples and at least 5 detects are available. Where too few samples or detects are available, the maximum detected concentration is used. ProUCL 4.00.02 recommends 10-15 or more distinct results for the most accurate and reliable UCL calculation. When fewer than 10 detects were present in the dataset, the calculations were reviewed individually to determine appropriate UCLs.
(h) The average is selected as the EPC for lead based on the model used to evaluate lead exposure.
(i) Distribution selection shown in Attachment B-4.

TABLE 3.4 MLE
EXPOSURE POINT CONCENTRATIONS - SURFACE WATER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - MLE Scenario (mg/L) (a)				
				Mississippi River		
		Q - South - Pond (Large)	Q - South - Pond (Small)	Q (Seep)	R (Seep)	Surface Water
VOCs						
Benzene	71-43-2	NCOPC	NCOPC	NCOPC	2.70E-01	NCOPC
Chlorobenzene	108-90-7	NCOPC	NCOPC	NCOPC	6.40E-01	NCOPC
SVOCs						
1,4-Dichlorobenzene	106-46-7	NCOPC	NCOPC	NCOPC	1.20E-01	NCOPC
2,4-Dichlorophenol	120-83-2	NCOPC	NCOPC	NCOPC	NCOPC	3.35E-03
2-Chlorophenol	95-57-8	NCOPC	NCOPC	NCOPC	6.80E-01	NCOPC
4-Chloroaniline	106-47-8	NCOPC	NCOPC	NCOPC	5.80E+00	8.19E-03
Benzo(a)pyrene	50-32-8	NCOPC	3.05E-03	NCOPC	NCOPC	NCOPC
Benzo(k)fluoranthene	207-08-9	NCOPC	7.20E-03	NCOPC	NCOPC	NCOPC
Indeno(1,2,3-cd)pyrene	193-39-5	NCOPC	3.00E-03	NCOPC	NCOPC	NCOPC
Naphthalene	91-20-3	NCOPC	NCOPC	NCOPC	6.20E-01	NCOPC
Pesticides						
Heptachlor Epoxide	1024-57-3	NCOPC	NCOPC	NCOPC	4.70E-04	NCOPC
Dioxin						
Dioxin TEQ-HH	Dioxin TEQ-HH	NCOPC	NCOPC	1.17E-07	NCOPC	NCOPC
Metals						
Aluminum	7429-90-5	7.70E+00	NCOPC	6.85E+01	9.20E+00	1.18E+00
Arsenic	7440-38-2	NCOPC	NCOPC	7.35E-02	2.40E-02	NCOPC
Barium	7440-39-3	NCOPC	NCOPC	1.70E+00	NCOPC	NCOPC
Beryllium	7440-41-7	NCOPC	NCOPC	6.42E-03	NCOPC	NCOPC
Cadmium	7440-43-9	NCOPC	NCOPC	1.24E-02	NCOPC	NCOPC
Chromium	7440-47-3	NCOPC	NCOPC	9.60E-02	NCOPC	NCOPC
Lead	7439-92-1	8.35E-03	NCOPC	1.74E-01	1.40E-02	NCOPC
Manganese	7439-96-5	1.91E-01	NCOPC	9.65E+00	4.20E+00	1.13E-01
Nickel	7440-02-0	NCOPC	NCOPC	1.87E-01	NCOPC	NCOPC
Vanadium	7440-62-2	NCOPC	NCOPC	2.47E-01	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
MLE - Most Likely Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Average detected concentration. Summary statistics shown in Table 3.4.

TABLE 3.4 RME
EXPOSURE POINT CONCENTRATIONS - SURFACE WATER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - RME Scenario (mg/L) (a)				
				Mississippi River		
		Q - South - Pond (Large)	Q - South - Pond (Small)	Q (Seep)	R (Seep)	Surface Water
VOCs						
Benzene	71-43-2	NCOPC	NCOPC	NCOPC	2.70E-01	NCOPC
Chlorobenzene	108-90-7	NCOPC	NCOPC	NCOPC	6.40E-01	NCOPC
SVOCs						
1,4-Dichlorobenzene	106-46-7	NCOPC	NCOPC	NCOPC	1.20E-01	NCOPC
2,4-Dichlorophenol	120-83-2	NCOPC	NCOPC	NCOPC	NCOPC	5.71E-03
2-Chlorophenol	95-57-8	NCOPC	NCOPC	NCOPC	6.80E-01	NCOPC
4-Chloroaniline	106-47-8	NCOPC	NCOPC	NCOPC	5.80E+00	1.41E-02
Benzo(a)pyrene	50-32-8	NCOPC	4.60E-03	NCOPC	NCOPC	NCOPC
Benzo(k)fluoranthene	207-08-9	NCOPC	7.20E-03	NCOPC	NCOPC	NCOPC
Indeno(1,2,3-cd)pyrene	193-39-5	NCOPC	3.00E-03	NCOPC	NCOPC	NCOPC
Naphthalene	91-20-3	NCOPC	NCOPC	NCOPC	6.20E-01	NCOPC
Pesticides						
Heptachlor Epoxide	1024-57-3	NCOPC	NCOPC	NCOPC	4.70E-04	NCOPC
Dioxin						
Dioxin TEQ-HH	Dioxin TEQ-HH	NCOPC	NCOPC	1.17E-07	NCOPC	NCOPC
Metals						
Aluminum	7429-90-5	7.70E+00	NCOPC	1.20E+02	9.20E+00	1.70E+00
Arsenic	7440-38-2	NCOPC	NCOPC	1.20E-01	2.40E-02	NCOPC
Barium	7440-39-3	NCOPC	NCOPC	3.00E+00	NCOPC	NCOPC
Beryllium	7440-41-7	NCOPC	NCOPC	1.20E-02	NCOPC	NCOPC
Cadmium	7440-43-9	NCOPC	NCOPC	2.40E-02	NCOPC	NCOPC
Chromium	7440-47-3	NCOPC	NCOPC	1.70E-01	NCOPC	NCOPC
Lead	7439-92-1	8.35E-03	NCOPC	1.74E-01	1.40E-02	NCOPC
Manganese	7439-96-5	4.60E-01	NCOPC	1.40E+01	4.20E+00	1.42E-01
Nickel	7440-02-0	NCOPC	NCOPC	3.50E-01	NCOPC	NCOPC
Vanadium	7440-62-2	NCOPC	NCOPC	4.50E-01	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Lower of the ProUCL recommended upper confidence limit (UCL) and the maximum detected concentration. Selection shown in Table 3.4.

TABLE 3.5
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR FISH TISSUE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/L)	Max(d) (mg/L)	MLE EPC Mean (c) (mg/L)	Location of Max	Distribution (h)	UCL Selected (e)	UCL (f) (mg/L)	RME EPC (g) (mg/L)	EPC Type
Pond (Site Q) (Black Bullhead Fillet)	Pesticide	4,4'-DDT	1 : 1 : 1	100	3.60E-01	3.60E-01	3.60E-01	Black Bullhead - Fillets	--	--	--	3.60E-01	Max
Pond (Site Q) (Black Bullhead Fillet)	Pesticide	alpha-Chlordane	1 : 1 : 1	100	1.00E-02 J	1.00E-02 J	1.00E-02	Black Bullhead - Fillets	--	--	--	1.00E-02	Max
Pond (Site Q) (Black Bullhead Fillet)	Pesticide	Dieldrin	1 : 1 : 1	100	1.00E-01	1.00E-01	1.00E-01	Black Bullhead - Fillets	--	--	--	1.00E-01	Max
Pond (Site Q) (Black Bullhead Fillet)	PCBs	PCBs, Total	1 : 1 : 1	100	3.87E+00	3.87E+00	3.87E+00	Black Bullhead - Fillets	--	--	--	3.87E+00	Max
Pond (Site Q) (Black Bullhead Fillet)	Dioxin	Dioxin TEQ-HH	1 : 1 : 1	100	2.65E-06	2.65E-06	2.65E-06	Black Bullhead - Fillets	--	--	--	2.65E-06	Max
Pond (Site Q) (Black Bullhead Fillet)	Metals	Arsenic	1 : 1 : 1	100	7.80E-01 J	7.80E-01 J	7.80E-01	Black Bullhead - Fillets	--	--	--	7.80E-01	Max
Pond (Site Q) (Black Bullhead Fillet)	Metals	Mercury	1 : 1 : 1	100	2.50E-01	2.50E-01	2.50E-01	Black Bullhead - Fillets	--	--	--	2.50E-01	Max
Pond (Site Q) (Carp Fillet)	SVOCs	Benzo(a)anthracene	1 : 1 : 1	100	1.40E-01 J	1.40E-01 J	1.40E-01	Carp - Fillets	--	--	--	1.40E-01	Max
Pond (Site Q) (Carp Fillet)	SVOCs	Benzo(a)pyrene	1 : 1 : 1	100	1.80E-01 J	1.80E-01 J	1.80E-01	Carp - Fillets	--	--	--	1.80E-01	Max
Pond (Site Q) (Carp Fillet)	SVOCs	bis(2-Ethylhexyl)phthalate	1 : 1 : 1	100	5.00E-01 J	5.00E-01 J	5.00E-01	Carp - Fillets	--	--	--	5.00E-01	Max
Pond (Site Q) (Carp Fillet)	SVOCs	Dibenzo(a,h)anthracene	1 : 1 : 1	100	1.40E-01 J	1.40E-01 J	1.40E-01	Carp - Fillets	--	--	--	1.40E-01	Max
Pond (Site Q) (Carp Fillet)	Pesticide	4,4'-DDT	1 : 1 : 1	100	3.30E-01	3.30E-01	3.30E-01	Carp - Fillets	--	--	--	3.30E-01	Max
Pond (Site Q) (Carp Fillet)	Pesticide	alpha-Chlordane	1 : 1 : 1	100	1.60E-02 J	1.60E-02 J	1.60E-02	Carp - Fillets	--	--	--	1.60E-02	Max
Pond (Site Q) (Carp Fillet)	Pesticide	beta-BHC	1 : 1 : 1	100	1.70E-02 J	1.70E-02 J	1.70E-02	Carp - Fillets	--	--	--	1.70E-02	Max
Pond (Site Q) (Carp Fillet)	Pesticide	Dieldrin	1 : 1 : 1	100	1.90E-01	1.90E-01	1.90E-01	Carp - Fillets	--	--	--	1.90E-01	Max
Pond (Site Q) (Carp Fillet)	PCBs	PCBs, Total	1 : 1 : 1	100	1.00E+01	1.00E+01	1.00E+01	Carp - Fillets	--	--	--	1.00E+01	Max
Pond (Site Q) (Carp Fillet)	Dioxin	Dioxin TEQ-HH	1 : 1 : 1	100	1.53E-05	1.53E-05	1.53E-05	Carp - Fillets	--	--	--	1.53E-05	Max
Pond (Site Q) (Carp Fillet)	Metals	Arsenic	1 : 1 : 1	100	8.20E-01 J	8.20E-01 J	8.20E-01	Carp - Fillets	--	--	--	8.20E-01	Max
River-DDA	Dioxin	Dioxin TEQ-HH	1 : 1 : 1	100	6.96E-07	6.96E-07	6.96E-07	DDA DA-1 Buffalo Fillet	--	--	--	6.96E-07	Max
River-PDA	Dioxin	Dioxin TEQ-HH	3 : 3 : 3	100	3.71E-07	5.04E-07	5.83E-07	PDA Buffalo Fillet Comp#3	--	--	--	5.04E-07	Max
River-UDA	Pesticide	4,4'-DDE	1 : 1 : 1	100	1.70E-02 J	1.70E-02 J	1.70E-02	UDA Buffalo Fillet	--	--	--	1.70E-02	Max
River-UDA	Pesticide	Dieldrin	1 : 1 : 1	100	8.10E-03 J	8.10E-03 J	8.10E-03	UDA Buffalo Fillet	--	--	--	8.10E-03	Max
River-UDA	Dioxin	Dioxin TEQ-HH	1 : 1 : 1	100	4.42E-06	4.42E-06	4.42E-06	UDA Buffalo Fillet	--	--	--	4.42E-06	Max

Notes:
DDA - Downstream Discharge Area.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
FOD - Frequency of detection.
J - Estimated value.
PCB - Polycyclic Biphenyl.
PDA - Plume Discharge Area.
SVOCs - Semivolatile Organic Compounds.
UCL - Upper confidence limit.
UDA - Upstream Discharge Area.
VOCs - Volatile Organic Compounds.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples. Percentage calculated based on number of detects and number of valid results.
(b) Minimum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(c) Maximum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(d) When FOD = 100% and when too few samples and detects were available to calculate reliable UCLs (g), the mean was calculated using detected results only. When FOD was less than 100%, the nonparametric mean given by ProUCL (see Attachment B) was used. All means calculated after results from duplicate samples have been averaged.
(e) UCL recommended for use by ProUCL Version 4.00.02 (U.S. EPA, 2007). If more than one UCL was recommended, the higher UCL was used. See Attachment B.
(f) UCL on the arithmetic mean for each constituent, after duplicates have been averaged. Confidence level listed with UCL selected. ProUCL selects the appropriate substitution method for non-detects.
(g) UCLs calculated where at least 10 samples and at least 5 detects are available. Where too few samples or detects are available, the maximum detected concentration is used. ProUCL 4.00.02 recommends 10-15 or more distinct results for the most accurate and reliable UCL calculation. When fewer than 10 detects were present in the dataset, the calculations were reviewed individually to determine appropriate UCLs.
(h) No UCLs calculated for fish tissue; therefore, no distribution selected.

TABLE 3.5 MLE
EXPOSURE POINT CONCENTRATIONS - FISH TISSUE (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - MLE Scenario (mg/kg) (a)				
		Mississippi River			Pond (Site Q) (Black Bullhead Fillet)	Pond (Site Q) (Carp Fillet)
		DDA	PDA	UDA		
SVOCs						
Benzo(a)anthracene	56-55-3	NCOPC	NCOPC	NCOPC	NCOPC	1.40E-01
Benzo(a)pyrene	50-32-8	NCOPC	NCOPC	NCOPC	NCOPC	1.80E-01
bis(2-Ethylhexyl)phthalate	117-81-7	NCOPC	NCOPC	NCOPC	NCOPC	5.00E-01
Dibenzo(a,h)anthracene	53-70-3	NCOPC	NCOPC	NCOPC	NCOPC	1.40E-01
Pesticides						
4,4'-DDE	72-55-9	NCOPC	NCOPC	1.70E-02	NCOPC	NCOPC
4,4'-DDT	50-29-3	NCOPC	NCOPC	NCOPC	3.60E-01	3.30E-01
alpha-Chlordane	5103-71-9	NCOPC	NCOPC	NCOPC	1.00E-02	1.60E-02
beta-BHC	319-85-7	NCOPC	NCOPC	NCOPC	NCOPC	1.70E-02
Dieldrin	60-57-1	NCOPC	NCOPC	8.10E-03	1.00E-01	1.90E-01
PCBs						
PCBs, Total	Total PCBs	NCOPC	NCOPC	NCOPC	3.87E+00	1.00E+01
Dioxin						
Dioxin TEQ-HH	Dioxin TEQ-HH	6.96E-07	5.83E-07	4.42E-06	2.65E-06	1.53E-05
Metals						
Arsenic	7440-38-2	NCOPC	NCOPC	NCOPC	7.80E-01	8.20E-01
Mercury	7439-97-6	NCOPC	NCOPC	NCOPC	2.50E-01	NCOPC

Notes:
CAS - Chemical Abstracts Service.
DDA - Downstream Discharge Area.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
PDA - Plume Discharge Area.
MLE - Most Likely Exposure.
SVOCs - Semivolatile Organic Compounds.
UDA - Upstream Discharge Area.
(a) Average detected concentration. Summary statistics shown in Table 3.5.

TABLE 3.5 RME
EXPOSURE POINT CONCENTRATIONS - FISH TISSUE (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - RME Scenario (mg/kg) (a)				
		Mississippi River			Pond (Site Q) (Black Bullhead Fillet)	Pond (Site Q) (Carp Fillet)
		DDA	PDA	UDA		
SVOCs						
Benzo(a)anthracene	56-55-3	NCOPC	NCOPC	NCOPC	NCOPC	1.40E-01
Benzo(a)pyrene	50-32-8	NCOPC	NCOPC	NCOPC	NCOPC	1.80E-01
bis(2-Ethylhexyl)phthalate	117-81-7	NCOPC	NCOPC	NCOPC	NCOPC	5.00E-01
Dibenzo(a,h)anthracene	53-70-3	NCOPC	NCOPC	NCOPC	NCOPC	1.40E-01
Pesticides						
4,4'-DDE	72-55-9	NCOPC	NCOPC	1.70E-02	NCOPC	NCOPC
4,4'-DDT	50-29-3	NCOPC	NCOPC	NCOPC	3.60E-01	3.30E-01
alpha-Chlordane	5103-71-9	NCOPC	NCOPC	NCOPC	1.00E-02	1.60E-02
beta-BHC	319-85-7	NCOPC	NCOPC	NCOPC	NCOPC	1.70E-02
Dieldrin	60-57-1	NCOPC	NCOPC	8.10E-03	1.00E-01	1.90E-01
PCBs						
PCBs, Total	Total PCBs	NCOPC	NCOPC	NCOPC	3.87E+00	1.00E+01
Dioxin						
Dioxin TEQ-HH	Dioxin TEQ-HH	6.96E-07	5.04E-07	4.42E-06	2.65E-06	1.53E-05
Metals						
Arsenic	7440-38-2	NCOPC	NCOPC	NCOPC	7.80E-01	8.20E-01
Mercury	7439-97-6	NCOPC	NCOPC	NCOPC	2.50E-01	NCOPC

Notes:
CAS - Chemical Abstracts Service.
DDA - Downstream Discharge Area.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
PDA - Plume Discharge Area.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
UDA - Upstream Discharge Area.
(a) Lower of the ProUCL recommended upper confidence limit (UCL) and the maximum detected concentration. Selection shown in Table 3.5.

TABLE 3.6
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR SHALLOW GROUNDWATER AND LEACHATE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

								MLE EPC					RME	
Site	Analyte Type	Constituent	cas	FOD (a)	FOD % (a)	Min (b) (mg/L)	Max(d) (mg/L)	Mean (c) (mg/L)	Location of Max	Distribution (i)	UCL Selected (e)	UCL (f) (mg/L)	EPC (g) (mg/L)	EPC Type
O - AA-O-1-16	SVOCs	Benzo(a)pyrene	50-32-8	1 : 1 : 1	100	1.60E-03	1.60E-03	1.60E-03	AA-O-1	--	--	--	1.60E-03	Max
O - AA-O-1-16	SVOCs	Benzo(b)fluoranthene	205-99-2	1 : 1 : 1	100	1.10E-03	1.10E-03	1.10E-03	AA-O-1	--	--	--	1.10E-03	Max
O - AA-O-1-16	SVOCs	Benzo(k)fluoranthene	207-08-9	1 : 1 : 1	100	1.20E-03	1.20E-03	1.20E-03	AA-O-1	--	--	--	1.20E-03	Max
O - AA-O-1-16	SVOCs	Dibenzo(a,h)anthracene	53-70-3	1 : 1 : 1	100	2.70E-03	2.70E-03	2.70E-03	AA-O-1	--	--	--	2.70E-03	Max
O - AA-O-1-16	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	1 : 1 : 1	100	3.00E-03	3.00E-03	3.00E-03	AA-O-1	--	--	--	3.00E-03	Max
O - AA-O-1-16	Metals	Aluminum	7429-90-5	1 : 1 : 1	100	5.00E+00	5.00E+00	5.00E+00	AA-O-1	--	--	--	5.00E+00	Max
O - AA-O-1-16	Metals	Arsenic	7440-38-2	1 : 1 : 1	100	7.00E-02	7.00E-02	7.00E-02	AA-O-1	--	--	--	7.00E-02	Max
O - AA-O-1-16	Metals	Lead	7439-92-1	1 : 1 : 1	100	1.90E-02	1.90E-02	1.90E-02	AA-O-1	--	--	--	1.90E-02	Average (h)
O - AA-O-1-16	Metals	Manganese	7439-96-5	1 : 1 : 1	100	4.10E+00	4.10E+00	4.10E+00	AA-O-1	--	--	--	4.10E+00	Max
O - GM-19A	VOCs	Benzene	71-43-2	1 : 1 : 1	100	6.35E-03	6.35E-03	6.35E-03	GM-19A	--	--	--	6.35E-03	Max
O - GM-19A	VOCs	Tetrachloroethene	127-18-4	1 : 1 : 1	100	1.10E-01	1.10E-01	1.10E-01	GM-19A	--	--	--	1.10E-01	Max
O - GM-19A	VOCs	Trichloroethene	79-01-6	1 : 1 : 1	100	5.30E-02	5.30E-02	5.30E-02	GM-19A	--	--	--	5.30E-02	Max
O - GM-19A	Herbicide	Pentachlorophenol	87-86-5	1 : 1 : 1	100	7.75E-02	7.75E-02	7.75E-02	GM-19A	--	--	--	7.75E-02	Max
O - GM-19A	PCBs	PCBs, Total	Total PCBs	1 : 1 : 1	100	2.23E-03	2.23E-03	2.23E-03	GM-19A	--	--	--	2.23E-03	Max
O - GM-19A	Metals	Manganese	7439-96-5	1 : 1 : 1	100	1.40E+00	1.40E+00	1.40E+00	GM-19A	--	--	--	1.40E+00	Max
O - LEACH-0-1	VOCs	Benzene	71-43-2	1 : 1 : 1	100	9.20E-01	9.20E-01	9.20E-01	LEACH-O-1	--	--	--	9.20E-01	Max
O - LEACH-0-1	VOCs	Chlorobenzene	108-90-7	1 : 1 : 1	100	1.70E+00 J	1.70E+00 J	1.70E+00	LEACH-O-1	--	--	--	1.70E+00	Max
O - LEACH-0-1	SVOCs	2,4,6-Trichlorophenol	88-06-2	1 : 1 : 1	100	3.80E-01	3.80E-01	3.80E-01	LEACH-O-1	--	--	--	3.80E-01	Max
O - LEACH-0-1	SVOCs	2,4-Dichlorophenol	120-83-2	1 : 1 : 1	100	3.20E-01	3.20E-01	3.20E-01	LEACH-O-1	--	--	--	3.20E-01	Max
O - LEACH-0-1	SVOCs	2-Chlorophenol	95-57-8	1 : 1 : 1	100	3.30E-01	3.30E-01	3.30E-01	LEACH-O-1	--	--	--	3.30E-01	Max
O - LEACH-0-1	SVOCs	2-Nitroaniline	88-74-4	1 : 1 : 1	100	2.60E-01	2.60E-01	2.60E-01	LEACH-O-1	--	--	--	2.60E-01	Max
O - LEACH-0-1	SVOCs	3&4Methylphenol	106-44-5	1 : 1 : 1	100	6.40E-01	6.40E-01	6.40E-01	LEACH-O-1	--	--	--	6.40E-01	Max
O - LEACH-0-1	SVOCs	4-Chloroaniline	106-47-8	1 : 1 : 1	100	4.20E+00	4.20E+00	4.20E+00	LEACH-O-1	--	--	--	4.20E+00	Max
O - LEACH-0-1	SVOCs	4-Nitroaniline	100-01-6	1 : 1 : 1	100	7.00E-01	7.00E-01	7.00E-01	LEACH-O-1	--	--	--	7.00E-01	Max
O - LEACH-0-1	SVOCs	Naphthalene	91-20-3	1 : 1 : 1	100	5.70E-01	5.70E-01	5.70E-01	LEACH-O-1	--	--	--	5.70E-01	Max
O - LEACH-0-1	SVOCs	Nitrobenzene	98-95-3	1 : 1 : 1	100	8.00E-02	8.00E-02	8.00E-02	LEACH-O-1	--	--	--	8.00E-02	Max
O - LEACH-0-1	SVOCs	Phenol	108-95-2	1 : 1 : 1	100	3.80E+00	3.80E+00	3.80E+00	LEACH-O-1	--	--	--	3.80E+00	Max
O - LEACH-0-1	Pesticide	beta-BHC	319-85-7	1 : 1 : 1	100	2.50E-03 J	2.50E-03 J	2.50E-03	LEACH-O-1	--	--	--	2.50E-03	Max
O - LEACH-0-1	Herbicide	2,4,5-T	93-76-5	1 : 1 : 1	100	4.80E-01	4.80E-01	4.80E-01	LEACH-O-1	--	--	--	4.80E-01	Max
O - LEACH-0-1	Herbicide	2,4-D	94-75-7	1 : 1 : 1	100	9.30E-01 J	9.30E-01 J	9.30E-01	LEACH-O-1	--	--	--	9.30E-01	Max
O - LEACH-0-1	Herbicide	Pentachlorophenol	87-86-5	1 : 1 : 1	100	7.80E-01 J	7.80E-01 J	7.80E-01	LEACH-O-1	--	--	--	7.80E-01	Max
O - LEACH-0-1	PCBs	PCBs, Total	Total PCBs	1 : 1 : 1	100	5.49E-02	5.49E-02	5.49E-02	LEACH-O-1	--	--	--	5.49E-02	Max
O - LEACH-0-1	Dioxin	Dioxin TEQ-HH	Dioxin TEQ-HH	1 : 1 : 1	100	7.20E-07	7.20E-07	7.20E-07	LEACH-O-1	--	--	--	7.20E-07	Max
O - LEACH-0-1	Metals	Arsenic	7440-38-2	1 : 1 : 1	100	2.80E-02	2.80E-02	2.80E-02	LEACH-O-1	--	--	--	2.80E-02	Max
O - LEACH-0-1	Metals	Manganese	7439-96-5	1 : 1 : 1	100	1.80E+01	1.80E+01	1.80E+01	LEACH-O-1	--	--	--	1.80E+01	Max
O - LEACH-0-1	Metals	Thallium	7440-28-0	1 : 1 : 1	100	3.70E-03	3.70E-03	3.70E-03	LEACH-O-1	--	--	--	3.70E-03	Max
O - SA2-MW-4-S	VOCs	Benzene	71-43-2	1 : 1 : 1	100	4.40E+00	4.40E+00	4.40E+00	SA2-MW-4-S	--	--	--	4.40E+00	Max
O - SA2-MW-4-S	VOCs	Chlorobenzene	108-90-7	1 : 1 : 1	100	1.10E+01	1.10E+01	1.10E+01	SA2-MW-4-S	--	--	--	1.10E+01	Max
O - SA2-MW-4-S	VOCs	Chloroethane	75-00-3	1 : 1 : 1	100	6.50E-01	6.50E-01	6.50E-01	SA2-MW-4-S	--	--	--	6.50E-01	Max
O - SA2-MW-4-S	SVOCs	1,4-Dioxane	123-91-1	1 : 1 : 1	100	4.40E-03	4.40E-03	4.40E-03	SA2-MW-4-S	--	--	--	4.40E-03	Max
O - SA2-MW-4-S	SVOCs	2-Chlorophenol	95-57-8	1 : 1 : 1	100	5.50E-02	5.50E-02	5.50E-02	SA2-MW-4-S	--	--	--	5.50E-02	Max
O - SA2-MW-4-S	SVOCs	4-Chlorophenol	106-48-9	1 : 1 : 1	100	5.70E-02	5.70E-02	5.70E-02	SA2-MW-4-S	--	--	--	5.70E-02	Max
O - SA2-MW-4-S	Metals	Arsenic	7440-38-2	1 : 1 : 1	100	9.70E-02	9.70E-02	9.70E-02	SA2-MW-4-S	--	--	--	9.70E-02	Max
O - SA2-MW-4-S	Metals	Manganese	7439-96-5	1 : 1 : 1	100	4.60E+00	4.60E+00	4.60E+00	SA2-MW-4-S	--	--	--	4.60E+00	Max
Q Central - SA-Q-5	Metals	Arsenic	7440-38-2	1 : 1 : 1	100	1.30E-01	1.30E-01	1.30E-01	SA-Q-5	--	--	--	1.30E-01	Max
Q Central - SA-Q-5	Metals	Manganese	7439-96-5	1 : 1 : 1	100	5.90E+00	5.90E+00	5.90E+00	SA-Q-5	--	--	--	5.90E+00	Max
Q North - LEACH-Q-1	VOCs	1,2-Dichloroethane	107-06-2	5 : 5 : 5	100	1.20E+00	2.30E+00	1.95E+00	LEACH-Q-1	--	--	--	2.30E+00	Max
Q North - LEACH-Q-1	VOCs	Benzene	71-43-2	5 : 5 : 5	100	3.50E-01	5.10E-01	4.39E-01	LEACH-Q-1	--	--	--	5.10E-01	Max
Q North - LEACH-Q-1	VOCs	Chlorobenzene	108-90-7	5 : 5 : 5	100	9.00E-01	1.80E+00	1.39E+00	LEACH-Q-1	--	--	--	1.80E+00	Max
Q North - LEACH-Q-1	VOCs	Dichloromethane	75-09-2	5 : 5 : 5	100	3.40E-02	5.50E-02	4.63E-02	LEACH-Q-1	--	--	--	5.50E-02	Max

TABLE 3.6
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR SHALLOW GROUNDWATER AND LEACHATE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	cas	FOD (a)	FOD % (a)	Min (b) (mg/L)	Max(d) (mg/L)	MLE EPC Mean (c) (mg/L)	Location of Max	Distribution (i)	UCL Selected (e)	UCL (f) (mg/L)	RME EPC (g) (mg/L)	EPC Type
Q North - LEACH-Q-1	VOCs	Tetrachloroethene	127-18-4	5 : 5 : 5	100	8.25E-02	1.40E-01	1.07E-01	LEACH-Q-1	--	--	--	1.40E-01	Max
Q North - LEACH-Q-1	VOCs	Toluene	108-88-3	5 : 5 : 5	100	9.25E-01 J	1.20E+00	1.07E+00	LEACH-Q-1, LEACH-Q-1	--	--	--	1.20E+00	Max
Q North - LEACH-Q-1	VOCs	Trichloroethene	79-01-6	5 : 5 : 5	100	1.80E-02	3.00E-02	2.18E-02	LEACH-Q-1	--	--	--	3.00E-02	Max
Q North - LEACH-Q-1	VOCs	Vinyl chloride	75-01-4	2 : 4 : 5	50	4.10E-03	5.60E-03	4.85E-03	LEACH-Q-1	--	--	--	5.60E-03	Max
Q North - LEACH-Q-1	SVOCs	1,4-Dichlorobenzene	106-46-7	1 : 4 : 5	25	8.15E-02	8.15E-02	8.15E-02	LEACH-Q-1	--	--	--	8.15E-02	Max
Q North - LEACH-Q-1	SVOCs	2,4,6-Trichlorophenol	88-06-2	5 : 5 : 5	100	9.80E+00	1.40E+01 J	1.21E+01	LEACH-Q-1	--	--	--	1.40E+01	Max
Q North - LEACH-Q-1	SVOCs	2,4-Dichlorophenol	120-83-2	5 : 5 : 5	100	9.80E+01	1.80E+02	1.47E+02	LEACH-Q-1	--	--	--	1.80E+02	Max
Q North - LEACH-Q-1	SVOCs	2,4-Dimethylphenol	105-67-9	3 : 4 : 4	75	2.40E-01	3.10E-01	2.63E-01	LEACH-Q-1	--	--	--	3.10E-01	Max
Q North - LEACH-Q-1	SVOCs	2-Chlorophenol	95-57-8	5 : 5 : 5	100	5.00E+00	1.30E+01 J	8.96E+00	LEACH-Q-1	--	--	--	1.30E+01	Max
Q North - LEACH-Q-1	SVOCs	2-Nitroaniline	88-74-4	5 : 5 : 5	100	8.00E+00	2.20E+01	1.72E+01	LEACH-Q-1	--	--	--	2.20E+01	Max
Q North - LEACH-Q-1	SVOCs	3&4Methylphenol	106-44-5	5 : 5 : 5	100	8.20E-01	2.60E+00 J	1.78E+00	LEACH-Q-1	--	--	--	2.60E+00	Max
Q North - LEACH-Q-1	SVOCs	4-Chloroaniline	106-47-8	4 : 5 : 5	80	9.30E+00	1.50E+01 J	1.24E+01	LEACH-Q-1	--	--	--	1.50E+01	Max
Q North - LEACH-Q-1	SVOCs	4-Nitroaniline	100-01-6	4 : 5 : 5	80	1.07E+00	3.10E+00	2.00E+00	LEACH-Q-1	--	--	--	3.10E+00	Max
Q North - LEACH-Q-1	SVOCs	4-Nitrophenol	100-02-7	1 : 5 : 5	20	5.70E-01	5.70E-01	5.70E-01	LEACH-Q-1	--	--	--	5.70E-01	Max
Q North - LEACH-Q-1	SVOCs	Dibenzo(a,h)anthracene	53-70-3	1 : 5 : 5	20	9.60E-03	9.60E-03	9.60E-03	LEACH-Q-1	--	--	--	9.60E-03	Max
Q North - LEACH-Q-1	SVOCs	Dinoseb	88-85-7	1 : 5 : 5	20	4.50E-01	4.50E-01	4.50E-01	LEACH-Q-1	--	--	--	4.50E-01	Max
Q North - LEACH-Q-1	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	1 : 4 : 5	25	9.00E-03	9.00E-03	9.00E-03	LEACH-Q-1	--	--	--	9.00E-03	Max
Q North - LEACH-Q-1	SVOCs	Naphthalene	91-20-3	3 : 4 : 5	75	1.20E+00	1.90E+00	1.47E+00	LEACH-Q-1	--	--	--	1.90E+00	Max
Q North - LEACH-Q-1	SVOCs	Nitrobenzene	98-95-3	5 : 5 : 5	100	8.10E-01	1.70E+00	1.42E+00	LEACH-Q-1, LEACH-Q-1	--	--	--	1.70E+00	Max
Q North - LEACH-Q-1	SVOCs	N-Nitrosodiphenylamine	86-30-6	1 : 5 : 5	20	2.40E-02	2.40E-02	2.40E-02	LEACH-Q-1	--	--	--	2.40E-02	Max
Q North - LEACH-Q-1	SVOCs	Phenol	108-95-2	5 : 5 : 5	100	4.00E+00 J	1.90E+01 J	1.05E+01	LEACH-Q-1	--	--	--	1.90E+01	Max
Q North - LEACH-Q-1	Pesticide	beta-BHC	319-85-7	2 : 4 : 4	50	1.35E-02 J	1.70E-02 J	1.53E-02	LEACH-Q-1	--	--	--	1.70E-02	Max
Q North - LEACH-Q-1	Pesticide	Endrin Ketone	53494-70-5	1 : 4 : 4	25	3.20E-03 J	3.20E-03 J	3.20E-03	LEACH-Q-1	--	--	--	3.20E-03	Max
Q North - LEACH-Q-1	Herbicide	2,4,5-T	93-76-5	1 : 5 : 5	20	3.10E-01 J	3.10E-01 J	3.10E-01	LEACH-Q-1	--	--	--	3.10E-01	Max
Q North - LEACH-Q-1	Herbicide	2,4-D	94-75-7	4 : 5 : 5	80	4.30E+01	1.40E+02	8.20E+01	LEACH-Q-1	--	--	--	1.40E+02	Max
Q North - LEACH-Q-1	Herbicide	Dicamba	1918-00-9	1 : 5 : 5	20	4.55E-01	4.55E-01	4.55E-01	LEACH-Q-1	--	--	--	4.55E-01	Max
Q North - LEACH-Q-1	Herbicide	Dichlorprop	120-36-5	3 : 5 : 5	60	1.10E+00	1.35E+00	1.22E+00	LEACH-Q-1	--	--	--	1.35E+00	Max
Q North - LEACH-Q-1	Herbicide	Pentachlorophenol	87-86-5	4 : 5 : 5	80	5.00E-01	6.30E+00 J	2.99E+00	LEACH-Q-1	--	--	--	6.30E+00	Max
Q North - LEACH-Q-1	PCBs	PCBs, Total	Total PCBs	4 : 4 : 4	100	1.25E-03	4.79E-02	1.67E-02	LEACH-Q-1	--	--	--	4.79E-02	Max
Q North - LEACH-Q-1	Dioxin	Dioxin TEQ-HH	Dioxin TEQ-HH	4 : 4 : 4	100	2.14E-08	1.58E-06	4.75E-07	LEACH-Q-1	--	--	--	1.58E-06	Max
Q North - LEACH-Q-1	Metals	Aluminum	7429-90-5	5 : 5 : 5	100	4.00E-02	3.60E+01	9.03E+00	LEACH-Q-1	--	--	--	3.60E+01	Max
Q North - LEACH-Q-1	Metals	Antimony	7440-36-0	5 : 5 : 5	100	1.10E-02	3.90E-02	2.08E-02	LEACH-Q-1	--	--	--	3.90E-02	Max
Q North - LEACH-Q-1	Metals	Arsenic	7440-38-2	2 : 5 : 5	40	9.90E-03 J	5.80E-02	3.40E-02	LEACH-Q-1	--	--	--	5.80E-02	Max
Q North - LEACH-Q-1	Metals	Barium	7440-39-3	5 : 5 : 5	100	5.80E-02	5.60E+00 J	1.33E+00	LEACH-Q-1	--	--	--	5.60E+00	Max
Q North - LEACH-Q-1	Metals	Cadmium	7440-43-9	2 : 5 : 5	40	5.90E-03	2.30E-02	1.45E-02	LEACH-Q-1	--	--	--	2.30E-02	Max
Q North - LEACH-Q-1	Metals	Chromium	7440-47-3	5 : 5 : 5	100	1.30E-02	2.30E-01 J	6.58E-02	LEACH-Q-1	--	--	--	2.30E-01	Max
Q North - LEACH-Q-1	Metals	Copper	7440-50-8	3 : 5 : 5	60	2.30E-03	6.60E+00	2.37E+00	LEACH-Q-1	--	--	--	6.60E+00	Max
Q North - LEACH-Q-1	Metals	Lead	7439-92-1	2 : 5 : 5	40	4.15E-01 J	2.80E+00	1.61E+00	LEACH-Q-1	--	--	--	1.61E+00	Average (h)
Q North - LEACH-Q-1	Metals	Manganese	7439-96-5	5 : 5 : 5	100	1.40E+00	2.30E+00	1.89E+00	LEACH-Q-1	--	--	--	2.30E+00	Max
Q North - LEACH-Q-1	Metals	Mercury	7439-97-6	2 : 5 : 5	40	1.90E-03	5.90E-03 J	3.90E-03	LEACH-Q-1	--	--	--	5.90E-03	Max
Q North - LEACH-Q-1	Metals	Nickel	7440-02-0	5 : 5 : 5	100	3.00E-01	1.85E+00	8.04E-01	LEACH-Q-1	--	--	--	1.85E+00	Max
Q North - LEACH-Q-1	Metals	Vanadium	7440-62-2	5 : 5 : 5	100	1.80E-02	3.10E-01	9.65E-02	LEACH-Q-1	--	--	--	3.10E-01	Max
Q North - LEACH-Q-1	Metals	Zinc	7440-66-6	5 : 5 : 5	100	6.50E+00	2.20E+01	1.27E+01	LEACH-Q-1	--	--	--	2.20E+01	Max
Q South - AA-Q-10-18	Herbicide	Pentachlorophenol	87-86-5	1 : 1 : 1	100	5.20E-03	5.20E-03	5.20E-03	AA-Q-10	--	--	--	5.20E-03	Max
Q South - AA-Q-10-18	Metals	Aluminum	7429-90-5	1 : 1 : 1	100	1.35E+01	1.35E+01	1.35E+01	AA-Q-10	--	--	--	1.35E+01	Max
Q South - AA-Q-10-18	Metals	Arsenic	7440-38-2	1 : 1 : 1	100	1.40E-02	1.40E-02	1.40E-02	AA-Q-10	--	--	--	1.40E-02	Max
Q South - AA-Q-10-18	Metals	Chromium	7440-47-3	1 : 1 : 1	100	1.30E-01	1.30E-01	1.30E-01	AA-Q-10	--	--	--	1.30E-01	Max
Q South - AA-Q-10-18	Metals	Lead	7439-92-1	1 : 1 : 1	100	2.75E-02	2.75E-02	2.75E-02	AA-Q-10	--	--	--	2.75E-02	Average (h)
Q South - AA-Q-10-18	Metals	Nickel	7440-02-0	1 : 1 : 1	100	1.25E-01	1.25E-01	1.25E-01	AA-Q-10	--	--	--	1.25E-01	Max
R - B-24A	VOCs	1,2-Dichloroethane	107-06-2	1 : 1 : 1	100	2.20E-01	2.20E-01	2.20E-01	B-24A	--	--	--	2.20E-01	Max
R - B-24A	VOCs	Acetone	67-64-1	1 : 1 : 1	100	2.20E+01	2.20E+01	2.20E+01	B-24A	--	--	--	2.20E+01	Max
R - B-24A	VOCs	Benzene	71-43-2	1 : 1 : 1	100	8.30E-01	8.30E-01	8.30E-01	B-24A	--	--	--	8.30E-01	Max

TABLE 3.6
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR SHALLOW GROUNDWATER AND LEACHATE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	cas	FOD (a)	FOD % (a)	Min (b) (mg/L)	Max(d) (mg/L)	MLE EPC Mean (c) (mg/L)	Location of Max	Distribution (i)	UCL Selected (e)	UCL (f) (mg/L)	RME EPC (g) (mg/L)	EPC Type
R - B-24A	VOCs	Chlorobenzene	108-90-7	1 : 1 : 1	100	1.00E+00	1.00E+00	1.00E+00	B-24A	--	--	--	1.00E+00	Max
R - B-24A	VOCs	Dichloromethane	75-09-2	1 : 1 : 1	100	1.40E-01	1.40E-01	1.40E-01	B-24A	--	--	--	1.40E-01	Max
R - B-24A	SVOCs	2,4,5-Trichlorophenol	95-95-4	1 : 1 : 1	100	1.30E+01	1.30E+01	1.30E+01	B-24A	--	--	--	1.30E+01	Max
R - B-24A	SVOCs	2,4,6-Trichlorophenol	88-06-2	1 : 1 : 1	100	1.50E+01	1.50E+01	1.50E+01	B-24A	--	--	--	1.50E+01	Max
R - B-24A	SVOCs	2,4-Dichlorophenol	120-83-2	1 : 1 : 1	100	2.10E+01	2.10E+01	2.10E+01	B-24A	--	--	--	2.10E+01	Max
R - B-24A	SVOCs	2-Chlorophenol	95-57-8	1 : 1 : 1	100	1.40E+02	1.40E+02	1.40E+02	B-24A	--	--	--	1.40E+02	Max
R - B-24A	SVOCs	3&4Methylphenol	106-44-5	1 : 1 : 1	100	1.80E+00	1.80E+00	1.80E+00	B-24A	--	--	--	1.80E+00	Max
R - B-24A	SVOCs	Nitrobenzene	98-95-3	1 : 1 : 1	100	1.30E+00	1.30E+00	1.30E+00	B-24A	--	--	--	1.30E+00	Max
R - B-24A	SVOCs	Phenol	108-95-2	1 : 1 : 1	100	1.00E+02	1.00E+02	1.00E+02	B-24A	--	--	--	1.00E+02	Max
R - B-24A	Herbicide	2,4-D	94-75-7	1 : 1 : 1	100	4.10E+01	4.10E+01	4.10E+01	B-24A	--	--	--	4.10E+01	Max
R - B-24A	Herbicide	Dichlorprop	120-36-5	1 : 1 : 1	100	3.40E+00	3.40E+00	3.40E+00	B-24A	--	--	--	3.40E+00	Max
R - B-24A	Metals	Arsenic	7440-38-2	1 : 1 : 1	100	3.20E-02	3.20E-02	3.20E-02	B-24A	--	--	--	3.20E-02	Max
R - B-24A	Metals	Chromium	7440-47-3	1 : 1 : 1	100	1.10E-01	1.10E-01	1.10E-01	B-24A	--	--	--	1.10E-01	Max
R - B-24A	Metals	Manganese	7439-96-5	1 : 1 : 1	100	2.70E+00	2.70E+00	2.70E+00	B-24A	--	--	--	2.70E+00	Max
R - LEACH-R-1	VOCs	1,1,2-Trichloroethane	79-00-5	1 : 4 : 4	25	1.20E-01	1.20E-01	1.20E-01	LEACH-R-1	--	--	--	1.20E-01	Max
R - LEACH-R-1	VOCs	1,1-Dichloroethylene	75-35-4	2 : 4 : 4	50	1.80E-01	3.10E-01	2.45E-01	LEACH-R-1	--	--	--	3.10E-01	Max
R - LEACH-R-1	VOCs	1,2-Dichloroethane	107-06-2	4 : 4 : 4	100	4.70E+01	1.97E+03	5.31E+02	LEACH-R-1	--	--	--	1.97E+03	Max
R - LEACH-R-1	VOCs	1,2-Dichloroethene (total)	540-59-0	4 : 4 : 4	100	1.30E+01	1.20E+03	3.12E+02	LEACH-R-1	--	--	--	1.20E+03	Max
R - LEACH-R-1	VOCs	1,2-Dichloropropane	78-87-5	1 : 4 : 4	25	1.00E-02	1.00E-02	1.00E-02	LEACH-R-1	--	--	--	1.00E-02	Max
R - LEACH-R-1	VOCs	2-Butanone	78-93-3	3 : 4 : 4	75	7.90E+00	1.20E+01	9.72E+00	LEACH-R-1	--	--	--	1.20E+01	Max
R - LEACH-R-1	VOCs	4-Methyl-2-pentanone	108-10-1	1 : 4 : 4	25	2.10E+00	2.10E+00	2.10E+00	LEACH-R-1	--	--	--	2.10E+00	Max
R - LEACH-R-1	VOCs	Acetone	67-64-1	3 : 4 : 4	75	3.20E+01	8.00E+01	5.10E+01	LEACH-R-1	--	--	--	8.00E+01	Max
R - LEACH-R-1	VOCs	Benzene	71-43-2	4 : 4 : 4	100	5.90E+00	1.47E+03	3.72E+02	LEACH-R-1	--	--	--	1.47E+03	Max
R - LEACH-R-1	VOCs	Chlorobenzene	108-90-7	4 : 4 : 4	100	1.10E+00	1.03E+03	2.59E+02	LEACH-R-1	--	--	--	1.03E+03	Max
R - LEACH-R-1	VOCs	Chloroform	67-66-3	4 : 4 : 4	100	2.00E+00	3.07E+02	7.85E+01	LEACH-R-1	--	--	--	3.07E+02	Max
R - LEACH-R-1	VOCs	Chloromethane	74-87-3	1 : 4 : 4	25	1.51E+02	1.51E+02	1.51E+02	LEACH-R-1	--	--	--	1.51E+02	Max
R - LEACH-R-1	VOCs	Dichloromethane	75-09-2	3 : 4 : 4	75	1.90E+00	2.50E+00	2.28E+00	LEACH-R-1	--	--	--	2.50E+00	Max
R - LEACH-R-1	VOCs	Ethylbenzene	100-41-4	2 : 4 : 4	50	1.70E-01	3.67E+02	1.83E+02	LEACH-R-1	--	--	--	3.67E+02	Max
R - LEACH-R-1	VOCs	Tetrachloroethene	127-18-4	4 : 4 : 4	100	1.80E+01	6.87E+04	1.72E+04	LEACH-R-1	--	--	--	6.87E+04	Max
R - LEACH-R-1	VOCs	Toluene	108-88-3	4 : 4 : 4	100	1.60E+01	1.73E+04	4.35E+03	LEACH-R-1	--	--	--	1.73E+04	Max
R - LEACH-R-1	VOCs	Trichloroethene	79-01-6	4 : 4 : 4	100	1.00E+02	7.97E+04	2.00E+04	LEACH-R-1	--	--	--	7.97E+04	Max
R - LEACH-R-1	VOCs	Vinyl chloride	75-01-4	1 : 4 : 4	25	1.50E-01	1.50E-01	1.50E-01	LEACH-R-1	--	--	--	1.50E-01	Max
R - LEACH-R-1	VOCs	Xylenes, Total	1330-20-7	3 : 4 : 4	75	4.70E-01 J	1.07E+03	3.56E+02	LEACH-R-1	--	--	--	1.07E+03	Max
R - LEACH-R-1	SVOCs	1,2,4-Trichlorobenzene	120-82-1	1 : 4 : 4	25	2.77E+01	2.77E+01	2.77E+01	LEACH-R-1	--	--	--	2.77E+01	Max
R - LEACH-R-1	SVOCs	1,2-Dichlorobenzene	95-50-1	2 : 4 : 4	50	2.70E+00	2.33E+01	1.30E+01	LEACH-R-1	--	--	--	2.33E+01	Max
R - LEACH-R-1	SVOCs	1,4-Dichlorobenzene	106-46-7	2 : 4 : 4	50	7.60E+00	3.77E+01	2.26E+01	LEACH-R-1	--	--	--	3.77E+01	Max
R - LEACH-R-1	SVOCs	2,4,6-Trichlorophenol	88-06-2	3 : 4 : 4	75	3.00E-01	3.23E+01	1.23E+01	LEACH-R-1	--	--	--	3.23E+01	Max
R - LEACH-R-1	SVOCs	2,4-Dichlorophenol	120-83-2	3 : 4 : 4	75	5.20E-01	2.43E+01 J	9.58E+00	LEACH-R-1	--	--	--	2.43E+01	Max
R - LEACH-R-1	SVOCs	2,4-Dimethylphenol	105-67-9	2 : 4 : 4	50	1.02E+00	1.90E+01	1.00E+01	LEACH-R-1	--	--	--	1.90E+01	Max
R - LEACH-R-1	SVOCs	2-Chlorophenol	95-57-8	4 : 4 : 4	100	1.10E+01	1.09E+02 J	3.86E+01	LEACH-R-1	--	--	--	1.09E+02	Max
R - LEACH-R-1	SVOCs	2-Methylnaphthalene	91-57-6	2 : 4 : 4	50	8.20E-01	1.62E+01	8.53E+00	LEACH-R-1	--	--	--	1.62E+01	Max
R - LEACH-R-1	SVOCs	2-Methylphenol	95-48-7	1 : 4 : 4	25	1.55E+01	1.55E+01	1.55E+01	LEACH-R-1	--	--	--	1.55E+01	Max
R - LEACH-R-1	SVOCs	2-Nitroaniline	88-74-4	3 : 4 : 4	75	6.90E+00	4.87E+01 J	2.10E+01	LEACH-R-1	--	--	--	4.87E+01	Max
R - LEACH-R-1	SVOCs	3&4Methylphenol	106-44-5	4 : 4 : 4	100	4.50E+00	2.59E+01 J	1.12E+01	LEACH-R-1	--	--	--	2.59E+01	Max
R - LEACH-R-1	SVOCs	3,3'-Dichlorobenzidine	91-94-1	1 : 4 : 4	25	2.40E-01	2.40E-01	2.40E-01	LEACH-R-1	--	--	--	2.40E-01	Max
R - LEACH-R-1	SVOCs	4-Chloroaniline	106-47-8	4 : 4 : 4	100	2.00E+01	5.39E+02 J	1.75E+02	LEACH-R-1	--	--	--	5.39E+02	Max
R - LEACH-R-1	SVOCs	4-Nitroaniline	100-01-6	3 : 4 : 4	75	1.80E+01	5.40E+01 J	4.13E+01	LEACH-R-1	--	--	--	5.40E+01	Max
R - LEACH-R-1	SVOCs	Benzo(a)pyrene	50-32-8	1 : 4 : 4	25	1.80E-01	1.80E-01	1.80E-01	LEACH-R-1	--	--	--	1.80E-01	Max
R - LEACH-R-1	SVOCs	Benzo(b)fluoranthene	205-99-2	1 : 4 : 4	25	1.42E+01	1.42E+01	1.42E+01	LEACH-R-1	--	--	--	1.42E+01	Max
R - LEACH-R-1	SVOCs	Benzo(g,h,i)perylene	191-24-2	3 : 4 : 4	75	2.00E-01	1.42E+01	5.27E+00	LEACH-R-1	--	--	--	1.42E+01	Max
R - LEACH-R-1	SVOCs	Benzo(k)fluoranthene	207-08-9	2 : 4 : 4	50	2.00E-01	1.41E+01	7.13E+00	LEACH-R-1	--	--	--	1.41E+01	Max
R - LEACH-R-1	SVOCs	Benzyl Butyl Phthalate	85-68-7	2 : 4 : 4	50	1.20E+01 J	6.67E+01	3.93E+01	LEACH-R-1	--	--	--	6.67E+01	Max
R - LEACH-R-1	SVOCs	bis(2-Ethylhexyl)phthalate	117-81-7	1 : 4 : 4	25	1.20E+00	1.20E+00	1.20E+00	LEACH-R-1	--	--	--	1.20E+00	Max
R - LEACH-R-1	SVOCs	Chrysene	218-01-9	1 : 4 : 4	25	1.40E+00	1.40E+00	1.40E+00	LEACH-R-1	--	--	--	1.40E+00	Max

TABLE 3.6
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR SHALLOW GROUNDWATER AND LEACHATE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

								MLE EPC					RME	
Site	Analyte Type	Constituent	cas	FOD (a)	FOD % (a)	Min (b) (mg/L)	Max(d) (mg/L)	Mean (c) (mg/L)	Location of Max	Distribution (i)	UCL Selected (e)	UCL (f) (mg/L)	EPC (g) (mg/L)	EPC Type
R - LEACH-R-1	SVOCs	Dibenzo(a,h)anthracene	53-70-3	1 : 4 : 4	25	1.90E-01	1.90E-01	1.90E-01	LEACH-R-1	--	--	--	1.90E-01	Max
R - LEACH-R-1	SVOCs	Diethyl Phthalate	84-66-2	3 : 4 : 4	75	2.30E+00	1.26E+02 J	5.24E+01	LEACH-R-1	--	--	--	1.26E+02	Max
R - LEACH-R-1	SVOCs	Di-n-butylphthalate	84-74-2	3 : 4 : 4	75	1.93E+00	6.67E+01	2.82E+01	LEACH-R-1	--	--	--	6.67E+01	Max
R - LEACH-R-1	SVOCs	Di-n-octylphthalate	117-84-0	3 : 4 : 4	75	2.40E-01	2.40E+01	8.88E+00	LEACH-R-1	--	--	--	2.40E+01	Max
R - LEACH-R-1	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	1 : 4 : 4	25	2.80E-01	2.80E-01	2.80E-01	LEACH-R-1	--	--	--	2.80E-01	Max
R - LEACH-R-1	SVOCs	Naphthalene	91-20-3	1 : 4 : 4	25	5.60E+00	5.60E+00	5.60E+00	LEACH-R-1	--	--	--	5.60E+00	Max
R - LEACH-R-1	SVOCs	N-Nitrosodiphenylamine	86-30-6	2 : 4 : 4	50	1.30E+00	1.90E+01	1.02E+01	LEACH-R-1	--	--	--	1.90E+01	Max
R - LEACH-R-1	SVOCs	Phenol	108-95-2	4 : 4 : 4	100	6.80E+02	3.43E+03 J	1.64E+03	LEACH-R-1	--	--	--	3.43E+03	Max
R - LEACH-R-1	Pesticide	4,4'-DDT	50-29-3	2 : 4 : 4	50	2.10E-01 J	8.20E-01 J	5.15E-01	LEACH-R-1	--	--	--	8.20E-01	Max
R - LEACH-R-1	Pesticide	beta-BHC	319-85-7	2 : 4 : 4	50	2.00E-01 J	3.40E-01	2.70E-01	LEACH-R-1	--	--	--	3.40E-01	Max
R - LEACH-R-1	Pesticide	Dieldrin	60-57-1	1 : 4 : 4	25	1.90E-01 J	1.90E-01 J	1.90E-01	LEACH-R-1	--	--	--	1.90E-01	Max
R - LEACH-R-1	Pesticide	gamma-BHC (Lindane)	58-89-9	1 : 4 : 4	25	2.80E-02 J	2.80E-02 J	2.80E-02	LEACH-R-1	--	--	--	2.80E-02	Max
R - LEACH-R-1	Pesticide	Heptachlor	76-44-8	1 : 4 : 4	25	2.10E-01 J	2.10E-01 J	2.10E-01	LEACH-R-1	--	--	--	2.10E-01	Max
R - LEACH-R-1	Herbicide	2,4,5-T	93-76-5	2 : 4 : 4	50	6.60E-02 J	1.14E+00	6.03E-01	LEACH-R-1	--	--	--	1.14E+00	Max
R - LEACH-R-1	Herbicide	2,4,5-TP (Silvex)	93-72-1	1 : 4 : 4	25	6.90E-02 J	6.90E-02 J	6.90E-02	LEACH-R-1	--	--	--	6.90E-02	Max
R - LEACH-R-1	Herbicide	2,4-D	94-75-7	2 : 4 : 4	50	3.80E+00	9.70E+00	6.75E+00	LEACH-R-1	--	--	--	9.70E+00	Max
R - LEACH-R-1	Herbicide	2,4-DB	94-82-6	2 : 4 : 4	50	1.50E-01 J	8.13E+00 J	4.14E+00	LEACH-R-1	--	--	--	8.13E+00	Max
R - LEACH-R-1	Herbicide	Dichlorprop	120-36-5	1 : 4 : 4	25	8.00E-01 J	8.00E-01 J	8.00E-01	LEACH-R-1	--	--	--	8.00E-01	Max
R - LEACH-R-1	Herbicide	MCPA	94-74-6	1 : 4 : 4	25	1.09E+03 J	1.09E+03 J	1.09E+03	LEACH-R-1	--	--	--	1.09E+03	Max
R - LEACH-R-1	Herbicide	MCPP	93-65-2	1 : 4 : 4	25	4.50E+00 J	4.50E+00 J	4.50E+00	LEACH-R-1	--	--	--	4.50E+00	Max
R - LEACH-R-1	Herbicide	Pentachlorophenol	87-86-5	2 : 4 : 4	50	9.40E-02	7.10E-01	4.02E-01	LEACH-R-1	--	--	--	7.10E-01	Max
R - LEACH-R-1	PCBs	PCBs, Total	Total PCBs	4 : 4 : 4	100	4.06E+00	1.75E+02	8.90E+01	LEACH-R-1	--	--	--	1.75E+02	Max
R - LEACH-R-1	Dioxin	Dioxin TEQ-HH	Dioxin TEQ-HH	3 : 4 : 4	75	1.53E-08	2.81E-06	1.30E-06	LEACH-R-1	--	--	--	2.81E-06	Max
R - LEACH-R-1	Metals	Aluminum	7429-90-5	4 : 4 : 4	100	9.00E+00	1.50E+01 J	1.10E+01	LEACH-R-1	--	--	--	1.50E+01	Max
R - LEACH-R-1	Metals	Arsenic	7440-38-2	4 : 4 : 4	100	2.10E-02 J	5.10E-02	4.02E-02	LEACH-R-1	--	--	--	5.10E-02	Max
R - LEACH-R-1	Metals	Beryllium	7440-41-7	4 : 4 : 4	100	2.50E-02	3.10E-02	2.70E-02	LEACH-R-1	--	--	--	3.10E-02	Max
R - LEACH-R-1	Metals	Cadmium	7440-43-9	3 : 4 : 4	75	3.20E-03	6.40E-02	2.64E-02	LEACH-R-1	--	--	--	6.40E-02	Max
R - LEACH-R-1	Metals	Chromium	7440-47-3	4 : 4 : 4	100	4.07E-01 J	6.00E-01	4.72E-01	LEACH-R-1	--	--	--	6.00E-01	Max
R - LEACH-R-1	Metals	Cobalt	7440-48-4	4 : 4 : 4	100	1.70E+00	2.60E+00	2.19E+00	LEACH-R-1	--	--	--	2.60E+00	Max
R - LEACH-R-1	Metals	Lead	7439-92-1	2 : 4 : 4	50	2.33E-02	7.00E-02 J	4.67E-02	LEACH-R-1	--	--	--	4.67E-02	Average (h)
R - LEACH-R-1	Metals	Manganese	7439-96-5	4 : 4 : 4	100	9.20E+01	2.50E+02	1.49E+02	LEACH-R-1	--	--	--	2.50E+02	Max
R - LEACH-R-1	Metals	Mercury	7439-97-6	3 : 4 : 4	75	2.50E-03 J	3.00E-02	1.52E-02	LEACH-R-1	--	--	--	3.00E-02	Max
R - LEACH-R-1	Metals	Nickel	7440-02-0	4 : 4 : 4	100	1.67E+00 J	2.20E+00 J	1.95E+00	LEACH-R-1	--	--	--	2.20E+00	Max
R - LEACH-R-1	Metals	Selenium	7782-49-2	2 : 4 : 4	50	2.97E-02	5.50E-02	4.23E-02	LEACH-R-1	--	--	--	5.50E-02	Max
R - LEACH-R-1	Metals	Thallium	7440-28-0	1 : 4 : 4	25	1.20E-01	1.20E-01	1.20E-01	LEACH-R-1	--	--	--	1.20E-01	Max
R - LEACH-R-1	Metals	Vanadium	7440-62-2	4 : 4 : 4	100	3.60E-01	1.50E+00	7.75E-01	LEACH-R-1	--	--	--	1.50E+00	Max
R - LEACH-R-1	Metals	Zinc	7440-66-6	4 : 4 : 4	100	4.80E+01	1.09E+02	7.72E+01	LEACH-R-1	--	--	--	1.09E+02	Max
S - SA-S-2	Metals	Arsenic	7440-38-2	1 : 1 : 1	100	7.10E-02	7.10E-02	7.10E-02	SA-S-2	--	--	--	7.10E-02	Max
S - SA-S-2	Metals	Manganese	7439-96-5	1 : 1 : 1	100	2.60E+00	2.60E+00	2.60E+00	SA-S-2	--	--	--	2.60E+00	Max

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
FOD - Frequency of detection.
J - Estimated value.
PCB - Polycyclic Biphenyl.
SVOCs - Semivolatile Organic Compounds.
UCL - Upper confidence limit.
VOCs - Volatile Organic Compounds.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples. Percentage calculated based on number of detects and number of valid results.
(b) Minimum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(c) Maximum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(d) When FOD = 100% and when too few samples and detects were available to calculate reliable UCLs (g), the mean was calculated using detected results only. When FOD was less than 100%, the nonparametric mean given by ProUCL (see Attachment B) was used. All means calculated after results from duplicate samples have been averaged.
(e) UCL recommended for use by ProUCL Version 4.00.02 (U.S. EPA, 2007). If more than one UCL was recommended, the higher UCL was used. See Attachment B.
(f) UCL on the arithmetic mean for each constituent, after duplicates have been averaged. Confidence level listed with UCL selected. ProUCL selects the appropriate substitution method for non-detects.
(g) UCL where at least 10 samples and at least 5 detects are available. Where too few samples or detects are available, the maximum detected concentration is used.
(h) The average is selected as the EPC for lead based on the model used to evaluate lead exposure.
(i) No UCLs calculated for shallow groundwater and leachate; therefore, no distributions selected.

TABLE 3.6 MLE
EXPOSURE POINT CONCENTRATIONS - SHALLOW GROUNDWATER & LEACHATE (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - MLE Scenario (mg/L)									
		O - AA-O-1-16 (a)	O - GM-19A (a)	O - LEACH-0-1 (a)	O - SA2-MW-4-S (a)	Q Central - SA-Q-5 (a)	Q North - LEACH-Q-1 (b)	Q South - AA-Q-10-18 (a)	R - B-24A (a)	R - LEACH-R-1 (b)	S - SA-S-2 (a)
VOCs											
1,1,2-Trichloroethane	79-00-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E-01	NCOPC
1,1-Dichloroethylene	75-35-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.45E-01	NCOPC
1,2-Dichloroethane	107-06-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.95E+00	NCOPC	2.20E-01	5.31E+02	NCOPC
1,2-Dichloroethene (total)	540-59-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.12E+02	NCOPC
1,2-Dichloropropane	78-87-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.00E-02	NCOPC
2-Butanone	78-93-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.72E+00	NCOPC
4-Methyl-2-pentanone	108-10-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.10E+00	NCOPC
Acetone	67-64-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.20E+01	5.10E+01	NCOPC
Benzene	71-43-2	NCOPC	6.35E-03	9.20E-01	4.40E+00	NCOPC	4.39E-01	NCOPC	8.30E-01	3.72E+02	NCOPC
Chlorobenzene	108-90-7	NCOPC	NCOPC	1.70E+00	1.10E+01	NCOPC	1.39E+00	NCOPC	1.00E+00	2.59E+02	NCOPC
Chloroethane	75-00-3	NCOPC	NCOPC	NCOPC	6.50E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Chloroform	67-66-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.85E+01	NCOPC
Chloromethane	74-87-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.51E+02	NCOPC
Dichloromethane	75-09-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.63E-02	NCOPC	1.40E-01	2.28E+00	NCOPC
Ethylbenzene	100-41-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.83E+02	NCOPC
Tetrachloroethene	127-18-4	NCOPC	1.10E-01	NCOPC	NCOPC	NCOPC	1.07E-01	NCOPC	NCOPC	1.72E+04	NCOPC
Toluene	108-88-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.07E+00	NCOPC	NCOPC	4.35E+03	NCOPC
Trichloroethene	79-01-6	NCOPC	5.30E-02	NCOPC	NCOPC	NCOPC	2.18E-02	NCOPC	NCOPC	2.00E+04	NCOPC
Vinyl chloride	75-01-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.85E-03	NCOPC	NCOPC	1.50E-01	NCOPC
Xylenes, Total	1330-20-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.56E+02	NCOPC
SVOCs											
1,2,4-Trichlorobenzene	120-82-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.77E+01	NCOPC
1,2-Dichlorobenzene	95-50-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.30E+01	NCOPC
1,4-Dichlorobenzene	106-46-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.15E-02	NCOPC	NCOPC	2.26E+01	NCOPC
1,4-Dioxane	123-91-1	NCOPC	NCOPC	NCOPC	4.40E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
2,4,5-Trichlorophenol	95-95-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.30E+01	NCOPC	NCOPC
2,4,6-Trichlorophenol	88-06-2	NCOPC	NCOPC	3.80E-01	NCOPC	NCOPC	1.21E+01	NCOPC	1.50E+01	1.23E+01	NCOPC
2,4-Dichlorophenol	120-83-2	NCOPC	NCOPC	3.20E-01	NCOPC	NCOPC	1.47E+02	NCOPC	2.10E+01	9.58E+00	NCOPC
2,4-Dimethylphenol	105-67-9	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.63E-01	NCOPC	NCOPC	1.00E+01	NCOPC
2-Chlorophenol	95-57-8	NCOPC	NCOPC	3.30E-01	5.50E-02	NCOPC	8.96E+00	NCOPC	1.40E+02	3.86E+01	NCOPC
2-Methylnaphthalene	91-57-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.53E+00	NCOPC
2-Methylphenol	95-48-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.55E+01	NCOPC
2-Nitroaniline	88-74-4	NCOPC	NCOPC	2.60E-01	NCOPC	NCOPC	1.72E+01	NCOPC	NCOPC	2.10E+01	NCOPC
3&4Methylphenol	106-44-5	NCOPC	NCOPC	6.40E-01	NCOPC	NCOPC	1.78E+00	NCOPC	1.80E+00	1.12E+01	NCOPC
3,3'-Dichlorobenzidine	91-94-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.40E-01	NCOPC
4-Chloroaniline	106-47-8	NCOPC	NCOPC	4.20E+00	NCOPC	NCOPC	1.24E+01	NCOPC	NCOPC	1.75E+02	NCOPC
4-Chlorophenol	106-48-9	NCOPC	NCOPC	NCOPC	5.70E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Nitroaniline	100-01-6	NCOPC	NCOPC	7.00E-01	NCOPC	NCOPC	2.00E+00	NCOPC	NCOPC	4.13E+01	NCOPC
4-Nitrophenol	100-02-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.70E-01	NCOPC	NCOPC	NCOPC	NCOPC
Benzo(a)pyrene	50-32-8	1.60E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.80E-01	NCOPC
Benzo(b)fluoranthene	205-99-2	1.10E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.42E+01	NCOPC
Benzo(g,h,i)perylene	191-24-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.27E+00	NCOPC

TABLE 3.6 MLE
EXPOSURE POINT CONCENTRATIONS - SHALLOW GROUNDWATER & LEACHATE (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - MLE Scenario (mg/L)									
		O - AA-O-1-16 (a)	O - GM-19A (a)	O - LEACH-0-1 (a)	O - SA2-MW-4-S (a)	Q Central - SA-Q-5 (a)	Q North - LEACH-Q-1 (b)	Q South - AA-Q-10-18 (a)	R - B-24A (a)	R - LEACH-R-1 (b)	S - SA-S-2 (a)
Benzo(k)fluoranthene	207-08-9	1.20E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.13E+00	NCOPC
Benzyl Butyl Phthalate	85-68-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.93E+01	NCOPC
bis(2-Ethylhexyl)phthalate	117-81-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E+00	NCOPC
Chrysene	218-01-9	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.40E+00	NCOPC
Dibenzo(a,h)anthracene	53-70-3	2.70E-03	NCOPC	NCOPC	NCOPC	NCOPC	9.60E-03	NCOPC	NCOPC	1.90E-01	NCOPC
Diethyl Phthalate	84-66-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.24E+01	NCOPC
Di-n-butylphthalate	84-74-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.82E+01	NCOPC
Di-n-octylphthalate	117-84-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.88E+00	NCOPC
Dinoseb	88-85-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.50E-01	NCOPC	NCOPC	NCOPC	NCOPC
Indeno(1,2,3-cd)pyrene	193-39-5	3.00E-03	NCOPC	NCOPC	NCOPC	NCOPC	9.00E-03	NCOPC	NCOPC	2.80E-01	NCOPC
Naphthalene	91-20-3	NCOPC	NCOPC	5.70E-01	NCOPC	NCOPC	1.47E+00	NCOPC	NCOPC	5.60E+00	NCOPC
Nitrobenzene	98-95-3	NCOPC	NCOPC	8.00E-02	NCOPC	NCOPC	1.42E+00	NCOPC	1.30E+00	NCOPC	NCOPC
N-Nitrosodiphenylamine	86-30-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.40E-02	NCOPC	NCOPC	1.02E+01	NCOPC
Phenol	108-95-2	NCOPC	NCOPC	3.80E+00	NCOPC	NCOPC	1.05E+01	NCOPC	1.00E+02	1.64E+03	NCOPC
Pesticides											
4,4'-DDT	50-29-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.15E-01	NCOPC
beta-BHC	319-85-7	NCOPC	NCOPC	2.50E-03	NCOPC	NCOPC	1.53E-02	NCOPC	NCOPC	2.70E-01	NCOPC
Dieldrin	60-57-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.90E-01	NCOPC
Endrin Ketone	53494-70-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.20E-03	NCOPC	NCOPC	NCOPC	NCOPC
gamma-BHC (Lindane)	58-89-9	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.80E-02	NCOPC
Heptachlor	76-44-8	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.10E-01	NCOPC
Herbicides											
2,4,5-T	93-76-5	NCOPC	NCOPC	4.80E-01	NCOPC	NCOPC	3.10E-01	NCOPC	NCOPC	6.03E-01	NCOPC
2,4,5-TP (Silvex)	93-72-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.90E-02	NCOPC
2,4-D	94-75-7	NCOPC	NCOPC	9.30E-01	NCOPC	NCOPC	8.20E+01	NCOPC	4.10E+01	6.75E+00	NCOPC
2,4-DB	94-82-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.14E+00	NCOPC
Dicamba	1918-00-9	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.55E-01	NCOPC	NCOPC	NCOPC	NCOPC
Dichlorprop	120-36-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.22E+00	NCOPC	3.40E+00	8.00E-01	NCOPC
MCPA	94-74-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.09E+03	NCOPC
MCPP	93-65-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.50E+00	NCOPC
Pentachlorophenol	87-86-5	NCOPC	7.75E-02	7.80E-01	NCOPC	NCOPC	2.99E+00	5.20E-03	NCOPC	4.02E-01	NCOPC
PCBs											
PCBs, Total	Total PCBs	NCOPC	2.23E-03	5.49E-02	NCOPC	NCOPC	1.67E-02	NCOPC	NCOPC	8.90E+01	NCOPC
Dioxin											
Dioxin TEQ-HH	Dioxin TEQ-HH	NCOPC	NCOPC	7.20E-07	NCOPC	NCOPC	4.75E-07	NCOPC	NCOPC	1.30E-06	NCOPC
Metals											
Aluminum	7429-90-5	5.00E+00	NCOPC	NCOPC	NCOPC	NCOPC	9.03E+00	1.35E+01	NCOPC	1.10E+01	NCOPC
Antimony	7440-36-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.08E-02	NCOPC	NCOPC	NCOPC	NCOPC
Arsenic	7440-38-2	7.00E-02	NCOPC	2.80E-02	9.70E-02	9.70E-02	3.40E-02	1.40E-02	3.20E-02	4.02E-02	7.10E-02
Barium	7440-39-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.33E+00	NCOPC	NCOPC	NCOPC	NCOPC
Beryllium	7440-41-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.70E-02	NCOPC
Cadmium	7440-43-9	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.45E-02	NCOPC	NCOPC	2.64E-02	NCOPC

TABLE 3.6 MLE
EXPOSURE POINT CONCENTRATIONS - SHALLOW GROUNDWATER & LEACHATE (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - MLE Scenario (mg/L)									
		O - AA-O-1-16 (a)	O - GM-19A (a)	O - LEACH-0-1 (a)	O - SA2-MW-4-S (a)	Q Central - SA-Q-5 (a)	Q North - LEACH-Q-1 (b)	Q South - AA-Q-10-18 (a)	R - B-24A (a)	R - LEACH-R-1 (b)	S - SA-S-2 (a)
Chromium	7440-47-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.58E-02	1.30E-01	1.10E-01	4.72E-01	NCOPC
Cobalt	7440-48-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.19E+00	NCOPC
Copper	7440-50-8	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.37E+00	NCOPC	NCOPC	NCOPC	NCOPC
Lead	7439-92-1	1.90E-02	NCOPC	NCOPC	NCOPC	NCOPC	1.61E+00	2.75E-02	NCOPC	4.67E-02	NCOPC
Manganese	7439-96-5	4.10E+00	1.40E+00	1.80E+01	4.60E+00	4.60E+00	1.89E+00	NCOPC	2.70E+00	1.49E+02	2.60E+00
Mercury	7439-97-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.90E-03	NCOPC	NCOPC	1.52E-02	NCOPC
Nickel	7440-02-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.04E-01	1.25E-01	NCOPC	1.95E+00	NCOPC
Selenium	7782-49-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.23E-02	NCOPC
Thallium	7440-28-0	NCOPC	NCOPC	3.70E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E-01	NCOPC
Vanadium	7440-62-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.65E-02	NCOPC	NCOPC	7.75E-01	NCOPC
Zinc	7440-66-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.27E+01	NCOPC	NCOPC	7.72E+01	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
MLE - Most Likely Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Detected Concentration. One sample collected.
(b) Average detected concentration from multiple sampling rounds. Summary statistics shown in Table 3.6.

TABLE 3.6 RME
EXPOSURE POINT CONCENTRATIONS - SHALLOW GROUNDWATER & LEACHATE (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - RME Scenario (mg/L)									
		O - AA-O-1-16 (a)	O - GM-19A (a)	O - LEACH-0-1 (a)	O - SA2-MW-4-S (a)	Q Central - SA-Q-5 (a)	Q North - LEACH-Q-1 (b)	Q South - AA-Q-10-18 (a)	R - B-24A (a)	R - LEACH-R-1 (b)	S - SA-S-2 (a)
VOCs											
1,1,2-Trichloroethane	79-00-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E-01	NCOPC
1,1-Dichloroethylene	75-35-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.10E-01	NCOPC
1,2-Dichloroethane	107-06-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.30E+00	NCOPC	2.20E-01	1.97E+03	NCOPC
1,2-Dichloroethene (total)	540-59-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E+03	NCOPC
1,2-Dichloropropane	78-87-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.00E-02	NCOPC
2-Butanone	78-93-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E+01	NCOPC
4-Methyl-2-pentanone	108-10-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.10E+00	NCOPC
Acetone	67-64-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.20E+01	8.00E+01	NCOPC
Benzene	71-43-2	NCOPC	6.35E-03	9.20E-01	4.40E+00	NCOPC	5.10E-01	NCOPC	8.30E-01	1.47E+03	NCOPC
Chlorobenzene	108-90-7	NCOPC	NCOPC	1.70E+00	1.10E+01	NCOPC	1.80E+00	NCOPC	1.00E+00	1.03E+03	NCOPC
Chloroethane	75-00-3	NCOPC	NCOPC	NCOPC	6.50E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Chloroform	67-66-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.07E+02	NCOPC
Chloromethane	74-87-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.51E+02	NCOPC
Dichloromethane	75-09-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.50E-02	NCOPC	1.40E-01	2.50E+00	NCOPC
Ethylbenzene	100-41-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.67E+02	NCOPC
Tetrachloroethene	127-18-4	NCOPC	1.10E-01	NCOPC	NCOPC	NCOPC	1.40E-01	NCOPC	NCOPC	6.87E+04	NCOPC
Toluene	108-88-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E+00	NCOPC	NCOPC	1.73E+04	NCOPC
Trichloroethene	79-01-6	NCOPC	5.30E-02	NCOPC	NCOPC	NCOPC	3.00E-02	NCOPC	NCOPC	7.97E+04	NCOPC
Vinyl chloride	75-01-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.60E-03	NCOPC	NCOPC	1.50E-01	NCOPC
Xylenes, Total	1330-20-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.07E+03	NCOPC
SVOCs											
1,2,4-Trichlorobenzene	120-82-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.77E+01	NCOPC
1,2-Dichlorobenzene	95-50-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.33E+01	NCOPC
1,4-Dichlorobenzene	106-46-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.15E-02	NCOPC	NCOPC	3.77E+01	NCOPC
1,4-Dioxane	123-91-1	NCOPC	NCOPC	NCOPC	4.40E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
2,4,5-Trichlorophenol	95-95-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.30E+01	NCOPC	NCOPC
2,4,6-Trichlorophenol	88-06-2	NCOPC	NCOPC	3.80E-01	NCOPC	NCOPC	1.40E+01	NCOPC	1.50E+01	3.23E+01	NCOPC
2,4-Dichlorophenol	120-83-2	NCOPC	NCOPC	3.20E-01	NCOPC	NCOPC	1.80E+02	NCOPC	2.10E+01	2.43E+01	NCOPC
2,4-Dimethylphenol	105-67-9	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.10E-01	NCOPC	NCOPC	1.90E+01	NCOPC
2-Chlorophenol	95-57-8	NCOPC	NCOPC	3.30E-01	5.50E-02	NCOPC	1.30E+01	NCOPC	1.40E+02	1.09E+02	NCOPC
2-Methylnaphthalene	91-57-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.62E+01	NCOPC
2-Methylphenol	95-48-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.55E+01	NCOPC
2-Nitroaniline	88-74-4	NCOPC	NCOPC	2.60E-01	NCOPC	NCOPC	2.20E+01	NCOPC	NCOPC	4.87E+01	NCOPC
3&4Methylphenol	106-44-5	NCOPC	NCOPC	6.40E-01	NCOPC	NCOPC	2.60E+00	NCOPC	1.80E+00	2.59E+01	NCOPC
3,3'-Dichlorobenzidine	91-94-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.40E-01	NCOPC
4-Chloroaniline	106-47-8	NCOPC	NCOPC	4.20E+00	NCOPC	NCOPC	1.50E+01	NCOPC	NCOPC	5.39E+02	NCOPC
4-Chlorophenol	106-48-9	NCOPC	NCOPC	NCOPC	5.70E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Nitroaniline	100-01-6	NCOPC	NCOPC	7.00E-01	NCOPC	NCOPC	3.10E+00	NCOPC	NCOPC	5.40E+01	NCOPC
4-Nitrophenol	100-02-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.70E-01	NCOPC	NCOPC	NCOPC	NCOPC
Benzo(a)pyrene	50-32-8	1.60E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.80E-01	NCOPC
Benzo(b)fluoranthene	205-99-2	1.10E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.42E+01	NCOPC
Benzo(g,h,i)perylene	191-24-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.42E+01	NCOPC

TABLE 3.6 RME
EXPOSURE POINT CONCENTRATIONS - SHALLOW GROUNDWATER & LEACHATE (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - RME Scenario (mg/L)									
		O - AA-O-1-16 (a)	O - GM-19A (a)	O - LEACH-0-1 (a)	O - SA2-MW-4-S (a)	Q Central - SA-Q-5 (a)	Q North - LEACH-Q-1 (b)	Q South - AA-Q-10-18 (a)	R - B-24A (a)	R - LEACH-R-1 (b)	S - SA-S-2 (a)
Benzo(k)fluoranthene	207-08-9	1.20E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.41E+01	NCOPC
Benzyl Butyl Phthalate	85-68-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.67E+01	NCOPC
bis(2-Ethylhexyl)phthalate	117-81-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E+00	NCOPC
Chrysene	218-01-9	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.40E+00	NCOPC
Dibenzo(a,h)anthracene	53-70-3	2.70E-03	NCOPC	NCOPC	NCOPC	NCOPC	9.60E-03	NCOPC	NCOPC	1.90E-01	NCOPC
Diethyl Phthalate	84-66-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.26E+02	NCOPC
Di-n-butylphthalate	84-74-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.67E+01	NCOPC
Di-n-octylphthalate	117-84-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.40E+01	NCOPC
Dinoseb	88-85-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.50E-01	NCOPC	NCOPC	NCOPC	NCOPC
Indeno(1,2,3-cd)pyrene	193-39-5	3.00E-03	NCOPC	NCOPC	NCOPC	NCOPC	9.00E-03	NCOPC	NCOPC	2.80E-01	NCOPC
Naphthalene	91-20-3	NCOPC	NCOPC	5.70E-01	NCOPC	NCOPC	1.90E+00	NCOPC	NCOPC	5.60E+00	NCOPC
Nitrobenzene	98-95-3	NCOPC	NCOPC	8.00E-02	NCOPC	NCOPC	1.70E+00	NCOPC	1.30E+00	NCOPC	NCOPC
N-Nitrosodiphenylamine	86-30-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.40E-02	NCOPC	NCOPC	1.90E+01	NCOPC
Phenol	108-95-2	NCOPC	NCOPC	3.80E+00	NCOPC	NCOPC	1.90E+01	NCOPC		3.43E+03	NCOPC
Pesticides											
4,4'-DDT	50-29-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.20E-01	NCOPC
beta-BHC	319-85-7	NCOPC	NCOPC	2.50E-03	NCOPC	NCOPC	1.70E-02	NCOPC	NCOPC	3.40E-01	NCOPC
Dieldrin	60-57-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.90E-01	NCOPC
Endrin Ketone	53494-70-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.20E-03	NCOPC	NCOPC	NCOPC	NCOPC
gamma-BHC (Lindane)	58-89-9	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.80E-02	NCOPC
Heptachlor	76-44-8	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.10E-01	NCOPC
Herbicides											
2,4,5-T	93-76-5	NCOPC	NCOPC	4.80E-01	NCOPC	NCOPC	3.10E-01	NCOPC	NCOPC	1.14E+00	NCOPC
2,4,5-TP (Silvex)	93-72-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.90E-02	NCOPC
2,4-D	94-75-7	NCOPC	NCOPC	9.30E-01	NCOPC	NCOPC	1.40E+02	NCOPC	4.10E+01	9.70E+00	NCOPC
2,4-DB	94-82-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.13E+00	NCOPC
Dicamba	1918-00-9	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.55E-01	NCOPC	NCOPC	NCOPC	NCOPC
Dichlorprop	120-36-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.35E+00	NCOPC	3.40E+00	8.00E-01	NCOPC
MCPA	94-74-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.09E+03	NCOPC
MCPP	93-65-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.50E+00	NCOPC
Pentachlorophenol	87-86-5	NCOPC	7.75E-02	7.80E-01	NCOPC	NCOPC	6.30E+00	5.20E-03	NCOPC	7.10E-01	NCOPC
PCBs											
PCBs, Total	Total PCBs	NCOPC	2.23E-03	5.49E-02	NCOPC	NCOPC	4.79E-02	NCOPC	NCOPC	1.75E+02	NCOPC
Dioxin											
Dioxin TEQ-HH	Dioxin TEQ-HH	NCOPC	NCOPC	7.20E-07	NCOPC	NCOPC	1.58E-06	NCOPC	NCOPC	2.81E-06	NCOPC
Metals											
Aluminum	7429-90-5	5.00E+00	NCOPC	NCOPC	NCOPC	NCOPC	3.60E+01	1.35E+01	NCOPC	1.50E+01	NCOPC
Antimony	7440-36-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.90E-02	NCOPC	NCOPC	NCOPC	NCOPC
Arsenic	7440-38-2	7.00E-02	NCOPC	2.80E-02	9.70E-02	9.70E-02	5.80E-02	1.40E-02	3.20E-02	5.10E-02	7.10E-02

TABLE 3.6 RME
EXPOSURE POINT CONCENTRATIONS - SHALLOW GROUNDWATER & LEACHATE (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - RME Scenario (mg/L)									
		O - AA-O-1-16 (a)	O - GM-19A (a)	O - LEACH-0-1 (a)	O - SA2-MW-4-S (a)	Q Central - SA-Q-5 (a)	Q North - LEACH-Q-1 (b)	Q South - AA-Q-10-18 (a)	R - B-24A (a)	R - LEACH-R-1 (b)	S - SA-S-2 (a)
Barium	7440-39-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.60E+00	NCOPC	NCOPC	NCOPC	NCOPC
Beryllium	7440-41-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.10E-02	NCOPC
Cadmium	7440-43-9	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.30E-02	NCOPC	NCOPC	6.40E-02	NCOPC
Chromium	7440-47-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.30E-01	1.30E-01	1.10E-01	6.00E-01	NCOPC
Cobalt	7440-48-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.60E+00	NCOPC
Copper	7440-50-8	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.60E+00	NCOPC	NCOPC	NCOPC	NCOPC
Lead	7439-92-1	1.90E-02	NCOPC	NCOPC	NCOPC	NCOPC	1.61E+00	2.75E-02	NCOPC	4.67E-02	NCOPC
Manganese	7439-96-5	4.10E+00	1.40E+00	1.80E+01	4.60E+00	4.60E+00	2.30E+00	NCOPC	2.70E+00	2.50E+02	2.60E+00
Mercury	7439-97-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.90E-03	NCOPC	NCOPC	3.00E-02	NCOPC
Nickel	7440-02-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.85E+00	1.25E-01	NCOPC	2.20E+00	NCOPC
Selenium	7782-49-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.50E-02	NCOPC
Thallium	7440-28-0	NCOPC	NCOPC	3.70E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E-01	NCOPC
Vanadium	7440-62-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.10E-01	NCOPC	NCOPC	1.50E+00	NCOPC
Zinc	7440-66-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.20E+01	NCOPC	NCOPC	1.09E+02	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Detected Concentration. One sample collected.
(b) Maximum detected concentration from multiple sampling rounds. Selection indicated in Table 3.6.

TABLE 3.7
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR SHALLOW & MID GROUNDWATER AND LEACHATE (VOLATILES ONLY)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/L)	Max(d) (mg/L)	MLE EPC Mean (c) (mg/L)	Location of Max	Distribution (h)	UCL Selected (e)	UCL (f) (mg/L)	RME EPC (g) (mg/L)	EPC Type
O - AA-CLAY-2-22	VOCs	1,1,1-Trichloroethane	1 : 1 : 1	100	2.30E+01	2.30E+01	2.30E+01	AA-CLAY-2	--	--	--	2.30E+01	Max
O - AA-CLAY-2-22	VOCs	1,1,2-Trichloroethane	1 : 1 : 1	100	6.70E-01	6.70E-01	6.70E-01	AA-CLAY-2	--	--	--	6.70E-01	Max
O - AA-CLAY-2-22	VOCs	1,1-Dichloroethane	1 : 1 : 1	100	1.20E+01	1.20E+01	1.20E+01	AA-CLAY-2	--	--	--	1.20E+01	Max
O - AA-CLAY-2-22	VOCs	1,1-Dichloroethylene	1 : 1 : 1	100	2.10E+00	2.10E+00	2.10E+00	AA-CLAY-2	--	--	--	2.10E+00	Max
O - AA-CLAY-2-22	VOCs	1,2-Dichloroethene (total)	1 : 1 : 1	100	4.00E+01	4.00E+01	4.00E+01	AA-CLAY-2	--	--	--	4.00E+01	Max
O - AA-CLAY-2-22	VOCs	Benzene	1 : 1 : 1	100	6.30E+01	6.30E+01	6.30E+01	AA-CLAY-2	--	--	--	6.30E+01	Max
O - AA-CLAY-2-22	VOCs	Chlorobenzene	1 : 1 : 1	100	4.80E+00	4.80E+00	4.80E+00	AA-CLAY-2	--	--	--	4.80E+00	Max
O - AA-CLAY-2-22	VOCs	Chloroform	1 : 1 : 1	100	6.10E-01	6.10E-01	6.10E-01	AA-CLAY-2	--	--	--	6.10E-01	Max
O - AA-CLAY-2-22	VOCs	Dichloromethane	1 : 1 : 1	100	2.70E-01	2.70E-01	2.70E-01	AA-CLAY-2	--	--	--	2.70E-01	Max
O - AA-CLAY-2-22	VOCs	Ethylbenzene	1 : 1 : 1	100	1.60E+00	1.60E+00	1.60E+00	AA-CLAY-2	--	--	--	1.60E+00	Max
O - AA-CLAY-2-22	VOCs	Toluene	1 : 1 : 1	100	3.40E+01	3.40E+01	3.40E+01	AA-CLAY-2	--	--	--	3.40E+01	Max
O - AA-CLAY-2-22	VOCs	Trichloroethene	1 : 1 : 1	100	6.90E-01	6.90E-01	6.90E-01	AA-CLAY-2	--	--	--	6.90E-01	Max
O - AA-CLAY-2-22	VOCs	Vinyl chloride	1 : 1 : 1	100	5.10E-01	5.10E-01	5.10E-01	AA-CLAY-2	--	--	--	5.10E-01	Max
O - AA-CLAY-2-22	SVOCs	1,2-Dichlorobenzene	1 : 1 : 1	100	1.90E+00	1.90E+00	1.90E+00	AA-CLAY-2	--	--	--	1.90E+00	Max
O - AA-CLAY-2-22	SVOCs	1,4-Dichlorobenzene	1 : 1 : 1	100	1.60E+00	1.60E+00	1.60E+00	AA-CLAY-2	--	--	--	1.60E+00	Max
O - AA-CLAY-2-22	SVOCs	2-Methylnaphthalene	1 : 1 : 1	100	7.30E-02	7.30E-02	7.30E-02	AA-CLAY-2	--	--	--	7.30E-02	Max
O - GM-19A	VOCs	Benzene	1 : 1 : 1	100	6.35E-03	6.35E-03	6.35E-03	GM-19A	--	--	--	6.35E-03	Max
O - GM-19A	VOCs	Tetrachloroethene	1 : 1 : 1	100	1.10E-01	1.10E-01	1.10E-01	GM-19A	--	--	--	1.10E-01	Max
O - GM-19A	VOCs	Trichloroethene	1 : 1 : 1	100	5.30E-02	5.30E-02	5.30E-02	GM-19A	--	--	--	5.30E-02	Max
O - LEACH-0-1	VOCs	Benzene	1 : 1 : 1	100	9.20E-01	9.20E-01	9.20E-01	LEACH-O-1	--	--	--	9.20E-01	Max
O - LEACH-0-1	VOCs	Chlorobenzene	1 : 1 : 1	100	1.70E+00 J	1.70E+00 J	1.70E+00	LEACH-O-1	--	--	--	1.70E+00	Max
O - LEACH-0-1	SVOCs	2-Chlorophenol	1 : 1 : 1	100	3.30E-01	3.30E-01	3.30E-01	LEACH-O-1	--	--	--	3.30E-01	Max
O - LEACH-0-1	SVOCs	Naphthalene	1 : 1 : 1	100	5.70E-01	5.70E-01	5.70E-01	LEACH-O-1	--	--	--	5.70E-01	Max
O - LEACH-0-1	SVOCs	Nitrobenzene	1 : 1 : 1	100	8.00E-02	8.00E-02	8.00E-02	LEACH-O-1	--	--	--	8.00E-02	Max
O - SA2-MW-4-S	VOCs	Benzene	1 : 1 : 1	100	4.40E+00	4.40E+00	4.40E+00	SA2-MW-4-S	--	--	--	4.40E+00	Max
O - SA2-MW-4-S	VOCs	Chlorobenzene	1 : 1 : 1	100	1.10E+01	1.10E+01	1.10E+01	SA2-MW-4-S	--	--	--	1.10E+01	Max
O - SA2-MW-4-S	VOCs	Chloroethane	1 : 1 : 1	100	6.50E-01	6.50E-01	6.50E-01	SA2-MW-4-S	--	--	--	6.50E-01	Max
O - SA2-MW-4-S	SVOCs	1,4-Dioxane	1 : 1 : 1	100	4.40E-03	4.40E-03	4.40E-03	SA2-MW-4-S	--	--	--	4.40E-03	Max
O - SA2-MW-4-S	SVOCs	2-Chlorophenol	1 : 1 : 1	100	5.50E-02	5.50E-02	5.50E-02	SA2-MW-4-S	--	--	--	5.50E-02	Max
O - SA2-MW-4-S	SVOCs	4-Chlorophenol	1 : 1 : 1	100	5.70E-02	5.70E-02	5.70E-02	SA2-MW-4-S	--	--	--	5.70E-02	Max
O - SA-O-3	VOCs	Benzene	1 : 1 : 1	100	7.35E-03	7.35E-03	7.35E-03	SA-O-3	--	--	--	7.35E-03	Max
O - SA-O-3	VOCs	Tetrachloroethene	1 : 1 : 1	100	2.35E-02	2.35E-02	2.35E-02	SA-O-3	--	--	--	2.35E-02	Max
O - SA-O-3	VOCs	Trichloroethene	1 : 1 : 1	100	2.20E-02	2.20E-02	2.20E-02	SA-O-3	--	--	--	2.20E-02	Max
Q Central - SA-Q-6	VOCs	Benzene	1 : 1 : 1	100	2.20E-01	2.20E-01	2.20E-01	SA-Q-6	--	--	--	2.20E-01	Max
Q Central - SA-Q-6	VOCs	Chlorobenzene	1 : 1 : 1	100	2.80E-01	2.80E-01	2.80E-01	SA-Q-6	--	--	--	2.80E-01	Max
Q North - LEACH-Q-1	VOCs	1,2-Dichloroethane	5 : 5 : 5	100	1.20E+00	2.30E+00	1.95E+00	LEACH-Q-1	--	--	--	2.30E+00	Max
Q North - LEACH-Q-1	VOCs	Benzene	5 : 5 : 5	100	3.50E-01	5.10E-01	4.39E-01	LEACH-Q-1	--	--	--	5.10E-01	Max
Q North - LEACH-Q-1	VOCs	Chlorobenzene	5 : 5 : 5	100	9.00E-01	1.80E+00	1.39E+00	LEACH-Q-1	--	--	--	1.80E+00	Max
Q North - LEACH-Q-1	VOCs	Dichloromethane	5 : 5 : 5	100	3.40E-02	5.50E-02	4.63E-02	LEACH-Q-1	--	--	--	5.50E-02	Max
Q North - LEACH-Q-1	VOCs	Tetrachloroethene	5 : 5 : 5	100	8.25E-02	1.40E-01	1.07E-01	LEACH-Q-1	--	--	--	1.40E-01	Max
Q North - LEACH-Q-1	VOCs	Toluene	5 : 5 : 5	100	9.25E-01 J	1.20E+00	1.07E+00	LEACH-Q-1, LEACH-Q-1	--	--	--	1.20E+00	Max
Q North - LEACH-Q-1	VOCs	Trichloroethene	5 : 5 : 5	100	1.80E-02	3.00E-02	2.18E-02	LEACH-Q-1	--	--	--	3.00E-02	Max
Q North - LEACH-Q-1	VOCs	Vinyl chloride	2 : 4 : 5	50	4.10E-03	5.60E-03	4.85E-03	LEACH-Q-1	--	--	--	5.60E-03	Max
Q North - LEACH-Q-1	SVOCs	1,4-Dichlorobenzene	1 : 4 : 5	25	8.15E-02	8.15E-02	8.15E-02	LEACH-Q-1	--	--	--	8.15E-02	Max
Q North - LEACH-Q-1	SVOCs	2-Chlorophenol	5 : 5 : 5	100	5.00E+00	1.30E+01 J	8.96E+00	LEACH-Q-1	--	--	--	1.30E+01	Max
Q North - LEACH-Q-1	SVOCs	Naphthalene	3 : 4 : 5	75	1.20E+00	1.90E+00	1.47E+00	LEACH-Q-1	--	--	--	1.90E+00	Max
Q North - LEACH-Q-1	SVOCs	Nitrobenzene	5 : 5 : 5	100	8.10E-01	1.70E+00	1.42E+00	LEACH-Q-1, LEACH-Q-1	--	--	--	1.70E+00	Max
Q North - SA-Q-1	VOCs	Benzene	1 : 1 : 1	100	1.00E+00	1.00E+00	1.00E+00	SA-Q-1	--	--	--	1.00E+00	Max
Q North - SA-Q-1	VOCs	Chlorobenzene	1 : 1 : 1	100	1.20E+00	1.20E+00	1.20E+00	SA-Q-1	--	--	--	1.20E+00	Max

TABLE 3.7
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR SHALLOW & MID GROUNDWATER AND LEACHATE (VOLATILES ONLY)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/L)	Max(d) (mg/L)	MLE EPC Mean (c) (mg/L)	Location of Max	Distribution (h)	UCL Selected (e)	UCL (f) (mg/L)	RME EPC (g) (mg/L)	EPC Type
Q North - SA-Q-1	VOCs	Chloroethane	1 : 1 : 1	100	3.50E-02	3.50E-02	3.50E-02	SA-Q-1	--	--	--	3.50E-02	Max
Q South - AA-Q-6-24	VOCs	Benzene	1 : 1 : 1	100	4.75E-01	4.75E-01	4.75E-01	AA-Q-6	--	--	--	4.75E-01	Max
Q South - AA-Q-6-24	SVOCs	2-Methylnaphthalene	1 : 1 : 1	100	4.55E-01 J	4.55E-01 J	4.55E-01	AA-Q-6	--	--	--	4.55E-01	Max
R - AA-R-1-28	VOCs	Benzene	1 : 1 : 1	100	5.10E-01	5.10E-01	5.10E-01	AA-R-1	--	--	--	5.10E-01	Max
R - AA-R-1-28	VOCs	Chlorobenzene	1 : 1 : 1	100	2.00E+00	2.00E+00	2.00E+00	AA-R-1	--	--	--	2.00E+00	Max
R - AA-R-1-28	SVOCs	bis(2-Chloroethyl)ether	1 : 1 : 1	100	3.60E-01	3.60E-01	3.60E-01	AA-R-1	--	--	--	3.60E-01	Max
R - B-22A	VOCs	Benzene	1 : 1 : 1	100	7.80E-02	7.80E-02	7.80E-02	B-22A	--	--	--	7.80E-02	Max
R - B-22A	VOCs	Chlorobenzene	1 : 1 : 1	100	1.70E+00	1.70E+00	1.70E+00	B-22A	--	--	--	1.70E+00	Max
R - B-22A	SVOCs	1,4-Dichlorobenzene	1 : 1 : 1	100	3.00E-01	3.00E-01	3.00E-01	B-22A	--	--	--	3.00E-01	Max
R - B-22A	SVOCs	2-Chlorophenol	1 : 1 : 1	100	8.00E-02	8.00E-02	8.00E-02	B-22A	--	--	--	8.00E-02	Max
R - B-24A	VOCs	1,2-Dichloroethane	1 : 1 : 1	100	2.20E-01	2.20E-01	2.20E-01	B-24A	--	--	--	2.20E-01	Max
R - B-24A	VOCs	Acetone	1 : 1 : 1	100	2.20E+01	2.20E+01	2.20E+01	B-24A	--	--	--	2.20E+01	Max
R - B-24A	VOCs	Benzene	1 : 1 : 1	100	8.30E-01	8.30E-01	8.30E-01	B-24A	--	--	--	8.30E-01	Max
R - B-24A	VOCs	Chlorobenzene	1 : 1 : 1	100	1.00E+00	1.00E+00	1.00E+00	B-24A	--	--	--	1.00E+00	Max
R - B-24A	VOCs	Dichloromethane	1 : 1 : 1	100	1.40E-01	1.40E-01	1.40E-01	B-24A	--	--	--	1.40E-01	Max
R - B-24A	SVOCs	2-Chlorophenol	1 : 1 : 1	100	1.40E+02	1.40E+02	1.40E+02	B-24A	--	--	--	1.40E+02	Max
R - B-24A	SVOCs	Nitrobenzene	1 : 1 : 1	100	1.30E+00	1.30E+00	1.30E+00	B-24A	--	--	--	1.30E+00	Max
R - B-25A	VOCs	1,2-Dichloroethane	1 : 1 : 1	100	9.10E+00	9.10E+00	9.10E+00	B-25A	--	--	--	9.10E+00	Max
R - B-25A	VOCs	Chlorobenzene	1 : 1 : 1	100	3.50E+00	3.50E+00	3.50E+00	B-25A	--	--	--	3.50E+00	Max
R - B-25A	VOCs	Chloroethane	1 : 1 : 1	100	1.60E-01	1.60E-01	1.60E-01	B-25A	--	--	--	1.60E-01	Max
R - B-25A	SVOCs	2-Chlorophenol	1 : 1 : 1	100	5.00E+01	5.00E+01	5.00E+01	B-25A	--	--	--	5.00E+01	Max
R - B-25A	SVOCs	Nitrobenzene	1 : 1 : 1	100	3.20E+00	3.20E+00	3.20E+00	B-25A	--	--	--	3.20E+00	Max
R - B-28A	VOCs	Benzene	1 : 1 : 1	100	1.40E-01	1.40E-01	1.40E-01	B-28A	--	--	--	1.40E-01	Max
R - B-28A	VOCs	Chlorobenzene	1 : 1 : 1	100	3.40E-01	3.40E-01	3.40E-01	B-28A	--	--	--	3.40E-01	Max
R - LEACH-R-1	VOCs	1,1,2-Trichloroethane	1 : 4 : 4	25	1.20E-01	1.20E-01	1.20E-01	LEACH-R-1	--	--	--	1.20E-01	Max
R - LEACH-R-1	VOCs	1,1-Dichloroethylene	2 : 4 : 4	50	1.80E-01	3.10E-01	2.45E-01	LEACH-R-1	--	--	--	3.10E-01	Max
R - LEACH-R-1	VOCs	1,2-Dichloroethane	4 : 4 : 4	100	4.70E+01	1.97E+03	5.31E+02	LEACH-R-1	--	--	--	1.97E+03	Max
R - LEACH-R-1	VOCs	1,2-Dichloroethene (total)	4 : 4 : 4	100	1.30E+01	1.20E+03	3.12E+02	LEACH-R-1	--	--	--	1.20E+03	Max
R - LEACH-R-1	VOCs	1,2-Dichloropropane	1 : 4 : 4	25	1.00E-02	1.00E-02	1.00E-02	LEACH-R-1	--	--	--	1.00E-02	Max
R - LEACH-R-1	VOCs	2-Butanone	3 : 4 : 4	75	7.90E+00	1.20E+01	9.72E+00	LEACH-R-1	--	--	--	1.20E+01	Max
R - LEACH-R-1	VOCs	4-Methyl-2-pentanone	1 : 4 : 4	25	2.10E+00	2.10E+00	2.10E+00	LEACH-R-1	--	--	--	2.10E+00	Max
R - LEACH-R-1	VOCs	Acetone	3 : 4 : 4	75	3.20E+01	8.00E+01	5.10E+01	LEACH-R-1	--	--	--	8.00E+01	Max
R - LEACH-R-1	VOCs	Benzene	4 : 4 : 4	100	5.90E+00	1.47E+03	3.72E+02	LEACH-R-1	--	--	--	1.47E+03	Max
R - LEACH-R-1	VOCs	Chlorobenzene	4 : 4 : 4	100	1.10E+00	1.03E+03	2.59E+02	LEACH-R-1	--	--	--	1.03E+03	Max
R - LEACH-R-1	VOCs	Chloroform	4 : 4 : 4	100	2.00E+00	3.07E+02	7.85E+01	LEACH-R-1	--	--	--	3.07E+02	Max
R - LEACH-R-1	VOCs	Chloromethane	1 : 4 : 4	25	1.51E+02	1.51E+02	1.51E+02	LEACH-R-1	--	--	--	1.51E+02	Max
R - LEACH-R-1	VOCs	Dichloromethane	3 : 4 : 4	75	1.90E+00	2.50E+00	2.28E+00	LEACH-R-1	--	--	--	2.50E+00	Max
R - LEACH-R-1	VOCs	Ethylbenzene	2 : 4 : 4	50	1.70E-01	3.67E+02	1.83E+02	LEACH-R-1	--	--	--	3.67E+02	Max
R - LEACH-R-1	VOCs	Tetrachloroethene	4 : 4 : 4	100	1.80E+01	6.87E+04	1.72E+04	LEACH-R-1	--	--	--	6.87E+04	Max
R - LEACH-R-1	VOCs	Toluene	4 : 4 : 4	100	1.60E+01	1.73E+04	4.35E+03	LEACH-R-1	--	--	--	1.73E+04	Max
R - LEACH-R-1	VOCs	Trichloroethene	4 : 4 : 4	100	1.00E+02	7.97E+04	2.00E+04	LEACH-R-1	--	--	--	7.97E+04	Max
R - LEACH-R-1	VOCs	Vinyl chloride	1 : 4 : 4	25	1.50E-01	1.50E-01	1.50E-01	LEACH-R-1	--	--	--	1.50E-01	Max
R - LEACH-R-1	VOCs	Xylenes, Total	3 : 4 : 4	75	4.70E-01 J	1.07E+03	3.56E+02	LEACH-R-1	--	--	--	1.07E+03	Max

TABLE 3.7
SELECTION OF EXPOSURE POINT CONCENTRATIONS FOR SHALLOW & MID GROUNDWATER AND LEACHATE (VOLATILES ONLY)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Analyte Type	Constituent	FOD (a)	FOD % (a)	Min (b) (mg/L)	Max(d) (mg/L)	MLE EPC Mean (c) (mg/L)	Location of Max	Distribution (h)	UCL Selected (e)	UCL (f) (mg/L)	RME EPC (g) (mg/L)	EPC Type
R - LEACH-R-1	SVOCs	1,2,4-Trichlorobenzene	1 : 4 : 4	25	2.77E+01	2.77E+01	2.77E+01	LEACH-R-1	--	--	--	2.77E+01	Max
R - LEACH-R-1	SVOCs	1,2-Dichlorobenzene	2 : 4 : 4	50	2.70E+00	2.33E+01	1.30E+01	LEACH-R-1	--	--	--	2.33E+01	Max
R - LEACH-R-1	SVOCs	1,4-Dichlorobenzene	2 : 4 : 4	50	7.60E+00	3.77E+01	2.26E+01	LEACH-R-1	--	--	--	3.77E+01	Max
R - LEACH-R-1	SVOCs	2-Chlorophenol	4 : 4 : 4	100	1.10E+01	1.09E+02 J	3.86E+01	LEACH-R-1	--	--	--	1.09E+02	Max
R - LEACH-R-1	SVOCs	2-Methylnaphthalene	2 : 4 : 4	50	8.20E-01	1.62E+01	8.53E+00	LEACH-R-1	--	--	--	1.62E+01	Max
R - LEACH-R-1	SVOCs	Naphthalene	1 : 4 : 4	25	5.60E+00	5.60E+00	5.60E+00	LEACH-R-1	--	--	--	5.60E+00	Max
S - SA-S-1	VOCs	Benzene	1 : 1 : 1	100	7.35E-03	7.35E-03	7.35E-03	SA-S-1	--	--	--	7.35E-03	Max
S - SA-S-1	VOCs	Chloroethane	1 : 1 : 1	100	7.35E-03	7.35E-03	7.35E-03	SA-S-1	--	--	--	7.35E-03	Max

Notes:
EPC - Exposure point concentration.
FOD - Frequency of detection.
J - Estimated value.
SVOCs - Semivolatile Organic Compounds.
UCL - Upper confidence limit.
VOCs - Volatile Organic Compounds.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples. Percentage calculated based on number of detects and number of valid results.
(b) Minimum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(c) Maximum detected concentration for each constituent after results for duplicate samples have been averaged. Validation qualifer presented.
(d) When FOD = 100% and when too few samples and detects were available to calculate reliable UCLs (g), the mean was calculated using detected results only. When FOD was less than 100%, the nonparametric mean given by ProUCL (see Attachment B) was used. All means calculated after results from duplicate samples have been averaged.
(e) UCL recommended for use by ProUCL Version 4.00.02 (U.S. EPA, 2007). If more than one UCL was recommended, the higher UCL was used. See Attachment B.
(f) UCL on the arithmetic mean for each constituent, after duplicates have been averaged. Confidence level listed with UCL selected. ProUCL selects the appropriate substitution method for non-detects.
(g) UCL where at least 10 samples and at least 5 detects are available. Where too few samples or detects are available, the maximum detected concentration is used.
(h) No UCLs calculated for shallow and mid groundwater and leachate; therefore, no distribution selected.

TABLE 3.7 MLE
EXPOSURE POINT CONCENTRATIONS - SHALLOW/MID GROUNDWATER & LEACHATE (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - MLE Scenario (mg/L)															
		O - AA-CLAY-2-22 (a)	O - GM-19A (a)	O - LEACH-0-1 (a)	O - SA2-MW-4-S (a)	O - SA-O-3 (a)	Q Central - SA-Q-6 (a)	Q North - LEACH-Q-1 (b)	Q North - SA-Q-1 (a)	Q South - AA-Q-6-24 (a)	R - AA-R-1-28 (a)	R - B-22A (a)	R - B-24A (a)	R - B-25A (a)	R - B-28A (a)	R - LEACH-R-1 (b)	S - SA-S-1 (a)
VOCs																	
1,1,1-Trichloroethane	71-55-6	2.30E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,1,2-Trichloroethane	79-00-5	6.70E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E-01	NCOPC
1,1-Dichloroethane	75-34-3	1.20E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,1-Dichloroethylene	75-35-4	2.10E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.45E-01	NCOPC
1,2-Dichloroethane	107-06-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.95E+00	NCOPC	NCOPC	NCOPC	NCOPC	2.20E-01	9.10E+00	NCOPC	5.31E+02	NCOPC
1,2-Dichloroethene (total)	540-59-0	4.00E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.12E+02	NCOPC
1,2-Dichloropropane	78-87-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.00E-02	NCOPC
2-Butanone	78-93-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.72E+00	NCOPC
4-Methyl-2-pentanone	108-10-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.10E+00	NCOPC
Acetone	67-64-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.20E+01	NCOPC	NCOPC	5.10E+01	NCOPC
Benzene	71-43-2	6.30E+01	6.35E-03	9.20E-01	4.40E+00	7.35E-03	2.20E-01	4.39E-01	1.00E+00	4.75E-01	5.10E-01	7.80E-02	8.30E-01	NCOPC	1.40E-01	3.72E+02	7.35E-03
Chlorobenzene	108-90-7	4.80E+00	NCOPC	1.70E+00	1.10E+01	NCOPC	2.80E-01	1.39E+00	1.20E+00	NCOPC	2.00E+00	1.70E+00	1.00E+00	3.50E+00	3.40E-01	2.59E+02	NCOPC
Chloroethane	75-00-3	NCOPC	NCOPC	NCOPC	6.50E-01	NCOPC	NCOPC	NCOPC	3.50E-02	NCOPC	NCOPC	NCOPC	NCOPC	1.60E-01	NCOPC	NCOPC	7.35E-03
Chloroform	67-66-3	6.10E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.85E+01	NCOPC
Chloromethane	74-87-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.51E+02	NCOPC
Dichloromethane	75-09-2	2.70E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.63E-02	NCOPC	NCOPC	NCOPC	NCOPC	1.40E-01	NCOPC	NCOPC	2.28E+00	NCOPC
Ethylbenzene	100-41-4	1.60E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.83E+02	NCOPC
Tetrachloroethene	127-18-4	NCOPC	1.10E-01	NCOPC	NCOPC	2.35E-02	NCOPC	1.07E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.72E+04	NCOPC
Toluene	108-88-3	3.40E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.07E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.35E+03	NCOPC
Trichloroethene	79-01-6	6.90E-01	5.30E-02	NCOPC	NCOPC	2.20E-02	NCOPC	2.18E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.00E+04	NCOPC
Vinyl chloride	75-01-4	5.10E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.85E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.50E-01	NCOPC
Xylenes, Total	1330-20-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.56E+02	NCOPC
SVOCs																	
1,2,4-Trichlorobenzene	120-82-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.77E+01	NCOPC
1,2-Dichlorobenzene	95-50-1	1.90E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.30E+01	NCOPC
1,4-Dichlorobenzene	106-46-7	1.60E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.15E-02	NCOPC	NCOPC	NCOPC	3.00E-01	NCOPC	NCOPC	NCOPC	2.26E+01	NCOPC
1,4-Dioxane	123-91-1	NCOPC	NCOPC	NCOPC	4.40E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
2-Chlorophenol	95-57-8	NCOPC	NCOPC	3.30E-01	5.50E-02	NCOPC	NCOPC	8.96E+00	NCOPC	NCOPC	NCOPC	8.00E-02	1.40E+02	5.00E+01	NCOPC	3.86E+01	NCOPC
2-Methylnaphthalene	91-57-6	7.30E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.55E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.53E+00	NCOPC
4-Chlorophenol	106-48-9	NCOPC	NCOPC	NCOPC	5.70E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
bis(2-Chloroethyl)ether	111-44-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.60E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Naphthalene	91-20-3	NCOPC	NCOPC	5.70E-01	NCOPC	NCOPC	NCOPC	1.47E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.60E+00	NCOPC
Nitrobenzene	98-95-3	NCOPC	NCOPC	8.00E-02	NCOPC	NCOPC	NCOPC	1.42E+00	NCOPC	NCOPC	NCOPC	NCOPC	1.30E+00	3.20E+00	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
MLE - Most Likely Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Detected Concentration. One sample collected.
(b) Average detected concentration from multiple sampling rounds. Summary statistics shown in Table 3.6.

TABLE 3.7 RME
EXPOSURE POINT CONCENTRATIONS - SHALLOW/MID GROUNDWATER & LEACHATE (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - RME Scenario (mg/L)															
		O - AA-CLAY-2-22 (a)	O - GM-19A (a)	O - LEACH-0-1 (a)	O - SA2-MW 4-S (a)	O - SA-O-3 (a)	Q Central - SA-Q-6 (a)	Q North - LEACH-Q-1 (b)	Q North - SA-Q-1 (a)	Q South - AA-Q-6-24 (a)	R - AA-R-1-28 (a)	R - B-22A (a)	R - B-24A (a)	R - B-25A (a)	R - B-28A (a)	R - LEACH-R-1 (b)	S - SA-S-1 (a)
VOCs																	
1,1,1-Trichloroethane	71-55-6	2.30E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,1,2-Trichloroethane	79-00-5	6.70E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E-01	NCOPC
1,1-Dichloroethane	75-34-3	1.20E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,1-Dichloroethylene	75-35-4	2.10E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.10E-01	NCOPC
1,2-Dichloroethane	107-06-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.30E+00	NCOPC	NCOPC	NCOPC	NCOPC	2.20E-01	9.10E+00	NCOPC	1.97E+03	NCOPC
1,2-Dichloroethene (total)	540-59-0	4.00E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E+03	NCOPC
1,2-Dichloropropane	78-87-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.00E-02	NCOPC
2-Butanone	78-93-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E+01	NCOPC
4-Methyl-2-pentanone	108-10-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.10E+00	NCOPC
Acetone	67-64-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.20E+01	NCOPC	NCOPC	8.00E+01	NCOPC
Benzene	71-43-2	6.30E+01	6.35E-03	9.20E-01	4.40E+00	7.35E-03	2.20E-01	5.10E-01	1.00E+00	4.75E-01	5.10E-01	7.80E-02	8.30E-01	NCOPC	1.40E-01	1.47E+03	7.35E-03
Chlorobenzene	108-90-7	4.80E+00	NCOPC	1.70E+00	1.10E+01	NCOPC	2.80E-01	1.80E+00	1.20E+00	NCOPC	2.00E+00	1.70E+00	1.00E+00	3.50E+00	3.40E-01	1.03E+03	NCOPC
Chloroethane	75-00-3	NCOPC	NCOPC	NCOPC	6.50E-01	NCOPC	NCOPC	NCOPC	3.50E-02	NCOPC	NCOPC	NCOPC	NCOPC	1.60E-01	NCOPC	NCOPC	7.35E-03
Chloroform	67-66-3	6.10E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.07E+02	NCOPC
Chloromethane	74-87-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.51E+02	NCOPC
Dichloromethane	75-09-2	2.70E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.50E-02	NCOPC	NCOPC	NCOPC	NCOPC	1.40E-01	NCOPC	NCOPC	2.50E+00	NCOPC
Ethylbenzene	100-41-4	1.60E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.67E+02	NCOPC
Tetrachloroethene	127-18-4	NCOPC	1.10E-01	NCOPC	NCOPC	2.35E-02	NCOPC	1.40E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.87E+04	NCOPC
Toluene	108-88-3	3.40E+01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.73E+04	NCOPC
Trichloroethene	79-01-6	6.90E-01	5.30E-02	NCOPC	NCOPC	2.20E-02	NCOPC	3.00E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.97E+04	NCOPC
Vinyl chloride	75-01-4	5.10E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.60E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.50E-01	NCOPC
Xylenes, Total	1330-20-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.07E+03	NCOPC
SVOCs																	
1,2,4-Trichlorobenzene	120-82-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.77E+01	NCOPC
1,2-Dichlorobenzene	95-50-1	1.90E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.33E+01	NCOPC
1,4-Dichlorobenzene	106-46-7	1.60E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.15E-02	NCOPC	NCOPC	NCOPC	3.00E-01	NCOPC	NCOPC	NCOPC	3.77E+01	NCOPC
1,4-Dioxane	123-91-1	NCOPC	NCOPC	NCOPC	4.40E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
2-Chlorophenol	95-57-8	NCOPC	NCOPC	3.30E-01	5.50E-02	NCOPC	NCOPC	1.30E+01	NCOPC	NCOPC	NCOPC	8.00E-02	1.40E+02	5.00E+01	NCOPC	1.09E+02	NCOPC
2-Methylnaphthalene	91-57-6	7.30E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.55E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.62E+01	NCOPC
4-Chlorophenol	106-48-9	NCOPC	NCOPC	NCOPC	5.70E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
bis(2-Chloroethyl)ether	111-44-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.60E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Naphthalene	91-20-3	NCOPC	NCOPC	5.70E-01	NCOPC	NCOPC	NCOPC	1.90E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.60E+00	NCOPC
Nitrobenzene	98-95-3	NCOPC	NCOPC	8.00E-02	NCOPC	NCOPC	NCOPC	1.70E+00	NCOPC	NCOPC	NCOPC	NCOPC	1.30E+00	3.20E+00	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Detected Concentration. One sample collected.
(b) Maximum detected concentration from multiple sampling rounds. Selection indicated in Table 3.7.

TABLE 3.8 MLE
EXPOSURE POINT CONCENTRATIONS - OUTDOOR AIR FROM COMBINED SOIL (VOC) AND SURFACE SOIL (NON-VOC) - ON-SITE WORKER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	PEF or VF Used	EPC - MLE Scenario (mg/m^3)								
			O	O North	O South	P	Q Central	Q North	Q South	R	S
VOCs											
1,1,2-Trichloroethane	79-00-5	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.84E-03	NCOPC
1,2-Dichloroethane	107-06-2	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.93E-02	NCOPC
1,2-Dichloroethene (total)	540-59-0	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.05E-02	NCOPC
Benzene	71-43-2	VF (a)	6.68E-02	1.52E-02	NCOPC	1.28E-03	NCOPC	7.31E-04	1.19E-04	2.86E-02	8.57E-03
Chlorobenzene	108-90-7	VF (a)	1.09E-01	6.97E-02	NCOPC	NCOPC	1.04E-02	NCOPC	NCOPC	1.52E-01	1.30E-01
Chloroform	67-66-3	VF (a)	NCOPC	NCOPC	NCOPC	2.21E-03	NCOPC	NCOPC	NCOPC	1.22E-02	NCOPC
Dichloromethane	75-09-2	VF (a)	NCOPC	4.06E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.29E-02
Ethylbenzene	100-41-4	VF (a)	2.21E-01	1.15E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.88E-02
Hexane	110-54-3	VF (a)	NCOPC	NCOPC	NCOPC	3.33E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Tetrachloroethene	127-18-4	VF (a)	3.52E-03	2.51E-03	NCOPC	2.43E-02	NCOPC	3.88E-03	1.10E-03	5.45E-01	1.29E-02
Toluene	108-88-3	VF (a)	3.78E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.08E-02	2.52E-01	5.56E-01
Trichloroethene	79-01-6	VF (a)	NCOPC	NCOPC	NCOPC	3.85E-04	NCOPC	2.09E-04	6.28E-05	6.71E-01	5.16E-02
Xylenes, Total	1330-20-7	VF (a)	1.04E+00	5.91E-01	NCOPC	3.17E-02	1.94E-02	1.44E-02	4.52E-02	3.32E-02	5.05E-01
SVOCs											
1,2,4-Trichlorobenzene	120-82-1	VF (a)	1.73E-03	9.39E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.53E-03	1.90E-03
1,2-Dichlorobenzene	95-50-1	VF (a)	NCOPC	3.05E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,4-Dichlorobenzene	106-46-7	VF (a)	7.58E-03	1.72E-02	NCOPC	1.19E-02	1.17E-03	NCOPC	NCOPC	3.53E-03	1.57E-02
2,4,6-Trichlorophenol	88-06-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.79E-09
2,4-Dichlorophenol	120-83-2	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
2-Chlorophenol	95-57-8	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.61E-03	NCOPC
2-Methylnaphthalene	91-57-6	VF (a)	6.53E-04	2.18E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Chloroaniline	106-47-8	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Nitroaniline	100-01-6	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Benzo(a)anthracene	56-55-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	6.86E-10	NCOPC	7.03E-11	NCOPC	1.87E-09
Benzo(a)pyrene	50-32-8	PEF (b)	NCOPC	NCOPC	NCOPC	7.18E-11	6.54E-10	6.18E-10	6.56E-11	NCOPC	1.28E-09
Benzo(b)fluoranthene	205-99-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	6.28E-10	NCOPC	8.43E-11	NCOPC	1.58E-09
bis(2-Chloroethyl)ether	111-44-4	VF (a)	NCOPC	2.28E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
bis(2-Ethylhexyl)phthalate	117-81-7	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Dibenzo(a,h)anthracene	53-70-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.75E-10	2.00E-11	NCOPC	8.32E-10
Hexachlorobenzene	118-74-1	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Indeno(1,2,3-cd)pyrene	193-39-5	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Naphthalene	91-20-3	VF (a)	NCOPC	6.43E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.72E-03	9.42E-04
Nitrobenzene	98-95-3	VF (a)	NCOPC	4.79E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.61E-03	NCOPC
Pesticides											
4,4'-DDD	72-54-8	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDE	72-55-9	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDT	50-29-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.70E-09
Aldrin	309-00-2	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
alpha-BHC	319-84-6	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
beta-BHC	319-85-7	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.01E-09
delta-BHC	319-86-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.42E-10

TABLE 3.8 MLE
EXPOSURE POINT CONCENTRATIONS - OUTDOOR AIR FROM COMBINED SOIL (VOC) AND SURFACE SOIL (NON-VOC) - ON-SITE WORKER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	PEF or VF Used	EPC - MLE Scenario (mg/m^3)								
			O	O North	O South	P	Q Central	Q North	Q South	R	S
Dieldrin	60-57-1	PEF (b)	1.95E-11	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.96E-12	NCOPC	NCOPC
gamma-BHC (Lindane)	58-89-9	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.47E-09
Heptachlor	76-44-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.94E-10
Heptachlor Epoxide	1024-57-3	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Herbicides											
MCPP	93-65-2	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Pentachlorophenol	87-86-5	PEF (b)	2.49E-10	9.51E-09	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.78E-08
PCBs											
PCBs, Total	Total PCBs	PEF (b)	5.86E-10	5.44E-08	NCOPC	6.56E-10	9.89E-10	7.96E-10	3.99E-10	NCOPC	2.33E-07
Dioxin											
Dioxin TEQ-HH	Dioxin TEQ-HH	PEF (b)	3.70E-13	3.95E-12	NCOPC	NCOPC	5.44E-13	2.99E-13	7.03E-14	NCOPC	NCOPC
Metals											
Antimony	7440-36-0	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.07E-10	NCOPC	NCOPC
Arsenic	7440-38-2	PEF (b)	NCOPC	NCOPC	NCOPC	3.12E-09	1.05E-08	1.22E-08	1.05E-09	NCOPC	NCOPC
Barium	7440-39-3	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Cadmium	7440-43-9	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.69E-09	4.29E-08	NCOPC	NCOPC
Chromium	7440-47-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.60E-09	NCOPC	NCOPC
Copper	7440-50-8	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Lead	7439-92-1	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Manganese	7439-96-5	PEF (b)	NCOPC	NCOPC	NCOPC	1.24E-07	NCOPC	NCOPC	6.71E-08	NCOPC	NCOPC
Mercury	7439-97-6	PEF (b)	NCOPC	4.68E-09	NCOPC	NCOPC	NCOPC	NCOPC	8.39E-10	NCOPC	NCOPC
Nickel	7440-02-0	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Thallium	7440-28-0	PEF (b)	NOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Vanadium	7440-62-2	PEF (b)	NCOPC	NCOPC	NCOPC	1.28E-08	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
PEF - Particulate Emission Factor.
MLE - Most Likely Exposure.
SVOCs - Semivolatile Organic Compounds.
VF - Volatilization Factor.
VOCs - Volatile Organic Compounds.
(a) For all VOCs (c), a site-specific VF (Volatilization Factor) was used to calculate the Outdoor Air EPC. Calculations shown in Table C-10.
(b) For all constituents not desiganted as VOCs (c), a site-specific PEF was used to calculate the Outdoor Air EPC. Calculations shown in Table C-16.
(c) For modeling purposes, VOCs are defined as constituents with Henry's Law Constant greater than 1.00 x 10-5 atm-m3/mol and a molecular weight greater than 200 g/mol.

TABLE 3.8 RME
EXPOSURE POINT CONCENTRATIONS - OUTDOOR AIR FROM COMBINED SOIL (VOC) AND SURFACE SOIL (NON-VOC) - ON-SITE WORKER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	PEF or VF Used	EPC - RME Scenario (mg/m^3)								
			O	O North	O South	P	Q Central	Q North	Q South	R	S
VOCs											
1,1,2-Trichloroethane	79-00-5	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.09E-03	NCOPC
1,2-Dichloroethane	107-06-2	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.77E-02	NCOPC
1,2-Dichloroethene (total)	540-59-0	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.12E-02	NCOPC
Benzene	71-43-2	VF (a)	1.13E-01	2.73E-02	NCOPC	9.51E-04	NCOPC	2.09E-03	2.27E-04	6.74E-02	4.64E-03
Chlorobenzene	108-90-7	VF (a)	7.06E-02	1.04E-01	NCOPC	NCOPC	2.12E-02	NCOPC	NCOPC	3.47E-01	2.08E-01
Chloroform	67-66-3	VF (a)	NCOPC	NCOPC	NCOPC	3.09E-03	NCOPC	NCOPC	NCOPC	7.37E-03	NCOPC
Dichloromethane	75-09-2	VF (a)	NCOPC	6.52E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.41E-02
Ethylbenzene	100-41-4	VF (a)	4.01E-01	1.91E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.32E-01
Hexane	110-54-3	VF (a)	NCOPC	NCOPC	NCOPC	3.27E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Tetrachloroethene	127-18-4	VF (a)	3.10E-03	4.98E-03	NCOPC	5.34E-02	NCOPC	1.21E-02	2.74E-03	8.18E-01	9.60E-03
Toluene	108-88-3	VF (a)	7.43E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.79E-01	1.60E-01	8.85E-01
Trichloroethene	79-01-6	VF (a)	NCOPC	NCOPC	NCOPC	1.36E-04	NCOPC	4.42E-04	6.62E-05	1.15E+00	3.88E-02
Xylenes, Total	1330-20-7	VF (a)	1.92E+00	9.48E-01	NCOPC	4.42E-02	6.19E-02	4.64E-02	1.86E-01	5.38E-02	7.98E-01
SVOCs											
1,2,4-Trichlorobenzene	120-82-1	VF (a)	9.80E-04	1.68E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.02E-02	1.67E-03
1,2-Dichlorobenzene	95-50-1	VF (a)	NCOPC	6.73E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,4-Dichlorobenzene	106-46-7	VF (a)	3.69E-03	2.63E-02	NCOPC	3.93E-03	7.87E-04	NCOPC	NCOPC	5.14E-03	2.35E-02
2,4,6-Trichlorophenol	88-06-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.79E-09
2,4-Dichlorophenol	120-83-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
2-Chlorophenol	95-57-8	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.82E-03	NCOPC
2-Methylnaphthalene	91-57-6	VF (a)	3.65E-04	4.36E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Chloroaniline	106-47-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Nitroaniline	100-01-6	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Benzo(a)anthracene	56-55-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	1.51E-09	NCOPC	2.59E-10	NCOPC	3.70E-09
Benzo(a)pyrene	50-32-8	PEF (b)	NCOPC	NCOPC	NCOPC	1.02E-10	1.40E-09	1.53E-09	2.61E-10	NCOPC	2.50E-09
Benzo(b)fluoranthene	205-99-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	1.35E-09	NCOPC	2.98E-10	NCOPC	3.05E-09
bis(2-Chloroethyl)ether	111-44-4	VF (a)	NCOPC	1.21E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
bis(2-Ethylhexyl)phthalate	117-81-7	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Dibenzo(a,h)anthracene	53-70-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.40E-10	2.18E-11	NCOPC	8.32E-10
Hexachlorobenzene	118-74-1	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Indeno(1,2,3-cd)pyrene	193-39-5	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Naphthalene	91-20-3	VF (a)	NCOPC	1.16E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.97E-03	5.90E-04
Nitrobenzene	98-95-3	VF (a)	NCOPC	2.53E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.62E-03	NCOPC
Pesticides											
4,4'-DDD	72-54-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDE	72-55-9	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDT	50-29-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.40E-09
Aldrin	309-00-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC

TABLE 3.8 RME
EXPOSURE POINT CONCENTRATIONS - OUTDOOR AIR FROM COMBINED SOIL (VOC) AND SURFACE SOIL (NON-VOC) - ON-SITE WORKER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	PEF or VF Used	EPC - RME Scenario (mg/m^3)								
			O	O North	O South	P	Q Central	Q North	Q South	R	S
alpha-BHC	319-84-6	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
beta-BHC	319-85-7	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E-08
delta-BHC	319-86-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.42E-10
Dieldrin	60-57-1	PEF (b)	1.95E-11	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.06E-11	NCOPC	NCOPC
gamma-BHC (Lindane)	58-89-9	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.47E-09
Heptachlor	76-44-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.94E-10
Heptachlor Epoxide	1024-57-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Herbicides											
MCPP	93-65-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Pentachlorophenol	87-86-5	PEF (b)	1.01E-09	3.68E-08	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.03E-07
PCBs											
PCBs, Total	Total PCBs	PEF (b)	1.17E-09	5.44E-08	NCOPC	1.94E-09	1.02E-09	2.15E-09	7.69E-10	NCOPC	4.66E-07
Dioxin											
Dioxin TEQ-HH	Dioxin TEQ-HH	PEF (b)	7.33E-13	3.95E-12	NCOPC	NCOPC	2.30E-12	1.11E-12	4.69E-13	NCOPC	NCOPC
Metals											
Antimony	7440-36-0	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.01E-09	NCOPC	NCOPC
Arsenic	7440-38-2	PEF (b)	NCOPC	NCOPC	NCOPC	4.14E-09	6.33E-08	8.86E-08	1.78E-09	NCOPC	NCOPC
Barium	7440-39-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Cadmium	7440-43-9	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.17E-08	4.63E-07	NCOPC	NCOPC
Chromium	7440-47-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.18E-08	NCOPC	NCOPC
Copper	7440-50-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Lead	7439-92-1	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Manganese	7439-96-5	PEF (b)	NCOPC	NCOPC	NCOPC	2.83E-07	NCOPC	NCOPC	8.45E-08	NCOPC	NCOPC
Mercury	7439-97-6	PEF (b)	NCOPC	1.38E-08	NCOPC	NCOPC	NCOPC	NCOPC	8.48E-09	NCOPC	NCOPC
Nickel	7440-02-0	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Thallium	7440-28-0	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Vanadium	7440-62-2	PEF (b)	NCOPC	NCOPC	NCOPC	3.86E-08	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
PEF - Particulate Emission Factor.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
VF - Volatilization Factor.
VOCs - Volatile Organic Compounds.
(a) For all VOCs (c), a site-specific VF (Volatilization Factor) was used to calculate the Outdoor Air EPC. Calculations shown in Table C-9.
(b) For all constituents not desiganted as VOCs (c), a site-specific PEF was used to calculate the Outdoor Air EPC. Calculations shown in Table C-15.
(c) For modeling purposes, VOCs are defined as constituents with Henry's Law Constant greater than 1.00 x 10-5 atm-m3/mol and a molecular weight greater than 200 g/mol.

TABLE 3.9 MLE
EXPOSURE POINT CONCENTRATIONS - OUTDOOR AIR FROM COMBINED SOIL (VOC) AND SURFACE SOIL (NON-VOC) - TRESPASSING TEENAGER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	PEF or VF Used	EPC - MLE Scenario (mg/m^3)								
			O	O North	O South	P	Q Central	Q North	Q South	R	S
VOCs											
1,1,2-Trichloroethane	79-00-5	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.66E-03	NCOPC
1,2-Dichloroethane	107-06-2	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.34E-02	NCOPC
1,2-Dichloroethene (total)	540-59-0	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.64E-02	NCOPC
Benzene	71-43-2	VF (a)	5.33E-02	1.21E-02	NCOPC	1.02E-03	NCOPC	5.83E-04	9.53E-05	2.28E-02	6.84E-03
Chlorobenzene	108-90-7	VF (a)	8.67E-02	5.56E-02	NCOPC	NCOPC	8.31E-03	NCOPC	NCOPC	1.21E-01	1.04E-01
Chloroform	67-66-3	VF (a)	NCOPC	NCOPC	NCOPC	1.76E-03	NCOPC	NCOPC	NCOPC	9.73E-03	NCOPC
Dichloromethane	75-09-2	VF (a)	NCOPC	3.24E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.83E-02
Ethylbenzene	100-41-4	VF (a)	1.76E-01	9.15E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.08E-02
Hexane	110-54-3	VF (a)	NCOPC	NCOPC	NCOPC	2.65E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Tetrachloroethene	127-18-4	VF (a)	2.80E-03	2.01E-03	NCOPC	1.94E-02	NCOPC	3.10E-03	8.81E-04	4.35E-01	1.03E-02
Toluene	108-88-3	VF (a)	3.02E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.25E-02	2.01E-01	4.43E-01
Trichloroethene	79-01-6	VF (a)	NCOPC	NCOPC	NCOPC	3.07E-04	NCOPC	1.67E-04	5.01E-05	5.35E-01	4.12E-02
Xylenes, Total	1330-20-7	VF (a)	8.29E-01	4.72E-01	NCOPC	2.53E-02	1.55E-02	1.15E-02	3.60E-02	2.65E-02	4.03E-01
SVOCs											
1,2,4-Trichlorobenzene	120-82-1	VF (a)	1.38E-03	7.49E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.00E-03	1.52E-03
1,2-Dichlorobenzene	95-50-1	VF (a)	NCOPC	2.43E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,4-Dichlorobenzene	106-46-7	VF (a)	6.04E-03	1.37E-02	NCOPC	9.49E-03	9.31E-04	NCOPC	NCOPC	2.82E-03	1.25E-02
2,4,6-Trichlorophenol	88-06-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.79E-09
2,4-Dichlorophenol	120-83-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
2-Chlorophenol	95-57-8	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.08E-03	NCOPC
2-Methylnaphthalene	91-57-6	VF (a)	5.21E-04	1.74E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Chloroaniline	106-47-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Nitroaniline	100-01-6	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Benzo(a)anthracene	56-55-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	6.86E-10	NCOPC	7.03E-11	NCOPC	1.87E-09
Benzo(a)pyrene	50-32-8	PEF (b)	NCOPC	NCOPC	NCOPC	7.18E-11	6.54E-10	6.18E-10	6.56E-11	NCOPC	1.28E-09
Benzo(b)fluoranthene	205-99-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	6.28E-10	NCOPC	8.43E-11	NCOPC	1.58E-09
bis(2-Chloroethyl)ether	111-44-4	VF (a)	NCOPC	1.82E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
bis(2-Ethylhexyl)phthalate	117-81-7	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Dibenzo(a,h)anthracene	53-70-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.75E-10	2.00E-11	NCOPC	8.32E-10
Hexachlorobenzene	118-74-1	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Indeno(1,2,3-cd)pyrene	193-39-5	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Naphthalene	91-20-3	VF (a)	NCOPC	5.13E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.17E-03	7.52E-04
Nitrobenzene	98-95-3	VF (a)	NCOPC	3.82E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.29E-03	NCOPC
Pesticides											
4,4'-DDD	72-54-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDE	72-55-9	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDT	50-29-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.70E-09
Aldrin	309-00-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
alpha-BHC	319-84-6	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
beta-BHC	319-85-7	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.01E-09
delta-BHC	319-86-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.42E-10

TABLE 3.9 MLE
EXPOSURE POINT CONCENTRATIONS - OUTDOOR AIR FROM COMBINED SOIL (VOC) AND SURFACE SOIL (NON-VOC) - TRESPASSING TEENAGER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	PEF or VF Used	EPC - MLE Scenario (mg/m^3)								
			O	O North	O South	P	Q Central	Q North	Q South	R	S
Dieldrin	60-57-1	PEF (b)	1.95E-11	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.96E-12	NCOPC	NCOPC
gamma-BHC (Lindane)	58-89-9	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.47E-09
Heptachlor	76-44-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.94E-10
Heptachlor Epoxide	1024-57-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Herbicides											
MCPP	93-65-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Pentachlorophenol	87-86-5	PEF (b)	2.49E-10	9.51E-09	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.78E-08
PCBs											
PCBs, Total	Total PCBs	PEF (b)	5.86E-10	5.44E-08	NCOPC	6.56E-10	9.89E-10	7.96E-10	3.99E-10	NCOPC	2.33E-07
Dioxin											
Dioxin TEQ-HH	Dioxin TEQ-HH	PEF (b)	3.70E-13	3.95E-12	NCOPC	NCOPC	5.44E-13	2.99E-13	7.03E-14	NCOPC	NCOPC
Metals											
Antimony	7440-36-0	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.07E-10	NCOPC	NCOPC
Arsenic	7440-38-2	PEF (b)	NCOPC	NCOPC	NCOPC	3.12E-09	1.05E-08	1.22E-08	1.05E-09	NCOPC	NCOPC
Barium	7440-39-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Cadmium	7440-43-9	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.69E-09	4.29E-08	NCOPC	NCOPC
Chromium	7440-47-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.60E-09	NCOPC	NCOPC
Copper	7440-50-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Lead	7439-92-1	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Manganese	7439-96-5	PEF (b)	NCOPC	NCOPC	NCOPC	1.24E-07	NCOPC	NCOPC	6.71E-08	NCOPC	NCOPC
Mercury	7439-97-6	PEF (b)	NCOPC	4.68E-09	NCOPC	NCOPC	NCOPC	NCOPC	8.39E-10	NCOPC	NCOPC
Nickel	7440-02-0	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Thallium	7440-28-0	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Vanadium	7440-62-2	PEF (b)	NCOPC	NCOPC	NCOPC	1.28E-08	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
PEF - Particulate Emission Factor.
MLE - Most Likely Exposure.
SVOCs - Semivolatile Organic Compounds.
VF - Volatilization Factor.
VOCs - Volatile Organic Compounds.
(a) For all VOCs (c), a site-specific VF (Volatilization Factor) was used to calculate the Outdoor Air EPC. Calculations shown in Table C-12.
(b) For all constituents not desiganted as VOCs (c), a site-specific PEF was used to calculate the Outdoor Air EPC. Calculations shown in Table C-15.
(c) For modeling purposes, VOCs are defined as constituents with Henry's Law Constant greater than 1.00 x 10-5 atm-m3/mol and a molecular weight greater than 200 g/mol.

TABLE 3.9 RME
EXPOSURE POINT CONCENTRATIONS - OUTDOOR AIR FROM COMBINED SOIL (VOC) AND SURFACE SOIL (NON-VOC) - TRESPASSING TEENAGER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	PEF or VF Used	EPC - RME Scenario (mg/m^3)								
			O	O North	O South	P	Q Central	Q North	Q South	R	S
VOCs											
1,1,2-Trichloroethane	79-00-5	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.66E-03	NCOPC
1,2-Dichloroethane	107-06-2	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.66E-02	NCOPC
1,2-Dichloroethene (total)	540-59-0	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.68E-02	NCOPC
Benzene	71-43-2	VF (a)	1.70E-01	4.11E-02	NCOPC	1.43E-03	NCOPC	3.15E-03	3.42E-04	1.02E-01	7.00E-03
Chlorobenzene	108-90-7	VF (a)	1.06E-01	1.56E-01	NCOPC	NCOPC	3.20E-02	NCOPC	NCOPC	5.24E-01	3.14E-01
Chloroform	67-66-3	VF (a)	NCOPC	NCOPC	NCOPC	4.66E-03	NCOPC	NCOPC	NCOPC	1.11E-02	NCOPC
Dichloromethane	75-09-2	VF (a)	NCOPC	9.83E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.12E-02
Ethylbenzene	100-41-4	VF (a)	6.04E-01	2.88E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.99E-01
Hexane	110-54-3	VF (a)	NCOPC	NCOPC	NCOPC	4.94E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Tetrachloroethene	127-18-4	VF (a)	4.67E-03	7.51E-03	NCOPC	8.05E-02	NCOPC	1.83E-02	4.13E-03	1.23E+00	1.45E-02
Toluene	108-88-3	VF (a)	1.12E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.70E-01	2.41E-01	1.33E+00
Trichloroethene	79-01-6	VF (a)	NCOPC	NCOPC	NCOPC	2.06E-04	NCOPC	6.67E-04	9.97E-05	1.73E+00	5.85E-02
Xylenes, Total	1330-20-7	VF (a)	2.90E+00	1.43E+00	NCOPC	6.67E-02	9.34E-02	6.99E-02	2.81E-01	8.10E-02	1.20E+00
SVOCs											
1,2,4-Trichlorobenzene	120-82-1	VF (a)	1.48E-03	2.53E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.53E-02	2.52E-03
1,2-Dichlorobenzene	95-50-1	VF (a)	NCOPC	1.01E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,4-Dichlorobenzene	106-46-7	VF (a)	5.56E-03	3.97E-02	NCOPC	5.93E-03	1.19E-03	NCOPC	NCOPC	7.74E-03	3.54E-02
2,4,6-Trichlorophenol	88-06-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.79E-09
2,4-Dichlorophenol	120-83-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
2-Chlorophenol	95-57-8	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.27E-03	NCOPC
2-Methylnaphthalene	91-57-6	VF (a)	5.50E-04	6.58E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Chloroaniline	106-47-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Nitroaniline	100-01-6	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Benzo(a)anthracene	56-55-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	1.51E-09	NCOPC	2.59E-10	NCOPC	3.70E-09
Benzo(a)pyrene	50-32-8	PEF (b)	NCOPC	NCOPC	NCOPC	1.02E-10	1.40E-09	1.53E-09	2.61E-10	NCOPC	2.50E-09
Benzo(b)fluoranthene	205-99-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	1.35E-09	NCOPC	2.98E-10	NCOPC	3.05E-09
bis(2-Chloroethyl)ether	111-44-4	VF (a)	NCOPC	1.82E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
bis(2-Ethylhexyl)phthalate	117-81-7	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Dibenzo(a,h)anthracene	53-70-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.40E-10	2.18E-11	NCOPC	8.32E-10
Hexachlorobenzene	118-74-1	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Indeno(1,2,3-cd)pyrene	193-39-5	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Naphthalene	91-20-3	VF (a)	NCOPC	1.75E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.50E-03	8.90E-04
Nitrobenzene	98-95-3	VF (a)	NCOPC	3.82E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.44E-03	NCOPC
Pesticides											
4,4'-DDD	72-54-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDE	72-55-9	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDT	50-29-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.40E-09
Aldrin	309-00-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
alpha-BHC	319-84-6	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
beta-BHC	319-85-7	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E-08
delta-BHC	319-86-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.42E-10
Dieldrin	60-57-1	PEF (b)	1.95E-11	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.06E-11	NCOPC	NCOPC

TABLE 3.9 RME
EXPOSURE POINT CONCENTRATIONS - OUTDOOR AIR FROM COMBINED SOIL (VOC) AND SURFACE SOIL (NON-VOC) - TRESPASSING TEENAGER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	PEF or VF Used	EPC - RME Scenario (mg/m^3)								
			O	O North	O South	P	Q Central	Q North	Q South	R	S
gamma-BHC (Lindane)	58-89-9	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.47E-09
Heptachlor	76-44-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.94E-10
Heptachlor Epoxide	1024-57-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Herbicides											
MCPP	93-65-2	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Pentachlorophenol	87-86-5	PEF (b)	1.01E-09	3.68E-08	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.03E-07
PCBs											
PCBs, Total	Total PCBs	PEF (b)	1.17E-09	5.44E-08	NCOPC	1.94E-09	1.02E-09	2.15E-09	7.69E-10	NCOPC	4.66E-07
Dioxin											
Dioxin TEQ-HH	Dioxin TEQ-HH	PEF (b)	7.33E-13	3.95E-12	NCOPC	NCOPC	2.30E-12	1.11E-12	4.69E-13	NCOPC	NCOPC
Metals											
Antimony	7440-36-0	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.01E-09	NCOPC	NCOPC
Arsenic	7440-38-2	PEF (b)	NCOPC	NCOPC	NCOPC	4.14E-09	6.33E-08	8.86E-08	1.78E-09	NCOPC	NCOPC
Barium	7440-39-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Cadmium	7440-43-9	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.17E-08	4.63E-07	NCOPC	NCOPC
Chromium	7440-47-3	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.18E-08	NCOPC	NCOPC
Copper	7440-50-8	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Lead	7439-92-1	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Manganese	7439-96-5	PEF (b)	NCOPC	NCOPC	NCOPC	2.83E-07	NCOPC	NCOPC	8.45E-08	NCOPC	NCOPC
Mercury	7439-97-6	PEF (b)	NCOPC	1.38E-08	NCOPC	NCOPC	NCOPC	NCOPC	8.48E-09	NCOPC	NCOPC
Nickel	7440-02-0	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Thallium	7440-28-0	PEF (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Vanadium	7440-62-2	PEF (b)	NCOPC	NCOPC	NCOPC	3.86E-08	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
PEF - Particulate Emission Factor.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
VF - Volatilization Factor.
VOCs - Volatile Organic Compounds.
(a) For all VOCs (c), a site-specific VF (Volatilization Factor) was used to calculate the Outdoor Air EPC. Calculations shown in Table C-11.
(b) For all constituents not desiganted as VOCs (c), a site-specific PEF was used to calculate the Outdoor Air EPC. Calculations shown in Table C-15.
(c) For modeling purposes, VOCs are defined as constituents with Henry's Law Constant greater than 1.00 x 10-5 atm-m3/mol and a molecular weight greater than 200 g/mol.

TABLE 3-10 MLE
EXPOSURE POINT CONCENTRATIONS - EXCAVATION AIR MODELED FROM COMBINED SOIL (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	PM_{10} Dust Concentration or VF Used	EPC - MLE Scenario (mg/m^3)								
			O	O North	O South	P	Q Central	Q North	Q South	R	S
VOCs											
1,1,2-Trichloroethane	79-00-5	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.05E-02	NCOPC
1,2-Dichloroethane	107-06-2	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.03E-01	NCOPC
1,2-Dichloroethene (total)	540-59-0	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.19E-02	NCOPC
Benzene	71-43-2	VF (a)	2.34E-01	5.22E-02	NCOPC	4.49E-03	NCOPC	2.57E-03	1.51E-03	1.00E-01	2.90E-02
Chlorobenzene	108-90-7	VF (a)	3.80E-01	2.39E-01	NCOPC	NCOPC	3.66E-02	NCOPC	NCOPC	5.32E-01	4.41E-01
Chloroform	67-66-3	VF (a)	NCOPC	NCOPC	NCOPC	7.72E-03	NCOPC	NCOPC	NCOPC	4.27E-02	NCOPC
Dichloromethane	75-09-2	VF (a)	NCOPC	1.39E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.76E-02
Ethylbenzene	100-41-4	VF (a)	7.73E-01	3.94E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.01E-01
Hexane	110-54-3	VF (a)	NCOPC	NCOPC	NCOPC	1.16E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Tetrachloroethene	127-18-4	VF (a)	1.23E-02	8.63E-03	NCOPC	8.50E-02	NCOPC	1.36E-02	1.82E-02	1.91E+00	4.38E-02
Toluene	108-88-3	VF (a)	1.32E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.19E+00	8.84E-01	1.88E+00
Trichloroethene	79-01-6	VF (a)	NCOPC	NCOPC	NCOPC	1.35E-03	NCOPC	7.35E-04	4.40E-04	2.35E+00	1.75E-01
Xylenes, Total	1330-20-7	VF (a)	3.63E+00	2.03E+00	NCOPC	1.11E-01	6.83E-02	5.07E-02	1.24E+00	1.16E-01	1.71E+00
SVOCs											
1,2,4-Trichlorobenzene	120-82-1	VF (a)	6.06E-03	3.22E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.64E-02	6.44E-03
1,2-Dichlorobenzene	95-50-1	VF (a)	NCOPC	1.05E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,4-Dichlorobenzene	106-46-7	VF (a)	2.65E-02	5.91E-02	NCOPC	4.16E-02	4.10E-03	NCOPC	NCOPC	1.24E-02	5.32E-02
2,4,6-Trichlorophenol	88-06-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.92E-07
2,4-Dichlorophenol	120-83-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
2-Chlorophenol	95-57-8	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.13E-03	NCOPC
2-Methylnaphthalene	91-57-6	VF (a)	2.28E-03	7.48E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Chloroaniline	106-47-8	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Nitroaniline	100-01-6	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Benzo(a)anthracene	56-55-3	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	3.74E-08	NCOPC	3.33E-08	NCOPC	2.43E-07
Benzo(a)pyrene	50-32-8	PM_{10} (b)	NCOPC	NCOPC	NCOPC	1.56E-08	3.57E-08	4.19E-08	3.11E-08	NCOPC	1.66E-07
Benzo(b)fluoranthene	205-99-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	3.42E-08	NCOPC	3.99E-08	NCOPC	2.05E-07
bis(2-Chloroethyl)ether	111-44-4	VF (a)	NCOPC	7.83E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
bis(2-Ethylhexyl)phthalate	117-81-7	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Dibenzo(a,h)anthracene	53-70-3	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.18E-08	9.46E-09	NCOPC	1.08E-07
Hexachlorobenzene	118-74-1	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Indeno(1,2,3-cd)pyrene	193-39-5	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Naphthalene	91-20-3	VF (a)	NCOPC	2.21E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.53E-03	3.19E-03
Nitrobenzene	98-95-3	VF (a)	NCOPC	1.64E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.65E-03	NCOPC
Pesticides											
4,4'-DDD	72-54-8	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDE	72-55-9	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDT	50-29-3	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.80E-07
Aldrin	309-00-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
alpha-BHC	319-84-6	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
beta-BHC	319-85-7	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.80E-07
delta-BHC	319-86-8	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.44E-08
Dieldrin	60-57-1	PM_{10} (b)	1.08E-08	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.25E-09	NCOPC	NCOPC

TABLE 3-10 MLE
EXPOSURE POINT CONCENTRATIONS - EXCAVATION AIR MODELED FROM COMBINED SOIL (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	PM_{10} Dust Concentration or VF Used	EPC - MLE Scenario (mg/m^3)								
			O	O North	O South	P	Q Central	Q North	Q South	R	S
gamma-BHC (Lindane)	58-89-9	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.50E-07
Heptachlor	76-44-8	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.00E-08
Heptachlor Epoxide	1024-57-3	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Herbicides											
MCPP	93-65-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Pentachlorophenol	87-86-5	PM_{10} (b)	1.38E-07	7.43E-06	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.80E-06
PCBs											
PCBs, Total	Total PCBs	PM_{10} (b)	3.25E-07	4.26E-05	NCOPC	1.43E-07	5.39E-08	5.39E-08	1.89E-07	NCOPC	3.03E-05
Dioxin											
Dioxin TEQ-HH	Dioxin TEQ-HH	PM_{10} (b)	2.05E-10	3.09E-09	NCOPC	NCOPC	2.96E-11	2.02E-11	3.33E-11	NCOPC	NCOPC
Metals											
Antimony	7440-36-0	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.30E-07	NCOPC	NCOPC
Arsenic	7440-38-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	6.78E-07	5.72E-07	8.25E-07	4.97E-07	NCOPC	NCOPC
Barium	7440-39-3	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Cadmium	7440-43-9	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.56E-07	2.03E-05	NCOPC	NCOPC
Chromium	7440-47-3	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.60E-06	NCOPC	NCOPC
Copper	7440-50-8	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Lead	7439-92-1	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Manganese	7439-96-5	PM_{10} (b)	NCOPC	NCOPC	NCOPC	2.70E-05	NCOPC	NCOPC	3.18E-05	NCOPC	NCOPC
Mercury	7439-97-6	PM_{10} (b)	NCOPC	3.66E-06	NCOPC	NCOPC	NCOPC	NCOPC	3.98E-07	NCOPC	NCOPC
Nickel	7440-02-0	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Thallium	7440-28-0	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Vanadium	7440-62-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	2.79E-06	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
PM_{10} - Particulate Matter of 10 microns or less in diameter.
MLE - Most Likely Exposure.
SVOCs - Semivolatile Organic Compounds.
VF - Volatilization Factor.
VOCs - Volatile Organic Compounds.
(a) For all VOCs (c), a site-specific VF (Volatilization Factor) was used to calculate the Outdoor Air EPC. Calculations shown in Table C-14.
(b) Excavation air concentrations for non-VOCs are the surface soil EPC (mg/kg) (Table 3.2 MLE) multiplied by the PM_{10} (Particulate Matter of 10 microns in diameter) dust concentration (0.06 mg/m3) (MADEP, 1995) and multiplied by a unit correction factor (1E-6 kg/mg).
(c) For modeling purposes, VOCs are defined as constituents with Henry's Law Constant greater than 1.00 x 10-5 atm-m3/mol and a molecular weight greater than 200 g/mol.

TABLE 3.10 RME
EXPOSURE POINT CONCENTRATIONS - EXCAVATION AIR MODELED FROM COMBINED SOIL (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	PM_{10} Dust Concentration or VF Used	EPC - RME Scenario (mg/m^3)								
			O	O North	O South	P	Q Central	Q North	Q South	R	S
VOCs											
1,1,2-Trichloroethane	79-00-5	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.05E-02	NCOPC
1,2-Dichloroethane	107-06-2	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.17E-01	NCOPC
1,2-Dichloroethene (total)	540-59-0	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.39E-02	NCOPC
Benzene	71-43-2	VF (a)	7.45E-01	1.77E-01	NCOPC	6.29E-03	NCOPC	1.38E-02	1.51E-03	4.46E-01	2.97E-02
Chlorobenzene	108-90-7	VF (a)	4.67E-01	6.72E-01	NCOPC	NCOPC	1.41E-01	NCOPC	NCOPC	2.30E+00	1.33E+00
Chloroform	67-66-3	VF (a)	NCOPC	NCOPC	NCOPC	2.05E-02	NCOPC	NCOPC	NCOPC	4.88E-02	NCOPC
Dichloromethane	75-09-2	VF (a)	NCOPC	4.23E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.01E-02
Ethylbenzene	100-41-4	VF (a)	2.65E+00	1.24E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.46E-01
Hexane	110-54-3	VF (a)	NCOPC	NCOPC	NCOPC	2.17E+00	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Tetrachloroethene	127-18-4	VF (a)	2.05E-02	3.23E-02	NCOPC	3.53E-01	NCOPC	8.04E-02	1.82E-02	5.41E+00	6.14E-02
Toluene	108-88-3	VF (a)	4.91E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.19E+00	1.06E+00	5.66E+00
Trichloroethene	79-01-6	VF (a)	NCOPC	NCOPC	NCOPC	9.02E-04	NCOPC	2.93E-03	4.40E-04	7.59E+00	2.48E-01
Xylenes, Total	1330-20-7	VF (a)	1.27E+01	6.15E+00	NCOPC	2.93E-01	4.12E-01	3.08E-01	1.24E+00	3.56E-01	5.11E+00
SVOCs											
1,2,4-Trichlorobenzene	120-82-1	VF (a)	6.48E-03	1.09E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.73E-02	1.07E-02
1,2-Dichlorobenzene	95-50-1	VF (a)	NCOPC	4.37E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,4-Dichlorobenzene	106-46-7	VF (a)	2.44E-02	1.71E-01	NCOPC	2.60E-02	5.23E-03	NCOPC	NCOPC	3.40E-02	1.50E-01
2,4,6-Trichlorophenol	88-06-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.92E-07
2,4-Dichlorophenol	120-83-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
2-Chlorophenol	95-57-8	VF (a)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.19E-02	NCOPC
2-Methylnaphthalene	91-57-6	VF (a)	2.41E-03	2.83E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Chloroaniline	106-47-8	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4-Nitroaniline	100-01-6	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Benzo(a)anthracene	56-55-3	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.23E-07	NCOPC	4.80E-07
Benzo(a)pyrene	50-32-8	PM_{10} (b)	NCOPC	NCOPC	NCOPC	2.21E-08	7.64E-08	1.04E-07	1.23E-07	NCOPC	3.24E-07
Benzo(b)fluoranthene	205-99-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	7.37E-08	NCOPC	1.41E-07	NCOPC	3.96E-07
bis(2-Chloroethyl)ether	111-44-4	VF (a)	NCOPC	7.83E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
bis(2-Ethylhexyl)phthalate	117-81-7	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Dibenzo(a,h)anthracene	53-70-3	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.63E-08	1.03E-08	NCOPC	1.08E-07
Hexachlorobenzene	118-74-1	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Indeno(1,2,3-cd)pyrene	193-39-5	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Naphthalene	91-20-3	VF (a)	NCOPC	7.54E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.29E-02	3.78E-03
Nitrobenzene	98-95-3	VF (a)	NCOPC	1.64E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.07E-02	NCOPC
Pesticides											
4,4'-DDD	72-54-8	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDE	72-55-9	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
4,4'-DDT	50-29-3	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.60E-07
Aldrin	309-00-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
alpha-BHC	319-84-6	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
beta-BHC	319-85-7	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.56E-06
delta-BHC	319-86-8	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.44E-08
Dieldrin	60-57-1	PM_{10} (b)	1.08E-08	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.00E-09	NCOPC	NCOPC

TABLE 3.10 RME
EXPOSURE POINT CONCENTRATIONS - EXCAVATION AIR MODELED FROM COMBINED SOIL (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	PM_{10} Dust Concentration or VF Used	EPC - RME Scenario (mg/m^3)								
			O	O North	O South	P	Q Central	Q North	Q South	R	S
gamma-BHC (Lindane)	58-89-9	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.50E-07
Heptachlor	76-44-8	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.00E-08
Heptachlor Epoxide	1024-57-3	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Herbicides											
MCPP	93-65-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Pentachlorophenol	87-86-5	PM_{10} (b)	5.58E-07	2.88E-05	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.64E-05
PCBs											
PCBs, Total	Total PCBs	PM_{10} (b)	6.46E-07	4.26E-05	NCOPC	4.21E-07	5.55E-08	1.46E-07	3.64E-07	NCOPC	6.05E-05
Dioxin											
Dioxin TEQ-HH	Dioxin TEQ-HH	PM_{10} (b)	4.06E-10	3.09E-09	NCOPC	NCOPC	1.25E-10	7.49E-11	2.22E-10	NCOPC	NCOPC
Metals											
Antimony	7440-36-0	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.80E-07	NCOPC	NCOPC
Arsenic	7440-38-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	9.01E-07	3.45E-06	6.00E-06	8.41E-07	NCOPC	NCOPC
Barium	7440-39-3	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Cadmium	7440-43-9	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.53E-06	2.19E-04	NCOPC	NCOPC
Chromium	7440-47-3	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.98E-05	NCOPC	NCOPC
Copper	7440-50-8	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Lead	7439-92-1	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Manganese	7439-96-5	PM_{10} (b)	NCOPC	NCOPC	NCOPC	6.16E-05	NCOPC	NCOPC	4.00E-05	NCOPC	NCOPC
Mercury	7439-97-6	PM_{10} (b)	NCOPC	1.08E-05	NCOPC	NCOPC	NCOPC	NCOPC	4.02E-06	NCOPC	NCOPC
Nickel	7440-02-0	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Thallium	7440-28-0	PM_{10} (b)	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Vanadium	7440-62-2	PM_{10} (b)	NCOPC	NCOPC	NCOPC	8.40E-06	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
PCBs - Polychlorinated Biphenyls.
PM_{10} - Particulate Matter of 10 microns or less in diameter.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
VF - Volatilization Factor.
VOCs - Volatile Organic Compounds.
(a) For all VOCs (c), a site-specific VF (Volatilization Factor) was used to calculate the Outdoor Air EPC. Calculations shown in Table C-13.
(b) Excavation air concentrations for non-VOCs are the surface soil EPC (mg/kg) (Table 3.2 RME) multiplied by the PM_{10} (Particulate Matter of 10 microns in diameter) dust concentration (0.06 mg/m3) (MADEP, 1995) and multiplied by a unit correction factor (1E-6 kg/mg).
(c) For modeling purposes, VOCs are defined as constituents with Henry's Law Constant greater than 1.00 x 10-5 atm-m3/mol and a molecular weight greater than 200 g/mol.

TABLE 3.11 MLE
EXPOSURE POINT CONCENTRATIONS - OUTDOOR AIR FROM MID/SHALLOW GROUNDWATER - ON-SITE WORKER AND TRESPASSING TEENAGER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - MLE Scenario (mg/m^3) (a)															
		O - AA-CLAY-2-22	O - GM-19A	O - LEACH-0-1	O - SA2-MW 4-S	O - SA-O-3	Q Central - SA-Q-6	Q North - LEACH-Q-1	Q North - SA-Q-1	Q South - AA-Q-6-24	R - AA-R-1-28	R - B-22A	R - B-24A	R - B-25A	R - B-28A	R - LEACH-R-1	S - SA-S-1
VOCs																	
1,1,1-Trichloroethane	71-55-6	1.69E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,1,2-Trichloroethane	79-00-5	2.40E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.14E-05	NCOPC
1,1-Dichloroethane	75-34-3	2.75E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,1-Dichloroethylene	75-35-4	2.71E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.35E-04	NCOPC
1,2-Dichloroethane	107-06-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.67E-04	NCOPC	NCOPC	NCOPC	NCOPC	2.98E-05	2.62E-03	NCOPC	9.52E-02	NCOPC
1,2-Dichloroethene (total)	540-59-0	6.35E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.31E-01	NCOPC
1,2-Dichloropropane	78-87-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.20E-06	NCOPC
2-Butanone	78-93-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.83E-05	NCOPC
4-Methyl-2-pentanone	108-10-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.42E-05	NCOPC
Acetone	67-64-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.51E-04	NCOPC	NCOPC	4.44E-04	NCOPC
Benzene	71-43-2	1.69E-01	2.02E-05	2.66E-03	1.30E-02	3.07E-05	1.02E-04	4.16E-04	2.68E-03	1.27E-03	9.79E-05	4.50E-05	4.45E-04	NCOPC	4.98E-05	2.63E-01	1.90E-05
Chlorobenzene	108-90-7	5.98E-03	NCOPC	2.28E-03	1.51E-02	NCOPC	6.02E-05	6.12E-04	1.50E-03	NCOPC	1.79E-04	4.57E-04	2.49E-04	1.86E-03	5.63E-05	8.54E-02	NCOPC
Chloroethane	75-00-3	NCOPC	NCOPC	NCOPC	1.18E-02	NCOPC	NCOPC	NCOPC	5.76E-04	NCOPC	NCOPC	NCOPC	NCOPC	1.12E-03	NCOPC	NCOPC	1.17E-04
Chloroform	67-66-3	1.28E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.34E-02	NCOPC
Chloromethane	74-87-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.44E-01	NCOPC
Dichloromethane	75-09-2	4.87E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.95E-05	NCOPC	NCOPC	NCOPC	NCOPC	5.05E-05	NCOPC	NCOPC	1.09E-03	NCOPC
Ethylbenzene	100-41-4	5.18E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.57E-01	NCOPC
Tetrachloroethene	127-18-4	NCOPC	9.11E-04	NCOPC	NCOPC	2.56E-04	NCOPC	2.65E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.17E+01	NCOPC
Toluene	108-88-3	1.07E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.20E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.63E+00	NCOPC
Trichloroethene	79-01-6	2.94E-03	2.68E-04	NCOPC	NCOPC	1.46E-04	NCOPC	3.29E-05	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.26E+01	NCOPC
Vinyl chloride	75-01-4	8.24E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.77E-05	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.41E-04	NCOPC
Xylenes, Total	1330-20-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.45E-01	NCOPC
SVOCs																	
1,2,4-Trichlorobenzene	120-82-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.75E-03	NCOPC
1,2-Dichlorobenzene	95-50-1	1.39E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.51E-03	NCOPC
1,4-Dichlorobenzene	106-46-7	1.46E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.63E-05	NCOPC	NCOPC	NCOPC	5.92E-05	NCOPC	NCOPC	NCOPC	5.47E-03	NCOPC
2-Chlorophenol	95-57-8	NCOPC	NCOPC	1.98E-06	3.03E-07	NCOPC	NCOPC	1.47E-05	NCOPC	NCOPC	NCOPC	8.78E-08	1.60E-04	9.95E-05	NCOPC	5.09E-05	NCOPC
2-Methylnaphthalene	91-57-6	1.03E-05	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.43E-05	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.19E-04	NCOPC
bis(2-Chloroethyl)ether	111-44-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.21E-07	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Naphthalene	91-20-3	NCOPC	NCOPC	9.09E-05	NCOPC	NCOPC	NCOPC	7.60E-05	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.18E-04	NCOPC
Nitrobenzene	98-95-3	NCOPC	NCOPC	1.24E-06	NCOPC	NCOPC	NCOPC	6.53E-06	NCOPC	NCOPC	NCOPC	NCOPC	3.80E-06	1.78E-05	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
MLE - Most Likely Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Outdoor Air from Mid/Shallow Groundwater clculations shown in Table D-8.

TABLE 3.11 RME
EXPOSURE POINT CONCENTRATIONS - OUTDOOR AIR FROM MID/SHALLOW GROUNDWATER - ON-SITE WORKER AND TRESPASSING TEENAGER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - RME Scenario (mg/m^3) (a)																
		O - AA-CLAY-2-22	O - GM-19A	O - LEACH-0-1	O - SA2-MW 4-S	O - SA-O-3	Q Central - SA-Q-6	Q North - LEACH-Q-1	Q North - SA-Q-1	Q South - AA-Q-6-24	R - AA-R-1-28	R - B-22A	R - B-24A	R - B-25A	R - B-28A	R - LEACH-R-1	S - SA-S-1
VOCs																	
1,1,1-Trichloroethane	71-55-6	1.69E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,1,2-Trichloroethane	79-00-5	2.40E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.15E-05	NCOPC
1,1-Dichloroethane	75-34-3	2.75E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
1,1-Dichloroethylene	75-35-4	2.71E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.86E-03	NCOPC
1,2-Dichloroethane	107-06-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.56E-03	NCOPC	NCOPC	NCOPC	NCOPC	6.34E-05	8.19E-04	NCOPC	1.29E+00	NCOPC
1,2-Dichloroethene (total)	540-59-0	6.35E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.84E+00	NCOPC
1,2-Dichloropropane	78-87-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.17E-05	NCOPC
2-Butanone	78-93-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.58E-04	NCOPC
4-Methyl-2-pentanone	108-10-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.26E-04	NCOPC
Acetone	67-64-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.01E-04	NCOPC	NCOPC	2.58E-03	NCOPC
Benzene	71-43-2	1.69E-01	2.02E-05	2.66E-03	1.30E-02	3.07E-05	1.02E-04	1.37E-03	2.68E-03	9.12E-05	2.95E-04	4.18E-05	9.47E-04	NCOPC	9.92E-05	3.80E+00	1.90E-05
Chlorobenzene	108-90-7	5.98E-03	NCOPC	2.28E-03	1.51E-02	NCOPC	6.02E-05	2.24E-03	1.50E-03	NCOPC	5.37E-04	4.24E-04	5.31E-04	5.79E-04	1.12E-04	1.25E+00	NCOPC
Chloroethane	75-00-3	NCOPC	NCOPC	NCOPC	1.18E-02	NCOPC	NCOPC	NCOPC	5.76E-04	NCOPC	NCOPC	NCOPC	NCOPC	3.50E-04	NCOPC	NCOPC	1.17E-04
Chloroform	67-66-3	1.28E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.21E-01	NCOPC
Chloromethane	74-87-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.91E-01	NCOPC
Dichloromethane	75-09-2	4.87E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.93E-05	NCOPC	NCOPC	NCOPC	NCOPC	1.08E-04	NCOPC	NCOPC	4.36E-03	NCOPC
Ethylbenzene	100-41-4	5.18E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.15E+00	NCOPC
Tetrachloroethene	127-18-4	NCOPC	9.11E-04	NCOPC	NCOPC	2.56E-04	NCOPC	9.77E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.63E+02	NCOPC
Toluene	108-88-3	1.07E-01	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.79E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.30E+01	NCOPC
Trichloroethene	79-01-6	2.94E-03	2.68E-04	NCOPC	NCOPC	1.46E-04	NCOPC	1.28E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.29E+02	NCOPC
Vinyl chloride	75-01-4	8.24E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.05E-05	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.34E-03	NCOPC
Xylenes, Total	1330-20-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.68E+00	NCOPC
SVOCs																	
1,2,4-Trichlorobenzene	120-82-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	6.40E-03	NCOPC
1,2-Dichlorobenzene	95-50-1	1.39E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.65E-02	NCOPC
1,4-Dichlorobenzene	106-46-7	1.46E-03	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.45E-05	NCOPC	NCOPC	NCOPC	5.49E-05	NCOPC	NCOPC	NCOPC	3.33E-02	NCOPC
2-Chlorophenol	95-57-8	NCOPC	NCOPC	1.98E-06	3.03E-07	NCOPC	NCOPC	6.45E-05	NCOPC	NCOPC	NCOPC	9.14E-08	2.79E-04	3.24E-05	NCOPC	5.47E-04	NCOPC
2-Methylnaphthalene	91-57-6	1.03E-05	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.58E-06	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.22E-03	NCOPC
bis(2-Chloroethyl)ether	111-44-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.21E-07	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Naphthalene	91-20-3	NCOPC	NCOPC	9.09E-05	NCOPC	NCOPC	NCOPC	2.80E-04	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.98E-04	NCOPC
Nitrobenzene	98-95-3	NCOPC	NCOPC	1.24E-06	NCOPC	NCOPC	NCOPC	2.30E-05	NCOPC	NCOPC	NCOPC	NCOPC	7.23E-06	5.69E-06	NCOPC	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Outdoor Air from Mid/Shallow Groundwater EPC calculations shown in Table D-7.

TABLE 3.12 MLE
EXPOSURE POINT CONCENTRATIONS - EXCAVATION TRENCH AIR MODELED FROM SHALLOW/MID GROUNDWATER AND LEACHATE (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - MLE Scenario (mg/m^3) (a)									
		O - AA-O-1-16	O - GM-19A	O - LEACH-0-1	O - SA2-MW-4-S	Q Central - SA-Q-5	Q North - LEACH-Q-1	Q South - AA-Q-10-18	R - B-24	R - LEACH-R-1	S - SA-S-2
VOCs											
1,1,2-Trichloroethane	79-00-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.46E-03	NCOPC
1,1-Dichloroethylene	75-35-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.61E-03	NCOPC
1,2-Dichloroethane	107-06-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.70E-02	NCOPC	3.04E-03	7.35E+00	NCOPC
1,2-Dichloroethene (total)	540-59-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	5.22E+00	NCOPC
1,2-Dichloropropane	78-87-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.23E-04	NCOPC
2-Butanone	78-93-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.01E-01	NCOPC
4-Methyl-2-pentanone	108-10-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.08E-02	NCOPC
Acetone	67-64-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.51E-01	5.83E-01	NCOPC
Benzene	71-43-2	NCOPC	8.78E-05	1.27E-02	6.09E-02	NCOPC	6.07E-03	NCOPC	1.15E-02	5.14E+00	NCOPC
Chlorobenzene	108-90-7	NCOPC	NCOPC	2.08E-02	1.35E-01	NCOPC	1.70E-02	NCOPC	1.22E-02	3.18E+00	NCOPC
Chloroethane	75-00-3	NCOPC	NCOPC	NCOPC	1.06E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Chloroform	67-66-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.11E+00	NCOPC
Chloromethane	74-87-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.39E+00	NCOPC
Dichloromethane	75-09-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	7.63E-04	NCOPC	2.31E-03	3.76E-02	NCOPC
Ethylbenzene	100-41-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.02E+00	NCOPC
Tetrachloroethene	127-18-4	NCOPC	1.28E-03	NCOPC	NCOPC	NCOPC	1.24E-03	NCOPC	NCOPC	1.99E+02	NCOPC
Toluene	108-88-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.30E-02	NCOPC	NCOPC	5.28E+01	NCOPC
Trichloroethene	79-01-6	NCOPC	6.82E-04	NCOPC	NCOPC	NCOPC	2.80E-04	NCOPC	NCOPC	2.58E+02	NCOPC
Vinyl chloride	75-01-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	8.45E-06	NCOPC	NCOPC	2.61E-04	NCOPC
Xylenes, Total	1330-20-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.70E+00	NCOPC
SVOCs											
1,2,4-Trichlorobenzene	120-82-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.15E-01	NCOPC
1,2-Dichlorobenzene	95-50-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.44E-01	NCOPC
1,4-Dichlorobenzene	106-46-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.05E-04	NCOPC	NCOPC	2.51E-01	NCOPC
2-Chlorophenol	95-57-8	NCOPC	NCOPC	1.35E-03	2.24E-04	NCOPC	3.65E-02	NCOPC	5.71E-01	1.57E-01	NCOPC
2-Methylnaphthalene	91-57-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.08E-02	NCOPC
Naphthalene	91-20-3	NCOPC	NCOPC	5.81E-03	NCOPC	NCOPC	1.50E-02	NCOPC	NCOPC	5.71E-02	NCOPC
Nitrobenzene	98-95-3	NCOPC	NCOPC	5.65E-04	NCOPC	NCOPC	1.00E-02	NCOPC	9.18E-03	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
MLE - Most Likely Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Exacavation Trench Air EPC calculation (MLE) show in Table E-3.

TABLE 3.12 RME
EXPOSURE POINT CONCENTRATIONS - EXCAVATION TRENCH AIR MODELED FROM SHALLOW/MID GROUNDWATER AND LEACHATE (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	EPC - RME Scenario (mg/m^3) (a)									
		O - AA-O-1-16	O - GM-19A	O - LEACH-0-1	O - SA2-MW-4-S	Q Central - SA-Q-5	Q North - LEACH-Q-1	Q South - AA-Q-10-18	R - B-24	R - LEACH-R-1	S - SA-S-2
VOCs											
1,1,2-Trichloroethane	79-00-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.46E-03	NCOPC
1,1-Dichloroethylene	75-35-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.56E-03	NCOPC
1,2-Dichloroethane	107-06-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.18E-02	NCOPC	3.04E-03	2.72E+01	NCOPC
1,2-Dichloroethene (total)	540-59-0	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.01E+01	NCOPC
1,2-Dichloropropane	78-87-5	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.23E-04	NCOPC
2-Butanone	78-93-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.25E-01	NCOPC
4-Methyl-2-pentanone	108-10-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.08E-02	NCOPC
Acetone	67-64-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.51E-01	9.14E-01	NCOPC
Benzene	71-43-2	NCOPC	8.78E-05	1.27E-02	6.09E-02	NCOPC	7.05E-03	NCOPC	1.15E-02	2.03E+01	NCOPC
Chlorobenzene	108-90-7	NCOPC	NCOPC	2.08E-02	1.35E-01	NCOPC	2.20E-02	NCOPC	1.22E-02	1.27E+01	NCOPC
Chloroethane	75-00-3	NCOPC	NCOPC	NCOPC	1.06E-02	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC
Chloroform	67-66-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.32E+00	NCOPC
Chloromethane	74-87-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.39E+00	NCOPC
Dichloromethane	75-09-2	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.06E-04	NCOPC	2.31E-03	4.12E-02	NCOPC
Ethylbenzene	100-41-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	4.04E+00	NCOPC
Tetrachloroethene	127-18-4	NCOPC	1.28E-03	NCOPC	NCOPC	NCOPC	1.62E-03	NCOPC	NCOPC	7.97E+02	NCOPC
Toluene	108-88-3	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.46E-02	NCOPC	NCOPC	2.11E+02	NCOPC
Trichloroethene	79-01-6	NCOPC	6.82E-04	NCOPC	NCOPC	NCOPC	3.86E-04	NCOPC	NCOPC	1.02E+03	NCOPC
Vinyl chloride	75-01-4	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.75E-06	NCOPC	NCOPC	2.61E-04	NCOPC
Xylenes, Total	1330-20-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.41E+01	NCOPC
SVOCs											
1,2,4-Trichlorobenzene	120-82-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	3.15E-01	NCOPC
1,2-Dichlorobenzene	95-50-1	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	2.59E-01	NCOPC
1,4-Dichlorobenzene	106-46-7	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	9.05E-04	NCOPC	NCOPC	4.18E-01	NCOPC
2-Chlorophenol	95-57-8	NCOPC	NCOPC	1.35E-03	2.24E-04	NCOPC	5.30E-02	NCOPC	5.71E-01	4.46E-01	NCOPC
2-Methylnaphthalene	91-57-6	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	NCOPC	1.73E-01	NCOPC
Naphthalene	91-20-3	NCOPC	NCOPC	5.81E-03	NCOPC	NCOPC	1.94E-02	NCOPC	NCOPC	5.71E-02	NCOPC
Nitrobenzene	98-95-3	NCOPC	NCOPC	5.65E-04	NCOPC	NCOPC	1.20E-02	NCOPC	9.18E-03	NCOPC	NCOPC

Notes:
CAS - Chemical Abstracts Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.
EPC - Exposure point concentration.
NCOPC - Not a constituent of potential concern in this location.
RME - Reasonable Maximum Exposure.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Exacavation Trench Air EPC calculation (RME) show in Table E-2.

TABLE 4.1
SUMMARY OF POTENTIAL EXPOSURE ASSUMPTIONS - CURRENT AND FUTURE OUTDOOR INDUSTRIAL WORKER
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Parameter	RME Future Outdoor Worker		MLE Future Outdoor Worker		Parameter Code	Units	Intake Equation
Parameters Used in the Inhalation Pathways: Soil and Groundwater Volatiles and Soil Particulates in Outdoor Air							Chronic Daily Intake (CDI) (mg/kg-day)=
Exposure Point Concentration in Air	Table 3.8 RME Table 3.11 RME		Table 3.8 MLE Table 3.11 MLE		CA	mg/m^3	$CDI = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT}$
Exposure Time	8	(a)	8	(a)	ET	hours/day	
Exposure Frequency	190	(i)	190	(i)	EF	days/year	
Exposure Duration	25	(b)	7	(c)	ED	years	
Inhalation Rate	1.6	(d)	1	(e)	IR	m^3/hour	
Body Weight	70	(b)	70	(b)	BW	kg	
Averaging Time - Cancer	25550	(l)	25550	(l)	AT-C	days	
Averaging Time - Noncancer	9125	(m)	2555	(m)	AT-NC	days	
Parameters Used in the Ingestion and Dermal Contact Pathway: Surface Soil							Chronic Daily Intake (CDI) (mg/kg-day)=
Exposure Point Concentration in Soil	Table 3.1 RME		Table 3.1 MLE		CS	mg/kg	
Exposure Frequency	190	(i)	190	(i)	EF	days/year	*Ingestion:*
Exposure Duration	25	(b)	7	(c)	ED	years	
Soil Ingestion Rate	100	(f)	30	(j)	SIR	mg/day	$CDI = \frac{CS \times SIR \times EF \times ED \times ABS_o \times CF}{BW \times AT}$
Oral Absorption Fraction	Table G-1		Table G-1		ABS_o	unitless	
Dermal Absorption Fraction	Table G-1		Table G-1		ABS_d	unitless	
Exposed Skin Surface Area	3300	(g,k)	3300	(g,k)	SA	cm^2/day	
Soil to Skin Adherence Factor	0.2	(h,k)	0.02	(h,k)	AF	mg/cm^2	*Dermal Contact:*
Body Weight	70	(b)	70	(b)	BW	kg	
Averaging Time - Cancer	25550	(l)	25550	(l)	AT-C	days	
Averaging Time - Noncancer	9125	(m)	2555	(m)	AT-NC	days	$CDI = \frac{CS \times SA \times AF \times EF \times ED \times ABS_d \times CF}{BW \times AT}$
Unit Conversion Factor	0.000001	--	0.000001	--	CF	kg/mg	

Notes:
MLE - Most Likely Exposure.
RME - Reasonable Maximum Exposure.
(a) - USEPA, 1997. Exposure Factors Handbook. 50th percentile time spent at work, males and females, all ages. EFH Table 15-68.
(b) - USEPA, 1991. Standard Default Exposure Factors.
(c) - USEPA, 1997. Exposure Factors Handbook. Recommended value for occupational tenure listed in EFH Table 1-2.
(d) - USEPA, 1997. Exposure Factors Handbook. Inhalation rate for moderate activity listed in EFH Table 5-23.
(e) - USEPA, 1997. Exposure Factors Handbook. Inhalation rate for light activity listed in EFH Table 5-23.
(f) - USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Exhibit 4-1.
(g) - USEPA, 1997. Exposure Factors Handbook. Represents 50th percentile values for males and females based on hands, forearms, and face listed in EFH Tables 6-2 and 6-3. See Table 4.5 for calculation.
(h) - USEPA, 1997 and USEPA, 2004. See Table 4.5 for calculation.
(i) - Exposure frequency of 250 days (USEPA, 1991) adjusted for percentage of days with inclement weather (24%), [250-(250*0.24) = 190].
(j) - Calabrese, E.J., et. al. 1990. Preliminary adult soil ingestion estimates; results of a pilot study. Regul. Toxicol. Pharmacol. 12:88-95. As cited in USEPA, 1997. Exposure Factors Handbook. Low end of range.
(k) - USEPA, 2004. Supplemental Guidance for Dermal Risk Assessment. Exhibit 3-5.
(l) - Lifetime (70 years) x 365 days per year. Used in calculation for carcinogenic intake.
(m) - Exposure duration (years) x 365 days per year. Used in calculation for noncarcinogenic intake. (USEPA, 1989. Risk Assessment Guidance for Superfund).

TABLE 4.2
SUMMARY OF POTENTIAL EXPOSURE ASSUMPTIONS - CURRENT AND FUTURE TRESPASSING TEENAGER
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Parameter	RME Trespassing Teenager (7 to 18 yrs)		MLE Trespassing Teenager (7 to 18 yrs)		Parameter Code	Units	Intake Equation
Parameters Used in the Ingestion and Dermal Contact Pathway: Surface Soil							Chronic Daily Intake (CDI) (mg/kg-day)=
Exposure Point Concentration in Soil	Table 3.1 RME		Table 3.1 MLE		CS	mg/kg	
Exposure Frequency	26	(a)	13	(b)	EF	days/year	*Ingestion:*
Exposure Duration	11	(c)	11	(c)	ED	years	$CDI = \frac{CS \times SIR \times EF \times ED \times ABS_d \times CF}{BW \times AT}$
Soil Ingestion Rate	100	(d)	50	(e)	SIR	mg/day	
Oral Absorption Fraction	Table G-1		Table G-1		ABS_o	unitless	
Dermal Absorption Fraction	Table G-1		Table G-1		ABS_d	unitless	
Exposed Skin Surface Area	4500	(f)	4500	(f)	SA	cm^2/day	*Dermal Contact:*
Soil to Skin Adherence Factor	0.03	(g)	0.03	(g)	AF	mg/cm^2	$CDI = \frac{CS \times SA \times AF \times EF \times ED \times ABS_d \times CF}{BW \times AT}$
Body Weight	47	(h)	47	(h)	BW	kg	
Averaging Time - Cancer	25550	(q)	25550	(q)	AT-C	days	
Averaging Time - Noncancer	4015	(r)	4015	(r)	AT-NC	days	
Parameters Used in the Inhalation Pathway: Soil and Groundwater Volatiles and Soil Particulates in Outdoor Air							Chronic Daily Intake (CDI) (mg/kg-day)=
Exposure Point Concentration in Air	Table 3.9 RME Table 3.11 RME		Table 3.9 MLE Table 3.11 MLE		CA	mg/m^3	
Exposure Time	2	(i)	2	(i)	ET	hours/day	
Exposure Frequency	26	(a)	13	(b)	EF	days/year	$CDI = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT}$
Exposure Duration	11	(c)	11	(c)	ED	years	
Inhalation Rate	1.2	(j)	1	(k)	IR	m^3/hour	
Body Weight	47	(h)	47	(h)	BW	kg	
Averaging Time - Cancer	25550	(q)	25550	(q)	AT-C	days	
Averaging Time - Noncancer	4015	(r)	4015	(r)	AT-NC	days	
Parameters Used in the Ingestion and Dermal Contact Pathway: Sediment (l)							Chronic Daily Intake (CDI) (mg/kg-day)=
Exposure Point Concentration in Sediment	Table 3.3 RME		Table 3.3 MLE		CS	mg/kg	
Exposure Frequency	13	(b)	7	(m)	EF	days/year	*Ingestion:*
Exposure Duration	11	(c)	11	(c)	ED	years	
Soil Ingestion Rate	100	(d)	50	(e)	IR	mg/day	$CDI = \frac{CS \times IR \times EF \times ED \times ABS_o \times CF}{BW \times AT}$
Oral Absorption Fraction	Table G-1		Table G-1		ABS_o	unitless	
Dermal Absorption Fraction	Table G-1		Table G-1		ABS_d	unitless	
Surface Area Exposed	5500	(n)	5500	(n)	SA	cm^2/day	
Adherence Factor	0.2	(g)	0.2	(g)	AF	mg/cm^2	*Dermal Contact:*
Body Weight	47	(h)	47	(h)	BW	kg	$CDI = \frac{CS \times SA \times AF \times EF \times ED \times ABS_d \times CF}{BW \times AT}$
Averaging Time - Cancer	25550	(q)	25550	(q)	AT-C	days	
Averaging Time - Noncancer	4015	(r)	4015	(r)	AT-NC	days	

TABLE 4.2
SUMMARY OF POTENTIAL EXPOSURE ASSUMPTIONS - CURRENT AND FUTURE TRESPASSING TEENAGER
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Parameter	RME Trespassing Teenager (7 to 18 yrs)		MLE Trespassing Teenager (7 to 18 yrs)		Parameter Code	Units	Intake Equation
Parameters Used in the Ingestion and Dermal Contact Pathway: Surface Water (l)							Chronic Daily Intake (CDI) (mg/kg-day)=
Exposure Point Concentration in Surface Water	Table 3.4 RME		Table 3.4 MLE		CW	mg/L	*Ingestion:* $CDI = \frac{CW \times IR \times EF \times ED}{BW \times AT}$
Absorbed Dose per Event	--	(s)	--	(s)	DA_{event}	mg/cm^2-event	
Event Frequency	1		1		EV	events/day	*Dermal Contact:*
Exposure Time	1	(o)	1	(o)	ET	hours/day	
Exposure Frequency	13	(b)	7	(m)	EF	days/year	$CDI = \frac{DA_{event} \times EV \times EF \times ED \times SA}{BW \times AT}$
Exposure Duration	11	(c)	11	(c)	ED	years	
Water Ingestion Rate	0.005	(p)	0.005	(p)	IR	L/day	
Surface Area Exposed	5500	(n)	5500	(n)	SA	cm^2/day	Organics, if ET< t*:
Permeability Constant	Table H-1		Table H-1		PC	cm/hr	$DA_{event} = 2FA \times PC \times CW \times CF \sqrt{\frac{6T \times ET}{\pi}}$
Fraction Absorbed	Table H-1		Table H-1		FA	unitless	
Lag Time per Event	Table H-1		Table H-1		T	hours/day	
Time to Steady State	Table H-1		Table H-1		t*	hours	Organics, if ET>t*:
Dimensionless ratio of the PC of a chemical through the stratum corneum relative to its permeability constant across the viable epidermis	Table H-1		Table H-1		B	unitless	$DA_{event} = FA \times PC \times CW \times CF \times \left[\frac{ET}{1+B} + 2T\left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]$
Body Weight	47	(h)	47	(h)	BW	kg	
Averaging Time - Cancer	25550	(q)	25550	(q)	AT-C	days	
Averaging Time - Noncancer	4015	(r)	4015	(r)	AT-NC	days	
Unit Conversion Factor	0.000001	--	0.000001	--	CF	L/cm^3	Inorganics: $DA_{event} = CW \times PC \times ET \times CF$

Notes:
MLE - Most Likely Exposure.
RME - Reasonable Maximum Exposure.
(a) - 1 day per week for 26 weeks (6 months) of the year.
(b) - 1 day per 2 weeks for 26 weeks (6 months) of the year.
(c) - Trespassing teenager is assumed to range in age from 7 to 18. Therefore, total exposure duration is 11 years.
(d) - USEPA, 1991. Standard Default Exposure Factors.
(e) - USEPA, 1997. Exposure Factors Handbook. Average soil ingestion rate for an adult listed in EFH Table 1-2.
(f) - USEPA, 1997. Exposure Factors Handbook. Average surface area of head, hands, forearms and lower legs of males and females aged 7 to 18 listed in EFH Tables 6-6 to 6-8. See Table 4.5 for calculation.
(g) - USEPA, 1997 and USEPA, 2004. See Table 4.5 for calculation.
(h) - USEPA, 1997. Exposure Factors Handbook. Body weight is the average of males and females aged 7 to 18 listed in EFH Table 7-3
(i) - The trespassing teen is assumed to be on-site for two hours.
(j) - USEPA, 1997. Exposure Factors Handbook. Inhalation rates is the value for moderate activity (children) listed in EFH Table 5-23.
(k) - USEPA, 1997. Exposure Factors Handbook. Inhalation rates is the value for light activity (children) listed in EFH Table 5-23.
(l) - Sediment and surface water exposures for the Mississippi River are evaluated separately from the Site Q Ponds; sediment and surface water exposures for the Site Q Ponds are evaluated in conjunction with the Site Q soil and air pathways. Exposure to seeps will be evaluated separately.
(m) - One day per 4 weeks for approximately six months of the year.
(n) - USEPA, 1997. Exposure Factors Handbook. Average surface area of head, hands, forearms, feet and lower legs of males and females aged 7 to 18 listed in EFH Tables 6-6 to 6-8. See Table 4.5 for calculation.
(o) - Assumed duration of wading event.
(p) - USEPA, 1989a. Risk Assessment Guidance for Superfund, Volume I. Value is one-tenth of that assumed to occur during a swimming event.
(q) - Lifetime (70 years) x 365 days per year. Used in calculation for carcinogenic intake. (USEPA, 1989. Risk Assessment Guidance for Superfund).
(r) - Exposure duration (years) x 365 days per year. Used in calculation for noncarcinogenic intake. (USEPA, 1989. Risk Assessment Guidance for Superfund).
(s) - Absorbed dose will be calculated in the revised risk assessment.

TABLE 4.3
SUMMARY OF POTENTIAL EXPOSURE ASSUMPTIONS - CURRENT AND FUTURE CONSTRUCTION WORKER
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Parameter	RME Future Construction/Utility Worker		MLE Future Construction/Utility Worker		Parameter Code	Units	Intake Equation
Parameters Used in the Inhalation Pathway: Soil and Groundwater Volatiles and Soil Particulates in Outdoor Air							Chronic Daily Intake (CDI) (mg/kg-day)=
Exposure Point Concentration in Air	Table 3.10 RME Table 3.12 RME		Table 3.10 MLE Table 3.12 MLE		CA	mg/m^3	$CDI = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT}$
Exposure Time	8	(a)	8	(a)	ET	hours/day	
Exposure Frequency	40	(b)	20	(c)	EF	days/year	
Exposure Duration	1	(d)	1	(d)	ED	years	
Inhalation Rate	2.5	(e)	1.5	(f)	IR	m^3/hour	
Body Weight	70	(g)	70	(g)	BW	kg	
Averaging Time - Cancer	25550	(p)	25550	(p)	AT-C	days	
Averaging Time - Noncancer	365	(q)	365	(q)	AT-NC	days	
Parameters Used in the Ingestion and Dermal Contact Pathway: Surface and Combined Soil							Chronic Daily Intake (CDI) (mg/kg-day)=
Exposure Point Concentration in Soil	Table 3.2 RME		Table 3.2 MLE		CS	mg/kg	*Ingestion:*
Exposure Frequency	40	(b)	20	(c)	EF	days/year	$CDI = \frac{CS \times SIR \times EF \times ED \times ABS_o \times CF}{BW \times AT}$
Exposure Duration	1	(d)	1	(d)	ED	years	
Soil Ingestion Rate	330	(m)	64	(h)	SIR	mg/day	
Oral Absorption Fraction	Table G-1		Table G-1		ABS_o	unitless	
Dermal Absorption Fraction	Table G-1		Table G-1		ABS_d	unitless	
Exposed Skin Surface Area	3300	(i,n)	3300	(i,n)	SA	cm^2/day	*Dermal Contact:*
Soil to Skin Adherence Factor	0.3	(j,o)	0.1	(j,o)	AF	mg/cm^2	$CDI = \frac{CS \times SA \times AF \times EF \times ED \times ABS_d \times CF}{BW \times AT}$
Body Weight	70	(g)	70	(g)	BW	kg	
Averaging Time - Cancer	25550	(p)	25550	(p)	AT-C	days	
Averaging Time - Noncancer	365	(q)	365	(q)	AT-NC	days	
Parameters Used in the Ingestion and Dermal Contact Pathway: Groundwater/Leachate							Chronic Daily Intake (CDI) (mg/kg-day)=
Exposure Point Concentration in Groundwater	Table 3.6 RME		Table 3.6 MLE		CW	mg/L	
Absorbed Dose per Event	--	(r)	--	(r)	DA_{event}	mg/cm^2-event	*Ingestion:* $CDI = \frac{CW \times IR \times EF \times ED}{BW \times AT}$
Event Frequency	1		1		EV	events/day	
Exposure Time	1	(k)	1	(k)	ET	hours/day	
Exposure Frequency	10	(k)	5	(k)	EF	days/year	*Dermal Contact:*
Exposure Duration	1	(d)	1	(d)	ED	years	
Water Ingestion Rate	0.005	(l)	0.005	(l)	IR	L/day	$CDI = \frac{DA_{event} \times EV \times EF \times ED \times SA}{BW \times AT}$
Surface Area Exposed	3300	(i,n)	3300	(i,n)	SA	cm^2/day	
Permeability Constant	Table H-1		Table H-1		PC	cm/hr	
Fraction Absorbed	Table H-1		Table H-1		FA	unitless	Organics, if ET< t*:
Lag Time per Event	Table H-1		Table H-1		T	hours/day	$DA_{event} = 2FA \times PC \times CW \times CF \sqrt{\frac{6T \times ET}{\pi}}$
Time to Steady State	Table H-1		Table H-1		t*	hours	
Dimensionless ratio of the PC of a chemical through the stratum corneum relative to its permeability constant across the viable epidermis	Table H-1		Table H-1		B	unitless	Organics, if ET>t*: $DA_{event} = FA \times PC \times CW \times CF \times \left[\frac{ET}{1+B} + 2T\left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]$
Body Weight	70	(g)	70	(g)	BW	kg	
Averaging Time - Cancer	25550	(p)	25550	(p)	AT-C	days	
Averaging Time - Noncancer	365	(q)	365	(q)	AT-NC	days	
Unit Conversion Factor	0.000001	--	0.000001	--	CF	L/cm^3	Inorganics: $DA_{event} = CW \times PC \times ET \times CF$

See notes on following page.

TABLE 4.3
SUMMARY OF POTENTIAL EXPOSURE ASSUMPTIONS - CURRENT AND FUTURE CONSTRUCTION WORKER
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Notes:
MLE - Most Likely Exposure.
RME - Reasonable Maximum Exposure.
(a) - USEPA, 1997. Exposure Factors Handbook. 50th percentile time spent at work, males and females, all ages. EFH Table 15-68.
(b) - Exposure frequency is equivalent to 5 days per week for 2 months.
(c) - Exposure frequency is equivalent to 5 days per week for 1 month.
(d) - Construction activities are assumed to occur within a 1 year period.
(e) - USEPA, 1997. Exposure Factors Handbook. Inhalation rate is the value for heavy activity for an outdoor worker listed in EFH Table 5-23.
(f) - USEPA, 1997. Exposure Factors Handbook. Inhalation rate is the value for moderate activity for an outdoor worker listed in EFH Table 5-23.
(g) - USEPA, 1991. Standard Default Exposure Factors.
(h) - ENSR-derived value; see text.
(i) - USEPA, 1997. Exposure Factors Handbook. Represents 50th percentile values for males and females based on hands, forearms, and face listed in EFH Tables 6-2 and 6-3. See Table 4.5 for calculation.
(j) - USEPA, 1997 and USEPA, 2004. See Table 4.5 for calculation.
(k) - Assumes that contact with water occurs only for a fraction of the total exposure duration and time.
(l) - USEPA, 1989. Risk Assessment Guidance for Superfund, Volume I. Value is one-tenth of that assumed to occur during a swimming event.
(m) - USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Exhibit 4-1.
(n) - USEPA, 2004. Supplemental Guidance for Dermal Risk Assessment. Exhibit 3-5.
(o) - USEPA, 2004. Supplemental Guidance for Dermal Risk Assessment. Exhibit 3-3.
(p) - Lifetime (70 years) x 365 days per year. Used in calculation for carcinogenic intake. (USEPA, 1989. Risk Assessment Guidance for Superfund).
(q) - Exposure duration (years) x 365 days per year. Used in calculation for noncarcinogenic intake. (USEPA, 1989. Risk Assessment Guidance for Superfund).
(r) - Absorbed dose will be calculated in the revised risk assessment.

TABLE 4.4
SUMMARY OF POTENTIAL EXPOSURE ASSUMPTIONS - CURRENT AND FUTURE RECREATIONAL FISHER
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Parameter	RME Adult Recreational Fisher		MLE Adult Recreational Fisher		Parameter Code	Units	Intake Equation
Parameters Used in the Fish Ingestion Pathway							Chronic Daily Intake (CDI) (mg/kg-day)=
Exposure Point Concentration in Fish	Table 3.5 RME		Table 3.5 MLE		CF	mg/kg	$CDI = \frac{CF \times IR \times EF \times ED}{AT \times BW}$
Exposure Frequency	365	(a)	365	(a)	EF	days/year	
Exposure Duration	30	(b)	9	(c)	ED	years	
Ingestion Rate	0.008	(d)	0.001	(e)	IR	kg/day	
Body Weight	70	(b)	70	(b)	BW	kg	
Averaging Time - Cancer	25550	(n)	25550	(n)	AT-C	days	
Averaging Time - Noncancer	10950	(o)	3285	(o)	AT-NC	days	
Parameters Used in the Ingestion and Dermal Contact Pathway: Wading in Surface Water							Chronic Daily Intake (CDI) (mg/kg-day)=
Exposure Point Concentration in Surface Water	Table 3.4 RME		Table 3.4 MLE	(p)	CW	mg/L	*Ingestion:* $CDI = \frac{CW \times IR \times EF \times ED}{BW \times AT}$
Absorbed Dose per Event	--	(p)	--	(p)	DA_{event}	mg/cm^2-event	
Event Frequency	1		1		EV	events/day	
Exposure Time	1	(k)	1	(k)	ET	hours/day	
Exposure Frequency	22	(h)	3	(i)	EF	days/year	*Dermal Contact:*
Exposure Duration	30	(b)	9	(c)	ED	years	
Surface Water Ingestion Rate	0.01	(f)	0.005	(j)	IR	L/day	$CDI = \frac{DA_{event} \times EV \times EF \times ED \times SA}{BW \times AT}$
Surface Area Exposed	6900	(g)	6900	(g)	SA	cm^2/day	
Permeability Constant	Table H-1		Table H-1		PC	cm/hr	
Fraction Absorbed	Table H-1		Table H-1		FA	unitless	Organics, if ET< t*:
Lag Time per Event	Table H-1		Table H-1		T	hours/day	$DA_{event} = 2 FA \times PC \times CW \times CF \sqrt{\frac{6T \times ET}{\pi}}$
Time to Steady State	Table H-1		Table H-1		t*	hours	
Dimensionless ratio of the PC of a chemical through the stratum corneum relative to its permeability constant across the viable epidermis	Table H-1		Table H-1		B	unitless	Organics, if ET>t*: $DA_{event} = FA \times PC \times CW \times CF \times \left[\frac{ET}{1+B} + 2T\left(\frac{1+3B+3B^2}{(1+B)^2}\right)\right]$
Body Weight	70	(b)	70	(b)	BW	kg	
Averaging Time - Cancer	25550	(n)	25550	(n)	AT-C	days	
Averaging Time - Noncancer	10950	(o)	3285	(o)	AT-NC	days	
Unit Conversion Factor	0.000001	--	0.000001	--	CF	L/cm^3	Inorganics: $DA_{event} = CW \times PC \times ET \times CF$
Parameters Used in the Ingestion and Dermal Contact Pathway: Wading in Sediment							Chronic Daily Intake (CDI) (mg/kg-day)=
Exposure Point Concentration in Sediment	Table 3.3 RME		Table 3.3 RME		CS	mg/kg	*Ingestion:* $CDI = \frac{CS \times IR \times EF \times ED \times ABS_o \times CF}{BW \times AT}$
Exposure Frequency	22	(h)	3	(i)	EF	days/year	
Exposure Duration	30	(b)	9	(c)	ED	years	
Sediment Ingestion Rate	100	(b)	50	(m)	IR	mg/day	
Oral Absorption Fraction	Table G-1		Table G-1		ABS_o	unitless	
Dermal Absorption Fraction	Table G-1		Table G-1		ABS_d	unitless	
Surface Area Exposed	6900	(g)	6900	(g)	SA	cm^2/day	
Adherence Factor	0.3	(l)	0.3	(l)	AF	mg/cm^2	*Dermal Contact:*
Body Weight	70	(b)	70	(b)	BW	kg	
Averaging Time - Cancer	25550	(n)	25550	(n)	AT-C	days	$CDI = \frac{CS \times SA \times AF \times EF \times ED \times ABS_d \times CF}{BW \times AT}$
Averaging Time - Noncancer	10950	(o)	3285	(o)	AT-NC	days	

See notes on following page.

TABLE 4.4
SUMMARY OF POTENTIAL EXPOSURE ASSUMPTIONS - CURRENT AND FUTURE RECREATIONAL FISHER
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Notes:
MLE - Most Likely Exposure.
RME - Reasonable Maximum Exposure.
(a) - Fish ingestion rates are based on 365 days per year.
(b) - USEPA, 1991. Standard Default Exposure Factors.
(c) - USEPA, 1997. Exposure Factors Handbook. Recommended average for time residing in a household. EFH Table 1-2.
(d) - USEPA, 1997. Exposure Factors Handbook. 8 g/day is equivalent to approximately 22 fish meals of 129 g per year.
(e) - 1 g/day is equivalent to approximately three 129 g fish meals per year (equivalent to one fish meal per month in the three summer months).
(f) - USEPA, 1989a. Risk Assessment Guidance for Superfund, Volume I. Value is one-fifth of that assumed to occur during a swimming event.
(g) - USEPA, 1997. Exposure Factors Handbook. Represents 50th percentile values for adult males and females based on hands, lower arms, lower legs, feet and head. See Table 4.5 for calculation.
(h) - One day per week for 5 months.
(i) - One day per month during the three summer months.
(j) - USEPA, 1989a. Risk Assessment Guidance for Superfund, Volume I. Value is one-tenth of that assumed to occur during a swimming event.
(k) - Assumed duration of wading event.
(l) - USEPA, 1997 and USEPA, 2004. See Table 4.5 for calculation.
(m) - USEPA, 1997. Exposure Factors Handbook. Average soil ingestion rate for an adult listed in EFH Table 1-2.
(n) - Lifetime (70 years) x 365 days per year. Used in calculation for carcinogenic intake. (USEPA, 1989. Risk Assessment Guidance for Superfund).
(o) - Exposure duration (years) x 365 days per year. Used in calculation for noncarcinogenic intake. (USEPA, 1989. Risk Assessment Guidance for Superfund).
(p) - Absorbed dose will be calculated in the revised risk assessment.

TABLE 4.5
SOIL ADHERENCE FACTORS AND SURFACE AREAS
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Outdoor Industrial Worker Scenario - Reasonable Maximum Exposure Scenario		
Body Part	**Surface Area 50th percentile (cm^2) (a)**	**Soil Loading Utility Wokrker (mg/cm^2) (b)**	**Total Soil Mass (mg)**
Head	1,205	0.293	353.07
Hands	904	0.250	225.88
Forearms	1,173	0.102	119.65
Total	3,282		698.59
Area-Weighted Soil Adherence factor (mg/cm2) = Soil mass/Surface area =			0.21

Notes:
(a) - Data from USEPA (1997), Tables 6-2, 6-3. Average of 50th percentile values for men and women (45% arm used as proxy for female forearm).
(b) - Data from USEPA (2004a) Exhibit C-2. Geometric mean of Utility Workers Nos. 1 and 2.

	Outdoor Industrial Worker Scenario - Most Likely Exposure Scenario		
Body Part	**Surface Area 50th percentile (cm^2) (a)**	**Soil Loading Groundskeepers (mg/cm^2) (a)**	**Total Soil Mass (mg)**
Head	1,205	0.004	4.82
Hands	904	0.046	41.56
Forearms	1,173	0.007	8.21
Total	3,282		54.59
Area-Weighted Soil Adherence factor (mg/cm2) = Soil mass/Surface area =			0.02

Notes:
(a) - Data from USEPA (1997), Tables 6-2, 6-3. Average of 50th percentile values for men and women (45% arm used as proxy for female forearm).
(b) - Data from USEPA (2004a) Exhibit C-2. Geometric mean of groundskeepers Nos 1, 2, 3, 4, and 5.

TABLE 4.5
SOIL ADHERENCE FACTORS AND SURFACE AREAS
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Construction Worker Scenario - Reasonable Maximum Exposure Scenario		
Body Part	**Surface Area 50th percentile (cm^2) (a)**	**Soil Loading Construction Workers (mg/cm^2) (b)**	**Total Soil Mass (mg)**
Head	1,205	0.071	85.56
Hands	904	0.518	468.01
Forearms	1,173	0.215	252.20
Total	3,282		805.76
Area-Weighted Soil Adherence factor (mg/cm2) = Soil mass/Surface area =			0.25

Notes:
(a) - Data from USEPA (1997), Tables 6-2, 6-3. Average of 50th percentile values for men and women (45% arm used as proxy for female forearm).
(b) - Data from USEPA (2004a) Exhibit C-2. 95th Percentile of Construction Workers

	Construction Worker Scenario - Most Likely Exposure Scenario		
Body Part	**Surface Area 50th percentile (cm^2) (a)**	**Soil Loading Construction Workers (mg/cm^2) (a)**	**Total Soil Mass (mg)**
Head	1,205	0.029	34.95
Hands	904	0.242	218.65
Forearms	1,173	0.098	114.95
Total	3,282		368.55
Area-Weighted Soil Adherence factor (mg/cm2) = Soil mass/Surface area =			0.11

Notes:
(a) - Data from USEPA (1997), Tables 6-2, 6-3. Average of 50th percentile values for men and women (45% arm used as proxy for female forearm).
(b) - Data from USEPA (2004a) Exhibit C-2. Geometric mean of construction workers.

TABLE 4.5
SOIL ADHERENCE FACTORS AND SURFACE AREAS
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Trespassing Teenager - Soil (7 to 18 years)		
Body Part	**Surface Area 50th percentile (a) (cm^2)**	**Soil Loading Soccer No. 1 (mg/cm^2) (b)**	**Total Soil Mass (mg)**
Hands	715	0.110	78.65
Forearms	804	0.011	8.84
Lower legs	1,654	0.031	51.27
Head	1,354	0.012	16.25
Total	4,527	--	155.02
Area-Weighted Soil Adherence factor (mg/cm2) = Soil mass/Surface area =			0.03

Notes:
(a) - Data from USEPA (1997). Based on average of boys (EFH Table 6-6) and girls (EFH Table 6-7) total body surface area , and mean percentages of total surface area for individual body parts EFH Table 6-8). 45% arm used as proxy for lower arm, and 40% leg used as proxy for lower leg (USEPA, 2004a).
(b) - Data from USEPA (2004a), Supplemental Guidance for Dermal Risk Assessment. Exhibit C-2. Geometric mean for Soccer Players No. 1.

	Trespasser (7 to 18 years) - Sediment		
Body Part	**Surface Area 50th percentile (a) (cm^2)**	**Soil Loading Children Playing in Wet Soil (mg/cm^2) (b)**	**Total Soil Mass (mg)**
Hands	715	0.656	469.04
Forearms	804	0.015	12.06
Lower legs	1,654	0.026	43.00
Head	1,354	0.004	5.42
Feet (c)	995	0.656	635.66
Total	5,522	--	1165.18
Area-Weighted Sediment Adherence factor (mg/cm2) = Soil mass/Surface area =			0.21

Notes:
(a) - Data from USEPA (1997). Based on average of boys (EFH Table 6-6) and girls (EFH Table 6-7) total body surface area , and mean percentages of total surface area for individual body parts EFH Table 6-8). 45% arm used as proxy for lower arm, and 40% leg used as proxy for lower leg (USEPA, 2004a).
(b) - Data from USEPA (2004a), Supplemental Guidance for Dermal Risk Assessment. Exhibit C-2. Geometric mean for children playing in wet soil.
(c) - Soil loading data for hands used, as no soil loading data for feet are available.

TABLE 4.5
SOIL ADHERENCE FACTORS AND SURFACE AREAS
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Body Part	Recreational Angler - Sediment		
	Surface Area 50th percentile (a) (cm^2)	Soil Loading Reed Gatherer (mg/cm^2) (b)	Total Soil Mass (mg)
Hands	904	0.658	594.83
Forearms	1,173	0.036	42.23
Feet	1,225	0.633	775.43
Lower Legs	2,370	0.159	376.83
Head	1,205	(c)	(c)
Total Surface Area	6,877	--	
Total for Adherence	5,672		1789.32
Area-Weighted Sediment Adherence factor (mg/cm2) = Sediment mass/Surface area =			0.32

Notes:
(a) - Data from USEPA (1997). Tables 6-2, 6-3. Average of 50th percentile values for men and women (45% arm used as proxy for female forearm).
(b) - Data from USEPA (2004a) Exhibit C-2. Geometric mean of values for reed gatherers.
(c) - Not included in total for derivation of adherence factor.

TABLE 5.1
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL NONCARCINOGENIC EFFECTS FROM CHRONIC EXPOSURE THROUGH THE ORAL ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	Oral RfD (mg/kg-day)	Fraction Absorbed ABS_{GI} (a)	Dermal RfD (b) (mg/kg-day)	Reference (Last Verified)	USEPA Confidence Level	Uncertainty Factor	Modifying Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
VOCs											
1,1,1-Trichloroethane	71-55-6	2.00E+00	--	2.00E+00	IRIS (3/08)	LOW/ MEDIUM	1000	1	Reduced Body Weight	MOUSE	ORAL: DIET
1,1,2-Trichloroethane	79-00-5	4.00E-03	--	4.00E-03	IRIS (3/08)	MEDIUM	1000	1	Clinical Serum Chemistry	MOUSE	ORAL: DRINKING WATER
1,1-Dichloroethane	75-34-3	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethylene	75-35-4	5.00E-02	--	5.00E-02	IRIS (3/08)	MEDIUM	100	1	Liver Toxicity (Fatty Change)	RAT	ORAL: DRINKING WATER
1,2-Dichloroethane	107-06-2	2.00E-02	--	2.00E-02	NCEA (10/02)	MEDIUM	3000	1	Increased Kidney Weight	RAT/MOUSE	ORAL: DRINKING WATER
1,2-Dichloroethene (total)	540-59-0	2.00E-02 (l)	--	2.00E-02	IRIS (3/08)	LOW	1000	1	Increased Serum Phosphates	MOUSE	ORAL: DRINKING WATER
1,2-Dichloropropane	78-87-5	9.00E-02	--	9.00E-02	ATSDR (11/07)	NA	1000	NA	Liver	NA	NA
2-Butanone	78-93-3	6.00E-01	--	6.00E-01	IRIS (3/08)	LOW	1000	1	Decreased Pup Body Weight	RAT	ORAL: DRINKING WATER
4-Methyl-2-pentanone	108-10-1	8.00E-02	--	8.00E-02	HEAST (97)	NA	3000	NA	Lethargy; Increased Liver and Kidney Weight; Increased Urinary Protein Levels	RAT	ORAL: GAVAGE
Acetone	67-64-1	9.00E-01	--	9.00E-01	IRIS (3/08)	MEDIUM	1000	1	Nephropathy	RAT	ORAL: DRINKING WATER
Acrolein	107-02-8	5.00E-04	--	5.00E-04	IRIS (3/08)	MEDIUM/ HIIGH	100	1	Decreased survival	RAT	ORAL: GAVAGE
Benzene	71-43-2	4.00E-03	--	4.00E-03	IRIS (3/08)	MEDIUM	300	1	Decreased Lymphocyte Count	HUMAN	OCCUPATIONAL: INHALATION
Chlorobenzene	108-90-7	2.00E-02	--	2.00E-02	IRIS (3/08)	MEDIUM	1000	1	Histopathologic Changes in Liver	DOG	ORAL: DIET
Chloroethane	75-00-3	4.00E-01	--	4.00E-01	NCEA (8/30/96)	LOW	3000	NA	Developmental	MOUSE	INHALATION
Chloroform	67-66-3	1.00E-02	--	1.00E-02	IRIS (3/08)	MEDIUM	100	1	Moderate/Marked Fatty Cyst Formation in the Liver and Elevated SGPT	DOG	ORAL: BIOASSAY
Chloromethane	74-87-3	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	6.00E-02	--	6.00E-02	IRIS (3/08)	MEDIUM	100	1	Liver Toxicity	RAT	DRINKING WATER: BIOASSAY
Ethylbenzene	100-41-4	1.00E-01	--	1.00E-01	IRIS (3/08)	LOW	1000	1	Liver and Kidney Toxicity	RAT	ORAL: BIOASSAY
Hexane	110-54-3	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	1.00E-02	--	1.00E-02	IRIS (3/08)	MEDIUM	1000	1	Hepatotoxicity in Mice, Weight Gain in Rats	MOUSE	ORAL : GAVAGE
Toluene	108-88-3	8.00E-02	--	8.00E-02	IRIS (3/08)	MEDIUM	3000	1	Increased Kidney Weight	RAT	ORAL : GAVAGE
Trichloroethene	79-01-6	3.00E-04	--	3.00E-04	(r)	LOW	3000	1	Increased Liver Weight	MOUSE	ORAL: DRINKING WATER
Vinyl chloride	75-01-4	3.00E-03	--	3.00E-03	IRIS (3/08)	MEDIUM	30	1	Liver Cell Polymorphism	RAT	ORAL: DIET
Xylenes, Total	1330-20-7	2.00E-01	--	2.00E-01	IRIS (3/08)	MEDIUM	1000	1	Decreased body weight and increased mortality	RAT	ORAL: GAVAGE
SVOCs											
1,2,4-Trichlorobenzene	120-82-1	1.00E-02	--	1.00E-02	IRIS (3/08)	MEDIUM	1000	1	Increased Adrenal Weights; Vacuolization of Zona Fasciculata in the Cortex	RAT	REPRODUCTIVE
1,2-Dichlorobenzene	95-50-1	9.00E-02	--	9.00E-02	IRIS (3/08)	LOW	1000	1	No Adverse Effects Observed	RAT	ORAL : GAVAGE
1,4-Dichlorobenzene	106-46-7	3.00E-02	--	3.00E-02	NCEA (4/29/97)	MEDIUM	1000	NA	Liver Perturbations and Developmental Toxicity Effects	RAT	ORAL : GAVAGE
1,4-Dioxane	123-91-1	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	1.00E-01	--	1.00E-01	IRIS (3/08)	LOW	1000	1	Liver and Kidney Pathology	RAT	ORAL
2,4,6-Trichlorophenol	88-06-2	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	3.00E-03	--	3.00E-03	IRIS (3/08)	LOW	100	1	Decreased Delayed Hypersensitivity Response	RAT	ORAL
2,4-Dimethylphenol	105-67-9	2.00E-02	--	2.00E-02	IRIS (3/08)	LOW	3000	1	Clinical Signs (Lethargy, Prostration, and Ataxia) and Hematological Changes	MOUSE	ORAL : GAVAGE
2-Chlorophenol	95-57-8	5.00E-03	--	5.00E-03	IRIS (3/08)	LOW	1000	1	Reproductive Effects	RAT	ORAL: DRINKING WATER
2-Methylnaphthalene	91-57-6	4.00E-03	--	4.00E-03	IRIS (3/08)	LOW	1000	1	Pulmonary Alveolar Proteinosis	MOUSE	ORAL

TABLE 5.1
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL NONCARCINOGENIC EFFECTS FROM CHRONIC EXPOSURE THROUGH THE ORAL ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	Oral RfD (mg/kg-day)	Fraction Absorbed ABS_{GI} (a)	Dermal RfD (b) (mg/kg-day)	Reference (Last Verified)	USEPA Confidence Level	Uncertainty Factor	Modifying Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
2-Methylphenol	95-48-7	5.00E-02	--	5.00E-02	IRIS (3/08)	MEDIUM	1000	1	Decreased Body Weights and Neurotoxicity	RAT	ORAL
2-Nitroaniline	88-74-4	3.00E-03 (t)	--	3.00E-03	NCEA (11/1/02)	HIGH	100	1	Hematological Effects	RAT	ORAL : GAVAGE
3&4Methylphenol	106-44-5	5.00E-02 (k)	--	5.00E-02	IRIS (3/08)	MEDIUM	1000	1	Decreased Body Weights and Neurotoxicity	RAT	ORAL
3,3'-Dichlorobenzidine	91-94-1	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	106-47-8	4.00E-03	--	4.00E-03	IRIS (3/08)	LOW	3000	1	Nonneoplastic Lesions of Splenic Capsule	RAT	ORAL: BIOASSAY
4-Chlorophenol	106-48-9	5.00E-03 (u)	--	5.00E-03	IRIS (3/08)	LOW	1000	1	Reproductive Effects	RAT	ORAL: DRINKING WATER
4-Nitroaniline	100-01-6	3.00E-03	--	3.00E-03	NCEA (11/1/02)	HIGH	100	1	Hematological Effects	RAT	ORAL : GAVAGE
4-Nitrophenol	100-02-7	8.00E-03	--	8.00E-03	NCEA (1/27/95)	NA	3000	NA	Liver, Kidney and Lung	RAT	ORAL : GAVAGE
Benzo(a)anthracene	56-55-3	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	191-24-2	3.00E-02 (m)	--	3.00E-02	IRIS (3/08)	LOW	3000	1	Kidney Effects	MOUSE	ORAL: BIOASSAY
Benzo(k)fluoranthene	207-08-9	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Butyl Phthalate	85-68-7	2.00E-01	--	2.00E-01	IRIS (3/08)	LOW	1000	1	Significantly Increased Liver-To-Body Weight and Liver-To-Brain Weight Ratios	RAT	ORAL
bis(2-Chloroethyl)ether	111-44-4	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	2.00E-02	--	2.00E-02	IRIS (3/08)	MEDIUM	1000	1	Increased Relative Liver Weight	GUINEA PIG	ORAL: BIOASSAY
Chrysene	218-01-9	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	53-70-3	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl Phthalate	84-66-2	8.00E-01	--	8.00E-01	IRIS (3/08)	LOW	1000	1	Decreased Growth Rate, Food Consumption and Altered Organ Weights	RAT	ORAL
Di-n-butylphthalate	84-74-2	1.00E-01	--	1.00E-01	IRIS (3/08)	LOW	1000	1	Increased Mortality	RAT	ORAL: BIOASSAY
Di-n-octylphthalate	NA	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Dinoseb	88-85-7	1.00E-03	--	1.00E-03	IRIS (3/08)	LOW	1000	1	Decrease Fetal Weight	RAT	REPRODUCTIVE
Hexachlorobenzene	118-74-1	8.00E-04	--	8.00E-04	IRIS (3/08)	MEDIUM	100	1	Liver Effects	RAT	ORAL: DIET
Indeno(1,2,3-cd)pyrene	193-39-5	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	2.00E-02	--	2.00E-02	IRIS (3/08)	LOW	3000	1	Decreased mean terminal body weight in males	RAT	ORAL
Nitrobenzene	98-95-3	5.00E-04	--	5.00E-04	IRIS (3/08)	LOW	10000	1	Hematologic, Adrenal, Renal and Hepatic Lesions	RAT/MOUSE	INHALATION
N-Nitrosodiphenylamine	86-30-6	NA	--	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	3.00E-01	--	3.00E-01	IRIS (3/08)	MEDIUM/ HIGH	300	1	Decreased Maternal Weight Gain	RAT	DEVELOPMENTAL
Pesticides											
4,4'-DDD	72-54-8	5.00E-04 (c)	--	5.00E-04	IRIS (3/08)	MEDIUM	100	1	Liver Lesions	RAT	ORAL: DIET
4,4'-DDE	72-55-9	5.00E-04 (c)	--	5.00E-04	IRIS (3/08)	MEDIUM	100	1	Liver Lesions	RAT	ORAL: DIET
4,4'-DDT	50-29-3	5.00E-04	--	5.00E-04	IRIS (3/08)	MEDIUM	100	1	Liver Lesions	RAT	ORAL: DIET
Aldrin	309-00-2	3.00E-05	--	3.00E-05	IRIS (3/08)	MEDIUM	1000	1	Liver Toxicity	RAT	ORAL
alpha-BHC	319-84-6	3.00E-04 (q)	--	3.00E-04	IRIS (3/08)	MEDIUM	1000	1	Liver and Kidney Toxicity	RAT	ORAL: BIOASSAY
alpha-Chlordane	5103-71-9	5.00E-04 (h)	--	5.00E-04	IRIS (3/08)	MEDIUM	300	1	Hepatic Necrosis	MOUSE	ORAL
beta-BHC	319-85-7	3.00E-04 (q)	--	3.00E-04	IRIS (3/08)	MEDIUM	1000	1	Liver and Kidney Toxicity	RAT	ORAL: BIOASSAY
delta-BHC	319-86-8	3.00E-04 (q)	--	3.00E-04	IRIS (3/08)	MEDIUM	1000	1	Liver and Kidney Toxicity	RAT	ORAL: BIOASSAY
Dieldrin	60-57-1	5.00E-05	--	5.00E-05	IRIS (3/08)	MEDIUM	100	1	Liver Lesions	RAT	ORAL: DIET

TABLE 5.1
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL NONCARCINOGENIC EFFECTS FROM CHRONIC EXPOSURE THROUGH THE ORAL ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	Oral RfD (mg/kg-day)	Fraction Absorbed ABS_{GI} (a)	Dermal RfD (b) (mg/kg-day)	Reference (Last Verified)	USEPA Confidence Level	Uncertainty Factor	Modifying Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
Endrin Ketone	53494-70-5	3.00E-04 (j)	--	3.00E-04	IRIS (3/08)	MEDIUM	100	1	Mild Histological Lesion in Liver, Occasional Convulsions	DOG	ORAL: BIOASSAY
gamma-BHC (Lindane)	58-89-9	3.00E-04	--	3.00E-04	IRIS (3/08)	MEDIUM	1000	1	Liver and Kidney Toxicity	RAT	ORAL: BIOASSAY
Heptachlor	76-44-8	5.00E-04	--	5.00E-04	IRIS (3/08)	LOW	300	1	Liver Weight Increase in Males	RAT	ORAL
Heptachlor Epoxide	1024-57-3	1.30E-05	--	1.30E-05	IRIS (3/08)	LOW	1000	1	Increase Liver-To-Body Weight Ratio in Both Males and Females	DOG	ORAL
Herbicides											
2,4,5-T	93-76-5	1.00E-02	--	1.00E-02	IRIS (3/08)	MEDIUM	300	1	Increased Urinary Coproporphyrins (Other Effect: Reduced Neonatal Survival)	RAT	ORAL
2,4,5-TP (Silvex)	93-72-1	8.00E-03	--	8.00E-03	IRIS (3/08)	MEDIUM	100	1	Histopathologic Changes in Liver	DOG	ORAL: BIOASSAY
2,4-D	94-75-7	1.00E-02	--	1.00E-02	IRIS (3/08)	MEDIUM	100	1	Hematologic, Hepatic and Renal Toxicity	RAT	ORAL: BIOASSAY
2,4-DB	94-82-6	8.00E-03	--	8.00E-03	IRIS (3/08)	LOW	1000	1	Internal Hemorrhage, Mortality	DOG	ORAL: BIOASSAY
Dicamba	1918-00-9	3.00E-02	--	3.00E-02	IRIS (3/08)	HIGH	100	1	Maternal and Fetal Toxicity	RABBIT	DEVELOPMENTAL
Dichlorprop	120-36-5	8.00E-03 (p)	--	8.00E-03	IRIS (3/08)	LOW	1000	1	Internal Hemorrhage, Mortality	DOG	ORAL: BIOASSAY
MCPA	94-74-6	5.00E-04	--	5.00E-04	IRIS (3/08)	MEDIUM	300	1	Kidney and Liver Toxicity	DOG	ORAL
MCPP	93-65-2	1.00E-03	--	1.00E-03	IRIS (3/08)	MEDIUM	3000	1	Increased Absolute and Relative Kidney Weights	RAT	ORAL
Pentachlorophenol	87-86-5	3.00E-02	--	3.00E-02	IRIS (3/08)	MEDIUM	100	1	Liver and Kidney Pathology	RAT	ORAL
PCBs											
PCBs, Total	1336-36-3	2.00E-05 (d)	--	2.00E-05	IRIS (3/08)	MEDIUM	300	1	Ocular, Meibomiam gland, Finger and Toenail, Immune Effects	MONKEY	ORAL: CAPSULE
Dioxin											
Dioxin TEQ-HH	1746-01-6	1.00E-09	--	1.00E-09	ATSDR (11/07)	NA	NA	NA	Developmental	NA	NA
Metals											
Aluminum	7429-90-5	1.00E+00	--	1.00E+00	PPRTV (2/7/07)	LOW	100	NA	Neurological/Toxicity	MOUSE	ORAL: DIET
Antimony	7440-36-0	4.00E-04	1.50E-01	6.00E-05	IRIS (3/08)	LOW	1000	1	Longevity, Blood Glucose and Cholesterol	RAT	ORAL: BIOASSAY
Arsenic	7440-38-2	3.00E-04	--	3.00E-04	IRIS (3/08)	MEDIUM	3	1	Hyperpigmentation, Kertosis and Possible Vascular Complications	HUMAN	ORAL
Barium	7440-39-3	2.00E-01	7.00E-02	1.40E-02	IRIS (3/08)	MEDIUM	300	1	Nephropathy	MOUSE	DRINKING WATER
Beryllium	7440-41-7	2.00E-03	7.00E-03	1.40E-05	IRIS (3/08)	LOW/ MEDIUM	300	1	Small Intestinal Lesions	DOG	ORAL
Cadmium	7440-43-9	5.00E-04 (f)	5.00E-02	2.50E-05	IRIS (3/08)	HIGH	10	1	Significant Proteinuria	HUMAN	ORAL
Cadmium	7440-43-9	1.00E-03 (g)	2.50E-02	2.50E-05	IRIS (3/08)	HIGH	10	1	Significant Proteinuria	HUMAN	ORAL
Chromium	7440-47-3	3.00E-03 (i)	2.50E-02	7.50E-05	IRIS (3/08)	LOW	300	3	None Reported	RAT	ORAL: DRINKING WATER
Cobalt	7440-48-4	2.00E-02	--	2.00E-02	NCEA (1/15/02)	LOW/ MEDIUM	10	1	Increased Hemoglobin	HUMAN	INJECTION (DIALYSIS)
Copper	7440-50-8	3.70E-02 (s)	--	3.70E-02	HEAST (97)	NA	NA	NA	GI Irritation	HUMAN	ORAL
Manganese	7439-96-5	2.40E-02 (n)	4.00E-02	9.60E-04	IRIS (3/08)	HIGH	1	3	CNS Effects (Other Effect: Impairment of Neurobehavioral Function)	HUMAN	ORAL
Mercury	7439-97-6	3.00E-04 (e)	7.00E-02	2.10E-05	IRIS (3/08)	HIGH	1000	1	Autoimmune Effects	RAT	ORAL: DIET
Nickel	7440-02-0	2.00E-02	4.00E-02	8.00E-04	IRIS (3/08)	MEDIUM	300	1	Decreased Body and Organ Weights	RAT	ORAL
Selenium	7782-49-2	5.00E-03	--	5.00E-03	IRIS (3/08)	HIGH	3	1	Clinical Selenosis	HUMAN	EPIDEMIOLOGICAL
Thallium	7440-28-0	6.67E-05 (o)	--	6.67E-05	IRIS (3/08)	LOW	3000	1	Increased Levels of SGOT and LDH	RAT	ORAL: SUBCHRONIC

TABLE 5.1
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL NONCARCINOGENIC EFFECTS FROM CHRONIC EXPOSURE THROUGH THE ORAL ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	Oral RfD (mg/kg-day)	Fraction Absorbed ABS_{GI} (a)	Dermal RfD (b) (mg/kg-day)	Reference (Last Verified)	USEPA Confidence Level	Uncertainty Factor	Modifying Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
Vanadium	7440-62-2	1.00E-03	2.60E-02	2.60E-05	NCEA (5/00)	MEDIUM	300	NA	Kidney Toxicity	RAT	ORAL
Zinc	7440-66-6	3.00E-01	--	3.00E-01	IRIS (3/08)	MEDIUM/ HIGH	3	1	Superoxide Dismutase (ESOD) Activity in Healthy Adult Male and Female Volunteers	HUMAN	ORAL

Notes:
"--" - No adjustment necessary.
ATSDR - Agency for Toxic Substances and Disease Registry. Minimal Risk Level. November 2007.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. TEFs are presented in Table F-1.
HEAST - Health Effects Assessment Summary Tables (USEPA, 1997).
IRIS - Integrated Risk Information System, an on-line computer database of toxicological information (USEPA, 2008).
LOAEL - Lowest Observed Adverse Effects Level.
NA - Not available.
NCEA - National Center for Environmental Assessment.
PCBs - Polychlorinated Biphenyls.
PPRTV - Provisional Peer Reviewed Toxicity Value.
RfD - Reference Dose.
SVOCs - Semivolatile Organic Compounds.
USEPA - United States Environmental Protection Agency.
VOCs - Volatile Organic Compounds.
(a) USEPA, 2004. Risk Assessment Guidance for Superfund. Volume 1, Part E, Supplemental Guidance for Dermal Risk Assessment. Exhibit 4-1. Where USEPA, 2004 does not recommend adjustments, no value is listed.
(b) Oral RfD multiplied by ABS_{GI}. Where no adjustment is recommended by USEPA, 2004, Dermal RfD = Oral RfD.
(c) 4,4-DDT used as surrogate based on structural similarity.
(d) Value for Aroclor 1254.
(e) Value for mercuric chloride.
(f) Reference dose for water will be used to evaluate potential groundwater and surface water exposures.
(g) Reference dose for food will be used to evaluate potential soil exposures.
(h) Value for Chlordane (Technical).
(i) Value for Chromium hexavalent.
(j) Value for Endrin used as surrogate based on structural similarities.
(k) Value for 3-Methylphenol. No IRIS value for 4-Methylphenol available.
(l) Value for trans-1,2-Dichloroethane. No value on IRIS for total or cis-1,2-Dichloroethane.
(m) Value for Pyrene used as surrogate based on structural similarities.
(n) When assessing exposure to manganese in soil or drinking water, IRIS (03/08) recommends applying a modifying factor of 3 to the oral RfD of 0.14 mg/kg-day. The USEPA Region 9 PRG table (USEPA, 2004) also indicates that the average dietary manganese content of the US diet (5 mg/day) be subtracted from the critical dose of 10 mg/day. Therefore, the RfD is (10 mg/day - 5 mg/day)/Modifying Factor (3) = 1.67 mg/day / 70 kg = 0.024 mg/kg-day.
(o) The NOAEL of 0.25 mg/kg-day for Thallium Sulfate (IRIS, 03/08) was adjusted for the molecular weight of Thallium (as noted in the IRIS file for Thallium Acetate, 03/08) to 0.20 mg/kg-day. Therefore, the Thallium RfD = 0.20 mg/kg-day / UF 3000 = 6.67E-05 mg/kg-day.
(p) Value for 2,4-DB used as surrogate based on structural similarities.
(q) Value for gamma-BHC (Lindane) used as surrogate based on structural similarities.
(r) Trichloroethylene Health Risk Assessment Synthesis and Characterization. EPA/600/p-01/002A August 2001. External Review Draft.
(s) Converted from drinking water standard: 1.3 mg/L x 2 L/day x 1/70 kg = 0.037 mg/kg-day. (See also USEPA, 2006. Maximum Contaminant Levels (MCL)).
(t) Value for 4-Nitroaniline used as surrogate based on structural similarities.
(u) Value for 2-Chlorophenol used as surrogate based on structural similarities.

TABLE 5.2
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL NONCARCINOGENIC EFFECTS THROUGH THE INHALATION ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	Inhalation RfD (mg/kg-day)	Inhalation RfC (mg/m^3)	Reference (Last Verified)	USEPA Confidence Level	Uncertainty Factor	Modifying Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
VOCs										
1,1,1-Trichloroethane	71-55-6	1.43E+00 (a)	5.00E+00	IRIS (3/08)	MEDIUM	100	1	Liver Histopathologic Changes	MOUSE	INHALATION
1,1,2-Trichloroethane	79-00-5	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	1.43E-01 (a)	5.00E-01	HEAST (97, Alt)	NA	1000	1	Kidney Damage	CAT	INHALATION: INTERMITTENT
1,1-Dichloroethylene	75-35-4	5.71E-02 (a)	2.00E-01	IRIS (3/08)	MEDIUM	30	1	Liver toxicity (fatty change)	RAT	INHALATION
1,2-Dichloroethane	107-06-2	7.00E-01 (a,h)	2.45E+00	ATSDR (11/07)	NA	90	NA	Liver	NA	NA
1,2-Dichloroethene (total)	540-59-0	1.71E-02 (a,b)	6.00E-02	PPRTV (3/1/06)	LOW	3000	1	Liver and Lung	RAT	INHALATION
1,2-Dichloropropane	78-87-5	1.14E-03 (a)	4.00E-03	IRIS (3/08)	MEDIUM	300	1	Hyperplasia of the nasal mucosa	RAT	INHALATION
2-Butanone	78-93-3	1.43E+00 (a)	5.00E+00	IRIS (3/08)	MEDIUM	300	1	variations)	MOUSE	DEVELOPMENTAL
4-Methyl-2-pentanone	108-10-1	8.57E-01 (a)	3.00E+00	IRIS (3/08)	LOW/MEDIUM	300	1	Reduced fetal body weight, skeletal variations, increased fetal death	MOUSE/RAT	INHALATION: DEVELOPMENTAL
Acetone	67-64-1	8.86E+00 (a)	3.10E+01	ATSDR (11/07)	NA	100	NA	Neurological	NA	NA
Acrolein	107-02-8	5.71E-06 (a)	2.00E-05	iRIS (3/08)	MEDIUM	1000	1	Nasal lesions	RAT	INHALATION
Benzene	71-43-2	8.57E-03 (a)	3.00E-02	IRIS (3/08)	MEDIUM	300	1	Decreased Lymphocyte Count	HUMAN	OCCUPATIONAL
Chlorobenzene	108-90-7	1.43E-02 (a)	5.00E-02	PPRTV (10/12/06)	LOW	1000	1	Liver and Kidney effects	RAT	INHALATION
Chloroethane	75-00-3	2.86E+00 (a)	1.00E+01	IRIS (3/08)	MEDIUM	300	1	Delayed Fetal Ossification	MOUSE	INHALATION: DEVELOPMENTAL
Chloroform	67-66-3	8.57E-02 (a)	3.00E-01	CalEPA (2/05)	NA	NA	NA	Alimentary system, kidney, development	NA	NA
Chloromethane	74-87-3	2.57E-02 (a)	9.00E-02	IRIS (3/08)	MEDIUM	1000	1	Cerebellar lesions	MOUSE	INHALATION
Dichloromethane	75-09-2	1.14E-01 (a)	4.00E-01	CalEPA (2/05)	NA	NA	NA	Cardiovascular, nervous	NA	NA
Ethylbenzene	100-41-4	2.86E-01 (a)	1.00E+00	IRIS (3/08)	LOW	300	1	Developmental toxicity	RAT/RABBIT	INHALATION
Hexane	110-54-3	2.00E-01 (a)	7.00E-01	IRIS (3/08)	MEDIUM	300	1	Peripheral neuropathy	RAT	INHALATION
Tetrachloroethene	127-18-4	1.00E-02 (a)	3.50E-02	CalEPA (2/05)	NA	NA	NA	Kidney, liver	NA	NA
Toluene	108-88-3	1.43E+00 (a)	5.00E+00	IRIS (3/08)	HIGH	10	1	Neurological effects in occupationally exposed workers.	HUMAN	INHALATION: OCCUPATIONAL
Trichloroethene	79-01-6	1.14E-02 (a)	4.00E-02	(c)	NA	1000	1	CNS, liver and endocrine effects.	HUMAN	INHALATION: OCCUPATIONAL
Vinyl chloride	75-01-4	2.86E-02 (a)	1.00E-01	IRIS (3/08)	MEDIUM	30	1	Liver cell polymorphism	RAT	ORAL
Xylenes, Total	1330-20-7	2.86E-02 (a)	1.00E-01	IRIS (3/08)	MEDIUM	300	1	Impaired motor coordination	RAT	INHALATION
SVOCs										
1,2,4-Trichlorobenzene	120-82-1	5.71E-02 (a)	2.00E-01	HEAST (97)	NA	1000	1	Liver	RAT, RABBIT, DOG, MONKEY	INHALATION
1,2-Dichlorobenzene	95-50-1	5.71E-02 (a)	2.00E-01	HEAST (97, Alt)	NA	1000	1	Decreased weight gain	RAT	INHALATION: INTERMITTENT
1,4-Dichlorobenzene	106-46-7	2.29E-01 (a)	8.00E-01	IRIS (3/08)	MEDIUM	100	1	Increased liver weight	RAT	INHALATION
1,4-Dioxane	123-91-1	8.57E-01 (a)	3.00E+00	CalEPA (2/05)	NA	NA	NA	Alimentary system; kidney; cardiovascular system	NA	NA
2,4,5-Trichlorophenol	95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	8.57E-04 (a,d)	3.00E-03	IRIS (3/08)	MEDIUM	3000	1	Nasal Effects; Hyperplasia and Metaplasia in respiratory and olfactory epithelium	MOUSE	INHALATION
2-Methylphenol	95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	88-74-4	5.71E-05 (a)	2.00E-04	HEAST (97)	NA	10000	NA	Hematological Effects	RAT	INHALATION: INTERMITTENT
3&4Methylphenol	106-44-5	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	106-47-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenol	106-48-9	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	1.14E-03 (a)	4.00E-03	NCEA (11/3/02)	LOW	1000	NA	Hematological Effects	RAT	INHALATION: INTERMITTENT
4-Nitrophenol	100-02-7	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	56-55-3	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 5.2
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL NONCARCINOGENIC EFFECTS THROUGH THE INHALATION ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	Inhalation RfD (mg/kg-day)		Inhalation RfC (mg/m^3)	Reference (Last Verified)	USEPA Confidence Level	Uncertainty Factor	Modifying Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
Benzo(g,h,i)perylene	191-24-2	NA		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	NA		NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Butyl Phthalate	85-68-7	NA		NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	111-44-4	NA		NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	NA		NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	NA		NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	53-70-3	NA		NA	NA	NA	NA	NA	NA	NA	NA
Diethyl Phthalate	84-66-2	NA		NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	84-74-2	NA		NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	117-84-0	NA		NA	NA	NA	NA	NA	NA	NA	NA
Dinoseb	88-85-7	NA		NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	118-74-1	NA		NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA		NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	8.57E-04	(a)	3.00E-03	IRIS (3/08)	MEDIUM	3000	1	Nasal Effects; Hyperplasia and Metaplasia in respiratory and olfactory epithelium	MOUSE	INHALATION
Nitrobenzene	98-95-3	5.71E-04	(a)	2.00E-03	HEAST (97, Alt)	NA	10000	NA	Hematological Effects, Adrenal, Kidney, and Liver Lesions	MOUSE/RAT	INHALATION: INTERMITTENT
N-Nitrosodiphenylamine	86-30-6	NA		NA	NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	5.71E-02	(a)	2.00E-01	CalEPA (2/05)	NA	NA	NA	Alimentary System; Cardiovascular System; Kidney; Hematopoietic System	NA	NA
Pesticides											
4,4'-DDD	72-54-8	NA		NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	NA		NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	NA		NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	NA		NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	NA		NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	5103-71-9	2.00E-04	(a,e)	7.00E-04	IRIS (3/08)	LOW	1000	1	Hepatic Effects	RAT	INHALATION
beta-BHC	319-85-7	NA		NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	319-86-8	NA		NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	NA		NA	NA	NA	NA	NA	NA	NA	NA
Endrin Ketone	53494-70-5	NA		NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	58-89-9	NA		NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	NA		NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	1024-57-3	NA		NA	NA	NA	NA	NA	NA	NA	NA
Herbicides											
2,4,5-T	93-76-5	NA		NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)	93-72-1	NA		NA	NA	NA	NA	NA	NA	NA	NA
2,4-D	94-75-7	NA		NA	NA	NA	NA	NA	NA	NA	NA
2,4-DB	94-82-6	NA		NA	NA	NA	NA	NA	NA	NA	NA
Dicamba	1918-00-9	NA		NA	NA	NA	NA	NA	NA	NA	NA
Dichlorprop	120-36-5	NA		NA	NA	NA	NA	NA	NA	NA	NA
MCPA	94-74-6	NA		NA	NA	NA	NA	NA	NA	NA	NA
MCPP	93-65-2	NA		NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	NA		NA	NA	NA	NA	NA	NA	NA	NA
PCBs											
PCBs, Total	1336-36-3	NA		NA	NA	NA	NA	NA	NA	NA	NA
Dioxin											
Dioxin TEQ-HH	1746-01-6	NA		NA	NA	NA	NA	NA	NA	NA	NA

TABLE 5.2
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL NONCARCINOGENIC EFFECTS THROUGH THE INHALATION ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	Inhalation RfD (mg/kg-day)	Inhalation RfC (mg/m^3)	Reference (Last Verified)	USEPA Confidence Level	Uncertainty Factor	Modifying Factor	Target Organ/ Critical Effect at LOAEL	Study Animal	Study Method
Metals										
Aluminum	7429-90-5	1.43E-03 (a)	5.00E-03	PPRTV (2/7/07)	LOW/MEDIUM	300	NA	Neurological (Psychomotor and Cognitive Impairment)	HUMAN	INHALATION
Antimony	7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	8.57E-06 (a)	3.00E-05	CalEPA (2/05)	NA	NA	NA	Development; Cardiovascular System; Nervous System	NA	NA
Barium	7440-39-3	1.43E-04 (a)	5.00E-04	HEAST (97, Alt)	NA	1000	1	Fetotoxicity	RAT	INHALATION: INTERMITTENT
Beryllium	7440-41-7	5.71E-06 (a)	2.00E-05	IRIS (3/08)	MEDIUM	10	1	Beryllium Sensitization and Progression to CBD	HUMAN	OCCUPATIONAL
Cadmium	7440-43-9	5.71E-06 (a)	2.00E-05	CalEPA (2/05)	NA	NA	NA	Kidney; Respiratory System	NA	NA
Chromium	7440-47-3	2.86E-05 (a,f)	1.00E-04	IRIS (3/08)	MEDIUM	300	1	Lactate Dehydrogenase in Bronchioaveolar Lavage Fluid	HUMAN	INHALATION: OCCUPATIONAL
Cobalt	7440-48-4	5.71E-06 (a)	2.00E-05	NCEA (1/15/02)	LOW/MEDIUM	100	NA	Respiratory Effects	HUMAN	INHALATION: OCCUPATIONAL
Copper	7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	1.43E-05 (a)	5.00E-05	IRIS (3/08)	MEDIUM	1000	1	Impairment of Neurobehavioral Function	HUMAN	INHALATION: OCCUPATIONAL
Mercury	7439-97-6	8.57E-05 (a,g)	3.00E-04	IRIS (3/08) (g)	MEDIUM	30	1	Hand tremor; increases in memory disturbances; slight evidence of autonomic dysfunction	HUMAN	INHALATION: OCCUPATIONAL
Nickel	7440-02-0	1.43E-05 (a)	5.00E-05	CalEPA (2/05)	NA	NA	NA	Respiratory System; Hematopoietic System	NA	NA
Selenium	7782-49-2	5.71E-03 (a)	2.00E-02	CalEPA (2/05)	NA	NA	NA	Alimentary System; Cardiovascular System; Nervous System	NA	NA
Thallium	7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
ATSDR - Agency for Toxic Substances and Disease Registry. Minimal Risk Level (MRL). November 2007.
CalEPA, 2005. Chronic Reference Exposure Levels (ChRELs). California Environmental Protection Agency. February 2005. <http://www.oehha.org/air/chronic_rels/AllChrels.html>.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. TEFs are presented in Table F-1.
HEAST - Health Effects Assessment Summary Tables (USEPA, 1997). Alt = Alternate Methods (HEAST Table 2).
IRIS - Integrated Risk Information System, an on-line computer database of toxicological information (USEPA, 2008).
LOAEL - Lowest Observed Adverse Effects Level.
NA - Not Available.
NCEA - National Center for Environmental Assessment.
PCBs - Polychlorinated Biphenyls.
PPRTV - Provisional Peer Reviewed Toxicity Value.
RfC - Reference Concentration.
RfD - Reference Dose.
SVOCs - Semivolatile Organic Compounds.
USEPA - United States Environmental Protection Agency.
VOCs - Volatile Organic Compounds.
(a) Converted from reference concentration: RfC (mg/m^3) x (20 m3 air/day)/70 kg body weight.
(b) Value for 1,2-dichloroethene (trans).
(c) Trichloroethylene Health Risk Assessment Synthesis and Characterization. EPA/600/p-01/002A August 2001 (USEPA, 2001). External Review Draft.
(d) Value for Naphthalene used as surrogate based on structural similarities.
(e) Value for Chlordane (Technical).
(f) Value for Chromium (VI).
(g) Value for elemental mercury.
(h) MRL for 1,2-Dichloroethane converted to RfC as follows: MRL (0.6 ppm) x Molecular Weight (98.96 g/mol)/ Molar Volume of Air in liters (24.45)

TABLE 6.1
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL CARCINOGENIC EFFECTS THROUGH THE ORAL ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	USEPA Carcinogen Class	Oral CSF $(mg/kg\text{-}day)^{-1}$	Fraction Absorbed ABS_{GI} (a)	Dermal CSF (b) $(mg/kg\text{-}day)^{-1}$	Reference (Last Verified)	Study Animal	Study Method
VOCs								
1,1,1-Trichloroethane	71-55-6	D	NA	--	NA	IRIS (3/08)	NA	NA
1,1,2-Trichloroethane	79-00-5	C	5.70E-02	--	5.70E-02	IRIS (3/08)	MOUSE	ORAL : GAVAGE
1,1-Dichloroethane	75-34-3	C	5.70E-03	--	5.70E-03	CalEPA (1/08)	NA	NA
1,1-Dichloroethylene	75-35-4	C	NA	--	NA	IRIS (3/08)	NA	NA
1,2-Dichloroethane	107-06-2	B2	9.10E-02	--	9.10E-02	IRIS (3/08)	RAT	ORAL : GAVAGE
1,2-Dichloroethene (total)	540-59-0	NA	NA	--	NA	NA	NA	NA
1,2-Dichloropropane	78-87-5	NA	3.60E-02	--	3.60E-02	CalEPA (1/08)	NA	NA
2-Butanone	78-93-3	NA	NA	--	NA	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	NA	NA	--	NA	NA	NA	NA
Acetone	67-64-1	D	NA	--	NA	IRIS (3/08)	NA	NA
Acrolein	107-02-8	ND	NA	--	NA	IRIS (3/08)	NA	NA
Benzene	71-43-2	A	1.50E-02 (c)	--	1.50E-02	IRIS (3/08)	HUMAN	INHALATION
Chlorobenzene	108-90-7	D	NA	--	NA	IRIS (3/08)	NA	NA
Chloroethane	75-00-3	B2	2.90E-03	--	2.90E-03	NCEA (4/5/93)	MOUSE	NA
Chloroform	67-66-3	B2	NA	--	NA	(d)	NA	ORAL : GAVAGE
Chloromethane	74-87-3	D	NA (n)	--	NA	IRIS (3/08)	NA	NA
Dichloromethane	75-09-2	B2	7.50E-03	--	7.50E-03	IRIS (3/08)	MOUSE	INHALATION
Ethylbenzene	100-41-4	D	NA	--	NA	IRIS (3/08)	NA	NA
Hexane	110-54-3	NA	NA	--	NA	NA	NA	NA
Tetrachloroethene	127-18-4	NA	5.40E-01	--	5.40E-01	CalEPA (1/08)	MOUSE	INHALATION
Toluene	108-88-3	D	NA	--	NA	IRIS (3/08)	NA	NA
Trichloroethene	79-01-6	NA	4.00E-01	--	4.00E-01	(f)	HUMAN	ORAL: DRINKING WATER
Vinyl chloride	75-01-4	A	7.20E-01 (e)	--	7.20E-01	IRIS (3/08)	RAT	INHALATION
Xylenes, Total	1330-20-7	NA	NA	--	NA	NA	NA	NA
SVOCs								
1,2,4-Trichlorobenzene	120-82-1	D	NA	--	NA	IRIS (3/08)	NA	NA
1,2-Dichlorobenzene	95-50-1	D	NA	--	NA	IRIS (3/08)	NA	NA
1,4-Dichlorobenzene	106-46-7	NA	5.40E-03	--	5.40E-03	CalEPA (1/08)	NA	NA
1,4-Dioxane	123-91-1	B2	1.10E-02	--	1.10E-02	IRIS (3/08)	RAT	ORAL: DRINKING WATER
2,4,5-Trichlorophenol	95-95-4	NA	NA	--	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	B2	1.10E-02	--	1.10E-02	IRIS (3/08)	RAT	ORAL: DIET
2,4-Dichlorophenol	120-83-2	NA	NA	--	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	NA	NA	--	NA	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA	--	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA	--	NA	NA	NA	NA
2-Methylphenol	95-48-7	C	NA	--	NA	IRIS (3/08)	NA	NA
2-Nitroaniline	88-74-4	NA	NA	--	NA	NA	NA	NA
3&4Methylphenol	106-44-5	C	NA	--	NA	IRIS (3/08)	NA	NA
3,3'-Dichlorobenzidine	91-94-1	B2	4.50E-01	--	4.50E-01	IRIS (3/08)	RAT	NA
4-Chloroaniline	106-47-8	NA	NA	--	NA	NA	NA	NA
4-Chlorophenol	106-48-9	NA	NA	--	NA	NA	NA	NA
4-Nitroaniline	100-01-6	C	2.10E-02	--	2.10E-02	NCEA (11/1/02)	MOUSE	NA
4-Nitrophenol	100-02-7	NA	NA	--	NA	NA	NA	NA
Benzo(a)anthracene	56-55-3	B2	7.30E-01	--	7.30E-01	(g)	NA	NA
Benzo(a)pyrene	50-32-8	B2	7.30E+00	--	7.30E+00	IRIS (3/08)	RAT	INHALATION
Benzo(b)fluoranthene	205-99-2	B2	7.30E-01	--	7.30E-01	(g)	NA	NA
Benzo(g,h,i)perylene	191-24-2	D	NA	--	NA	IRIS (3/08)	NA	NA
Benzo(k)fluoranthene	207-08-9	B2	7.30E-02	--	7.30E-02	(h)	NA	NA
Benzyl Butyl Phthalate	85-68-7	C	NA	--	NA	IRIS (3/08)	NA	NA
bis(2-Chloroethyl)ether	111-44-4	B2	1.10E+00	--	1.10E+00	IRIS (3/08)	MOUSE	ORAL : GAVAGE
bis(2-Ethylhexyl)phthalate	117-81-7	B2	1.40E-02	--	1.40E-02	IRIS (3/08)	MOUSE	NA

TABLE 6.1
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL CARCINOGENIC EFFECTS THROUGH THE ORAL ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	USEPA Carcinogen Class	Oral CSF $(mg/kg\text{-}day)^{-1}$	Fraction Absorbed ABS_{GI} (a)	Dermal CSF (b) $(mg/kg\text{-}day)^{-1}$	Reference (Last Verified)	Study Animal	Study Method
Chrysene	218-01-9	B2	7.30E-03	--	7.30E-03	(i)	NA	NA
Dibenzo(a,h)anthracene	53-70-3	B2	7.30E+00	--	7.30E+00	(j)	NA	NA
Diethyl Phthalate	84-66-2	D	NA	--	NA	IRIS (3/08)	NA	NA
Di-n-butylphthalate	84-74-2	D	NA	--	NA	IRIS (3/08)	NA	NA
Di-n-octylphthalate	117-84-0	NA	NA	--	NA	NA	NA	NA
Dinoseb	88-85-7	D	NA	--	NA	IRIS (3/08)	NA	NA
Hexachlorobenzene	118-74-1	B2	1.60E+00	--	1.60E+00	IRIS (3/08)	RAT	ORAL: DIET
Indeno(1,2,3-cd)pyrene	193-39-5	B2	7.30E-01	--	7.30E-01	(g)	NA	NA
Naphthalene	91-20-3	C	NA	--	NA	IRIS (3/08)	NA	NA
Nitrobenzene	98-95-3	D	NA	--	NA	IRIS (3/08)	NA	NA
N-Nitrosodiphenylamine	86-30-6	B2	4.90E-03	--	4.90E-03	IRIS (3/08)	RAT	NA
Phenol	108-95-2	D	NA	--	NA	IRIS (3/08)	NA	NA
Pesticides								
4,4'-DDD	72-54-8	B2	2.40E-01	--	2.40E-01	IRIS (3/08)	MOUSE	NA
4,4'-DDE	72-55-9	B2	3.40E-01	--	3.40E-01	IRIS (3/08)	MOUSE	NA
4,4'-DDT	50-29-3	B2	3.40E-01	--	3.40E-01	IRIS (3/08)	MOUSE	ORAL: DIET
Aldrin	309-00-2	B2	1.70E+01	--	1.70E+01	IRIS (3/08)	MOUSE	ORAL: DIET
alpha-BHC	319-84-6	B2	6.30E+00	--	6.30E+00	IRIS (3/08)	MOUSE	ORAL: DIET
alpha-Chlordane	5103-71-9	B2	3.50E-01 (k)	--	3.50E-01	IRIS (3/08)	MOUSE	ORAL: DIET
beta-BHC	319-85-7	C	1.80E+00	--	1.80E+00	IRIS (3/08)	MOUSE	ORAL: DIET
delta-BHC	319-86-8	D	NA	--	NA	IRIS (3/08)	NA	NA
Dieldrin	60-57-1	B2	1.60E+01	--	1.60E+01	IRIS (3/08)	MOUSE	ORAL: DIET
Endrin Ketone	53494-70-5	NA	NA	--	NA	NA	NA	NA
gamma-BHC (Lindane)	58-89-9	B2-C	1.30E+00	--	1.30E+00	HEAST (97)	MOUSE	NA
Heptachlor	76-44-8	B2	4.50E+00	--	4.50E+00	IRIS (3/08)	MOUSE	ORAL: DIET
Heptachlor Epoxide	1024-57-3	B2	9.10E+00	--	9.10E+00	IRIS (3/08)	MOUSE	ORAL: DIET
Herbicides								
2,4,5-T	93-76-5	NA	NA	--	NA	NA	NA	NA
2,4,5-TP (Silvex)	93-72-1	D	NA	--	NA	IRIS (3/08)	NA	NA
2,4-D	94-75-7	NA	NA	--	NA	NA	NA	NA
2,4-DB	94-82-6	NA	NA	--	NA	NA	NA	NA
Dicamba	1918-00-9	NA	NA	--	NA	NA	NA	NA
Dichlorprop	120-36-5	NA	NA	--	NA	NA	NA	NA
MCPA	94-74-6	NA	NA	--	NA	NA	NA	NA
MCPP	93-65-2	NA	NA	--	NA	NA	NA	NA
Pentachlorophenol	87-86-5	B2	1.20E-01	--	1.20E-01	IRIS (3/08)	MOUSE	NA
PCBs								
PCBs, Total	1336-36-3	B2	2.00E+00 (l)	--	2.00E+00	IRIS (3/08)	RAT	ORAL: DIET
Dioxin								
Dioxin TEQ-HH	1746-01-6	B2	1.50E+05	--	1.50E+05	HEAST (97)	RAT	ORAL: DIET
Metals								
Aluminum	7429-90-5	NA	NA	--	NA	NA	NA	NA
Antimony	7440-36-0	NA	NA	(m)	NA	NA	NA	NA
Arsenic	7440-38-2	A	1.50E+00	--	1.50E+00	IRIS (3/08)	HUMAN	INHALATION: OCCUPATIONAL
Barium	7440-39-3	D	NA	(m)	NA	IRIS (3/08)	NA	NA
Beryllium	7440-41-7	B1	NA	(m)	NA	IRIS (3/08)	NA	INHALATION: OCCUPATIONAL
Cadmium	7440-43-9	B1	NA	(m)	NA	IRIS (3/08)	NA	INHALATION: OCCUPATIONAL
Chromium	7440-47-3	D	NA	2.50E-02	NA	IRIS (3/08)	NA	INHALATION: OCCUPATIONAL
Cobalt	7440-48-4	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	D	NA	--	NA	IRIS (3/08)	NA	NA
Manganese	7439-96-5	D	NA	(m)	NA	IRIS (3/08)	NA	NA
Mercury	7439-97-6	D	NA	(m)	NA	IRIS (3/08)	NA	NA

TABLE 6.1
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL CARCINOGENIC EFFECTS THROUGH THE ORAL ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	USEPA Carcinogen Class	Oral CSF $(mg/kg\text{-}day)^{-1}$	Fraction Absorbed ABS_{GI} (a)	Dermal CSF (b) $(mg/kg\text{-}day)^{-1}$	Reference (Last Verified)	Study Animal	Study Method
Nickel	7440-02-0	NA	NA	(m)	NA	NA	NA	NA
Selenium	7782-49-2	D	NA	--	NA	IRIS (3/08)	NA	NA
Thallium	7440-28-0	D	NA	--	NA	IRIS (3/08)	NA	NA
Vanadium	7440-62-2	NA	NA	(m)	NA	NA	NA	NA
Zinc	7440-66-6	D	NA	--	NA	IRIS (3/08)	NA	NA

Notes:
A - Human carcinogen.
B1 - Probable human carcinogen - based on limited evidence of carcinogenicity in humans.
B2 - Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals.
C - Possible Human Carcinogen.
CalEPA, 2008. Toxicity Criteria Database. California Environmental Protection Agency. January 25, 2008. <http://www.oehha.org/risk/ChemicalDB/index.asp>.
CAS - Chemical Abstracts Service.
CSF - Cancer Slope Factor.
COPC - Constituent of Potential Concern.
D - Not classifiable as to human carcinogenicity.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. TEFs are presented in Table F-1.
HEAST - Health Effects Assessment Summary Tables (USEPA, 1997).
IRIS - Integrated Risk Information System, an online computer database of toxicological information (USEPA, 2008).
NA - Not available.
NCEA - National Center for Environmental Assessment.
ND - Data are inadequate for an assessment of human carcinogenic potential.
PCBs - Polychlorinated Biphenyls.
RPF - Relative Potency Factor.
SVOCs - Semivolatile Organic Compounds.
USEPA - United States Environmental Protection Agency.
VOCs - Volatile Organic Compounds.
(a) USEPA, 2004. Risk Assessment Guidance for Superfund. Volume 1, Part E, Supplemental Guidance for Dermal Risk Assessment. Exhibit 4-1. Where USEPA, 2004 does not recommend adjustments, no value is listed.
(b) Oral CSF divided by ABS_{GI}. Where no adjustment is recommended, Dermal CSF = Oral CSF.
(c) IRIS provides a range of CSF for benzene of 1.5E-02 to 5.5E-02 kg*day/mg. IRIS states that each value within this range has equal scientific plausibility.
(d) The oral reference dose is considered protective of potential carcinogenic effects (IRIS, 3/08).
(e) IRIS provides a range of oral cancer slope factors for vinyl chloride of 0.72 kg*day/mg to 1.5 kg*day/mg. The value for continuous lifetime exposure during adulthood, 0.72 kg*day/mg was chosen because the exposure scenarios evaluated do not include young children.
(f) Trichloroethylene Health Risk Assessment Synthesis and Characterization. EPA/600/p-01/002A August 2001.
(g) CSF based on that for benzo(a)pyrene and applying a RPF of 0.1 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993).
(h) CSF based on that for benzo(a)pyrene and applying a RPF of 0.01 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993).
(i) CSF based on that for benzo(a)pyrene and applying a RPF of 0.001 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993).
(j) CSF based on that for benzo(a)pyrene and applying a RPF of 1 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993).
(k) Value for Chlordane (Technical).
(l) Upper bound value for high risk and persistence category. See Table I-1.
(m) No oral CSF available; therefore, fraction absorbed not applicable.
(n) The carcinogenicity assessment for chloromethane on IRIS, dated July 2001, chloromethane was classified a Class D (not classifiable) carcinogen and quantitative estimates of carcinogenicity were not provided. As this assessment post-dates the CSF provided in HEAST, the HEAST value has not been used.

TABLE 6.2
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL CARCINOGENIC EFFECTS THROUGH THE INHALATION ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	USEPA Carcinogen Class	Inhalation CSF (mg/kg-day)$^{-1}$		Unit Risk Factor (m^3/ug)	Reference	Study Animal	Study Method
VOCs								
1,1,1-Trichloroethane	71-55-6	D	NA		NA	IRIS (3/08)	NA	NA
1,1,2-Trichloroethane	79-00-5	C	5.60E-02	(a)	1.60E-05	IRIS (3/08)	MOUSE	ORAL : GAVAGE
1,1-Dichloroethane	75-34-3	C	5.70E-03	(a)	1.60E-06	CalEPA (1/08)	NA	NA
1,1-Dichloroethylene	75-35-4	C	NA		NA	IRIS (3/08)	NA	NA
1,2-Dichloroethane	107-06-2	B2	9.10E-02	(a)	2.60E-05	IRIS (3/08)	RAT	ORAL : GAVAGE
1,2-Dichloroethene (total)	540-59-0	NA	NA		NA	NA	NA	NA
1,2-Dichloropropane	78-87-5	NA	3.60E-02	(a)	1.00E-05	CalEPA (1/08)	NA	NA
2-Butanone	78-93-3	NA	NA		NA	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	NA	NA		NA	NA	NA	NA
Acetone	67-64-1	D	NA		NA	IRIS (3/08)	NA	NA
Acrolein	107-02-8	ND	NA		NA	IRIS (3/08)	NA	NA
Benzene	71-43-2	A	7.70E-03	(a,b)	7.80E-06	IRIS (3/08)	HUMAN	INHALATION
Chlorobenzene	108-90-7	D	NA		NA	IRIS (3/08)	NA	NA
Chloroethane	75-00-3	B2	NA		NA	NA	NA	NA
Chloroform	67-66-3	B2	8.05E-02	(a)	2.30E-05	IRIS (3/08)	MOUSE	ORAL : GAVAGE
Chloromethane	74-87-3	D	NA		NA	IRIS (3/08)	NA	NA
Dichloromethane	75-09-2	B2	1.65E-03	(a)	4.70E-07	IRIS (3/08)	MOUSE	INHALATION
Ethylbenzene	100-41-4	D	NA		NA	IRIS (3/08)	NA	NA
Hexane	110-54-3	NA	NA		NA	NA	NA	NA
Tetrachloroethene	127-18-4	NA	2.10E-02	(a)	5.90E-06	CalEPA (1/08)	MOUSE	INHALATION
Toluene	108-88-3	D	NA		NA	IRIS (3/08)	NA	NA
Trichloroethene	79-01-6	NA	4.00E-01		NA	(k)	HUMAN	ORAL: DRINKING WATER
Vinyl chloride	75-01-4	A	1.54E-02	(a,c)	4.40E-06	IRIS (3/08)	RAT	INHALATION
Xylenes, Total	1330-20-7	NA	NA		NA	NA	NA	NA
SVOCs								
1,2,4-Trichlorobenzene	120-82-1	D	NA		NA	IRIS (3/08)	NA	NA
1,2-Dichlorobenzene	95-50-1	D	NA		NA	IRIS (3/08)	NA	NA
1,4-Dichlorobenzene	106-46-7	NA	4.00E-02	(a)	1.10E-05	CalEPA (1/08)	NA	NA
1,4-Dioxane	123-91-1	B2	2.70E-02	(a)	7.70E-06	CalEPA (1/08)	NA	NA
2,4,5-Trichlorophenol	95-95-4	NA	NA		NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	B2	1.09E-02	(a)	3.10E-06	IRIS (3/08)	RAT	ORAL: DIET
2,4-Dichlorophenol	120-83-2	NA	NA		NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	NA	NA		NA	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA		NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA		NA	NA	NA	NA
2-Methylphenol	95-48-7	C	NA		NA	IRIS (3/08)	NA	NA
2-Nitroaniline	88-74-4	NA	NA		NA	NA	NA	NA
3&4Methylphenol	106-44-5	C	NA		NA	IRIS (3/08)	NA	NA
3,3'-Dichlorobenzidine	91-94-1	B2	NA		NA	IRIS (3/08)	NA	NA
4-Chloroaniline	106-47-8	NA	NA		NA	NA	NA	NA
4-Chlorophenol	106-48-9	NA	NA		NA	NA	NA	NA
4-Nitroaniline	100-01-6	C	NA		NA	NCEA (11/1/02)	NA	NA
4-Nitrophenol	100-02-7	NA	NA		NA	NA	NA	NA
Benzo(a)anthracene	56-55-3	B2	3.08E-01		NA	(d)	NA	NA
Benzo(a)pyrene	50-32-8	B2	3.08E+00	(a)	8.80E-04	NCEA (11/18/94)	HAMSTERS	INHALATION
Benzo(b)fluoranthene	205-99-2	B2	3.08E-01		NA	(d)	NA	NA
Benzo(g,h,i)perylene	191-24-2	D	NA		NA	IRIS (3/08)	NA	NA
Benzo(k)fluoranthene	207-08-9	B2	3.08E-02		NA	(e)	NA	NA
Benzyl Butyl Phthalate	85-68-7	C	NA		NA	IRIS (3/08)	NA	NA
bis(2-Chloroethyl)ether	111-44-4	B2	1.16E+00	(a)	3.30E-04	IRIS (3/08)	MOUSE	ORAL : GAVAGE
bis(2-Ethylhexyl)phthalate	117-81-7	B2	NA		NA	IRIS (3/08)	NA	NA
Chrysene	218-01-9	B2	3.08E-03		NA	(f)	NA	NA

TABLE 6.2
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL CARCINOGENIC EFFECTS THROUGH THE INHALATION ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	USEPA Carcinogen Class	Inhalation CSF (mg/kg-day)$^{-1}$		Unit Risk Factor (m^3/ug)	Reference	Study Animal	Study Method
Dibenzo(a,h)anthracene	53-70-3	B2	3.08E+00		NA	(g)	NA	NA
Diethyl Phthalate	84-66-2	D	NA		NA	IRIS (3/08)	NA	NA
Di-n-butylphthalate	84-74-2	D	NA		NA	IRIS (3/08)	NA	NA
Di-n-octylphthalate	117-84-0	NA	NA		NA	NA	NA	NA
Dinoseb	88-85-7	D	NA		NA	IRIS (3/08)	NA	NA
Hexachlorobenzene	118-74-1	B2	1.61E+00	(a)	4.60E-04	IRIS (3/08)	RAT	ORAL: DIET
Indeno(1,2,3-cd)pyrene	193-39-5	B2	3.08E-01		NA	(d)	NA	NA
Naphthalene	91-20-3	C	NA		NA	IRIS (3/08)	NA	NA
Nitrobenzene	98-95-3	D	NA		NA	IRIS (3/08)	NA	NA
N-Nitrosodiphenylamine	86-30-6	B2	9.00E-03	(a)	2.57E-06	CalEPA (1/08)	NA	NA
Phenol	108-95-2	D	NA		NA	IRIS (3/08)	NA	NA
Pesticides								
4,4'-DDD	72-54-8	B2	NA		NA	IRIS (3/08)	NA	NA
4,4'-DDE	72-55-9	B2	NA		NA	IRIS (3/08)	NA	NA
4,4'-DDT	50-29-3	B2	3.40E-01	(a)	9.70E-05	IRIS (3/08)	MOUSE	ORAL: DIET
Aldrin	309-00-2	B2	1.72E+01	(a)	4.90E-03	IRIS (3/08)	MOUSE	ORAL: DIET
alpha-BHC	319-84-6	B2	6.30E+00	(a)	1.80E-03	IRIS (3/08)	MOUSE	ORAL: DIET
alpha-Chlordane	5103-71-9	B2	3.50E-01	(a,h)	1.00E-04	IRIS (3/08)	MOUSE	ORAL: DIET
beta-BHC	319-85-7	C	1.86E+00	(a)	5.30E-04	IRIS (3/08)	MOUSE	ORAL: DIET
delta-BHC	319-86-8	D	NA		NA	IRIS (3/08)	NA	NA
Dieldrin	60-57-1	B2	1.61E+01	(a)	4.60E-03	IRIS (3/08)	MOUSE	ORAL: DIET
Endrin Ketone	53494-70-5	NA	NA		NA	NA	NA	NA
gamma-BHC (Lindane)	58-89-9	B2-C	NA		NA	HEAST (97)	NA	NA
Heptachlor	76-44-8	B2	4.55E+00	(a)	1.30E-03	IRIS (3/08)	MOUSE	ORAL: DIET
Heptachlor Epoxide	1024-57-3	B2	9.10E+00	(a)	2.60E-03	IRIS (3/08)	MOUSE	ORAL: DIET
Herbicides								
2,4,5-T	93-76-5	NA	NA		NA	NA	NA	NA
2,4,5-TP (Silvex)	93-72-1	D	NA		NA	IRIS (3/08)	NA	NA
2,4-D	94-75-7	NA	NA		NA	NA	NA	NA
2,4-DB	94-82-6	NA	NA		NA	NA	NA	NA
Dicamba	1918-00-9	NA	NA		NA	NA	NA	NA
Dichlorprop	120-36-5	NA	NA		NA	NA	NA	NA
MCPA	94-74-6	NA	NA		NA	NA	NA	NA
MCPP	93-65-2	NA	NA		NA	NA	NA	NA
Pentachlorophenol	87-86-5	B2	NA		NA	IRIS (3/08)	NA	NA
PCBs								
PCBs, Total	1336-36-3	B2	2.00E+00	(i)	NA	IRIS (3/08)	RAT	ORAL: DIET
Dioxin								
Dioxin TEQ-HH	1746-01-6	B2	1.50E+05	(a)	3.30E-05	HEAST (97)	RAT	ORAL: DIET
Metals								
Aluminum	7429-90-5	NA	NA		NA	NA	NA	NA
Antimony	7440-36-0	NA	NA		NA	NA	NA	NA
Arsenic	7440-38-2	A	1.51E+01	(a)	4.30E-03	IRIS (3/08)	HUMAN	INHALATION: OCCUPATIONAL
Barium	7440-39-3	D	NA		NA	IRIS (3/08)	NA	NA
Beryllium	7440-41-7	B1	8.40E+00	(a)	2.40E-03	IRIS (3/08)	HUMAN	INHALATION: OCCUPATIONAL
Cadmium	7440-43-9	B1	6.30E+00	(a)	1.80E-03	IRIS (3/08)	HUMAN	INHALATION: OCCUPATIONAL
Chromium	7440-47-3	A	4.20E+01	(a,j)	1.20E-02	IRIS (3/08)	HUMAN	INHALATION: OCCUPATIONAL
Cobalt	7440-48-4	B1	9.80E+00	(a)	2.80E-03	NCEA (1/15/02)	MOUSE/RAT	INHALATION
Copper	7440-50-8	D	NA		NA	IRIS (3/08)	NA	NA
Manganese	7439-96-5	D	NA		NA	IRIS (3/08)	NA	NA
Mercury	7439-97-6	D	NA		NA	IRIS (3/08)	NA	NA

TABLE 6.2
DOSE-RESPONSE INFORMATION FOR COPC WITH POTENTIAL CARCINOGENIC EFFECTS THROUGH THE INHALATION ROUTE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS Number	USEPA Carcinogen Class	Inhalation CSF $(mg/kg\text{-}day)^{-1}$	Unit Risk Factor (m^3/ug)	Reference	Study Animal	Study Method
Nickel	7440-02-0	NA	9.10E-01 (a)	2.60E-04	CalEPA (1/08)	NA	NA
Selenium	7782-49-2	D	NA	NA	IRIS (3/08)	NA	NA
Thallium	7440-28-0	D	NA	NA	IRIS (3/08)	NA	NA
Vanadium	7440-62-2	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	D	NA	NA	IRIS (3/08)	NA	NA

Notes:
A - Human carcinogen.
B1 - Probable human carcinogen - based on limited evidence of carcinogenicity in humans.
B2 - Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals.
C - Possible Human Carcinogen.
CalEPA, 2008. Toxicity Criteria Database. California Environmental Protection Agency. January 25, 2008. <http://www.oehha.org/risk/ChemicalDB/index.asp>.
CAS - Chemical Abstracts Service.
COPC - Constituent of Potential Concern.
CSF - Cancer Slope Factor.
D - Not classifiable as to human carcinogenicity.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. TEFs are presented in Table F-1.
HEAST - Health Effects Assessment Summary Tables (USEPA, 1997).
IRIS - Integrated Risk Information System, an online computer database of toxicological information (USEPA, 2008).
NA - Not available.
NCEA - National Center for Environmental Assessment.
ND - Data are inadequate for an assessment of human carcinogenic potential.
PCBs - Polychlorinated Biphenyls.
SVOCs - Semivolatile Organic Compounds.
USEPA - United States Environmental Protection Agency.
VOCs - Volatile Organic Compounds.
(a) Converted from unit risk factor: Unit Risk Factor (m3/ug) x (70 kg x (1day/20m^3) x 1000 ug/mg).
(b) IRIS provides a range of inhalation unit risk factors for benzene of 2.2E-06 to 7.8E-06 m^3/ug. These are equivalent to an CSF range of 7.7 E-03 to 2.7E-02 kg*day/mg. IRIS states that each value within this range has equal scientific plausibility
(c) IRIS provides a range of inhalation unit risk factors for vinyl chloride of 4.4E-06 to 8.8E-06 m^3/ug. The value for continuous lifetime exposure during adulthood, 4.4E-06 was chosen because the exposure scenarios evaluated do not include young children.
(d) CSF based on that for benzo(a)pyrene and applying a relative potency factor of 0.1 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993).
(e) CSF based on that for benzo(a)pyrene and applying a relative potency factor of 0.01 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993).
(f) CSF based on that for benzo(a)pyrene and applying a relative potency factor of 0.001 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993).
(g) CSF based on that for benzo(a)pyrene and applying a relative potency factor of 1.0 per USEPA Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons (USEPA, 1993).
(h) Value for Chlordane (Technical).
(i) Upper bound value for dust/aerosol inhalation. See Table I-1
(j) Value for Chromium (Hexavalent).
(k) Trichloroethylene Health Risk Assessment Synthesis and Characterization. EPA/600/p-01/002A August 2001.
(l) The carcinogenicity assessment for chloromethane on IRIS, dated July 2001, chloromethane was classified a Class D (not classifiable) carcinogen and quantitative estimates of carcinogenicity were not provided. As this assessment post-dates the CSF provided in HEAST, the HEAST value has not been used.

Attachment A

Supporting Documentation for Table 2
Occurrence, Distribution and Selection of Constituents of Potential Concern

- Table A-1: List of Samples in Each Site/Medium
- Table A-2: Matching of Site Well to Background Well
- Table A-3a: Upgradient/Background Concentrations – Surface Soil
- Table A-3b: Upgradient/Background Concentrations – Combined Soil
- Table A-3c: Upgradient/Background Concentrations – Sediment
- Table A-3d: Upgradient/Background Concentrations – Groundwater
- Table A-3e: Upgradient/Background Concentrations – Surface Water
- Table A-4: Screening Values for Soil and Sediment
- Table A-5: Screening Values for Groundwater and Surface Water
- Table A-6: Screening Values for Fish Fillet

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)		Depth to Groundwater (ft)	
Leachate								
O - LEACH-0-1	LEACH-O-1	RI	LEACH-O-1		11.5			
Q North - LEACH-Q-1	LEACH-Q-1	RI	LEACH-Q-1		9.5			
Q North - LEACH-Q-1	LEACH-Q-1	RI	LEACH-Q-1-DUP	LEACH-Q-1	9.5			
Q North - LEACH-Q-1	LEACH-Q-1	RI_S	Leach-Q-1		9.5			
Q North - LEACH-Q-1	LEACH-Q-1	RI_S	LEACH-Q-1-DUP	Leach-Q-1	9.5			
Q North - LEACH-Q-1	LEACH-Q-1	RI_S Phase 1	Leach Q-1		9.5			
R - LEACH-R-1	LEACH-R-1	RI	LEACH-R-1		19.5			
R - LEACH-R-1	LEACH-R-1	RI_S	LEACH-R-1		19.5			
R - LEACH-R-1	LEACH-R-1	RI_S	LEACH-R-1-DUP	LEACH-R-1	19.5			
Shallow Groundwater								
O - AA-O-1-16	AA-O-1	RI	GW-AA-O-1-16		16		11	(d)
O - AA-O-2-13	AA-O-2	RI	GW-AA-O-2-13		13		8	(d)
O - GM-19A	GM-19A	RI_Supplemental Phase 1	GM-19A-D	GM-19A	30	(e)	14.1	(f)
O - GM-19A	GM-19A	RI_Supplemental Phase 1	GM-19A		30	(e)	14.1	(f)
O - SA2-MW-4-S	SA2-MW-4-S	RI_Supplemental Phase 2/3	SA2-MW-4-S		22.21	(e)	12.44	(f)
P - SA2-MW-1-S	SA2-MW-1-S	RI_Supplemental Phase 2/3	SA2-MW-1-S		18.55	(e)	7.56	(f)
P - SA2-MW-2-S	SA2-MW-2-S	RI_Supplemental Phase 2/3	SA2-MW-2-S		25.17	(e)	12.67	(f)
P - SA2-MW-3-S	SA2-MW-3-S	RI_Supplemental Phase 2/3	SA2-MW-3-S		30.55	(e)	14.12	(f)
P - SA2-MW-3-S	SA2-MW-3-S	RI_Supplemental Phase 2/3	SA2-MW-3-S-D	SA2-MW-3-S	30.55	(e)	14.12	(f)
Q Central - SA-Q-5	SA-Q-5	RI_Supplemental Phase 1	SA-Q-5		26	(e)	12.06	(f)
Q South - AA-Q-10-18	AA-Q-10	RI_Supplemental Phase 1	AA-Q-10-18-D	AA-Q-10-18	18		13	(d)
Q South - AA-Q-10-18	AA-Q-10	RI_Supplemental Phase 1	AA-Q-10-18		18		13	(d)
Q South - SA2-MW-10-S	SA2-MW-10-S	RI_Supplemental Phase 2/3	SA2-MW-10-S		20.5	(e)	11.07	(f)
Q South - SA-Q-10	SA-Q-10	RI_Supplemental Phase 1	SA-Q-10-FD	SA-Q-10	16	(e)	10.59	(f)
Q South - SA-Q-10	SA-Q-10	RI_Supplemental Phase 1	SA-Q-10		16	(e)	10.59	(f)
Q South - SA-Q-13	SA-Q-13	RI_Supplemental Phase 1	SA-Q-13		16	(e)	10.12	(f)
Q South - SA-Q-15	SA-Q-15	RI_Supplemental Phase 1	SA-Q-15		19	(e)	14.47	(f)
Q South - SA-Q-16	SA-Q-16	RI_Supplemental Phase 1	SA-Q-16		14.5	(e)	13.59	(f)
Q South - SA-Q-9	SA-Q-9	RI_Supplemental Phase 1	SA-Q-9		15	(e)	9.88	(f)
R - B-24A	B-24A	RI_Supplemental Phase 1	B-24A		22.8	(e)	11.57	(f)
S - SA-S-2	SA-S-2	RI_Supplemental Phase 1	SA-S-2		16	(e)	12.2	(f)
Up - SA2-MW-5-S	SA2-MW-5-S	RI_Supplemental Phase 2/3	SA2-MW-5-S		20.28	(e)	9.55	(f)
Up - UAA-1/OS-1-20	UAA-1/OS-1	RI	GW-UAA-1-20FT		20		15	(d)
Up - UAA-2/OS-2-20	UAA-2/OS-2	RI	GW-UAA-2-20FT		20		15	(d)

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)		Depth to Groundwater (ft)	
Up - UAA-4/OS-4-20	UAA-4/OS-4	RI	GW-AA-UAA-4-20-DUP	GW-AA-UAA-4-20	20		15	(d)
Up - UAA-4/OS-4-20	UAA-4/OS-4	RI	GW-AA-UAA-4-20		20		15	(d)
Up - UAA-6-18	UAA-6	RI_Supplemental Phase 1	UAA-6-18		18		13	(d)
Up - UAA-7-18	UAA-7	RI_Supplemental Phase 1	UAA-7-18		18		13	(d)
Mid Groundwater								
O - AA-CLAY-2-22	AA-CLAY-2	RI_Supplemental Phase 1	AA-CLAY-2-22		22		17	(d)
O - AA-O-3-28	AA-O-3	RI	GW-AA-O-3-28FT		28		23	(d)
O - SA-O-2	SA-O-2	RI_Supplemental Phase 1	SA-O-2		25	(e)	15.69	(f)
O - SA-O-3	SA-O-3	RI_Supplemental Phase 1	SA-O-3		33	(e)	16.65	(f)
O - SA-O-3	SA-O-3	RI_Supplemental Phase 1	SA-O-3-D	SA-O-3	33	(e)	16.65	(f)
O - SA-O-4	SA-O-4	RI_Supplemental Phase 1	SA-O-4		29.5	(e)	15.05	(f)
O North - AA-CLAY-1-26	AA-CLAY-1	RI_Supplemental Phase 1	AA-CLAY-1-26		26		21	(d)
O North - GM-60A	GM-60A	RI_Supplemental Phase 1	GM-60A		28	(e)	15.41	(f)
O South - AA-O-5-22	AA-O-5	RI_Supplemental Phase 1	AA-O-5-22		22		17	(d)
P - AA-P-10-22	AA-P-10	RI_Supplemental Phase 2/3	AA-P-10-22		22		17	(d)
P - AA-P-1-24	AA-P-1	RI	GW-AA-P-1-24FT		24		19	(d)
P - AA-P-1-24	AA-P-1	RI	GW-AA-P-1-24FT-DUP	GW-AA-P-1-24FT	24		19	(d)
P - AA-P-2-24	AA-P-2	RI	GW-AA-P-2-24		24		19	(d)
P - AA-P-3-32	AA-P-3	RI	GW-AA-P-3-32		32		27	(d)
P - AA-P-4-22	AA-P-4	RI_Supplemental Phase 1	AA-P-4-22		22		17	(d)
P - AA-P-5-34	AA-P-5	RI_Supplemental Phase 1	AA-P-5-34		34		29	(d)
P - AA-P-6-30	AA-P-6	RI_Supplemental Phase 1	AA-P-6-30		30		25	(d)
P - AA-P-7-32	AA-P-7	RI_Supplemental Phase 1	AA-P-7-32		32		27	(d)
P - AA-P-9-34	AA-P-9	RI_Supplemental Phase 1	AA-P-9-34		34		29	(d)
P - AA-SLAY-1-34	AA-SLAY-1	RI_Supplemental Phase 1	AA-SLAY-1-34		34		29	(d)
P - OSAA-1-26	OSAA-1	RI_Supplemental Phase 2/3	OSAA-1-26		26		21	(d)
P - SA-P-1	SA-P-1	RI_Supplemental Phase 1	SA-P-1		36	(e)	22.85	(f)
P - SA-P-1	SA-P-1	RI_Supplemental Phase 1	SA-P-1		36	(e)	22.85	(f)
P - SA-P-2	SA-P-2	RI_Supplemental Phase 1	SA-P-2		32	(e)	19.27	(f)
P - SA-P-3	SA-P-3	RI_Supplemental Phase 1	SA-P-3		31	(e)	18.39	(f)
Q Central - SA-Q-6	SA-Q-6	RI_Supplemental Phase 1	SA-Q-6		30	(e)	18.74	(f)
Q Central - SA-Q-7	SA-Q-7	RI_Supplemental Phase 1	SA-Q-7		35	(e)	21.05	(f)
Q North - SA-Q-1	SA-Q-1	RI_Supplemental Phase 1	SA-Q-1		31	(e)	21	(f)
Q South - AA-Q-6-24	AA-Q-6	RI	GW-AA-Q-6-24		24		19	(d)
Q South - AA-Q-6-24	AA-Q-6	RI	GW-AA-Q-6-24-DUP	GW-AA-Q-6-24	24		19	(d)

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)		Depth to Groundwater (ft)	
Q South - AA-Q-7-24	AA-Q-7	RI	GW-AA-Q-7-24		24		19	(d)
Q South - AA-Q-8-24	AA-Q-8	RI	GW-AA-Q-8-24		24		19	(d)
Q South - Piez-7S	Piez-7S	RI_Supplemental Phase 1	PIEZ-7S		20	(e)	18.25	(f)
Q South - Piez-7S	Piez-7S	RI_Supplemental Phase 1	Piez-7S		20	(e)	18.25	(f)
Q South - SA2-MW-9-S	SA2-MW-9-S	RI_Supplemental Phase 2/3	SA2-MW-9-S		30.63	(e)	17.06	(f)
Q South - SA2-MW-9-S	SA2-MW-9-S	RI_Supplemental Phase 2/3	SA2-MW-9-S		30.63	(e)	17.06	(f)
Q South - SA2-MW-9-S	SA2-MW-9-S	RI_Supplemental Phase 2/3	SA2-MW-9-S		30.63	(e)	17.06	(f)
Q South - SA-Q-11	SA-Q-11	RI_Supplemental Phase 1	SA-Q-11		21	(e)	16.23	(f)
Q South - SA-Q-12	SA-Q-12	RI_Supplemental Phase 1	SA-Q-12		22	(e)	16.66	(f)
Q South - SA-Q-14	SA-Q-14	RI_Supplemental Phase 1	SA-Q-14		25	(e)	15.86	(f)
Q South - UAA-10-22	UAA-10	RI_Supplemental Phase 1	UAA-10-22		22		17	(d)
R - AA-R-1-28	AA-R-1	RI	GW-AA-R-1-28		28		23	(d)
R - B-22A	B-22A	RI_Supplemental Phase 1	B-22A		30.3	(e)	15.78	(f)
R - B-25A	B-25A	RI_Supplemental Phase 1	B-25A		30.5	(e)	20.46	(f)
R - B-25A	B-25A	RI_Supplemental Phase 1	B-25A		30.5	(e)	20.46	(f)
R - B-28A	B-28A	RI_Supplemental Phase 1	B-28A		27.8	(e)	17.92	(f)
S - AA-S-1-24	AA-S-1	RI	GW-AA-S-1-24FT		24		19	(d)
S - AA-S-2-28	AA-S-2	RI	GW-AA-S-2-28		28		23	(d)
S - AA-S-3-24	AA-S-3	RI	GW-AA-S-3-24FT		24		19	(d)
S - SA-S-1	SA-S-1	RI_Supplemental Phase 1	SA-S-1		22	(e)	15.04	(f)
S - SA-S-1	SA-S-1	RI_Supplemental Phase 1	SA-S-1-D	SA-S-1	22	(e)	15.04	(f)
S - SA-S-1	SA-S-1	RI_Supplemental Phase 1	SA-S-1		22	(e)	15.04	(f)
Up - UAA-1/OS-1-30	UAA-1/OS-1	RI	GW-UAA-1-30FT		30		25	(d)
Up - UAA-11-22	UAA-11	RI_Supplemental Phase 2/3	UAA-11-22		22		17	(d)
Up - UAA-2/OS-2-30	UAA-2/OS-2	RI	GW-UAA-2-30FT		30		25	(d)
Up - UAA-2/OS-2-30	UAA-2/OS-2	RI	GW-UAA-2-30FT-DUP	GW-UAA-2-30FT	30		25	(d)
Up - UAA-3/OS-3-24	UAA-3/OS-3	RI	GW-UAA-3-24FT-R		24		19	(d)
Up - UAA-3/OS-3-34	UAA-3/OS-3	RI	GW-UAA-3-34FT-R		34		29	(d)
Up - UAA-4/OS-4-30	UAA-4/OS-4	RI	GW-AA-UAA-4-30		30		25	(d)
Up - UAA-5-30	UAA-5	RI_Supplemental Phase 1	UAA-5-30		30		25	(d)
Up - UAA-8-26	UAA-8	RI_Supplemental Phase 1	UAA-8-26		26		21	(d)
Up - UAA-9-30	UAA-9	RI_Supplemental Phase 1	UAA-9-30		30		25	(d)
Surface Soil (b)								
O	SA-O-2	RI_S Phase 1	SA-O-2-SS-0.5		0-0.5			
O	SA-O-3	RI_S Phase 1	SA-O-3-SS-0.5		0-0.5			

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
O	SA-O-4	RI_S Phase 1	SA-O-4-SS-0.5		0-0.5	
O	SOIL-O-2	RI	SOIL-O-2-0.5		0-0.5	
O	SOIL-O-3	RI	SOIL-O-3-0.5		0-0.5	
O North	SA-O-1	RI_S Phase 1	SA-O-1-SS-0.5		0-0.5	
O North	SA-O-1	RI_S Phase 1	SA-O-1-SS-0.5-D	SA-O-1-SS-0.5	0-0.5	
O North	SOIL-O-1	RI	SOIL-O-1-0.5		0-0.5	
O North	Soil-O-4	RI_S Phase 1	SOIL-O-4-SS-0.5		0-0.5	
O North	Soil-O-4	RI_S Phase 1	SOIL-O-4-SS-0.5-D	SOIL-O-4-SS-0.5	0-0.5	
O North	Soil-O-5	RI_S Phase 1	SOIL-O-5-SS-0.5		0-0.5	
O South	Soil-O-6	RI_S Phase 1	SOIL-O-6-SS-0.5		0-0.5	
O South	Soil-O-7	RI_S Phase 1	SOIL-O-7-SS-1.0		0-1	
P	AT-P-2	RI_S Phase 1	AT-P-2-SS-0.5		0-0.5	
P	AT-P-2	RI_S Phase 1	AT-P-2-SS-0.5-D	AT-P-2-SS-0.5	0-0.5	
P	AT-P-3	RI_S Phase 1	AT-P-3-SS-0.5		0-0.5	
P	AT-P-4	RI_S Phase 1	AT-P-4-SS-0.5		0-0.5	
P	AT-P-5	RI_S Phase 1	AT-P-5-SS-0.5		0-0.5	
P	SA-P-1	RI_S Phase 1	SA-P-1-SS-0.5		0-0.5	
P	SA-P-1	RI_S Phase 1	SA-P-1-SS-0.5-D	SA-P-1-SS-0.5	0-0.5	
P	SA-P-2	RI_S Phase 1	SA-P-2-SS-0.5		0-0.5	
P	SA-P-3	RI_S Phase 1	SA-P-3-SS-1.5		0-1.5	
P	SOIL-P-1	RI	SOIL-P-1-0.5		0-0.5	
P	SOIL-P-2	RI	SOIL-P-2-0.5		0-0.5	
P	SOIL-P-3	RI	SOIL-P-3-0.5		0-0.5	
P	SOIL-P-4	RI	SOIL-P-4-0.5		0-0.5	
Q Central	AT-Q-22	RI_S Phase 1	AT-Q-22-SS-0.5		0-0.5	
Q Central	AT-Q-23	RI_S Phase 1	AT-Q-23-SS-0.5		0-0.5	
Q Central	AT-Q-23	RI_S Phase 1	AT-Q-23-SS-1		0-1	
Q Central	AT-Q-24	RI_S Phase 1	AT-Q-24-SS-0.5		0-0.5	
Q Central	AT-Q-26	RI_S Phase 1	AT-Q-26-SS-1.5		0-1.5	
Q Central	AT-Q-27	RI_S Phase 1	AT-Q-27-SS-1		0-1	
Q Central	AT-Q-28	RI_S Phase 1	AT-Q-28-SS-1.5		0-1.5	
Q Central	AT-Q-29	RI_S Phase 1	AT-Q-29-SS-1		0-1	
Q Central	AT-Q-30	RI_S Phase 1	AT-Q-30-SS-1		0-1	
Q Central	AT-Q-30	RI_S Phase 1	AT-Q-30-SS-1-D	AT-Q-30-SS-1	0-1	
Q Central	AT-Q-31	RI_S Phase 1	AT-Q-31-SS-0.5		0-0.5	

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
Q Central	AT-Q-32	RI_S Phase 1	AT-Q-32-SS-2		0-2	
Q Central	SA-Q-2	RI_S Phase 1	SA-Q-2-SS-0.5		0-0.5	
Q Central	SA-Q-5	RI_S Phase 1	SA-Q-5-SS-1.5		0-1.5	
Q Central	SA-Q-6	RI_S Phase 1	SA-Q-6-SS-0.5		0-0.5	
Q Central	SA-Q-7	RI_S Phase 1	SA-Q-7-SS-1		0-1	
Q Central	SA-Q-8	RI_S Phase 1	SA-Q-8-SS-0.5		0-0.5	
Q Central	SOIL-Q-21	RI_S Phase 2/3	Soil-Q-21-SS-0.5		0-0.5	
Q Central	SOIL-Q-6	RI	SOIL-Q-6-0.5		0-0.5	
Q Central	SOIL-Q-7	RI	SOIL-Q-7-0.5		0-0.5	
Q Central	SOIL-Q-7	RI	SOIL-Q-7-0.5-DUP	SOIL-Q-7-0.5	0-0.5	
Q Central	SOIL-Q-8	RI	SOIL-Q-8-0.5		0-0.5	
Q North	AT-Q-19	RI_S Phase 1	AT-Q-19-SS-1.5		0-1.5	
Q North	AT-Q-20	RI_S Phase 1	AT-Q-20-SS-1		0-1	
Q North	AT-Q-21	RI_S Phase 1	AT-Q-21-SS-1		0-1	
Q North	AT-Q-21	RI_S Phase 1	AT-Q-21-SS-1-D	AT-Q-21-SS-1	0-1	
Q North	SA-Q-1	RI_S Phase 1	SA-Q-1-SS-1		0-1	
Q North	SA-Q-3	RI_S Phase 1	SA-Q-3-SS-0.5		0-0.5	
Q North	SA-Q-4	RI_S Phase 1	SA-Q-4-SS-0.5		0-0.5	
Q North	SOIL-Q-1	RI	SOIL-Q-1-0.5FT		0-0.5	
Q North	SOIL-Q-2	RI	SOIL-Q-2-0.5		0-0.5	
Q North	SOIL-Q-3	RI	SOIL-Q-3-0.5		0-0.5	
Q North	SOIL-Q-4	RI	SOIL-Q-4-0.5		0-0.5	
Q North	SOIL-Q-5	RI	SOIL-Q-5-0.5		0-0.5	
Q South	AT-Q-33	RI_S Phase 1	AT-Q-33-SS-0.5		0-0.5	
Q South	AT-Q-34	RI_S Phase 1	AT-Q-34-SS-0.5		0-0.5	
Q South	AT-Q-35	RI_S Phase 1	AT-Q-35-SS-0.5		0-0.5	
Q South	AT-Q-36	RI_S Phase 1	AT-Q-36-SS-0.5		0-0.5	
Q South	SA-Q-10	RI_S Phase 1	SA-Q-10-SS-0.5		0-0.5	
Q South	SA-Q-10	RI_S Phase 1	SA-Q-10-SS-0.5-D	SA-Q-10-SS-0.5	0-0.5	
Q South	SA-Q-11	RI_S Phase 1	SA-Q-11-SS-0.5		0-0.5	
Q South	SA-Q-12	RI_S Phase 1	SA-Q-12-SS-0.5		0-0.5	
Q South	SA-Q-13	RI_S Phase 1	SA-Q-13-SS-1		0-1	
Q South	SA-Q-14	RI_S Phase 1	SA-Q-14-SS-0.5		0-0.5	
Q South	SA-Q-15	RI_S Phase 1	SA-Q-15-SS-0.5		0-0.5	
Q South	SA-Q-16	RI_S Phase 1	SA-Q-16-SS-0.5		0-0.5	

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
Q South	SA-Q-9	RI_S Phase 1	SA-Q-9-SS-0.5		0-0.5	
Q South	SOIL-Q-10	RI	SOIL-Q-10-0.5		0-0.5	
Q South	SOIL-Q-10	RI	SOIL-Q-10-0.5-DUP	SOIL-Q-10-0.5	0-0.5	
Q South	SOIL-Q-11	RI	SOIL-Q-11-0.5		0-0.5	
Q South	SOIL-Q-11	RI	SOIL-Q-11-0.5-DUP	SOIL-Q-11-0.5	0-0.5	
Q South	SOIL-Q-12	RI	SOIL-Q-12-0.5		0-0.5	
Q South	SOIL-Q-13	RI	SOIL-Q-13-0.5		0-0.5	
Q South	SOIL-Q-14	RI	SOIL-Q-14-0.5		0-0.5	
Q South	SOIL-Q-15	RI	SOIL-Q-15-0.5		0-0.5	
Q South	SOIL-Q-16	RI	SOIL-Q-16-0.5		0-0.5	
Q South	SOIL-Q-17	RI	SOIL-Q-17-0.5		0-0.5	
Q South	SOIL-Q-18	RI	SOIL-Q-18-0.5		0-0.5	
Q South	SOIL-Q-19	RI	SOIL-Q-19-0.5		0-0.5	
Q South	SOIL-Q-20	RI	SOIL-Q-20-0.5		0-0.5	
Q South	SOIL-Q-9	RI	SOIL-Q-9-0.5		0-0.5	
R	SOIL-R-1	RI	SOIL-R-1-0.5		0-0.5	
R	SOIL-R-2	RI	SOIL-R-2-0.5		0-0.5	
R	SOIL-R-3	RI	SOIL-R-3-0.5FT		0-0.5	
R	SOIL-R-4	RI	SOIL-R-4-0.5FT		0-0.5	
S	SA-S-1	RI_S Phase 1	SA-S-1-SS-0.5		0-0.5	
S	SA-S-2	RI_S Phase 1	SA-S-2-SS-1.5		0-1.5	
S	SOIL-S-1	RI	SOIL-S-1-0.5		0-0.5	
S	SOIL-S-2	RI	SOIL-S-2-0.5		0-0.5	
Upgradient	OS-5	RI	SOIL-OS-5-0.5ft		0-0.5	
Upgradient	UAA-1/OS-1	RI	SOIL-OS-1-0.5FT		0-0.5	
Upgradient	UAA-2/OS-2	RI	SOIL-OS-2-0.5FT		0-0.5	
Upgradient	UAA-2/OS-2	RI	SOIL-OS-2-0.5FT DUP	SOIL-OS-2-0.5FT	0-0.5	
Upgradient	UAA-3/OS-3	RI	SOIL-OS-3-0.5FT		0-0.5	
Upgradient	UAA-4/OS-4	RI	SOIL-OS-4-0.5FT		0-0.5	
Subsurface Soil (b)						
O	SA-O-2	RI_S Phase 1	SA-O-2-SB-5		0.5-5	
O	SA-O-3	RI_S Phase 1	SA-O-3-SB-4		0.5-4	
O	SA-O-4	RI_S Phase 1	SA-O-4-SB-6		0.5-6	
O	SOIL-O-2	RI	SOIL-O-2-6FT		0.5 - 6	
O	SOIL-O-3	RI	SOIL-O-3-6FT		0.5 - 6	

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
O	SOIL-O-3	RI	SOIL-O-3-6FT-DUP	SOIL-O-3-6FT	0.5 - 6	
O North	SA-O-1	RI_S Phase 1	SA-O-1-SB-3		0.5-3	
O North	SOIL-O-1	RI	SOIL-O-1-6FT		0.5 - 6	
O North	Soil-O-4	RI_S Phase 1	SOIL-O-4-SB-5.5		0.5-5.5	
O North	Soil-O-5	RI_S Phase 1	SOIL-O-5-SB-5.5		0.5-5.5	
O South	Soil-O-6	RI_S Phase 1	SOIL-O-6-SB-5		0.5-5	
O South	Soil-O-7	RI_S Phase 1	SOIL-O-7-SB-6.0		0.5-6	
P	AT-P-2	RI_S Phase 1	AT-P-2-SB-6		0.5-6	
P	AT-P-3	RI_S Phase 1	AT-P-3-SB-6		0.5-6	
P	AT-P-3	RI_S Phase 1	AT-P-3-WS-10		6-10	
P	AT-P-4	RI_S Phase 1	AT-P-4-SB-4		0.5-4	
P	AT-P-4	RI_S Phase 1	AT-P-4-SB-4-D	AT-P-4-SB-4	0.5-4	
P	AT-P-5	RI_S Phase 1	AT-P-5-SB-6		0.5-6	
P	SA-P-1	RI_S Phase 1	SA-P-1-SB-6		0.5-6	
P	SA-P-2	RI_S Phase 1	SA-P-2-SB-5		0.5-5	
P	SA-P-3	RI_S Phase 1	SA-P-3-SB-4		0.5-4	
P	SOIL-P-1	RI	SOIL-P-1-6FT		0.5 - 6	
P	SOIL-P-2	RI	SOIL-P-2-6FT		0.5 - 6	
P	SOIL-P-3	RI	SOIL-P-3-6FT		0.5 - 6	
P	SOIL-P-4	RI	SOIL-P-4-6FT		0.5 - 6	
Q Central	AT-Q-22	RI_S Phase 1	AT-Q-22-SB-6		0.5-6	
Q Central	AT-Q-23	RI_S Phase 1	AT-Q-23-SB-6		0.5-6	
Q Central	AT-Q-24	RI_S Phase 1	AT-Q-24-SB-6		0.5-6	
Q Central	AT-Q-26	RI_S Phase 1	AT-Q-26-SB-6		0.5-6	
Q Central	AT-Q-27	RI_S Phase 1	AT-Q-27-SB-6		0.5-6	
Q Central	AT-Q-28	RI_S Phase 1	AT-Q-28-SB-6		0.5-6	
Q Central	AT-Q-28	RI_S Phase 1	AT-Q-28-SB-6-DUP	AT-Q-28-SB-6	0.5-6	
Q Central	AT-Q-29	RI_S Phase 1	AT-Q-29-SB-6		0.5-6	
Q Central	AT-Q-30	RI_S Phase 1	AT-Q-30-SB-6		0.5-6	
Q Central	AT-Q-31	RI_S Phase 1	AT-Q-31-SB-6		0.5-6	
Q Central	AT-Q-32	RI_S Phase 1	AT-Q-32-SB-6		0.5-6	
Q Central	SA-Q-2	RI_S Phase 1	SA-Q-2-SB-4		0.5-4	
Q Central	SA-Q-5	RI_S Phase 1	SA-Q-5-SB-6		0.5-6	
Q Central	SA-Q-6	RI_S Phase 1	SA-Q-6-SB-6		0.5-6	
Q Central	SA-Q-7	RI_S Phase 1	SA-Q-7-SB-5		0.5-5	

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SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
Q Central	SA-Q-7	RI_S Phase 1	SA-Q-7-SB-5-D	SA-Q-7-SB-5	0.5-5	
Q Central	SA-Q-8	RI_S Phase 1	SA-Q-8-SB-5		0.5-5	
Q Central	SOIL-Q-21	RI_S Phase 2/3	Soil-Q-21-SB-4'		0.5-4	
Q Central	SOIL-Q-6	RI	SOIL-Q-6-6		0.5 - 6	
Q Central	SOIL-Q-7	RI	SOIL-Q-7-6		0.5 - 6	
Q Central	SOIL-Q-8	RI	SOIL-Q-8-6		0.5 - 6	
Q Central	SOIL-Q-8	RI	SOIL-Q-8-6-DUP	SOIL-Q-8-6	0.5 - 6	
Q North	AT-Q-19	RI_S Phase 1	AT-Q-19-SB-6		0.5-6	
Q North	AT-Q-19	RI_S Phase 1	AT-Q-19-SB-6-D	AT-Q-19-SB-6	0.5-6	
Q North	AT-Q-20	RI_S Phase 1	AT-Q-20-SB-6		0.5-6	
Q North	AT-Q-21	RI_S Phase 1	AT-Q-21-SB-6		0.5-6	
Q North	SA-Q-1	RI_S Phase 1	SA-Q-1-SB-6		0.5-6	
Q North	SA-Q-3	RI_S Phase 1	SA-Q-3-SB-6		0.5-6	
Q North	SA-Q-3	RI_S Phase 1	SA-Q-3-SB-6-D	SA-Q-3-SB-6	0.5-6	
Q North	SA-Q-4	RI_S Phase 1	SA-Q-4-SB-6		0.5-6	
Q North	SOIL-Q-1	RI	SOIL-Q-1-6FT		0.5 - 6	
Q North	SOIL-Q-2	RI	SOIL-Q-2-6FT		0.5 - 6	
Q North	SOIL-Q-3	RI	SOIL-Q-3-6		0.5 - 6	
Q North	SOIL-Q-4	RI	SOIL-Q-4-6		0.5 - 6	
Q North	SOIL-Q-5	RI	SOIL-Q-5-6FT		0.5 - 6	
Q South	AT-Q-33	RI_S Phase 1	AT-Q-33-SB-5		0.5-5	
Q South	AT-Q-34	RI_S Phase 1	AT-Q-34-SB-6		0.5-6	
Q South	AT-Q-35	RI_S Phase 1	AT-Q-35-SB-6		0.5-6	
Q South	AT-Q-36	RI_S Phase 1	AT-Q-36-SB-6		0.5-6	
Q South	SA-Q-10	RI_S Phase 1	SA-Q-10-SB-2		0.5-2	
Q South	SA-Q-11	RI_S Phase 1	SA-Q-11-SB-2		0.5-2	
Q South	SA-Q-12	RI_S Phase 1	SA-Q-12-SB-6		0.5-6	
Q South	SA-Q-13	RI_S Phase 1	SA-Q-13-SB-2		1-2	
Q South	SA-Q-14	RI_S Phase 1	SA-Q-14-SB-5		0.5-5	
Q South	SA-Q-15	RI_S Phase 1	SA-Q-15-SB-2		0.5-2	
Q South	SA-Q-16	RI_S Phase 1	SA-Q-16-SB-3		0.5-3	
Q South	SA-Q-9	RI_S Phase 1	SA-Q-9-SB-5		0.5-5	
Q South	SA-Q-9	RI_S Phase 1	SA-Q-9-SB-5-D	SA-Q-9-SB-5	0.5-5	
Q South	SOIL-Q-10	RI	SOIL-Q-10-6		0.5 - 6	
Q South	SOIL-Q-11	RI	SOIL-Q-11-6		0.5 - 6	

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SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
Q South	SOIL-Q-12	RI	SOIL-Q-12-6		0.5 - 6	
Q South	SOIL-Q-9	RI	SOIL-Q-9-6		0.5 - 6	
R	SOIL-R-1	RI	SOIL-R-1-6FT		0.5 - 6	
R	SOIL-R-2	RI	SOIL-R-2-6		0.5 - 6	
R	SOIL-R-3	RI	SOIL-R-3-6FT		0.5 - 6	
R	SOIL-R-4	RI	SOIL-R-4-6FT		0.5 - 6	
S	SA-S-1	RI_S Phase 1	SA-S-1-SB-5		0.5-5	
S	SA-S-2	RI_S Phase 1	SA-S-2-SB-4		0.5-4	
S	SOIL-S-1	RI	SOIL-S-1-6FT		0.5 - 6	
S	SOIL-S-2	RI	SOIL-S-2-6FT		0.5 - 6	
Upgradient	OS-5	RI	SOIL-OS-5-6ft		0.5 - 6	
Upgradient	UAA-1/OS-1	RI	SOIL-OS-1-6FT		0.5 - 6	
Upgradient	UAA-2/OS-2	RI	SOIL-OS-2-6FT		0.5 - 6	
Upgradient	UAA-2/OS-2	RI	SOIL-OS-2-6FT DUP	SOIL-OS-2-6FT	0.5 - 6	
Upgradient	UAA-3/OS-3	RI	SOIL-OS-3-6FT		0.5 - 6	
Upgradient	UAA-4/OS-4	RI	SOIL-OS-4-6FT		0.5 - 6	
Upgradient	UAA-4/OS-4	RI	SOIL-OS-4-6FT-DUP	SOIL-OS-4-6FT	0.5 - 6	
Waste (b)						
O	SA-O-2	RI_S Phase 1	SA-O-2-WS-9		0-9	
O	SA-O-2	RI_S Phase 1	SA-O-2-WS-9-D	SA-O-2-WS-9	0-9	
O	SA-O-3	RI_S Phase 1	SA-O-3-WS-9		0-9	
O	WASTE-O-2	RI	WASTE-O-2-7FT		0 - 7	
O	WASTE-O-2	RI	WASTE-O-2-COMP		0 - 7	
O	WASTE-O-3	RI	WASTE-O-3-9FT		0 - 9	
O	WASTE-O-3	RI	WASTE-O-3-COMP		0 - 9	
O North	WASTE-O-1	RI	WASTE-O-1-4FT		0 - 4	
O North	WASTE-O-1	RI	WASTE-O-1-COMP		0 - 4	
P	AT-P-2	RI_S Phase 1	AT-P-2-WS-10		0-10	
P	AT-P-4	RI_S Phase 1	AT-P-4-NAPL		0 - 4	
P	AT-P-5	RI_S Phase 1	AT-P-5-WS-12		0-12	
P	LEACH-P-1	RI_S Phase 2/3	LEACH-P-1 (DNAPL)		20.5 - 22	
P	LEACH-P-1	RI_S Phase 2/3	LEACH-P-1 (LNAPL)		20.5 - 22	
P	SA-P-1	RI_S Phase 1	SA-P-1-WS-8		0-8	
P	SA-P-2	RI_S Phase 1	SA-P-2-WS-9		0-9	
P	SA-P-3	RI_S Phase 1	SA-P-3-WS-14		0-14	

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
P	WASTE-P-1	RI	WASTE-P-1-15FT		0 - 15	
P	WASTE-P-1	RI	WASTE-P-1-COMP		0 - 15	
P	WASTE-P-2	RI	WASTE-P-2-6FT		0 - 6	
P	WASTE-P-2	RI	WASTE-P-2-COMP		0 - 6	
P	WASTE-P-3	RI	WASTE-P-3-22FT		0 - 22	
P	WASTE-P-3	RI	WASTE-P-3-COMP		0 - 22	
P	WASTE-P-4	RI	WASTE-P-4-17		0 - 17	
P	WASTE-P-4	RI	WASTE-P-4-COMP		0 - 17	
Q Central	AT-Q-25	RI_S Phase 1	AT-Q-25-WS-9		0-9	
Q Central	AT-Q-29	RI_S Phase 1	AT-Q-28-WS-16		0-16	
Q Central	AT-Q-31	RI_S Phase 1	AT-Q-31-WS-12		0-12	
Q Central	SA-Q-6	RI_S Phase 1	SA-Q-6-WS-16		0-16	
Q Central	WASTE-Q-6	RI	WASTE-Q-6-15		0 - 15	
Q Central	WASTE-Q-6	RI	WASTE-Q-6-15-DUP	WASTE-Q-6-15	0 - 15	
Q Central	WASTE-Q-6	RI	WASTE-Q-6-COMP		0 - 15	
Q Central	WASTE-Q-6	RI	WASTE-Q-6-COMP-DUP	WASTE-Q-6-COMP	0 - 15	
Q Central	WASTE-Q-7	RI	WASTE-Q-7-9		0 - 9	
Q Central	WASTE-Q-7	RI	WASTE-Q-7-COMP		0 - 9	
Q Central	WASTE-Q-8	RI	WASTE-Q-8-7		0 - 7	
Q Central	WASTE-Q-8	RI	WASTE-Q-8-COMP		0 - 7	
Q North	AT-Q-21	RI_S Phase 1	AT-Q-21-WS-8		0-8	
Q North	AT-Q-21	RI_S Phase 1	AT-Q-21-WS-8-D	AT-Q-21-WS-8	0-8	
Q North	SA-Q-3	RI_S Phase 1	SA-Q-3-WS-12		0-12	
Q North	WASTE-Q-1	RI	WASTE-Q-1-5FT		0 - 5	
Q North	WASTE-Q-1	RI	WASTE-Q-1-COMP		0 - 5	
Q North	WASTE-Q-2	RI	WASTE-Q-2-8FT		0 - 8	
Q North	WASTE-Q-2	RI	WASTE-Q-2-COMP		0 - 8	
Q North	WASTE-Q-3	RI	WASTE-Q-3-6FT		0 - 6	
Q North	WASTE-Q-3	RI	WASTE-Q-3-COMP		0 - 6	
Q North	WASTE-Q-4	RI	WASTE-Q-4-9		0 - 9	
Q North	WASTE-Q-4	RI	WASTE-Q-4-COMP		0 - 9	
Q North	WASTE-Q-5	RI	WASTE-Q-5-8		0 - 8	
Q North	WASTE-Q-5	RI	WASTE-Q-5-COMP		0 - 8	
Q South	AT-Q-35	RI_S Phase 1	AT-Q-35-WS-8		0-8	
Q South	WASTE-Q-10	RI	WASTE-Q-10-8		0 - 8	

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SAUGET AREA 2 RI/FS
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Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
Q South	WASTE-Q-10	RI	WASTE-Q-10-8-DUP	WASTE-Q-10-8	0 - 8	
Q South	WASTE-Q-10	RI	WASTE-Q-10-COMP		0 - 8	
Q South	WASTE-Q-10	RI	WASTE-Q-10-COMP-DUP	WASTE-Q-10-COMP	0 - 8	
Q South	WASTE-Q-11	RI	WASTE-Q-11-8		0 - 8	
Q South	WASTE-Q-11	RI	WASTE-Q-11-COMP		0 - 8	
Q South	WASTE-Q-12	RI	WASTE-Q-12-4		0 - 4	
Q South	WASTE-Q-12	RI	WASTE-Q-12-4-DUP	WASTE-Q-12-4	0 - 4	
Q South	WASTE-Q-12	RI	WASTE-Q-12-COMP		0 - 4	
Q South	WASTE-Q-12	RI	WASTE-Q-12-COMP-DUP	WASTE-Q-12-COMP	0 - 4	
Q South	WASTE-Q-9	RI	WASTE-Q-9-8		0 - 8	
Q South	WASTE-Q-9	RI	WASTE-Q-9-COMP		0 - 8	
R	WASTE-R-1	RI	WASTE-R-1-19FT		0 - 19	
R	WASTE-R-1	RI	WASTE-R-1-COMP		0 - 19	
R	WASTE-R-2	RI	WASTE-R-2-20FT		0 - 20	
R	WASTE-R-2	RI	WASTE-R-2-COMP		0 - 20	
R	WASTE-R-3	RI	WASTE-R-3-22FT		0 - 22	
R	WASTE-R-3	RI	WASTE-R-3-COMP		0 - 22	
R	WASTE-R-4	RI	WASTE-R-4-24FT		0 - 24	
R	WASTE-R-4	RI	WASTE-R-4-COMP		0 - 24	
S	SA-S-1	RI_S Phase 1	SA-S-1-WS-9		0-9	
S	WASTE-S-1	RI	WASTE-S-1-6FT		0 - 6	
S	WASTE-S-1	RI	WASTE-S-1-COMP		0 - 6	
S	WASTE-S-2	RI	WASTE-S-2-6FT		0 - 6	
S	WASTE-S-2	RI	WASTE-S-2-COMP		0 - 6	
Deep Subsurface Soil (c)						
Q North	NAPL-A	RI_S Phase 2/3	NAPL-A-(105-110)		105-110	
Q North	NAPL-A	RI_S Phase 2/3	NAPL-A-(75-80)		75-80	
Q North	NAPL-A	RI_S Phase 2/3	NAPL-A-(95-100)		95-100	
Q North	NAPL-A	RI_S Phase 2/3	NAPL-A-138		138	
Q North	NAPL-A	RI_S Phase 2/3	NAPL-A-40		40	
Q North	NAPL-B	RI_S Phase 2/3	NAPL-B-(110-115)		110-115	
Q North	NAPL-B	RI_S Phase 2/3	NAPL-B-(20-25)		20-25	
Q North	NAPL-B	RI_S Phase 2/3	NAPL-B-(80-85)		80-85	
Q North	NAPL-B	RI_S Phase 2/3	NAPL-B-138		138	
Q North	NAPL-B	RI_S Phase 2/3	NAPL-B-139		139	

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HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
Q North	NAPL-B	RI_S Phase 2/3	NAPL-B-34		34	
Q North	NAPL-C	RI_S Phase 2/3	NAPL-C-(100-105)		100-105	
Q North	NAPL-C	RI_S Phase 2/3	NAPL-C-(20-25)		20-25	
Q North	NAPL-C	RI_S Phase 2/3	NAPL-C-(65-70)		65-70	
Q North	NAPL-C	RI_S Phase 2/3	NAPL-C-139		139	
Q North	NAPL-C	RI_S Phase 2/3	NAPL-C-31		31	
Q North	NAPL-C	RI_S Phase 2/3	NAPL-C-31-D	NAPL-C-31	31	
Sediment						
Q - South - Pond (Large)	Large Pond	RI	P11S		--	
Q - South - Pond (Large)	Large Pond	RI	P12S	P11S	--	
Q - South - Pond (Large)	Large Pond 1	RI_S	LPond-1-S		--	
Q - South - Pond (Large)	Large Pond 2	RI_S	LPond-2-S		--	
Q - South - Pond (Large)	Large Pond 3	RI_S	LPond-3-S		--	
Q - South - Pond (Small)	Small Pond 1	RI_S	SPond-1-S		--	
Q - South - Pond (Small)	Small Pond 2	RI_S	SPond-2-S		--	
Q - South - Pond (Small)	Small Pond 3	RI_S	SPond-3-Dup	SPond-3-S	--	
Q - South - Pond (Small)	Small Pond 3	RI_S	SPond-3-S		--	
River	PDA9A	RI_S Phase 1	SED-SA2-GMCS-PDA9A		--	
River	R2AD	RI	R2AD1S		--	
River	R2AM	RI	R2AM1S		--	
River	R2AM	RI	R2AM2S	R2AM1S	--	
River	R2AU	RI	R2AU1S		--	
River	R2BD	RI	R2BD1S		--	
River	R2BM	RI	R2BM1S		--	
River	R2BU	RI	R2BU1S		--	
River	R2CM	RI	R2CM1S		--	
River	R3AD	RI	R3AD1S		--	
River	R3AM	RI	R3AM1S		--	
River	R3AM	RI_S Phase 1	SED-SA2-GMCS-R3AM		--	
River	R3AU	RI	R3AU1S		--	
River	R3BD	RI	R3BD1S		--	
River	R3BM	RI	R3BM1S		--	
River	R3BM	RI_S Phase 1	SED-SA2-GMCS-R3BM		--	
River	R3BU	RI	R3BU1S		--	
River	R3CM	RI	R3CM1S		--	

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
River	R3CM	RI_S Phase 1	SED-SA2-GMCS-R3CM		--	
River	R4AD	RI	R4AD1S		--	
River	R4AM	RI	R4AM1S		--	
River	R4AU	RI	R4AU1S		--	
River	R4BD	RI	R4BD1S		--	
River	R4BM	RI	R4BM1S		--	
River	R4BU	RI	R4BU1S		--	
River	R4CM	RI	R4CM1S		--	
River	R4CM	RI	R4CM2S	R4CM1S	--	
River	R5AM	RI	R5AM1S		--	
River	R5AN	RI	R5AN1S		--	
River	R5AU	RI	R5AU1S		--	
River	R5BM	RI	R5BM1S		--	
River	R5BN	RI	R5BN1S		--	
River	R5BU	RI	R5BU1S		--	
River	R5CM	RI	R5CM1S		--	
River	R6AD	RI	R6AD1S		--	
River	R6AM	RI	R6AM1S		--	
River	R6AM	RI	R6AM2S	R6AM1S	--	
River	R6AU	RI	R6AU1S		--	
River	R6BM	RI	R6BM1S		--	
River	R6BU	RI	R6BU1S		--	
River	R6CM	RI	R6CM1S		--	
River	Station 2 - PDA2	RI_S	SED-SA2-GMCS-2		--	
River	Station 2 - PDA2	RI_S Phase 1	DUP SED	SED-SA2-GMCS-PDA2	--	
River	Station 2 - PDA2	RI_S Phase 1	SED-SA2-GMCS-PDA2		--	
River	Station 2 - PDA2	RI_S Phase 2/3	SED-SA2-GMCS-2		--	
River	Station 2 - PDA2	RI_S Phase 2/3	SED-SA2-GMCS-STATION 2		--	
River	Station 3 - PDA3	RI_S Phase 1	SED-SA2-GMCS-PDA3		--	
River	Station 3 - PDA3	RI_S Phase 2/3	SED-SA2-GMCS-3		--	
River	Station 3 - PDA3	RI_S Phase 2/3	SED-SA2-GMCS-STATION 3		--	
River	Station 4 - PDA4	RI_S Phase 1	SED-SA2-GMCS-PDA4		--	
River	Station 4 - PDA4	RI_S Phase 2/3	SED-SA2-GMCS-4		--	
River	Station 4 - PDA4	RI_S Phase 2/3	SED-SA2-GMCS-STATION 4		--	
River	Station 5 - PDA5	RI_S	SED-SA2-GMCS-5		--	

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
River	Station 5 - PDA5	RI_S Phase 1	SED-SA2-GMCS-PDA5		--	
River	Station 5 - PDA5	RI_S Phase 2/3	SED-SA2-GMCS-5		--	
River	Station 5 - PDA5	RI_S Phase 2/3	SED-SA2-GMCS-STATION 5		--	
River	Station 5 - PDA5	RI_S Phase 2/3	SED-SA2-GMCS-STATION 5 DUP	SED-SA2-GMCS-STATION 5	--	
River	Station 9 - PDA9	RI_S	SED-SA2-GMCS-9		--	
River	Station 9 - PDA9	RI_S Phase 1	SED-SA2-GMCS-PDA9		--	
River	Station 9 - PDA9	RI_S Phase 2/3	SED-SA2-GMCS-9		--	
River	Station 9 - PDA9	RI_S Phase 2/3	SED-SA2-GMCS-STATION 9		--	
Upgradient	R1AD	RI	R1AD1S		--	
Upgradient	R1AM	RI	R1AM1S		--	
Upgradient	R1AU	RI	R1AU1S		--	
Upgradient	R1BD	RI	R1BD1S		--	
Upgradient	R1BM	RI	R1BM1S		--	
Upgradient	R1BM	RI	R1BM2S	R1BM1S	--	
Upgradient	R1BU	RI	R1BU1S		--	
Upgradient	R1CM	RI	R1CM1S		--	
Surface Water						
Q - South - Pond (Large)	Large Pond	RI	P11W		--	
Q - South - Pond (Large)	Large Pond	RI	P12W	P11W	--	
Q - South - Pond (Large)	Large Pond 1	RI_S	LPond-1-W		--	
Q - South - Pond (Large)	Large Pond 2	RI_S	LPond-2-W		--	
Q - South - Pond (Large)	Large Pond 3	RI_S	LPond-3-W		--	
Q - South - Pond (Small)	Small Pond 1	RI_S	SPond-1-W		--	
Q - South - Pond (Small)	Small Pond 2	RI_S	SPond-2-W		--	
Q - South - Pond (Small)	Small Pond 2	RI_S	SPond-2-W-Dup	SPond-2-W	--	
Q - South - Pond (Small)	Small Pond 3	RI_S	SPond-3-W		--	
River	R2AD	RI	R2AD1W		--	
River	R2AM	RI	R2AM1W		--	
River	R2AM	RI	R2AM2W	R2AM1W	--	
River	R2AU	RI	R2AU1W		--	
River	R2BD	RI	R2BD1W		--	
River	R2BM	RI	R2BM1W		--	
River	R2BU	RI	R2BU1W		--	
River	R2CM	RI	R2CM1W		--	
River	R3AD	RI	R3AD1W		--	

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
River	R3AM	RI	R3AM1W		--	
River	R3AM	RI_S Phase 1	SW-SA2-GMCS-R3AM		--	
River	R3AU	RI	R3AU1W		--	
River	R3BD	RI	R3BD1W		--	
River	R3BM	RI	R3BM1W		--	
River	R3BM	RI_S Phase 1	SW-SA2-GMCS-R3BM		--	
River	R3BU	RI	R3BU1W		--	
River	R3CM	RI	R3CM1W		--	
River	R3CM	RI_S Phase 1	SW-SA2-GMCS-R3CM		--	
River	R4AD	RI	R4AD1W		--	
River	R4AM	RI	R4AM1W		--	
River	R4AU	RI	R4AU1W		--	
River	R4BD	RI	R4BD1W		--	
River	R4BM	RI	R4BM1W		--	
River	R4BU	RI	R4BU1W		--	
River	R4CM	RI	R4CM1W		--	
River	R4CM	RI	R4CM2W	R4CM1W	--	
River	R5AD	RI	R5AD1W		--	
River	R5AM	RI	R5AM1W		--	
River	R5AN	RI	R5AN1W		--	
River	R5AU	RI	R5AU1W		--	
River	R5BD	RI	R5BD1W		--	
River	R5BM	RI	R5BM1W		--	
River	R5BN	RI	R5BN1W		--	
River	R5BU	RI	R5BU1W		--	
River	R5CM	RI	R5CM1W		--	
River	R6AD	RI	R6AD1W		--	
River	R6AM	RI	R6AM1W		--	
River	R6AM	RI	R6AM2W	R6AM1W	--	
River	R6AU	RI	R6AU1W		--	
River	R6BM	RI	R6BM1W		--	
River	R6BU	RI	R6BU1W		--	
River	R6CM	RI	R6CM1W		--	
River	Station 2 - PDA2	RI_S	SW-SA2-GMCS-2		--	
River	Station 2 - PDA2	RI_S Phase 1	DUP SW	SW-SA2-GMCS-PDA2	--	

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
River	Station 2 - PDA2	RI_S Phase 1	SW-SA2-GMCS-PDA2		--	
River	Station 2 - PDA2	RI_S Phase 2/3	SW-SA2-GMCS-2		--	
River	Station 2 - PDA2	RI_S Phase 2/3	SW-SA2-GMCS-STATION 2		--	
River	Station 3 - PDA3	RI_S	SW-SA2-GMCS-3		--	
River	Station 3 - PDA3	RI_S Phase 1	SW-SA2-GMCS-PDA3		--	
River	Station 3 - PDA3	RI_S Phase 2/3	SW-SA2-GMCS-3		--	
River	Station 3 - PDA3	RI_S Phase 2/3	SW-SA2-GMCS-STATION 3		--	
River	Station 4 - PDA4	RI_S	SW-SA2-GMCS-4		--	
River	Station 4 - PDA4	RI_S Phase 1	SW-SA2-GMCS-PDA4		--	
River	Station 4 - PDA4	RI_S Phase 2/3	SW-SA2-GMCS-4		--	
River	Station 4 - PDA4	RI_S Phase 2/3	SW-SA2-GMCS-STATION 4		--	
River	Station 5 - PDA5	RI_S	SW-SA2-GMCS-5		--	
River	Station 5 - PDA5	RI_S Phase 1	SW-SA2-GMCS-PDA5		--	
River	Station 5 - PDA5	RI_S Phase 2/3	SW-SA2-GMCS-5		--	
River	Station 5 - PDA5	RI_S Phase 2/3	SW-SA2-GMCS-STATION 5		--	
River	Station 5 - PDA5	RI_S Phase 2/3	SW-SA2-GMCS-STATION 5 DUP	SW-SA2-GMCS-STATION 5	--	
River	Station 9 - PDA9	RI_S	SW-SA2-GMCS-9		--	
River	Station 9 - PDA9	RI_S Phase 1	SW-SA2-GMCS-PDA9		--	
River	Station 9 - PDA9	RI_S Phase 2/3	SW-SA2-GMCS-9		--	
River	Station 9 - PDA9	RI_S Phase 2/3	SW-SA2-GMCS-STATION 9		--	
River	Station 9 - PDA9A	RI_S Phase 1	SW-SA2-GMCS-PDA9A		--	
Upgradient	R1AD	RI	R1AD1W		--	
Upgradient	R1AM	RI	R1AM1W		--	
Upgradient	R1AU	RI	R1AU1W		--	
Upgradient	R1BD	RI	R1BD1W		--	
Upgradient	R1BM	RI	R1BM1W		--	
Upgradient	R1BM	RI	R1BM2W	R1BM1W	--	
Upgradient	R1BU	RI	R1BU1W		--	
Upgradient	R1CM	RI	R1CM1W		--	
Seep						
Q	SEEP-Q-1	RI	SEEP-Q-1		--	
Q	SEEP-Q-2	RI	SEEP-Q-2		--	
R	SEEP-R-1	RI	SEEP-R-1		--	
Fish Fillet						
Pond (Site Q) (Black Bullhead	Black Bullhead	RI	Black Bullhead - Fillets		--	

TABLE A-1
SAMPLES USED IN COPC SELECTION
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	Location	Event	Sample	Parent Sample (a)	Sample Depth (ft bgs)	Depth to Groundwater (ft)
Pond (Site Q) (Carp Fillet)	Carp	RI	Carp - Fillets		--	
River-DDA	Buffalo	RI	DDA DA-1 Buffalo Fillet		--	
River-PDA	Buffalo	RI	PDA Buffalo Fillet Comp#1		--	
River-PDA	Buffalo	RI	PDA Buffalo Fillet Comp#2		--	
River-PDA	Buffalo	RI	PDA Buffalo Fillet Comp#3		--	
River-UDA	Buffalo	RI	UDA Buffalo Fillet		--	

Notes:
DDA - Downstream Discharge Area (Mississippi River).
ft bgs - feet below ground surface
PDA - Plume Discharge Area (Mississippi River).
RI - Remedial Investigation.
RI_S - Supplemental Remedial Investigation.
UDA - Upstream Discharge Area (Mississippi River).
(a) - Parent of duplicate sample. Duplicates are averaged prior to running statistics, and are treated as one sample in deriving frequency of detection, minimum, maximum, mean, and upper confidence levels.
(b) - Combined soil statistics include surface soil, subsurface soil, and waste samples.
(c) - Samples collected below the depth of assumed human contact are evaluated separately.
(d) - Depth to water for alluvial aquifer locations is estimated as five feet above sample depth.
(e) - Sample depth estimated at the midpoint of the screened interval as presented on Table 4-5 of the Remedial Investigation Report (URS, 2008).
(f) - Average of depth to groundwater measurements as presented on Table 4-5 of the Remedial Investigation Report (URS, 2008).

TABLE A-2
MATCHING OF SITE GROUNDWATER LOCATIONS TO UPGRADIENT GROUNDWATER LOCATIONS
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site Location	Corresponding Background Location	Medium
O North - AA-CLAY-1-26	Up - UAA-2/OS-2-30	Mid Groundwater
O - AA-CLAY-2-22	Up - UAA-2/OS-2-20	Mid Groundwater
O - AA-O-1-16	Up - UAA-2/OS-2-20	Shallow Groundwater
O - AA-O-2-13	Up - UAA-2/OS-2-20	Shallow Groundwater
O - AA-O-3-28	Up - UAA-2/OS-2-30	Mid Groundwater
O South - AA-O-5-22	Up - UAA-3/OS-3-24	Mid Groundwater
P - AA-P-1-24	Up - UAA-1/OS-1-20	Mid Groundwater
P - AA-P-10-22	Up - UAA-1/OS-1-20	Mid Groundwater
P - AA-P-2-24	Up - UAA-1/OS-1-20	Mid Groundwater
P - AA-P-3-32	Up - UAA-1/OS-1-30	Mid Groundwater
P - AA-P-4-22	Up - UAA-1/OS-1-20	Mid Groundwater
P - AA-P-5-34	Up - UAA-1/OS-1-30	Mid Groundwater
P - AA-P-6-30	Up - UAA-1/OS-1-30	Mid Groundwater
P - AA-P-7-32	Up - UAA-5-30	Mid Groundwater
P - AA-P-9-34	Up - UAA-1/OS-1-30	Mid Groundwater
Q South - AA-Q-10-18	Up - UAA-4/OS-4-20	Shallow Groundwater
Q South - AA-Q-6-24	Up - UAA-4/OS-4-20	Mid Groundwater
Q South - AA-Q-7-24	Up - UAA-4/OS-4-20	Mid Groundwater
Q South - AA-Q-8-24	Up - UAA-4/OS-4-20	Mid Groundwater
R - AA-R-1-28	Up - UAA-2/OS-2-30	Mid Groundwater
S - AA-S-1-24	Up - UAA-3/OS-3-24	Mid Groundwater
S - AA-S-2-28	Up - UAA-3/OS-3-24	Mid Groundwater
S - AA-S-3-24	Up - UAA-3/OS-3-24	Mid Groundwater
P - AA-SLAY-1-34	Up - UAA-1/OS-1-30	Mid Groundwater
R - B-22A	Up - UAA-2/OS-2-30	Mid Groundwater
R - B-24A	Up - UAA-2/OS-2-20	Mid Groundwater
R - B-25A	Up - UAA-2/OS-2-30	Mid Groundwater
R - B-28A	Up - UAA-2/OS-2-30	Mid Groundwater
O - GM-19A	Up - UAA-2/OS-2-30	Mid Groundwater
O North - GM-60A	Up - UAA-2/OS-2-30	Mid Groundwater
P - OSAA-1-26	Up - UAA-5-30	Mid Groundwater
Q South - Piez-7M	Up - UAA-4/OS-4-30	Mid Groundwater
Q South - Piez-7S	Up - UAA-4/OS-4-20	Shallow Groundwater
Q South - SA2-MW-10-M	Up - UAA-4/OS-4-30	Mid Groundwater
Q South - SA2-MW-10-S	Up - UAA-4/OS-4-20	Shallow Groundwater
P - SA2-MW-1-M	Up - UAA-1/OS-1-40	Mid Groundwater
P - SA2-MW-1-S	Up - UAA-1/OS-1-20	Shallow Groundwater
P - SA2-MW-2-M	Up - UAA-1/OS-1-40	Mid Groundwater
P - SA2-MW-2-S	Up - UAA-1/OS-1-20	Shallow Groundwater
P - SA2-MW-3-M	Up - UAA-1/OS-1-40	Mid Groundwater
P - SA2-MW-3-S	Up - UAA-1/OS-1-20	Shallow Groundwater
O - SA2-MW-4-M	Up - UAA-2/OS-2-40	Mid Groundwater
O - SA2-MW-4-S	Up - UAA-2/OS-2-20	Shallow Groundwater
Q Central - SA2-MW-6-M	Up - UAA-8-26	Mid Groundwater
Q Central - SA2-MW-7-M	Up - UAA-9-30	Mid Groundwater
Q South - SA2-MW-9-M	Up - UAA-4/OS-4-30	Mid Groundwater
Q South - SA2-MW-9-S	Up - UAA-4/OS-4-20	Shallow Groundwater
O North - SA-O-1	Up - UAA-2/OS-2-30	Mid Groundwater
O - SA-O-2	Up - UAA-2/OS-2-20	Mid Groundwater
O - SA-O-3	Up - UAA-2/OS-2-30	Mid Groundwater
O - SA-O-4	Up - UAA-2/OS-2-30	Mid Groundwater
P - SA-P-2	Up - UAA-1/OS-1-30	Mid Groundwater
P - SA-P-3	Up - UAA-1/OS-1-30	Mid Groundwater
Q North - SA-Q-1	Up - UAA-3/OS-3-34	Mid Groundwater
Q South - SA-Q-10	Up - UAA-4/OS-4-20	Shallow Groundwater

TABLE A-2
MATCHING OF SITE GROUNDWATER LOCATIONS TO UPGRADIENT GROUNDWATER LOCATIONS
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site Location	Corresponding Background Location	Medium
Q South - SA-Q-11	Up - UAA-4/OS-4-20	Mid Groundwater
Q South - SA-Q-12	Up - UAA-4/OS-4-20	Mid Groundwater
Q South - SA-Q-13	Up - UAA-4/OS-4-20	Shallow Groundwater
Q South - SA-Q-14	Up - UAA-4/OS-4-20	Mid Groundwater
Q South - SA-Q-15	Up - UAA-4/OS-4-20	Shallow Groundwater
Q South - SA-Q-16	Up - UAA-4/OS-4-20	Shallow Groundwater
Q Central - SA-Q-5	Up - UAA-9-30	Mid Groundwater
Q Central - SA-Q-6	Up - UAA-9-30	Mid Groundwater
Q Central - SA-Q-7	Up - UAA-9-30	Mid Groundwater
Q Central - SA-Q-8	Up - UAA-9-30	Mid Groundwater
Q South - SA-Q-9	Up - UAA-4/OS-4-20	Shallow Groundwater
S - SA-S-1	Up - UAA-3/OS-3-24	Mid Groundwater
S - SA-S-2	Up - UAA-3/OS-3-24	Shallow Groundwater
Q South - UAA-10-22	Up - UAA-4/OS-4-20	Mid Groundwater

TABLE A-3a
BACKGROUND STATISTICS FOR SURFACE SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (mg/kg)	Maximum Detect and Qualifier (c) (mg/kg)	Mean Detected (c) (mg/kg)	Background Concentration (d) (mg/kg)
Surface Soil							
VOCs							
Chloromethane	74-87-3	1 : 5 : 5	0.0087-0.018	4.50E-04 J	4.50E-04 J	4.50E-04	9.00E-04
Ethylbenzene	100-41-4	3 : 5 : 5	0.0043-0.0091	4.50E-04	5.80E-04	5.33E-04	1.07E-03
Styrene (Monomer)	100-42-5	3 : 5 : 5	0.0043-0.0091	7.60E-04	3.00E-03	1.69E-03	3.37E-03
Tetrachloroethene	127-18-4	1 : 5 : 5	0.0043-0.0091	4.40E-04	4.40E-04	4.40E-04	8.80E-04
Xylenes, Total	1330-20-7	3 : 5 : 5	0.0087-0.018	5.40E-04	1.10E-03	8.03E-04	1.61E-03
SVOCs							
Acenaphthene	83-32-9	1 : 5 : 5	0.35-0.41	2.10E-02	2.10E-02	2.10E-02	4.20E-02
Anthracene	120-12-7	1 : 5 : 5	0.35-0.41	6.00E-02	6.00E-02	6.00E-02	1.20E-01
Benzo(a)anthracene	56-55-3	3 : 5 : 5	0.35-0.41	2.50E-02	2.30E-01	9.83E-02	1.97E-01
Benzo(a)pyrene	50-32-8	1 : 5 : 5	0.35-0.41	2.40E-01	2.40E-01	2.40E-01	4.80E-01
Benzo(b)fluoranthene	205-99-2	2 : 5 : 5	0.35-0.41	4.00E-02	2.20E-01	1.30E-01	2.60E-01
Benzo(g,h,i)perylene	191-24-2	1 : 5 : 5	0.35-0.41	2.60E-01	2.60E-01	2.60E-01	5.20E-01
Benzo(k)fluoranthene	207-08-9	3 : 5 : 5	0.35-0.41	2.50E-02	2.30E-01	1.05E-01	2.10E-01
bis(2-Ethylhexyl)phthalate	117-81-7	2 : 5 : 5	0.35-0.41	5.30E-02	3.00E-01	1.76E-01	3.53E-01
Chrysene	218-01-9	3 : 5 : 5	0.35-0.41	3.50E-02	2.70E-01	1.17E-01	2.35E-01
Dibenzo(a,h)anthracene	53-70-3	1 : 5 : 5	0.35-0.41	6.00E-02	6.00E-02	6.00E-02	1.20E-01
Fluoranthene	206-44-0	3 : 5 : 5	0.35-0.41	4.70E-02	5.60E-01	2.21E-01	4.42E-01
Phenanthrene	85-01-8	3 : 5 : 5	0.35-0.41	3.25E-02	3.50E-01	1.44E-01	2.89E-01
Pyrene	129-00-0	3 : 5 : 5	0.35-0.41	5.60E-02	5.00E-01	2.04E-01	4.09E-01
Pesticide							
4,4'-DDD	72-54-8	3 : 5 : 5	0.0037-0.035	8.60E-04 J	8.50E-03	4.62E-03	9.24E-03
4,4'-DDE	72-55-9	4 : 5 : 5	0.0037-0.035	1.60E-03 J	1.22E-02 J	7.22E-03	1.44E-02
4,4'-DDT	50-29-3	4 : 5 : 5	0.0037-0.035	6.50E-03 J	4.10E-02 J	2.48E-02	4.95E-02
Aldrin	309-00-2	1 : 5 : 5	0.0019-0.018	4.90E-03 J	4.90E-03 J	4.90E-03	9.80E-03
alpha-BHC	319-84-6	1 : 5 : 5	0.0019-0.018	1.20E-01 J	1.20E-01 J	1.20E-01	2.40E-01
alpha-Chlordane	5103-71-9	2 : 5 : 5	0.0019-0.018	4.20E-04 J	1.20E-02 J	6.21E-03	1.24E-02
delta-BHC	319-86-8	1 : 5 : 5	0.0019-0.018	3.40E-02 J	3.40E-02 J	3.40E-02	6.80E-02
Dieldrin	60-57-1	4 : 5 : 5	0.0037-0.035	3.00E-03 J	1.20E-02 J	6.58E-03	1.32E-02
Endosulfan I	959-98-8	2 : 5 : 5	0.0019-0.018	1.90E-04 J	2.10E-03 J	1.15E-03	2.29E-03
Endosulfan II	33213-65-9	1 : 5 : 5	0.0037-0.035	5.80E-04 J	5.80E-04 J	5.80E-04	1.16E-03
Endosulfan Sulfate	1031-07-8	2 : 5 : 5	0.0037-0.035	7.10E-04 J	1.10E-03 J	9.05E-04	1.81E-03
Endrin	72-20-8	1 : 5 : 5	0.0037-0.035	4.80E-03	4.80E-03	4.80E-03	9.60E-03
Endrin Aldehyde	7421-93-4	2 : 5 : 5	0.0037-0.035	3.00E-03 J	5.80E-03 J	4.40E-03	8.80E-03
gamma-Chlordane	5103-74-2	2 : 5 : 5	0.0019-0.018	7.20E-04 J	9.90E-02	4.99E-02	9.97E-02
Heptachlor	76-44-8	1 : 5 : 5	0.0019-0.018	7.40E-02 J	7.40E-02 J	7.40E-02	1.48E-01
Heptachlor Epoxide	1024-57-3	4 : 5 : 5	0.0019-0.018	1.20E-03 J	1.80E-02 J	6.33E-03	1.27E-02
Methoxychlor	72-43-5	1 : 5 : 5	0.019-0.18	2.80E-03 J	2.80E-03 J	2.80E-03	5.60E-03
Herbicide							
2,4-D	94-75-7	1 : 5 : 5	0.0089-0.01	5.80E-03	5.80E-03	5.80E-03	1.16E-02
Dichlorprop	120-36-5	2 : 5 : 5	0.11-0.23	4.90E-03 J	1.10E-01 J	5.72E-02	1.14E-01
MCPP	93-65-2	1 : 5 : 5	2.2-2.5	4.40E+00 J	4.40E+00 J	4.40E+00	8.80E+00
Pentachlorophenol	87-86-5	3 : 5 : 5	0.018-0.021	1.20E-03 J	3.95E-03 J	2.28E-03	4.57E-03
PCBs							
TOTAL PCBs	Total PCBs	3 : 5 : 5	-	8.22E-02	1.55E-01	1.25E-01	2.50E-01

TABLE A-3a
BACKGROUND STATISTICS FOR SURFACE SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (mg/kg)	Maximum Detect and Qualifier (c) (mg/kg)	Mean Detected (c) (mg/kg)	Background Concentration (d) (mg/kg)
Dioxin							
Dioxin TEQ-HH	Dioxin TEQ	3 : 5 : 5	-	1.37E-05	3.61E-05	2.15E-05	4.31E-05
Metals							
Aluminum	7429-90-5	5 : 5 : 5	20-23	5.10E+03	9.60E+03	6.92E+03	1.38E+04
Antimony	7440-36-0	2 : 5 : 5	2-2.3	9.30E-01 J	1.70E+00 J	1.31E+00	2.63E+00
Arsenic	7440-38-2	5 : 5 : 5	0.98-1.1	3.20E+00	9.05E+00	6.19E+00	1.24E+01
Barium	7440-39-3	5 : 5 : 5	0.98-1.1	4.20E+01	1.95E+02	1.53E+02	3.07E+02
Beryllium	7440-41-7	5 : 5 : 5	0.39-0.46	1.90E-01	6.70E-01	4.51E-01	9.02E-01
Cadmium	7440-43-9	5 : 5 : 5	0.49-0.57	3.40E-01 J	3.30E+00	1.67E+00	3.34E+00
Calcium	7440-70-2	5 : 5 : 5	52-490	3.10E+03	2.20E+05	4.87E+04	9.74E+04
Chromium	7440-47-3	5 : 5 : 5	0.98-1.1	7.00E+00	1.50E+01	1.11E+01	2.21E+01
Cobalt	7440-48-4	5 : 5 : 5	0.98-1.1	1.50E+00	6.90E+00	4.70E+00	9.40E+00
Copper	7440-50-8	5 : 5 : 5	2-2.3	1.20E+01	9.65E+01 J	4.29E+01	8.58E+01
Iron	7439-89-6	5 : 5 : 5	4.9-5.7	4.80E+03	1.60E+04	1.17E+04	2.33E+04
Lead	7439-92-1	5 : 5 : 5	0.49-0.57	3.10E+01 J	1.04E+02 J	6.51E+01	1.30E+02
Magnesium	7439-95-4	5 : 5 : 5	49-57	1.70E+03	1.70E+04	6.14E+03	1.23E+04
Manganese	7439-96-5	5 : 5 : 5	0.98-1.1	8.60E+01	4.90E+02	2.76E+02	5.52E+02
Mercury	7439-97-6	5 : 5 : 5	0.02-0.023	2.90E-02	9.50E-02	6.68E-02	1.34E-01
Nickel	7440-02-0	5 : 5 : 5	3.9-4.6	1.20E+01	2.25E+01	1.65E+01	3.30E+01
Potassium	7440-09-7	5 : 5 : 5	98-110	5.30E+02 J	2.30E+03 J	1.51E+03	3.01E+03
Selenium	7782-49-2	1 : 5 : 5	0.98-1.1	6.20E-01 J	6.20E-01 J	6.20E-01	1.24E+00
Silver	7440-22-4	2 : 5 : 5	0.98-1.1	2.40E-01	6.70E-01	4.55E-01	9.10E-01
Sodium	7440-23-5	1 : 5 : 5	49-57	2.30E+02	2.30E+02	2.30E+02	4.60E+02
Vanadium	7440-62-2	5 : 5 : 5	0.98-1.1	8.80E+00 J	2.60E+01 J	1.95E+01	3.89E+01
Zinc	7440-66-6	5 : 5 : 5	2-2.3	5.50E+01	3.50E+02	1.95E+02	3.90E+02

Notes:
CAS - Chemical Abstracts Service.
COPC - Constituent of potential concern.
PCB - Polychlorinated Biphenyl.Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration, Human Health Calculated using Toxicity Equivalency Factors (TEFs) from Van den Berg, et al., 2006. TEFs presented in Table F-1.
J - Estimated value.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.
-- Not applicable.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.
(b) Range of reporting limits (sample quantitation limits) is based on available information; not available for all samples with positive detections. Range not presented for calculated parameters (i.e., PCBs and Dioxins).
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. The validation qualifier is presented for the minimum and maximum. Only detected results are included in the mean calculation.
(d) Equal to two times the average detected concentration for the constituent in off-site/upgradient sampling locations.
(e) Only constituents detected at least once in the specified area/medium are included here.

TABLE A-3b
BACKGROUND STATISTICS FOR COMBINED SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (mg/kg)	Maximum Detect and Qualifier (c) (mg/kg)	Mean Detected (c) (mg/kg)	Background Concentration (d) (mg/kg)
Combined Soil							
VOCs							
4-Methyl-2-pentanone	108-10-1	1 : 10 : 10	0.022-0.049	1.00E-03	1.00E-03	1.00E-03	2.00E-03
Chloromethane	74-87-3	1 : 10 : 10	0.0087-0.02	4.50E-04 J	4.50E-04 J	4.50E-04	9.00E-04
Dichloromethane	75-09-2	2 : 10 : 10	0.0043-0.0098	3.20E-03 J	3.30E-03 J	3.25E-03	6.50E-03
Ethylbenzene	100-41-4	6 : 10 : 10	0.0043-0.0098	2.50E-04	5.80E-04	4.76E-04	9.52E-04
Styrene	100-42-5	7 : 10 : 10	0.0043-0.0098	2.80E-04	3.80E-03	1.82E-03	3.64E-03
Tetrachloroethene	127-18-4	2 : 10 : 10	0.0043-0.0098	4.40E-04	5.10E-04	4.75E-04	9.50E-04
Xylenes, Total	1330-20-7	7 : 10 : 10	0.0087-0.02	5.40E-04	1.10E-03	7.72E-04	1.54E-03
SVOCs							
Acenaphthene	83-32-9	1 : 10 : 10	0.35-0.41	2.10E-02	2.10E-02	2.10E-02	4.20E-02
Anthracene	120-12-7	1 : 10 : 10	0.35-0.41	6.00E-02	6.00E-02	6.00E-02	1.20E-01
Benzo(a)anthracene	56-55-3	3 : 10 : 10	0.35-0.41	2.50E-02	2.30E-01	9.83E-02	1.97E-01
Benzo(a)pyrene	50-32-8	1 : 10 : 10	0.35-0.41	2.40E-01	2.40E-01	2.40E-01	4.80E-01
Benzo(b)fluoranthene	205-99-2	2 : 10 : 10	0.35-0.41	4.00E-02	2.20E-01	1.30E-01	2.60E-01
Benzo(g,h,i)perylene	191-24-2	1 : 10 : 10	0.35-0.41	2.60E-01	2.60E-01	2.60E-01	5.20E-01
Benzo(k)fluoranthene	207-08-9	3 : 10 : 10	0.35-0.41	2.50E-02	2.30E-01	1.05E-01	2.10E-01
bis(2-Ethylhexyl)phthalate	117-81-7	3 : 10 : 10	0.35-0.41	3.20E-02	3.00E-01	1.28E-01	2.57E-01
Chrysene	218-01-9	3 : 10 : 10	0.35-0.41	3.50E-02	2.70E-01	1.17E-01	2.35E-01
Dibenzo(a,h)anthracene	53-70-3	1 : 10 : 10	0.35-0.41	6.00E-02	6.00E-02	6.00E-02	1.20E-01
Fluoranthene	206-44-0	3 : 10 : 10	0.35-0.41	4.70E-02	5.60E-01	2.21E-01	4.42E-01
Phenanthrene	85-01-8	3 : 10 : 10	0.35-0.41	3.25E-02	3.50E-01	1.44E-01	2.89E-01
Pyrene	129-00-0	3 : 10 : 10	0.35-0.41	5.60E-02	5.00E-01	2.04E-01	4.09E-01
Pesticide							
4,4'-DDD	72-54-8	3 : 10 : 10	0.0035-0.035	8.60E-04 J	8.50E-03	4.62E-03	9.24E-03
4,4'-DDE	72-55-9	4 : 10 : 10	0.0035-0.035	1.60E-03 J	1.22E-02 J	7.22E-03	1.44E-02
4,4'-DDT	50-29-3	5 : 10 : 10	0.0035-0.035	5.20E-04 J	4.10E-02 J	1.99E-02	3.98E-02
Aldrin	309-00-2	1 : 10 : 10	0.0018-0.018	4.90E-03 J	4.90E-03 J	4.90E-03	9.80E-03
alpha-BHC	319-84-6	1 : 10 : 10	0.0018-0.018	1.20E-01 J	1.20E-01 J	1.20E-01	2.40E-01
alpha-Chlordane	5103-71-9	2 : 10 : 10	0.0018-0.018	4.20E-04 J	1.20E-02 J	6.21E-03	1.24E-02
delta-BHC	319-86-8	1 : 10 : 10	0.0018-0.018	3.40E-02 J	3.40E-02 J	3.40E-02	6.80E-02
Dieldrin	60-57-1	4 : 10 : 10	0.0035-0.035	3.00E-03 J	1.20E-02 J	6.58E-03	1.32E-02
Endosulfan I	959-98-8	2 : 10 : 10	0.0018-0.018	1.90E-04 J	2.10E-03 J	1.15E-03	2.29E-03
Endosulfan II	33213-65-9	1 : 10 : 10	0.0035-0.035	5.80E-04 J	5.80E-04 J	5.80E-04	1.16E-03
Endosulfan Sulfate	1031-07-8	2 : 10 : 10	0.0035-0.035	7.10E-04 J	1.10E-03 J	9.05E-04	1.81E-03
Endrin	72-20-8	1 : 10 : 10	0.0035-0.035	4.80E-03	4.80E-03	4.80E-03	9.60E-03
Endrin Aldehyde	7421-93-4	2 : 10 : 10	0.0035-0.035	3.00E-03 J	5.80E-03 J	4.40E-03	8.80E-03
gamma-Chlordane	5103-74-2	3 : 10 : 10	0.0018-0.018	1.20E-04 J	9.90E-02	3.33E-02	6.66E-02
Heptachlor	76-44-8	1 : 10 : 10	0.0018-0.018	7.40E-02 J	7.40E-02 J	7.40E-02	1.48E-01
Heptachlor Epoxide	1024-57-3	5 : 10 : 10	0.0018-0.018	3.20E-04	1.80E-02 J	5.13E-03	1.03E-02
Methoxychlor	72-43-5	2 : 10 : 10	0.018-0.18	5.10E-04 J	2.80E-03 J	1.66E-03	3.31E-03
Herbicide							
2,4-D	94-75-7	1 : 10 : 10	0.0088-0.01	5.80E-03	5.80E-03	5.80E-03	1.16E-02
Dichlorprop	120-36-5	3 : 10 : 10	0.11-0.23	2.90E-03 J	1.10E-01 J	3.91E-02	7.82E-02
MCPP	93-65-2	1 : 10 : 10	2.1-2.5	4.40E+00 J	4.40E+00 J	4.40E+00	8.80E+00
Pentachlorophenol	87-86-5	3 : 10 : 10	0.018-0.021	1.20E-03 J	3.95E-03 J	2.28E-03	4.57E-03

TABLE A-3b
BACKGROUND STATISTICS FOR COMBINED SOIL
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (mg/kg)	Maximum Detect and Qualifier (c) (mg/kg)	Mean Detected (c) (mg/kg)	Background Concentration (d) (mg/kg)
PCBs							
TOTAL PCBs	Total PCBs	3 : 10 : 10	-	8.22E-02	1.55E-01	1.25E-01	2.50E-01
Dioxin							
Dioxin TEQ-HH	Dioxin TEQ	4 : 10 : 10	-	3.24E-06	3.61E-05	1.70E-05	3.39E-05
Metals							
Aluminum	7429-90-5	10 : 10 : 10	19-24	2.30E+03	9.60E+03	5.43E+03	1.09E+04
Antimony	7440-36-0	4 : 10 : 10	1.9-2.4	5.70E-01 J	1.70E+00 J	9.60E-01	1.92E+00
Arsenic	7440-38-2	10 : 10 : 10	0.97-1.2	3.00E+00	9.05E+00	5.41E+00	1.08E+01
Barium	7440-39-3	10 : 10 : 10	0.97-1.2	4.20E+01	2.00E+02	1.59E+02	3.17E+02
Beryllium	7440-41-7	10 : 10 : 10	0.39-0.49	1.80E-01	6.70E-01	3.83E-01	7.65E-01
Cadmium	7440-43-9	10 : 10 : 10	0.48-0.61	7.80E-02	3.30E+00	9.07E-01	1.81E+00
Calcium	7440-70-2	10 : 10 : 10	48-490	3.10E+03	2.20E+05	3.05E+04	6.11E+04
Chromium	7440-47-3	10 : 10 : 10	0.97-1.2	5.60E+00	1.50E+01	9.45E+00	1.89E+01
Cobalt	7440-48-4	10 : 10 : 10	0.97-1.2	1.50E+00	6.90E+00	4.63E+00	9.27E+00
Copper	7440-50-8	10 : 10 : 10	1.9-2.4	2.70E+00	9.65E+01 J	2.48E+01	4.96E+01
Iron	7439-89-6	10 : 10 : 10	4.8-6.1	4.80E+03	1.60E+04	1.05E+04	2.10E+04
Lead	7439-92-1	10 : 10 : 10	0.48-0.61	4.10E+00	1.04E+02 J	3.59E+01	7.18E+01
Magnesium	7439-95-4	10 : 10 : 10	48-61	1.70E+03	1.70E+04	5.63E+03	1.13E+04
Manganese	7439-96-5	10 : 10 : 10	0.97-1.2	8.60E+01	4.90E+02	2.51E+02	5.01E+02
Mercury	7439-97-6	10 : 10 : 10	0.019-0.023	5.40E-03	9.50E-02	3.86E-02	7.72E-02
Nickel	7440-02-0	10 : 10 : 10	3.9-4.9	9.30E+00	2.25E+01	1.41E+01	2.83E+01
Potassium	7440-09-7	10 : 10 : 10	97-120	5.30E+02 J	2.30E+03 J	1.19E+03	2.38E+03
Selenium	7782-49-2	1 : 10 : 10	0.97-1.2	6.20E-01 J	6.20E-01 J	6.20E-01	1.24E+00
Silver	7440-22-4	2 : 10 : 10	0.97-1.2	2.40E-01	6.70E-01	4.55E-01	9.10E-01
Sodium	7440-23-5	2 : 10 : 10	48-61	1.10E+02	2.30E+02	1.70E+02	3.40E+02
Vanadium	7440-62-2	10 : 10 : 10	0.97-1.2	8.80E+00 J	2.60E+01 J	1.72E+01	3.44E+01
Zinc	7440-66-6	10 : 10 : 10	1.9-2.4	1.90E+01	3.50E+02	1.12E+02	2.24E+02

Notes:
CAS - Chemical Abstracts Service.
COPC - Constituent of potential concern.
PCB - Polychlorinated Biphenyl.Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration, Human Health Calculated using Toxicity Equivalency Factors (TEFs) from Van den Berg, et al., 2006. TEFs presented in Table F-1.
J - Estimated value.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.
-- Not applicable.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.
(b) Range of reporting limits (sample quantitation limits) is based on available information; not available for all samples with positive detections. Range not presented for calculated parameters (i.e., PCBs and Dioxins).
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. The validation qualifier is presented for the minimum and maximum. Only detected results are included in the mean calculation.
(d) Equal to two times the average detected concentration for the constituent in off-site/upgradient sampling locations.
(e) Only constituents detected at least once in the specified area/medium are included here.

TABLE A-3c
BACKGROUND STATISTICS FOR SEDIMENT
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (mg/kg)	Maximum Detect and Qualifier (c) (mg/kg)	Mean Detected (c) (mg/kg)	Background Concentration (d) (mg/kg)
Sediment							
VOCs							
2-Butanone	78-93-3	1 : 7 : 7	0.0088-0.017	3.40E-03	3.40E-03	3.40E-03	6.80E-03
Acetone	67-64-1	6 : 7 : 7	0.018-0.028	5.75E-03 J	9.80E-02 J	3.97E-02	7.94E-02
Xylenes, Total	1330-20-7	1 : 7 : 7	0.0048-0.011	3.20E-03	3.20E-03	3.20E-03	6.40E-03
SVOCs							
Chrysene	218-01-9	1 : 7 : 7	0.01-0.44	3.10E-02	3.10E-02	3.10E-02	6.20E-02
Fluoranthene	206-44-0	2 : 7 : 7	0.01-0.44	3.60E-02	4.10E-02	3.85E-02	7.70E-02
Phenanthrene	85-01-8	1 : 7 : 7	0.01-0.44	3.60E-02	3.60E-02	3.60E-02	7.20E-02
Pyrene	129-00-0	1 : 7 : 7	0.01-0.44	6.70E-02	6.70E-02	6.70E-02	1.34E-01
Herbicide							
2,4-D	94-75-7	1 : 6 : 7	0.0005-0.012	5.20E-03 J	5.20E-03 J	5.20E-03	1.04E-02
Dichlorprop	120-36-5	4 : 6 : 7	0.1-0.15	1.20E-02 J	2.30E-02 J	1.75E-02	3.50E-02
MCPP	93-65-2	2 : 6 : 7	0.12-2.7	3.70E-01 J	4.60E-01 J	4.15E-01	8.30E-01
Dioxin							
Dioxin TEQ-HH	Dioxin TEQ	1 : 1 : 1	-	7.05E-09	7.05E-09	7.05E-09	1.41E-08
Metals							
Aluminum	7429-90-5	7 : 7 : 7	0.02-0.02	6.30E+02	5.90E+03	1.80E+03	3.60E+03
Arsenic	7440-38-2	7 : 7 : 7	0.01-0.01	1.00E+00 J	5.60E+00	2.33E+00	4.66E+00
Barium	7440-39-3	7 : 7 : 7	0.94-0.94	1.10E+01	1.40E+02	4.63E+01	9.26E+01
Beryllium	7440-41-7	1 : 7 : 7	0.004-0.53	4.80E-01	4.80E-01	4.80E-01	9.60E-01
Cadmium	7440-43-9	1 : 7 : 7	0.005-0.61	1.20E+00	1.20E+00	1.20E+00	2.40E+00
Calcium	7440-70-2	7 : 7 : 7	1.1-1.1	8.60E+02	8.20E+03	3.04E+03	6.08E+03
Chromium	7440-47-3	7 : 7 : 7	0.01-0.01	1.60E+00	1.10E+01	4.83E+00	9.66E+00
Cobalt	7440-48-4	7 : 7 : 7	0.01-0.01	2.30E+00	6.00E+00	3.20E+00	6.40E+00
Copper	7440-50-8	7 : 7 : 7	0.01-0.01	6.10E-01	1.20E+01	3.09E+00	6.19E+00
Iron	7439-89-6	7 : 7 : 7	0.05-0.05	2.60E+03	1.20E+04	5.36E+03	1.07E+04
Lead	7439-92-1	7 : 7 : 7	0.005-0.005	1.60E+00	1.20E+01	4.73E+00	9.46E+00
Magnesium	7439-95-4	7 : 7 : 7	47-47	3.80E+02	3.40E+03	1.34E+03	2.68E+03
Manganese	7439-96-5	7 : 7 : 7	0.01-0.01	8.30E+01	5.00E+02	1.89E+02	3.78E+02
Mercury	7439-97-6	4 : 7 : 7	0.017-0.024	3.50E-03	1.30E-01	5.08E-02	1.02E-01
Nickel	7440-02-0	7 : 7 : 7	0.04-0.04	4.70E+00	1.50E+01	7.47E+00	1.49E+01
Potassium	7440-09-7	7 : 7 : 7	94-94	8.70E+01	8.20E+02	2.79E+02	5.58E+02
Sodium	7440-23-5	7 : 7 : 7	100-100	2.20E+01	7.80E+01	4.15E+01	8.30E+01
Vanadium	7440-62-2	7 : 7 : 7	0.01-0.01	3.10E+00	1.90E+01	6.83E+00	1.37E+01
Zinc	7440-66-6	6 : 7 : 7	0.02-15	6.70E+00 J	8.90E+01 J	2.55E+01	5.11E+01
Surface Soil							
VOCs							
Chloromethane	74-87-3	1 : 5 : 5	0.0087-0.018	4.50E-04 J	4.50E-04 J	4.50E-04	9.00E-04
Ethylbenzene	100-41-4	3 : 5 : 5	0.0043-0.0091	4.50E-04	5.80E-04	5.33E-04	1.07E-03
Styrene	100-42-5	3 : 5 : 5	0.0043-0.0091	7.60E-04	3.00E-03	1.69E-03	3.37E-03
Tetrachloroethene	127-18-4	1 : 5 : 5	0.0043-0.0091	4.40E-04	4.40E-04	4.40E-04	8.80E-04
Xylenes, Total	1330-20-7	3 : 5 : 5	0.0087-0.018	5.40E-04	1.10E-03	8.03E-04	1.61E-03
SVOCs							
Acenaphthene	83-32-9	1 : 5 : 5	0.35-0.41	2.10E-02	2.10E-02	2.10E-02	4.20E-02
Anthracene	120-12-7	1 : 5 : 5	0.35-0.41	6.00E-02	6.00E-02	6.00E-02	1.20E-01

TABLE A-3c
BACKGROUND STATISTICS FOR SEDIMENT
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (mg/kg)	Maximum Detect and Qualifier (c) (mg/kg)	Mean Detected (c) (mg/kg)	Background Concentration (d) (mg/kg)
Benzo(a)anthracene	56-55-3	3 : 5 : 5	0.35-0.41	2.50E-02	2.30E-01	9.83E-02	1.97E-01
Benzo(a)pyrene	50-32-8	1 : 5 : 5	0.35-0.41	2.40E-01	2.40E-01	2.40E-01	4.80E-01
Benzo(b)fluoranthene	205-99-2	2 : 5 : 5	0.35-0.41	4.00E-02	2.20E-01	1.30E-01	2.60E-01
Benzo(g,h,i)perylene	191-24-2	1 : 5 : 5	0.35-0.41	2.60E-01	2.60E-01	2.60E-01	5.20E-01
Benzo(k)fluoranthene	207-08-9	3 : 5 : 5	0.35-0.41	2.50E-02	2.30E-01	1.05E-01	2.10E-01
bis(2-Ethylhexyl)phthalate	117-81-7	2 : 5 : 5	0.35-0.41	5.30E-02	3.00E-01	1.76E-01	3.53E-01
Chrysene	218-01-9	3 : 5 : 5	0.35-0.41	3.50E-02	2.70E-01	1.17E-01	2.35E-01
Dibenzo(a,h)anthracene	53-70-3	1 : 5 : 5	0.35-0.41	6.00E-02	6.00E-02	6.00E-02	1.20E-01
Fluoranthene	206-44-0	3 : 5 : 5	0.35-0.41	4.70E-02	5.60E-01	2.21E-01	4.42E-01
Phenanthrene	85-01-8	3 : 5 : 5	0.35-0.41	3.25E-02	3.50E-01	1.44E-01	2.89E-01
Pyrene	129-00-0	3 : 5 : 5	0.35-0.41	5.60E-02	5.00E-01	2.04E-01	4.09E-01
Pesticide							
4,4'-DDD	72-54-8	3 : 5 : 5	0.0037-0.035	8.60E-04 J	8.50E-03	4.62E-03	9.24E-03
4,4'-DDE	72-55-9	4 : 5 : 5	0.0037-0.035	1.60E-03 J	1.22E-02 J	7.22E-03	1.44E-02
4,4'-DDT	50-29-3	4 : 5 : 5	0.0037-0.035	6.50E-03 J	4.10E-02 J	2.48E-02	4.95E-02
Aldrin	309-00-2	1 : 5 : 5	0.0019-0.018	4.90E-03 J	4.90E-03 J	4.90E-03	9.80E-03
alpha-BHC	319-84-6	1 : 5 : 5	0.0019-0.018	1.20E-01 J	1.20E-01 J	1.20E-01	2.40E-01
alpha-Chlordane	5103-71-9	2 : 5 : 5	0.0019-0.018	4.20E-04 J	1.20E-02 J	6.21E-03	1.24E-02
delta-BHC	319-86-8	1 : 5 : 5	0.0019-0.018	3.40E-02 J	3.40E-02 J	3.40E-02	6.80E-02
Dieldrin	60-57-1	4 : 5 : 5	0.0037-0.035	3.00E-03 J	1.20E-02 J	6.58E-03	1.32E-02
Endosulfan I	959-98-8	2 : 5 : 5	0.0019-0.018	1.90E-04 J	2.10E-03 J	1.15E-03	2.29E-03
Endosulfan II	33213-65-9	1 : 5 : 5	0.0037-0.035	5.80E-04 J	5.80E-04 J	5.80E-04	1.16E-03
Endosulfan Sulfate	1031-07-8	2 : 5 : 5	0.0037-0.035	7.10E-04 J	1.10E-03 J	9.05E-04	1.81E-03
Endrin	72-20-8	1 : 5 : 5	0.0037-0.035	4.80E-03	4.80E-03	4.80E-03	9.60E-03
Endrin Aldehyde	7421-93-4	2 : 5 : 5	0.0037-0.035	3.00E-03 J	5.80E-03 J	4.40E-03	8.80E-03
gamma-Chlordane	5103-74-2	2 : 5 : 5	0.0019-0.018	7.20E-04 J	9.90E-02	4.99E-02	9.97E-02
Heptachlor	76-44-8	1 : 5 : 5	0.0019-0.018	7.40E-02 J	7.40E-02 J	7.40E-02	1.48E-01
Heptachlor Epoxide	1024-57-3	4 : 5 : 5	0.0019-0.018	1.20E-03 J	1.80E-02 J	6.33E-03	1.27E-02
Methoxychlor	72-43-5	1 : 5 : 5	0.019-0.18	2.80E-03 J	2.80E-03 J	2.80E-03	5.60E-03
Herbicide							
2,4-D	94-75-7	1 : 5 : 5	0.0089-0.01	5.80E-03	5.80E-03	5.80E-03	1.16E-02
Dichlorprop	120-36-5	2 : 5 : 5	0.11-0.23	4.90E-03 J	1.10E-01 J	5.72E-02	1.14E-01
MCPP	93-65-2	1 : 5 : 5	2.2-2.5	4.40E+00 J	4.40E+00 J	4.40E+00	8.80E+00
Pentachlorophenol	87-86-5	3 : 5 : 5	0.018-0.021	1.20E-03 J	3.95E-03 J	2.28E-03	4.57E-03
PCBs							
TOTAL PCBs	Total PCBs	3 : 5 : 5	-	8.22E-02	1.55E-01	1.25E-01	2.50E-01
Dioxin							
Dioxin TEQ-HH	Dioxin TEQ	3 : 5 : 5	-	1.37E-05	3.61E-05	2.15E-05	4.31E-05
Metals							
Aluminum	7429-90-5	5 : 5 : 5	20-23	5.10E+03	9.60E+03	6.92E+03	1.38E+04
Antimony	7440-36-0	2 : 5 : 5	2-2.3	9.30E-01 J	1.70E+00 J	1.31E+00	2.63E+00
Arsenic	7440-38-2	5 : 5 : 5	0.98-1.1	3.20E+00	9.05E+00	6.19E+00	1.24E+01
Barium	7440-39-3	5 : 5 : 5	0.98-1.1	4.20E+01	1.95E+02	1.53E+02	3.07E+02
Beryllium	7440-41-7	5 : 5 : 5	0.39-0.46	1.90E-01	6.70E-01	4.51E-01	9.02E-01
Cadmium	7440-43-9	5 : 5 : 5	0.49-0.57	3.40E-01 J	3.30E+00	1.67E+00	3.34E+00
Calcium	7440-70-2	5 : 5 : 5	52-490	3.10E+03	2.20E+05	4.87E+04	9.74E+04

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (mg/kg)	Maximum Detect and Qualifier (c) (mg/kg)	Mean Detected (c) (mg/kg)	Background Concentration (d) (mg/kg)
Chromium	7440-47-3	5 : 5 : 5	0.98-1.1	7.00E+00	1.50E+01	1.11E+01	2.21E+01
Cobalt	7440-48-4	5 : 5 : 5	0.98-1.1	1.50E+00	6.90E+00	4.70E+00	9.40E+00
Copper	7440-50-8	5 : 5 : 5	2-2.3	1.20E+01	9.65E+01 J	4.29E+01	8.58E+01
Iron	7439-89-6	5 : 5 : 5	4.9-5.7	4.80E+03	1.60E+04	1.17E+04	2.33E+04
Lead	7439-92-1	5 : 5 : 5	0.49-0.57	3.10E+01 J	1.04E+02 J	6.51E+01	1.30E+02
Magnesium	7439-95-4	5 : 5 : 5	49-57	1.70E+03	1.70E+04	6.14E+03	1.23E+04
Manganese	7439-96-5	5 : 5 : 5	0.98-1.1	8.60E+01	4.90E+02	2.76E+02	5.52E+02
Mercury	7439-97-6	5 : 5 : 5	0.02-0.023	2.90E-02	9.50E-02	6.68E-02	1.34E-01
Nickel	7440-02-0	5 : 5 : 5	3.9-4.6	1.20E+01	2.25E+01	1.65E+01	3.30E+01
Potassium	7440-09-7	5 : 5 : 5	98-110	5.30E+02 J	2.30E+03 J	1.51E+03	3.01E+03
Selenium	7782-49-2	1 : 5 : 5	0.98-1.1	6.20E-01 J	6.20E-01 J	6.20E-01	1.24E+00
Silver	7440-22-4	2 : 5 : 5	0.98-1.1	2.40E-01	6.70E-01	4.55E-01	9.10E-01
Sodium	7440-23-5	1 : 5 : 5	49-57	2.30E+02	2.30E+02	2.30E+02	4.60E+02
Vanadium	7440-62-2	5 : 5 : 5	0.98-1.1	8.80E+00 J	2.60E+01 J	1.95E+01	3.89E+01
Zinc	7440-66-6	5 : 5 : 5	2-2.3	5.50E+01	3.50E+02	1.95E+02	3.90E+02
Surface Water							
VOCs							
Chloromethane	74-87-3	1 : 7 : 7	0.5-1	5.00E-01 J	5.00E-01 J	5.00E-01	1.00E+00
SVOCs							
bis(2-Ethylhexyl)phthalate	117-81-7	1 : 7 : 7	10-10	1.40E+01 J	1.40E+01 J	1.40E+01	2.80E+01
Pesticide							
Endrin Ketone	53494-70-5	5 : 7 : 7	0.1-0.1	1.50E-02 J	2.40E-02	1.87E-02	3.74E-02
Herbicide							
Pentachlorophenol	87-86-5	1 : 7 : 7	1-1	3.00E-01	3.00E-01	3.00E-01	6.00E-01
Metals							
Aluminum	7429-90-5	7 : 7 : 7	20-20	5.80E+02	8.80E+02	7.04E+02	1.41E+03
Barium	7440-39-3	7 : 7 : 7	10-10	5.50E+01	6.10E+01	5.87E+01	1.17E+02
Calcium	7440-70-2	7 : 7 : 7	500-500	4.90E+04	5.30E+04	5.11E+04	1.02E+05
Cobalt	7440-48-4	1 : 7 : 7	10-10	1.10E+00	1.10E+00	1.10E+00	2.20E+00
Iron	7439-89-6	7 : 7 : 7	50-50	8.30E+02	1.10E+03	9.69E+02	1.94E+03
Magnesium	7439-95-4	7 : 7 : 7	500-500	2.00E+04	2.10E+04	2.06E+04	4.11E+04
Manganese	7439-96-5	7 : 7 : 7	10-10	7.70E+01	8.40E+01	8.12E+01	1.62E+02
Potassium	7440-09-7	7 : 7 : 7	10-10	3.20E+03	3.50E+03	3.36E+03	6.73E+03
Sodium	7440-23-5	7 : 7 : 7	80000-80000	1.70E+04	2.00E+04	1.84E+04	3.69E+04
Thallium	7440-28-0	1 : 7 : 7	10-10	5.20E+00 J	5.20E+00 J	5.20E+00	1.04E+01
Vanadium	7440-62-2	1 : 7 : 7	10-10	3.30E+00	3.30E+00	3.30E+00	6.60E+00
Zinc	7440-66-6	1 : 7 : 7	20-20	4.60E+00	4.60E+00	4.60E+00	9.20E+00

TABLE A-3c
BACKGROUND STATISTICS FOR SEDIMENT
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (mg/kg)	Maximum Detect and Qualifier (c) (mg/kg)	Mean Detected (c) (mg/kg)	Background Concentration (d) (mg/kg)

Notes:
CAS - Chemical Abstracts Service.
COPC - Constituent of potential concern.
PCB - Polychlorinated Biphenyl.Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration, Human Health Calculated using Toxicity Equivalency Factors (TEFs) from Van den Berg, et al., 2006. TEFs presented in Table F-1.
J - Estimated value.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.
-- Not applicable.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.
(b) Range of reporting limits (sample quantitation limits) is based on available information; not available for all samples with positive detections. Range not presented for calculated parameters (i.e., PCBs and Dioxins).
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. The validation qualifier is presented for the minimum and maximum. Only detected results are included in the mean calculation.
(d) Equal to two times the average detected concentration for the constituent in off-site/upgradient sampling locations.
(e) Only constituents detected at least once in the specified area/medium are included here.

TABLE A-3d
BACKGROUND STATISTICS FOR GROUNDWATER
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (ug/L)	Maximum Detect and Qualifier (c) (ug/L)	Mean Detected (c) (ug/L)	Background Concentration (d) (ug/L)
Mid Groundwater							
Up - UAA-11-22							
VOCs							
2-Butanone	78-93-3	1 : 1 : 1	10-10	1.60E+00	1.60E+00	1.60E+00	3.20E+00
Metals							
Aluminum	7429-90-5	1 : 1 : 1	200-200	1.20E+04	1.20E+04	1.20E+04	2.40E+04
Arsenic	7440-38-2	1 : 1 : 1	10-10	1.10E+01	1.10E+01	1.10E+01	2.20E+01
Barium	7440-39-3	1 : 1 : 1	10-10	5.40E+02 J	5.40E+02 J	5.40E+02	1.08E+03
Beryllium	7440-41-7	1 : 1 : 1	4-4	8.80E-01	8.80E-01	8.80E-01	1.76E+00
Calcium	7440-70-2	1 : 1 : 1	500-500	1.70E+05	1.70E+05	1.70E+05	3.40E+05
Chromium	7440-47-3	1 : 1 : 1	10-10	1.70E+02 J	1.70E+02 J	1.70E+02	3.40E+02
Cobalt	7440-48-4	1 : 1 : 1	10-10	2.50E+01	2.50E+01	2.50E+01	5.00E+01
Copper	7440-50-8	1 : 1 : 1	20-20	1.90E+01	1.90E+01	1.90E+01	3.80E+01
Iron	7439-89-6	1 : 1 : 1	50-50	2.20E+04	2.20E+04	2.20E+04	4.40E+04
Lead	7439-92-1	1 : 1 : 1	5-5	1.90E+01	1.90E+01	1.90E+01	3.80E+01
Magnesium	7439-95-4	1 : 1 : 1	500-500	3.70E+04	3.70E+04	3.70E+04	7.40E+04
Manganese	7439-96-5	1 : 1 : 1	10-10	2.00E+03 J	2.00E+03 J	2.00E+03	4.00E+03
Nickel	7440-02-0	1 : 1 : 1	40-40	1.20E+02	1.20E+02	1.20E+02	2.40E+02
Potassium	7440-09-7	1 : 1 : 1	1000-1000	7.40E+03	7.40E+03	7.40E+03	1.48E+04
Sodium	7440-23-5	1 : 1 : 1	1000-1000	1.20E+04	1.20E+04	1.20E+04	2.40E+04
Vanadium	7440-62-2	1 : 1 : 1	10-10	3.60E+01 J	3.60E+01 J	3.60E+01	7.20E+01
Zinc	7440-66-6	1 : 1 : 1	20-20	2.00E+02 J	2.00E+02 J	2.00E+02	4.00E+02
Up - UAA-2/OS-2-30							
VOCs							
1,1-Dichloroethane	75-34-3	1 : 1 : 1	1-1	4.85E+00	4.85E+00	4.85E+00	9.70E+00
1,1-Dichloroethylene	75-35-4	1 : 1 : 1	1-1	3.45E+00	3.45E+00	3.45E+00	6.90E+00
1,2-Dichloroethene (total)	540-59-0	1 : 1 : 1	2-2	1.70E+01	1.70E+01	1.70E+01	3.40E+01
Vinyl chloride	75-01-4	1 : 1 : 1	1-1	4.00E-01	4.00E-01	4.00E-01	8.00E-01
Up - UAA-3/OS-3-24							
Metals							
Barium	7440-39-3	1 : 1 : 1	10-10	1.80E+02	1.80E+02	1.80E+02	3.60E+02
Calcium	7440-70-2	1 : 1 : 1	500-500	1.00E+05	1.00E+05	1.00E+05	2.00E+05
Cobalt	7440-48-4	1 : 1 : 1	10-10	8.90E-01	8.90E-01	8.90E-01	1.78E+00
Copper	7440-50-8	1 : 1 : 1	20-20	1.90E+00	1.90E+00	1.90E+00	3.80E+00
Iron	7439-89-6	1 : 1 : 1	50-50	2.00E+03	2.00E+03	2.00E+03	4.00E+03
Iron, Ferrous (2+)	C-FE+2	1 : 1 : 1	100-100	1.10E+01	1.10E+01	1.10E+01	2.20E+01
Magnesium	7439-95-4	1 : 1 : 1	500-500	3.20E+04	3.20E+04	3.20E+04	6.40E+04
Manganese	7439-96-5	1 : 1 : 1	10-10	9.20E+01	9.20E+01	9.20E+01	1.84E+02
Nickel	7440-02-0	1 : 1 : 1	40-40	7.20E+00	7.20E+00	7.20E+00	1.44E+01
Potassium	7440-09-7	1 : 1 : 1	1000-1000	4.40E+04	4.40E+04	4.40E+04	8.80E+04
Selenium	7782-49-2	1 : 1 : 1	10-10	9.20E+00 J	9.20E+00 J	9.20E+00	1.84E+01
Sodium	7440-23-5	1 : 1 : 1	500-500	2.40E+03	2.40E+03	2.40E+03	4.80E+03
Thallium	7440-28-0	1 : 1 : 1	10-10	4.10E+00 J	4.10E+00 J	4.10E+00	8.20E+00
Vanadium	7440-62-2	1 : 1 : 1	10-10	2.00E+00	2.00E+00	2.00E+00	4.00E+00
Zinc	7440-66-6	1 : 1 : 1	20-20	9.40E+00	9.40E+00	9.40E+00	1.88E+01

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (ug/L)	Maximum Detect and Qualifier (c) (ug/L)	Mean Detected (c) (ug/L)	Background Concentration (d) (ug/L)
Up - UAA-4/OS-4-30							
VOCs							
Dichloromethane	75-09-2	1 : 1 : 1	5-5	1.10E+00	1.10E+00	1.10E+00	2.20E+00
Up - UAA-5-30							
Metals							
Aluminum	7429-90-5	1 : 1 : 1	-	1.90E+04	1.90E+04	1.90E+04	3.80E+04
Arsenic	7440-38-2	1 : 1 : 1	-	8.80E+01	8.80E+01	8.80E+01	1.76E+02
Barium	7440-39-3	1 : 1 : 1	-	1.90E+03	1.90E+03	1.90E+03	3.80E+03
Beryllium	7440-41-7	1 : 1 : 1	-	1.20E+00	1.20E+00	1.20E+00	2.40E+00
Cadmium	7440-43-9	1 : 1 : 1	-	2.00E+00	2.00E+00	2.00E+00	4.00E+00
Calcium	7440-70-2	1 : 1 : 1	-	3.60E+05	3.60E+05	3.60E+05	7.20E+05
Chromium	7440-47-3	1 : 1 : 1	-	2.30E+02	2.30E+02	2.30E+02	4.60E+02
Cobalt	7440-48-4	1 : 1 : 1	-	2.70E+01	2.70E+01	2.70E+01	5.40E+01
Copper	7440-50-8	1 : 1 : 1	-	8.50E+01	8.50E+01	8.50E+01	1.70E+02
Iron	7439-89-6	1 : 1 : 1	-	9.70E+04	9.70E+04	9.70E+04	1.94E+05
Lead	7439-92-1	1 : 1 : 1	-	5.30E+01	5.30E+01	5.30E+01	1.06E+02
Magnesium	7439-95-4	1 : 1 : 1	-	7.90E+04	7.90E+04	7.90E+04	1.58E+05
Manganese	7439-96-5	1 : 1 : 1	-	5.90E+03	5.90E+03	5.90E+03	1.18E+04
Nickel	7440-02-0	1 : 1 : 1	-	1.10E+02	1.10E+02	1.10E+02	2.20E+02
Potassium	7440-09-7	1 : 1 : 1	-	1.50E+04	1.50E+04	1.50E+04	3.00E+04
Sodium	7440-23-5	1 : 1 : 1	-	6.80E+04	6.80E+04	6.80E+04	1.36E+05
Vanadium	7440-62-2	1 : 1 : 1	-	5.90E+01	5.90E+01	5.90E+01	1.18E+02
Zinc	7440-66-6	1 : 1 : 1	-	1.10E+03	1.10E+03	1.10E+03	2.20E+03
Up - UAA-8-26							
Herbicide							
2,4-D	94-75-7	1 : 1 : 1	-	1.20E-01	1.20E-01	1.20E-01	2.40E-01
Metals							
Aluminum	7429-90-5	1 : 1 : 1	-	6.40E+03	6.40E+03	6.40E+03	1.28E+04
Arsenic	7440-38-2	1 : 1 : 1	-	5.20E+00	5.20E+00	5.20E+00	1.04E+01
Barium	7440-39-3	1 : 1 : 1	-	3.20E+02	3.20E+02	3.20E+02	6.40E+02
Beryllium	7440-41-7	1 : 1 : 1	-	4.80E-01	4.80E-01	4.80E-01	9.60E-01
Calcium	7440-70-2	1 : 1 : 1	-	2.00E+05	2.00E+05	2.00E+05	4.00E+05
Chromium	7440-47-3	1 : 1 : 1	-	1.80E+02	1.80E+02	1.80E+02	3.60E+02
Cobalt	7440-48-4	1 : 1 : 1	-	2.60E+01	2.60E+01	2.60E+01	5.20E+01
Copper	7440-50-8	1 : 1 : 1	-	1.30E+01	1.30E+01	1.30E+01	2.60E+01
Iron	7439-89-6	1 : 1 : 1	-	2.70E+04	2.70E+04	2.70E+04	5.40E+04
Lead	7439-92-1	1 : 1 : 1	-	1.20E+01	1.20E+01	1.20E+01	2.40E+01
Magnesium	7439-95-4	1 : 1 : 1	-	2.70E+04	2.70E+04	2.70E+04	5.40E+04
Manganese	7439-96-5	1 : 1 : 1	-	6.80E+02	6.80E+02	6.80E+02	1.36E+03
Nickel	7440-02-0	1 : 1 : 1	-	1.30E+02	1.30E+02	1.30E+02	2.60E+02
Potassium	7440-09-7	1 : 1 : 1	-	7.60E+03	7.60E+03	7.60E+03	1.52E+04
Sodium	7440-23-5	1 : 1 : 1	-	9.10E+03	9.10E+03	9.10E+03	1.82E+04
Vanadium	7440-62-2	1 : 1 : 1	-	1.90E+01	1.90E+01	1.90E+01	3.80E+01
Zinc	7440-66-6	1 : 1 : 1	-	9.90E+01	9.90E+01	9.90E+01	1.98E+02
Up - UAA-9-30							

TABLE A-3d
BACKGROUND STATISTICS FOR GROUNDWATER
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (ug/L)	Maximum Detect and Qualifier (c) (ug/L)	Mean Detected (c) (ug/L)	Background Concentration (d) (ug/L)
Metals							
Aluminum	7429-90-5	1 : 1 : 1	-	4.80E+03	4.80E+03	4.80E+03	9.60E+03
Arsenic	7440-38-2	1 : 1 : 1	-	7.00E+00	7.00E+00	7.00E+00	1.40E+01
Barium	7440-39-3	1 : 1 : 1	-	2.10E+02	2.10E+02	2.10E+02	4.20E+02
Beryllium	7440-41-7	1 : 1 : 1	-	4.30E-01	4.30E-01	4.30E-01	8.60E-01
Calcium	7440-70-2	1 : 1 : 1	-	3.40E+05	3.40E+05	3.40E+05	6.80E+05
Chromium	7440-47-3	1 : 1 : 1	-	5.90E+01	5.90E+01	5.90E+01	1.18E+02
Cobalt	7440-48-4	1 : 1 : 1	-	2.00E+01	2.00E+01	2.00E+01	4.00E+01
Copper	7440-50-8	1 : 1 : 1	-	1.90E+01	1.90E+01	1.90E+01	3.80E+01
Iron	7439-89-6	1 : 1 : 1	-	2.40E+04	2.40E+04	2.40E+04	4.80E+04
Lead	7439-92-1	1 : 1 : 1	-	1.40E+01	1.40E+01	1.40E+01	2.80E+01
Magnesium	7439-95-4	1 : 1 : 1	-	8.30E+04	8.30E+04	8.30E+04	1.66E+05
Manganese	7439-96-5	1 : 1 : 1	-	8.50E+02	8.50E+02	8.50E+02	1.70E+03
Nickel	7440-02-0	1 : 1 : 1	-	6.90E+01	6.90E+01	6.90E+01	1.38E+02
Potassium	7440-09-7	1 : 1 : 1	-	1.10E+04	1.10E+04	1.10E+04	2.20E+04
Sodium	7440-23-5	1 : 1 : 1	-	2.60E+04	2.60E+04	2.60E+04	5.20E+04
Vanadium	7440-62-2	1 : 1 : 1	-	1.40E+01	1.40E+01	1.40E+01	2.80E+01
Zinc	7440-66-6	1 : 1 : 1	-	6.70E+01	6.70E+01	6.70E+01	1.34E+02
Shallow Groundwater							
Up - SA2-MW-5-S							
Herbicide							
2,4,5-TP (Silvex)	93-72-1	1 : 1 : 1	0.48-0.48	1.60E-01	1.60E-01	1.60E-01	3.20E-01
2,4-D	94-75-7	1 : 1 : 1	0.48-0.48	1.70E-01	1.70E-01	1.70E-01	3.40E-01
Pentachlorophenol	87-86-5	1 : 1 : 1	0.24-0.24	7.50E-01	7.50E-01	7.50E-01	1.50E+00
Metals							
Barium	7440-39-3	1 : 1 : 1	10-10	1.30E+02	1.30E+02	1.30E+02	2.60E+02
Calcium	7440-70-2	1 : 1 : 1	500-500	1.20E+05	1.20E+05	1.20E+05	2.40E+05
Copper	7440-50-8	1 : 1 : 1	20-20	3.80E+00	3.80E+00	3.80E+00	7.60E+00
Iron	7439-89-6	1 : 1 : 1	50-50	5.70E+02	5.70E+02	5.70E+02	1.14E+03
Magnesium	7439-95-4	1 : 1 : 1	500-500	1.80E+04	1.80E+04	1.80E+04	3.60E+04
Manganese	7439-96-5	1 : 1 : 1	10-10	4.00E+02	4.00E+02	4.00E+02	8.00E+02
Nickel	7440-02-0	1 : 1 : 1	40-40	5.30E+00	5.30E+00	5.30E+00	1.06E+01
Potassium	7440-09-7	1 : 1 : 1	1000-1000	3.70E+03	3.70E+03	3.70E+03	7.40E+03
Sodium	7440-23-5	1 : 1 : 1	1000-1000	6.20E+03	6.20E+03	6.20E+03	1.24E+04
Zinc	7440-66-6	1 : 1 : 1	20-20	5.30E+00	5.30E+00	5.30E+00	1.06E+01
Up - UAA-1/OS-1-20							
Metals							
Aluminum	7429-90-5	1 : 1 : 1	200-200	1.40E+03 J	1.40E+03 J	1.40E+03	2.80E+03
Barium	7440-39-3	1 : 1 : 1	10-10	3.00E+02	3.00E+02	3.00E+02	6.00E+02
Calcium	7440-70-2	1 : 1 : 1	500-500	1.90E+05	1.90E+05	1.90E+05	3.80E+05
Chromium	7440-47-3	1 : 1 : 1	10-10	7.10E+00	7.10E+00	7.10E+00	1.42E+01
Cobalt	7440-48-4	1 : 1 : 1	10-10	4.60E+00	4.60E+00	4.60E+00	9.20E+00
Iron	7439-89-6	1 : 1 : 1	50-50	4.70E+03	4.70E+03	4.70E+03	9.40E+03
Iron, Ferrous (2+)	C-FE+2	1 : 1 : 1	100-100	4.00E+01	4.00E+01	4.00E+01	8.00E+01
Lead	7439-92-1	1 : 1 : 1	5-5	3.00E+00	3.00E+00	3.00E+00	6.00E+00
Magnesium	7439-95-4	1 : 1 : 1	500-500	4.30E+04	4.30E+04	4.30E+04	8.60E+04

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (ug/L)	Maximum Detect and Qualifier (c) (ug/L)	Mean Detected (c) (ug/L)	Background Concentration (d) (ug/L)
Manganese	7439-96-5	1 : 1 : 1	10-10	1.70E+03	1.70E+03	1.70E+03	3.40E+03
Nickel	7440-02-0	1 : 1 : 1	40-40	2.10E+01	2.10E+01	2.10E+01	4.20E+01
Potassium	7440-09-7	1 : 1 : 1	1000-1000	8.60E+03 J	8.60E+03 J	8.60E+03	1.72E+04
Sodium	7440-23-5	1 : 1 : 1	2500-2500	4.80E+04	4.80E+04	4.80E+04	9.60E+04
Zinc	7440-66-6	1 : 1 : 1	20-20	2.20E+01	2.20E+01	2.20E+01	4.40E+01
Up - UAA-2/OS-2-20							
Metals							
Aluminum	7429-90-5	1 : 1 : 1	200-200	8.10E+00 J	8.10E+00 J	8.10E+00	1.62E+01
Barium	7440-39-3	1 : 1 : 1	10-10	1.20E+02	1.20E+02	1.20E+02	2.40E+02
Calcium	7440-70-2	1 : 1 : 1	500-500	1.30E+05	1.30E+05	1.30E+05	2.60E+05
Iron	7439-89-6	1 : 1 : 1	50-50	1.90E+03	1.90E+03	1.90E+03	3.80E+03
Iron, Ferrous (2+)	C-FE+2	1 : 1 : 1	100-100	5.10E+01	5.10E+01	5.10E+01	1.02E+02
Magnesium	7439-95-4	1 : 1 : 1	500-500	3.60E+04	3.60E+04	3.60E+04	7.20E+04
Manganese	7439-96-5	1 : 1 : 1	10-10	1.80E+01	1.80E+01	1.80E+01	3.60E+01
Nickel	7440-02-0	1 : 1 : 1	40-40	7.20E+00	7.20E+00	7.20E+00	1.44E+01
Potassium	7440-09-7	1 : 1 : 1	1000-1000	1.30E+03	1.30E+03	1.30E+03	2.60E+03
Sodium	7440-23-5	1 : 1 : 1	500-500	8.10E+03	8.10E+03	8.10E+03	1.62E+04
Zinc	7440-66-6	1 : 1 : 1	20-20	2.60E+01	2.60E+01	2.60E+01	5.20E+01
Up - UAA-4/OS-4-20							
VOCs							
Dichloromethane	75-09-2	1 : 1 : 1	5-5	1.00E+00	1.00E+00	1.00E+00	2.00E+00
Metals							
Aluminum	7429-90-5	1 : 1 : 1	200-200	3.45E+02	3.45E+02	3.45E+02	6.90E+02
Barium	7440-39-3	1 : 1 : 1	10-10	1.80E+02	1.80E+02	1.80E+02	3.60E+02
Calcium	7440-70-2	1 : 1 : 1	500-500	1.30E+05	1.30E+05	1.30E+05	2.60E+05
Cobalt	7440-48-4	1 : 1 : 1	10-10	2.40E+00	2.40E+00	2.40E+00	4.80E+00
Iron	7439-89-6	1 : 1 : 1	50-50	2.30E+03	2.30E+03	2.30E+03	4.60E+03
Magnesium	7439-95-4	1 : 1 : 1	500-500	2.90E+04	2.90E+04	2.90E+04	5.80E+04
Manganese	7439-96-5	1 : 1 : 1	10-10	1.40E+03	1.40E+03	1.40E+03	2.80E+03
Nickel	7440-02-0	1 : 1 : 1	40-40	1.25E+01	1.25E+01	1.25E+01	2.50E+01
Potassium	7440-09-7	1 : 1 : 1	1000-1000	5.80E+03	5.80E+03	5.80E+03	1.16E+04
Sodium	7440-23-5	1 : 1 : 1	500-500	1.15E+04	1.15E+04	1.15E+04	2.30E+04
Vanadium	7440-62-2	1 : 1 : 1	10-10	1.60E+00	1.60E+00	1.60E+00	3.20E+00
Up - UAA-6-18							
Herbicide							
2,4-D	94-75-7	1 : 1 : 1	-	1.20E-01	1.20E-01	1.20E-01	2.40E-01
Metals							
Aluminum	7429-90-5	1 : 1 : 1	-	1.60E+04	1.60E+04	1.60E+04	3.20E+04
Antimony	7440-36-0	1 : 1 : 1	-	7.80E+00	7.80E+00	7.80E+00	1.56E+01
Arsenic	7440-38-2	1 : 1 : 1	-	3.40E+01	3.40E+01	3.40E+01	6.80E+01
Barium	7440-39-3	1 : 1 : 1	-	9.80E+02	9.80E+02	9.80E+02	1.96E+03
Beryllium	7440-41-7	1 : 1 : 1	-	2.10E+00	2.10E+00	2.10E+00	4.20E+00
Cadmium	7440-43-9	1 : 1 : 1	-	2.00E+00	2.00E+00	2.00E+00	4.00E+00
Calcium	7440-70-2	1 : 1 : 1	-	3.40E+05	3.40E+05	3.40E+05	6.80E+05
Chromium	7440-47-3	1 : 1 : 1	-	1.30E+03	1.30E+03	1.30E+03	2.60E+03
Cobalt	7440-48-4	1 : 1 : 1	-	6.00E+01	6.00E+01	6.00E+01	1.20E+02

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (ug/L)	Maximum Detect and Qualifier (c) (ug/L)	Mean Detected (c) (ug/L)	Background Concentration (d) (ug/L)
Copper	7440-50-8	1 : 1 : 1	-	6.20E+02	6.20E+02	6.20E+02	1.24E+03
Iron	7439-89-6	1 : 1 : 1	-	7.20E+04	7.20E+04	7.20E+04	1.44E+05
Lead	7439-92-1	1 : 1 : 1	-	2.80E+01	2.80E+01	2.80E+01	5.60E+01
Magnesium	7439-95-4	1 : 1 : 1	-	7.20E+04	7.20E+04	7.20E+04	1.44E+05
Manganese	7439-96-5	1 : 1 : 1	-	2.40E+03	2.40E+03	2.40E+03	4.80E+03
Nickel	7440-02-0	1 : 1 : 1	-	4.00E+02	4.00E+02	4.00E+02	8.00E+02
Potassium	7440-09-7	1 : 1 : 1	-	9.00E+03	9.00E+03	9.00E+03	1.80E+04
Sodium	7440-23-5	1 : 1 : 1	-	2.10E+04	2.10E+04	2.10E+04	4.20E+04
Vanadium	7440-62-2	1 : 1 : 1	-	5.70E+01	5.70E+01	5.70E+01	1.14E+02
Zinc	7440-66-6	1 : 1 : 1	-	1.20E+04	1.20E+04	1.20E+04	2.40E+04
Up - UAA-7-18							
Metals							
Aluminum	7429-90-5	1 : 1 : 1	-	4.20E+04	4.20E+04	4.20E+04	8.40E+04
Arsenic	7440-38-2	1 : 1 : 1	-	5.40E+01	5.40E+01	5.40E+01	1.08E+02
Barium	7440-39-3	1 : 1 : 1	-	2.10E+03	2.10E+03	2.10E+03	4.20E+03
Beryllium	7440-41-7	1 : 1 : 1	-	3.10E+00	3.10E+00	3.10E+00	6.20E+00
Cadmium	7440-43-9	1 : 1 : 1	-	3.10E+00	3.10E+00	3.10E+00	6.20E+00
Calcium	7440-70-2	1 : 1 : 1	-	4.90E+05	4.90E+05	4.90E+05	9.80E+05
Chromium	7440-47-3	1 : 1 : 1	-	5.00E+02	5.00E+02	5.00E+02	1.00E+03
Cobalt	7440-48-4	1 : 1 : 1	-	8.80E+01	8.80E+01	8.80E+01	1.76E+02
Copper	7440-50-8	1 : 1 : 1	-	6.50E+01	6.50E+01	6.50E+01	1.30E+02
Iron	7439-89-6	1 : 1 : 1	-	1.00E+05	1.00E+05	1.00E+05	2.00E+05
Lead	7439-92-1	1 : 1 : 1	-	6.10E+01	6.10E+01	6.10E+01	1.22E+02
Magnesium	7439-95-4	1 : 1 : 1	-	8.00E+04	8.00E+04	8.00E+04	1.60E+05
Manganese	7439-96-5	1 : 1 : 1	-	5.40E+03	5.40E+03	5.40E+03	1.08E+04
Nickel	7440-02-0	1 : 1 : 1	-	3.20E+02	3.20E+02	3.20E+02	6.40E+02
Potassium	7440-09-7	1 : 1 : 1	-	1.60E+04	1.60E+04	1.60E+04	3.20E+04
Sodium	7440-23-5	1 : 1 : 1	-	1.10E+04	1.10E+04	1.10E+04	2.20E+04
Vanadium	7440-62-2	1 : 1 : 1	-	1.30E+02	1.30E+02	1.30E+02	2.60E+02
Zinc	7440-66-6	1 : 1 : 1	-	8.60E+02	8.60E+02	8.60E+02	1.72E+03

Notes:
CAS - Chemical Abstracts Service.
COPC - Constituent of potential concern.
PCB - Polychlorinated Biphenyl.Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration, Human Health Calculated using Toxicity Equivalency Factors (TEFs) from Van den Berg, et al., 2006. TEFs presented in Table F-1.
J - Estimated value.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.
-- Not applicable.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.
(b) Range of reporting limits (sample quantitation limits) is based on available information; not available for all samples with positive detections. Range not presented for calculated parameters (i.e., PCBs and Dioxins).
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. The validation qualifier is presented for the minimum and maximum. Only detected results are included in the mean calculation.
(d) Equal to two times the average detected concentration for the constituent in off-site/upgradient sampling locations.
(e) Only constituents detected at least once in the specified area/medium are included here.

TABLE A-3e
BACKGROUND STATISTICS FOR SURFACE WATER
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (ug/L)	Maximum Detect and Qualifier (c) (ug/L)	Mean Detected (c) (ug/L)	Background Concentration (d) (ug/L)
Sediment							
VOCs							
2-Butanone	78-93-3	1 : 7 : 7	0.0088-0.017	3.40E-03	3.40E-03	3.40E-03	6.80E-03
Acetone	67-64-1	6 : 7 : 7	0.018-0.028	5.75E-03 J	9.80E-02 J	3.97E-02	7.94E-02
Xylenes, Total	1330-20-7	1 : 7 : 7	0.0048-0.011	3.20E-03	3.20E-03	3.20E-03	6.40E-03
SVOCs							
Chrysene	218-01-9	1 : 7 : 7	0.01-0.44	3.10E-02	3.10E-02	3.10E-02	6.20E-02
Fluoranthene	206-44-0	2 : 7 : 7	0.01-0.44	3.60E-02	4.10E-02	3.85E-02	7.70E-02
Phenanthrene	85-01-8	1 : 7 : 7	0.01-0.44	3.60E-02	3.60E-02	3.60E-02	7.20E-02
Pyrene	129-00-0	1 : 7 : 7	0.01-0.44	6.70E-02	6.70E-02	6.70E-02	1.34E-01
Herbicide							
2,4-D	94-75-7	1 : 6 : 7	0.0005-0.012	5.20E-03 J	5.20E-03 J	5.20E-03	1.04E-02
Dichlorprop	120-36-5	4 : 6 : 7	0.1-0.15	1.20E-02 J	2.30E-02 J	1.75E-02	3.50E-02
MCPP	93-65-2	2 : 6 : 7	0.12-2.7	3.70E-01 J	4.60E-01 J	4.15E-01	8.30E-01
Dioxin							
Dioxin TEQ-HH	Dioxin TEQ	1 : 1 : 1	-	7.05E-09	7.05E-09	7.05E-09	1.41E-08
Metals							
Aluminum	7429-90-5	7 : 7 : 7	0.02-0.02	6.30E+02	5.90E+03	1.80E+03	3.60E+03
Arsenic	7440-38-2	7 : 7 : 7	0.01-0.01	1.00E+00 J	5.60E+00	2.33E+00	4.66E+00
Barium	7440-39-3	7 : 7 : 7	0.94-0.94	1.10E+01	1.40E+02	4.63E+01	9.26E+01
Beryllium	7440-41-7	1 : 7 : 7	0.004-0.53	4.80E-01	4.80E-01	4.80E-01	9.60E-01
Cadmium	7440-43-9	1 : 7 : 7	0.005-0.61	1.20E+00	1.20E+00	1.20E+00	2.40E+00
Calcium	7440-70-2	7 : 7 : 7	1.1-1.1	8.60E+02	8.20E+03	3.04E+03	6.08E+03
Chromium	7440-47-3	7 : 7 : 7	0.01-0.01	1.60E+00	1.10E+01	4.83E+00	9.66E+00
Cobalt	7440-48-4	7 : 7 : 7	0.01-0.01	2.30E+00	6.00E+00	3.20E+00	6.40E+00
Copper	7440-50-8	7 : 7 : 7	0.01-0.01	6.10E-01	1.20E+01	3.09E+00	6.19E+00
Iron	7439-89-6	7 : 7 : 7	0.05-0.05	2.60E+03	1.20E+04	5.36E+03	1.07E+04
Lead	7439-92-1	7 : 7 : 7	0.005-0.005	1.60E+00	1.20E+01	4.73E+00	9.46E+00
Magnesium	7439-95-4	7 : 7 : 7	47-47	3.80E+02	3.40E+03	1.34E+03	2.68E+03
Manganese	7439-96-5	7 : 7 : 7	0.01-0.01	8.30E+01	5.00E+02	1.89E+02	3.78E+02
Mercury	7439-97-6	4 : 7 : 7	0.017-0.024	3.50E-03	1.30E-01	5.08E-02	1.02E-01
Nickel	7440-02-0	7 : 7 : 7	0.04-0.04	4.70E+00	1.50E+01	7.47E+00	1.49E+01
Potassium	7440-09-7	7 : 7 : 7	94-94	8.70E+01	8.20E+02	2.79E+02	5.58E+02
Sodium	7440-23-5	7 : 7 : 7	100-100	2.20E+01	7.80E+01	4.15E+01	8.30E+01
Vanadium	7440-62-2	7 : 7 : 7	0.01-0.01	3.10E+00	1.90E+01	6.83E+00	1.37E+01
Zinc	7440-66-6	6 : 7 : 7	0.02-15	6.70E+00 J	8.90E+01 J	2.55E+01	5.11E+01
Surface Soil							
VOCs							
Chloromethane	74-87-3	1 : 5 : 5	0.0087-0.018	4.50E-04 J	4.50E-04 J	4.50E-04	9.00E-04
Ethylbenzene	100-41-4	3 : 5 : 5	0.0043-0.0091	4.50E-04	5.80E-04	5.33E-04	1.07E-03
Styrene	100-42-5	3 : 5 : 5	0.0043-0.0091	7.60E-04	3.00E-03	1.69E-03	3.37E-03
Tetrachloroethene	127-18-4	1 : 5 : 5	0.0043-0.0091	4.40E-04	4.40E-04	4.40E-04	8.80E-04
Xylenes, Total	1330-20-7	3 : 5 : 5	0.0087-0.018	5.40E-04	1.10E-03	8.03E-04	1.61E-03
SVOCs							
Acenaphthene	83-32-9	1 : 5 : 5	0.35-0.41	2.10E-02	2.10E-02	2.10E-02	4.20E-02
Anthracene	120-12-7	1 : 5 : 5	0.35-0.41	6.00E-02	6.00E-02	6.00E-02	1.20E-01

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (ug/L)	Maximum Detect and Qualifier (c) (ug/L)	Mean Detected (c) (ug/L)	Background Concentration (d) (ug/L)
Benzo(a)anthracene	56-55-3	3 : 5 : 5	0.35-0.41	2.50E-02	2.30E-01	9.83E-02	1.97E-01
Benzo(a)pyrene	50-32-8	1 : 5 : 5	0.35-0.41	2.40E-01	2.40E-01	2.40E-01	4.80E-01
Benzo(b)fluoranthene	205-99-2	2 : 5 : 5	0.35-0.41	4.00E-02	2.20E-01	1.30E-01	2.60E-01
Benzo(g,h,i)perylene	191-24-2	1 : 5 : 5	0.35-0.41	2.60E-01	2.60E-01	2.60E-01	5.20E-01
Benzo(k)fluoranthene	207-08-9	3 : 5 : 5	0.35-0.41	2.50E-02	2.30E-01	1.05E-01	2.10E-01
bis(2-Ethylhexyl)phthalate	117-81-7	2 : 5 : 5	0.35-0.41	5.30E-02	3.00E-01	1.76E-01	3.53E-01
Chrysene	218-01-9	3 : 5 : 5	0.35-0.41	3.50E-02	2.70E-01	1.17E-01	2.35E-01
Dibenzo(a,h)anthracene	53-70-3	1 : 5 : 5	0.35-0.41	6.00E-02	6.00E-02	6.00E-02	1.20E-01
Fluoranthene	206-44-0	3 : 5 : 5	0.35-0.41	4.70E-02	5.60E-01	2.21E-01	4.42E-01
Phenanthrene	85-01-8	3 : 5 : 5	0.35-0.41	3.25E-02	3.50E-01	1.44E-01	2.89E-01
Pyrene	129-00-0	3 : 5 : 5	0.35-0.41	5.60E-02	5.00E-01	2.04E-01	4.09E-01
Pesticide							
4,4'-DDD	72-54-8	3 : 5 : 5	0.0037-0.035	8.60E-04 J	8.50E-03	4.62E-03	9.24E-03
4,4'-DDE	72-55-9	4 : 5 : 5	0.0037-0.035	1.60E-03 J	1.22E-02 J	7.22E-03	1.44E-02
4,4'-DDT	50-29-3	4 : 5 : 5	0.0037-0.035	6.50E-03 J	4.10E-02 J	2.48E-02	4.95E-02
Aldrin	309-00-2	1 : 5 : 5	0.0019-0.018	4.90E-03 J	4.90E-03 J	4.90E-03	9.80E-03
alpha-BHC	319-84-6	1 : 5 : 5	0.0019-0.018	1.20E-01 J	1.20E-01 J	1.20E-01	2.40E-01
alpha-Chlordane	5103-71-9	2 : 5 : 5	0.0019-0.018	4.20E-04 J	1.20E-02 J	6.21E-03	1.24E-02
delta-BHC	319-86-8	1 : 5 : 5	0.0019-0.018	3.40E-02 J	3.40E-02 J	3.40E-02	6.80E-02
Dieldrin	60-57-1	4 : 5 : 5	0.0037-0.035	3.00E-03 J	1.20E-02 J	6.58E-03	1.32E-02
Endosulfan I	959-98-8	2 : 5 : 5	0.0019-0.018	1.90E-04 J	2.10E-03 J	1.15E-03	2.29E-03
Endosulfan II	33213-65-9	1 : 5 : 5	0.0037-0.035	5.80E-04 J	5.80E-04 J	5.80E-04	1.16E-03
Endosulfan Sulfate	1031-07-8	2 : 5 : 5	0.0037-0.035	7.10E-04 J	1.10E-03 J	9.05E-04	1.81E-03
Endrin	72-20-8	1 : 5 : 5	0.0037-0.035	4.80E-03	4.80E-03	4.80E-03	9.60E-03
Endrin Aldehyde	7421-93-4	2 : 5 : 5	0.0037-0.035	3.00E-03 J	5.80E-03 J	4.40E-03	8.80E-03
gamma-Chlordane	5103-74-2	2 : 5 : 5	0.0019-0.018	7.20E-04 J	9.90E-02	4.99E-02	9.97E-02
Heptachlor	76-44-8	1 : 5 : 5	0.0019-0.018	7.40E-02 J	7.40E-02 J	7.40E-02	1.48E-01
Heptachlor Epoxide	1024-57-3	4 : 5 : 5	0.0019-0.018	1.20E-03 J	1.80E-02 J	6.33E-03	1.27E-02
Methoxychlor	72-43-5	1 : 5 : 5	0.019-0.18	2.80E-03 J	2.80E-03 J	2.80E-03	5.60E-03
Herbicide							
2,4-D	94-75-7	1 : 5 : 5	0.0089-0.01	5.80E-03	5.80E-03	5.80E-03	1.16E-02
Dichlorprop	120-36-5	2 : 5 : 5	0.11-0.23	4.90E-03 J	1.10E-01 J	5.72E-02	1.14E-01
MCPP	93-65-2	1 : 5 : 5	2.2-2.5	4.40E+00 J	4.40E+00 J	4.40E+00	8.80E+00
Pentachlorophenol	87-86-5	3 : 5 : 5	0.018-0.021	1.20E-03 J	3.95E-03 J	2.28E-03	4.57E-03
PCBs							
TOTAL PCBs	Total PCBs	3 : 5 : 5	-	8.22E-02	1.55E-01	1.25E-01	2.50E-01
Dioxin							
Dioxin TEQ-HH	Dioxin TEQ	3 : 5 : 5	-	1.37E-05	3.61E-05	2.15E-05	4.31E-05
Metals							
Aluminum	7429-90-5	5 : 5 : 5	20-23	5.10E+03	9.60E+03	6.92E+03	1.38E+04
Antimony	7440-36-0	2 : 5 : 5	2-2.3	9.30E-01 J	1.70E+00 J	1.31E+00	2.63E+00
Arsenic	7440-38-2	5 : 5 : 5	0.98-1.1	3.20E+00	9.05E+00	6.19E+00	1.24E+01
Barium	7440-39-3	5 : 5 : 5	0.98-1.1	4.20E+01	1.95E+02	1.53E+02	3.07E+02
Beryllium	7440-41-7	5 : 5 : 5	0.39-0.46	1.90E-01	6.70E-01	4.51E-01	9.02E-01
Cadmium	7440-43-9	5 : 5 : 5	0.49-0.57	3.40E-01 J	3.30E+00	1.67E+00	3.34E+00
Calcium	7440-70-2	5 : 5 : 5	52-490	3.10E+03	2.20E+05	4.87E+04	9.74E+04

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (ug/L)	Maximum Detect and Qualifier (c) (ug/L)	Mean Detected (c) (ug/L)	Background Concentration (d) (ug/L)
Chromium	7440-47-3	5 : 5 : 5	0.98-1.1	7.00E+00	1.50E+01	1.11E+01	2.21E+01
Cobalt	7440-48-4	5 : 5 : 5	0.98-1.1	1.50E+00	6.90E+00	4.70E+00	9.40E+00
Copper	7440-50-8	5 : 5 : 5	2-2.3	1.20E+01	9.65E+01 J	4.29E+01	8.58E+01
Iron	7439-89-6	5 : 5 : 5	4.9-5.7	4.80E+03	1.60E+04	1.17E+04	2.33E+04
Lead	7439-92-1	5 : 5 : 5	0.49-0.57	3.10E+01 J	1.04E+02 J	6.51E+01	1.30E+02
Magnesium	7439-95-4	5 : 5 : 5	49-57	1.70E+03	1.70E+04	6.14E+03	1.23E+04
Manganese	7439-96-5	5 : 5 : 5	0.98-1.1	8.60E+01	4.90E+02	2.76E+02	5.52E+02
Mercury	7439-97-6	5 : 5 : 5	0.02-0.023	2.90E-02	9.50E-02	6.68E-02	1.34E-01
Nickel	7440-02-0	5 : 5 : 5	3.9-4.6	1.20E+01	2.25E+01	1.65E+01	3.30E+01
Potassium	7440-09-7	5 : 5 : 5	98-110	5.30E+02 J	2.30E+03 J	1.51E+03	3.01E+03
Selenium	7782-49-2	1 : 5 : 5	0.98-1.1	6.20E-01 J	6.20E-01 J	6.20E-01	1.24E+00
Silver	7440-22-4	2 : 5 : 5	0.98-1.1	2.40E-01	6.70E-01	4.55E-01	9.10E-01
Sodium	7440-23-5	1 : 5 : 5	49-57	2.30E+02	2.30E+02	2.30E+02	4.60E+02
Vanadium	7440-62-2	5 : 5 : 5	0.98-1.1	8.80E+00 J	2.60E+01 J	1.95E+01	3.89E+01
Zinc	7440-66-6	5 : 5 : 5	2-2.3	5.50E+01	3.50E+02	1.95E+02	3.90E+02
Surface Water							
VOCs							
Chloromethane	74-87-3	1 : 7 : 7	0.5-1	5.00E-01 J	5.00E-01 J	5.00E-01	1.00E+00
SVOCs							
bis(2-Ethylhexyl)phthalate	117-81-7	1 : 7 : 7	10-10	1.40E+01 J	1.40E+01 J	1.40E+01	2.80E+01
Pesticide							
Endrin Ketone	53494-70-5	5 : 7 : 7	0.1-0.1	1.50E-02 J	2.40E-02	1.87E-02	3.74E-02
Herbicide							
Pentachlorophenol	87-86-5	1 : 7 : 7	1-1	3.00E-01	3.00E-01	3.00E-01	6.00E-01
Metals							
Aluminum	7429-90-5	7 : 7 : 7	20-20	5.80E+02	8.80E+02	7.04E+02	1.41E+03
Barium	7440-39-3	7 : 7 : 7	10-10	5.50E+01	6.10E+01	5.87E+01	1.17E+02
Calcium	7440-70-2	7 : 7 : 7	500-500	4.90E+04	5.30E+04	5.11E+04	1.02E+05
Cobalt	7440-48-4	1 : 7 : 7	10-10	1.10E+00	1.10E+00	1.10E+00	2.20E+00
Iron	7439-89-6	7 : 7 : 7	50-50	8.30E+02	1.10E+03	9.69E+02	1.94E+03
Magnesium	7439-95-4	7 : 7 : 7	500-500	2.00E+04	2.10E+04	2.06E+04	4.11E+04
Manganese	7439-96-5	7 : 7 : 7	10-10	7.70E+01	8.40E+01	8.12E+01	1.62E+02
Potassium	7440-09-7	7 : 7 : 7	10-10	3.20E+03	3.50E+03	3.36E+03	6.73E+03
Sodium	7440-23-5	7 : 7 : 7	80000-80000	1.70E+04	2.00E+04	1.84E+04	3.69E+04
Thallium	7440-28-0	1 : 7 : 7	10-10	5.20E+00 J	5.20E+00 J	5.20E+00	1.04E+01
Vanadium	7440-62-2	1 : 7 : 7	10-10	3.30E+00	3.30E+00	3.30E+00	6.60E+00
Zinc	7440-66-6	1 : 7 : 7	20-20	4.60E+00	4.60E+00	4.60E+00	9.20E+00

TABLE A-3e
BACKGROUND STATISTICS FOR SURFACE WATER
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA RI/FS
SAUGET, ILLINOIS

ENSR

Constituent (e)	CAS	FOD (a)	Range of Reporting Limits (b)	Minimum Detect and Qualifier (c) (ug/L)	Maximum Detect and Qualifier (c) (ug/L)	Mean Detected (c) (ug/L)	Background Concentration (d) (ug/L)

Notes:
CAS - Chemical Abstracts Service.
COPC - Constituent of potential concern.
PCB - Polychlorinated Biphenyl.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration, Human Health Calculated using Toxicity Equivalency Factors (TEFs) from Van den Berg, et al., 2006. TEFs presented in Table F-1.
J - Estimated value.
USEPA - United States Environmental Protection Agency.
VOC - Volatile Organic Compound.
-- Not applicable.
(a) Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.
(b) Range of reporting limits (sample quantitation limits) is based on available information; not available for all samples with positive detections. Range not presented for calculated parameters (i.e., PCBs and Dioxins).
(c) Summary statistics for each constituent for each area after sample/duplicate pairs were averaged. The validation qualifier is presented for the minimum and maximum. Only detected results are included in the mean calculation.
(d) Equal to two times the average detected concentration for the constituent in off-site/upgradient sampling locations.
(e) Only constituents detected at least once in the specified area/medium are included here.

TABLE A-4
SCREENING VALUES FOR SOIL AND SEDIMENT
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Cas Number	Screening Value (mg/kg)		Screening Value Basis	Structural Surrogate
VOCs					
1,1,1-Trichloroethane	71-55-6	6.94E+02	(a)	nc (sat)	
1,1,2,2-Tetrachloroethane	79-34-5	9.30E-01	(a)	ca	
1,1,2-Trichloroethane	79-00-5	1.60E+00	(a)	ca	
1,1-Dichloroethane	75-34-3	1.74E+02	(a)	nc	
1,1-Dichloroethylene	75-35-4	4.13E+01	(a)	nc	
1,2,4-Trimethylbenzene	95-63-6	1.70E+01	(a)	nc	
1,2-Dichloroethane	107-06-2	6.00E-01	(a)	ca	
1,2-Dichloroethene (cis)	156-59-2	1.46E+01	(a)	nc	
1,2-Dichloroethene (total)	540-59-0	1.46E+01	(a)	nc	1,2-Dichloroethylene (cis)
1,2-Dichloroethene (trans)	156-60-5	2.35E+01	(a)	nc	
1,2-Dichloropropane	78-87-5	7.40E-01	(a)	ca	
1,3,5-Trimethylbenzene	108-67-8	7.00E+00	(a)	nc	
1,3-Dichloropropene (cis)	10061-01-5	1.80E+00	(a)	ca	1,3-Dichloropropene
1,3-Dichloropropene (trans)	10061-02-6	1.80E+00	(a)	ca	1,3-Dichloropropene
2-Butanone	78-93-3	1.13E+04	(a)	nc	
4-Methyl-2-pentanone	108-10-1	4.70E+03	(a)	nc	
Acetone	67-64-1	5.43E+03	(a)	nc	
Acrolein	107-02-8	3.40E-02	(a)	nc	
Benzene	71-43-2	1.40E+00	(a)	ca	
Bromodichloromethane	75-27-4	1.83E+00	(a)	ca	
Bromoform	75-25-2	2.18E+02	(a)	ca	
Bromomethane	74-83-9	1.31E+00	(a)	nc	
Carbon Disulfide	75-15-0	1.20E+02	(a)	nc (sat)	
Carbon Tetrachloride	56-23-5	5.50E-01	(a)	ca	
Chlorobenzene	108-90-7	5.31E+01	(a)	nc	
Chlorodibromomethane	124-48-1	2.55E+00	(a)	ca	
Chloroethane	75-00-3	6.49E+00	(a)	ca	
Chloroform	67-66-3	4.70E-01	(a)	ca	
Chloromethane	74-87-3	1.56E+01	(a)	nc	
Dichloromethane	75-09-2	2.05E+01	(a)	ca	
Ethylbenzene	100-41-4	7.42E+02	(a)	nc (sat)	
Hexane	110-54-3	4.00E+01	(a)	nc (sat)	
Methyl acetate	79-20-9	NA			
Methyl N-Butyl Ketone	591-78-6	1.13E+04	(a)	nc	2-Butanone
o-Xylene	95-47-6	8.98E+01	(a)	nc (sat)	
p-Isopropyltoluene	99-87-6	8.98E+01	(a)	nc (sat)	Xylenes, total
p-Xylene/m-Xylene	108-38-3	8.98E+01	(a)	nc (sat)	
Styrene	100-42-5	1.81E+03	(a)	nc (sat)	
Tetrachloroethene	127-18-4	1.31E+00	(a)	ca	
Toluene	108-88-3	2.21E+02	(a)	nc (sat)	
Trichloroethylene	79-01-6	1.10E-01	(a)	ca	
Vinyl chloride	75-01-4	7.50E-01	(a)	ca	
Xylenes, Total	1330-20-7	8.98E+01	(a)	nc (sat)	
SVOCs					
1,2,4-Trichlorobenzene	120-82-1	2.16E+01	(a)	nc	
1,2-Dichlorobenzene	95-50-1	4.10E+02	(a)	nc (sat)	
1,3-Dichlorobenzene	541-73-1	2.09E+02	(a)	nc (sat)	
1,4-Dichlorobenzene	106-46-7	7.87E+00	(a)	ca	
2,2'-Oxybis(1-Chloropropane)	108-60-1	7.35E+00	(a)	ca	
2,4,5-Trichlorophenol	95-95-4	6.16E+03	(a)	nc	
2,4,6-Trichlorophenol	88-06-2	6.16E+00	(a)	nc	

TABLE A-4
SCREENING VALUES FOR SOIL AND SEDIMENT
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Cas Number	Screening Value (mg/kg)		Screening Value Basis	Structural Surrogate
2,4-Dichlorophenol	120-83-2	1.85E+02	(a)	nc	
2,4-Dimethylphenol	105-67-9	1.23E+03	(a)	nc	
2,4-Dinitrophenol	51-28-5	1.23E+02	(a)	nc	
2,4-Dinitrotoluene	121-14-2	1.23E+02	(a)	nc	
2,6-Dinitrotoluene	606-20-2	6.16E+01	(a)	nc	
2-Chloronaphthalene	91-58-7	2.34E+03	(a)	nc	
2-Chlorophenol	95-57-8	2.36E+01	(a)	nc	
2-Methylnaphthalene	91-57-6	1.88E+01	(a)	nc	Naphthalene
2-Methylphenol	95-48-7	3.08E+03	(a)	nc	
2-Nitroaniline	88-74-4	1.83E+02	(a)	nc	
2-Nitrophenol	88-75-5	NA			
3&4-Methylphenol	106-44-5	3.08E+02	(a)	nc	
3,3'-Dichlorobenzidine	91-94-1	3.83E+00	(a)	ca	
3-Nitroaniline	99-09-2	1.85E+01	(a)	nc (ca*)	
4,6-Dinitro-2-methylphenol	534-52-1	6.16E+00	(a)	nc	
4-Bromophenyl Phenyl Ether	101-55-3	NA			
4-Chloro-3-methylphenol	59-50-7	NA			
4-Chloroaniline	106-47-8	2.46E+02	(a)	nc	
4-Chlorophenyl Phenyl Ether	7005-72-3	NA			
4-Nitroaniline	100-01-6	8.20E+01	(a)	ca	
4-Nitrophenol	100-02-7	NA			
Acenaphthene	83-32-9	2.92E+03	(a)	nc	
Acenaphthylene	208-96-8	2.92E+03	(a)	nc	Acenaphthene
Anthracene	120-12-7	2.38E+04	(a)	nc (max)	
Benzo(a)anthracene	56-55-3	2.11E+00	(a)	ca	
Benzo(a)pyrene	50-32-8	2.10E-01	(a)	ca	
Benzo(b)fluoranthene	205-99-2	2.11E+00	(a)	ca	
Benzo(g,h,i)perylene	191-24-2	2.91E+03	(a)	nc	Pyrene
Benzo(k)fluoranthene	207-08-9	2.11E+01	(a)	ca	
Benzyl Butyl Phthalate	85-68-7	1.23E+04	(a)	nc (max)	
bis(2-Chloroethoxy)methane	111-91-1	NA			
bis(2-Chloroethyl)ether	111-44-4	5.80E-01	(a)	ca	
bis(2-Ethylhexyl)phthalate	117-81-7	1.23E+02	(a)	ca	
Carbazole	86-74-8	8.62E+01	(a)	ca	
Chrysene	218-01-9	2.11E+02	(a)	ca	
Dibenzo(a,h)anthracene	53-70-3	2.10E-01	(a)	ca	
Dibenzofuran	132-64-9	1.56E+02	(a)	nc	
Diethyl Phthalate	84-66-2	4.92E+04	(a)	nc (max)	
Dimethyl Phthalate	131-11-3	6.16E+05	(a)	nc (max)	
Di-n-butylphthalate	84-74-2	6.16E+03	(a)	nc	
Di-n-octylphthalate	117-84-0	2.46E+03	(a)	nc	
Fluoranthene	206-44-0	2.20E+03	(a)	nc	
Fluorene	86-73-7	2.63E+03	(a)	nc	
Hexachlorobenzene	118-74-1	1.08E+00	(a)	ca	
Hexachlorobutadiene	87-68-3	1.85E+01	(a)	nc (ca*)	
Hexachlorocyclopentadiene	77-47-4	3.66E+02	(a)	nc	
Hexachloroethane	67-72-1	6.16E+01	(a)	nc (ca*)	
Indeno(1,2,3-cd)pyrene	193-39-5	2.11E+00	(a)	ca	
Isophorone	78-59-1	5.12E+02	(a)	ca	
Naphthalene	91-20-3	1.88E+01	(a)	nc	
Nitrobenzene	98-95-3	1.03E+01	(a)	nc	
N-Nitroso-di-n-propylamine	621-64-7	2.50E-01	(a)	ca	

TABLE A-4
SCREENING VALUES FOR SOIL AND SEDIMENT
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Cas Number	Screening Value (mg/kg)		Screening Value Basis	Structural Surrogate
N-Nitrosodiphenylamine	86-30-6	3.52E+02	(a)	ca	
Phenanthrene	85-01-8	2.38E+04	(a)	nc (sat)	Anthracene
Phenol	108-95-2	1.85E+04	(a)	nc (max)	
Pyrene	129-00-0	2.91E+03	(a)	nc	
Pesticides					
4,4'-DDD	72-54-8	9.95E+00	(a)	ca	
4,4'-DDE	72-55-9	7.02E+00	(a)	ca	
4,4'-DDT	50-29-3	7.00E+00	(a)	ca	
Aldrin	309-00-2	1.00E-01	(a)	ca	
alpha-BHC	319-84-6	3.60E-01	(a)	ca	
alpha-Chlordane	5103-71-9	6.50E+00	(a)	ca	Chlordane (technical)
beta-BHC	319-85-7	1.26E+00	(a)	ca	
delta-BHC	319-86-8	3.60E-01	(a)	ca	alpha-HCH
Dieldrin	60-57-1	1.10E-01	(a)	ca	
Endosulfan I	959-98-8	3.69E+02	(a)	nc	Endosulfan
Endosulfan II	33213-65-9	3.69E+02	(a)	nc	Endosulfan
Endosulfan Sulfate	1031-07-8	3.69E+02	(a)	nc	Endosulfan
Endrin	72-20-8	1.85E+01	(a)	nc	
Endrin Aldehyde	7421-93-4	1.85E+01	(a)	nc	Endrin
Endrin Ketone	53494-70-5	1.85E+01	(a)	nc	Endrin
gamma-BHC (Lindane)	58-89-9	1.74E+00	(a)	ca	
gamma-Chlordane	5103-74-2	6.50E+00	(a)	ca	Chlordane (technical)
Heptachlor	76-44-8	3.80E-01	(a)	ca	
Heptachlor Epoxide	1024-57-3	1.90E-01	(a)	ca	
Methoxychlor	72-43-5	3.08E+02	(a)	nc	
Toxaphene	8001-35-2	1.57E+00	(a)	ca	
Herbicides					
2,4,5-T	93-76-5	6.16E+02	(a)	nc	
2,4,5-TP (Silvex)	93-72-1	4.92E+02	(a)	nc	
2,4-D	94-75-7	7.68E+02	(a)	nc	
2,4-DB	94-82-6	4.92E+02	(a)	nc	
Dalapon	75-99-0	1.85E+03	(a)	nc	
Dicamba	1918-00-9	1.85E+03	(a)	nc	
Dichlorprop	120-36-5	4.92E+02	(a)	nc	2,4-DB
Dinoseb	88-85-7	6.16E+01	(a)	nc	
MCPA	94-74-6	3.08E+01	(a)	nc	
MCPP	93-65-2	6.16E+01	(a)	nc	
Pentachlorophenol	87-86-5	9.00E+00	(a)	ca	
PCBs					
PCBs, total	Total PCBs	1.00E+00	(b)		
Dioxins					
Dioxin TEQ-HH	Dioxin TEQ-HH	1.00E-03	(c)		
Metals					
Aluminum	7429-90-5	9.21E+04	(a)	nc (max)	
Antimony	7440-36-0	4.09E+01	(a)	nc	
Arsenic	7440-38-2	1.59E+00	(a)	ca	
Barium	7440-39-3	6.66E+03	(a)	nc	
Beryllium	7440-41-7	1.94E+02	(a)	nc (ca*)	
Cadmium	7440-43-9	4.51E+01	(a)	nc	
Calcium	7440-70-2	EN			
Chromium	7440-47-3	4.48E+02	(a)	ca	
Cobalt	7440-48-4	1.33E+03	(a)	nc (ca*)	

TABLE A-4
SCREENING VALUES FOR SOIL AND SEDIMENT
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Cas Number	Screening Value (mg/kg)		Screening Value Basis	Structural Surrogate
Copper	7440-50-8	4.09E+03	(a)	nc	
Iron	7439-89-6	7.20E+04	(d)	nc	
Lead	7439-92-1	8.00E+02	(a)	AL	
Magnesium	7439-95-4	EN			
Manganese	7439-96-5	1.95E+03	(a)	nc	
Mercury	7439-97-6	3.10E+01	(a)	nc	Mercury and Compounds
Nickel	7440-02-0	2.04E+03	(a)	nc	
Potassium	7440-09-7	EN			
Selenium	7782-49-2	5.11E+02	(a)	nc	
Silver	7440-22-4	5.11E+02	(a)	nc	
Sodium	7440-23-5	EN			
Thallium	7440-28-0	6.75E+00	(a)	nc	
Vanadium	7440-62-2	1.02E+02	(a)	nc	
Zinc	7440-66-6	3.06E+04	(a)	nc (max)	

Acronyms:

CAS - Chemical Abstract Service.

Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. Calculated using TEFs from (Van den Berg et al., 2006). TEFs are presented in Table F-1.

EN - Essential Nutrient

NA - Not Available. No dose-response value to evaluate.

PCB - Polychlorinated Biphenyl.

PRG - Preliminary Remediation Goal.

SVOC - Semivolatile Organic Compound.

VOC - Volatile Organic Compound.

Basis Codes:

AL - PRG based on Adult Lead Model.

ca - PRG based on potentially carcinogenic effects

nc - PRG based on noncarcinogenic effects, and was adjusted to a hazard index of 0.1.

nc (ca*) - PRG is based on potentially carcinogenic effects. However, the noncarcinogenic PRG (presented in the electronic backup to the PRG table) adjusted to a hazard index of 0.1 is lower and is therefore used for screening.

nc (max) - PRG based on cap of 100,000 mg/kg. Therefore, PRG for noncarcinogenic effects was obtained from the electronic backup to the PRG table and was adjusted to a hazard index of 0.1.

nc (sat) - PRG based on soil saturation limit. Therefore, PRG for noncarcinogenic effects was obtained from the electronic backup to the PRG table and was adjusted to a hazard index of 0.1.

Notes:

(a) USEPA. 2004. Region 9 Preliminary Remediation Goals (PRGs). October 2004. PRG for Industrial Soil. PRBs for noncarcinogenic constituents were adjusted for a hazard index of 0.1 to account for cumulative effects.

(b) USEPA.1998a. Disposal of Polychlorinated Biphenyls (PCBs); Final Rule. FR63(124):35384-35474. June 29, 1998.

(c) USEPA. 1998. Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites. OSWER Directive 9200.4-26. April 13, 1998. Value for residential soil.

(d) - PRG from (a) revised using revised reference dose of 0.7 mg/kg-day. Provisional Peer Reviewed Toxicity Value Summary for Iron and Compounds. USEPA. February 7, 2007.

TABLE A-5
SCREENING VALUES FOR GROUNDWATER, LEACHATE, SURFACE WATER, AND SEEP
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Cas Number	Screening Value (a) (ug/L)	Screening Value Reference	Structural Surrogate
VOCs				
1,1,1-Trichloroethane	71-55-6	200	35 III 620.410 Class I	
1,1,2,2-Tetrachloroethane	79-34-5	420	non-TACO	
1,1,2-Trichloroethane	79-00-5	5	35 III 620.410 Class I	
1,1-Dichloroethane	75-34-3	700	TACO	
1,1-Dichloroethylene	75-35-4	7	35 III 620.410 Class I	
1,2,4-Trimethylbenzene	95-63-6	350	non-TACO	
1,2-Dichloroethane	107-06-2	5	35 III 620.410 Class I	
1,2-Dichloroethene (cis)	156-59-2	70	35 III 620.410 Class I	
1,2-Dichloroethene (total)	540-59-0	70	35 III 620.410 Class I	1,2-Dichloroethene (cis)
1,2-Dichloroethene (trans)	156-60-5	100	35 III 620.410 Class I	
1,2-Dichloropropane	78-87-5	5	35 III 620.410 Class I	
1,3-Dichloropropene (cis)	10061-01-5	1	TACO	
1,3-Dichloropropene (trans)	10061-02-6	1	TACO	
2-Butanone	78-93-3	4200	non-TACO	
4-Methyl-2-pentanone	108-10-1	2000	PRG	
Acetone	67-64-1	6300	TACO	
Benzene	71-43-2	5	35 III 620.410 Class I	
Bromodichloromethane	75-27-4	80	MCL	
Bromoform	75-25-2	80	MCL	
Bromomethane	74-83-9	9.8	TACO	
Carbon Disulfide	75-15-0	700	TACO	
Carbon Tetrachloride	56-23-5	5	35 III 620.410 Class I	
Chlorobenzene	108-90-7	100	35 III 620.410 Class I	
Chlorodibromomethane	124-48-1	80	MCL	
Chloroethane	75-00-3	4.6	PRG	
Chloroform	67-66-3	80	MCL	
Chloromethane	74-87-3	160	PRG	
Dichloromethane	75-09-2	5	35 III 620.410 Class I	
Ethylbenzene	100-41-4	700	35 III 620.410 Class I	
Isopropylbenzene	98-82-8	700	non-TACO	
Methyl N-Butyl Ketone	591-78-6	2000	PRG	4-Methyl-2-pentanone
Methyl tert-butyl ether (MTBE)	1634-04-4	70	35 III 620.410 Class I	
Methylcyclohexane	108-87-2	5200	PRG	
n-Propylbenzene	103-65-1	240	PRG	
Styrene	100-42-5	100	35 III 620.410 Class I	
Tetrachloroethene	127-18-4	5	35 III 620.410 Class I	
Toluene	108-88-3	1000	35 III 620.410 Class I	
Trichloroethylene	79-01-6	5	35 III 620.410 Class I	
Vinyl chloride	75-01-4	2	35 III 620.410 Class I	
Xylenes, Total	1330-20-7	10000	35 III 620.410 Class I	
1,2,4-Trichlorobenzene	120-82-1	70	35 III 620.410 Class I	
1,2-Dichlorobenzene	95-50-1	600	35 III 620.410 Class I	
SVOCs				
1,3-Dichlorobenzene	541-73-1	600	35 III 620.410 Class I	1,2-Dichlorobenzene
1,4-Dichlorobenzene	106-46-7	75	35 III 620.410 Class I	
1,4-Dioxane	123-91-1	1	non-TACO	
1-Methylnaphthalene	90-12-0	490	non-TACO	
2,2'-Oxybis(1-Chloropropane)	108-60-1	NA	NA	
2,4 & 2,5-Dimethylphenol	dimeth	140	TACO	2,4-Dimethylphenol
2,4,5-Trichlorophenol	95-95-4	700	TACO	
2,4,6-Trichlorophenol	88-06-2	10	TACO	

TABLE A-5
SCREENING VALUES FOR GROUNDWATER, LEACHATE, SURFACE WATER, AND SEEP
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Cas Number	Screening Value (a) (ug/L)	Screening Value Reference	Structural Surrogate
2,4-Dichlorophenol	120-83-2	21	TACO	
2,4-Dimethylphenol	105-67-9	140	TACO	
2,4-Dinitrophenol	51-28-5	14	TACO	
2,4-Dinitrotoluene	121-14-2	0.02	TACO	
2,6-Dinitrotoluene	606-20-2	0.31	TACO	
2-Chloronaphthalene	91-58-7	560	non-TACO	
2-Chlorophenol	95-57-8	35	TACO	
2-Methylnaphthalene	91-57-6	28	non-TACO	Naphthalene
2-Methylphenol	95-48-7	350	TACO	
2-Nitroaniline	88-74-4	21	non-TACO	
2-Nitrophenol	88-75-5	NA	NA	
2-Toluidine	95-53-4	0.35	PRG	p-Toluidine
3&4-Methylphenol	106-44-5	350	non-TACO	4-Methylphenol
3,3'-Dichlorobenzidine	91-94-1	20	TACO	
3-Nitroaniline	99-09-2	2.1	non-TACO	
4,6-Dinitro-2-methylphenol	534-52-1	7	non-TACO	
4-Bromophenyl Phenyl Ether	101-55-3	NA	NA	
4-Chloro-3-methylphenol	59-50-7	NA	NA	
4-Chloroaniline	106-47-8	28	TACO	
4-Chlorophenol	106-48-9	30	PRG	2-Chlorophenol
4-Chlorophenyl Phenyl Ether	7005-72-3	NA	NA	
4-Nitroaniline	100-01-6	21	non-TACO	
4-Nitrophenol	100-02-7	56	non-TACO	
Acenaphthene	83-32-9	420	TACO	
Acenaphthylene	208-96-8	210	non-TACO	
Acetophenone	98-86-2	NA	NA	
Aniline, 2-ethyl-	587-02-0	NA	NA	
Anthracene	120-12-7	2100	TACO	
Benzo(a)anthracene	56-55-3	0.13	TACO	
Benzo(a)pyrene	50-32-8	0.2	35 III 620.410 Class I	
Benzo(b)fluoranthene	205-99-2	0.18	TACO	
Benzo(g,h,i)perylene	191-24-2	210	non-TACO	Pyrene
Benzo(k)fluoranthene	207-08-9	0.17	TACO	
Benzyl Butyl Phthalate	85-68-7	1400	TACO	
bis(2-Chloroethoxy)methane	111-91-1	NA	NA	
bis(2-Chloroethyl)ether	111-44-4	10	TACO	
bis(2-Ethylhexyl)phthalate	117-81-7	6	35 III 620.410 Class I	
Caprolactam	105-60-2	3500	non-TACO	
Carbazole	86-74-8	3.4	PRG	
Chrysene	218-01-9	1.5	TACO	
Cresol o,m,p	1319-77-3	350	non-TACO	4-Methylphenol
Dibenzo(a,h)anthracene	53-70-3	0.3	TACO	
Dibenzofuran	132-64-9	14	non-TACO	
Diethyl Phthalate	84-66-2	5600	TACO	
Dimethyl Phthalate	131-11-3	360000	PRG	
Di-n-butylphthalate	84-74-2	700	TACO	
Di-n-octylphthalate	117-84-0	140	TACO	
Dinoseb	88-85-7	7	35 III 620.410 Class I	
Fluoranthene	206-44-0	280	TACO	
Fluorene	86-73-7	280	TACO	
Hexachlorobenzene	118-74-1	1	MCL	
Hexachlorobutadiene	87-68-3	0.86	non-TACO	

TABLE A-5
SCREENING VALUES FOR GROUNDWATER, LEACHATE, SURFACE WATER, AND SEEP
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Cas Number	Screening Value (a) (ug/L)	Screening Value Reference	Structural Surrogate
Hexachlorocyclopentadiene	77-47-4	50	35 III 620.410 Class I	
Hexachloroethane	67-72-1	7	TACO	
Indeno(1,2,3-cd)pyrene	193-39-5	0.43	TACO	
Isophorone	78-59-1	1400	TACO	
Naphthalene	91-20-3	140	TACO	
Nitrobenzene	98-95-3	3.5	TACO	
N-Nitroso-di-n-propylamine	621-64-7	1.8	TACO	
N-Nitrosodiphenylamine	86-30-6	3.2	TACO	
Phenanthrene	85-01-8	2100	non-TACO	
Phenol	108-95-2	100	35 III 620.410 Class I	
Pyrene	129-00-0	210	TACO	
Pesticides				
4,4'-DDD	72-54-8	14	TACO	
4,4'-DDE	72-55-9	10	TACO	
4,4'-DDT	50-29-3	6	TACO	
Aldrin	309-00-2	14	TACO	
alpha-BHC	319-84-6	0.11	TACO	
alpha-Chlordane	5103-71-9	2	35 III 620.410 Class I	chlordane
beta-BHC	319-85-7	0.2	35 III 620.410 Class I	gamma-bhc
delta-BHC	319-86-8	0.2	35 III 620.410 Class I	gamma-bhc
Dieldrin	60-57-1	9	TACO	
Endosulfan I	959-98-8	42	TACO	endosulfan
Endosulfan II	33213-65-9	42	TACO	endosulfan
Endosulfan Sulfate	1031-07-8	42	TACO	endosulfan
Endrin	72-20-8	2	35 III 620.410 Class I	
Endrin Aldehyde	7421-93-4	2	35 III 620.410 Class I	endrin
Endrin Ketone	53494-70-5	2	35 III 620.410 Class I	endrin
gamma-BHC (Lindane)	58-89-9	0.2	35 III 620.410 Class I	
gamma-Chlordane	5103-74-2	2	35 III 620.410 Class I	chlordane
Heptachlor	76-44-8	0.4	35 III 620.410 Class I	
Heptachlor Epoxide	1024-57-3	0.2	35 III 620.410 Class I	
Methoxychlor	72-43-5	40	35 III 620.410 Class I	
Toxaphene	8001-35-2	3	35 III 620.410 Class I	
Herbicides				
2,4,5-T	93-76-5	280	non-TACO	
2,4,5-TP (Silvex)	93-72-1	50	35 III 620.410 Class I	
2,4-D	94-75-7	70	35 III 620.410 Class I	
2,4-DB	94-82-6	290	PRG	
Dalapon	75-99-0	200	35 III 620.410 Class I	
Dicamba	1918-00-9	210	non-TACO	
Dichlorprop	120-36-5	290	PRG	2,4-DB
MCPA	94-74-6	3.5	non-TACO	
MCPP	93-65-2	7	non-TACO	
Pentachlorophenol	87-86-5	1	35 III 620.410 Class I	
PCBs				
Total PCBs	Total PCBs	0.5	35 III 620.410 Class I	
Dioxins				
Dioxin TEQ-HH	Dioxin TEQ-HH	0.00003	MCL	
Metals				
Aluminum	7429-90-5	3500	non-TACO	
Antimony	7440-36-0	6	35 III 620.410 Class I	
Arsenic	7440-38-2	10	MCL [35 III 620.410 Class I = 50 ug/L]	

TABLE A-5
SCREENING VALUES FOR GROUNDWATER, LEACHATE, SURFACE WATER, AND SEEP
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Cas Number	Screening Value (a) (ug/L)	Screening Value Reference	Structural Surrogate
Barium	7440-39-3	2000	35 III 620.410 Class I	
Beryllium	7440-41-7	4	35 III 620.410 Class I	
Cadmium	7440-43-9	5	35 III 620.410 Class I	
Calcium	7440-70-2	EN		
Chromium	7440-47-3	100	35 III 620.410 Class I	
Cobalt	7440-48-4	1000	35 III 620.410 Class I	
Copper	7440-50-8	650	35 III 620.410 Class I	
Iron	7439-89-6	5000	35 III 620.410 Class I	
Lead	7439-92-1	7.5	35 III 620.410 Class I	
Magnesium	7439-95-4	EN		
Manganese	7439-96-5	150	35 III 620.410 Class I	
Mercury	7439-97-6	2	35 III 620.410 Class I	
Nickel	7440-02-0	100	35 III 620.410 Class I	
Potassium	7440-09-7	EN		
Selenium	7782-49-2	50	35 III 620.410 Class I	
Silver	7440-22-4	50	35 III 620.410 Class I	
Sodium	7440-23-5	EN		
Thallium	7440-28-0	2	35 III 620.410 Class I	
Vanadium	7440-62-2	49	TACO	
Zinc	7440-66-6	5000	35 III 620.410 Class I	

Notes:

CAS - Chemical Abstract Service.

Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration for human health.

EN - Essential Nutrient.

NA - Not Available.

PCB - Polychlorinated Biphenyl.

SVOC - Semivolatile Organic Compound.

(a) Groundwater water screening levels were used according to the following hierarchy:

1) 35 III 620.410 Class I: Illinois Groundwater Quality Standards for Class I: Potable Resource Groundwater. 35 III. Adm. Code 620.410. February 2, 2002.

2) MCL: USEPA, 2006. 2006 Edition of the Drinking Water Standards and Health Advisories. Office of Water. EPA 822-R-06-013. Maximum Contaminant Levels.

3) TACO: IEPA, 2007. Tiered Approach to Corrective Action Objectives. Appendix B, Table E. Tier 1 Groundwater Remediation Objectives for the Groundwater Component of the Groundwater Ingestion Route. Class I values. February 23, 2007.

4) non-TACO: Groundwater Remediation Objectives for Chemicals Not Listed in TACO. May 1, 2007. Prepared by the Illinois EPA Toxicity Assessment Unit, and February 1, 2008 Revisions/Additions to Tables for Non-TACO Chemical Remediation Objectives.

5) PRG: USEPA, 2004. Region 9 Preliminary Remediation Goal (PRG) Table. October 1, 2004. Value for Tap water

TABLE A-6
SCREENING VALUES FOR FISH TISSUE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Cas Number	Screening Value (mg/kg)	Screening Value Basis	Structural Surrogate
SVOCs				
Benzo(a)anthracene	56-55-3	4.32E-03	ca	
Benzo(a)pyrene	50-32-8	4.32E-04	ca	
bis(2-Ethylhexyl)phthalate	117-81-7	2.25E-01	ca	
Chrysene	218-01-9	4.32E-01	ca	
Dibenzo(a,h)anthracene	53-70-3	4.32E-04	ca	
Fluoranthene	206-44-0	5.40E+00	nc	
Pesticides				
4,4'-DDE	72-55-9	9.28E-03	ca	
4,4'-DDT	50-29-3	9.28E-03	ca	
alpha-Chlordane	5103-71-9	9.00E-03	ca	Chlordane
beta-BHC	319-85-7	1.75E-03	ca	
Dieldrin	60-57-1	1.97E-04	ca	
Endrin Aldehyde	7421-93-4	4.10E-02	nc	Endrin
gamma-BHC (Lindane)	58-89-9	2.43E-03	ca	
gamma-Chlordane	5103-74-2	9.00E-03	ca	Chlordane
Methoxychlor	72-43-5	6.80E-01	nc	
Herbicides				
2,4,5-T	93-76-5	1.35E+00	nc	
2,4-DB	94-82-6	1.08E+00	nc	
PCBs				
PCBs, Total	Total PCBs	3.00E-03	ca	
Dioxins				
Dioxin TEQ-HH	Dioxin TEQ-HH	2.10E-08	ca	
Metals				
Aluminum	7429-90-5	1.35E+02	nc	
Arsenic	7440-38-2	2.10E-03	ca	
Calcium	7440-70-2	EN		
Copper	7440-50-8	5.40E+00	nc	
Iron	7439-89-6	9.46E+01	nc	
Magnesium	7439-95-4	EN		
Manganese	7439-96-5	2.70E+00	nc	
Mercury	7439-97-6	1.40E-01	ca	Methyl Mercury
Potassium	7440-09-7	EN		
Sodium	7440-23-5	EN		

Acronyms:
CAS - Chemical Abstract Service.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalent Concentration for human health.
EN - Essential Nutrient
PCB - Polychlorinated Biphenyl.
RBC - Risk-Based Concentration.
SVOC - Semivolatile Organic Compound.
Basis Codes:
ca - RBC based on potentially carcinogenic effects
nc - RBC based on noncarcinogenic effects, and was adjusted to a hazard index of 0.1.
Notes:
(a) - USEPA, 2007. Risk Based Concentration (RBC) Table. October 2007. RBC for fish tissue. RBC based on noncancer were adjusted for a hazard index of 0.1 to account for cumulative effects.

Attachment B

Supporting Documentation for Table 3
Exposure Point Concentration Summary

Goodness of Fit Tests – Surface Soil

Antimony (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	0	24	12	12	50.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	12	2	2.7	2.317	2.25	0.229
Statistics (Detects Only)	12	0.52	47	7.163	1.725	13.99
Statistics (All: NDs treated as DL value)	24	0.52	47	4.74	2.2	9.991
Statistics (All: NDs treated as DL/2 value)	24	0.52	47	4.16	1.225	10.15
Statistics (Normal ROS Estimated Data)	24	-3.862	47	4.242	1.679	10.36
Statistics (Gamma ROS Estimated Data)	24	0.52	47	7.167	5.756	9.717
Statistics (Lognormal ROS Estimated Data)	24	0.52	47	4.155	1.3	10.16

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.555	0.514	12.9	0.843	1.365	1.62
Statistics (NDs = DL)	0.825	0.75	5.746	0.839	0.947	1.128
Statistics (NDs = DL/2)	0.654	0.6	6.361	0.493	1.012	2.054
Statistics (Gamma ROS Estimates)	1.011	0.912	7.092	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.45	1.067	2.374

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.711	0.588	0.578	0.703

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.528	0.859	Data Not Normal
Lilliefors (Detects Only)	0.456	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.372	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.494	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.36	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.47	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.522	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.357	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.944	0.822	0.844	0.906

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.583	0.781	
Kolmogorov-Smirnov (Detects Only)	0.387	0.258	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	4.273	0.779	
Kolmogorov-Smirnov (NDs = DL)	0.439	0.184	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	4.94	0.792	
Kolmogorov-Smirnov (NDs = DL/2)	0.371	0.186	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.777	0.772	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.212	0.183	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.918	0.853	0.817	0.874

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.845	0.859	Data Not Lognormal
Lilliefors (Detects Only)	0.279	0.256	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.748	0.916	Data Not Lognormal
Lilliefors (NDs = DL)	0.337	0.181	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.685	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.311	0.181	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.773	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.21	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Arsenic (p)

Raw Statistics	
Number of Valid Observations	35
Number of Missing Values	12
Number of Distinct Observations	25
Minimum	0.95
Maximum	27
Mean of Raw Data	10.65
Standard Deviation of Raw Data	6.45
Kstar	1.944
Mean of Log Transformed Data	2.109
Standard Deviation of Log Transformed Data	0.831

Normal Distribution Test Results

Correlation Coefficient R	0.974
Shapiro Wilk Test Statistic	0.942
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.0973
Lilliefors Critical (0.95) Value	0.15

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.968
A-D Test Statistic	0.853
A-D Critical (0.95) Value	0.759
K-S Test Statistic	0.172
K-S Critical(0.95) Value	0.151

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.947
Shapiro Wilk Test Statistic	0.892
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.189
Lilliefors Critical (0.95) Value	0.15

Data not Lognormal at (0.05) Significance Level

Arsenic (q central)

Raw Statistics	
Number of Valid Observations	19
Number of Missing Values	1
Number of Distinct Observations	15
Minimum	1.1
Maximum	81
Mean of Raw Data	9.529
Standard Deviation of Raw Data	18.07
Kstar	0.764
Mean of Log Transformed Data	1.575
Standard Deviation of Log Transformed Data	1.012

Normal Distribution Test Results

Correlation Coefficient R	0.64
Shapiro Wilk Test Statistic	0.439
Shapiro Wilk Critical (0.95) Value	0.901
Lilliefors Test Statistic	0.404
Lilliefors Critical (0.95) Value	0.203

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.859

A-D Test Statistic	1.811
A-D Critical (0.95) Value	0.774
K-S Test Statistic	0.318
K-S Critical(0.95) Value	0.205

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.942
Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical (0.95) Value	0.901
Lilliefors Test Statistic	0.215
Lilliefors Critical (0.95) Value	0.203

Data not Lognormal at (0.05) Significance Level

Arsenic (q north)

Raw Statistics

Number of Valid Observations	11
Number of Distinct Observations	11
Minimum	2.3
Maximum	100
Mean of Raw Data	13.75
Standard Deviation of Raw Data	28.73
Kstar	0.589
Mean of Log Transformed Data	1.794
Standard Deviation of Log Transformed Data	1.05

Normal Distribution Test Results

Correlation Coefficient R	0.627
Shapiro Wilk Test Statistic	0.425
Shapiro Wilk Critical (0.95) Value	0.85
Lilliefors Test Statistic	0.447
Lilliefors Critical (0.95) Value	0.267

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.862
A-D Test Statistic	1.81
A-D Critical (0.95) Value	0.764
K-S Test Statistic	0.323
K-S Critical(0.95) Value	0.265

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.866
Shapiro Wilk Test Statistic	0.771
Shapiro Wilk Critical (0.95) Value	0.85
Lilliefors Test Statistic	0.228
Lilliefors Critical (0.95) Value	0.267

Data not Lognormal at (0.05) Significance Level

Arsenic (q south)

Raw Statistics

Number of Valid Observations	24
Number of Distinct Observations	22
Minimum	3.3
Maximum	33
Mean of Raw Data	8.29
Standard Deviation of Raw Data	6.444
Kstar	2.682
Mean of Log Transformed Data	1.941

Standard Deviation of Log Transformed Data	0.543

Normal Distribution Test Results

Correlation Coefficient R	0.796
Shapiro Wilk Test Statistic	0.654
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.32
Lilliefors Critical (0.95) Value	0.181

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.906
A-D Test Statistic	1.428
A-D Critical (0.95) Value	0.751
K-S Test Statistic	0.24
K-S Critical(0.95) Value	0.179

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.945
Shapiro Wilk Test Statistic	0.899
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.19
Lilliefors Critical (0.95) Value	0.181

Data not Lognormal at (0.05) Significance Level

Benzo(a)anthracene (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	1	19	15	4	21.05%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.34	0.46	0.395	0.39	0.05
Statistics (Detects Only)	15	0.035	3.6	0.623	0.25	0.916
Statistics (All: NDs treated as DL value)	19	0.035	3.6	0.575	0.34	0.814
Statistics (All: NDs treated as DL/2 value)	19	0.035	3.6	0.534	0.21	0.828
Statistics (Normal ROS Estimated Data)	19	0.035	3.6	0.544	0.219	0.824
Statistics (Gamma ROS Estimated Data)	19	0.035	3.6	0.607	0.425	0.809
Statistics (Lognormal ROS Estimated Data)	19	0.035	3.6	0.528	0.205	0.83

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.873	0.771	0.714	-1.144	1.161	-1.014
Statistics (NDs = DL)	1.049	0.918	0.549	-1.1	1.029	-0.935
Statistics (NDs = DL/2)	0.94	0.827	0.568	-1.246	1.045	-0.838
Statistics (Gamma ROS Estimates)	1.075	0.941	0.564	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.275	1.057	-0.829

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.772	0.745	0.727	0.73

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.618	0.881	Data Not Normal
Lilliefors (Detects Only)	0.317	0.229	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.581	0.901	Data Not Normal
Lilliefors (NDs = DL)	0.346	0.203	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.553	0.901	Data Not Normal
Lilliefors (NDs = DL/2)	0.339	0.203	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.558	0.901	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.345	0.203	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.954	0.923	0.924	0.931

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.728	0.769	
Kolmogorov-Smirnov (Detects Only)	0.216	0.229	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.857	0.768	
Kolmogorov-Smirnov (NDs = DL)	0.244	0.204	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.464	0.772	
Kolmogorov-Smirnov (NDs = DL/2)	0.254	0.205	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.556	0.767	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.166	0.204	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.981	0.978	0.954	0.952

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.971	0.881	Data Appear Lognormal
Lilliefors (Detects Only)	0.132	0.229	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.971	0.901	Data Appear Lognormal
Lilliefors (NDs = DL)	0.166	0.203	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.926	0.901	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.185	0.203	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.919	0.901	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.185	0.203	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)anthracene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	0	24	19	5	20.83%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	0.36	0.46	0.396	0.38	0.0385
Statistics (Detects Only)	19	0.03	2.515	0.555	0.069	0.848
Statistics (All: NDs treated as DL value)	24	0.03	2.515	0.522	0.14	0.753
Statistics (All: NDs treated as DL/2 value)	24	0.03	2.515	0.481	0.14	0.765
Statistics (Normal ROS Estimated Data)	24	0.0178	2.515	0.498	0.103	0.762
Statistics (Gamma ROS Estimated Data)	24	0.03	2.515	0.557	0.14	0.75
Statistics (Lognormal ROS Estimated Data)	24	0.03	2.515	0.46	0.0891	0.774

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.514	0.478	1.079	-1.819	1.565	-0.86
Statistics (NDs = DL)	0.625	0.574	0.835	-1.634	1.433	-0.877
Statistics (NDs = DL/2)	0.592	0.546	0.811	-1.778	1.388	-0.78
Statistics (Gamma ROS Estimates)	0.63	0.579	0.884	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.937	1.413	-0.73

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.809	0.824	0.783	0.809

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.649	0.901	Data Not Normal
Lilliefors (Detects Only)	0.395	0.203	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.677	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.324	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.613	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.42	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.653	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.359	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.934	0.961	0.942	0.969

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	2.327	0.801	
Kolmogorov-Smirnov (Detects Only)	0.282	0.21	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.541	0.794	
Kolmogorov-Smirnov (NDs = DL)	0.201	0.187	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.447	0.798	
Kolmogorov-Smirnov (NDs = DL/2)	0.312	0.187	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.401	0.794	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.213	0.186	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.902	0.954	0.932	0.895

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.797	0.901	Data Not Lognormal
Lilliefors (Detects Only)	0.239	0.203	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.894	0.916	Data Not Lognormal
Lilliefors (NDs = DL)	0.183	0.181	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.856	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.204	0.181	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.79	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.246	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	14	33	8	25	75.76%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	25	0.38	2000	164.3	3.8	552.5
Statistics (Detects Only)	8	0.042	0.67	0.258	0.205	0.19
Statistics (All: NDs treated as DL value)	33	0.042	2000	124.6	1.8	483.8
Statistics (All: NDs treated as DL/2 value)	33	0.042	1000	62.32	0.9	241.9
Statistics (Normal ROS Estimated Data)	33	0.042	0.67	0.234	0.231	0.106
Statistics (Gamma ROS Estimated Data)	33	0.042	0.67	0.267	0.27	0.0989
Statistics (Lognormal ROS Estimated Data)	33	0.042	0.67	0.201	0.181	0.104

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	2.202	2.022	0.117	-1.6	0.799	-0.499
Statistics (NDs = DL)	0.178	0.182	699.9	0.615	2.37	3.852
Statistics (NDs = DL/2)	0.184	0.188	338	0.0901	2.222	24.67
Statistics (Gamma ROS Estimates)	7.058	6.437	0.0379	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.7	0.445	-0.262

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.913	0.502	0.501	0.887

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.855	0.818	Data Appear Normal
Lilliefors (Detects Only)	0.224	0.313	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.27	0.931	Data Not Normal
Lilliefors (NDs = DL)	0.51	0.154	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.27	0.931	Data Not Normal
Lilliefors (NDs = DL/2)	0.51	0.154	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.82	0.931	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.238	0.154	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.976	0.863	0.86	0.902

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.29	0.723	
Kolmogorov-Smirnov (Detects Only)	0.183	0.297	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	6.51	0.91	
Kolmogorov-Smirnov (NDs = DL)	0.416	0.17	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	6.987	0.907	
Kolmogorov-Smirnov (NDs = DL/2)	0.425	0.17	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.868	0.748	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.234	0.153	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.954	0.921	0.897	0.92

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.935	0.818	Data Appear Lognormal
Lilliefors (Detects Only)	0.23	0.313	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.856	0.931	Data Not Lognormal
Lilliefors (NDs = DL)	0.167	0.154	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.813	0.931	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.178	0.154	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.885	0.931	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.238	0.154	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	1	19	15	4	21.05%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.34	0.4	0.375	0.38	0.0252
Statistics (Detects Only)	15	0.028	3.2	0.594	0.28	0.838
Statistics (All: NDs treated as DL value)	19	0.028	3.2	0.548	0.34	0.745
Statistics (All: NDs treated as DL/2 value)	19	0.028	3.2	0.509	0.2	0.759
Statistics (Normal ROS Estimated Data)	19	-0.0267	3.2	0.512	0.22	0.761
Statistics (Gamma ROS Estimated Data)	19	0.028	3.2	0.549	0.3	0.752
Statistics (Lognormal ROS Estimated Data)	19	0.028	3.2	0.498	0.2	0.764

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.8	0.709	0.743	-1.263	1.296	-1.026
Statistics (NDs = DL)	0.963	0.846	0.569	-1.204	1.149	-0.955
Statistics (NDs = DL/2)	0.871	0.769	0.584	-1.35	1.156	-0.857
Statistics (Gamma ROS Estimates)	0.894	0.788	0.614	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.424	1.196	-0.84

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.806	0.777	0.76	0.781

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.668	0.881	Data Not Normal
Lilliefors (Detects Only)	0.306	0.229	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.625	0.901	Data Not Normal
Lilliefors (NDs = DL)	0.347	0.203	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.6	0.901	Data Not Normal
Lilliefors (NDs = DL/2)	0.325	0.203	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.631	0.901	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.327	0.203	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.976	0.947	0.95	0.962

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.43	0.773	
Kolmogorov-Smirnov (Detects Only)	0.182	0.23	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.645	0.771	
Kolmogorov-Smirnov (NDs = DL)	0.233	0.205	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	1.03	0.774	
Kolmogorov-Smirnov (NDs = DL/2)	0.216	0.205	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.406	0.773	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.173	0.205	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.992	0.98	0.974	0.986

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.983	0.881	Data Appear Lognormal
Lilliefors (Detects Only)	0.0999	0.229	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.966	0.901	Data Appear Lognormal
Lilliefors (NDs = DL)	0.159	0.203	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.955	0.901	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.147	0.203	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.974	0.901	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.111	0.203	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	11	0	11	10	1	9.09%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	10	0.024	1.8	0.698	0.31	0.745
Statistics (All: NDs treated as DL value)	11	0.024	3.5	0.953	0.32	1.102
Statistics (All: NDs treated as DL/2 value)	11	0.024	1.8	0.794	0.32	0.775
Statistics (Normal ROS Estimated Data)	11	0.024	1.8	0.698	0.32	0.707
Statistics (Gamma ROS Estimated Data)	11	0.024	1.8	0.685	0.32	0.708
Statistics (Lognormal ROS Estimated Data)	11	0.024	1.8	0.662	0.3	0.717

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.71	0.577	0.983	-1.209	1.579	-1.306
Statistics (NDs = DL)	0.652	0.534	1.462	-0.986	1.672	-1.696
Statistics (NDs = DL/2)	0.735	0.595	1.08	-1.049	1.59	-1.517
Statistics (Gamma ROS Estimates)	0.77	0.621	0.889	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.209	1.498	-1.239

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.906	0.904	0.908	0.924

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.794	0.842	Data Not Normal
Lilliefors (Detects Only)	0.294	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.818	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.263	0.267	Data Appear Normal
Shapiro-Wilks (NDs = DL/2)	0.793	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.275	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.828	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.249	0.267	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.891	0.972	0.843	0.914

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.49	0.76	
Kolmogorov-Smirnov (Detects Only)	0.182	0.277	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.385	0.77	
Kolmogorov-Smirnov (NDs = DL)	0.169	0.267	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.635	0.764	
Kolmogorov-Smirnov (NDs = DL/2)	0.217	0.265	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.378	0.762	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.162	0.265	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.965	0.973	0.95	0.969

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.909	0.842	Data Appear Lognormal
Lilliefors (Detects Only)	0.174	0.28	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.93	0.85	Data Appear Lognormal
Lilliefors (NDs = DL)	0.173	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.88	0.85	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.196	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.921	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.15	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	0	24	20	4	16.67%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.38	0.46	0.413	0.405	0.034
Statistics (Detects Only)	20	0.023	2.975	0.518	0.0855	0.85
Statistics (All: NDs treated as DL value)	24	0.023	2.975	0.5	0.115	0.774
Statistics (All: NDs treated as DL/2 value)	24	0.023	2.975	0.466	0.115	0.782
Statistics (Normal ROS Estimated Data)	24	0.023	2.975	0.477	0.115	0.778
Statistics (Gamma ROS Estimated Data)	24	0.023	2.975	0.501	0.115	0.773
Statistics (Lognormal ROS Estimated Data)	24	0.023	2.975	0.447	0.0927	0.789

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.522	0.485	0.991	-1.867	1.513	-0.81
Statistics (NDs = DL)	0.61	0.561	0.82	-1.704	1.425	-0.836
Statistics (NDs = DL/2)	0.588	0.542	0.793	-1.819	1.379	-0.758
Statistics (Gamma ROS Estimates)	0.61	0.562	0.82	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.952	1.389	-0.711

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.791	0.806	0.771	0.782

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.631	0.905	Data Not Normal
Lilliefors (Detects Only)	0.404	0.198	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.657	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.312	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.603	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.41	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.62	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.396	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.968	0.981	0.965	0.981

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	2.294	0.8	
Kolmogorov-Smirnov (Detects Only)	0.315	0.205	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.552	0.796	
Kolmogorov-Smirnov (NDs = DL)	0.226	0.187	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.298	0.798	
Kolmogorov-Smirnov (NDs = DL/2)	0.303	0.187	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.569	0.796	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.227	0.187	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.918	0.961	0.944	0.902

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.834	0.905	Data Not Lognormal
Lilliefors (Detects Only)	0.226	0.198	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.913	0.916	Data Not Lognormal
Lilliefors (NDs = DL)	0.157	0.181	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.883	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.192	0.181	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.809	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.257	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(b)fluoranthene (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	1	19	15	4	21.05%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.34	0.4	0.375	0.38	0.0252
Statistics (Detects Only)	15	0.039	3.2	0.57	0.32	0.81
Statistics (All: NDs treated as DL value)	19	0.039	3.2	0.529	0.36	0.719
Statistics (All: NDs treated as DL/2 value)	19	0.039	3.2	0.49	0.2	0.732
Statistics (Normal ROS Estimated Data)	19	-0.013	3.2	0.492	0.256	0.734
Statistics (Gamma ROS Estimated Data)	19	0.039	3.2	0.532	0.32	0.725
Statistics (Lognormal ROS Estimated Data)	19	0.039	3.2	0.481	0.208	0.736

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.871	0.769	0.654	-1.235	1.204	-0.974
Statistics (NDs = DL)	1.052	0.921	0.503	-1.182	1.067	-0.903
Statistics (NDs = DL/2)	0.946	0.832	0.517	-1.328	1.078	-0.812
Statistics (Gamma ROS Estimates)	0.995	0.873	0.534	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.388	1.113	-0.802

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.785	0.754	0.743	0.762

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.639	0.881	Data Not Normal
Lilliefors (Detects Only)	0.29	0.229	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.594	0.901	Data Not Normal
Lilliefors (NDs = DL)	0.308	0.203	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.576	0.901	Data Not Normal
Lilliefors (NDs = DL/2)	0.291	0.203	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.605	0.901	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.289	0.203	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.957	0.923	0.931	0.94

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.421	0.769	
Kolmogorov-Smirnov (Detects Only)	0.152	0.229	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.696	0.768	
Kolmogorov-Smirnov (NDs = DL)	0.212	0.204	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	0.938	0.771	
Kolmogorov-Smirnov (NDs = DL/2)	0.193	0.205	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	0.425	0.769	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.13	0.204	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.993	0.978	0.978	0.986

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.984	0.881	Data Appear Lognormal
Lilliefors (Detects Only)	0.0913	0.229	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.962	0.901	Data Appear Lognormal
Lilliefors (NDs = DL)	0.148	0.203	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.962	0.901	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.141	0.203	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.974	0.901	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.108	0.203	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(b)fluoranthene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	0	24	17	7	29.17%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.36	0.46	0.4	0.38	0.0365
Statistics (Detects Only)	17	0.033	3.3	0.665	0.1	1.034
Statistics (All: NDs treated as DL value)	24	0.033	3.3	0.588	0.285	0.872
Statistics (All: NDs treated as DL/2 value)	24	0.033	3.3	0.53	0.185	0.89
Statistics (Normal ROS Estimated Data)	24	-0.215	3.3	0.555	0.19	0.892
Statistics (Gamma ROS Estimated Data)	24	0.033	3.3	0.664	0.424	0.863
Statistics (Lognormal ROS Estimated Data)	24	0.033	3.3	0.503	0.0989	0.901

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.511	0.475	1.303	-1.647	1.612	-0.978
Statistics (NDs = DL)	0.672	0.616	0.875	-1.435	1.387	-0.966
Statistics (NDs = DL/2)	0.615	0.566	0.862	-1.637	1.345	-0.821
Statistics (Gamma ROS Estimates)	0.689	0.631	0.963	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.847	1.405	-0.76

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.818	0.808	0.764	0.817

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.67	0.892	Data Not Normal
Lilliefors (Detects Only)	0.376	0.215	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.658	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.35	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.591	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.424	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.676	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.364	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.97	0.976	0.959	0.984

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.575	0.797	
Kolmogorov-Smirnov (Detects Only)	0.285	0.221	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.004	0.79	
Kolmogorov-Smirnov (NDs = DL)	0.203	0.186	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.201	0.795	
Kolmogorov-Smirnov (NDs = DL/2)	0.342	0.187	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.883	0.788	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.167	0.186	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.933	0.978	0.949	0.915

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.853	0.892	Data Not Lognormal
Lilliefors (Detects Only)	0.204	0.215	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.942	0.916	Data Appear Lognormal
Lilliefors (NDs = DL)	0.117	0.181	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.89	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.242	0.181	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.828	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.252	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Cadmium (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	11	0	11	10	1	9.09%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	10	0.49	92	10.94	1.35	28.54
Statistics (All: NDs treated as DL value)	11	0.49	92	9.993	1.3	27.26
Statistics (All: NDs treated as DL/2 value)	11	0.265	92	9.969	1.3	27.27
Statistics (Normal ROS Estimated Data)	11	-12.87	92	8.775	1.3	28.01
Statistics (Gamma ROS Estimated Data)	11	1.00E-09	92	9.945	1.3	27.27
Statistics (Lognormal ROS Estimated Data)	11	0.266	92	9.969	1.3	27.27

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.388	0.343	28.2	0.687	1.607	2.338
Statistics (NDs = DL)	0.382	0.339	26.15	0.567	1.576	2.779
Statistics (NDs = DL/2)	0.371	0.33	26.87	0.504	1.642	3.256
Statistics (Gamma ROS Estimates)	0.206	0.21	48.28	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.504	1.641	3.254

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.621	0.603	0.604	0.667

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.417	0.842	Data Not Normal
Lilliefors (Detects Only)	0.466	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.395	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.464	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.397	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.464	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.484	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.446	0.267	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.906	0.895	0.898	0.935

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.54	0.798	
Kolmogorov-Smirnov (Detects Only)	0.323	0.285	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.794	0.804	
Kolmogorov-Smirnov (NDs = DL)	0.322	0.273	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.628	0.806	
Kolmogorov-Smirnov (NDs = DL/2)	0.316	0.273	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.134	0.858	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.332	0.282	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.904	0.889	0.922	0.922

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.826	0.842	Data Not Lognormal
Lilliefors (Detects Only)	0.192	0.28	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.799	0.85	Data Not Lognormal
Lilliefors (NDs = DL)	0.208	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.863	0.85	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.177	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.863	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.177	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Cadmium (q south)

Raw Statistics	
Number of Valid Observations	24
Number of Distinct Observations	21
Minimum	0.41
Maximum	8000
Mean of Raw Data	338.6
Standard Deviation of Raw Data	1632
Kstar	0.174
Mean of Log Transformed Data	1.312
Standard Deviation of Log Transformed Data	1.997

Normal Distribution Test Results

Correlation Coefficient R	0.432
Shapiro Wilk Test Statistic	0.214
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.533
Lilliefors Critical (0.95) Value	0.181

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.835
A-D Test Statistic	6.281
A-D Critical (0.95) Value	0.908
K-S Test Statistic	0.428
K-S Critical(0.95) Value	0.198

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.849
Shapiro Wilk Test Statistic	0.745
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.23
Lilliefors Critical (0.95) Value	0.181

Data not Lognormal at (0.05) Significance Level

Cadmium (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	3	14	10	4	28.57%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.55	0.63	0.588	0.585	0.0386
Statistics (Detects Only)	10	0.54	250	39.49	1.233	80.06
Statistics (All: NDs treated as DL value)	14	0.54	250	28.37	0.735	69.07
Statistics (All: NDs treated as DL/2 value)	14	0.275	250	28.29	0.735	69.1
Statistics (Normal ROS Estimated Data)	14	-69.99	250	8.207	0.735	84.09
Statistics (Gamma ROS Estimated Data)	14	1.00E-09	250	28.2	0.735	69.14
Statistics (Lognormal ROS Estimated Data)	14	0.0856	250	28.23	0.735	69.13

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.293	0.278	134.6	1.316	2.339	1.777
Statistics (NDs = DL)	0.274	0.263	103.7	0.788	2.131	2.704
Statistics (NDs = DL/2)	0.257	0.249	110.1	0.59	2.282	3.869
Statistics (Gamma ROS Estimates)	0.0979	0.125	288.2	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.238	2.63	11.06

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.75	0.677	0.678	0.859

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.582	0.842	Data Not Normal

Lilliefors (Detects Only)	0.382	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.483	0.874	Data Not Normal
Lilliefors (NDs = DL)	0.436	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.484	0.874	Data Not Normal
Lilliefors (NDs = DL/2)	0.436	0.237	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.755	0.874	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.317	0.237	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.992	0.976	0.978	0.997

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.364	0.816	
Kolmogorov-Smirnov (Detects Only)	0.392	0.288	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.619	0.843	
Kolmogorov-Smirnov (NDs = DL)	0.427	0.249	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.235	0.85	
Kolmogorov-Smirnov (NDs = DL/2)	0.408	0.25	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.021	0.912	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.282	0.257	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.882	0.825	0.877	0.927

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.765	0.842	Data Not Lognormal
Lilliefors (Detects Only)	0.332	0.28	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.677	0.874	Data Not Lognormal
Lilliefors (NDs = DL)	0.334	0.237	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.763	0.874	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.296	0.237	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.849	0.874	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.241	0.237	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Chromium (q south)

Raw Statistics	
Number of Valid Observations	24
Number of Distinct Observations	21
Minimum	8
Maximum	660
Mean of Raw Data	59.98
Standard Deviation of Raw Data	132.7
Kstar	0.685
Mean of Log Transformed Data	3.297
Standard Deviation of Log Transformed Data	1.041

Normal Distribution Test Results

Correlation Coefficient R	0.603
Shapiro Wilk Test Statistic	0.392
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.348
Lilliefors Critical (0.95) Value	0.181

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.844
A-D Test Statistic	2.405
A-D Critical (0.95) Value	0.782
K-S Test Statistic	0.244
K-S Critical(0.95) Value	0.185

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.933
Shapiro Wilk Test Statistic	0.877
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.171
Lilliefors Critical (0.95) Value	0.181

Data not Lognormal at (0.05) Significance Level

Dibenzo(a,h)anthracene (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	11	0	11	5	6	54.55%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.36	3.5	0.91	0.4	1.269
Statistics (Detects Only)	5	0.066	0.37	0.197	0.18	0.121
Statistics (All: NDs treated as DL value)	11	0.066	3.5	0.586	0.37	0.975
Statistics (All: NDs treated as DL/2 value)	11	0.066	1.75	0.338	0.19	0.475
Statistics (Normal ROS Estimated Data)	11	0.066	0.37	0.184	0.181	0.0782
Statistics (Gamma ROS Estimated Data)	11	0.066	0.37	0.209	0.227	0.0781
Statistics (Lognormal ROS Estimated Data)	11	0.066	0.37	0.169	0.152	0.0816

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	3.057	2.284	0.0645	-1.795	0.683	-0.38
Statistics (NDs = DL)	0.974	0.769	0.602	-1.129	0.998	-0.884
Statistics (NDs = DL/2)	1.327	1.026	0.255	-1.507	0.816	-0.541
Statistics (Gamma ROS Estimates)	6.372	4.695	0.0327	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.869	0.44	-0.236

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.986	0.657	0.678	0.909

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.964	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.163	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.465	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.473	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.493	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.383	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.854	0.85	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.335	0.267	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.993	0.844	0.85	0.935

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.181	0.683	
Kolmogorov-Smirnov (Detects Only)	0.166	0.359	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.37	0.753	
Kolmogorov-Smirnov (NDs = DL)	0.386	0.263	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.445	0.745	
Kolmogorov-Smirnov (NDs = DL/2)	0.315	0.261	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.742	0.731	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.239	0.256	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.994	0.909	0.893	0.946

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.979	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.147	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.857	0.85	Data Appear Lognormal
Lilliefors (NDs = DL)	0.297	0.267	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.832	0.85	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.242	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.921	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.243	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dibenzo(a,h)anthracene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	0	24	5	19	79.17%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	19	0.38	2.155	0.498	0.41	0.402
Statistics (Detects Only)	5	0.03	0.44	0.158	0.074	0.168
Statistics (All: NDs treated as DL value)	24	0.03	2.155	0.427	0.4	0.389
Statistics (All: NDs treated as DL/2 value)	24	0.03	1.078	0.23	0.2	0.195
Statistics (Normal ROS Estimated Data)	24	-0.0403	0.44	0.11	0.0983	0.0987
Statistics (Gamma ROS Estimated Data)	24	0.03	0.44	0.152	0.154	0.0734
Statistics (Lognormal ROS Estimated Data)	24	0.0288	0.44	0.0938	0.0697	0.0838

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.284	1.151	0.123	-2.285	1.042	-0.456
Statistics (NDs = DL)	1.999	1.777	0.214	-1.121	0.824	-0.735
Statistics (NDs = DL/2)	2.653	2.349	0.0867	-1.669	0.64	-0.384
Statistics (Gamma ROS Estimates)	5.07	4.464	0.03	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.585	0.62	-0.24

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.894	0.645	0.67	0.923

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.807	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.291	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.452	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.425	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.484	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.417	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.871	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.223	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.994	0.74	0.776	0.863

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.318	0.689	
Kolmogorov-Smirnov (Detects Only)	0.274	0.363	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	3.682	0.755	
Kolmogorov-Smirnov (NDs = DL)	0.364	0.18	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	3.42	0.752	
Kolmogorov-Smirnov (NDs = DL/2)	0.335	0.18	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.596	0.746	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.221	0.178	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.984	0.807	0.832	0.955

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.967	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.22	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.68	0.916	Data Not Lognormal
Lilliefors (NDs = DL)	0.407	0.181	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.727	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.357	0.181	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.92	0.916	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.22	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dieldrin (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	2	22	14	8	36.36%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	8	0.0038	0.042	0.021	0.0175	0.017
Statistics (Detects Only)	14	3.90E-04	0.375	0.0708	0.0119	0.12
Statistics (All: NDs treated as DL value)	22	3.90E-04	0.375	0.0527	0.0155	0.0977
Statistics (All: NDs treated as DL/2 value)	22	3.90E-04	0.375	0.0488	0.00915	0.0987
Statistics (Normal ROS Estimated Data)	22	-0.0522	0.375	0.0449	0.0102	0.101
Statistics (Gamma ROS Estimated Data)	22	3.90E-04	0.375	0.0631	0.036	0.0948
Statistics (Lognormal ROS Estimated Data)	22	3.90E-04	0.375	0.0458	0.00295	0.0999

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.358	0.339	0.198	-4.52	2.327	-0.515
Statistics (NDs = DL)	0.435	0.406	0.121	-4.438	1.94	-0.437
Statistics (NDs = DL/2)	0.395	0.371	0.124	-4.69	1.95	-0.416
Statistics (Gamma ROS Estimates)	0.521	0.48	0.121	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.167	2.062	-0.399

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.809	0.754	0.728	0.775

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.659	0.874	Data Not Normal
Lilliefors (Detects Only)	0.373	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.58	0.911	Data Not Normal
Lilliefors (NDs = DL)	0.362	0.189	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.541	0.911	Data Not Normal
Lilliefors (NDs = DL/2)	0.425	0.189	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.616	0.911	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.407	0.189	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.978	0.976	0.968	0.979

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.574	0.821	
Kolmogorov-Smirnov (Detects Only)	0.217	0.246	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.767	0.818	
Kolmogorov-Smirnov (NDs = DL)	0.174	0.198	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.265	0.827	
Kolmogorov-Smirnov (NDs = DL/2)	0.276	0.199	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.323	0.802	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.158	0.196	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.982	0.989	0.984	0.96

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.944	0.874	Data Appear Lognormal
Lilliefors (Detects Only)	0.115	0.237	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.969	0.911	Data Appear Lognormal
Lilliefors (NDs = DL)	0.0943	0.189	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.958	0.911	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.145	0.189	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.912	0.911	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.196	0.189	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dioxin TEQ-HH (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	6	14	10	4	28.57%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	6.60E-05	1.37E-04	1.06E-04	1.11E-04	2.97E-05
Statistics (Detects Only)	10	5.78E-05	0.00387	4.94E-04	8.80E-05	0.00119
Statistics (All: NDs treated as DL value)	14	5.78E-05	0.00387	3.83E-04	9.85E-05	0.00101
Statistics (All: NDs treated as DL/2 value)	14	3.30E-05	0.00387	3.68E-04	6.75E-05	0.00101
Statistics (Normal ROS Estimated Data)	14	-3.03E-04	0.00387	3.50E-04	7.55E-05	0.00102
Statistics (Gamma ROS Estimated Data)	14	1.00E-09	0.00387	3.95E-04	9.81E-05	0.00101
Statistics (Lognormal ROS Estimated Data)	14	4.23E-05	0.00387	3.72E-04	7.74E-05	0.00101

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.502	0.442	9.83E-04	-8.876	1.299	-0.146
Statistics (NDs = DL)	0.568	0.494	6.75E-04	-8.965	1.101	-0.123
Statistics (NDs = DL/2)	0.505	0.445	7.29E-04	-9.163	1.188	-0.13
Statistics (Gamma ROS Estimates)	0.361	0.331	0.0011	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-9.092	1.147	-0.126

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.624	0.565	0.565	0.613

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.421	0.842	Data Not Normal
Lilliefors (Detects Only)	0.437	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.351	0.874	Data Not Normal
Lilliefors (NDs = DL)	0.454	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.351	0.874	Data Not Normal
Lilliefors (NDs = DL/2)	0.448	0.237	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.412	0.874	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.419	0.237	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.893	0.836	0.847	0.888

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.972	0.777	
Kolmogorov-Smirnov (Detects Only)	0.403	0.281	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.956	0.787	
Kolmogorov-Smirnov (NDs = DL)	0.435	0.241	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.934	0.793	
Kolmogorov-Smirnov (NDs = DL/2)	0.405	0.242	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.661	0.82	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.312	0.246	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.83	0.806	0.821	0.804

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.705	0.842	Data Not Lognormal
Lilliefors (Detects Only)	0.311	0.28	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.672	0.874	Data Not Lognormal
Lilliefors (NDs = DL)	0.333	0.237	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.7	0.874	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.274	0.237	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.671	0.874	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.295	0.237	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dioxin TEQ-HH (q south)

Raw Statistics	
Number of Valid Observations	22
Number of Missing Values	2
Number of Distinct Observations	22
Minimum	5.27E-05
Maximum	0.00711
Mean of Raw Data	5.55E-04
Standard Deviation of Raw Data	0.00148
Kstar	0.546
Mean of Log Transformed Data	-8.532
Standard Deviation of Log Transformed Data	1.159

Normal Distribution Test Results

Correlation Coefficient R	0.554
Shapiro Wilk Test Statistic	0.335
Shapiro Wilk Critical (0.95) Value	0.911
Lilliefors Test Statistic	0.393
Lilliefors Critical (0.95) Value	0.189

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.814
A-D Test Statistic	2.52
A-D Critical (0.95) Value	0.796
K-S Test Statistic	0.263
K-S Critical(0.95) Value	0.195

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.925
Shapiro Wilk Test Statistic	0.863
Shapiro Wilk Critical (0.95) Value	0.911
Lilliefors Test Statistic	0.169
Lilliefors Critical (0.95) Value	0.189

Data not Lognormal at (0.05) Significance Level

Mercury (q south)

Raw Statistics	
Number of Valid Observations	23
Number of Missing Values	1
Number of Distinct Observations	21
Minimum	0.021
Maximum	140
Mean of Raw Data	6.627
Standard Deviation of Raw Data	29.09
Kstar	0.232
Mean of Log Transformed Data	-1.187
Standard Deviation of Log Transformed Data	1.911

Normal Distribution Test Results

Correlation Coefficient R	0.454
Shapiro Wilk Test Statistic	0.233
Shapiro Wilk Critical (0.95) Value	0.914
Lilliefors Test Statistic	0.503
Lilliefors Critical (0.95) Value	0.185

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.821
A-D Test Statistic	4.12
A-D Critical (0.95) Value	0.879
K-S Test Statistic	0.37
K-S Critical(0.95) Value	0.2

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.936
Shapiro Wilk Test Statistic	0.89
Shapiro Wilk Critical (0.95) Value	0.914
Lilliefors Test Statistic	0.142
Lilliefors Critical (0.95) Value	0.185

Data not Lognormal at (0.05) Significance Level

Manganese (p)

Raw Statistics	
Number of Valid Observations	35
Number of Missing Values	12
Number of Distinct Observations	30
Minimum	1.2
Maximum	2700
Mean of Raw Data	258.9
Standard Deviation of Raw Data	445.4
Kstar	0.832
Mean of Log Transformed Data	4.898
Standard Deviation of Log Transformed Data	1.287

Normal Distribution Test Results

Correlation Coefficient R	0.626
Shapiro Wilk Test Statistic	0.432
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.299
Lilliefors Critical (0.95) Value	0.15

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.81
A-D Test Statistic	0.95
A-D Critical (0.95) Value	0.781
K-S Test Statistic	0.137
K-S Critical(0.95) Value	0.154

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.932
Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.126
Lilliefors Critical (0.95) Value	0.15

Data not Lognormal at (0.05) Significance Level

Manganese (q south)

Raw Statistics	
Number of Valid Observations	24
Number of Distinct Observations	19
Minimum	240
Maximum	2100
Mean of Raw Data	529.4
Standard Deviation of Raw Data	366.6
Kstar	3.8
Mean of Log Transformed Data	6.151
Standard Deviation of Log Transformed Data	0.44

Normal Distribution Test Results

Correlation Coefficient R	0.734
Shapiro Wilk Test Statistic	0.568
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.271
Lilliefors Critical (0.95) Value	0.181

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.833
A-D Test Statistic	1.572

A-D Critical (0.95) Value	0.748
K-S Test Statistic	0.216
K-S Critical(0.95) Value	0.179

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.919
Shapiro Wilk Test Statistic	0.864
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.185
Lilliefors Critical (0.95) Value	0.181

Data not Lognormal at (0.05) Significance Level

Tetrachloroethene (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	13	34	17	17	50.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	17	0.0034	10	1.813	0.21	3.374
Statistics (Detects Only)	17	0.0019	140	12.21	0.24	35.85
Statistics (All: NDs treated as DL value)	34	0.0019	140	7.009	0.225	25.62
Statistics (All: NDs treated as DL/2 value)	34	0.0017	140	6.556	0.145	25.64
Statistics (Normal ROS Estimated Data)	34	-19.12	140	0.392	0.00255	28.33
Statistics (Gamma ROS Estimated Data)	34	0.0019	140	12.72	9.691	25.08
Statistics (Lognormal ROS Estimated Data)	34	0.00177	140	6.11	0.0137	25.72

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.184	0.188	66.24	-1.543	3.315	-2.148
Statistics (NDs = DL)	0.198	0.2	35.48	-1.785	3.095	-1.734
Statistics (NDs = DL/2)	0.186	0.189	35.33	-2.131	3.142	-1.474
Statistics (Gamma ROS Estimates)	0.33	0.32	38.57	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.35	3.087	-0.921

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.609	0.525	0.503	0.692

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.396	0.892	Data Not Normal
Lilliefors (Detects Only)	0.489	0.215	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.308	0.933	Data Not Normal
Lilliefors (NDs = DL)	0.423	0.152	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.285	0.933	Data Not Normal
Lilliefors (NDs = DL/2)	0.465	0.152	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.513	0.933	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.376	0.152	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.962	0.917	0.905	0.898

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.507	0.889	
Kolmogorov-Smirnov (Detects Only)	0.293	0.232	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.473	0.9	
Kolmogorov-Smirnov (NDs = DL)	0.216	0.167	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.922	0.907	
Kolmogorov-Smirnov (NDs = DL/2)	0.222	0.168	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.374	0.849	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.201	0.163	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.977	0.975	0.968	0.935

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.946	0.892	Data Appear Lognormal
Lilliefors (Detects Only)	0.111	0.215	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.937	0.933	Data Appear Lognormal
Lilliefors (NDs = DL)	0.164	0.152	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.923	0.933	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.152	0.152	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.864	0.933	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.175	0.152	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Tetrachloroethene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	0	24	9	15	62.50%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	15	0.004	0.0075	0.00599	0.0062	0.00108
Statistics (Detects Only)	9	5.35E-04	1.7	0.233	0.0032	0.561
Statistics (All: NDs treated as DL value)	24	5.35E-04	1.7	0.0913	0.00595	0.35
Statistics (All: NDs treated as DL/2 value)	24	5.35E-04	1.7	0.0894	0.0031	0.35
Statistics (Normal ROS Estimated Data)	24	-0.0999	1.7	0.0982	0.0171	0.35
Statistics (Gamma ROS Estimated Data)	24	5.35E-04	1.7	0.243	0.249	0.332
Statistics (Lognormal ROS Estimated Data)	24	5.35E-04	1.7	0.0888	0.00215	0.35

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.228	0.228	1.022	-4.61	2.773	-0.601
Statistics (NDs = DL)	0.275	0.268	0.332	-4.938	1.662	-0.337
Statistics (NDs = DL/2)	0.242	0.239	0.37	-5.371	1.749	-0.326
Statistics (Gamma ROS Estimates)	0.529	0.49	0.459	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.624	1.845	-0.328

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.686	0.499	0.498	0.561

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.498	0.829	Data Not Normal
Lilliefors (Detects Only)	0.412	0.295	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.277	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.474	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.276	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.472	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.347	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.44	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.978	0.86	0.873	0.837

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.049	0.834	
Kolmogorov-Smirnov (Detects Only)	0.334	0.306	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	5.534	0.862	
Kolmogorov-Smirnov (NDs = DL)	0.486	0.194	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	6.204	0.876	
Kolmogorov-Smirnov (NDs = DL/2)	0.478	0.195	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.69	0.804	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.351	0.188	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.939	0.844	0.787	0.789

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.875	0.829	Data Appear Lognormal
Lilliefors (Detects Only)	0.251	0.295	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.735	0.916	Data Not Lognormal
Lilliefors (NDs = DL)	0.364	0.181	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.64	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.382	0.181	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.64	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.361	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Total PCBs (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	4	16	5	11	68.75%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	11	0.0899	1.7	0.712	0.894	0.538
Statistics (Detects Only)	5	0.14	2.58	0.898	0.459	0.982
Statistics (All: NDs treated as DL value)	16	0.0899	2.58	0.77	0.865	0.677
Statistics (All: NDs treated as DL/2 value)	16	0.045	2.58	0.525	0.453	0.611
Statistics (Normal ROS Estimated Data)	16	-1.277	2.58	-0.241	-0.417	1.001
Statistics (Gamma ROS Estimated Data)	16	0.14	2.58	1.153	1.21	0.749
Statistics (Lognormal ROS Estimated Data)	16	0.048	2.58	0.346	0.128	0.637

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.232	1.043	0.729	-0.565	1.082	-1.915
Statistics (NDs = DL)	1.178	0.999	0.654	-0.742	1.137	-1.532
Statistics (NDs = DL/2)	1.003	0.857	0.524	-1.219	1.219	-1
Statistics (Gamma ROS Estimates)	2.018	1.681	0.571	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.86	1.128	-0.607

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.885	0.92	0.803	0.912

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.795	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.289	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.851	0.887	Data Not Normal
Lilliefors (NDs = DL)	0.202	0.222	Data Appear Normal
Shapiro-Wilks (NDs = DL/2)	0.669	0.887	Data Not Normal
Lilliefors (NDs = DL/2)	0.283	0.222	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.841	0.887	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.257	0.222	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.99	0.971	0.933	0.917

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.284	0.689	
Kolmogorov-Smirnov (Detects Only)	0.239	0.363	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.761	0.76	
Kolmogorov-Smirnov (NDs = DL)	0.217	0.22	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	0.788	0.763	
Kolmogorov-Smirnov (NDs = DL/2)	0.208	0.221	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	1.042	0.75	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.238	0.218	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.988	0.939	0.937	0.919

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.984	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.178	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.865	0.887	Data Not Lognormal
Lilliefors (NDs = DL)	0.252	0.222	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.871	0.887	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.275	0.222	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.846	0.887	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.288	0.222	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Total PCBs (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	2	22	16	6	27.27%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.0965	5.3	1.323	0.294	2.063
Statistics (Detects Only)	16	0.093	13.94	3.148	1.291	4.382
Statistics (All: NDs treated as DL value)	22	0.093	13.94	2.65	1.111	3.927
Statistics (All: NDs treated as DL/2 value)	22	0.0483	13.94	2.47	1.039	3.905
Statistics (Normal ROS Estimated Data)	22	-2.77	13.94	1.968	1.039	4.258
Statistics (Gamma ROS Estimated Data)	22	1.00E-09	13.94	2.527	1.111	3.902
Statistics (Lognormal ROS Estimated Data)	22	0.093	13.94	2.353	0.898	3.936

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.656	0.597	4.8	0.217	1.579	7.279
Statistics (NDs = DL)	0.586	0.537	4.519	-0.0824	1.651	-20.04
Statistics (NDs = DL/2)	0.535	0.492	4.619	-0.271	1.773	-6.531
Statistics (Gamma ROS Estimates)	0.204	0.207	12.36	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.293	1.614	-5.509

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.82	0.81	0.786	0.86

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.675	0.887	Data Not Normal
Lilliefors (Detects Only)	0.304	0.222	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.659	0.911	Data Not Normal
Lilliefors (NDs = DL)	0.259	0.189	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.623	0.911	Data Not Normal
Lilliefors (NDs = DL/2)	0.285	0.189	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.747	0.911	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.246	0.189	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.956	0.967	0.957	0.951

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.422	0.783	
Kolmogorov-Smirnov (Detects Only)	0.142	0.225	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.574	0.797	
Kolmogorov-Smirnov (NDs = DL)	0.147	0.195	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.528	0.801	
Kolmogorov-Smirnov (NDs = DL/2)	0.128	0.195	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.265	0.89	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.264	0.205	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.972	0.967	0.974	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.931	0.887	Data Appear Lognormal
Lilliefors (Detects Only)	0.139	0.222	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.917	0.911	Data Appear Lognormal
Lilliefors (NDs = DL)	0.174	0.189	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.935	0.911	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.146	0.189	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.932	0.911	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.145	0.189	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Vanadium (p)

Raw Statistics	
Number of Valid Observations	35
Number of Missing Values	12
Number of Distinct Observations	23
Minimum	0.63
Maximum	260
Mean of Raw Data	29.62
Standard Deviation of Raw Data	41.27
Kstar	1.329
Mean of Log Transformed Data	3.001
Standard Deviation of Log Transformed Data	0.97

Normal Distribution Test Results

Correlation Coefficient R	0.576
Shapiro Wilk Test Statistic	0.374
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.372
Lilliefors Critical (0.95) Value	0.15

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.726
A-D Test Statistic	3.369
A-D Critical (0.95) Value	0.768
K-S Test Statistic	0.242
K-S Critical(0.95) Value	0.152

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.839
Shapiro Wilk Test Statistic	0.743
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.255
Lilliefors Critical (0.95) Value	0.15

Data not Lognormal at (0.05) Significance Level

Goodness of Fit Tests – Combined Soil

2-Methylnaphthalene (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	4	13	7	6	46.15%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.38	0.42	0.398	0.395	0.0147
Statistics (Detects Only)	7	0.038	29.5	11.23	10	11.03
Statistics (All: NDs treated as DL value)	13	0.038	29.5	6.228	0.41	9.612
Statistics (All: NDs treated as DL/2 value)	13	0.038	29.5	6.136	0.205	9.673
Statistics (Normal ROS Estimated Data)	13	-5.367	29.5	5.363	0.14	10.32
Statistics (Gamma ROS Estimated Data)	13	0.038	29.5	11.2	11.12	7.805
Statistics (Lognormal ROS Estimated Data)	13	0.038	29.5	6.104	0.14	9.694

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.472	0.415	23.77	1.061	2.629	2.478
Statistics (NDs = DL)	0.392	0.353	15.88	0.146	2.125	14.53
Statistics (NDs = DL/2)	0.34	0.313	18.05	-0.174	2.32	-13.36
Statistics (Gamma ROS Estimates)	0.81	0.675	13.83	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.437	2.538	-5.812

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.96	0.835	0.833	0.9

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.908	0.803	Data Appear Normal
Lilliefors (Detects Only)	0.19	0.335	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.698	0.866	Data Not Normal
Lilliefors (NDs = DL)	0.343	0.246	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.695	0.866	Data Not Normal
Lilliefors (NDs = DL/2)	0.345	0.246	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.814	0.866	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.268	0.246	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.914	0.966	0.962	0.919

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.48	0.756	
Kolmogorov-Smirnov (Detects Only)	0.232	0.328	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.121	0.811	
Kolmogorov-Smirnov (NDs = DL)	0.346	0.253	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.39	0.822	
Kolmogorov-Smirnov (NDs = DL/2)	0.369	0.255	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.58	0.767	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.378	0.245	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.915	0.942	0.911	0.919

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.825	0.803	Data Appear Lognormal
Lilliefors (Detects Only)	0.253	0.335	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.879	0.866	Data Appear Lognormal
Lilliefors (NDs = DL)	0.299	0.246	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.816	0.866	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.34	0.246	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.823	0.866	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.265	0.246	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

4-Chloroaniline (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	14	33	7	26	78.79%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	26	0.75	4000	161	3.75	783.1
Statistics (Detects Only)	7	0.22	930	138.3	0.87	349.2
Statistics (All: NDs treated as DL value)	33	0.22	4000	156.2	3.7	708.6
Statistics (All: NDs treated as DL/2 value)	33	0.22	2000	92.78	1.85	378.5
Statistics (Normal ROS Estimated Data)	33	-149.2	930	0.79	-31.74	172.1
Statistics (Gamma ROS Estimated Data)	33	1.00E-09	930	140.6	148	155.4
Statistics (Lognormal ROS Estimated Data)	33	0.0992	930	29.74	0.455	161.7

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.208	0.21	663.9	1.42	2.944	2.073
Statistics (NDs = DL)	0.199	0.201	785	1.35	2.128	1.576
Statistics (NDs = DL/2)	0.198	0.2	468.9	0.804	2.152	2.676
Statistics (Gamma ROS Estimates)	0.429	0.41	327.8	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.364	1.662	-4.562

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.666	0.455	0.493	0.584

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.472	0.803	Data Not Normal
Lilliefors (Detects Only)	0.489	0.335	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.24	0.931	Data Not Normal
Lilliefors (NDs = DL)	0.485	0.154	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.273	0.931	Data Not Normal
Lilliefors (NDs = DL/2)	0.497	0.154	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.384	0.931	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.362	0.154	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.96	0.858	0.893	0.804

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.942	0.818	
Kolmogorov-Smirnov (Detects Only)	0.328	0.341	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL)	6.398	0.899	
Kolmogorov-Smirnov (NDs = DL)	0.385	0.17	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	6.466	0.9	
Kolmogorov-Smirnov (NDs = DL/2)	0.37	0.17	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	5.603	0.827	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.397	0.163	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.933	0.906	0.897	0.773

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.872	0.803	Data Appear Lognormal
Lilliefors (Detects Only)	0.273	0.335	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.83	0.931	Data Not Lognormal
Lilliefors (NDs = DL)	0.225	0.154	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.809	0.931	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.174	0.154	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.628	0.931	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.308	0.154	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

1,4-Dichlorobenzene (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	4	13	6	7	53.85%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.38	0.42	0.399	0.4	0.0135
Statistics (Detects Only)	6	0.046	47	19.42	9.725	21.3
Statistics (All: NDs treated as DL value)	13	0.046	47	9.176	0.41	16.93
Statistics (All: NDs treated as DL/2 value)	13	0.046	47	9.069	0.205	16.99
Statistics (Normal ROS Estimated Data)	13	-18.55	47	3.13	-3.594	21.31
Statistics (Gamma ROS Estimated Data)	13	0.046	47	19.38	18.89	13.85
Statistics (Lognormal ROS Estimated Data)	13	0.0252	47	9.016	0.214	17.02

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.521	0.452	37.25	1.755	2.559	1.458
Statistics (NDs = DL)	0.353	0.323	25.99	0.315	2.158	6.861
Statistics (NDs = DL/2)	0.304	0.285	29.83	-0.0587	2.405	-40.96
Statistics (Gamma ROS Estimates)	1.024	0.839	18.93	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.577	2.857	-4.95

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.896	0.76	0.76	0.907

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.781	0.788	Data Not Normal
Lilliefors (Detects Only)	0.331	0.362	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.579	0.866	Data Not Normal
Lilliefors (NDs = DL)	0.318	0.246	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.579	0.866	Data Not Normal
Lilliefors (NDs = DL/2)	0.316	0.246	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.818	0.866	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.214	0.246	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.866	0.93	0.929	0.936

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.377	0.735	
Kolmogorov-Smirnov (Detects Only)	0.211	0.348	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.348	0.819	
Kolmogorov-Smirnov (NDs = DL)	0.355	0.255	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.46	0.829	
Kolmogorov-Smirnov (NDs = DL/2)	0.369	0.256	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.996	0.757	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.27	0.243	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.894	0.924	0.905	0.936

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.811	0.788	Data Appear Lognormal
Lilliefors (Detects Only)	0.276	0.362	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.85	0.866	Data Not Lognormal
Lilliefors (NDs = DL)	0.323	0.246	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.807	0.866	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.349	0.246	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.852	0.866	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.247	0.246	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

1,4-Dichlorobenzene (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	14	33	9	24	72.73%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	24	0.38	2000	170.7	2.89	563.5
Statistics (Detects Only)	9	0.033	160	29.92	1.4	53.97
Statistics (All: NDs treated as DL value)	33	0.033	2000	132.3	1.9	482.7
Statistics (All: NDs treated as DL/2 value)	33	0.033	1000	70.25	1.4	241.7
Statistics (Normal ROS Estimated Data)	33	-47.61	160	-4.039	-11.51	36.48
Statistics (Gamma ROS Estimated Data)	33	0.033	160	34.8	29.08	30.33
Statistics (Lognormal ROS Estimated Data)	33	0.00511	160	8.239	0.0858	30.16

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.268	0.264	111.5	0.782	3.029	3.873
Statistics (NDs = DL)	0.192	0.195	689.2	1.028	2.549	2.48
Statistics (NDs = DL/2)	0.198	0.2	355.2	0.524	2.55	4.866
Statistics (Gamma ROS Estimates)	0.779	0.728	44.67	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.872	2.445	-1.306

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.796	0.523	0.546	0.811

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.648	0.829	Data Not Normal
Lilliefors (Detects Only)	0.365	0.295	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.293	0.931	Data Not Normal
Lilliefors (NDs = DL)	0.465	0.154	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.316	0.931	Data Not Normal
Lilliefors (NDs = DL/2)	0.432	0.154	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.69	0.931	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.254	0.154	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.995	0.877	0.894	0.946

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.531	0.819	
Kolmogorov-Smirnov (Detects Only)	0.297	0.303	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	4.942	0.903	
Kolmogorov-Smirnov (NDs = DL)	0.351	0.17	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	4.731	0.9	
Kolmogorov-Smirnov (NDs = DL/2)	0.364	0.17	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	3.204	0.786	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.35	0.159	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.97	0.954	0.95	0.916

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.924	0.829	Data Appear Lognormal
Lilliefors (Detects Only)	0.185	0.295	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.911	0.931	Data Not Lognormal
Lilliefors (NDs = DL)	0.156	0.154	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.898	0.931	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.175	0.154	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.841	0.931	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.261	0.154	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

1,4-Dichlorobenzene (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	50	5	45	14	31	68.89%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	31	0.34	3.9	0.768	0.41	0.914
Statistics (Detects Only)	14	0.045	24	2.648	0.14	6.373
Statistics (All: NDs treated as DL value)	45	0.045	24	1.353	0.4	3.653
Statistics (All: NDs treated as DL/2 value)	45	0.045	24	1.088	0.205	3.642
Statistics (Normal ROS Estimated Data)	45	-1.742	24	1.253	0.684	3.708
Statistics (Gamma ROS Estimated Data)	45	0.045	24	2.679	2.792	3.486
Statistics (Lognormal ROS Estimated Data)	45	0.045	24	0.948	0.165	3.653

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.353	0.344	7.507	-0.93	1.894	-2.036
Statistics (NDs = DL)	0.613	0.587	2.207	-0.703	1.187	-1.69
Statistics (NDs = DL/2)	0.502	0.483	2.168	-1.18	1.189	-1.008
Statistics (Gamma ROS Estimates)	0.959	0.91	2.792	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.55	1.186	-0.765

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.662	0.546	0.498	0.626

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.466	0.874	Data Not Normal
Lilliefors (Detects Only)	0.354	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.339	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.369	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.288	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.387	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.439	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.294	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.947	0.813	0.796	0.759

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.681	0.822	
Kolmogorov-Smirnov (Detects Only)	0.335	0.246	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	5.204	0.803	
Kolmogorov-Smirnov (NDs = DL)	0.36	0.138	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	7.594	0.813	
Kolmogorov-Smirnov (NDs = DL/2)	0.363	0.139	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	4.775	0.779	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.265	0.136	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.919	0.932	0.874	0.849

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.842	0.874	Data Not Lognormal
Lilliefors (Detects Only)	0.279	0.237	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.883	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.27	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.781	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.297	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.74	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.265	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

1,2-Dichloroethane (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	7	5	41.67%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	0.0049	3.4	0.774	0.0071	1.481
Statistics (Detects Only)	7	0.0014	87	28.57	12	36.77
Statistics (All: NDs treated as DL value)	12	0.0014	87	16.99	0.229	30.71
Statistics (All: NDs treated as DL/2 value)	12	0.0014	87	16.83	0.114	30.79
Statistics (Normal ROS Estimated Data)	12	-0.31	87	16.54	0.00145	30.96
Statistics (Gamma ROS Estimated Data)	12	0.0014	87	29.91	31.78	27.21
Statistics (Lognormal ROS Estimated Data)	12	0.0014	87	16.67	0.00513	30.88

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.187	0.195	153.2	-0.636	5.38	-8.459
Statistics (NDs = DL)	0.169	0.183	100.3	-1.625	4.541	-2.795
Statistics (NDs = DL/2)	0.161	0.176	104.8	-1.913	4.65	-2.43
Statistics (Gamma ROS Estimates)	0.297	0.278	100.8	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.568	4.636	-1.805

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.902	0.791	0.788	0.786

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.794	0.803	Data Not Normal
Lilliefors (Detects Only)	0.245	0.335	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.628	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.338	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.622	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.355	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.619	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.37	0.256	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.876	0.937	0.935	0.886

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.768	0.826	
Kolmogorov-Smirnov (Detects Only)	0.289	0.343	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.838	0.876	
Kolmogorov-Smirnov (NDs = DL)	0.286	0.272	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	0.974	0.879	
Kolmogorov-Smirnov (NDs = DL/2)	0.294	0.273	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.996	0.825	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.383	0.266	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.889	0.931	0.917	0.861

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.755	0.803	Data Not Lognormal
Lilliefors (Detects Only)	0.29	0.335	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.836	0.859	Data Not Lognormal
Lilliefors (NDs = DL)	0.268	0.256	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.81	0.859	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.289	0.256	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.719	0.859	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.387	0.256	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

1,2-Dichloroethene (total) (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	5	7	58.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.0094	6.8	1.865	0.011	3.171
Statistics (Detects Only)	5	4.80E-04	51	13.52	4.6	21.52
Statistics (All: NDs treated as DL value)	12	4.80E-04	51	6.721	0.0125	14.49
Statistics (All: NDs treated as DL/2 value)	12	4.80E-04	51	6.177	0.00625	14.55
Statistics (Normal ROS Estimated Data)	12	-8.628	51	4.507	-0.0695	15.45
Statistics (Gamma ROS Estimated Data)	12	1.00E-09	51	12.68	10.8	13.85
Statistics (Lognormal ROS Estimated Data)	12	1.90E-04	51	5.635	0.00222	14.73

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.189	0.197	71.69	-1.334	5.524	-4.142
Statistics (NDs = DL)	0.185	0.194	36.36	-2.124	4.109	-1.934
Statistics (NDs = DL/2)	0.173	0.185	35.7	-2.528	4.184	-1.655
Statistics (Gamma ROS Estimates)	0.208	0.212	60.99	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.277	4.31	-1.008

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.849	0.708	0.68	0.76

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.731	0.762	Data Not Normal
Lilliefors (Detects Only)	0.328	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.528	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.331	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.491	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.376	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.61	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.331	0.256	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.999	0.982	0.982	0.945

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.433	0.781	
Kolmogorov-Smirnov (Detects Only)	0.27	0.39	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.957	0.871	
Kolmogorov-Smirnov (NDs = DL)	0.33	0.272	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.018	0.875	
Kolmogorov-Smirnov (NDs = DL/2)	0.337	0.272	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.962	0.862	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.39	0.271	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.918	0.935	0.927	0.884

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.815	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.298	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.856	0.859	Data Not Lognormal
Lilliefors (NDs = DL)	0.282	0.256	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.84	0.859	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.303	0.256	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.774	0.859	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.304	0.256	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

2,4-Dichlorophenol (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	7	29	5	24	82.76%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	24	0.35	21	2.021	0.43	4.451
Statistics (Detects Only)	5	0.03	270	67.79	2.9	116.4
Statistics (All: NDs treated as DL value)	29	0.03	270	13.36	0.49	50.89
Statistics (All: NDs treated as DL/2 value)	29	0.03	270	12.52	0.245	50.96
Statistics (Normal ROS Estimated Data)	29	-87.48	270	-31.62	-48.67	66.77
Statistics (Gamma ROS Estimated Data)	29	1.00E-09	310.6	81.39	42	95.32
Statistics (Lognormal ROS Estimated Data)	29	0.00319	270	11.71	0.0194	51.12

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.257	0.253	263.7	1.466	3.586	2.446
Statistics (NDs = DL)	0.276	0.271	48.37	0.062	1.817	29.31
Statistics (NDs = DL/2)	0.236	0.234	53.09	-0.512	1.929	-3.769
Statistics (Gamma ROS Estimates)	0.157	0.164	518.3	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.152	2.699	-0.856

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.831	0.503	0.487	0.765

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.701	0.762	Data Not Normal
Lilliefors (Detects Only)	0.311	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.285	0.926	Data Not Normal
Lilliefors (NDs = DL)	0.439	0.165	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.269	0.926	Data Not Normal
Lilliefors (NDs = DL/2)	0.459	0.165	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.616	0.926	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.24	0.165	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.999	0.866	0.868	0.827

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.258	0.755	
Kolmogorov-Smirnov (Detects Only)	0.254	0.384	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	5.169	0.866	
Kolmogorov-Smirnov (NDs = DL)	0.337	0.178	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	5.703	0.883	
Kolmogorov-Smirnov (NDs = DL/2)	0.364	0.179	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	5.316	0.919	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.44	0.182	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.987	0.893	0.88	0.85

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.968	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.175	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.818	0.926	Data Not Lognormal
Lilliefors (NDs = DL)	0.244	0.165	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.79	0.926	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.261	0.165	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.731	0.926	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.267	0.165	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

2,4-Dichlorophenol (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	6	6	50.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.35	0.39	0.367	0.365	0.0163
Statistics (Detects Only)	6	0.03	3500	654.7	79	1397
Statistics (All: NDs treated as DL value)	12	0.03	3500	327.5	0.375	1002
Statistics (All: NDs treated as DL/2 value)	12	0.03	3500	327.5	0.193	1002
Statistics (Normal ROS Estimated Data)	12	-670.4	3500	159.6	-15.01	1083
Statistics (Gamma ROS Estimated Data)	12	0.03	3500	680.9	534.7	952.3
Statistics (Lognormal ROS Estimated Data)	12	0.0219	3500	327.5	0.208	1002

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.207	0.211	3163	2.948	4.413	1.497
Statistics (NDs = DL)	0.158	0.174	2070	0.972	3.621	3.726
Statistics (NDs = DL/2)	0.149	0.167	2199	0.625	3.839	6.139
Statistics (Gamma ROS Estimates)	0.371	0.334	1834	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.418	4.04	9.668

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.729	0.587	0.587	0.721

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.556	0.788	Data Not Normal
Lilliefors (Detects Only)	0.442	0.362	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.376	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.44	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.376	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.44	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.554	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.376	0.256	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.982	0.945	0.948	0.945

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.272	0.8	
Kolmogorov-Smirnov (Detects Only)	0.187	0.363	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.669	0.879	
Kolmogorov-Smirnov (NDs = DL)	0.39	0.273	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.689	0.883	
Kolmogorov-Smirnov (NDs = DL/2)	0.383	0.273	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.734	0.81	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.23	0.263	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.963	0.899	0.888	0.923

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.92	0.788	Data Appear Lognormal
Lilliefors (Detects Only)	0.268	0.362	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.81	0.859	Data Not Lognormal
Lilliefors (NDs = DL)	0.368	0.256	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.785	0.859	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.353	0.256	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.842	0.859	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.261	0.256	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

4,4'-DDT (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	23	24	13	11	45.83%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	11	0.019	4.5	0.946	0.18	1.518
Statistics (Detects Only)	13	0.0081	14	1.503	0.2	3.798
Statistics (All: NDs treated as DL value)	24	0.0081	14	1.248	0.185	2.934
Statistics (All: NDs treated as DL/2 value)	24	0.0081	14	1.031	0.0925	2.838
Statistics (Normal ROS Estimated Data)	24	-1.659	14	0.551	0.0335	2.991
Statistics (Gamma ROS Estimated Data)	24	0.0081	14	1.495	1.243	2.761
Statistics (Lognormal ROS Estimated Data)	24	0.0081	14	0.831	0.0392	2.843

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.324	0.312	4.634	-1.692	2.272	-1.343
Statistics (NDs = DL)	0.368	0.349	3.394	-1.593	2.035	-1.277
Statistics (NDs = DL/2)	0.347	0.331	2.972	-1.911	2.047	-1.071
Statistics (Gamma ROS Estimates)	0.526	0.488	2.842	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.584	1.985	-0.768

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.633	0.66	0.587	0.663

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.431	0.866	Data Not Normal
Lilliefors (Detects Only)	0.402	0.246	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.462	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.336	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.374	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.359	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.472	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.311	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.921	0.942	0.883	0.829

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.745	0.825	
Kolmogorov-Smirnov (Detects Only)	0.194	0.256	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.172	0.836	
Kolmogorov-Smirnov (NDs = DL)	0.227	0.191	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.461	0.841	
Kolmogorov-Smirnov (NDs = DL/2)	0.223	0.192	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.356	0.804	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.235	0.188	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.981	0.986	0.975	0.939

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.953	0.866	Data Appear Lognormal
Lilliefors (Detects Only)	0.159	0.246	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.964	0.916	Data Appear Lognormal
Lilliefors (NDs = DL)	0.106	0.181	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.941	0.916	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.138	0.181	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.878	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.214	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

1,2,4-Trichlorobenzene (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	4	13	5	8	61.54%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	8	0.38	26	3.599	0.4	9.051
Statistics (Detects Only)	5	0.03	23	11.23	6.9	10.58
Statistics (All: NDs treated as DL value)	13	0.03	26	6.532	0.41	10
Statistics (All: NDs treated as DL/2 value)	13	0.03	23	5.425	0.205	8.49
Statistics (Normal ROS Estimated Data)	13	-7.491	23	2.615	0.34	9.742
Statistics (Gamma ROS Estimated Data)	13	0.03	23	12.16	11.28	6.736
Statistics (Lognormal ROS Estimated Data)	13	0.0142	23	4.371	0.14	8.317

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.525	0.455	21.38	1.217	2.741	2.252
Statistics (NDs = DL)	0.398	0.358	16.4	0.223	2.109	9.447
Statistics (NDs = DL/2)	0.354	0.324	15.31	-0.203	2.268	-11.16
Statistics (Gamma ROS Estimates)	1.171	0.952	10.38	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.3	2.725	-2.096

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.938	0.819	0.829	0.906

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.854	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.259	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.661	0.866	Data Not Normal
Lilliefors (NDs = DL)	0.345	0.246	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.679	0.866	Data Not Normal
Lilliefors (NDs = DL/2)	0.346	0.246	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.817	0.866	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.214	0.246	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.827	0.91	0.937	0.916

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.462	0.71	
Kolmogorov-Smirnov (Detects Only)	0.249	0.371	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.315	0.81	
Kolmogorov-Smirnov (NDs = DL)	0.355	0.253	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.377	0.819	
Kolmogorov-Smirnov (NDs = DL/2)	0.371	0.255	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.239	0.755	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.271	0.242	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.872	0.921	0.91	0.934

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.771	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.332	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.844	0.866	Data Not Lognormal
Lilliefors (NDs = DL)	0.313	0.246	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.816	0.866	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.341	0.246	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.851	0.866	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.215	0.246	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

2,4,6-Trichlorophenol (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	4	13	5	8	61.54%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	8	0.38	0.42	0.398	0.395	0.0128
Statistics (Detects Only)	5	1.1	6.9	3.5	2.2	2.509
Statistics (All: NDs treated as DL value)	13	0.38	6.9	1.591	0.41	2.137
Statistics (All: NDs treated as DL/2 value)	13	0.19	6.9	1.468	0.205	2.212
Statistics (Normal ROS Estimated Data)	13	-7.955	6.9	-1.748	-3.294	4.743
Statistics (Gamma ROS Estimated Data)	13	1.1	6.9	3.543	3.572	1.471
Statistics (Lognormal ROS Estimated Data)	13	0.0868	6.9	1.491	0.357	2.199

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	2.385	1.886	1.468	1.029	0.763	0.741
Statistics (NDs = DL)	0.916	0.756	1.736	-0.172	1.082	-6.279
Statistics (NDs = DL/2)	0.625	0.532	2.35	-0.599	1.41	-2.354
Statistics (Gamma ROS Estimates)	5.807	4.518	0.61	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.563	1.438	-2.557

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.945	0.798	0.807	0.96

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.877	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.298	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.642	0.866	Data Not Normal
Lilliefors (NDs = DL)	0.323	0.246	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.655	0.866	Data Not Normal
Lilliefors (NDs = DL/2)	0.331	0.246	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.911	0.866	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.209	0.246	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.963	0.958	0.971	0.967

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.355	0.684	
Kolmogorov-Smirnov (Detects Only)	0.27	0.36	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.695	0.762	
Kolmogorov-Smirnov (NDs = DL)	0.364	0.244	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.655	0.78	
Kolmogorov-Smirnov (NDs = DL/2)	0.377	0.248	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.489	0.736	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.185	0.237	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.973	0.869	0.869	0.96

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.932	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.224	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.742	0.866	Data Not Lognormal
Lilliefors (NDs = DL)	0.355	0.246	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.737	0.866	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.368	0.246	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.907	0.866	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.209	0.246	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

2,4,6-Trichlorophenol (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	5	7	58.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.35	0.39	0.369	0.37	0.0157
Statistics (Detects Only)	5	0.1	650	176	89	269.4
Statistics (All: NDs treated as DL value)	12	0.1	650	73.56	0.38	185.9
Statistics (All: NDs treated as DL/2 value)	12	0.1	650	73.45	0.19	186
Statistics (Normal ROS Estimated Data)	12	-216.9	650	-3.837	-52.53	232.5
Statistics (Gamma ROS Estimated Data)	12	0.1	650	175.4	168.5	162.7
Statistics (Lognormal ROS Estimated Data)	12	0.0287	650	73.46	0.318	186

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.358	0.324	491.7	3.299	3.361	1.019
Statistics (NDs = DL)	0.209	0.212	352.7	0.792	3.001	3.79
Statistics (NDs = DL/2)	0.19	0.198	387	0.388	3.273	8.445
Statistics (Gamma ROS Estimates)	0.765	0.629	229.5	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.164	3.538	21.63

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.836	0.659	0.659	0.861

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.716	0.762	Data Not Normal
Lilliefors (Detects Only)	0.382	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.463	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.361	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.463	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.361	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.763	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.214	0.256	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.991	0.97	0.973	0.896

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.24	0.731	
Kolmogorov-Smirnov (Detects Only)	0.182	0.378	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.661	0.862	
Kolmogorov-Smirnov (NDs = DL)	0.403	0.271	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.753	0.869	
Kolmogorov-Smirnov (NDs = DL/2)	0.41	0.271	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.432	0.765	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.285	0.255	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.922	0.877	0.854	0.931

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.866	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.27	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.764	0.859	Data Not Lognormal
Lilliefors (NDs = DL)	0.385	0.256	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.718	0.859	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.398	0.256	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.851	0.859	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.261	0.256	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Aldrin (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	8	41	5	36	87.80%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	36	0.0018	0.25	0.0215	0.00288	0.0458
Statistics (Detects Only)	5	0.0011	0.3	0.129	0.13	0.131
Statistics (All: NDs treated as DL value)	41	0.0011	0.3	0.0345	0.00305	0.0693
Statistics (All: NDs treated as DL/2 value)	41	9.00E-04	0.3	0.0251	0.0025	0.0608
Statistics (Normal ROS Estimated Data)	41	-0.139	0.3	-0.0229	-0.0396	0.0814
Statistics (Gamma ROS Estimated Data)	41	0.0011	0.3	0.131	0.13	0.0418
Statistics (Lognormal ROS Estimated Data)	41	9.49E-05	0.3	0.0166	7.96E-04	0.0591

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.44	0.424	0.292	-3.522	2.662	-0.756
Statistics (NDs = DL)	0.454	0.437	0.076	-4.785	1.636	-0.342
Statistics (NDs = DL/2)	0.387	0.375	0.0649	-5.394	1.717	-0.318
Statistics (Gamma ROS Estimates)	2.923	2.726	0.0449	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-6.777	1.725	-0.255

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.964	0.721	0.66	0.879

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.908	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.233	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.532	0.941	Data Not Normal
Lilliefors (NDs = DL)	0.36	0.138	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.459	0.941	Data Not Normal
Lilliefors (NDs = DL/2)	0.387	0.138	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.793	0.941	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.213	0.138	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.883	0.96	0.951	0.737

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.535	0.719	
Kolmogorov-Smirnov (Detects Only)	0.295	0.374	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	3.519	0.824	
Kolmogorov-Smirnov (NDs = DL)	0.253	0.147	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	4.259	0.839	
Kolmogorov-Smirnov (NDs = DL/2)	0.24	0.148	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	10.53	0.755	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.488	0.139	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.915	0.929	0.92	0.885

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.812	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.311	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.847	0.941	Data Not Lognormal
Lilliefors (NDs = DL)	0.243	0.138	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.831	0.941	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.225	0.138	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.791	0.941	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.206	0.138	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Antimony (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	7	29	20	9	31.03%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	9	1.8	3.2	2.256	2.2	0.413
Statistics (Detects Only)	20	0.54	84	7.584	1.4	19.02
Statistics (All: NDs treated as DL value)	29	0.54	84	5.93	1.9	15.87
Statistics (All: NDs treated as DL/2 value)	29	0.54	84	5.58	1.15	15.96
Statistics (Normal ROS Estimated Data)	29	-1.511	84	5.892	1.8	15.92
Statistics (Gamma ROS Estimated Data)	29	0.54	84	7.645	3.8	15.67
Statistics (Lognormal ROS Estimated Data)	29	0.54	84	5.597	1.213	15.95

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.497	0.469	15.25	0.748	1.347	1.801
Statistics (NDs = DL)	0.607	0.567	9.77	0.764	1.113	1.458
Statistics (NDs = DL/2)	0.537	0.504	10.4	0.549	1.153	2.102
Statistics (Gamma ROS Estimates)	0.687	0.639	11.13	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.56	1.152	2.059

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.616	0.559	0.551	0.579

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.407	0.905	Data Not Normal
Lilliefors (Detects Only)	0.387	0.198	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.344	0.926	Data Not Normal
Lilliefors (NDs = DL)	0.403	0.165	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.336	0.926	Data Not Normal
Lilliefors (NDs = DL/2)	0.394	0.165	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.369	0.926	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.373	0.165	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.898	0.832	0.842	0.846

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	2.568	0.803	
Kolmogorov-Smirnov (Detects Only)	0.315	0.205	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	3.822	0.8	
Kolmogorov-Smirnov (NDs = DL)	0.323	0.171	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	4.913	0.807	
Kolmogorov-Smirnov (NDs = DL/2)	0.368	0.172	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.856	0.791	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.252	0.17	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.912	0.915	0.864	0.87

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.833	0.905	Data Not Lognormal
Lilliefors (Detects Only)	0.231	0.198	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.848	0.926	Data Not Lognormal
Lilliefors (NDs = DL)	0.219	0.165	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.757	0.926	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.261	0.165	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.767	0.926	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.265	0.165	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Antimony (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	28	17	37.78%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	17	1.9	2.7	2.3	2.2	0.281
Statistics (Detects Only)	28	0.52	47	10.48	4.1	13.01
Statistics (All: NDs treated as DL value)	45	0.52	47	7.392	2.6	10.95
Statistics (All: NDs treated as DL/2 value)	45	0.52	47	6.958	1.4	11.17
Statistics (Normal ROS Estimated Data)	45	-8.12	47	5.682	2.216	12.18
Statistics (Gamma ROS Estimated Data)	45	0.52	47	10.01	6.742	10.39
Statistics (Lognormal ROS Estimated Data)	45	0.519	47	6.966	1.837	11.17

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.78	0.743	13.44	1.586	1.308	0.825
Statistics (NDs = DL)	0.841	0.799	8.793	1.299	1.093	0.841
Statistics (NDs = DL/2)	0.673	0.643	10.34	1.037	1.25	1.206
Statistics (Gamma ROS Estimates)	1.138	1.077	8.791	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	1.008	1.303	1.293

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.867	0.774	0.776	0.88

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.748	0.924	Data Not Normal
Lilliefors (Detects Only)	0.278	0.167	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.606	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.322	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.609	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.305	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.779	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.256	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.98	0.955	0.967	0.987

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.845	0.783	
Kolmogorov-Smirnov (Detects Only)	0.148	0.172	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL)	4.096	0.785	
Kolmogorov-Smirnov (NDs = DL)	0.292	0.137	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	4.025	0.797	
Kolmogorov-Smirnov (NDs = DL/2)	0.238	0.138	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.319	0.774	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.0779	0.135	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.987	0.945	0.935	0.962

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.959	0.924	Data Appear Lognormal
Lilliefors (Detects Only)	0.0961	0.167	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.886	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.242	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.858	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.223	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.905	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.145	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Arsenic (o)

Raw Statistics	
Number of Valid Observations	14
Number of Missing Values	3
Number of Distinct Observations	11
Minimum	4.4
Maximum	160
Mean of Raw Data	18.71
Standard Deviation of Raw Data	41.12
Kstar	0.629
Mean of Log Transformed Data	2.119
Standard Deviation of Log Transformed Data	0.988

Normal Distribution Test Results

Correlation Coefficient R	0.597
Shapiro Wilk Test Statistic	0.387
Shapiro Wilk Critical (0.95) Value	0.874
Lilliefors Test Statistic	0.399
Lilliefors Critical (0.95) Value	0.237
Data not Normal at (0.05) Significance Level	

Gamma Distribution Test Results

Correlation Coefficient R	0.845
A-D Test Statistic	2.854
A-D Critical (0.95) Value	0.772
K-S Test Statistic	0.4
K-S Critical(0.95) Value	0.238
Data not Gamma Distributed at (0.05) Significance Level	

Lognormal Distribution Test Results

Correlation Coefficient R	0.792
Shapiro Wilk Test Statistic	0.646
Shapiro Wilk Critical (0.95) Value	0.874
Lilliefors Test Statistic	0.338
Lilliefors Critical (0.95) Value	0.237
Data not Lognormal at (0.05) Significance Level	

Arsenic (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	12	35	34	1	2.86%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	34	1.6	27	10.93	12	6.319
Statistics (All: NDs treated as DL value)	35	0.95	27	10.65	12	6.45
Statistics (All: NDs treated as DL/2 value)	35	0.475	27	10.63	12	6.472
Statistics (Normal ROS Estimated Data)	35	-4.921	27	10.48	12	6.778
Statistics (Gamma ROS Estimated Data)	35	1.00E-09	27	10.62	12	6.494
Statistics (Lognormal ROS Estimated Data)	35	1.424	27	10.66	12	6.43

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	2.439	2.249	4.483	2.173	0.753	0.346
Statistics (NDs = DL)	2.105	1.944	5.058	2.109	0.831	0.394
Statistics (NDs = DL/2)	1.972	1.822	5.392	2.09	0.89	0.426
Statistics (Gamma ROS Estimates)	0.714	0.672	14.87	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	2.121	0.803	0.378

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.973	0.974	0.976	0.982

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.941	0.933	Data Appear Normal
Lilliefors (Detects Only)	0.0965	0.152	Data Appear Normal

Shapiro-Wilks (NDs = DL)	0.942	0.934	Data Appear Normal
Lilliefors (NDs = DL)	0.0973	0.15	Data Appear Normal
Shapiro-Wilks (NDs = DL/2)	0.946	0.934	Data Appear Normal
Lilliefors (NDs = DL/2)	0.0979	0.15	Data Appear Normal
Shapiro-Wilks (Normal ROS Estimates)	0.969	0.934	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.103	0.15	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.971	0.968	0.966	0.915

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.777	0.757	
Kolmogorov-Smirnov (Detects Only)	0.17	0.153	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	0.853	0.759	
Kolmogorov-Smirnov (NDs = DL)	0.172	0.151	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.873	0.76	
Kolmogorov-Smirnov (NDs = DL/2)	0.174	0.151	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	4.046	0.791	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.279	0.155	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.951	0.947	0.934	0.949

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.895	0.933	Data Not Lognormal
Lilliefors (Detects Only)	0.19	0.152	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.892	0.934	Data Not Lognormal
Lilliefors (NDs = DL)	0.189	0.15	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.877	0.934	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.186	0.15	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.889	0.934	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.189	0.15	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Arsenic (q central)

Raw Statistics

Number of Valid Observations	45
Number of Missing Values	5
Number of Distinct Observations	37
Minimum	1.1
Maximum	100
Mean of Raw Data	17.77
Standard Deviation of Raw Data	26.81
Kstar	0.714
Mean of Log Transformed Data	2.079
Standard Deviation of Log Transformed Data	1.195

Normal Distribution Test Results

Correlation Coefficient R	0.778
Shapiro Wilk Test Statistic	0.605
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.348
Lilliefors Critical (0.95) Value	0.132

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.944
A-D Test Statistic	3.657
A-D Critical (0.95) Value	0.79
K-S Test Statistic	0.274
K-S Critical(0.95) Value	0.137

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.958
Shapiro Wilk Test Statistic	0.903
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.203
Lilliefors Critical (0.95) Value	0.132

Data not Lognormal at (0.05) Significance Level

Arsenic (q north)

Raw Statistics

Number of Valid Observations	29
Number of Missing Values	7
Number of Distinct Observations	25
Minimum	2.3
Maximum	100
Mean of Raw Data	12.94
Standard Deviation of Raw Data	18.52
Kstar	1.212
Mean of Log Transformed Data	2.138
Standard Deviation of Log Transformed Data	0.815

Normal Distribution Test Results

Correlation Coefficient R	0.685
Shapiro Wilk Test Statistic	0.501
Shapiro Wilk Critical (0.95) Value	0.926
Lilliefors Test Statistic	0.326
Lilliefors Critical (0.95) Value	0.165

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.862
A-D Test Statistic	1.622
A-D Critical (0.95) Value	0.767
K-S Test Statistic	0.213
K-S Critical(0.95) Value	0.166

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.965
Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical (0.95) Value	0.926
Lilliefors Test Statistic	0.134
Lilliefors Critical (0.95) Value	0.165

Data appear Lognormal at (0.05) Significance Level

Arsenic (q south)

Raw Statistics

Number of Valid Observations	45
Number of Missing Values	4
Number of Distinct Observations	39
Minimum	2
Maximum	36
Mean of Raw Data	11.29
Standard Deviation of Raw Data	8.593
Kstar	2.051
Mean of Log Transformed Data	2.177
Standard Deviation of Log Transformed Data	0.702

Normal Distribution Test Results

Correlation Coefficient R	0.909

Shapiro Wilk Test Statistic	0.819
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.183
Lilliefors Critical (0.95) Value	0.132

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.98
A-D Test Statistic	0.82
A-D Critical (0.95) Value	0.76
K-S Test Statistic	0.122
K-S Critical(0.95) Value	0.133

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.991
Shapiro Wilk Test Statistic	0.971
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.0904
Lilliefors Critical (0.95) Value	0.132

Data appear Lognormal at (0.05) Significance Level

Arsenic (r)

Raw Statistics

Number of Valid Observations	12
Number of Missing Values	4
Number of Distinct Observations	11
Minimum	2.5
Maximum	12
Mean of Raw Data	6.117
Standard Deviation of Raw Data	2.328
Kstar	5.896
Mean of Log Transformed Data	1.745
Standard Deviation of Log Transformed Data	0.386

Normal Distribution Test Results

Correlation Coefficient R	0.926
Shapiro Wilk Test Statistic	0.885
Shapiro Wilk Critical (0.95) Value	0.859
Lilliefors Test Statistic	0.237
Lilliefors Critical (0.95) Value	0.256

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.945
A-D Test Statistic	0.458
A-D Critical (0.95) Value	0.731
K-S Test Statistic	0.196
K-S Critical(0.95) Value	0.246

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.952
Shapiro Wilk Test Statistic	0.93
Shapiro Wilk Critical (0.95) Value	0.859
Lilliefors Test Statistic	0.194
Lilliefors Critical (0.95) Value	0.256

Data appear Lognormal at (0.05) Significance Level

Barium (q north)

Raw Statistics	
Number of Valid Observations	29
Number of Missing Values	7
Number of Distinct Observations	27
Minimum	17
Maximum	7200
Mean of Raw Data	780.7
Standard Deviation of Raw Data	1807
Kstar	0.418
Mean of Log Transformed Data	5.191
Standard Deviation of Log Transformed Data	1.546

Normal Distribution Test Results

Correlation Coefficient R	0.663
Shapiro Wilk Test Statistic	0.455
Shapiro Wilk Critical (0.95) Value	0.926
Lilliefors Test Statistic	0.389
Lilliefors Critical (0.95) Value	0.165

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.927
A-D Test Statistic	3.134
A-D Critical (0.95) Value	0.825
K-S Test Statistic	0.295
K-S Critical(0.95) Value	0.173

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.953
Shapiro Wilk Test Statistic	0.904
Shapiro Wilk Critical (0.95) Value	0.926
Lilliefors Test Statistic	0.169
Lilliefors Critical (0.95) Value	0.165

Data not Lognormal at (0.05) Significance Level

Barium (q south)

Raw Statistics	
Number of Valid Observations	45
Number of Missing Values	4
Number of Distinct Observations	36
Minimum	46
Maximum	16000
Mean of Raw Data	1095
Standard Deviation of Raw Data	2477
Kstar	0.646
Mean of Log Transformed Data	6.101
Standard Deviation of Log Transformed Data	1.216

Normal Distribution Test Results

Correlation Coefficient R	0.604
Shapiro Wilk Test Statistic	0.406
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.336
Lilliefors Critical (0.95) Value	0.132

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.85
A-D Test Statistic	2.358
A-D Critical (0.95) Value	0.797
K-S Test Statistic	0.152
K-S Critical(0.95) Value	0.138

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.977
Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.128
Lilliefors Critical (0.95) Value	0.132

Data appear Lognormal at (0.05) Significance Level

Benzene (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	3	14	10	4	28.57%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.0038	0.0098	0.00585	0.0049	0.00274
Statistics (Detects Only)	10	0.0011	500	63.4	2.9	155.3
Statistics (All: NDs treated as DL value)	14	0.0011	500	45.29	0.323	132.6
Statistics (All: NDs treated as DL/2 value)	14	0.0011	500	45.29	0.323	132.6
Statistics (Normal ROS Estimated Data)	14	-77.91	500	23.03	0.323	145.2
Statistics (Gamma ROS Estimated Data)	14	1.00E-09	500	45.29	0.323	132.6
Statistics (Lognormal ROS Estimated Data)	14	0.0011	500	45.29	0.323	132.6

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.189	0.196	335.6	0.22	4.397	20.03
Statistics (NDs = DL)	0.149	0.165	303	-1.333	4.463	-3.348
Statistics (NDs = DL/2)	0.145	0.161	313.2	-1.531	4.656	-3.041
Statistics (Gamma ROS Estimates)	0.0863	0.115	524.6	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.59	4.711	-2.964

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.668	0.603	0.603	0.744

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.476	0.842	Data Not Normal
Lilliefors (Detects Only)	0.385	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.394	0.874	Data Not Normal
Lilliefors (NDs = DL)	0.403	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.394	0.874	Data Not Normal
Lilliefors (NDs = DL/2)	0.403	0.237	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.583	0.874	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.338	0.237	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.973	0.961	0.963	0.981

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.245	0.858	
Kolmogorov-Smirnov (Detects Only)	0.122	0.295	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.874	0.891	
Kolmogorov-Smirnov (NDs = DL)	0.212	0.255	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.894	0.892	
Kolmogorov-Smirnov (NDs = DL/2)	0.213	0.255	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	0.389	0.939	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.184	0.261	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.977	0.962	0.95	0.941

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.941	0.842	Data Appear Lognormal
Lilliefors (Detects Only)	0.134	0.28	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.905	0.874	Data Appear Lognormal
Lilliefors (NDs = DL)	0.198	0.237	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.88	0.874	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.221	0.237	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.863	0.874	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.26	0.237	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzene (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	14	33	21	12	36.36%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	12	0.0034	10	2.404	0.25	3.892
Statistics (Detects Only)	21	0.00126	14	1.194	0.19	3.044
Statistics (All: NDs treated as DL value)	33	0.00126	14	1.634	0.21	3.369
Statistics (All: NDs treated as DL/2 value)	33	0.00126	14	1.197	0.145	2.663
Statistics (Normal ROS Estimated Data)	33	-2.236	14	0.557	0.044	2.614
Statistics (Gamma ROS Estimated Data)	33	1.00E-09	14	0.94	0.057	2.517
Statistics (Lognormal ROS Estimated Data)	33	8.65E-04	14	0.767	0.0237	2.474

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.285	0.279	4.188	-2.263	2.764	-1.222
Statistics (NDs = DL)	0.272	0.268	6.002	-2.083	2.862	-1.374
Statistics (NDs = DL/2)	0.278	0.273	4.309	-2.335	2.853	-1.222
Statistics (Gamma ROS Estimates)	0.133	0.141	7.066	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.152	2.609	-0.828

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.624	0.731	0.689	0.691

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.415	0.908	Data Not Normal
Lilliefors (Detects Only)	0.364	0.193	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.547	0.931	Data Not Normal
Lilliefors (NDs = DL)	0.358	0.154	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.504	0.931	Data Not Normal
Lilliefors (NDs = DL/2)	0.327	0.154	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.52	0.931	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.314	0.154	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.924	0.974	0.971	0.965

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.639	0.852	
Kolmogorov-Smirnov (Detects Only)	0.148	0.206	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.08	0.867	
Kolmogorov-Smirnov (NDs = DL)	0.169	0.167	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.928	0.865	
Kolmogorov-Smirnov (NDs = DL/2)	0.161	0.167	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	1.164	0.934	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.16	0.172	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.978	0.973	0.97	0.977

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.945	0.908	Data Appear Lognormal
Lilliefors (Detects Only)	0.141	0.193	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.926	0.931	Data Not Lognormal
Lilliefors (NDs = DL)	0.175	0.154	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.92	0.931	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.157	0.154	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.941	0.931	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.143	0.154	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzene (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	7	29	17	12	41.38%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	12	0.00445	0.0108	0.00717	0.0065	0.00213
Statistics (Detects Only)	17	7.60E-04	8.8	0.635	0.0029	2.118
Statistics (All: NDs treated as DL value)	29	7.60E-04	8.8	0.375	0.0058	1.632
Statistics (All: NDs treated as DL/2 value)	29	7.60E-04	8.8	0.374	0.0029	1.632
Statistics (Normal ROS Estimated Data)	29	-0.46	8.8	0.335	0.0013	1.645
Statistics (Gamma ROS Estimated Data)	29	7.60E-04	8.8	0.669	0.5	1.602
Statistics (Lognormal ROS Estimated Data)	29	7.60E-04	8.8	0.374	0.00235	1.632

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.2	0.202	3.183	-4.14	2.905	-0.702
Statistics (NDs = DL)	0.208	0.21	1.801	-4.487	2.243	-0.5
Statistics (NDs = DL/2)	0.195	0.198	1.918	-4.774	2.333	-0.489
Statistics (Gamma ROS Estimates)	0.316	0.306	2.119	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.935	2.411	-0.488

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.55	0.463	0.462	0.502

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.333	0.892	Data Not Normal
Lilliefors (Detects Only)	0.408	0.215	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.246	0.926	Data Not Normal
Lilliefors (NDs = DL)	0.439	0.165	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.246	0.926	Data Not Normal
Lilliefors (NDs = DL/2)	0.439	0.165	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.287	0.926	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.394	0.165	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.912	0.848	0.855	0.824

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.799	0.883	
Kolmogorov-Smirnov (Detects Only)	0.277	0.231	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	4.74	0.894	
Kolmogorov-Smirnov (NDs = DL)	0.349	0.18	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	5.285	0.9	
Kolmogorov-Smirnov (NDs = DL/2)	0.378	0.18	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.945	0.853	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.197	0.176	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.943	0.931	0.89	0.869

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.878	0.892	Data Not Lognormal
Lilliefors (Detects Only)	0.251	0.215	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.869	0.926	Data Not Lognormal
Lilliefors (NDs = DL)	0.232	0.165	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.795	0.926	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.301	0.165	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.757	0.926	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.336	0.165	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	29	16	35.56%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	16	0.004	0.21	0.019	0.0062	0.051
Statistics (Detects Only)	29	8.60E-04	2	0.0968	0.0033	0.377
Statistics (All: NDs treated as DL value)	45	8.60E-04	2	0.0692	0.0058	0.304
Statistics (All: NDs treated as DL/2 value)	45	8.60E-04	2	0.0658	0.0031	0.304
Statistics (Normal ROS Estimated Data)	45	-0.0867	2	0.0587	0.003	0.306
Statistics (Gamma ROS Estimated Data)	45	8.60E-04	2	0.0944	0.016	0.3
Statistics (Lognormal ROS Estimated Data)	45	8.60E-04	2	0.0633	0.00272	0.304

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.26	0.258	0.372	-5.047	1.857	-0.368
Statistics (NDs = DL)	0.298	0.293	0.232	-4.989	1.578	-0.316
Statistics (NDs = DL/2)	0.278	0.274	0.237	-5.235	1.597	-0.305
Statistics (Gamma ROS Estimates)	0.379	0.369	0.249	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.406	1.576	-0.292

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.499	0.452	0.441	0.482

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.281	0.926	Data Not Normal
Lilliefors (Detects Only)	0.465	0.165	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.243	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.46	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.232	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.455	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.275	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.455	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.868	0.813	0.81	0.8

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	4.927	0.873	
Kolmogorov-Smirnov (Detects Only)	0.33	0.178	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	8.217	0.863	
Kolmogorov-Smirnov (NDs = DL)	0.377	0.143	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	8.964	0.872	
Kolmogorov-Smirnov (NDs = DL/2)	0.356	0.144	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.639	0.843	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.22	0.142	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.909	0.906	0.879	0.865

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.83	0.926	Data Not Lognormal
Lilliefors (Detects Only)	0.158	0.165	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.831	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.222	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.784	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.206	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.761	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.228	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzene (s)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	14	3	11	5	6	54.55%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.0054	3.9	1.227	0.375	1.662
Statistics (Detects Only)	5	0.0014	35	14.28	2.4	18.49
Statistics (All: NDs treated as DL value)	11	0.0014	35	7.16	0.56	13.59
Statistics (All: NDs treated as DL/2 value)	11	0.0014	35	6.826	0.28	13.71
Statistics (Normal ROS Estimated Data)	11	-1.131	35	6.349	0.0015	13.97
Statistics (Gamma ROS Estimated Data)	11	0.0014	35	14.37	15.7	11.77
Statistics (Lognormal ROS Estimated Data)	11	0.0014	35	6.493	0.00291	13.87

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.2	0.206	71.45	-1.023	5.149	-5.032
Statistics (NDs = DL)	0.217	0.218	33.03	-1.383	3.852	-2.785
Statistics (NDs = DL/2)	0.2	0.206	34.15	-1.761	3.901	-2.215
Statistics (Gamma ROS Estimates)	0.393	0.347	36.55	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.503	4.041	-1.154

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.869	0.752	0.732	0.75

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.724	0.762	Data Not Normal
Lilliefors (Detects Only)	0.34	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.565	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.413	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.537	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.445	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.563	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.429	0.267	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.772	0.902	0.895	0.86

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.566	0.775	
Kolmogorov-Smirnov (Detects Only)	0.274	0.388	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.469	0.853	
Kolmogorov-Smirnov (NDs = DL)	0.19	0.281	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.595	0.86	
Kolmogorov-Smirnov (NDs = DL/2)	0.191	0.282	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.652	0.802	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.392	0.273	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.908	0.96	0.957	0.845

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.789	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.256	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.894	0.85	Data Appear Lognormal
Lilliefors (NDs = DL)	0.189	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.888	0.85	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.206	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.699	0.85	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.374	0.267	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzene (r)

Raw Statistics	
Number of Valid Observations	12
Number of Missing Values	4
Number of Distinct Observations	11
Minimum	6.80E-04
Maximum	150
Mean of Raw Data	26.19
Standard Deviation of Raw Data	50.14
Kstar	0.165
Mean of Log Transformed Data	-2.019
Standard Deviation of Log Transformed Data	5.034

Normal Distribution Test Results

Correlation Coefficient R	0.771
Shapiro Wilk Test Statistic	0.603
Shapiro Wilk Critical (0.95) Value	0.859
Lilliefors Test Statistic	0.336
Lilliefors Critical (0.95) Value	0.256

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.956
A-D Test Statistic	1.044
A-D Critical (0.95) Value	0.884
K-S Test Statistic	0.294
K-S Critical(0.95) Value	0.273

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.916
Shapiro Wilk Test Statistic	0.811
Shapiro Wilk Critical (0.95) Value	0.859
Lilliefors Test Statistic	0.231
Lilliefors Critical (0.95) Value	0.256

Data not Lognormal at (0.05) Significance Level

Benzo(a)anthracene (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	4	13	6	7	53.85%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.38	110	19.71	0.41	40.94
Statistics (Detects Only)	6	0.037	14.35	6.208	5.4	6.798
Statistics (All: NDs treated as DL value)	13	0.037	110	13.48	0.41	30.11
Statistics (All: NDs treated as DL/2 value)	13	0.037	55	8.173	0.205	15.24
Statistics (Normal ROS Estimated Data)	13	0.037	14.35	3.866	1.166	5.005
Statistics (Gamma ROS Estimated Data)	13	0.037	14.35	6.051	6.688	4.489
Statistics (Lognormal ROS Estimated Data)	13	0.037	14.35	2.957	0.113	5.392

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.361	0.329	17.19	-0.0269	2.826	-105.1
Statistics (NDs = DL)	0.294	0.277	45.87	0.247	2.518	10.19
Statistics (NDs = DL/2)	0.308	0.288	26.51	-0.126	2.506	-19.87
Statistics (Gamma ROS Estimates)	0.696	0.587	8.694	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.029	2.095	-2.036

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.903	0.691	0.751	0.859

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.785	0.788	Data Not Normal
Lilliefors (Detects Only)	0.312	0.362	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.504	0.866	Data Not Normal
Lilliefors (NDs = DL)	0.335	0.246	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.587	0.866	Data Not Normal
Lilliefors (NDs = DL/2)	0.315	0.246	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.731	0.866	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.321	0.246	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.785	0.963	0.967	0.894

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.736	0.757	
Kolmogorov-Smirnov (Detects Only)	0.313	0.354	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.01	0.832	
Kolmogorov-Smirnov (NDs = DL)	0.336	0.257	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.332	0.828	
Kolmogorov-Smirnov (NDs = DL/2)	0.365	0.256	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.349	0.775	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.305	0.247	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.913	0.953	0.915	0.882

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.8	0.788	Data Appear Lognormal
Lilliefors (Detects Only)	0.301	0.362	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.9	0.866	Data Appear Lognormal
Lilliefors (NDs = DL)	0.286	0.246	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.824	0.866	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.332	0.246	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.767	0.866	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.292	0.246	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)anthracene (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	50	6	44	28	16	36.36%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	16	0.34	2	0.641	0.44	0.5
Statistics (Detects Only)	28	0.029	3.6	0.643	0.27	0.893
Statistics (All: NDs treated as DL value)	44	0.029	3.6	0.642	0.405	0.767
Statistics (All: NDs treated as DL/2 value)	44	0.029	3.6	0.525	0.234	0.74
Statistics (Normal ROS Estimated Data)	44	-0.0786	3.6	0.496	0.249	0.742
Statistics (Gamma ROS Estimated Data)	44	0.029	3.6	0.635	0.515	0.711
Statistics (Lognormal ROS Estimated Data)	44	0.029	3.6	0.464	0.19	0.748

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.783	0.744	0.821	-1.203	1.285	-1.068
Statistics (NDs = DL)	1.046	0.99	0.614	-0.992	1.105	-1.113
Statistics (NDs = DL/2)	0.965	0.914	0.545	-1.244	1.07	-0.86
Statistics (Gamma ROS Estimates)	1.158	1.094	0.549	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.467	1.093	-0.745

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.815	0.825	0.769	0.771

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.672	0.924	Data Not Normal
Lilliefors (Detects Only)	0.256	0.167	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.692	0.944	Data Not Normal
Lilliefors (NDs = DL)	0.298	0.134	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.609	0.944	Data Not Normal
Lilliefors (NDs = DL/2)	0.264	0.134	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.613	0.944	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.289	0.134	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.976	0.969	0.948	0.945

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.65	0.783	
Kolmogorov-Smirnov (Detects Only)	0.132	0.172	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.937	0.776	
Kolmogorov-Smirnov (NDs = DL)	0.179	0.137	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.877	0.779	
Kolmogorov-Smirnov (NDs = DL/2)	0.211	0.137	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.74	0.774	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.135	0.137	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.996	0.987	0.983	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.98	0.924	Data Appear Lognormal
Lilliefors (Detects Only)	0.074	0.167	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.968	0.944	Data Appear Lognormal
Lilliefors (NDs = DL)	0.128	0.134	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.963	0.944	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.145	0.134	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.944	0.944	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.171	0.134	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)anthracene (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	7	29	21	8	27.59%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	8	0.36	230	32.16	0.7	80.25
Statistics (Detects Only)	21	0.06	4.85	1.268	1	1.239
Statistics (All: NDs treated as DL value)	29	0.06	230	9.789	0.8	42.53
Statistics (All: NDs treated as DL/2 value)	29	0.06	115	5.353	0.795	21.19
Statistics (Normal ROS Estimated Data)	29	-0.0468	4.85	1.052	0.795	1.128
Statistics (Gamma ROS Estimated Data)	29	0.06	4.85	1.172	0.795	1.1
Statistics (Lognormal ROS Estimated Data)	29	0.06	4.85	1.004	0.511	1.137

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.931	0.857	1.362	-0.389	1.344	-3.459
Statistics (NDs = DL)	0.296	0.288	33.09	-0.0549	1.712	-31.17
Statistics (NDs = DL/2)	0.35	0.336	15.31	-0.246	1.638	-6.654
Statistics (Gamma ROS Estimates)	1.103	1.012	1.063	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.635	1.233	-1.941

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.926	0.448	0.465	0.903

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.859	0.908	Data Not Normal
Lilliefors (Detects Only)	0.165	0.193	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.233	0.926	Data Not Normal
Lilliefors (NDs = DL)	0.477	0.165	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.249	0.926	Data Not Normal
Lilliefors (NDs = DL/2)	0.441	0.165	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.823	0.926	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.166	0.165	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.993	0.795	0.789	0.989

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.281	0.773	
Kolmogorov-Smirnov (Detects Only)	0.122	0.195	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	4.374	0.858	
Kolmogorov-Smirnov (NDs = DL)	0.337	0.177	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	3.316	0.845	
Kolmogorov-Smirnov (NDs = DL/2)	0.286	0.176	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.327	0.772	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.114	0.167	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.965	0.954	0.969	0.989

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.919	0.908	Data Appear Lognormal
Lilliefors (Detects Only)	0.162	0.193	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.922	0.926	Data Not Lognormal
Lilliefors (NDs = DL)	0.119	0.165	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.946	0.926	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.101	0.165	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.964	0.926	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.112	0.165	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)anthracene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	34	11	24.44%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	11	0.34	0.49	0.403	0.39	0.0498
Statistics (Detects Only)	34	0.03	13	1.018	0.205	2.257
Statistics (All: NDs treated as DL value)	45	0.03	13	0.868	0.38	1.973
Statistics (All: NDs treated as DL/2 value)	45	0.03	13	0.818	0.2	1.986
Statistics (Normal ROS Estimated Data)	45	-0.303	13	0.809	0.165	1.992
Statistics (Gamma ROS Estimated Data)	45	0.0105	13	0.892	0.478	1.971
Statistics (Lognormal ROS Estimated Data)	45	0.03	13	0.796	0.115	1.994

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.507	0.488	2.009	-1.233	1.609	-1.305
Statistics (NDs = DL)	0.608	0.583	1.426	-1.155	1.402	-1.213
Statistics (NDs = DL/2)	0.556	0.534	1.473	-1.325	1.404	-1.06
Statistics (Gamma ROS Estimates)	0.585	0.561	1.525	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.474	1.462	-0.992

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.634	0.602	0.595	0.604

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.438	0.933	Data Not Normal
Lilliefors (Detects Only)	0.331	0.152	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.404	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.336	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.395	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.346	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.409	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.326	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.877	0.84	0.848	0.844

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.521	0.811	
Kolmogorov-Smirnov (Detects Only)	0.182	0.159	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.443	0.803	
Kolmogorov-Smirnov (NDs = DL)	0.174	0.138	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.617	0.808	
Kolmogorov-Smirnov (NDs = DL/2)	0.263	0.139	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.16	0.805	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.134	0.139	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.965	0.983	0.971	0.949

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.92	0.933	Data Not Lognormal
Lilliefors (Detects Only)	0.138	0.152	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.959	0.945	Data Appear Lognormal
Lilliefors (NDs = DL)	0.105	0.132	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.937	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.173	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.894	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.204	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	4	13	6	7	53.85%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.38	26	4.056	0.4	9.677
Statistics (Detects Only)	6	0.037	10.2	4.361	4.35	4.247
Statistics (All: NDs treated as DL value)	13	0.037	26	4.197	0.41	7.373
Statistics (All: NDs treated as DL/2 value)	13	0.037	13	3.105	0.205	4.548
Statistics (Normal ROS Estimated Data)	13	-1.616	10.2	2.112	0.13	3.586
Statistics (Gamma ROS Estimated Data)	13	0.037	10.2	4.347	4.386	2.743
Statistics (Lognormal ROS Estimated Data)	13	0.0362	10.2	2.082	0.13	3.513

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.517	0.449	8.434	0.251	2.365	9.435
Statistics (NDs = DL)	0.435	0.386	9.651	-0.0588	1.915	-32.59
Statistics (NDs = DL/2)	0.418	0.373	7.435	-0.432	2.003	-4.637
Statistics (Gamma ROS Estimates)	1.021	0.836	4.259	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.092	2.058	-1.884

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.951	0.777	0.846	0.884

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.882	0.788	Data Appear Normal
Lilliefors (Detects Only)	0.219	0.362	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.622	0.866	Data Not Normal
Lilliefors (NDs = DL)	0.315	0.246	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.71	0.866	Data Not Normal
Lilliefors (NDs = DL/2)	0.353	0.246	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.784	0.866	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.291	0.246	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.866	0.983	0.947	0.907

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.483	0.735	
Kolmogorov-Smirnov (Detects Only)	0.288	0.348	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.993	0.803	
Kolmogorov-Smirnov (NDs = DL)	0.33	0.252	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.358	0.806	
Kolmogorov-Smirnov (NDs = DL/2)	0.363	0.253	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.589	0.757	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.378	0.243	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.926	0.955	0.918	0.922

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.84	0.788	Data Appear Lognormal
Lilliefors (Detects Only)	0.259	0.362	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.911	0.866	Data Appear Lognormal
Lilliefors (NDs = DL)	0.279	0.246	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.831	0.866	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.329	0.246	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.832	0.866	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.216	0.246	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	14	33	8	25	75.76%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	25	0.38	2000	164.3	3.8	552.5
Statistics (Detects Only)	8	0.042	0.67	0.258	0.205	0.19
Statistics (All: NDs treated as DL value)	33	0.042	2000	124.6	1.8	483.8
Statistics (All: NDs treated as DL/2 value)	33	0.042	1000	62.32	0.9	241.9
Statistics (Normal ROS Estimated Data)	33	0.042	0.67	0.234	0.231	0.106
Statistics (Gamma ROS Estimated Data)	33	0.042	0.67	0.267	0.27	0.0989
Statistics (Lognormal ROS Estimated Data)	33	0.042	0.67	0.201	0.181	0.104

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	2.202	2.022	0.117	-1.6	0.799	-0.499
Statistics (NDs = DL)	0.178	0.182	699.9	0.615	2.37	3.852
Statistics (NDs = DL/2)	0.184	0.188	338	0.0901	2.222	24.67
Statistics (Gamma ROS Estimates)	7.058	6.437	0.0379	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.7	0.445	-0.262

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.913	0.502	0.501	0.887

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.855	0.818	Data Appear Normal
Lilliefors (Detects Only)	0.224	0.313	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.27	0.931	Data Not Normal
Lilliefors (NDs = DL)	0.51	0.154	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.27	0.931	Data Not Normal
Lilliefors (NDs = DL/2)	0.51	0.154	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.82	0.931	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.238	0.154	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.976	0.863	0.86	0.902

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.29	0.723	
Kolmogorov-Smirnov (Detects Only)	0.183	0.297	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	6.51	0.91	
Kolmogorov-Smirnov (NDs = DL)	0.416	0.17	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	6.987	0.907	
Kolmogorov-Smirnov (NDs = DL/2)	0.425	0.17	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.868	0.748	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.234	0.153	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.954	0.921	0.897	0.92

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.935	0.818	Data Appear Lognormal
Lilliefors (Detects Only)	0.23	0.313	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.856	0.931	Data Not Lognormal
Lilliefors (NDs = DL)	0.167	0.154	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.813	0.931	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.178	0.154	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.885	0.931	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.238	0.154	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	50	6	44	27	17	38.64%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	17	0.34	2	0.617	0.41	0.491
Statistics (Detects Only)	27	0.024	3.2	0.619	0.3	0.81
Statistics (All: NDs treated as DL value)	44	0.024	3.2	0.619	0.403	0.697
Statistics (All: NDs treated as DL/2 value)	44	0.024	3.2	0.499	0.22	0.665
Statistics (Normal ROS Estimated Data)	44	-0.0746	3.2	0.464	0.268	0.669
Statistics (Gamma ROS Estimated Data)	44	0.024	3.2	0.618	0.532	0.631
Statistics (Lognormal ROS Estimated Data)	44	0.024	3.2	0.431	0.172	0.674

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.765	0.728	0.81	-1.26	1.364	-1.083
Statistics (NDs = DL)	1.047	0.991	0.591	-1.029	1.149	-1.117
Statistics (NDs = DL/2)	0.963	0.913	0.518	-1.296	1.111	-0.857
Statistics (Gamma ROS Estimates)	1.179	1.114	0.525	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.577	1.155	-0.732

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.843	0.843	0.794	0.799

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.716	0.923	Data Not Normal
Lilliefors (Detects Only)	0.275	0.171	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.719	0.944	Data Not Normal
Lilliefors (NDs = DL)	0.312	0.134	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.645	0.944	Data Not Normal
Lilliefors (NDs = DL/2)	0.265	0.134	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.654	0.944	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.298	0.134	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.987	0.974	0.963	0.951

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.416	0.783	
Kolmogorov-Smirnov (Detects Only)	0.128	0.175	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.107	0.776	
Kolmogorov-Smirnov (NDs = DL)	0.188	0.137	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.599	0.779	
Kolmogorov-Smirnov (NDs = DL/2)	0.179	0.137	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.191	0.774	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.173	0.137	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.992	0.972	0.982	0.982

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.972	0.923	Data Appear Lognormal
Lilliefors (Detects Only)	0.0779	0.171	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.939	0.944	Data Not Lognormal
Lilliefors (NDs = DL)	0.164	0.134	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.959	0.944	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.153	0.134	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.956	0.944	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.147	0.134	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	7	29	23	6	20.69%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.49	230	43.27	3.75	91.8
Statistics (Detects Only)	23	0.024	3.9	1.072	0.73	1.051
Statistics (All: NDs treated as DL value)	29	0.024	230	9.801	0.98	42.53
Statistics (All: NDs treated as DL/2 value)	29	0.024	115	5.326	0.98	21.19
Statistics (Normal ROS Estimated Data)	29	0.024	3.9	1.004	0.937	0.954
Statistics (Gamma ROS Estimated Data)	29	0.024	3.9	1.016	0.98	0.956
Statistics (Lognormal ROS Estimated Data)	29	0.024	3.9	0.921	0.443	0.981

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.784	0.726	1.367	-0.69	1.526	-2.212
Statistics (NDs = DL)	0.28	0.274	34.98	-0.206	1.928	-9.363
Statistics (NDs = DL/2)	0.335	0.323	15.9	-0.349	1.802	-5.158
Statistics (Gamma ROS Estimates)	0.898	0.828	1.131	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.791	1.386	-1.753

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.937	0.449	0.462	0.933

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.875	0.914	Data Not Normal
Lilliefors (Detects Only)	0.167	0.185	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.233	0.926	Data Not Normal
Lilliefors (NDs = DL)	0.485	0.165	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.246	0.926	Data Not Normal
Lilliefors (NDs = DL/2)	0.458	0.165	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.871	0.926	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.162	0.165	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.973	0.8	0.789	0.984

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.469	0.78	
Kolmogorov-Smirnov (Detects Only)	0.124	0.188	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	3.696	0.864	
Kolmogorov-Smirnov (NDs = DL)	0.341	0.177	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.987	0.848	
Kolmogorov-Smirnov (NDs = DL/2)	0.303	0.176	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.439	0.778	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.144	0.168	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.961	0.968	0.971	0.98

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.911	0.914	Data Not Lognormal
Lilliefors (Detects Only)	0.151	0.185	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.948	0.926	Data Appear Lognormal
Lilliefors (NDs = DL)	0.135	0.165	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.952	0.926	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.125	0.165	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.948	0.926	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.107	0.165	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	33	12	26.67%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	12	0.34	4.6	0.767	0.425	1.208
Statistics (Detects Only)	33	0.023	11	0.917	0.16	1.96
Statistics (All: NDs treated as DL value)	45	0.023	11	0.877	0.38	1.778
Statistics (All: NDs treated as DL/2 value)	45	0.023	11	0.775	0.2	1.715
Statistics (Normal ROS Estimated Data)	45	0.023	11	0.735	0.201	1.7
Statistics (Gamma ROS Estimated Data)	45	0.023	11	0.842	0.577	1.68
Statistics (Lognormal ROS Estimated Data)	45	0.023	11	0.704	0.113	1.709

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.513	0.494	1.788	-1.32	1.582	-1.198
Statistics (NDs = DL)	0.606	0.581	1.447	-1.149	1.424	-1.239
Statistics (NDs = DL/2)	0.576	0.553	1.344	-1.334	1.394	-1.046
Statistics (Gamma ROS Estimates)	0.658	0.629	1.28	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.539	1.4	-0.91

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.654	0.666	0.631	0.612

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.462	0.931	Data Not Normal
Lilliefors (Detects Only)	0.324	0.154	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.48	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.316	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.439	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.331	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.415	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.338	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.897	0.907	0.878	0.855

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.693	0.81	
Kolmogorov-Smirnov (Detects Only)	0.223	0.162	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.455	0.803	
Kolmogorov-Smirnov (NDs = DL)	0.171	0.138	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.614	0.806	
Kolmogorov-Smirnov (NDs = DL/2)	0.268	0.139	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.254	0.798	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.159	0.138	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.966	0.988	0.973	0.943

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.925	0.931	Data Not Lognormal
Lilliefors (Detects Only)	0.148	0.154	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.969	0.945	Data Appear Lognormal
Lilliefors (NDs = DL)	0.0974	0.132	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.943	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.182	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.888	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.216	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(b)fluoranthene (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	4	13	9	4	30.77%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.39	0.42	0.405	0.405	0.0129
Statistics (Detects Only)	9	0.04	8.95	3.06	0.49	3.891
Statistics (All: NDs treated as DL value)	13	0.04	8.95	2.243	0.41	3.424
Statistics (All: NDs treated as DL/2 value)	13	0.04	8.95	2.181	0.205	3.461
Statistics (Normal ROS Estimated Data)	13	0.04	8.95	2.177	0.192	3.463
Statistics (Gamma ROS Estimated Data)	13	0.04	8.95	2.832	2.318	3.197
Statistics (Lognormal ROS Estimated Data)	13	0.04	8.95	2.154	0.12	3.478

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.438	0.388	6.988	-0.363	2.158	-5.946
Statistics (NDs = DL)	0.478	0.419	4.69	-0.529	1.781	-3.364
Statistics (NDs = DL/2)	0.428	0.38	5.099	-0.743	1.859	-2.503
Statistics (Gamma ROS Estimates)	0.598	0.511	4.734	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.917	1.963	-2.14

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.873	0.809	0.803	0.802

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.737	0.829	Data Not Normal
Lilliefors (Detects Only)	0.301	0.295	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.647	0.866	Data Not Normal
Lilliefors (NDs = DL)	0.388	0.246	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.636	0.866	Data Not Normal
Lilliefors (NDs = DL/2)	0.38	0.246	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.635	0.866	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.379	0.246	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.864	0.912	0.908	0.922

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.688	0.782	
Kolmogorov-Smirnov (Detects Only)	0.242	0.296	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.096	0.794	
Kolmogorov-Smirnov (NDs = DL)	0.322	0.251	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.418	0.804	
Kolmogorov-Smirnov (NDs = DL/2)	0.33	0.252	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.63	0.782	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.216	0.248	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.947	0.957	0.929	0.897

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.869	0.829	Data Appear Lognormal
Lilliefors (Detects Only)	0.216	0.295	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.901	0.866	Data Appear Lognormal
Lilliefors (NDs = DL)	0.233	0.246	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.849	0.866	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.285	0.246	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.79	0.866	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.319	0.246	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(b)fluoranthene (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	50	6	44	25	19	43.18%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	19	0.34	3.5	0.764	0.42	0.808
Statistics (Detects Only)	25	0.031	3.2	0.602	0.32	0.777
Statistics (All: NDs treated as DL value)	44	0.031	3.5	0.672	0.4	0.786
Statistics (All: NDs treated as DL/2 value)	44	0.031	3.2	0.507	0.239	0.646
Statistics (Normal ROS Estimated Data)	44	-0.055	3.2	0.45	0.305	0.617
Statistics (Gamma ROS Estimated Data)	44	0.031	3.2	0.6	0.508	0.586
Statistics (Lognormal ROS Estimated Data)	44	0.031	3.2	0.412	0.198	0.622

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.862	0.818	0.698	-1.19	1.237	-1.039
Statistics (NDs = DL)	1.098	1.038	0.612	-0.918	1.069	-1.165
Statistics (NDs = DL/2)	1.065	1.008	0.476	-1.217	1.022	-0.839
Statistics (Gamma ROS Estimates)	1.404	1.323	0.428	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.486	1.011	-0.68

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.833	0.823	0.801	0.787

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.703	0.918	Data Not Normal
Lilliefors (Detects Only)	0.266	0.177	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.686	0.944	Data Not Normal
Lilliefors (NDs = DL)	0.322	0.134	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.658	0.944	Data Not Normal
Lilliefors (NDs = DL/2)	0.27	0.134	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.642	0.944	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.296	0.134	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.982	0.964	0.965	0.945

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.469	0.779	
Kolmogorov-Smirnov (Detects Only)	0.133	0.181	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.443	0.775	
Kolmogorov-Smirnov (NDs = DL)	0.215	0.137	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.879	0.776	
Kolmogorov-Smirnov (NDs = DL/2)	0.195	0.137	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.795	0.769	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.135	0.136	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.995	0.977	0.981	0.975

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.981	0.918	Data Appear Lognormal
Lilliefors (Detects Only)	0.0658	0.177	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.95	0.944	Data Appear Lognormal
Lilliefors (NDs = DL)	0.146	0.134	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.959	0.944	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.134	0.134	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.949	0.944	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.137	0.134	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(b)fluoranthene (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	7	29	22	7	24.14%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.36	230	36.65	0.6	85.59
Statistics (Detects Only)	22	0.09	3.6	1.142	0.863	1.011
Statistics (All: NDs treated as DL value)	29	0.09	230	9.712	0.735	42.54
Statistics (All: NDs treated as DL/2 value)	29	0.09	115	5.289	0.735	21.19
Statistics (Normal ROS Estimated Data)	29	-0.0762	3.6	0.998	0.735	0.933
Statistics (Gamma ROS Estimated Data)	29	0.09	3.6	1.071	0.735	0.918
Statistics (Lognormal ROS Estimated Data)	29	0.09	3.6	0.959	0.55	0.939

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.156	1.059	0.988	-0.359	1.132	-3.155
Statistics (NDs = DL)	0.299	0.291	32.46	-0.0327	1.606	-49.12
Statistics (NDs = DL/2)	0.359	0.345	14.74	-0.2	1.522	-7.608
Statistics (Gamma ROS Estimates)	1.273	1.164	0.841	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.528	1.051	-1.992

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.939	0.446	0.46	0.929

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.875	0.911	Data Not Normal
Lilliefors (Detects Only)	0.175	0.189	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.23	0.926	Data Not Normal
Lilliefors (NDs = DL)	0.488	0.165	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.244	0.926	Data Not Normal
Lilliefors (NDs = DL/2)	0.463	0.165	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.862	0.926	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.189	0.165	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.976	0.792	0.782	0.983

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.431	0.767	
Kolmogorov-Smirnov (Detects Only)	0.14	0.19	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	4.873	0.857	
Kolmogorov-Smirnov (NDs = DL)	0.368	0.177	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	3.83	0.843	
Kolmogorov-Smirnov (NDs = DL/2)	0.316	0.175	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.437	0.768	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.128	0.166	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.972	0.936	0.952	0.986

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.931	0.911	Data Appear Lognormal
Lilliefors (Detects Only)	0.159	0.189	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.892	0.926	Data Not Lognormal
Lilliefors (NDs = DL)	0.138	0.165	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.918	0.926	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.12	0.165	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.958	0.926	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.123	0.165	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(b)fluoranthene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	30	15	33.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	15	0.34	0.5	0.413	0.4	0.0507
Statistics (Detects Only)	30	0.033	7.8	0.956	0.315	1.56
Statistics (All: NDs treated as DL value)	45	0.033	7.8	0.775	0.4	1.293
Statistics (All: NDs treated as DL/2 value)	45	0.033	7.8	0.706	0.21	1.316
Statistics (Normal ROS Estimated Data)	45	-0.501	7.8	0.685	0.18	1.336
Statistics (Gamma ROS Estimated Data)	45	0.033	7.8	0.939	0.875	1.269
Statistics (Lognormal ROS Estimated Data)	45	0.033	7.8	0.676	0.124	1.329

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.577	0.553	1.658	-1.123	1.571	-1.4
Statistics (NDs = DL)	0.756	0.721	1.025	-1.046	1.282	-1.226
Statistics (NDs = DL/2)	0.657	0.628	1.076	-1.277	1.296	-1.015
Statistics (Gamma ROS Estimates)	0.82	0.78	1.145	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.491	1.4	-0.939

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.771	0.717	0.703	0.742

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.618	0.927	Data Not Normal
Lilliefors (Detects Only)	0.277	0.162	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.549	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.322	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.528	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.308	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.587	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.268	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.969	0.926	0.934	0.925

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.942	0.803	
Kolmogorov-Smirnov (Detects Only)	0.174	0.168	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.397	0.789	
Kolmogorov-Smirnov (NDs = DL)	0.216	0.137	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.74	0.799	
Kolmogorov-Smirnov (NDs = DL/2)	0.277	0.138	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.098	0.786	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.156	0.137	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.977	0.984	0.973	0.956

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.939	0.927	Data Appear Lognormal
Lilliefors (Detects Only)	0.127	0.162	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.959	0.945	Data Appear Lognormal
Lilliefors (NDs = DL)	0.156	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.939	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.2	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.901	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.198	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

beta-BHC (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	14	22	8	14	63.64%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	14	0.0019	0.48	0.0718	0.00385	0.159
Statistics (Detects Only)	8	0.0013	1.3	0.174	0.0125	0.455
Statistics (All: NDs treated as DL value)	22	0.0013	1.3	0.109	0.00805	0.295
Statistics (All: NDs treated as DL/2 value)	22	9.50E-04	1.3	0.086	0.00555	0.279
Statistics (Normal ROS Estimated Data)	22	-0.296	1.3	-0.0331	-0.0898	0.312
Statistics (Gamma ROS Estimated Data)	22	0.0013	1.3	0.15	0.0734	0.269
Statistics (Lognormal ROS Estimated Data)	22	4.79E-04	1.3	0.0641	0.00203	0.276

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.278	0.27	0.625	-4.265	2.163	-0.507
Statistics (NDs = DL)	0.304	0.292	0.358	-4.485	1.951	-0.435
Statistics (NDs = DL/2)	0.282	0.274	0.305	-4.926	2.01	-0.408
Statistics (Gamma ROS Estimates)	0.603	0.551	0.249	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.753	1.74	-0.302

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.641	0.627	0.557	0.68

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.441	0.818	Data Not Normal
Lilliefors (Detects Only)	0.49	0.313	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.416	0.911	Data Not Normal
Lilliefors (NDs = DL)	0.456	0.189	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.337	0.911	Data Not Normal
Lilliefors (NDs = DL/2)	0.429	0.189	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.494	0.911	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.362	0.189	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.937	0.946	0.899	0.864

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.223	0.806	
Kolmogorov-Smirnov (Detects Only)	0.365	0.318	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.777	0.847	
Kolmogorov-Smirnov (NDs = DL)	0.305	0.201	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.782	0.856	
Kolmogorov-Smirnov (NDs = DL/2)	0.314	0.202	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.662	0.796	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.179	0.195	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.931	0.935	0.934	0.858

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.881	0.818	Data Appear Lognormal
Lilliefors (Detects Only)	0.238	0.313	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.869	0.911	Data Not Lognormal
Lilliefors (NDs = DL)	0.153	0.189	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.868	0.911	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.19	0.189	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.753	0.911	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.288	0.189	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

bis(2-Ethylhexyl)phthalate (s)

Raw Statistics	
Number of Valid Observations	11
Number of Missing Values	3
Number of Distinct Observations	11
Minimum	0.53
Maximum	130
Mean of Raw Data	33.08
Standard Deviation of Raw Data	47.32
Kstar	0.366
Mean of Log Transformed Data	1.943
Standard Deviation of Log Transformed Data	2.131

Normal Distribution Test Results

Correlation Coefficient R	0.862
Shapiro Wilk Test Statistic	0.734
Shapiro Wilk Critical (0.95) Value	0.85
Lilliefors Test Statistic	0.316
Lilliefors Critical (0.95) Value	0.267

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.955
A-D Test Statistic	0.591
A-D Critical (0.95) Value	0.797
K-S Test Statistic	0.231
K-S Critical(0.95) Value	0.272

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.962
Shapiro Wilk Test Statistic	0.896
Shapiro Wilk Critical (0.95) Value	0.85
Lilliefors Test Statistic	0.173
Lilliefors Critical (0.95) Value	0.267

Data appear Lognormal at (0.05) Significance Level

Cadmium (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	3	14	10	4	28.57%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.55	0.63	0.588	0.585	0.0386
Statistics (Detects Only)	10	0.54	250	39.49	1.233	80.06
Statistics (All: NDs treated as DL value)	14	0.54	250	28.37	0.735	69.07
Statistics (All: NDs treated as DL/2 value)	14	0.275	250	28.29	0.735	69.1
Statistics (Normal ROS Estimated Data)	14	-69.99	250	8.207	0.735	84.09
Statistics (Gamma ROS Estimated Data)	14	1.00E-09	250	28.2	0.735	69.14
Statistics (Lognormal ROS Estimated Data)	14	0.0856	250	28.23	0.735	69.13

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.293	0.278	134.6	1.316	2.339	1.777
Statistics (NDs = DL)	0.274	0.263	103.7	0.788	2.131	2.704
Statistics (NDs = DL/2)	0.257	0.249	110.1	0.59	2.282	3.869
Statistics (Gamma ROS Estimates)	0.0979	0.125	288.2	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.238	2.63	11.06

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.75	0.677	0.678	0.859

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.582	0.842	Data Not Normal
Lilliefors (Detects Only)	0.382	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.483	0.874	Data Not Normal
Lilliefors (NDs = DL)	0.436	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.484	0.874	Data Not Normal
Lilliefors (NDs = DL/2)	0.436	0.237	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.755	0.874	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.317	0.237	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.992	0.976	0.978	0.997

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.364	0.816	
Kolmogorov-Smirnov (Detects Only)	0.392	0.288	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.619	0.843	
Kolmogorov-Smirnov (NDs = DL)	0.427	0.249	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.235	0.85	
Kolmogorov-Smirnov (NDs = DL/2)	0.408	0.25	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.021	0.912	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.282	0.257	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.882	0.825	0.877	0.927

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.765	0.842	Data Not Lognormal
Lilliefors (Detects Only)	0.332	0.28	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.677	0.874	Data Not Lognormal
Lilliefors (NDs = DL)	0.334	0.237	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.763	0.874	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.296	0.237	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.849	0.874	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.241	0.237	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Cadmium (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	12	35	30	5	14.29%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	0.48	0.59	0.516	0.49	0.0483
Statistics (Detects Only)	30	0.62	93	6.994	2.55	17.01
Statistics (All: NDs treated as DL value)	35	0.48	93	6.069	1.5	15.87
Statistics (All: NDs treated as DL/2 value)	35	0.24	93	6.032	1.5	15.89
Statistics (Normal ROS Estimated Data)	35	-19.69	93	3.568	1.5	17.88
Statistics (Gamma ROS Estimated Data)	35	1.00E-09	93	5.995	1.5	15.9
Statistics (Lognormal ROS Estimated Data)	35	0.144	93	6.023	1.5	15.89

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.643	0.607	10.87	0.994	1.182	1.188
Statistics (NDs = DL)	0.592	0.56	10.25	0.757	1.241	1.638
Statistics (NDs = DL/2)	0.55	0.522	10.97	0.658	1.375	2.088
Statistics (Gamma ROS Estimates)	0.19	0.193	31.52	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.618	1.439	2.329

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.586	0.568	0.571	0.733

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.377	0.927	Data Not Normal
Lilliefors (Detects Only)	0.354	0.162	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.359	0.934	Data Not Normal
Lilliefors (NDs = DL)	0.362	0.15	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.362	0.934	Data Not Normal
Lilliefors (NDs = DL/2)	0.358	0.15	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.58	0.934	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.292	0.15	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.841	0.833	0.841	0.923

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	2.321	0.797	
Kolmogorov-Smirnov (Detects Only)	0.207	0.168	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.678	0.803	
Kolmogorov-Smirnov (NDs = DL)	0.201	0.156	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.069	0.807	
Kolmogorov-Smirnov (NDs = DL/2)	0.188	0.157	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	4.443	0.905	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.37	0.165	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.956	0.958	0.98	0.985

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.914	0.927	Data Not Lognormal
Lilliefors (Detects Only)	0.124	0.162	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.916	0.934	Data Not Lognormal
Lilliefors (NDs = DL)	0.136	0.15	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.959	0.934	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.0926	0.15	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.971	0.934	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0803	0.15	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Cadmium (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	7	29	28	1	3.45%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	28	0.4	92	10.35	2.125	21.29
Statistics (All: NDs treated as DL value)	29	0.4	92	10.01	1.75	20.98
Statistics (All: NDs treated as DL/2 value)	29	0.265	92	9.998	1.75	20.99
Statistics (Normal ROS Estimated Data)	29	-14.74	92	9.481	1.75	21.42
Statistics (Gamma ROS Estimated Data)	29	1.00E-09	92	9.989	1.75	20.99
Statistics (Lognormal ROS Estimated Data)	29	0.25	92	9.998	1.75	20.99

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.49	0.462	21.11	1.036	1.493	1.44
Statistics (NDs = DL)	0.482	0.455	20.75	0.979	1.498	1.531
Statistics (NDs = DL/2)	0.475	0.449	21.04	0.955	1.53	1.603
Statistics (Gamma ROS Estimates)	0.336	0.324	29.74	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.953	1.533	1.609

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.706	0.7	0.701	0.739

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.516	0.924	Data Not Normal
Lilliefors (Detects Only)	0.384	0.167	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.508	0.926	Data Not Normal
Lilliefors (NDs = DL)	0.383	0.165	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.509	0.926	Data Not Normal
Lilliefors (NDs = DL/2)	0.383	0.165	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.572	0.926	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.373	0.165	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.954	0.952	0.953	0.969

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	2.502	0.812	
Kolmogorov-Smirnov (Detects Only)	0.232	0.175	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.644	0.815	
Kolmogorov-Smirnov (NDs = DL)	0.232	0.173	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.493	0.817	
Kolmogorov-Smirnov (NDs = DL/2)	0.229	0.173	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.941	0.848	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.228	0.176	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.959	0.956	0.966	0.967

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.909	0.924	Data Not Lognormal
Lilliefors (Detects Only)	0.125	0.167	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.903	0.926	Data Not Lognormal
Lilliefors (NDs = DL)	0.127	0.165	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.926	0.926	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.119	0.165	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.928	0.926	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.118	0.165	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Cadmium (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	43	2	4.44%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	2	0.47	0.48	0.475	0.475	0.00707
Statistics (Detects Only)	43	0.13	8000	330.7	5.75	1479
Statistics (All: NDs treated as DL value)	45	0.13	8000	316.1	4.9	1446
Statistics (All: NDs treated as DL/2 value)	45	0.13	8000	316	4.9	1446
Statistics (Normal ROS Estimated Data)	45	-917.7	8000	275.3	4.9	1468
Statistics (Gamma ROS Estimated Data)	45	1.00E-09	8000	316	4.9	1446
Statistics (Lognormal ROS Estimated Data)	45	0.13	8000	316	4.9	1446

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.189	0.191	1749	1.875	2.163	1.154
Statistics (NDs = DL)	0.186	0.189	1698	1.758	2.183	1.241
Statistics (NDs = DL/2)	0.185	0.187	1709	1.728	2.223	1.287
Statistics (Gamma ROS Estimates)	0.156	0.161	2021	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	1.707	2.254	1.32

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.462	0.455	0.455	0.506

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.242	0.943	Data Not Normal
Lilliefors (Detects Only)	0.51	0.135	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.236	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.509	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.236	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.509	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.292	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.498	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.862	0.858	0.858	0.874

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	8.406	0.911	
Kolmogorov-Smirnov (Detects Only)	0.376	0.15	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	8.729	0.914	
Kolmogorov-Smirnov (NDs = DL)	0.373	0.147	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	8.553	0.915	
Kolmogorov-Smirnov (NDs = DL/2)	0.371	0.147	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	6.624	0.933	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.328	0.148	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.94	0.942	0.948	0.951

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.896	0.943	Data Not Lognormal
Lilliefors (Detects Only)	0.124	0.135	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.896	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.115	0.132	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.906	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.114	0.132	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.909	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.114	0.132	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Chloroform (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	5	7	58.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.0049	3.4	0.491	0.0055	1.283
Statistics (Detects Only)	5	0.0028	11	6.361	5.6	4.338
Statistics (All: NDs treated as DL value)	12	0.0028	11	2.936	0.00685	4.108
Statistics (All: NDs treated as DL/2 value)	12	0.00245	11	2.793	0.00343	4.121
Statistics (Normal ROS Estimated Data)	12	-0.39	11	2.423	-0.39	4.35
Statistics (Gamma ROS Estimated Data)	12	0.0028	11	6.361	6.361	2.616
Statistics (Lognormal ROS Estimated Data)	12	0.0028	11	2.655	0.00816	4.188

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.457	0.399	13.9	0.442	3.548	8.022
Statistics (NDs = DL)	0.215	0.217	13.63	-2.299	3.692	-1.606
Statistics (NDs = DL/2)	0.198	0.204	14.14	-2.704	3.935	-1.455
Statistics (Gamma ROS Estimates)	0.986	0.795	6.453	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.62	3.448	-1.316

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.965	0.871	0.856	0.837

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.931	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.212	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.745	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.345	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.721	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.334	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.69	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.378	0.256	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.769	0.887	0.89	0.789

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.001	0.717	
Kolmogorov-Smirnov (Detects Only)	0.453	0.373	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.568	0.859	
Kolmogorov-Smirnov (NDs = DL)	0.369	0.27	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.567	0.866	
Kolmogorov-Smirnov (NDs = DL/2)	0.372	0.271	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	3.115	0.757	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.49	0.252	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.783	0.865	0.856	0.837

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.633	0.762	Data Not Lognormal
Lilliefors (Detects Only)	0.437	0.396	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.721	0.859	Data Not Lognormal
Lilliefors (NDs = DL)	0.347	0.256	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.704	0.859	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.356	0.256	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.683	0.859	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.404	0.256	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Chlorobenzene (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	3	14	8	6	42.86%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.0037	0.0098	0.00517	0.00405	0.00238
Statistics (Detects Only)	8	0.065	760	188.9	50.75	297.3
Statistics (All: NDs treated as DL value)	14	0.0037	760	107.9	0.138	238.8
Statistics (All: NDs treated as DL/2 value)	14	0.00185	760	107.9	0.138	238.8
Statistics (Normal ROS Estimated Data)	14	-534.9	760	-121.3	0.138	431
Statistics (Gamma ROS Estimated Data)	14	0.065	760	123.5	36.33	231.8
Statistics (Lognormal ROS Estimated Data)	14	9.33E-04	760	107.9	0.138	238.8

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.254	0.247	743.6	2.452	3.755	1.532
Statistics (NDs = DL)	0.14	0.157	773.6	-0.885	4.862	-5.494
Statistics (NDs = DL/2)	0.133	0.152	809.6	-1.182	5.158	-4.365
Statistics (Gamma ROS Estimates)	0.357	0.328	345.6	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.589	5.572	-3.506

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.832	0.714	0.714	0.916

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.689	0.818	Data Not Normal
Lilliefors (Detects Only)	0.382	0.313	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.523	0.874	Data Not Normal
Lilliefors (NDs = DL)	0.389	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.523	0.874	Data Not Normal
Lilliefors (NDs = DL/2)	0.389	0.237	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.828	0.874	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.26	0.237	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.943	0.957	0.956	0.946

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.433	0.815	
Kolmogorov-Smirnov (Detects Only)	0.23	0.32	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.218	0.894	
Kolmogorov-Smirnov (NDs = DL)	0.295	0.255	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.145	0.896	
Kolmogorov-Smirnov (NDs = DL/2)	0.28	0.256	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.09	0.821	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.274	0.246	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.939	0.923	0.927	0.918

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.857	0.818	Data Appear Lognormal
Lilliefors (Detects Only)	0.268	0.313	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.826	0.874	Data Not Lognormal
Lilliefors (NDs = DL)	0.208	0.237	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.831	0.874	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.217	0.237	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.815	0.874	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.262	0.237	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Chlorobenzene (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	50	5	45	20	25	55.56%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	25	0.0036	0.0073	0.00519	0.005	0.00101
Statistics (Detects Only)	20	0.0013	240	16.01	0.171	53.77
Statistics (All: NDs treated as DL value)	45	0.0013	240	7.12	0.0062	36.24
Statistics (All: NDs treated as DL/2 value)	45	0.0013	240	7.118	0.0031	36.24
Statistics (Normal ROS Estimated Data)	45	-63.9	240	-16.17	-29.61	46.23
Statistics (Gamma ROS Estimated Data)	45	1.00E-09	240	16.51	18.45	35.53
Statistics (Lognormal ROS Estimated Data)	45	2.78E-05	240	7.117	0.00132	36.24

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.176	0.179	90.99	-1.491	3.397	-2.278
Statistics (NDs = DL)	0.14	0.145	50.97	-3.596	2.937	-0.817
Statistics (NDs = DL/2)	0.132	0.138	54.04	-3.981	3.174	-0.797
Statistics (Gamma ROS Estimates)	0.288	0.283	57.38	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.115	4.031	-0.788

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.553	0.422	0.422	0.753

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.334	0.905	Data Not Normal
Lilliefors (Detects Only)	0.443	0.198	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.216	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.475	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.216	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.475	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.609	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.27	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.932	0.865	0.87	0.815

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.594	0.898	
Kolmogorov-Smirnov (Detects Only)	0.25	0.215	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	9.131	0.944	
Kolmogorov-Smirnov (NDs = DL)	0.352	0.148	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	8.729	0.949	
Kolmogorov-Smirnov (NDs = DL/2)	0.333	0.149	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	3.057	0.867	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.283	0.144	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.987	0.864	0.866	0.93

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.966	0.905	Data Appear Lognormal
Lilliefors (Detects Only)	0.117	0.198	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.747	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.307	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.744	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.296	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.857	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.227	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Chlorobenzene (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	11	1	8.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	11	0.0014	2400	254.4	0.064	715
Statistics (All: NDs treated as DL value)	12	0.0014	2400	233.2	0.0595	685.7
Statistics (All: NDs treated as DL/2 value)	12	0.0014	2400	233.2	0.0595	685.7
Statistics (Normal ROS Estimated Data)	12	-164.6	2400	219.5	0.0595	692.4
Statistics (Gamma ROS Estimated Data)	12	1.00E-09	2400	233.2	0.0595	685.7
Statistics (Lognormal ROS Estimated Data)	12	0.0014	2400	233.2	0.0595	685.7

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.13	0.153	1960	-0.507	5.48	-10.81
Statistics (NDs = DL)	0.125	0.149	1871	-0.877	5.38	-6.135
Statistics (NDs = DL/2)	0.124	0.148	1886	-0.935	5.431	-5.811
Statistics (Gamma ROS Estimates)	0.106	0.135	2210	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.945	5.441	-5.755

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.617	0.6	0.6	0.632

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.412	0.85	Data Not Normal
Lilliefors (Detects Only)	0.428	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.391	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.424	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.391	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.424	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.434	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.416	0.256	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.965	0.962	0.962	0.968

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.72	0.885	
Kolmogorov-Smirnov (Detects Only)	0.267	0.285	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.921	0.891	
Kolmogorov-Smirnov (NDs = DL)	0.289	0.274	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.942	0.891	
Kolmogorov-Smirnov (NDs = DL/2)	0.286	0.274	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.491	0.897	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.234	0.275	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.942	0.937	0.932	0.931

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.863	0.85	Data Appear Lognormal
Lilliefors (Detects Only)	0.211	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.855	0.859	Data Not Lognormal
Lilliefors (NDs = DL)	0.219	0.256	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.846	0.859	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.224	0.256	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.844	0.859	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.229	0.256	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Chromium (q central)

Raw Statistics	
Number of Valid Observations	45
Number of Missing Values	5
Number of Distinct Observations	30
Minimum	2.2
Maximum	8000
Mean of Raw Data	199
Standard Deviation of Raw Data	1189
Kstar	0.295
Mean of Log Transformed Data	2.995
Standard Deviation of Log Transformed Data	1.129

Normal Distribution Test Results

Correlation Coefficient R	0.353
Shapiro Wilk Test Statistic	0.16
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.512
Lilliefors Critical (0.95) Value	0.132

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.689
A-D Test Statistic	12.35
A-D Critical (0.95) Value	0.862
K-S Test Statistic	0.451
K-S Critical(0.95) Value	0.143

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.814
Shapiro Wilk Test Statistic	0.714
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.199
Lilliefors Critical (0.95) Value	0.132

Data not Lognormal at (0.05) Significance Level

Chromium (q south)

Raw Statistics	
Number of Valid Observations	45
Number of Missing Values	4
Number of Distinct Observations	37
Minimum	4
Maximum	660
Mean of Raw Data	80.55
Standard Deviation of Raw Data	127.8
Kstar	0.758
Mean of Log Transformed Data	3.643
Standard Deviation of Log Transformed Data	1.197

Normal Distribution Test Results

Correlation Coefficient R	0.74
Shapiro Wilk Test Statistic	0.569
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.275
Lilliefors Critical (0.95) Value	0.132

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.934

A-D Test Statistic	1.611
A-D Critical (0.95) Value	0.787
K-S Test Statistic	0.158
K-S Critical(0.95) Value	0.137

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.983
Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.106
Lilliefors Critical (0.95) Value	0.132

Data appear Lognormal at (0.05) Significance Level

Chromium (s)

Raw Statistics

Number of Valid Observations	11
Number of Missing Values	3
Number of Distinct Observations	11
Minimum	6.2
Maximum	480
Mean of Raw Data	132
Standard Deviation of Raw Data	150.2
Kstar	0.586
Mean of Log Transformed Data	4.05
Standard Deviation of Log Transformed Data	1.53

Normal Distribution Test Results

Correlation Coefficient R	0.908
Shapiro Wilk Test Statistic	0.824
Shapiro Wilk Critical (0.95) Value	0.85
Lilliefors Test Statistic	0.221
Lilliefors Critical (0.95) Value	0.267

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.983
A-D Test Statistic	0.401
A-D Critical (0.95) Value	0.765
K-S Test Statistic	0.222
K-S Critical(0.95) Value	0.265

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.969
Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical (0.95) Value	0.85
Lilliefors Test Statistic	0.179
Lilliefors Critical (0.95) Value	0.267

Data appear Lognormal at (0.05) Significance Level

Copper (q central)

Raw Statistics	
Number of Valid Observations	45
Number of Missing Values	5
Number of Distinct Observations	37
Minimum	1.75
Maximum	20000
Mean of Raw Data	513.4
Standard Deviation of Raw Data	2974
Kstar	0.261
Mean of Log Transformed Data	3.567
Standard Deviation of Log Transformed Data	1.556

Normal Distribution Test Results	
Correlation Coefficient R	0.369
Shapiro Wilk Test Statistic	0.172
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.468
Lilliefors Critical (0.95) Value	0.132
Data not Normal at (0.05) Significance Level	

Gamma Distribution Test Results	
Correlation Coefficient R	0.723
A-D Test Statistic	9.054
A-D Critical (0.95) Value	0.878
K-S Test Statistic	0.361
K-S Critical(0.95) Value	0.144
Data not Gamma Distributed at (0.05) Significance Level	

Lognormal Distribution Test Results	
Correlation Coefficient R	0.927
Shapiro Wilk Test Statistic	0.887
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.171
Lilliefors Critical (0.95) Value	0.132
Data not Lognormal at (0.05) Significance Level	

Copper (q north)

Raw Statistics	
Number of Valid Observations	29
Number of Missing Values	7
Number of Distinct Observations	28
Minimum	8.3
Maximum	17000
Mean of Raw Data	854.9
Standard Deviation of Raw Data	3189
Kstar	0.287
Mean of Log Transformed Data	4.399
Standard Deviation of Log Transformed Data	1.803

Normal Distribution Test Results	
Correlation Coefficient R	0.506
Shapiro Wilk Test Statistic	0.288
Shapiro Wilk Critical (0.95) Value	0.926
Lilliefors Test Statistic	0.438
Lilliefors Critical (0.95) Value	0.165
Data not Normal at (0.05) Significance Level	

Gamma Distribution Test Results	
Correlation Coefficient R	0.859
A-D Test Statistic	3.981
A-D Critical (0.95) Value	0.859
K-S Test Statistic	0.292
K-S Critical(0.95) Value	0.177
Data not Gamma Distributed at (0.05) Significance Level	

Lognormal Distribution Test Results	
Correlation Coefficient R	0.945
Shapiro Wilk Test Statistic	0.895
Shapiro Wilk Critical (0.95) Value	0.926
Lilliefors Test Statistic	0.158
Lilliefors Critical (0.95) Value	0.165
Data not Lognormal at (0.05) Significance Level	

Dibenzo(a,h)anthracene (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	4	13	5	8	61.54%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	8	0.39	39.5	8.489	0.405	15.4
Statistics (Detects Only)	5	0.078	6	1.998	0.78	2.534
Statistics (All: NDs treated as DL value)	13	0.078	39.5	5.992	0.41	12.3
Statistics (All: NDs treated as DL/2 value)	13	0.078	19.75	3.38	0.205	6.167
Statistics (Normal ROS Estimated Data)	13	-0.917	6	0.825	0.644	1.834
Statistics (Gamma ROS Estimated Data)	13	0.078	6	1.902	1.565	1.489
Statistics (Lognormal ROS Estimated Data)	13	0.0521	6	0.859	0.206	1.738

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.575	0.493	3.475	-0.39	1.897	-4.865
Statistics (NDs = DL)	0.365	0.332	16.4	-0.0377	1.921	-50.97
Statistics (NDs = DL/2)	0.392	0.353	8.614	-0.464	1.9	-4.092
Statistics (Gamma ROS Estimates)	1.314	1.062	1.448	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.421	1.465	-1.031

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.917	0.731	0.778	0.847

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.834	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.285	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.549	0.866	Data Not Normal
Lilliefors (NDs = DL)	0.365	0.246	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.616	0.866	Data Not Normal
Lilliefors (NDs = DL/2)	0.356	0.246	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.738	0.866	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.356	0.246	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.985	0.967	0.983	0.953

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.297	0.707	
Kolmogorov-Smirnov (Detects Only)	0.233	0.37	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.527	0.817	
Kolmogorov-Smirnov (NDs = DL)	0.328	0.254	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.495	0.811	
Kolmogorov-Smirnov (NDs = DL/2)	0.355	0.253	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.8	0.753	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.281	0.242	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.973	0.931	0.909	0.922

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.923	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.208	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.864	0.866	Data Not Lognormal
Lilliefors (NDs = DL)	0.283	0.246	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.816	0.866	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.333	0.246	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.848	0.866	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.291	0.246	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dibenzo(a,h)anthracene (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	7	29	10	19	65.52%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	19	0.36	230	14.72	0.6	52.36
Statistics (Detects Only)	10	0.066	0.4	0.205	0.19	0.112
Statistics (All: NDs treated as DL value)	29	0.066	230	9.712	0.41	42.57
Statistics (All: NDs treated as DL/2 value)	29	0.066	115	4.892	0.245	21.28
Statistics (Normal ROS Estimated Data)	29	0.066	0.4	0.194	0.192	0.0666
Statistics (Gamma ROS Estimated Data)	29	0.066	0.4	0.219	0.229	0.0653
Statistics (Lognormal ROS Estimated Data)	29	0.066	0.4	0.178	0.167	0.0681

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	3.726	3.363	0.0551	-1.724	0.572	-0.332
Statistics (NDs = DL)	0.269	0.264	36.09	-0.334	1.748	-5.228
Statistics (NDs = DL/2)	0.292	0.284	16.78	-0.789	1.575	-1.997
Statistics (Gamma ROS Estimates)	9.967	8.959	0.0219	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.783	0.341	-0.191

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.966	0.452	0.452	0.892

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.922	0.842	Data Appear Normal
Lilliefors (Detects Only)	0.15	0.28	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.236	0.926	Data Not Normal
Lilliefors (NDs = DL)	0.45	0.165	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.236	0.926	Data Not Normal
Lilliefors (NDs = DL/2)	0.451	0.165	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.815	0.926	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.27	0.165	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.983	0.811	0.802	0.897

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.212	0.73	
Kolmogorov-Smirnov (Detects Only)	0.139	0.268	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	4.973	0.869	
Kolmogorov-Smirnov (NDs = DL)	0.325	0.178	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	5.554	0.86	
Kolmogorov-Smirnov (NDs = DL/2)	0.345	0.177	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.697	0.746	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.252	0.162	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.987	0.924	0.889	0.926

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.967	0.842	Data Appear Lognormal
Lilliefors (Detects Only)	0.11	0.28	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.865	0.926	Data Not Lognormal
Lilliefors (NDs = DL)	0.23	0.165	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.805	0.926	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.225	0.165	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.88	0.926	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.236	0.165	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dibenzo(a,h)anthracene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	13	32	71.11%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	32	0.34	14	1.144	0.415	2.556
Statistics (Detects Only)	13	0.03	2.8	0.362	0.12	0.743
Statistics (All: NDs treated as DL value)	45	0.03	14	0.918	0.4	2.209
Statistics (All: NDs treated as DL/2 value)	45	0.03	7	0.511	0.205	1.145
Statistics (Normal ROS Estimated Data)	45	-0.225	2.8	0.255	0.211	0.429
Statistics (Gamma ROS Estimated Data)	45	1.00E-09	2.8	0.345	0.274	0.456
Statistics (Lognormal ROS Estimated Data)	45	0.03	2.8	0.187	0.109	0.407

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.678	0.648	0.535	-1.91	1.204	-0.631
Statistics (NDs = DL)	0.693	0.661	1.325	-0.959	1.142	-1.191
Statistics (NDs = DL/2)	0.764	0.728	0.669	-1.452	1.008	-0.694
Statistics (Gamma ROS Estimates)	0.274	0.271	1.259	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.158	0.757	-0.351

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.652	0.565	0.587	0.7

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.456	0.866	Data Not Normal
Lilliefors (Detects Only)	0.382	0.246	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.358	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.46	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.381	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.431	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.539	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.273	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.882	0.822	0.84	0.954

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.124	0.776	
Kolmogorov-Smirnov (Detects Only)	0.225	0.247	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL)	6.157	0.795	
Kolmogorov-Smirnov (NDs = DL)	0.394	0.138	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	7.334	0.789	
Kolmogorov-Smirnov (NDs = DL/2)	0.397	0.137	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	6.993	0.873	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.312	0.144	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.96	0.906	0.879	0.923

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.931	0.866	Data Appear Lognormal
Lilliefors (Detects Only)	0.123	0.246	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.838	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.283	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.793	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.303	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.879	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.205	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dichloromethane (s)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	14	3	11	5	6	54.55%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.0045	6.8	1.169	0.0061	2.76
Statistics (Detects Only)	5	2.1	57	20.14	13	22.79
Statistics (All: NDs treated as DL value)	11	0.0045	57	9.792	2.1	17.6
Statistics (All: NDs treated as DL/2 value)	11	0.00225	57	9.473	2.1	17.69
Statistics (Normal ROS Estimated Data)	11	-53.65	57	-12.32	-28.65	34.84
Statistics (Gamma ROS Estimated Data)	11	2.1	57	19.76	20.36	14.53
Statistics (Lognormal ROS Estimated Data)	11	0.0778	57	9.279	0.405	17.77

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.853	0.681	23.61	2.313	1.437	0.621
Statistics (NDs = DL)	0.231	0.228	42.43	-0.836	3.799	-4.542
Statistics (NDs = DL/2)	0.211	0.214	44.94	-1.214	4.092	-3.37
Statistics (Gamma ROS Estimates)	1.721	1.312	11.48	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.172	2.281	13.24

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.926	0.792	0.778	0.956

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.855	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.223	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.643	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.295	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.623	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.362	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.908	0.85	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.226	0.267	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.996	0.999	0.998	0.937

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.293	0.695	
Kolmogorov-Smirnov (Detects Only)	0.247	0.366	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.46	0.848	
Kolmogorov-Smirnov (NDs = DL)	0.217	0.28	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.499	0.856	
Kolmogorov-Smirnov (NDs = DL/2)	0.216	0.281	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.768	0.741	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.225	0.259	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.968	0.939	0.937	0.955

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.915	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.228	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.852	0.85	Data Appear Lognormal
Lilliefors (NDs = DL)	0.227	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.848	0.85	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.229	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.895	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.227	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dieldrin (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	6	11	5	6	54.55%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.0033	25	8.175	0.0223	12.65
Statistics (Detects Only)	5	0.005	3.8	1.519	0.18	1.993
Statistics (All: NDs treated as DL value)	11	0.0033	25	5.15	0.0405	9.678
Statistics (All: NDs treated as DL/2 value)	11	0.00165	12.5	2.92	0.0203	4.836
Statistics (Normal ROS Estimated Data)	11	-3.035	3.8	-0.379	-0.445	2.388
Statistics (Gamma ROS Estimated Data)	11	0.005	3.8	1.298	0.258	1.522
Statistics (Lognormal ROS Estimated Data)	11	7.24E-05	3.8	0.692	0.006	1.489

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.314	0.289	4.844	-1.764	3.1	-1.757
Statistics (NDs = DL)	0.2	0.206	25.73	-2.038	3.647	-1.79
Statistics (NDs = DL/2)	0.21	0.213	13.94	-2.416	3.69	-1.528
Statistics (Gamma ROS Estimates)	0.493	0.419	2.633	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.003	3.977	-0.795

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.868	0.763	0.813	0.94

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.722	0.762	Data Not Normal
Lilliefors (Detects Only)	0.349	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.582	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.374	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.653	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.351	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.869	0.85	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.226	0.267	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.806	0.906	0.905	0.89

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.487	0.737	
Kolmogorov-Smirnov (Detects Only)	0.269	0.379	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.918	0.86	
Kolmogorov-Smirnov (NDs = DL)	0.246	0.282	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	0.868	0.856	
Kolmogorov-Smirnov (NDs = DL/2)	0.268	0.281	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	0.499	0.782	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.207	0.269	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.95	0.933	0.937	0.956

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.871	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.237	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.841	0.85	Data Not Lognormal
Lilliefors (NDs = DL)	0.198	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.846	0.85	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.205	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.892	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.169	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dieldrin (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	23	24	10	14	58.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	14	0.019	4.5	0.733	0.0665	1.396
Statistics (Detects Only)	10	0.002	1.3	0.271	0.0695	0.42
Statistics (All: NDs treated as DL value)	24	0.002	4.5	0.54	0.0695	1.106
Statistics (All: NDs treated as DL/2 value)	24	0.002	2.25	0.326	0.0378	0.589
Statistics (Normal ROS Estimated Data)	24	-0.158	1.3	0.111	0.021	0.307
Statistics (Gamma ROS Estimated Data)	24	0.002	1.3	0.28	0.252	0.269
Statistics (Lognormal ROS Estimated Data)	24	0.002	1.3	0.12	0.013	0.293

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.431	0.404	0.629	-2.818	2.178	-0.773
Statistics (NDs = DL)	0.381	0.361	1.418	-2.357	1.958	-0.831
Statistics (NDs = DL/2)	0.401	0.378	0.815	-2.761	1.917	-0.694
Statistics (Gamma ROS Estimates)	0.907	0.822	0.309	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.903	1.739	-0.446

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.828	0.727	0.772	0.786

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.697	0.842	Data Not Normal
Lilliefors (Detects Only)	0.34	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.544	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.36	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.606	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.387	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.641	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.322	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.985	0.974	0.97	0.947

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.331	0.79	
Kolmogorov-Smirnov (Detects Only)	0.177	0.283	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.883	0.833	
Kolmogorov-Smirnov (NDs = DL)	0.294	0.191	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.876	0.829	
Kolmogorov-Smirnov (NDs = DL/2)	0.25	0.191	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.167	0.776	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.262	0.184	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.983	0.97	0.965	0.951

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.952	0.842	Data Appear Lognormal
Lilliefors (Detects Only)	0.144	0.28	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.939	0.916	Data Appear Lognormal
Lilliefors (NDs = DL)	0.198	0.181	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.924	0.916	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.175	0.181	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.9	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.191	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dieldrin (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	50	13	37	17	20	54.05%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	20	0.00185	0.07	0.00875	0.00468	0.0147
Statistics (Detects Only)	17	5.20E-04	0.39	0.0436	0.014	0.0916
Statistics (All: NDs treated as DL value)	37	5.20E-04	0.39	0.0248	0.0053	0.0645
Statistics (All: NDs treated as DL/2 value)	37	5.20E-04	0.39	0.0224	0.0036	0.0644
Statistics (Normal ROS Estimated Data)	37	-0.065	0.39	0.00107	-0.0206	0.0737
Statistics (Gamma ROS Estimated Data)	37	5.20E-04	0.39	0.0436	0.0435	0.0611
Statistics (Lognormal ROS Estimated Data)	37	5.20E-04	0.39	0.0208	0.00185	0.0647

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.511	0.488	0.0852	-4.371	1.718	-0.393
Statistics (NDs = DL)	0.564	0.536	0.0439	-4.804	1.328	-0.276
Statistics (NDs = DL/2)	0.466	0.446	0.0481	-5.179	1.473	-0.284
Statistics (Gamma ROS Estimates)	1.013	0.949	0.043	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.604	1.656	-0.296

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.652	0.567	0.55	0.738

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.454	0.892	Data Not Normal
Lilliefors (Detects Only)	0.377	0.215	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.36	0.936	Data Not Normal
Lilliefors (NDs = DL)	0.353	0.146	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.341	0.936	Data Not Normal
Lilliefors (NDs = DL/2)	0.367	0.146	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.585	0.936	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.221	0.146	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.885	0.828	0.829	0.721

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.657	0.797	
Kolmogorov-Smirnov (Detects Only)	0.189	0.221	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	3.215	0.806	
Kolmogorov-Smirnov (NDs = DL)	0.297	0.153	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	3.488	0.82	
Kolmogorov-Smirnov (NDs = DL/2)	0.265	0.154	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	4.414	0.777	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.32	0.149	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.98	0.955	0.948	0.936

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.962	0.892	Data Appear Lognormal
Lilliefors (Detects Only)	0.133	0.215	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.922	0.936	Data Not Lognormal
Lilliefors (NDs = DL)	0.206	0.146	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.901	0.936	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.183	0.146	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.87	0.936	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.216	0.146	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dieldrin (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	14	22	11	11	50.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	11	0.0037	0.2	0.0364	0.007	0.0592
Statistics (Detects Only)	11	0.00395	3.2	0.458	0.024	0.978
Statistics (All: NDs treated as DL value)	22	0.0037	3.2	0.247	0.0155	0.71
Statistics (All: NDs treated as DL/2 value)	22	0.00185	3.2	0.238	0.0155	0.712
Statistics (Normal ROS Estimated Data)	22	-1.574	3.2	-0.224	-0.227	0.998
Statistics (Gamma ROS Estimated Data)	22	1.00E-09	3.2	0.309	0.0155	0.709
Statistics (Lognormal ROS Estimated Data)	22	1.30E-04	3.2	0.23	0.00375	0.714

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.319	0.305	1.437	-2.924	2.203	-0.753
Statistics (NDs = DL)	0.312	0.299	0.793	-3.597	1.923	-0.535
Statistics (NDs = DL/2)	0.278	0.271	0.856	-3.944	2.077	-0.527
Statistics (Gamma ROS Estimates)	0.14	0.151	2.212	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.946	2.656	-0.537

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.726	0.604	0.594	0.888

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.549	0.85	Data Not Normal
Lilliefors (Detects Only)	0.379	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.389	0.911	Data Not Normal
Lilliefors (NDs = DL)	0.413	0.189	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.377	0.911	Data Not Normal
Lilliefors (NDs = DL/2)	0.441	0.189	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.809	0.911	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.245	0.189	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.985	0.932	0.935	0.988

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.991	0.816	
Kolmogorov-Smirnov (Detects Only)	0.293	0.275	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.522	0.845	
Kolmogorov-Smirnov (NDs = DL)	0.291	0.201	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.586	0.857	
Kolmogorov-Smirnov (NDs = DL/2)	0.274	0.202	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.14	0.917	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.214	0.208	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.96	0.941	0.95	0.965

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.91	0.85	Data Appear Lognormal
Lilliefors (Detects Only)	0.188	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.88	0.911	Data Not Lognormal
Lilliefors (NDs = DL)	0.151	0.189	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.897	0.911	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.141	0.189	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.929	0.911	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.133	0.189	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dieldrin (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	8	41	27	14	34.15%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	14	0.0034	0.085	0.0255	0.0175	0.0249
Statistics (Detects Only)	27	3.90E-04	0.825	0.113	0.029	0.186
Statistics (All: NDs treated as DL value)	41	3.90E-04	0.825	0.0831	0.029	0.156
Statistics (All: NDs treated as DL/2 value)	41	3.90E-04	0.825	0.0787	0.02	0.158
Statistics (Normal ROS Estimated Data)	41	-0.117	0.825	0.0616	0.00662	0.168
Statistics (Gamma ROS Estimated Data)	41	3.90E-04	0.825	0.094	0.042	0.153
Statistics (Lognormal ROS Estimated Data)	41	3.90E-04	0.825	0.0753	0.0049	0.159

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.426	0.411	0.265	-3.709	2.188	-0.59
Statistics (NDs = DL)	0.457	0.439	0.182	-3.899	1.917	-0.492
Statistics (NDs = DL/2)	0.411	0.397	0.192	-4.135	1.991	-0.481
Statistics (Gamma ROS Estimates)	0.575	0.549	0.163	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.505	2.118	-0.47

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.796	0.737	0.725	0.806

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.65	0.923	Data Not Normal
Lilliefors (Detects Only)	0.272	0.171	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.569	0.941	Data Not Normal
Lilliefors (NDs = DL)	0.298	0.138	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.551	0.941	Data Not Normal
Lilliefors (NDs = DL/2)	0.323	0.138	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.678	0.941	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.278	0.138	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.996	0.978	0.98	0.966

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.26	0.824	
Kolmogorov-Smirnov (Detects Only)	0.103	0.18	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.776	0.823	
Kolmogorov-Smirnov (NDs = DL)	0.136	0.147	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.18	0.833	
Kolmogorov-Smirnov (NDs = DL/2)	0.161	0.148	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.491	0.806	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.117	0.145	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.985	0.992	0.991	0.979

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.956	0.923	Data Appear Lognormal
Lilliefors (Detects Only)	0.106	0.171	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.972	0.941	Data Appear Lognormal
Lilliefors (NDs = DL)	0.0876	0.138	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.968	0.941	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.106	0.138	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.941	0.941	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.162	0.138	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dieldrin (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	5	11	7	4	36.36%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.0035	0.44	0.113	0.00385	0.218
Statistics (Detects Only)	7	3.70E-04	1.8	0.503	0.01	0.821
Statistics (All: NDs treated as DL value)	11	3.70E-04	1.8	0.361	0.0039	0.676
Statistics (All: NDs treated as DL/2 value)	11	3.70E-04	1.8	0.341	0.00195	0.677
Statistics (Normal ROS Estimated Data)	11	-0.0877	1.8	0.306	0.0014	0.694
Statistics (Gamma ROS Estimated Data)	11	3.70E-04	1.8	0.428	0.269	0.645
Statistics (Lognormal ROS Estimated Data)	11	3.70E-04	1.8	0.321	0.0014	0.684

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.226	0.225	2.224	-3.877	3.531	-0.911
Statistics (NDs = DL)	0.235	0.232	1.535	-4.066	3.042	-0.748
Statistics (NDs = DL/2)	0.223	0.223	1.527	-4.319	3.092	-0.716
Statistics (Gamma ROS Estimates)	0.329	0.3	1.301	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.896	3.092	-0.631

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.815	0.773	0.747	0.762

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.651	0.803	Data Not Normal
Lilliefors (Detects Only)	0.398	0.335	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.598	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.372	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.561	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.389	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.584	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.43	0.267	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.876	0.931	0.923	0.937

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.586	0.811	
Kolmogorov-Smirnov (Detects Only)	0.249	0.34	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.958	0.846	
Kolmogorov-Smirnov (NDs = DL)	0.3	0.28	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.087	0.851	
Kolmogorov-Smirnov (NDs = DL/2)	0.298	0.281	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.439	0.814	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.179	0.275	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.956	0.952	0.936	0.895

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.886	0.803	Data Appear Lognormal
Lilliefors (Detects Only)	0.206	0.335	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.887	0.85	Data Appear Lognormal
Lilliefors (NDs = DL)	0.232	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.857	0.85	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.278	0.267	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.788	0.85	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.266	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dioxin TEQ-HH (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	26	21	18	3	14.29%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	3	4.04E-04	0.0139	0.00904	0.0128	0.00749
Statistics (Detects Only)	18	1.79E-04	0.00701	0.00173	8.57E-04	0.00207
Statistics (All: NDs treated as DL value)	21	1.79E-04	0.0139	0.00277	8.62E-04	0.00402
Statistics (All: NDs treated as DL/2 value)	21	1.79E-04	0.00701	0.00213	8.62E-04	0.00246
Statistics (Normal ROS Estimated Data)	21	-7.84E-04	0.00701	0.0016	8.62E-04	0.00199
Statistics (Gamma ROS Estimated Data)	21	1.00E-09	0.00701	0.00166	8.62E-04	0.00195
Statistics (Lognormal ROS Estimated Data)	21	1.79E-04	0.00701	0.00158	8.62E-04	0.00195

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.053	0.934	0.00164	-6.905	1.043	-0.151
Statistics (NDs = DL)	0.737	0.664	0.00376	-6.702	1.262	-0.188
Statistics (NDs = DL/2)	0.902	0.805	0.00236	-6.801	1.184	-0.174
Statistics (Gamma ROS Estimates)	0.565	0.516	0.00293	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-6.984	1.016	-0.145

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.825	0.805	0.853	0.858

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.683	0.897	Data Not Normal
Lilliefors (Detects Only)	0.379	0.209	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.65	0.908	Data Not Normal
Lilliefors (NDs = DL)	0.367	0.193	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.716	0.908	Data Not Normal
Lilliefors (NDs = DL/2)	0.361	0.193	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.744	0.908	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.308	0.193	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.949	0.963	0.925	0.969

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.131	0.766	
Kolmogorov-Smirnov (Detects Only)	0.285	0.209	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.429	0.784	
Kolmogorov-Smirnov (NDs = DL)	0.302	0.197	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.238	0.775	
Kolmogorov-Smirnov (NDs = DL/2)	0.266	0.196	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.188	0.799	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.203	0.199	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.968	0.967	0.965	0.963

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.932	0.897	Data Appear Lognormal
Lilliefors (Detects Only)	0.21	0.209	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.926	0.908	Data Appear Lognormal
Lilliefors (NDs = DL)	0.222	0.193	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.916	0.908	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.189	0.193	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.922	0.908	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.209	0.193	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dioxin TEQ-HH (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	50	25	25	20	5	20.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	1.90E-04	4.67E-04	2.98E-04	2.55E-04	1.18E-04
Statistics (Detects Only)	20	6.66E-05	0.0182	0.00241	5.00E-04	0.00529
Statistics (All: NDs treated as DL value)	25	6.66E-05	0.0182	0.00199	4.41E-04	0.00479
Statistics (All: NDs treated as DL/2 value)	25	6.66E-05	0.0182	0.00196	3.76E-04	0.0048
Statistics (Normal ROS Estimated Data)	25	-0.00293	0.0182	0.00152	3.76E-04	0.00506
Statistics (Gamma ROS Estimated Data)	25	1.00E-09	0.0182	0.00193	3.76E-04	0.00481

Statistics (Lognormal ROS Estimated Data)	25	6.66E-05	0.0182	0.00195	3.76E-04	0.0048

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.466	0.436	0.00517	-7.409	1.481	-0.2
Statistics (NDs = DL)	0.477	0.447	0.00416	-7.563	1.364	-0.18
Statistics (NDs = DL/2)	0.442	0.416	0.00442	-7.701	1.455	-0.189
Statistics (Gamma ROS Estimates)	0.194	0.197	0.00995	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-7.764	1.512	-0.195

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.673	0.632	0.634	0.736

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.465	0.905	Data Not Normal
Lilliefors (Detects Only)	0.429	0.198	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.414	0.918	Data Not Normal
Lilliefors (NDs = DL)	0.448	0.177	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.416	0.918	Data Not Normal
Lilliefors (NDs = DL/2)	0.446	0.177	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.558	0.918	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.407	0.177	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.914	0.893	0.9	0.937

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	2.64	0.81	
Kolmogorov-Smirnov (Detects Only)	0.381	0.206	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	3.768	0.812	
Kolmogorov-Smirnov (NDs = DL)	0.391	0.185	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	3.394	0.82	
Kolmogorov-Smirnov (NDs = DL/2)	0.372	0.186	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.752	0.898	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.212	0.194	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.931	0.913	0.927	0.936

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.869	0.905	Data Not Lognormal
Lilliefors (Detects Only)	0.273	0.198	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.838	0.918	Data Not Lognormal
Lilliefors (NDs = DL)	0.266	0.177	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.859	0.918	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.234	0.177	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.871	0.918	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.222	0.177	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dioxin TEQ-HH (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	19	17	15	2	11.76%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	2	1.59E-04	1.94E-04	1.76E-04	1.76E-04	2.49E-05
Statistics (Detects Only)	15	5.88E-05	0.0678	0.00704	4.66E-04	0.0173
Statistics (All: NDs treated as DL value)	17	5.88E-05	0.0678	0.00623	4.04E-04	0.0164
Statistics (All: NDs treated as DL/2 value)	17	5.88E-05	0.0678	0.00622	4.04E-04	0.0164
Statistics (Normal ROS Estimated Data)	17	-0.0143	0.0678	0.00484	4.04E-04	0.0174
Statistics (Gamma ROS Estimated Data)	17	1.00E-09	0.0678	0.00621	4.04E-04	0.0164
Statistics (Lognormal ROS Estimated Data)	17	2.59E-05	0.0678	0.00622	4.04E-04	0.0164

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.355	0.332	0.0198	-6.846	1.971	-0.288
Statistics (NDs = DL)	0.341	0.32	0.0183	-7.058	1.939	-0.275
Statistics (NDs = DL/2)	0.33	0.311	0.0189	-7.14	2.022	-0.283
Statistics (Gamma ROS Estimates)	0.214	0.216	0.029	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-7.229	2.144	-0.297

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS

Correlation Coefficient R	0.648	0.626	0.626	0.731

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.449	0.881	Data Not Normal
Lilliefors (Detects Only)	0.348	0.229	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.42	0.892	Data Not Normal
Lilliefors (NDs = DL)	0.367	0.215	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.421	0.892	Data Not Normal
Lilliefors (NDs = DL/2)	0.367	0.215	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.572	0.892	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.33	0.215	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.935	0.926	0.928	0.954

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.173	0.824	
Kolmogorov-Smirnov (Detects Only)	0.25	0.238	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.606	0.833	
Kolmogorov-Smirnov (NDs = DL)	0.269	0.226	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.429	0.835	
Kolmogorov-Smirnov (NDs = DL/2)	0.26	0.226	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.684	0.877	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.191	0.231	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.97	0.955	0.967	0.982

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.939	0.881	Data Appear Lognormal
Lilliefors (Detects Only)	0.195	0.229	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.91	0.892	Data Appear Lognormal
Lilliefors (NDs = DL)	0.212	0.215	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.929	0.892	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.192	0.215	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.96	0.892	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.17	0.215	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dioxin TEQ-HH (q south)

Raw Statistics

Number of Valid Observations	32
Number of Missing Values	17
Number of Distinct Observations	32
Minimum	5.27E-05
Maximum	0.032
Mean of Raw Data	0.00161
Standard Deviation of Raw Data	0.00569
Kstar	0.39
Mean of Log Transformed Data	-8.041
Standard Deviation of Log Transformed Data	1.441

Normal Distribution Test Results

Correlation Coefficient R	0.499
Shapiro Wilk Test Statistic	0.283
Shapiro Wilk Critical (0.95) Value	0.93
Lilliefors Test Statistic	0.429
Lilliefors Critical (0.95) Value	0.157

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.812
A-D Test Statistic	3.795
A-D Critical (0.95) Value	0.831
K-S Test Statistic	0.261
K-S Critical(0.95) Value	0.166

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.947
Shapiro Wilk Test Statistic	0.9

Shapiro Wilk Critical (0.95) Value	0.93
Lilliefors Test Statistic	0.123
Lilliefors Critical (0.95) Value	0.157

Data not Lognormal at (0.05) Significance Level

Dioxin TEQ-HH (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	5	7	58.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	3.53E-05	2.49E-04	1.24E-04	1.12E-04	7.39E-05
Statistics (Detects Only)	5	1.23E-04	0.0128	0.00323	0.00114	0.00539
Statistics (All: NDs treated as DL value)	12	3.53E-05	0.0128	0.00142	1.65E-04	0.00362
Statistics (All: NDs treated as DL/2 value)	12	1.76E-05	0.0128	0.00138	1.06E-04	0.00364
Statistics (Normal ROS Estimated Data)	12	-0.0103	0.0128	-0.00424	-0.00858	0.00739
Statistics (Gamma ROS Estimated Data)	12	1.23E-04	0.0128	0.00214	9.86E-04	0.00342
Statistics (Lognormal ROS Estimated Data)	12	7.31E-06	0.0128	0.00135	1.40E-05	0.00365

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.586	0.495	0.00552	-6.793	1.66	-0.244
Statistics (NDs = DL)	0.405	0.36	0.0035	-8.178	1.654	-0.202
Statistics (NDs = DL/2)	0.338	0.309	0.00409	-8.582	1.933	-0.225
Statistics (Gamma ROS Estimates)	0.976	0.787	0.00219	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-9.567	2.657	-0.278

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.783	0.624	0.624	0.891

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.634	0.762	Data Not Normal
Lilliefors (Detects Only)	0.44	0.396	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.42	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.429	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.42	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.425	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.792	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.305	0.256	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.967	0.904	0.917	0.864

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.507	0.707	
Kolmogorov-Smirnov (Detects Only)	0.357	0.37	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.351	0.803	
Kolmogorov-Smirnov (NDs = DL)	0.289	0.262	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.306	0.816	
Kolmogorov-Smirnov (NDs = DL/2)	0.326	0.264	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.22	0.758	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.295	0.253	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.958	0.948	0.949	0.908

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.942	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.264	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.905	0.859	Data Appear Lognormal
Lilliefors (NDs = DL)	0.196	0.256	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.902	0.859	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.251	0.256	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.811	0.859	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.311	0.256	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Ethylbenzene (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	3	14	11	3	21.43%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	3	0.0038	0.0056	0.00453	0.0042	9.45E-04
Statistics (Detects Only)	11	3.80E-04	2800	330.1	0.41	829.2
Statistics (All: NDs treated as DL value)	14	3.80E-04	2800	259.3	0.0863	740.7
Statistics (All: NDs treated as DL/2 value)	14	3.80E-04	2800	259.3	0.0863	740.7
Statistics (Normal ROS Estimated Data)	14	-289.3	2800	197.3	0.0863	773.6
Statistics (Gamma ROS Estimated Data)	14	1.00E-09	2800	259.3	0.0863	740.7
Statistics (Lognormal ROS Estimated Data)	14	3.80E-04	2800	259.3	0.0863	740.7

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.138	0.156	2393	0.16	5.774	36.07
Statistics (NDs = DL)	0.12	0.142	2156	-1.034	5.592	-5.411
Statistics (NDs = DL/2)	0.118	0.14	2199	-1.182	5.724	-4.842
Statistics (Gamma ROS Estimates)	0.084	0.114	3087	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.303	5.839	-4.481

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.653	0.608	0.608	0.697

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.457	0.85	Data Not Normal
Lilliefors (Detects Only)	0.395	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.4	0.874	Data Not Normal
Lilliefors (NDs = DL)	0.405	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.4	0.874	Data Not Normal
Lilliefors (NDs = DL/2)	0.405	0.237	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.518	0.874	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.371	0.237	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.976	0.969	0.97	0.98

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.519	0.882	
Kolmogorov-Smirnov (Detects Only)	0.223	0.285	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.059	0.9	
Kolmogorov-Smirnov (NDs = DL)	0.265	0.256	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.087	0.901	
Kolmogorov-Smirnov (NDs = DL/2)	0.258	0.256	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.399	0.944	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.15	0.261	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.958	0.945	0.937	0.93

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.895	0.85	Data Appear Lognormal
Lilliefors (Detects Only)	0.239	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.874	0.874	Data Not Lognormal
Lilliefors (NDs = DL)	0.205	0.237	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.857	0.874	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.223	0.237	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.843	0.874	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.242	0.237	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Ethylbenzene (s)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	14	3	11	10	1	9.09%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	10	0.0011	1100	232.8	99	346.1
Statistics (All: NDs treated as DL value)	11	0.0011	1100	211.6	58	335.7
Statistics (All: NDs treated as DL/2 value)	11	0.0011	1100	211.6	58	335.7
Statistics (Normal ROS Estimated Data)	11	-170.2	1100	196.2	58	350.1
Statistics (Gamma ROS Estimated Data)	11	0.0011	1100	212.3	58	335.3
Statistics (Lognormal ROS Estimated Data)	11	0.0011	1100	211.6	58	335.7

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.181	0.192	1287	1.318	5.675	4.306
Statistics (NDs = DL)	0.164	0.18	1292	0.723	5.733	7.926
Statistics (NDs = DL/2)	0.162	0.178	1307	0.66	5.808	8.796
Statistics (Gamma ROS Estimates)	0.187	0.196	1137	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.637	5.838	9.167

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.849	0.83	0.83	0.878

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.732	0.842	Data Not Normal
Lilliefors (Detects Only)	0.251	0.28	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.702	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.264	0.267	Data Appear Normal
Shapiro-Wilks (NDs = DL/2)	0.702	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.264	0.267	Data Appear Normal
Shapiro-Wilks (Normal ROS Estimates)	0.791	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.223	0.267	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.98	0.982	0.982	0.985

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.686	0.86	
Kolmogorov-Smirnov (Detects Only)	0.214	0.295	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.756	0.873	
Kolmogorov-Smirnov (NDs = DL)	0.223	0.283	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.771	0.873	
Kolmogorov-Smirnov (NDs = DL/2)	0.219	0.284	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.486	0.865	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.175	0.283	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.915	0.922	0.919	0.918

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.812	0.842	Data Not Lognormal
Lilliefors (Detects Only)	0.286	0.28	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.82	0.85	Data Not Lognormal
Lilliefors (NDs = DL)	0.265	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.814	0.85	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.266	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.812	0.85	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.267	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Heptachlor (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	6	11	6	5	45.45%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	0.0017	13	5.001	0.0021	6.855
Statistics (Detects Only)	6	0.0073	2.775	0.983	0.6	1.175
Statistics (All: NDs treated as DL value)	11	0.0017	13	2.809	0.019	4.888
Statistics (All: NDs treated as DL/2 value)	11	8.50E-04	6.5	1.673	0.019	2.453
Statistics (Normal ROS Estimated Data)	11	-2.025	2.775	-0.021	0.0073	1.581
Statistics (Gamma ROS Estimated Data)	11	0.0073	2.775	0.833	0.111	0.97
Statistics (Lognormal ROS Estimated Data)	11	1.86E-04	2.775	0.539	0.0162	0.975

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.362	0.324	2.716	-1.865	2.743	-1.471
Statistics (NDs = DL)	0.22	0.22	12.79	-2.268	3.642	-1.606
Statistics (NDs = DL/2)	0.232	0.229	7.208	-2.583	3.705	-1.434
Statistics (Gamma ROS Estimates)	0.47	0.402	1.772	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.109	3.578	-0.871

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.928	0.793	0.858	0.949

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.841	0.788	Data Appear Normal
Lilliefors (Detects Only)	0.294	0.362	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.627	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.321	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.725	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.295	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.892	0.85	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.226	0.267	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.912	0.922	0.914	0.927

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.632	0.757	
Kolmogorov-Smirnov (Detects Only)	0.314	0.354	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.742	0.852	
Kolmogorov-Smirnov (NDs = DL)	0.284	0.281	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	0.737	0.847	
Kolmogorov-Smirnov (NDs = DL/2)	0.269	0.28	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.668	0.787	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.245	0.27	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.917	0.939	0.938	0.945

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.81	0.788	Data Appear Lognormal
Lilliefors (Detects Only)	0.278	0.362	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.852	0.85	Data Appear Lognormal
Lilliefors (NDs = DL)	0.225	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.847	0.85	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.225	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.871	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.211	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Heptachlor Epoxide (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	23	24	6	18	75.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	18	0.0021	2.3	0.317	0.0505	0.628
Statistics (Detects Only)	6	0.0079	2.1	0.366	0.0215	0.85
Statistics (All: NDs treated as DL value)	24	0.0021	2.3	0.329	0.0405	0.67
Statistics (All: NDs treated as DL/2 value)	24	0.00105	2.1	0.21	0.022	0.488
Statistics (Normal ROS Estimated Data)	24	-1.114	2.1	-0.214	-0.284	0.568
Statistics (Gamma ROS Estimated Data)	24	0.0079	2.1	0.386	0.414	0.399
Statistics (Lognormal ROS Estimated Data)	24	6.49E-04	2.1	0.0955	0.00643	0.427

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.306	0.295	1.196	-3.253	2.007	-0.617
Statistics (NDs = DL)	0.388	0.367	0.85	-2.817	1.812	-0.643
Statistics (NDs = DL/2)	0.374	0.355	0.562	-3.337	1.794	-0.538
Statistics (Gamma ROS Estimates)	1.013	0.914	0.381	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.854	1.464	-0.302

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.691	0.724	0.68	0.78

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.505	0.788	Data Not Normal
Lilliefors (Detects Only)	0.487	0.362	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.531	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.413	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.482	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.415	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.645	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.293	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.955	0.945	0.962	0.801

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.313	0.766	
Kolmogorov-Smirnov (Detects Only)	0.478	0.357	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.443	0.832	
Kolmogorov-Smirnov (NDs = DL)	0.282	0.191	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.663	0.835	
Kolmogorov-Smirnov (NDs = DL/2)	0.316	0.191	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	3.209	0.772	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.328	0.183	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.825	0.957	0.953	0.831

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.709	0.788	Data Not Lognormal
Lilliefors (Detects Only)	0.39	0.362	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.913	0.916	Data Not Lognormal
Lilliefors (NDs = DL)	0.15	0.181	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.913	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.177	0.181	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.724	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.282	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Heptachlor Epoxide (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	8	41	19	22	53.66%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	22	0.0018	0.25	0.0296	0.0025	0.0587
Statistics (Detects Only)	19	2.30E-04	0.23	0.042	0.012	0.064
Statistics (All: NDs treated as DL value)	41	2.30E-04	0.25	0.0354	0.0084	0.0608
Statistics (All: NDs treated as DL/2 value)	41	2.30E-04	0.23	0.0274	0.007	0.0498
Statistics (Normal ROS Estimated Data)	41	-0.0577	0.23	0.00913	5.00E-04	0.0548
Statistics (Gamma ROS Estimated Data)	41	1.00E-09	0.23	0.0407	0.0171	0.0489
Statistics (Lognormal ROS Estimated Data)	41	2.12E-04	0.23	0.0201	0.00169	0.0476

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.474	0.455	0.0886	-4.522	2.012	-0.445
Statistics (NDs = DL)	0.467	0.449	0.0757	-4.718	1.804	-0.382
Statistics (NDs = DL/2)	0.435	0.419	0.063	-5.09	1.872	-0.368
Statistics (Gamma ROS Estimates)	0.488	0.468	0.0835	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.82	1.904	-0.327

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.824	0.781	0.765	0.851

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.686	0.901	Data Not Normal
Lilliefors (Detects Only)	0.283	0.203	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.617	0.941	Data Not Normal
Lilliefors (NDs = DL)	0.282	0.138	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.6	0.941	Data Not Normal
Lilliefors (NDs = DL/2)	0.297	0.138	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.745	0.941	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.277	0.138	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.988	0.98	0.988	0.985

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.303	0.808	
Kolmogorov-Smirnov (Detects Only)	0.145	0.211	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.59	0.821	
Kolmogorov-Smirnov (NDs = DL)	0.194	0.147	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.691	0.828	
Kolmogorov-Smirnov (NDs = DL/2)	0.168	0.147	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.64	0.816	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.126	0.146	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.986	0.979	0.973	0.964

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.962	0.901	Data Appear Lognormal
Lilliefors (Detects Only)	0.115	0.203	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.945	0.941	Data Appear Lognormal
Lilliefors (NDs = DL)	0.17	0.138	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.93	0.941	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.161	0.138	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.913	0.941	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.16	0.138	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Indeno(1,2,3-cd)pyrene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	21	24	53.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	24	0.34	14	1.39	0.425	2.924
Statistics (Detects Only)	21	0.037	6.8	0.644	0.12	1.458
Statistics (All: NDs treated as DL value)	45	0.037	14	1.042	0.41	2.362
Statistics (All: NDs treated as DL/2 value)	45	0.037	7	0.671	0.21	1.444
Statistics (Normal ROS Estimated Data)	45	-0.331	6.8	0.41	0.184	1.021
Statistics (Gamma ROS Estimated Data)	45	0.037	6.8	0.643	0.639	0.983
Statistics (Lognormal ROS Estimated Data)	45	0.037	6.8	0.36	0.108	1.019

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.552	0.53	1.167	-1.574	1.417	-0.9
Statistics (NDs = DL)	0.604	0.579	1.725	-0.981	1.317	-1.342
Statistics (NDs = DL/2)	0.643	0.615	1.044	-1.351	1.21	-0.896
Statistics (Gamma ROS Estimates)	1.081	1.024	0.594	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.931	1.043	-0.54

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.629	0.624	0.642	0.589

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.422	0.908	Data Not Normal
Lilliefors (Detects Only)	0.339	0.193	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.424	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.374	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.434	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.341	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.393	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.316	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.877	0.889	0.887	0.73

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.39	0.801	
Kolmogorov-Smirnov (Detects Only)	0.215	0.2	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	3.757	0.804	
Kolmogorov-Smirnov (NDs = DL)	0.292	0.138	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	4.112	0.8	
Kolmogorov-Smirnov (NDs = DL/2)	0.297	0.138	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	3.942	0.775	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.281	0.135	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.958	0.958	0.954	0.913

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.915	0.908	Data Appear Lognormal
Lilliefors (Detects Only)	0.174	0.193	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.916	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.182	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.906	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.21	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.843	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.217	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

MCPP (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	8	4	33.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	49	10000	3512	2000	4459
Statistics (Detects Only)	8	5.2	85	49.53	50	24.36
Statistics (All: NDs treated as DL value)	12	5.2	10000	1204	51	2886
Statistics (All: NDs treated as DL/2 value)	12	5.2	5000	618.4	51	1436
Statistics (Normal ROS Estimated Data)	12	5.2	85	46.91	46.79	20.52
Statistics (Gamma ROS Estimated Data)	12	5.2	85	49.47	51	20.43
Statistics (Lognormal ROS Estimated Data)	12	5.2	85	43.82	39.88	21.66

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	2.51	1.938	19.73	3.69	0.872	0.236
Statistics (NDs = DL)	0.302	0.282	3993	4.808	2.146	0.446
Statistics (NDs = DL/2)	0.362	0.327	1711	4.577	1.897	0.414
Statistics (Gamma ROS Estimates)	3.475	2.662	14.24	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	3.608	0.725	0.201

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.962	0.676	0.679	0.948

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.939	0.818	Data Appear Normal
Lilliefors (Detects Only)	0.226	0.313	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.484	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.401	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.489	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.395	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.918	0.859	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.254	0.256	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.915	0.967	0.958	0.923

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.739	0.723	
Kolmogorov-Smirnov (Detects Only)	0.271	0.297	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL)	1.69	0.824	
Kolmogorov-Smirnov (NDs = DL)	0.403	0.265	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.451	0.812	
Kolmogorov-Smirnov (NDs = DL/2)	0.375	0.263	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.991	0.737	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.231	0.247	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.833	0.908	0.936	0.879

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.722	0.818	Data Not Lognormal
Lilliefors (Detects Only)	0.326	0.313	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.835	0.859	Data Not Lognormal
Lilliefors (NDs = DL)	0.318	0.256	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.886	0.859	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.278	0.256	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.798	0.859	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.32	0.256	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Mercury (q north)

Raw Statistics	
Number of Valid Observations	27
Number of Missing Values	9
Number of Distinct Observations	23
Minimum	0.016
Maximum	170
Mean of Raw Data	7.539
Standard Deviation of Raw Data	32.6
Kstar	0.237
Mean of Log Transformed Data	-0.982
Standard Deviation of Log Transformed Data	2.091

Normal Distribution Test Results

Correlation Coefficient R	0.46
Shapiro Wilk Test Statistic	0.242
Shapiro Wilk Critical (0.95) Value	0.923
Lilliefors Test Statistic	0.458
Lilliefors Critical (0.95) Value	0.171

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.829
A-D Test Statistic	3.695
A-D Critical (0.95) Value	0.879
K-S Test Statistic	0.287
K-S Critical(0.95) Value	0.185

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.969
Shapiro Wilk Test Statistic	0.945
Shapiro Wilk Critical (0.95) Value	0.923
Lilliefors Test Statistic	0.114
Lilliefors Critical (0.95) Value	0.171

Data appear Lognormal at (0.05) Significance Level

Mercury (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	8	41	40	1	2.44%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	40	0.021	140	5.817	0.425	22.87
Statistics (All: NDs treated as DL value)	41	0.021	140	5.676	0.38	22.6
Statistics (All: NDs treated as DL/2 value)	41	0.0105	140	5.676	0.38	22.6
Statistics (Normal ROS Estimated Data)	41	-23.27	140	5.108	0.38	23.03

Statistics (Gamma ROS Estimated Data)	41	1.00E-09	140	5.676	0.38	22.6
Statistics (Lognormal ROS Estimated Data)	41	0.0031	140	5.676	0.38	22.6

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.273	0.269	21.33	-0.807	1.97	-2.441
Statistics (NDs = DL)	0.268	0.265	21.16	-0.882	2.003	-2.272
Statistics (NDs = DL/2)	0.267	0.264	21.28	-0.898	2.032	-2.261
Statistics (Gamma ROS Estimates)	0.237	0.236	23.99	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.928	2.094	-2.257

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.492	0.489	0.489	0.535

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.279	0.94	Data Not Normal
Lilliefors (Detects Only)	0.444	0.14	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.276	0.941	Data Not Normal
Lilliefors (NDs = DL)	0.444	0.138	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.276	0.941	Data Not Normal
Lilliefors (NDs = DL/2)	0.444	0.138	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.335	0.941	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.434	0.138	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.859	0.858	0.859	0.87

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	4.903	0.87	
Kolmogorov-Smirnov (Detects Only)	0.324	0.152	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	4.945	0.873	
Kolmogorov-Smirnov (NDs = DL)	0.321	0.151	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	4.848	0.873	
Kolmogorov-Smirnov (NDs = DL/2)	0.32	0.151	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	4.063	0.887	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.29	0.152	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.97	0.971	0.977	0.98

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.94	0.94	Data Appear Lognormal
Lilliefors (Detects Only)	0.141	0.14	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.941	0.941	Data Not Lognormal
Lilliefors (NDs = DL)	0.135	0.138	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.955	0.941	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.134	0.138	Data Appear Lognormal

Shapiro-Wilks (Lognormal ROS Estimates)	0.969	0.941	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.134	0.138	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Mercury (r)

Raw Statistics	
Number of Valid Observations	12
Number of Missing Values	4
Number of Distinct Observations	12
Minimum	0.037
Maximum	3000
Mean of Raw Data	250.5
Standard Deviation of Raw Data	865.9
Kstar	0.148
Mean of Log Transformed Data	-0.912
Standard Deviation of Log Transformed Data	3.182

Normal Distribution Test Results

Correlation Coefficient R	0.544
Shapiro Wilk Test Statistic	0.328
Shapiro Wilk Critical (0.95) Value	0.859
Lilliefors Test Statistic	0.529
Lilliefors Critical (0.95) Value	0.256

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.932
A-D Test Statistic	2.875
A-D Critical (0.95) Value	0.891
K-S Test Statistic	0.449
K-S Critical(0.95) Value	0.274

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.835
Shapiro Wilk Test Statistic	0.715
Shapiro Wilk Critical (0.95) Value	0.859
Lilliefors Test Statistic	0.26
Lilliefors Critical (0.95) Value	0.256

Data not Lognormal at (0.05) Significance Level

Manganese (o)

Raw Statistics	
Number of Valid Observations	14
Number of Missing Values	3
Number of Distinct Observations	13
Minimum	345
Maximum	2000
Mean of Raw Data	620.4
Standard Deviation of Raw Data	410.6
Kstar	3.754
Mean of Log Transformed Data	6.321
Standard Deviation of Log Transformed Data	0.421

Normal Distribution Test Results

Correlation Coefficient R	0.712
Shapiro Wilk Test Statistic	0.539
Shapiro Wilk Critical (0.95) Value	0.874
Lilliefors Test Statistic	0.338
Lilliefors Critical (0.95) Value	0.237

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.808
A-D Test Statistic	1.545
A-D Critical (0.95) Value	0.739
K-S Test Statistic	0.269
K-S Critical(0.95) Value	0.229

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.862
Shapiro Wilk Test Statistic	0.77
Shapiro Wilk Critical (0.95) Value	0.874
Lilliefors Test Statistic	0.226
Lilliefors Critical (0.95) Value	0.237

Data not Lognormal at (0.05) Significance Level

Manganese (p)

Raw Statistics	
Number of Valid Observations	35
Number of Missing Values	12
Number of Distinct Observations	30
Minimum	1.2
Maximum	2700
Mean of Raw Data	258.9
Standard Deviation of Raw Data	445.4
Kstar	0.832
Mean of Log Transformed Data	4.898
Standard Deviation of Log Transformed Data	1.287

Normal Distribution Test Results

Correlation Coefficient R	0.626
Shapiro Wilk Test Statistic	0.432
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.299
Lilliefors Critical (0.95) Value	0.15

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.81
A-D Test Statistic	0.95
A-D Critical (0.95) Value	0.781
K-S Test Statistic	0.137
K-S Critical(0.95) Value	0.154

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.932
Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.126
Lilliefors Critical (0.95) Value	0.15

Data not Lognormal at (0.05) Significance Level

Manganese (q central)

Raw Statistics

Number of Valid Observations	45
Number of Missing Values	5
Number of Distinct Observations	37
Minimum	29
Maximum	5450
Mean of Raw Data	396.2
Standard Deviation of Raw Data	799.2
Kstar	1.009
Mean of Log Transformed Data	5.444
Standard Deviation of Log Transformed Data	0.92

Normal Distribution Test Results

Correlation Coefficient R	0.547
Shapiro Wilk Test Statistic	0.343
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.377
Lilliefors Critical (0.95) Value	0.132

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.742
A-D Test Statistic	2.683
A-D Critical (0.95) Value	0.776
K-S Test Statistic	0.245
K-S Critical(0.95) Value	0.135

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.958
Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.152
Lilliefors Critical (0.95) Value	0.132

Data not Lognormal at (0.05) Significance Level

Manganese (q south)

Raw Statistics

Number of Valid Observations	45
Number of Missing Values	4
Number of Distinct Observations	34
Minimum	96
Maximum	2100
Mean of Raw Data	579.9
Standard Deviation of Raw Data	348.9
Kstar	3.198
Mean of Log Transformed Data	6.209
Standard Deviation of Log Transformed Data	0.574

Normal Distribution Test Results

Correlation Coefficient R	0.903
Shapiro Wilk Test Statistic	0.84
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.143
Lilliefors Critical (0.95) Value	0.132

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.963
A-D Test Statistic	0.378
A-D Critical (0.95) Value	0.754
K-S Test Statistic	0.0872
K-S Critical(0.95) Value	0.133

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.983
Shapiro Wilk Test Statistic	0.977
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.109
Lilliefors Critical (0.95) Value	0.132

Data appear Lognormal at (0.05) Significance Level

Naphthalene (s)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	14	3	11	7	4	36.36%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.36	0.46	0.393	0.375	0.0457
Statistics (Detects Only)	7	0.15	48	21.89	19	18.4
Statistics (All: NDs treated as DL value)	11	0.15	48	14.07	2.1	17.91
Statistics (All: NDs treated as DL/2 value)	11	0.15	48	14	2.1	17.97
Statistics (Normal ROS Estimated Data)	11	-8.096	48	10.99	2.1	20.79
Statistics (Gamma ROS Estimated Data)	11	0.15	48	18.59	12.8	14.98
Statistics (Lognormal ROS Estimated Data)	11	0.15	48	14.04	2.1	17.94

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.684	0.558	31.99	2.2	2.085	0.948
Statistics (NDs = DL)	0.413	0.361	34.09	1.058	2.263	2.138
Statistics (NDs = DL/2)	0.364	0.326	38.42	0.806	2.52	3.126
Statistics (Gamma ROS Estimates)	0.973	0.768	19.1	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.969	2.351	2.427

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.978	0.897	0.896	0.937

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.935	0.803	Data Appear Normal
Lilliefors (Detects Only)	0.148	0.335	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.788	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.294	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.787	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.292	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.857	0.85	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.211	0.267	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.901	0.932	0.924	0.96

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.451	0.74	
Kolmogorov-Smirnov (Detects Only)	0.263	0.324	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.793	0.798	
Kolmogorov-Smirnov (NDs = DL)	0.265	0.272	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.904	0.808	
Kolmogorov-Smirnov (NDs = DL/2)	0.281	0.274	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.679	0.753	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.32	0.263	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.895	0.934	0.91	0.922

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.806	0.803	Data Appear Lognormal
Lilliefors (Detects Only)	0.31	0.335	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.845	0.85	Data Not Lognormal
Lilliefors (NDs = DL)	0.246	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.796	0.85	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.271	0.267	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.821	0.85	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.275	0.267	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Nickel (o)

Raw Statistics	
Number of Valid Observations	14
Number of Missing Values	3
Number of Distinct Observations	9
Minimum	15
Maximum	2500
Mean of Raw Data	230
Standard Deviation of Raw Data	665.9
Kstar	0.319
Mean of Log Transformed Data	3.483
Standard Deviation of Log Transformed Data	1.538

Normal Distribution Test Results

Correlation Coefficient R	0.587
Shapiro Wilk Test Statistic	0.375
Shapiro Wilk Critical (0.95) Value	0.874
Lilliefors Test Statistic	0.477
Lilliefors Critical (0.95) Value	0.237

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.906
A-D Test Statistic	3.73
A-D Critical (0.95) Value	0.823
K-S Test Statistic	0.488
K-S Critical(0.95) Value	0.246

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.713
Shapiro Wilk Test Statistic	0.525
Shapiro Wilk Critical (0.95) Value	0.874
Lilliefors Test Statistic	0.401
Lilliefors Critical (0.95) Value	0.237

Data not Lognormal at (0.05) Significance Level

Nickel (q south)

Raw Statistics	
Number of Valid Observations	45
Number of Missing Values	4
Number of Distinct Observations	35
Minimum	6.95
Maximum	2730
Mean of Raw Data	118.7
Standard Deviation of Raw Data	407.1
Kstar	0.548
Mean of Log Transformed Data	3.686
Standard Deviation of Log Transformed Data	1.11

Normal Distribution Test Results

Correlation Coefficient R	0.468
Shapiro Wilk Test Statistic	0.259
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.432
Lilliefors Critical (0.95) Value	0.132

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.742

A-D Test Statistic	5.25
A-D Critical (0.95) Value	0.807
K-S Test Statistic	0.262
K-S Critical(0.95) Value	0.139

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.937
Shapiro Wilk Test Statistic	0.894
Shapiro Wilk Critical (0.95) Value	0.945
Lilliefors Test Statistic	0.157
Lilliefors Critical (0.95) Value	0.132

Data not Lognormal at (0.05) Significance Level

Pentachlorophenol (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	3	14	9	5	35.71%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	0.011	470	128.5	10	202.5
Statistics (Detects Only)	9	0.023	7900	1260	2.9	2627
Statistics (All: NDs treated as DL value)	14	0.011	7900	855.9	6.1	2140
Statistics (All: NDs treated as DL/2 value)	14	0.0055	7900	832.9	3.95	2146
Statistics (Normal ROS Estimated Data)	14	-3253	7900	468.4	0.0925	2448
Statistics (Gamma ROS Estimated Data)	14	0.023	7900	1194	989.5	2063
Statistics (Lognormal ROS Estimated Data)	14	1.19E-04	7900	810	0.204	2154

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.151	0.167	8326	2.066	4.817	2.332
Statistics (NDs = DL)	0.161	0.174	5303	2.041	4.437	2.174
Statistics (NDs = DL/2)	0.155	0.169	5371	1.793	4.453	2.483
Statistics (Gamma ROS Estimates)	0.222	0.222	5382	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.119	4.983	41.86

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.745	0.669	0.659	0.804

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.577	0.829	Data Not Normal
Lilliefors (Detects Only)	0.35	0.295	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.474	0.874	Data Not Normal
Lilliefors (NDs = DL)	0.357	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.462	0.874	Data Not Normal
Lilliefors (NDs = DL/2)	0.395	0.237	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.688	0.874	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.36	0.237	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.999	0.99	0.989	0.966

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.607	0.863	
Kolmogorov-Smirnov (Detects Only)	0.283	0.31	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.64	0.887	
Kolmogorov-Smirnov (NDs = DL)	0.252	0.254	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.704	0.889	
Kolmogorov-Smirnov (NDs = DL/2)	0.242	0.255	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.93	0.864	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.291	0.252	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.967	0.981	0.989	0.962

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.91	0.829	Data Appear Lognormal
Lilliefors (Detects Only)	0.172	0.295	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.945	0.874	Data Appear Lognormal
Lilliefors (NDs = DL)	0.119	0.237	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.963	0.874	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.104	0.237	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.928	0.874	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.205	0.237	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Pentachlorophenol (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	13	34	31	3	8.82%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	3	0.012	0.47	0.191	0.091	0.245
Statistics (Detects Only)	31	0.0043	88	3.466	0.18	15.73
Statistics (All: NDs treated as DL value)	34	0.0043	88	3.177	0.175	15.03
Statistics (All: NDs treated as DL/2 value)	34	0.0043	88	3.169	0.175	15.03
Statistics (Normal ROS Estimated Data)	34	-6.927	88	2.862	0.155	15.15
Statistics (Gamma ROS Estimated Data)	34	1.00E-09	88	3.16	0.155	15.03
Statistics (Lognormal ROS Estimated Data)	34	0.0043	88	3.163	0.155	15.03

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.241	0.239	14.39	-1.724	2.3	-1.334
Statistics (NDs = DL)	0.242	0.24	13.13	-1.794	2.251	-1.255
Statistics (NDs = DL/2)	0.238	0.237	13.32	-1.855	2.28	-1.229
Statistics (Gamma ROS Estimates)	0.166	0.171	19	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.933	2.315	-1.198

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.439	0.426	0.426	0.463

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.225	0.929	Data Not Normal
Lilliefors (Detects Only)	0.442	0.159	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.215	0.933	Data Not Normal
Lilliefors (NDs = DL)	0.441	0.152	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.215	0.933	Data Not Normal
Lilliefors (NDs = DL/2)	0.44	0.152	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.254	0.933	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.432	0.152	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.803	0.79	0.792	0.829

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	3.107	0.88	
Kolmogorov-Smirnov (Detects Only)	0.251	0.173	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	3.509	0.881	
Kolmogorov-Smirnov (NDs = DL)	0.258	0.166	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	3.505	0.883	
Kolmogorov-Smirnov (NDs = DL/2)	0.254	0.166	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.001	0.917	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.181	0.168	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.983	0.982	0.983	0.982

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.966	0.929	Data Appear Lognormal
Lilliefors (Detects Only)	0.0951	0.159	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.964	0.933	Data Appear Lognormal
Lilliefors (NDs = DL)	0.0914	0.152	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.964	0.933	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.0812	0.152	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.961	0.933	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0979	0.152	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Pentachlorophenol (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	50	5	45	21	24	53.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	24	0.0052	0.028	0.0162	0.018	0.0062
Statistics (Detects Only)	21	0.0033	10.15	0.84	0.028	2.234
Statistics (All: NDs treated as DL value)	45	0.0033	10.15	0.401	0.02	1.562
Statistics (All: NDs treated as DL/2 value)	45	0.0026	10.15	0.396	0.0105	1.564

Statistics (Normal ROS Estimated Data)	45	-2.55	10.15	-0.329	-0.425	1.919
Statistics (Gamma ROS Estimated Data)	45	0.0033	10.15	0.875	0.882	1.511
Statistics (Lognormal ROS Estimated Data)	45	3.32E-04	10.15	0.394	0.00684	1.564

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.29	0.286	2.895	-2.562	2.256	-0.881
Statistics (NDs = DL)	0.277	0.273	1.448	-3.438	1.76	-0.512
Statistics (NDs = DL/2)	0.247	0.245	1.606	-3.808	1.949	-0.512
Statistics (Gamma ROS Estimates)	0.555	0.533	1.577	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.441	2.441	-0.55

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.626	0.495	0.496	0.789

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.417	0.908	Data Not Normal
Lilliefors (Detects Only)	0.354	0.193	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.284	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.428	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.285	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.427	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.665	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.266	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.937	0.861	0.873	0.813

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.82	0.85	
Kolmogorov-Smirnov (Detects Only)	0.273	0.206	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	8.593	0.872	
Kolmogorov-Smirnov (NDs = DL)	0.407	0.144	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	8.24	0.885	
Kolmogorov-Smirnov (NDs = DL/2)	0.373	0.145	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	3.08	0.808	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.231	0.139	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.958	0.87	0.878	0.954

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.912	0.908	Data Appear Lognormal
Lilliefors (Detects Only)	0.197	0.193	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.763	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.309	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.771	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.26	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.903	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.141	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Pentachlorophenol (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	8	28	22	6	21.43%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.009	0.023	0.0138	0.0105	0.00611
Statistics (Detects Only)	22	0.002	2300	164.2	0.074	496.8
Statistics (All: NDs treated as DL value)	28	0.002	2300	129	0.0465	443.4
Statistics (All: NDs treated as DL/2 value)	28	0.002	2300	129	0.0465	443.4
Statistics (Normal ROS Estimated Data)	28	-295.9	2300	70.71	0.0465	474.8
Statistics (Gamma ROS Estimated Data)	28	1.00E-09	2300	129	0.0465	443.4
Statistics (Lognormal ROS Estimated Data)	28	7.24E-04	2300	129	0.0465	443.4

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV

Statistics (Detects Only)	0.128	0.138	1282	-1.037	4.237	-4.084
Statistics (NDs = DL)	0.12	0.131	1075	-1.75	3.99	-2.281
Statistics (NDs = DL/2)	0.118	0.129	1097	-1.898	4.1	-2.16
Statistics (Gamma ROS Estimates)	0.0822	0.0972	1569	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.296	4.476	-1.949

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.591	0.548	0.548	0.689

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.376	0.911	Data Not Normal
Lilliefors (Detects Only)	0.401	0.189	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.332	0.924	Data Not Normal
Lilliefors (NDs = DL)	0.435	0.167	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.332	0.924	Data Not Normal
Lilliefors (NDs = DL/2)	0.435	0.167	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.509	0.924	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.38	0.167	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.968	0.957	0.958	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	3.021	0.922	
Kolmogorov-Smirnov (Detects Only)	0.347	0.208	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	4.82	0.934	
Kolmogorov-Smirnov (NDs = DL)	0.379	0.186	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	4.631	0.935	
Kolmogorov-Smirnov (NDs = DL/2)	0.373	0.186	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.768	1.057	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.258	0.195	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.914	0.884	0.892	0.929

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.827	0.911	Data Not Lognormal
Lilliefors (Detects Only)	0.255	0.189	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.776	0.924	Data Not Lognormal
Lilliefors (NDs = DL)	0.27	0.167	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.788	0.924	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.255	0.167	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.851	0.924	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.216	0.167	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Pentachlorophenol (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	32	13	28.89%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	13	0.00865	0.031	0.0174	0.011	0.00906
Statistics (Detects Only)	32	0.0011	470	22.33	0.0255	92.03
Statistics (All: NDs treated as DL value)	45	0.0011	470	15.89	0.02	77.92
Statistics (All: NDs treated as DL/2 value)	45	0.0011	470	15.88	0.014	77.92
Statistics (Normal ROS Estimated Data)	45	-38.89	470	10.3	0.0138	79.8
Statistics (Gamma ROS Estimated Data)	45	0.0011	470	23.71	0.0675	77.28
Statistics (Lognormal ROS Estimated Data)	45	9.16E-04	470	15.88	0.0107	77.92

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.126	0.132	177.9	-3.173	2.944	-0.928
Statistics (NDs = DL)	0.126	0.133	125.7	-3.464	2.529	-0.73
Statistics (NDs = DL/2)	0.123	0.13	129.2	-3.664	2.606	-0.711
Statistics (Gamma ROS Estimates)	0.169	0.173	140.3	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.924	2.77	-0.706

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.493	0.439	0.439	0.532

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.272	0.93	Data Not Normal
Lilliefors (Detects Only)	0.521	0.157	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.226	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.521	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.226	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.521	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.322	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.492	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.928	0.893	0.896	0.911

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	7.145	0.937	
Kolmogorov-Smirnov (Detects Only)	0.411	0.175	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	11.77	0.952	
Kolmogorov-Smirnov (NDs = DL)	0.428	0.149	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	11.6	0.954	
Kolmogorov-Smirnov (NDs = DL/2)	0.42	0.149	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	3.661	0.925	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.253	0.147	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.904	0.87	0.871	0.891

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.824	0.93	Data Not Lognormal
Lilliefors (Detects Only)	0.175	0.157	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.772	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.217	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.772	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.192	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.802	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.158	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Pentachlorophenol (s)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	14	3	11	6	5	45.45%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	0.0095	440	99.04	0.15	192.1
Statistics (Detects Only)	6	0.011	440	73.64	0.365	179.5
Statistics (All: NDs treated as DL value)	11	0.0095	440	85.19	0.25	176.2
Statistics (All: NDs treated as DL/2 value)	11	0.00475	440	62.68	0.25	141.3
Statistics (Normal ROS Estimated Data)	11	-241.6	440	-8.457	0.011	167
Statistics (Gamma ROS Estimated Data)	11	1.00E-09	440	49.42	0.25	131.1
Statistics (Lognormal ROS Estimated Data)	11	8.14E-05	440	40.17	0.0248	132.6

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.152	0.171	484.2	-0.744	3.812	-5.123
Statistics (NDs = DL)	0.159	0.176	537.3	-0.364	4.03	-11.07
Statistics (NDs = DL/2)	0.158	0.176	395.9	-0.679	4.007	-5.901
Statistics (Gamma ROS Estimates)	0.0891	0.125	554.5	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.003	4.024	-1.34

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.687	0.726	0.716	0.832

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.498	0.788	Data Not Normal
Lilliefors (Detects Only)	0.49	0.362	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.528	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.411	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.532	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.417	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.734	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.386	0.267	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.974	0.883	0.985	0.982

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.905	0.823	
Kolmogorov-Smirnov (Detects Only)	0.408	0.366	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.163	0.875	
Kolmogorov-Smirnov (NDs = DL)	0.325	0.284	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.033	0.875	
Kolmogorov-Smirnov (NDs = DL/2)	0.304	0.284	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.384	0.91	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.179	0.289	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.937	0.944	0.959	0.955

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.886	0.788	Data Appear Lognormal
Lilliefors (Detects Only)	0.246	0.362	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.869	0.85	Data Appear Lognormal
Lilliefors (NDs = DL)	0.182	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.901	0.85	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.151	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.934	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.205	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Tetrachloroethene (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	13	34	17	17	50.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	17	0.0034	10	1.813	0.21	3.374
Statistics (Detects Only)	17	0.0019	140	12.21	0.24	35.85
Statistics (All: NDs treated as DL value)	34	0.0019	140	7.009	0.225	25.62
Statistics (All: NDs treated as DL/2 value)	34	0.0017	140	6.556	0.145	25.64
Statistics (Normal ROS Estimated Data)	34	-19.12	140	0.392	0.00255	28.33
Statistics (Gamma ROS Estimated Data)	34	0.0019	140	12.72	9.691	25.08
Statistics (Lognormal ROS Estimated Data)	34	0.00177	140	6.11	0.0137	25.72

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.184	0.188	66.24	-1.543	3.315	-2.148
Statistics (NDs = DL)	0.198	0.2	35.48	-1.785	3.095	-1.734
Statistics (NDs = DL/2)	0.186	0.189	35.33	-2.131	3.142	-1.474
Statistics (Gamma ROS Estimates)	0.33	0.32	38.57	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.35	3.087	-0.921

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.609	0.525	0.503	0.692

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.396	0.892	Data Not Normal
Lilliefors (Detects Only)	0.489	0.215	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.308	0.933	Data Not Normal
Lilliefors (NDs = DL)	0.423	0.152	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.285	0.933	Data Not Normal
Lilliefors (NDs = DL/2)	0.465	0.152	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.513	0.933	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.376	0.152	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.962	0.917	0.905	0.898

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.507	0.889	
Kolmogorov-Smirnov (Detects Only)	0.293	0.232	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.473	0.9	
Kolmogorov-Smirnov (NDs = DL)	0.216	0.167	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.922	0.907	
Kolmogorov-Smirnov (NDs = DL/2)	0.222	0.168	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.374	0.849	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.201	0.163	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.977	0.975	0.968	0.935

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.946	0.892	Data Appear Lognormal
Lilliefors (Detects Only)	0.111	0.215	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.937	0.933	Data Appear Lognormal
Lilliefors (NDs = DL)	0.164	0.152	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.923	0.933	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.152	0.152	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.864	0.933	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.175	0.152	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Tetrachloroethene (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	7	29	16	13	44.83%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	13	0.00445	0.39	0.0502	0.0063	0.114
Statistics (Detects Only)	16	4.30E-04	28	1.822	0.00195	6.986
Statistics (All: NDs treated as DL value)	29	4.30E-04	28	1.028	0.0057	5.192
Statistics (All: NDs treated as DL/2 value)	29	4.30E-04	28	1.017	0.00285	5.194
Statistics (Normal ROS Estimated Data)	29	-0.0241	28	1.063	7.00E-04	5.187
Statistics (Gamma ROS Estimated Data)	29	4.30E-04	28	1.944	1.1	5.115
Statistics (Lognormal ROS Estimated Data)	29	4.30E-04	28	1.006	0.00111	5.196

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.132	0.141	13.81	-5.333	3.065	-0.575
Statistics (NDs = DL)	0.154	0.161	6.681	-4.951	2.472	-0.499
Statistics (NDs = DL/2)	0.146	0.154	6.954	-5.261	2.435	-0.463
Statistics (Gamma ROS Estimates)	0.221	0.221	8.79	--	--	--

Statistics (Lognormal ROS Estimates)	--	--	--	-5.938	2.349	-0.396

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.508	0.419	0.417	0.431

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.288	0.887	Data Not Normal
Lilliefors (Detects Only)	0.479	0.222	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.207	0.926	Data Not Normal
Lilliefors (NDs = DL)	0.48	0.165	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.204	0.926	Data Not Normal
Lilliefors (NDs = DL/2)	0.494	0.165	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.217	0.926	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.465	0.165	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.914	0.837	0.84	0.839

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	3.489	0.904	
Kolmogorov-Smirnov (Detects Only)	0.455	0.241	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	6.323	0.921	
Kolmogorov-Smirnov (NDs = DL)	0.456	0.182	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	6.869	0.925	
Kolmogorov-Smirnov (NDs = DL/2)	0.44	0.182	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.504	0.889	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.241	0.179	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.862	0.9	0.877	0.776

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.752	0.887	Data Not Lognormal
Lilliefors (Detects Only)	0.258	0.222	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.82	0.926	Data Not Lognormal
Lilliefors (NDs = DL)	0.278	0.165	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.782	0.926	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.227	0.165	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.624	0.926	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.283	0.165	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Tetrachloroethene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	25	20	44.44%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	20	0.004	0.029	0.007	0.00615	0.00528
Statistics (Detects Only)	25	5.35E-04	8.8	0.483	0.0039	1.774
Statistics (All: NDs treated as DL value)	45	5.35E-04	8.8	0.272	0.0058	1.332
Statistics (All: NDs treated as DL/2 value)	45	5.35E-04	8.8	0.27	0.0032	1.332
Statistics (Normal ROS Estimated Data)	45	-0.551	8.8	0.236	0.00295	1.347
Statistics (Gamma ROS Estimated Data)	45	5.35E-04	8.8	0.513	0.349	1.311
Statistics (Lognormal ROS Estimated Data)	45	5.35E-04	8.8	0.27	0.00295	1.332

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.201	0.202	2.404	-4.384	2.526	-0.576
Statistics (NDs = DL)	0.215	0.215	1.265	-4.693	1.917	-0.408
Statistics (NDs = DL/2)	0.199	0.201	1.354	-5.001	2.009	-0.402
Statistics (Gamma ROS Estimates)	0.333	0.325	1.541	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.083	2.065	-0.406

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.524	0.43	0.43	0.502

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.303	0.918	Data Not Normal
Lilliefors (Detects Only)	0.427	0.177	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.223	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.464	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.223	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.464	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.296	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.401	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.908	0.829	0.837	0.814

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	3.544	0.895	
Kolmogorov-Smirnov (Detects Only)	0.314	0.193	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	9.661	0.899	
Kolmogorov-Smirnov (NDs = DL)	0.392	0.146	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	10.2	0.906	
Kolmogorov-Smirnov (NDs = DL/2)	0.376	0.146	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.59	0.854	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.186	0.143	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.938	0.884	0.852	0.874

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.878	0.918	Data Not Lognormal
Lilliefors (Detects Only)	0.197	0.177	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.795	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.297	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.737	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.318	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.773	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.256	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Tetrachloroethene (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	10	2	16.67%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	2	0.0049	0.0071	0.006	0.006	0.00156
Statistics (Detects Only)	10	0.0026	1200	269.4	1.006	454.7
Statistics (All: NDs treated as DL value)	12	0.0026	1200	224.5	0.011	424.4
Statistics (All: NDs treated as DL/2 value)	12	0.00245	1200	224.5	0.011	424.4
Statistics (Normal ROS Estimated Data)	12	-140.3	1200	201.1	0.011	441.1
Statistics (Gamma ROS Estimated Data)	12	0.0026	1200	225.7	2.15	423.8
Statistics (Lognormal ROS Estimated Data)	12	0.00197	1200	224.5	0.011	424.4

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.13	0.153	2067	-0.418	5.514	-13.19
Statistics (NDs = DL)	0.12	0.145	1873	-1.204	5.315	-4.415
Statistics (NDs = DL/2)	0.118	0.144	1902	-1.319	5.414	-4.104
Statistics (Gamma ROS Estimates)	0.142	0.162	1587	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.387	5.477	-3.949

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.815	0.775	0.775	0.829

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.661	0.842	Data Not Normal
Lilliefors (Detects Only)	0.422	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.603	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.45	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.603	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.45	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.692	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.424	0.256	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.898	0.913	0.913	0.922

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.015	0.878	
Kolmogorov-Smirnov (Detects Only)	0.279	0.297	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL)	1.52	0.892	
Kolmogorov-Smirnov (NDs = DL)	0.331	0.274	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.497	0.893	
Kolmogorov-Smirnov (NDs = DL/2)	0.326	0.275	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.895	0.885	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.258	0.274	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.921	0.895	0.896	0.901

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)

Shapiro-Wilks (Detects Only)	0.818	0.842	Data Not Lognormal
Lilliefors (Detects Only)	0.266	0.28	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.777	0.859	Data Not Lognormal
Lilliefors (NDs = DL)	0.311	0.256	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.777	0.859	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.3	0.256	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.787	0.859	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.294	0.256	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Tetrachloroethene (s)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	14	3	11	9	2	18.18%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	2	0.0054	0.19	0.0977	0.0977	0.131
Statistics (Detects Only)	9	8.30E-04	33	11.65	6	12.67
Statistics (All: NDs treated as DL value)	11	8.30E-04	33	9.546	5.8	12.26
Statistics (All: NDs treated as DL/2 value)	11	8.30E-04	33	9.537	5.8	12.26
Statistics (Normal ROS Estimated Data)	11	-1.053	33	9.336	5.8	12.44
Statistics (Gamma ROS Estimated Data)	11	8.30E-04	33	10.1	5.8	11.84
Statistics (Lognormal ROS Estimated Data)	11	8.30E-04	33	9.529	5.8	12.27

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.253	0.245	46.01	-0.346	4.528	-13.08
Statistics (NDs = DL)	0.228	0.226	41.9	-0.909	4.313	-4.746
Statistics (NDs = DL/2)	0.22	0.221	43.29	-1.035	4.403	-4.255
Statistics (Gamma ROS Estimates)	0.29	0.272	34.78	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.178	4.453	-3.78

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.936	0.898	0.898	0.909

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.856	0.829	Data Appear Normal
Lilliefors (Detects Only)	0.228	0.295	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.792	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.25	0.267	Data Appear Normal
Shapiro-Wilks (NDs = DL/2)	0.791	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.25	0.267	Data Appear Normal
Shapiro-Wilks (Normal ROS Estimates)	0.811	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.242	0.267	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.872	0.896	0.893	0.917

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.937	0.825	
Kolmogorov-Smirnov (Detects Only)	0.304	0.304	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL)	0.737	0.849	
Kolmogorov-Smirnov (NDs = DL)	0.228	0.28	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.818	0.852	
Kolmogorov-Smirnov (NDs = DL/2)	0.232	0.281	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.819	0.824	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.269	0.276	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.879	0.922	0.915	0.907

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.749	0.829	Data Not Lognormal
Lilliefors (Detects Only)	0.346	0.295	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.822	0.85	Data Not Lognormal
Lilliefors (NDs = DL)	0.277	0.267	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.809	0.85	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.283	0.267	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.794	0.85	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.291	0.267	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Trichloroethene (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	14	33	7	26	78.79%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	26	0.0034	10	1.301	0.215	2.801
Statistics (Detects Only)	7	7.90E-04	0.99	0.197	0.076	0.356
Statistics (All: NDs treated as DL value)	33	7.90E-04	10	1.067	0.17	2.523
Statistics (All: NDs treated as DL/2 value)	33	7.90E-04	5	0.554	0.105	1.262
Statistics (Normal ROS Estimated Data)	33	-0.144	0.99	0.0381	0.0147	0.185
Statistics (Gamma ROS Estimated Data)	33	1.00E-09	0.99	0.18	0.166	0.163
Statistics (Lognormal ROS Estimated Data)	33	5.87E-04	0.99	0.0446	0.00319	0.174

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.314	0.306	0.627	-3.802	2.884	-0.759
Statistics (NDs = DL)	0.276	0.271	3.87	-2.471	2.741	-1.109
Statistics (NDs = DL/2)	0.286	0.28	1.936	-3.017	2.681	-0.889
Statistics (Gamma ROS Estimates)	0.418	0.4	0.431	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.498	1.654	-0.301

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.772	0.67	0.683	0.677

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.619	0.803	Data Not Normal
Lilliefors (Detects Only)	0.387	0.335	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.462	0.931	Data Not Normal
Lilliefors (NDs = DL)	0.374	0.154	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.479	0.931	Data Not Normal
Lilliefors (NDs = DL/2)	0.35	0.154	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.499	0.931	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.342	0.154	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.98	0.943	0.948	0.815

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.449	0.782	
Kolmogorov-Smirnov (Detects Only)	0.261	0.335	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.298	0.866	
Kolmogorov-Smirnov (NDs = DL)	0.163	0.167	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	1.37	0.861	
Kolmogorov-Smirnov (NDs = DL/2)	0.172	0.167	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	7.357	0.829	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.462	0.164	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.94	0.975	0.963	0.85

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.862	0.803	Data Appear Lognormal
Lilliefors (Detects Only)	0.254	0.335	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.932	0.931	Data Appear Lognormal
Lilliefors (NDs = DL)	0.149	0.154	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.907	0.931	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.171	0.154	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.734	0.931	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.347	0.154	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Trichloroethene (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	8	28	14	14	50.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	14	0.0042	0.39	0.0472	0.0066	0.11
Statistics (Detects Only)	14	4.90E-04	0.73	0.1	0.00107	0.252
Statistics (All: NDs treated as DL value)	28	4.90E-04	0.73	0.0737	0.00478	0.193
Statistics (All: NDs treated as DL/2 value)	28	4.90E-04	0.73	0.0619	0.00243	0.183
Statistics (Normal ROS Estimated Data)	28	4.90E-04	0.73	0.0782	0.0562	0.177
Statistics (Gamma ROS Estimated Data)	28	4.90E-04	0.73	0.112	0.123	0.176
Statistics (Lognormal ROS Estimated Data)	28	4.90E-04	0.73	0.0508	0.00145	0.182

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.197	0.2	0.507	-6.035	2.455	-0.407
Statistics (NDs = DL)	0.264	0.26	0.279	-5.271	2.107	-0.4
Statistics (NDs = DL/2)	0.25	0.247	0.247	-5.618	2.004	-0.357
Statistics (Gamma ROS Estimates)	0.358	0.343	0.313	--	--	--

Statistics (Lognormal ROS Estimates)	--	--	--	-6.285	1.722	-0.274

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.654	0.646	0.6	0.626

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.439	0.874	Data Not Normal
Lilliefors (Detects Only)	0.508	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.431	0.924	Data Not Normal
Lilliefors (NDs = DL)	0.485	0.167	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.377	0.924	Data Not Normal
Lilliefors (NDs = DL/2)	0.478	0.167	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.41	0.924	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.478	0.167	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.906	0.94	0.923	0.9

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	3.356	0.874	
Kolmogorov-Smirnov (Detects Only)	0.482	0.253	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	4.169	0.87	
Kolmogorov-Smirnov (NDs = DL)	0.393	0.181	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	5.315	0.875	
Kolmogorov-Smirnov (NDs = DL/2)	0.436	0.181	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.773	0.842	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.302	0.178	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.782	0.921	0.875	0.692

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.616	0.874	Data Not Lognormal
Lilliefors (Detects Only)	0.364	0.237	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.838	0.924	Data Not Lognormal
Lilliefors (NDs = DL)	0.22	0.167	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.764	0.924	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.28	0.167	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.496	0.924	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.407	0.167	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Trichloroethene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	25	20	44.44%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	20	0.004	0.011	0.0061	0.00615	0.00154
Statistics (Detects Only)	25	0.0011	0.38	0.028	0.0051	0.0789
Statistics (All: NDs treated as DL value)	45	0.0011	0.38	0.0183	0.0058	0.0593
Statistics (All: NDs treated as DL/2 value)	45	0.0011	0.38	0.0169	0.0031	0.0596
Statistics (Normal ROS Estimated Data)	45	-0.0295	0.38	0.0154	0.00381	0.0605
Statistics (Gamma ROS Estimated Data)	45	1.00E-09	0.38	0.0226	0.0058	0.0594
Statistics (Lognormal ROS Estimated Data)	45	8.92E-04	0.38	0.0167	0.00274	0.0596

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.413	0.4	0.0678	-5.159	1.497	-0.29
Statistics (NDs = DL)	0.548	0.526	0.0334	-5.144	1.116	-0.217
Statistics (NDs = DL/2)	0.467	0.451	0.0362	-5.453	1.164	-0.214
Statistics (Gamma ROS Estimates)	0.328	0.321	0.0689	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.569	1.227	-0.22

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.591	0.498	0.493	0.571

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.377	0.918	Data Not Normal
Lilliefors (Detects Only)	0.411	0.177	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.286	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.44	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.281	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.435	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.37	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.396	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.9	0.79	0.808	0.89

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	3.188	0.826	
Kolmogorov-Smirnov (Detects Only)	0.318	0.187	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	7.156	0.809	
Kolmogorov-Smirnov (NDs = DL)	0.382	0.139	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	8.266	0.821	
Kolmogorov-Smirnov (NDs = DL/2)	0.357	0.14	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.383	0.855	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.22	0.143	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.93	0.901	0.872	0.884

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.864	0.918	Data Not Lognormal
Lilliefors (Detects Only)	0.186	0.177	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.828	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.251	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.773	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.212	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.794	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.191	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Trichloroethene (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	9	3	25.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	3	0.0049	3.1	1.037	0.0071	1.786
Statistics (Detects Only)	9	3.00E-04	2200	337.8	0.019	747.5
Statistics (All: NDs treated as DL value)	12	3.00E-04	2200	253.6	0.0175	655.4
Statistics (All: NDs treated as DL/2 value)	12	3.00E-04	2200	253.5	0.0175	655.5
Statistics (Normal ROS Estimated Data)	12	-351.4	2200	193.8	0.014	693.7
Statistics (Gamma ROS Estimated Data)	12	3.00E-04	2200	323.5	15.1	638
Statistics (Lognormal ROS Estimated Data)	12	1.73E-04	2200	253.4	0.014	655.5

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.115	0.142	2933	-1.1	5.86	-5.328
Statistics (NDs = DL)	0.112	0.14	2258	-1.586	5.304	-3.344
Statistics (NDs = DL/2)	0.11	0.138	2305	-1.759	5.365	-3.049
Statistics (Gamma ROS Estimates)	0.148	0.167	2183	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.68	5.83	-2.175

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.725	0.662	0.662	0.761

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.547	0.829	Data Not Normal
Lilliefors (Detects Only)	0.438	0.295	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.464	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.467	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.464	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.467	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.607	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.427	0.256	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.993	0.99	0.99	0.994

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.729	0.876	
Kolmogorov-Smirnov (Detects Only)	0.288	0.312	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.19	0.895	
Kolmogorov-Smirnov (NDs = DL)	0.299	0.275	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.213	0.896	
Kolmogorov-Smirnov (NDs = DL/2)	0.292	0.275	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.57	0.883	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.226	0.273	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.962	0.958	0.957	0.942

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)

Shapiro-Wilks (Detects Only)	0.905	0.829	Data Appear Lognormal
Lilliefors (Detects Only)	0.243	0.295	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.902	0.859	Data Appear Lognormal
Lilliefors (NDs = DL)	0.256	0.256	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.899	0.859	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.243	0.256	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.869	0.859	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.254	0.256	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Trichloroethene (s)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	14	3	11	7	4	36.36%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.0045	6.8	1.75	0.0977	3.368
Statistics (Detects Only)	7	4.70E-04	240	47.36	1.4	90.07
Statistics (All: NDs treated as DL value)	11	4.70E-04	240	30.77	1.3	73.49
Statistics (All: NDs treated as DL/2 value)	11	4.70E-04	240	30.45	1.3	73.61
Statistics (Normal ROS Estimated Data)	11	-30.43	240	21.1	0.0019	78.94
Statistics (Gamma ROS Estimated Data)	11	1.00E-09	240	30.75	1.3	73.5
Statistics (Lognormal ROS Estimated Data)	11	4.70E-04	240	30.14	0.0113	73.74

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.183	0.194	258.7	-0.218	5.016	-23.02
Statistics (NDs = DL)	0.168	0.183	183.5	-1.081	4.487	-4.15
Statistics (NDs = DL/2)	0.16	0.177	190	-1.333	4.593	-3.444
Statistics (Gamma ROS Estimates)	0.0909	0.127	338.4	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.238	4.814	-2.151

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.784	0.689	0.685	0.781

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.631	0.803	Data Not Normal
Lilliefors (Detects Only)	0.388	0.335	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.499	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.446	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.495	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.444	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.633	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.39	0.267	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.996	0.989	0.989	0.996

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.269	0.828	
Kolmogorov-Smirnov (Detects Only)	0.161	0.343	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.481	0.871	
Kolmogorov-Smirnov (NDs = DL)	0.201	0.283	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.551	0.874	
Kolmogorov-Smirnov (NDs = DL/2)	0.191	0.284	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.415	0.908	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.179	0.288	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.957	0.976	0.968	0.938

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.9	0.803	Data Appear Lognormal
Lilliefors (Detects Only)	0.252	0.335	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.934	0.85	Data Appear Lognormal
Lilliefors (NDs = DL)	0.186	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.918	0.85	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.204	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.86	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.249	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Thallium (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	6	39	86.67%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	39	1	4.2	2.591	2.8	0.954
Statistics (Detects Only)	6	0.79	7	2.51	1.5	2.386
Statistics (All: NDs treated as DL value)	45	0.79	7	2.58	2.8	1.198
Statistics (All: NDs treated as DL/2 value)	45	0.5	7	1.457	1.4	1.009
Statistics (Normal ROS Estimated Data)	45	-1.176	7	0.929	0.756	1.265
Statistics (Gamma ROS Estimated Data)	45	0.051	7	3.224	3.437	1.73
Statistics (Lognormal ROS Estimated Data)	45	0.417	7	1.136	0.904	1.011

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.718	1.618	1.461	0.602	0.839	1.394
Statistics (NDs = DL)	4.485	4.201	0.575	0.832	0.509	0.611
Statistics (NDs = DL/2)	3.603	3.378	0.405	0.232	0.521	2.252
Statistics (Gamma ROS Estimates)	2.293	2.155	1.406	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.0317	0.483	-15.24

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.88	0.942	0.771	0.873

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.782	0.788	Data Not Normal
Lilliefors (Detects Only)	0.268	0.362	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.899	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.146	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.635	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.22	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.799	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.18	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.984	0.954	0.851	0.961

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.426	0.706	
Kolmogorov-Smirnov (Detects Only)	0.252	0.337	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.821	0.753	
Kolmogorov-Smirnov (NDs = DL)	0.2	0.132	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.559	0.754	
Kolmogorov-Smirnov (NDs = DL/2)	0.137	0.132	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.342	0.759	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.189	0.133	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.962	0.949	0.949	0.915

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.916	0.788	Data Appear Lognormal
Lilliefors (Detects Only)	0.227	0.362	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.896	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.224	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.91	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.175	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.863	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.182	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Toluene (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	3	14	11	3	21.43%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	3	0.0038	0.0098	0.0064	0.0056	0.00308
Statistics (Detects Only)	11	0.0016	390	41.58	0.32	116
Statistics (All: NDs treated as DL value)	14	0.0016	390	32.67	0.055	103.2
Statistics (All: NDs treated as DL/2 value)	14	0.0016	390	32.67	0.055	103.2
Statistics (Normal ROS Estimated Data)	14	-39.51	390	24.2	0.055	107.4
Statistics (Gamma ROS Estimated Data)	14	1.00E-09	390	32.67	0.055	103.2
Statistics (Lognormal ROS Estimated Data)	14	0.0016	390	32.67	0.055	103.2

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.168	0.179	248.1	-0.785	4.365	-5.56
Statistics (NDs = DL)	0.148	0.164	220.7	-1.716	4.256	-2.481
Statistics (NDs = DL/2)	0.144	0.161	226.2	-1.864	4.392	-2.356
Statistics (Gamma ROS Estimates)	0.0956	0.123	341.7	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.897	4.42	-2.33

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.614	0.57	0.57	0.661

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.408	0.85	Data Not Normal
Lilliefors (Detects Only)	0.459	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.355	0.874	Data Not Normal
Lilliefors (NDs = DL)	0.45	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.355	0.874	Data Not Normal
Lilliefors (NDs = DL/2)	0.45	0.237	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.47	0.874	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.418	0.237	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.949	0.937	0.939	0.958

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.574	0.871	
Kolmogorov-Smirnov (Detects Only)	0.192	0.283	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.153	0.891	
Kolmogorov-Smirnov (NDs = DL)	0.248	0.255	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	1.166	0.892	
Kolmogorov-Smirnov (NDs = DL/2)	0.24	0.255	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	0.35	0.917	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.131	0.258	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.967	0.949	0.94	0.934

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.914	0.85	Data Appear Lognormal
Lilliefors (Detects Only)	0.203	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.883	0.874	Data Appear Lognormal
Lilliefors (NDs = DL)	0.182	0.237	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.864	0.874	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.213	0.237	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.852	0.874	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.243	0.237	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Toluene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	34	11	24.44%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	11	0.004	0.21	0.0265	0.0088	0.0609
Statistics (Detects Only)	34	0.001	1300	38.27	0.0074	222.9
Statistics (All: NDs treated as DL value)	45	0.001	1300	28.92	0.0083	193.8
Statistics (All: NDs treated as DL/2 value)	45	0.001	1300	28.92	0.005	193.8
Statistics (Normal ROS Estimated Data)	45	-50.45	1300	24.26	0.0048	194.9
Statistics (Gamma ROS Estimated Data)	45	1.00E-09	1300	28.91	0.0043	193.8
Statistics (Lognormal ROS Estimated Data)	45	0.001	1300	28.91	0.0048	193.8

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.101	0.109	378.3	-4.371	2.515	-0.575
Statistics (NDs = DL)	0.104	0.112	278.5	-4.42	2.238	-0.506
Statistics (NDs = DL/2)	0.102	0.11	283.9	-4.589	2.269	-0.494
Statistics (Gamma ROS Estimates)	0.0719	0.082	401.9	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.732	2.285	-0.483

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.379	0.343	0.343	0.39

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.176	0.933	Data Not Normal
Lilliefors (Detects Only)	0.538	0.152	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.152	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.536	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.152	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.536	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.19	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.497	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.838	0.801	0.803	0.839

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	10.31	0.953	
Kolmogorov-Smirnov (Detects Only)	0.45	0.171	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	14.26	0.967	
Kolmogorov-Smirnov (NDs = DL)	0.456	0.15	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	14.3	0.968	
Kolmogorov-Smirnov (NDs = DL/2)	0.461	0.15	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	7.253	1.273	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.362	0.164	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.828	0.821	0.813	0.809

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.715	0.933	Data Not Lognormal
Lilliefors (Detects Only)	0.209	0.152	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.71	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.219	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.697	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.191	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.688	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.19	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Toluene (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	8	4	33.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.0049	0.0071	0.00603	0.00605	0.001
Statistics (Detects Only)	8	0.0018	830	267.5	270	285.3
Statistics (All: NDs treated as DL value)	12	0.0018	830	178.3	0.0266	262.9
Statistics (All: NDs treated as DL/2 value)	12	0.0018	830	178.3	0.0248	262.9
Statistics (Normal ROS Estimated Data)	12	-68.44	830	155.5	0.0245	281.3
Statistics (Gamma ROS Estimated Data)	12	0.0018	830	225.6	141.9	235.8
Statistics (Lognormal ROS Estimated Data)	12	0.0018	830	178.3	0.026	262.9

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.196	0.202	1368	1.814	5.798	3.197
Statistics (NDs = DL)	0.137	0.158	1301	-0.498	5.75	-11.54
Statistics (NDs = DL/2)	0.132	0.155	1348	-0.729	5.959	-8.169
Statistics (Gamma ROS Estimates)	0.274	0.261	824.6	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.499	5.75	-11.53

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.932	0.855	0.855	0.894

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.867	0.818	Data Appear Normal
Lilliefors (Detects Only)	0.201	0.313	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.735	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.334	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.735	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.334	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.8	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.293	0.256	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.901	0.921	0.919	0.954

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.128	0.837	
Kolmogorov-Smirnov (Detects Only)	0.355	0.324	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.534	0.887	
Kolmogorov-Smirnov (NDs = DL)	0.321	0.274	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.592	0.888	
Kolmogorov-Smirnov (NDs = DL/2)	0.31	0.274	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.65	0.835	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.411	0.267	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.877	0.88	0.87	0.878

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.745	0.818	Data Not Lognormal
Lilliefors (Detects Only)	0.351	0.313	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.746	0.859	Data Not Lognormal
Lilliefors (NDs = DL)	0.28	0.256	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.727	0.859	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.295	0.256	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.742	0.859	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.289	0.256	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Toluene (s)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	14	3	11	9	2	18.18%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	2	0.0054	0.0068	0.0061	0.0061	9.90E-04
Statistics (Detects Only)	9	0.0062	6000	1072	470	1914
Statistics (All: NDs treated as DL value)	11	0.0054	6000	877.4	210	1766
Statistics (All: NDs treated as DL/2 value)	11	0.0027	6000	877.4	210	1766
Statistics (Normal ROS Estimated Data)	11	-2684	6000	465.5	210	2188
Statistics (Gamma ROS Estimated Data)	11	1.00E-09	6000	877.4	210	1766
Statistics (Lognormal ROS Estimated Data)	11	3.04E-04	6000	877.4	210	1766

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.212	0.215	5052	3.542	5.083	1.435
Statistics (NDs = DL)	0.159	0.176	5532	1.97	5.737	2.912
Statistics (NDs = DL/2)	0.155	0.173	5658	1.844	5.912	3.206
Statistics (Gamma ROS Estimates)	0.105	0.137	8317	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	1.662	6.206	3.735

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.766	0.73	0.73	0.891

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.61	0.829	Data Not Normal
Lilliefors (Detects Only)	0.321	0.295	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.558	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.318	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.558	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.318	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.826	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.244	0.267	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.987	0.988	0.988	0.991

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.448	0.84	
Kolmogorov-Smirnov (Detects Only)	0.219	0.307	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.649	0.875	
Kolmogorov-Smirnov (NDs = DL)	0.206	0.284	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.621	0.876	
Kolmogorov-Smirnov (NDs = DL/2)	0.2	0.284	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.648	0.893	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.258	0.286	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.917	0.92	0.926	0.938

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.829	0.829	Data Not Lognormal
Lilliefors (Detects Only)	0.305	0.295	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.818	0.85	Data Not Lognormal
Lilliefors (NDs = DL)	0.267	0.267	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.829	0.85	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.269	0.267	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.858	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.269	0.267	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Total PCBs (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	6	11	9	2	18.18%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	2	0.0644	1.256	0.66	0.66	0.843
Statistics (Detects Only)	9	0.0532	298	51.51	1.926	98.97
Statistics (All: NDs treated as DL value)	11	0.0532	298	42.26	1.567	90.88
Statistics (All: NDs treated as DL/2 value)	11	0.0322	298	42.2	1.567	90.91
Statistics (Normal ROS Estimated Data)	11	-77.11	298	30.3	1.567	100.5
Statistics (Gamma ROS Estimated Data)	11	1.00E-09	298	42.14	1.567	90.94
Statistics (Lognormal ROS Estimated Data)	11	0.0367	298	42.15	1.567	90.94

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.292	0.273	176.4	1.569	2.782	1.773
Statistics (NDs = DL)	0.262	0.251	161.2	1.055	2.818	2.67
Statistics (NDs = DL/2)	0.252	0.244	167.4	0.929	2.943	3.167
Statistics (Gamma ROS Estimates)	0.126	0.153	333.2	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.765	3.071	4.013

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.77	0.727	0.727	0.847

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.612	0.829	Data Not Normal
Lilliefors (Detects Only)	0.326	0.295	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.551	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.363	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.551	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.363	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.746	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.304	0.267	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.996	0.991	0.992	0.999

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.438	0.81	
Kolmogorov-Smirnov (Detects Only)	0.259	0.302	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.687	0.835	
Kolmogorov-Smirnov (NDs = DL)	0.291	0.278	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	0.625	0.839	
Kolmogorov-Smirnov (NDs = DL/2)	0.279	0.279	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	0.48	0.886	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.183	0.285	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.986	0.979	0.985	0.981

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.967	0.829	Data Appear Lognormal
Lilliefors (Detects Only)	0.184	0.295	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.946	0.85	Data Appear Lognormal
Lilliefors (NDs = DL)	0.193	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.958	0.85	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.173	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.945	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.151	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Total PCBs (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	27	20	16	4	20.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.103	498	131.1	13.23	244.7
Statistics (Detects Only)	16	0.0519	403	35.48	5.729	99.36
Statistics (All: NDs treated as DL value)	20	0.0519	498	54.61	5.729	137.1
Statistics (All: NDs treated as DL/2 value)	20	0.0516	403	41.5	5.729	101.5
Statistics (Normal ROS Estimated Data)	20	-57.07	403	26.67	5.729	91.3
Statistics (Gamma ROS Estimated Data)	20	0.0519	403	35.11	6.654	88.29
Statistics (Lognormal ROS Estimated Data)	20	0.0519	403	28.64	3.4	89.39

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.316	0.302	112.2	1.408	2.332	1.657
Statistics (NDs = DL)	0.284	0.275	192	1.555	2.519	1.62
Statistics (NDs = DL/2)	0.299	0.287	138.9	1.417	2.501	1.765
Statistics (Gamma ROS Estimates)	0.383	0.359	91.64	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	1.055	2.271	2.152

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.596	0.65	0.662	0.636

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.385	0.887	Data Not Normal
Lilliefors (Detects Only)	0.381	0.222	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.438	0.905	Data Not Normal
Lilliefors (NDs = DL)	0.4	0.198	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.459	0.905	Data Not Normal
Lilliefors (NDs = DL/2)	0.39	0.198	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.44	0.905	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.354	0.198	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/;	Gamma ROS
Correlation Coefficient R	0.906	0.933	0.957	0.878

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.953	0.834	
Kolmogorov-Smirnov (Detects Only)	0.23	0.232	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL)	1.262	0.851	
Kolmogorov-Smirnov (NDs = DL)	0.22	0.211	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.066	0.845	
Kolmogorov-Smirnov (NDs = DL/2)	0.239	0.21	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.634	0.827	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.156	0.208	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/;	Log ROS
Correlation Coefficient R	0.981	0.983	0.98	0.988

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.966	0.887	Data Appear Lognormal
Lilliefors (Detects Only)	0.122	0.222	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.961	0.905	Data Appear Lognormal
Lilliefors (NDs = DL)	0.124	0.198	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.955	0.905	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.115	0.198	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.975	0.905	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.097	0.198	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Total PCBs (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	50	12	38	18	20	52.63%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	20	0.0849	24.48	2.132	0.959	5.37
Statistics (Detects Only)	18	0.0687	11.44	2.059	0.976	2.672
Statistics (All: NDs treated as DL value)	38	0.0687	24.48	2.097	0.976	4.253
Statistics (All: NDs treated as DL/2 value)	38	0.0425	12.24	1.536	0.499	2.689
Statistics (Normal ROS Estimated Data)	38	-2.469	11.44	0.389	0.124	2.514
Statistics (Gamma ROS Estimated Data)	38	0.0687	11.44	1.987	1.919	1.84
Statistics (Lognormal ROS Estimated Data)	38	0.0629	11.44	1.063	0.202	2.049

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.813	0.766	2.532	-0.00655	1.376	-210
Statistics (NDs = DL)	0.632	0.6	3.318	-0.229	1.418	-6.183
Statistics (NDs = DL/2)	0.603	0.573	2.547	-0.594	1.512	-2.544
Statistics (Gamma ROS Estimates)	1.537	1.433	1.293	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.024	1.414	-1.381

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/;	Normal ROS
Correlation Coefficient R	0.809	0.652	0.729	0.882

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.677	0.897	Data Not Normal
Lilliefors (Detects Only)	0.241	0.209	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.46	0.938	Data Not Normal
Lilliefors (NDs = DL)	0.317	0.144	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.548	0.938	Data Not Normal
Lilliefors (NDs = DL/2)	0.317	0.144	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.802	0.938	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.195	0.144	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/;	Gamma ROS
Correlation Coefficient R	0.953	0.893	0.938	0.879

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.333	0.775	
Kolmogorov-Smirnov (Detects Only)	0.135	0.211	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.467	0.8	
Kolmogorov-Smirnov (NDs = DL)	0.201	0.15	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.399	0.803	
Kolmogorov-Smirnov (NDs = DL/2)	0.187	0.15	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.283	0.766	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.168	0.146	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/;	Log ROS
Correlation Coefficient R	0.98	0.973	0.976	0.962

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.957	0.897	Data Appear Lognormal
Lilliefors (Detects Only)	0.149	0.209	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.94	0.938	Data Appear Lognormal
Lilliefors (NDs = DL)	0.157	0.144	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.937	0.938	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.157	0.144	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.912	0.938	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.184	0.144	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Total PCBs (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	14	22	17	5	22.73%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	0.1	2.98	1.297	1.031	1.275
Statistics (Detects Only)	17	0.451	220.6	31.18	1.802	65.03
Statistics (All: NDs treated as DL value)	22	0.1	220.6	24.39	1.685	58.2
Statistics (All: NDs treated as DL/2 value)	22	0.0502	220.6	24.24	1.511	58.26
Statistics (Normal ROS Estimated Data)	22	-80.79	220.6	14.26	1.444	66.99
Statistics (Gamma ROS Estimated Data)	22	1.00E-09	220.6	24.85	1.685	58.04
Statistics (Lognormal ROS Estimated Data)	22	0.0408	220.6	24.17	1.444	58.29

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.32	0.306	97.51	1.305	2.054	1.573
Statistics (NDs = DL)	0.301	0.29	80.98	0.906	2.059	2.273
Statistics (NDs = DL/2)	0.285	0.276	85.05	0.748	2.186	2.921
Statistics (Gamma ROS Estimates)	0.158	0.166	157.6	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.625	2.293	3.669

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.73	0.679	0.678	0.835

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.544	0.892	Data Not Normal
Lilliefors (Detects Only)	0.413	0.215	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.474	0.911	Data Not Normal
Lilliefors (NDs = DL)	0.418	0.189	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.473	0.911	Data Not Normal
Lilliefors (NDs = DL/2)	0.417	0.189	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.715	0.911	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.351	0.189	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.963	0.955	0.957	0.967

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	2.05	0.837	
Kolmogorov-Smirnov (Detects Only)	0.329	0.226	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.679	0.847	
Kolmogorov-Smirnov (NDs = DL)	0.35	0.201	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.643	0.854	
Kolmogorov-Smirnov (NDs = DL/2)	0.335	0.202	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.539	0.909	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.29	0.207	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.925	0.951	0.952	0.959

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.843	0.892	Data Not Lognormal
Lilliefors (Detects Only)	0.226	0.215	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.901	0.911	Data Not Lognormal
Lilliefors (NDs = DL)	0.215	0.189	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.905	0.911	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.204	0.189	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.916	0.911	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.181	0.189	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Total PCBs (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	8	41	31	10	24.39%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	10	0.0965	6.35	2.056	0.371	2.681
Statistics (Detects Only)	31	0.0434	38	5.129	1.403	8.327
Statistics (All: NDs treated as DL value)	41	0.0434	38	4.379	1.317	7.444
Statistics (All: NDs treated as DL/2 value)	41	0.0434	38	4.129	1.168	7.456
Statistics (Normal ROS Estimated Data)	41	-6.319	38	3.228	1.055	8.095
Statistics (Gamma ROS Estimated Data)	41	0.0434	38	4.578	1.934	7.3
Statistics (Lognormal ROS Estimated Data)	41	0.0434	38	3.943	1.023	7.515

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.535	0.512	9.592	0.459	1.739	3.788
Statistics (NDs = DL)	0.505	0.484	8.671	0.221	1.786	8.071
Statistics (NDs = DL/2)	0.47	0.452	8.791	0.0522	1.88	36.02
Statistics (Gamma ROS Estimates)	0.653	0.621	7.014	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.0436	1.793	-41.13

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.786	0.77	0.751	0.837

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.635	0.929	Data Not Normal
Lilliefors (Detects Only)	0.299	0.159	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.615	0.941	Data Not Normal
Lilliefors (NDs = DL)	0.28	0.138	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.586	0.941	Data Not Normal
Lilliefors (NDs = DL/2)	0.328	0.138	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.725	0.941	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.28	0.138	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.985	0.982	0.979	0.967

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.788	0.807	
Kolmogorov-Smirnov (Detects Only)	0.166	0.166	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.848	0.813	
Kolmogorov-Smirnov (NDs = DL)	0.142	0.146	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	0.917	0.82	
Kolmogorov-Smirnov (NDs = DL/2)	0.148	0.146	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.877	0.799	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.158	0.144	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.984	0.983	0.981	0.983

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.959	0.929	Data Appear Lognormal
Lilliefors (Detects Only)	0.111	0.159	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.951	0.941	Data Appear Lognormal
Lilliefors (NDs = DL)	0.129	0.138	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.944	0.941	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.11	0.138	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.95	0.941	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.129	0.138	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Total PCBs (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	8	4	33.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.0898	0.0994	0.0932	0.0919	0.00446
Statistics (Detects Only)	8	0.0791	278.2	64.05	4.225	113.5
Statistics (All: NDs treated as DL value)	12	0.0791	278.2	42.73	0.213	95.85
Statistics (All: NDs treated as DL/2 value)	12	0.0449	278.2	42.72	0.21	95.86
Statistics (Normal ROS Estimated Data)	12	-86.35	278.2	15.56	0.21	115.6
Statistics (Gamma ROS Estimated Data)	12	1.00E-09	278.2	42.72	0.271	95.86
Statistics (Lognormal ROS Estimated Data)	12	0.0168	278.2	42.71	0.21	95.86

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.245	0.239	261.5	1.25	3.194	2.555
Statistics (NDs = DL)	0.198	0.204	215.3	0.0423	3.111	73.61
Statistics (NDs = DL/2)	0.188	0.197	226.8	-0.189	3.318	-17.58
Statistics (Gamma ROS Estimates)	0.0988	0.13	432.3	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.47	3.603	-7.661

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.794	0.706	0.707	0.87

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.628	0.818	Data Not Normal
Lilliefors (Detects Only)	0.426	0.313	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.51	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.458	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.511	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.458	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.76	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.345	0.256	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.928	0.941	0.941	0.929

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.549	0.819	
Kolmogorov-Smirnov (Detects Only)	0.234	0.32	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.521	0.866	
Kolmogorov-Smirnov (NDs = DL)	0.283	0.271	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.355	0.869	
Kolmogorov-Smirnov (NDs = DL/2)	0.267	0.272	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	0.516	0.901	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.199	0.276	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.971	0.902	0.921	0.947

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.916	0.818	Data Appear Lognormal
Lilliefors (Detects Only)	0.151	0.313	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.794	0.859	Data Not Lognormal
Lilliefors (NDs = DL)	0.275	0.256	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.827	0.859	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.244	0.256	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.874	0.859	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.2	0.256	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Xylenes, Total (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	3	14	11	3	21.43%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	3	0.0076	0.011	0.00897	0.0083	0.0018
Statistics (Detects Only)	11	0.0013	14000	1603	1.7	4141
Statistics (All: NDs treated as DL value)	14	0.0013	14000	1260	0.328	3696
Statistics (All: NDs treated as DL/2 value)	14	0.0013	14000	1260	0.328	3696
Statistics (Normal ROS Estimated Data)	14	-1413	14000	957.1	0.328	3852
Statistics (Gamma ROS Estimated Data)	14	1.00E-09	14000	1260	0.328	3696
Statistics (Lognormal ROS Estimated Data)	14	0.0013	14000	1260	0.328	3696

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.135	0.153	11910	1.582	5.927	3.747
Statistics (NDs = DL)	0.115	0.138	10918	0.23	5.852	25.43
Statistics (NDs = DL/2)	0.113	0.137	11125	0.0816	5.993	73.46
Statistics (Gamma ROS Estimates)	0.0806	0.111	15625	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.083	5.992	72.17

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.638	0.594	0.594	0.682

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.437	0.85	Data Not Normal
Lilliefors (Detects Only)	0.419	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.383	0.874	Data Not Normal
Lilliefors (NDs = DL)	0.409	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.383	0.874	Data Not Normal
Lilliefors (NDs = DL/2)	0.409	0.237	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.498	0.874	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.375	0.237	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.966	0.96	0.96	0.972

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.566	0.883	
Kolmogorov-Smirnov (Detects Only)	0.222	0.285	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.118	0.902	
Kolmogorov-Smirnov (NDs = DL)	0.258	0.256	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.121	0.903	
Kolmogorov-Smirnov (NDs = DL/2)	0.252	0.256	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	0.428	0.952	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.164	0.262	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.955	0.937	0.932	0.931

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.89	0.85	Data Appear Lognormal
Lilliefors (Detects Only)	0.252	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.857	0.874	Data Not Lognormal
Lilliefors (NDs = DL)	0.22	0.237	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.846	0.874	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.228	0.237	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.844	0.874	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.228	0.237	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Xylenes, Total (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	13	34	26	8	23.53%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	8	0.0068	20	3.012	0.02	7.004
Statistics (Detects Only)	26	9.70E-04	600	48.02	3.2	135.3
Statistics (All: NDs treated as DL value)	34	9.70E-04	600	37.43	2.4	119.3
Statistics (All: NDs treated as DL/2 value)	34	9.70E-04	600	37.08	2.2	119.4
Statistics (Normal ROS Estimated Data)	34	-89.72	600	22.41	1.835	127.6
Statistics (Gamma ROS Estimated Data)	34	1.00E-09	600	36.72	1.3	119.5
Statistics (Lognormal ROS Estimated Data)	34	9.70E-04	600	36.73	1.3	119.5

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.217	0.217	221.3	0.523	3.58	6.843
Statistics (NDs = DL)	0.192	0.195	194.5	-0.226	3.684	-16.32
Statistics (NDs = DL/2)	0.186	0.189	199.4	-0.389	3.805	-9.786
Statistics (Gamma ROS Estimates)	0.1	0.111	365.5	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.564	3.749	-6.642

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.614	0.57	0.568	0.7

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.4	0.92	Data Not Normal
Lilliefors (Detects Only)	0.396	0.174	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.353	0.933	Data Not Normal

Lilliefors (NDs = DL)	0.411	0.152	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.35	0.933	Data Not Normal
Lilliefors (NDs = DL/2)	0.416	0.152	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.521	0.933	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.367	0.152	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.954	0.942	0.943	0.973

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.832	0.886	
Kolmogorov-Smirnov (Detects Only)	0.182	0.189	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.385	0.903	
Kolmogorov-Smirnov (NDs = DL)	0.163	0.167	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	1.429	0.907	
Kolmogorov-Smirnov (NDs = DL/2)	0.169	0.168	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.973	0.953	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.163	0.171	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.974	0.974	0.968	0.975

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.941	0.92	Data Appear Lognormal
Lilliefors (Detects Only)	0.155	0.174	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.933	0.933	Data Appear Lognormal
Lilliefors (NDs = DL)	0.147	0.152	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.921	0.933	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.141	0.152	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.935	0.933	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.145	0.152	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Xylenes, Total (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	50	6	44	27	17	38.64%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	17	0.0076	0.015	0.0111	0.011	0.00215
Statistics (Detects Only)	27	0.0012	630	26.54	0.015	121.1
Statistics (All: NDs treated as DL value)	44	0.0012	630	16.29	0.011	95.09
Statistics (All: NDs treated as DL/2 value)	44	0.0012	630	16.29	0.0059	95.09
Statistics (Normal ROS Estimated Data)	44	-38.31	630	11.28	0.00505	96.59
Statistics (Gamma ROS Estimated Data)	44	0.0012	630	27.47	5.05	94.2
Statistics (Lognormal ROS Estimated Data)	44	7.92E-04	630	16.29	0.00512	95.09

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.129	0.135	206.2	-2.824	3.582	-1.268
Statistics (NDs = DL)	0.126	0.132	129.6	-3.478	2.91	-0.837
Statistics (NDs = DL/2)	0.121	0.128	134.4	-3.746	3.025	-0.808
Statistics (Gamma ROS Estimates)	0.197	0.199	139.5	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.84	3.128	-0.815

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.451	0.381	0.381	0.465

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.234	0.923	Data Not Normal
Lilliefors (Detects Only)	0.48	0.171	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.181	0.944	Data Not Normal
Lilliefors (NDs = DL)	0.481	0.134	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.181	0.944	Data Not Normal
Lilliefors (NDs = DL/2)	0.481	0.134	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.259	0.944	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.456	0.134	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.884	0.828	0.832	0.805

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	4.147	0.93	
Kolmogorov-Smirnov (Detects Only)	0.313	0.189	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	10.04	0.952	
Kolmogorov-Smirnov (NDs = DL)	0.395	0.15	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	10.23	0.954	
Kolmogorov-Smirnov (NDs = DL/2)	0.383	0.151	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.817	0.907	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.18	0.148	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.924	0.862	0.839	0.882

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.849	0.923	Data Not Lognormal
Lilliefors (Detects Only)	0.207	0.171	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.75	0.944	Data Not Lognormal

Lilliefors (NDs = DL)	0.317	0.134	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.71	0.944	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.307	0.134	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.781	0.944	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.253	0.134	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Xylenes, Total (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	36	8	28	19	9	32.14%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	9	0.0083	0.0215	0.0137	0.015	0.00443
Statistics (Detects Only)	19	3.90E-04	300	20.44	0.026	70.12
Statistics (All: NDs treated as DL value)	28	3.90E-04	300	13.87	0.0155	58.07
Statistics (All: NDs treated as DL/2 value)	28	3.90E-04	300	13.87	0.00825	58.07
Statistics (Normal ROS Estimated Data)	28	-21.21	300	10.22	0.0047	59.32
Statistics (Gamma ROS Estimated Data)	28	1.00E-09	300	14.08	0.0047	58.03
Statistics (Lognormal ROS Estimated Data)	28	3.90E-04	300	13.87	0.0047	58.07

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.128	0.138	159.6	-3.12	3.781	-1.212
Statistics (NDs = DL)	0.128	0.138	108.4	-3.511	3.146	-0.896
Statistics (NDs = DL/2)	0.124	0.135	111.8	-3.733	3.223	-0.863
Statistics (Gamma ROS Estimates)	0.0787	0.0941	178.9	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.143	3.456	-0.834

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.554	0.486	0.486	0.562

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.335	0.901	Data Not Normal
Lilliefors (Detects Only)	0.475	0.203	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.266	0.924	Data Not Normal
Lilliefors (NDs = DL)	0.48	0.167	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.266	0.924	Data Not Normal
Lilliefors (NDs = DL/2)	0.48	0.167	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.35	0.924	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.455	0.167	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.959	0.924	0.927	0.959

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	2.807	0.915	
Kolmogorov-Smirnov (Detects Only)	0.382	0.223	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	5.775	0.93	
Kolmogorov-Smirnov (NDs = DL)	0.429	0.186	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	5.794	0.932	
Kolmogorov-Smirnov (NDs = DL/2)	0.419	0.186	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.651	1.08	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.249	0.196	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.945	0.905	0.898	0.9

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.891	0.901	Data Not Lognormal
Lilliefors (Detects Only)	0.216	0.203	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.826	0.924	Data Not Lognormal
Lilliefors (NDs = DL)	0.226	0.167	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.812	0.924	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.213	0.167	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.81	0.924	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.173	0.167	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Xylenes, Total (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	49	4	45	32	13	28.89%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	13	0.008	0.42	0.0424	0.01	0.113
Statistics (Detects Only)	32	5.60E-04	1900	59.62	0.0062	335.8
Statistics (All: NDs treated as DL value)	45	5.60E-04	1900	42.41	0.00915	283.2
Statistics (All: NDs treated as DL/2 value)	45	5.60E-04	1900	42.41	0.006	283.2
Statistics (Normal ROS Estimated Data)	45	-77.5	1900	39.02	0.0041	284.1
Statistics (Gamma ROS Estimated Data)	45	1.00E-09	1900	42.6	0.0036	283.2
Statistics (Lognormal ROS Estimated Data)	45	5.60E-04	1900	42.4	0.0041	283.2

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.0985	0.107	605	-4.168	3.154	-0.757
Statistics (NDs = DL)	0.102	0.11	415.8	-4.195	2.704	-0.645
Statistics (NDs = DL/2)	0.0998	0.108	425	-4.395	2.728	-0.621
Statistics (Gamma ROS Estimates)	0.0695	0.0797	613.1	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.65	2.776	-0.597

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.388	0.344	0.344	0.38

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.182	0.93	Data Not Normal
Lilliefors (Detects Only)	0.535	0.157	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.152	0.945	Data Not Normal
Lilliefors (NDs = DL)	0.532	0.132	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.152	0.945	Data Not Normal
Lilliefors (NDs = DL/2)	0.532	0.132	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.183	0.945	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.483	0.132	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.849	0.804	0.806	0.845

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	7.969	0.962	
Kolmogorov-Smirnov (Detects Only)	0.403	0.177	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	12.39	0.968	
Kolmogorov-Smirnov (NDs = DL)	0.411	0.15	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	12.63	0.972	
Kolmogorov-Smirnov (NDs = DL/2)	0.419	0.15	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	5.474	1.3	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.3	0.166	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.898	0.886	0.868	0.86

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.819	0.93	Data Not Lognormal
Lilliefors (Detects Only)	0.183	0.157	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.806	0.945	Data Not Lognormal
Lilliefors (NDs = DL)	0.232	0.132	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.776	0.945	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.227	0.132	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.76	0.945	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.203	0.132	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Xylenes, Total (r)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	16	4	12	11	1	8.33%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	11	9.50E-04	280	49.46	0.041	86.63
Statistics (All: NDs treated as DL value)	12	9.50E-04	280	45.34	0.0275	83.82
Statistics (All: NDs treated as DL/2 value)	12	9.50E-04	280	45.34	0.0251	83.82
Statistics (Normal ROS Estimated Data)	12	-6.842	280	44.77	0.0251	84.18
Statistics (Gamma ROS Estimated Data)	12	1.00E-09	280	45.34	0.0251	83.82
Statistics (Lognormal ROS Estimated Data)	12	9.50E-04	280	45.34	0.0251	83.82

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.149	0.167	332.9	-1.279	5.469	-4.277
Statistics (NDs = DL)	0.145	0.164	313.5	-1.528	5.285	-3.459
Statistics (NDs = DL/2)	0.143	0.163	316.4	-1.586	5.321	-3.356
Statistics (Gamma ROS Estimates)	0.118	0.144	383.1	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.635	5.358	-3.277

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.803	0.784	0.784	0.793

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.659	0.85	Data Not Normal
Lilliefors (Detects Only)	0.295	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.631	0.859	Data Not Normal
Lilliefors (NDs = DL)	0.312	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.631	0.859	Data Not Normal
Lilliefors (NDs = DL/2)	0.312	0.256	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.647	0.859	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.309	0.256	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.982	0.985	0.985	0.981

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.881	0.878	
Kolmogorov-Smirnov (Detects Only)	0.264	0.284	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL)	0.988	0.884	
Kolmogorov-Smirnov (NDs = DL)	0.29	0.273	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.022	0.884	
Kolmogorov-Smirnov (NDs = DL/2)	0.287	0.273	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.655	0.893	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.224	0.275	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.915	0.92	0.916	0.913

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.805	0.85	Data Not Lognormal
Lilliefors (Detects Only)	0.218	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.815	0.859	Data Not Lognormal
Lilliefors (NDs = DL)	0.207	0.256	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.808	0.859	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.221	0.256	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.803	0.859	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.216	0.256	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Xylenes, Total (s)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	14	3	11	10	1	9.09%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	10	0.0042	7300	1368	640	2229
Statistics (All: NDs treated as DL value)	11	0.0042	7300	1244	310	2154
Statistics (All: NDs treated as DL/2 value)	11	0.0042	7300	1244	310	2154
Statistics (Normal ROS Estimated Data)	11	-1071	7300	1146	310	2239
Statistics (Gamma ROS Estimated Data)	11	1.00E-09	7300	1244	310	2154
Statistics (Lognormal ROS Estimated Data)	11	0.0042	7300	1244	310	2154

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.177	0.189	7732	2.983	5.791	1.941
Statistics (NDs = DL)	0.158	0.176	7867	2.302	5.94	2.581
Statistics (NDs = DL/2)	0.156	0.174	7956	2.239	6.023	2.69
Statistics (Gamma ROS Estimates)	0.125	0.152	9934	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	2.287	5.96	2.606

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.801	0.784	0.784	0.835

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.662	0.842	Data Not Normal
Lilliefors (Detects Only)	0.271	0.28	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.636	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.282	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.636	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.282	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.726	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.244	0.267	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.984	0.985	0.985	0.983

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.68	0.862	
Kolmogorov-Smirnov (Detects Only)	0.235	0.295	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.759	0.875	
Kolmogorov-Smirnov (NDs = DL)	0.214	0.284	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.777	0.875	
Kolmogorov-Smirnov (NDs = DL/2)	0.215	0.284	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.636	0.886	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.24	0.285	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.916	0.92	0.917	0.92

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.814	0.842	Data Not Lognormal
Lilliefors (Detects Only)	0.283	0.28	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.818	0.85	Data Not Lognormal
Lilliefors (NDs = DL)	0.264	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.81	0.85	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.265	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.816	0.85	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.264	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Vanadium (p)

Raw Statistics	
Number of Valid Observations	35
Number of Missing Values	12
Number of Distinct Observations	23
Minimum	0.63
Maximum	260
Mean of Raw Data	29.62
Standard Deviation of Raw Data	41.27
Kstar	1.329
Mean of Log Transformed Data	3.001
Standard Deviation of Log Transformed Data	0.97

Normal Distribution Test Results	
Correlation Coefficient R	0.576
Shapiro Wilk Test Statistic	0.374
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.372
Lilliefors Critical (0.95) Value	0.15
Data not Normal at (0.05) Significance Level	

Gamma Distribution Test Results	
Correlation Coefficient R	0.726
A-D Test Statistic	3.369
A-D Critical (0.95) Value	0.768
K-S Test Statistic	0.242
K-S Critical(0.95) Value	0.152
Data not Gamma Distributed at (0.05) Significance Level	

Lognormal Distribution Test Results	
Correlation Coefficient R	0.839
Shapiro Wilk Test Statistic	0.743
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.255
Lilliefors Critical (0.95) Value	0.15
Data not Lognormal at (0.05) Significance Level	

Vanadium (q north)

Raw Statistics	
Number of Valid Observations	29
Number of Missing Values	7
Number of Distinct Observations	26
Minimum	7.7
Maximum	380
Mean of Raw Data	47.49
Standard Deviation of Raw Data	81.45
Kstar	0.894
Mean of Log Transformed Data	3.264
Standard Deviation of Log Transformed Data	0.934

Normal Distribution Test Results	
Correlation Coefficient R	0.669
Shapiro Wilk Test Statistic	0.47
Shapiro Wilk Critical (0.95) Value	0.926
Lilliefors Test Statistic	0.355
Lilliefors Critical (0.95) Value	0.165
Data not Normal at (0.05) Significance Level	

Gamma Distribution Test Results	
Correlation Coefficient R	0.875
A-D Test Statistic	2.558
A-D Critical (0.95) Value	0.775
K-S Test Statistic	0.251
K-S Critical(0.95) Value	0.168
Data not Gamma Distributed at (0.05) Significance Level	

Lognormal Distribution Test Results	
Correlation Coefficient R	0.943
Shapiro Wilk Test Statistic	0.89
Shapiro Wilk Critical (0.95) Value	0.926
Lilliefors Test Statistic	0.166
Lilliefors Critical (0.95) Value	0.165
Data not Lognormal at (0.05) Significance Level	

Goodness of Fit Tests – Sediment

Arsenic (river)

Raw Statistics	
Number of Valid Observations	56
Number of Distinct Observations	35
Minimum	0.98
Maximum	7.5
Mean of Raw Data	2.814
Standard Deviation of Raw Data	1.514
Kstar	3.835
Mean of Log Transformed Data	0.906
Standard Deviation of Log Transformed Data	0.506

Normal Distribution Test Results

Correlation Coefficient R	0.944
Lilliefors Test Statistic	0.157
Lilliefors Critical (0.95) Value	0.118

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.99
A-D Test Statistic	0.734
A-D Critical (0.95) Value	0.754
K-S Test Statistic	0.12
K-S Critical(0.95) Value	0.119

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.991
Lilliefors Test Statistic	0.0916
Lilliefors Critical (0.95) Value	0.118

Data appear Lognormal at (0.05) Significance Level

Goodness of Fit Tests – Surface Water

Antimony (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	0	24	12	12	50.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	12	2	2.7	2.317	2.25	0.229
Statistics (Detects Only)	12	0.52	47	7.163	1.725	13.99
Statistics (All: NDs treated as DL value)	24	0.52	47	4.74	2.2	9.991
Statistics (All: NDs treated as DL/2 value)	24	0.52	47	4.16	1.225	10.15
Statistics (Normal ROS Estimated Data)	24	-3.862	47	4.242	1.679	10.36
Statistics (Gamma ROS Estimated Data)	24	0.52	47	7.167	5.756	9.717
Statistics (Lognormal ROS Estimated Data)	24	0.52	47	4.155	1.3	10.16

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.555	0.514	12.9	0.843	1.365	1.62
Statistics (NDs = DL)	0.825	0.75	5.746	0.839	0.947	1.128
Statistics (NDs = DL/2)	0.654	0.6	6.361	0.493	1.012	2.054
Statistics (Gamma ROS Estimates)	1.011	0.912	7.092	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.45	1.067	2.374

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.711	0.588	0.578	0.703

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.528	0.859	Data Not Normal
Lilliefors (Detects Only)	0.456	0.256	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.372	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.494	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.36	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.47	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.522	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.357	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.944	0.822	0.844	0.906

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.583	0.781	
Kolmogorov-Smirnov (Detects Only)	0.387	0.258	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	4.273	0.779	
Kolmogorov-Smirnov (NDs = DL)	0.439	0.184	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	4.94	0.792	
Kolmogorov-Smirnov (NDs = DL/2)	0.371	0.186	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.777	0.772	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.212	0.183	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.918	0.853	0.817	0.874

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.845	0.859	Data Not Lognormal
Lilliefors (Detects Only)	0.279	0.256	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.748	0.916	Data Not Lognormal
Lilliefors (NDs = DL)	0.337	0.181	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.685	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.311	0.181	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.773	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.21	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Arsenic (p)

Raw Statistics	
Number of Valid Observations	35
Number of Missing Values	12
Number of Distinct Observations	25
Minimum	0.95
Maximum	27
Mean of Raw Data	10.65
Standard Deviation of Raw Data	6.45
Kstar	1.944
Mean of Log Transformed Data	2.109
Standard Deviation of Log Transformed Data	0.831

Normal Distribution Test Results

Correlation Coefficient R	0.974
Shapiro Wilk Test Statistic	0.942
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.0973
Lilliefors Critical (0.95) Value	0.15

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.968
A-D Test Statistic	0.853
A-D Critical (0.95) Value	0.759
K-S Test Statistic	0.172
K-S Critical(0.95) Value	0.151

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.947
Shapiro Wilk Test Statistic	0.892
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.189
Lilliefors Critical (0.95) Value	0.15

Data not Lognormal at (0.05) Significance Level

Arsenic (q central)

Raw Statistics	
Number of Valid Observations	19
Number of Missing Values	1
Number of Distinct Observations	15
Minimum	1.1
Maximum	81
Mean of Raw Data	9.529
Standard Deviation of Raw Data	18.07
Kstar	0.764
Mean of Log Transformed Data	1.575
Standard Deviation of Log Transformed Data	1.012

Normal Distribution Test Results

Correlation Coefficient R	0.64
Shapiro Wilk Test Statistic	0.439
Shapiro Wilk Critical (0.95) Value	0.901
Lilliefors Test Statistic	0.404
Lilliefors Critical (0.95) Value	0.203

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.859

A-D Test Statistic	1.811
A-D Critical (0.95) Value	0.774
K-S Test Statistic	0.318
K-S Critical(0.95) Value	0.205

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.942
Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical (0.95) Value	0.901
Lilliefors Test Statistic	0.215
Lilliefors Critical (0.95) Value	0.203

Data not Lognormal at (0.05) Significance Level

Arsenic (q north)

Raw Statistics

Number of Valid Observations	11
Number of Distinct Observations	11
Minimum	2.3
Maximum	100
Mean of Raw Data	13.75
Standard Deviation of Raw Data	28.73
Kstar	0.589
Mean of Log Transformed Data	1.794
Standard Deviation of Log Transformed Data	1.05

Normal Distribution Test Results

Correlation Coefficient R	0.627
Shapiro Wilk Test Statistic	0.425
Shapiro Wilk Critical (0.95) Value	0.85
Lilliefors Test Statistic	0.447
Lilliefors Critical (0.95) Value	0.267

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.862
A-D Test Statistic	1.81
A-D Critical (0.95) Value	0.764
K-S Test Statistic	0.323
K-S Critical(0.95) Value	0.265

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.866
Shapiro Wilk Test Statistic	0.771
Shapiro Wilk Critical (0.95) Value	0.85
Lilliefors Test Statistic	0.228
Lilliefors Critical (0.95) Value	0.267

Data not Lognormal at (0.05) Significance Level

Arsenic (q south)

Raw Statistics

Number of Valid Observations	24
Number of Distinct Observations	22
Minimum	3.3
Maximum	33
Mean of Raw Data	8.29
Standard Deviation of Raw Data	6.444
Kstar	2.682
Mean of Log Transformed Data	1.941

Standard Deviation of Log Transformed Data	0.543

Normal Distribution Test Results

Correlation Coefficient R	0.796
Shapiro Wilk Test Statistic	0.654
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.32
Lilliefors Critical (0.95) Value	0.181

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.906
A-D Test Statistic	1.428
A-D Critical (0.95) Value	0.751
K-S Test Statistic	0.24
K-S Critical(0.95) Value	0.179

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.945
Shapiro Wilk Test Statistic	0.899
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.19
Lilliefors Critical (0.95) Value	0.181

Data not Lognormal at (0.05) Significance Level

Benzo(a)anthracene (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	1	19	15	4	21.05%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.34	0.46	0.395	0.39	0.05
Statistics (Detects Only)	15	0.035	3.6	0.623	0.25	0.916
Statistics (All: NDs treated as DL value)	19	0.035	3.6	0.575	0.34	0.814
Statistics (All: NDs treated as DL/2 value)	19	0.035	3.6	0.534	0.21	0.828
Statistics (Normal ROS Estimated Data)	19	0.035	3.6	0.544	0.219	0.824
Statistics (Gamma ROS Estimated Data)	19	0.035	3.6	0.607	0.425	0.809
Statistics (Lognormal ROS Estimated Data)	19	0.035	3.6	0.528	0.205	0.83

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.873	0.771	0.714	-1.144	1.161	-1.014
Statistics (NDs = DL)	1.049	0.918	0.549	-1.1	1.029	-0.935
Statistics (NDs = DL/2)	0.94	0.827	0.568	-1.246	1.045	-0.838
Statistics (Gamma ROS Estimates)	1.075	0.941	0.564	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.275	1.057	-0.829

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.772	0.745	0.727	0.73

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.618	0.881	Data Not Normal
Lilliefors (Detects Only)	0.317	0.229	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.581	0.901	Data Not Normal
Lilliefors (NDs = DL)	0.346	0.203	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.553	0.901	Data Not Normal
Lilliefors (NDs = DL/2)	0.339	0.203	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.558	0.901	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.345	0.203	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.954	0.923	0.924	0.931

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.728	0.769	
Kolmogorov-Smirnov (Detects Only)	0.216	0.229	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.857	0.768	
Kolmogorov-Smirnov (NDs = DL)	0.244	0.204	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.464	0.772	
Kolmogorov-Smirnov (NDs = DL/2)	0.254	0.205	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.556	0.767	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.166	0.204	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.981	0.978	0.954	0.952

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.971	0.881	Data Appear Lognormal
Lilliefors (Detects Only)	0.132	0.229	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.971	0.901	Data Appear Lognormal
Lilliefors (NDs = DL)	0.166	0.203	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.926	0.901	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.185	0.203	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.919	0.901	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.185	0.203	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)anthracene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	0	24	19	5	20.83%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	0.36	0.46	0.396	0.38	0.0385
Statistics (Detects Only)	19	0.03	2.515	0.555	0.069	0.848
Statistics (All: NDs treated as DL value)	24	0.03	2.515	0.522	0.14	0.753
Statistics (All: NDs treated as DL/2 value)	24	0.03	2.515	0.481	0.14	0.765
Statistics (Normal ROS Estimated Data)	24	0.0178	2.515	0.498	0.103	0.762
Statistics (Gamma ROS Estimated Data)	24	0.03	2.515	0.557	0.14	0.75
Statistics (Lognormal ROS Estimated Data)	24	0.03	2.515	0.46	0.0891	0.774

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.514	0.478	1.079	-1.819	1.565	-0.86
Statistics (NDs = DL)	0.625	0.574	0.835	-1.634	1.433	-0.877
Statistics (NDs = DL/2)	0.592	0.546	0.811	-1.778	1.388	-0.78
Statistics (Gamma ROS Estimates)	0.63	0.579	0.884	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.937	1.413	-0.73

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.809	0.824	0.783	0.809

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.649	0.901	Data Not Normal
Lilliefors (Detects Only)	0.395	0.203	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.677	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.324	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.613	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.42	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.653	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.359	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.934	0.961	0.942	0.969

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	2.327	0.801	
Kolmogorov-Smirnov (Detects Only)	0.282	0.21	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.541	0.794	
Kolmogorov-Smirnov (NDs = DL)	0.201	0.187	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.447	0.798	
Kolmogorov-Smirnov (NDs = DL/2)	0.312	0.187	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.401	0.794	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.213	0.186	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.902	0.954	0.932	0.895

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.797	0.901	Data Not Lognormal
Lilliefors (Detects Only)	0.239	0.203	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.894	0.916	Data Not Lognormal
Lilliefors (NDs = DL)	0.183	0.181	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.856	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.204	0.181	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.79	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.246	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	14	33	8	25	75.76%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	25	0.38	2000	164.3	3.8	552.5
Statistics (Detects Only)	8	0.042	0.67	0.258	0.205	0.19
Statistics (All: NDs treated as DL value)	33	0.042	2000	124.6	1.8	483.8
Statistics (All: NDs treated as DL/2 value)	33	0.042	1000	62.32	0.9	241.9
Statistics (Normal ROS Estimated Data)	33	0.042	0.67	0.234	0.231	0.106
Statistics (Gamma ROS Estimated Data)	33	0.042	0.67	0.267	0.27	0.0989
Statistics (Lognormal ROS Estimated Data)	33	0.042	0.67	0.201	0.181	0.104

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	2.202	2.022	0.117	-1.6	0.799	-0.499
Statistics (NDs = DL)	0.178	0.182	699.9	0.615	2.37	3.852
Statistics (NDs = DL/2)	0.184	0.188	338	0.0901	2.222	24.67
Statistics (Gamma ROS Estimates)	7.058	6.437	0.0379	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.7	0.445	-0.262

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.913	0.502	0.501	0.887

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.855	0.818	Data Appear Normal
Lilliefors (Detects Only)	0.224	0.313	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.27	0.931	Data Not Normal
Lilliefors (NDs = DL)	0.51	0.154	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.27	0.931	Data Not Normal
Lilliefors (NDs = DL/2)	0.51	0.154	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.82	0.931	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.238	0.154	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.976	0.863	0.86	0.902

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.29	0.723	
Kolmogorov-Smirnov (Detects Only)	0.183	0.297	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	6.51	0.91	
Kolmogorov-Smirnov (NDs = DL)	0.416	0.17	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	6.987	0.907	
Kolmogorov-Smirnov (NDs = DL/2)	0.425	0.17	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.868	0.748	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.234	0.153	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.954	0.921	0.897	0.92

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.935	0.818	Data Appear Lognormal
Lilliefors (Detects Only)	0.23	0.313	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.856	0.931	Data Not Lognormal
Lilliefors (NDs = DL)	0.167	0.154	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.813	0.931	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.178	0.154	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.885	0.931	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.238	0.154	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	1	19	15	4	21.05%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.34	0.4	0.375	0.38	0.0252
Statistics (Detects Only)	15	0.028	3.2	0.594	0.28	0.838
Statistics (All: NDs treated as DL value)	19	0.028	3.2	0.548	0.34	0.745
Statistics (All: NDs treated as DL/2 value)	19	0.028	3.2	0.509	0.2	0.759
Statistics (Normal ROS Estimated Data)	19	-0.0267	3.2	0.512	0.22	0.761
Statistics (Gamma ROS Estimated Data)	19	0.028	3.2	0.549	0.3	0.752
Statistics (Lognormal ROS Estimated Data)	19	0.028	3.2	0.498	0.2	0.764

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.8	0.709	0.743	-1.263	1.296	-1.026
Statistics (NDs = DL)	0.963	0.846	0.569	-1.204	1.149	-0.955
Statistics (NDs = DL/2)	0.871	0.769	0.584	-1.35	1.156	-0.857
Statistics (Gamma ROS Estimates)	0.894	0.788	0.614	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.424	1.196	-0.84

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.806	0.777	0.76	0.781

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.668	0.881	Data Not Normal
Lilliefors (Detects Only)	0.306	0.229	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.625	0.901	Data Not Normal
Lilliefors (NDs = DL)	0.347	0.203	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.6	0.901	Data Not Normal
Lilliefors (NDs = DL/2)	0.325	0.203	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.631	0.901	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.327	0.203	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.976	0.947	0.95	0.962

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.43	0.773	
Kolmogorov-Smirnov (Detects Only)	0.182	0.23	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.645	0.771	
Kolmogorov-Smirnov (NDs = DL)	0.233	0.205	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	1.03	0.774	
Kolmogorov-Smirnov (NDs = DL/2)	0.216	0.205	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.406	0.773	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.173	0.205	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.992	0.98	0.974	0.986

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.983	0.881	Data Appear Lognormal
Lilliefors (Detects Only)	0.0999	0.229	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.966	0.901	Data Appear Lognormal
Lilliefors (NDs = DL)	0.159	0.203	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.955	0.901	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.147	0.203	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.974	0.901	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.111	0.203	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	11	0	11	10	1	9.09%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	10	0.024	1.8	0.698	0.31	0.745
Statistics (All: NDs treated as DL value)	11	0.024	3.5	0.953	0.32	1.102
Statistics (All: NDs treated as DL/2 value)	11	0.024	1.8	0.794	0.32	0.775
Statistics (Normal ROS Estimated Data)	11	0.024	1.8	0.698	0.32	0.707
Statistics (Gamma ROS Estimated Data)	11	0.024	1.8	0.685	0.32	0.708
Statistics (Lognormal ROS Estimated Data)	11	0.024	1.8	0.662	0.3	0.717

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.71	0.577	0.983	-1.209	1.579	-1.306
Statistics (NDs = DL)	0.652	0.534	1.462	-0.986	1.672	-1.696
Statistics (NDs = DL/2)	0.735	0.595	1.08	-1.049	1.59	-1.517
Statistics (Gamma ROS Estimates)	0.77	0.621	0.889	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.209	1.498	-1.239

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.906	0.904	0.908	0.924

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.794	0.842	Data Not Normal
Lilliefors (Detects Only)	0.294	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.818	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.263	0.267	Data Appear Normal
Shapiro-Wilks (NDs = DL/2)	0.793	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.275	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.828	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.249	0.267	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.891	0.972	0.843	0.914

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.49	0.76	
Kolmogorov-Smirnov (Detects Only)	0.182	0.277	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.385	0.77	
Kolmogorov-Smirnov (NDs = DL)	0.169	0.267	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.635	0.764	
Kolmogorov-Smirnov (NDs = DL/2)	0.217	0.265	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.378	0.762	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.162	0.265	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.965	0.973	0.95	0.969

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.909	0.842	Data Appear Lognormal
Lilliefors (Detects Only)	0.174	0.28	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.93	0.85	Data Appear Lognormal
Lilliefors (NDs = DL)	0.173	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.88	0.85	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.196	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.921	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.15	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(a)pyrene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	0	24	20	4	16.67%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.38	0.46	0.413	0.405	0.034
Statistics (Detects Only)	20	0.023	2.975	0.518	0.0855	0.85
Statistics (All: NDs treated as DL value)	24	0.023	2.975	0.5	0.115	0.774
Statistics (All: NDs treated as DL/2 value)	24	0.023	2.975	0.466	0.115	0.782
Statistics (Normal ROS Estimated Data)	24	0.023	2.975	0.477	0.115	0.778
Statistics (Gamma ROS Estimated Data)	24	0.023	2.975	0.501	0.115	0.773
Statistics (Lognormal ROS Estimated Data)	24	0.023	2.975	0.447	0.0927	0.789

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.522	0.485	0.991	-1.867	1.513	-0.81
Statistics (NDs = DL)	0.61	0.561	0.82	-1.704	1.425	-0.836
Statistics (NDs = DL/2)	0.588	0.542	0.793	-1.819	1.379	-0.758
Statistics (Gamma ROS Estimates)	0.61	0.562	0.82	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.952	1.389	-0.711

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.791	0.806	0.771	0.782

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.631	0.905	Data Not Normal
Lilliefors (Detects Only)	0.404	0.198	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.657	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.312	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.603	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.41	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.62	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.396	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.968	0.981	0.965	0.981

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	2.294	0.8	
Kolmogorov-Smirnov (Detects Only)	0.315	0.205	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.552	0.796	
Kolmogorov-Smirnov (NDs = DL)	0.226	0.187	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.298	0.798	
Kolmogorov-Smirnov (NDs = DL/2)	0.303	0.187	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.569	0.796	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.227	0.187	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.918	0.961	0.944	0.902

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.834	0.905	Data Not Lognormal
Lilliefors (Detects Only)	0.226	0.198	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.913	0.916	Data Not Lognormal
Lilliefors (NDs = DL)	0.157	0.181	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.883	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.192	0.181	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.809	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.257	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(b)fluoranthene (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	1	19	15	4	21.05%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.34	0.4	0.375	0.38	0.0252
Statistics (Detects Only)	15	0.039	3.2	0.57	0.32	0.81
Statistics (All: NDs treated as DL value)	19	0.039	3.2	0.529	0.36	0.719
Statistics (All: NDs treated as DL/2 value)	19	0.039	3.2	0.49	0.2	0.732
Statistics (Normal ROS Estimated Data)	19	-0.013	3.2	0.492	0.256	0.734
Statistics (Gamma ROS Estimated Data)	19	0.039	3.2	0.532	0.32	0.725
Statistics (Lognormal ROS Estimated Data)	19	0.039	3.2	0.481	0.208	0.736

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.871	0.769	0.654	-1.235	1.204	-0.974
Statistics (NDs = DL)	1.052	0.921	0.503	-1.182	1.067	-0.903
Statistics (NDs = DL/2)	0.946	0.832	0.517	-1.328	1.078	-0.812
Statistics (Gamma ROS Estimates)	0.995	0.873	0.534	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.388	1.113	-0.802

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.785	0.754	0.743	0.762

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.639	0.881	Data Not Normal
Lilliefors (Detects Only)	0.29	0.229	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.594	0.901	Data Not Normal
Lilliefors (NDs = DL)	0.308	0.203	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.576	0.901	Data Not Normal
Lilliefors (NDs = DL/2)	0.291	0.203	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.605	0.901	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.289	0.203	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.957	0.923	0.931	0.94

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.421	0.769	
Kolmogorov-Smirnov (Detects Only)	0.152	0.229	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.696	0.768	
Kolmogorov-Smirnov (NDs = DL)	0.212	0.204	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	0.938	0.771	
Kolmogorov-Smirnov (NDs = DL/2)	0.193	0.205	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	0.425	0.769	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.13	0.204	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.993	0.978	0.978	0.986

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.984	0.881	Data Appear Lognormal
Lilliefors (Detects Only)	0.0913	0.229	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.962	0.901	Data Appear Lognormal
Lilliefors (NDs = DL)	0.148	0.203	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.962	0.901	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.141	0.203	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.974	0.901	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.108	0.203	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Benzo(b)fluoranthene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	0	24	17	7	29.17%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.36	0.46	0.4	0.38	0.0365
Statistics (Detects Only)	17	0.033	3.3	0.665	0.1	1.034
Statistics (All: NDs treated as DL value)	24	0.033	3.3	0.588	0.285	0.872
Statistics (All: NDs treated as DL/2 value)	24	0.033	3.3	0.53	0.185	0.89
Statistics (Normal ROS Estimated Data)	24	-0.215	3.3	0.555	0.19	0.892
Statistics (Gamma ROS Estimated Data)	24	0.033	3.3	0.664	0.424	0.863
Statistics (Lognormal ROS Estimated Data)	24	0.033	3.3	0.503	0.0989	0.901

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.511	0.475	1.303	-1.647	1.612	-0.978
Statistics (NDs = DL)	0.672	0.616	0.875	-1.435	1.387	-0.966
Statistics (NDs = DL/2)	0.615	0.566	0.862	-1.637	1.345	-0.821
Statistics (Gamma ROS Estimates)	0.689	0.631	0.963	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.847	1.405	-0.76

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.818	0.808	0.764	0.817

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.67	0.892	Data Not Normal
Lilliefors (Detects Only)	0.376	0.215	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.658	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.35	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.591	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.424	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.676	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.364	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.97	0.976	0.959	0.984

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.575	0.797	
Kolmogorov-Smirnov (Detects Only)	0.285	0.221	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.004	0.79	
Kolmogorov-Smirnov (NDs = DL)	0.203	0.186	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.201	0.795	
Kolmogorov-Smirnov (NDs = DL/2)	0.342	0.187	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.883	0.788	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.167	0.186	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.933	0.978	0.949	0.915

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.853	0.892	Data Not Lognormal
Lilliefors (Detects Only)	0.204	0.215	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.942	0.916	Data Appear Lognormal
Lilliefors (NDs = DL)	0.117	0.181	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.89	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.242	0.181	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.828	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.252	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Cadmium (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	11	0	11	10	1	9.09%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	10	0.49	92	10.94	1.35	28.54
Statistics (All: NDs treated as DL value)	11	0.49	92	9.993	1.3	27.26
Statistics (All: NDs treated as DL/2 value)	11	0.265	92	9.969	1.3	27.27
Statistics (Normal ROS Estimated Data)	11	-12.87	92	8.775	1.3	28.01
Statistics (Gamma ROS Estimated Data)	11	1.00E-09	92	9.945	1.3	27.27
Statistics (Lognormal ROS Estimated Data)	11	0.266	92	9.969	1.3	27.27

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.388	0.343	28.2	0.687	1.607	2.338
Statistics (NDs = DL)	0.382	0.339	26.15	0.567	1.576	2.779
Statistics (NDs = DL/2)	0.371	0.33	26.87	0.504	1.642	3.256
Statistics (Gamma ROS Estimates)	0.206	0.21	48.28	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.504	1.641	3.254

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.621	0.603	0.604	0.667

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.417	0.842	Data Not Normal
Lilliefors (Detects Only)	0.466	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.395	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.464	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.397	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.464	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.484	0.85	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.446	0.267	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.906	0.895	0.898	0.935

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.54	0.798	
Kolmogorov-Smirnov (Detects Only)	0.323	0.285	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	1.794	0.804	
Kolmogorov-Smirnov (NDs = DL)	0.322	0.273	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.628	0.806	
Kolmogorov-Smirnov (NDs = DL/2)	0.316	0.273	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.134	0.858	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.332	0.282	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.904	0.889	0.922	0.922

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.826	0.842	Data Not Lognormal
Lilliefors (Detects Only)	0.192	0.28	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.799	0.85	Data Not Lognormal
Lilliefors (NDs = DL)	0.208	0.267	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.863	0.85	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.177	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.863	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.177	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Cadmium (q south)

Raw Statistics	
Number of Valid Observations	24
Number of Distinct Observations	21
Minimum	0.41
Maximum	8000
Mean of Raw Data	338.6
Standard Deviation of Raw Data	1632
Kstar	0.174
Mean of Log Transformed Data	1.312
Standard Deviation of Log Transformed Data	1.997

Normal Distribution Test Results

Correlation Coefficient R	0.432
Shapiro Wilk Test Statistic	0.214
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.533
Lilliefors Critical (0.95) Value	0.181

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.835
A-D Test Statistic	6.281
A-D Critical (0.95) Value	0.908
K-S Test Statistic	0.428
K-S Critical(0.95) Value	0.198

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.849
Shapiro Wilk Test Statistic	0.745
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.23
Lilliefors Critical (0.95) Value	0.181

Data not Lognormal at (0.05) Significance Level

Cadmium (o)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	17	3	14	10	4	28.57%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	0.55	0.63	0.588	0.585	0.0386
Statistics (Detects Only)	10	0.54	250	39.49	1.233	80.06
Statistics (All: NDs treated as DL value)	14	0.54	250	28.37	0.735	69.07
Statistics (All: NDs treated as DL/2 value)	14	0.275	250	28.29	0.735	69.1
Statistics (Normal ROS Estimated Data)	14	-69.99	250	8.207	0.735	84.09
Statistics (Gamma ROS Estimated Data)	14	1.00E-09	250	28.2	0.735	69.14
Statistics (Lognormal ROS Estimated Data)	14	0.0856	250	28.23	0.735	69.13

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.293	0.278	134.6	1.316	2.339	1.777
Statistics (NDs = DL)	0.274	0.263	103.7	0.788	2.131	2.704
Statistics (NDs = DL/2)	0.257	0.249	110.1	0.59	2.282	3.869
Statistics (Gamma ROS Estimates)	0.0979	0.125	288.2	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.238	2.63	11.06

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.75	0.677	0.678	0.859

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.582	0.842	Data Not Normal

Lilliefors (Detects Only)	0.382	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.483	0.874	Data Not Normal
Lilliefors (NDs = DL)	0.436	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.484	0.874	Data Not Normal
Lilliefors (NDs = DL/2)	0.436	0.237	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.755	0.874	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.317	0.237	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.992	0.976	0.978	0.997

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.364	0.816	
Kolmogorov-Smirnov (Detects Only)	0.392	0.288	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.619	0.843	
Kolmogorov-Smirnov (NDs = DL)	0.427	0.249	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.235	0.85	
Kolmogorov-Smirnov (NDs = DL/2)	0.408	0.25	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.021	0.912	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.282	0.257	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.882	0.825	0.877	0.927

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.765	0.842	Data Not Lognormal
Lilliefors (Detects Only)	0.332	0.28	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.677	0.874	Data Not Lognormal
Lilliefors (NDs = DL)	0.334	0.237	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.763	0.874	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.296	0.237	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.849	0.874	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.241	0.237	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Chromium (q south)

Raw Statistics	
Number of Valid Observations	24
Number of Distinct Observations	21
Minimum	8
Maximum	660
Mean of Raw Data	59.98
Standard Deviation of Raw Data	132.7
Kstar	0.685
Mean of Log Transformed Data	3.297
Standard Deviation of Log Transformed Data	1.041

Normal Distribution Test Results

Correlation Coefficient R	0.603
Shapiro Wilk Test Statistic	0.392
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.348
Lilliefors Critical (0.95) Value	0.181

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.844
A-D Test Statistic	2.405
A-D Critical (0.95) Value	0.782
K-S Test Statistic	0.244
K-S Critical(0.95) Value	0.185

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.933
Shapiro Wilk Test Statistic	0.877
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.171
Lilliefors Critical (0.95) Value	0.181

Data not Lognormal at (0.05) Significance Level

Dibenzo(a,h)anthracene (q north)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	11	0	11	5	6	54.55%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.36	3.5	0.91	0.4	1.269
Statistics (Detects Only)	5	0.066	0.37	0.197	0.18	0.121
Statistics (All: NDs treated as DL value)	11	0.066	3.5	0.586	0.37	0.975
Statistics (All: NDs treated as DL/2 value)	11	0.066	1.75	0.338	0.19	0.475
Statistics (Normal ROS Estimated Data)	11	0.066	0.37	0.184	0.181	0.0782
Statistics (Gamma ROS Estimated Data)	11	0.066	0.37	0.209	0.227	0.0781
Statistics (Lognormal ROS Estimated Data)	11	0.066	0.37	0.169	0.152	0.0816

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	3.057	2.284	0.0645	-1.795	0.683	-0.38
Statistics (NDs = DL)	0.974	0.769	0.602	-1.129	0.998	-0.884
Statistics (NDs = DL/2)	1.327	1.026	0.255	-1.507	0.816	-0.541
Statistics (Gamma ROS Estimates)	6.372	4.695	0.0327	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.869	0.44	-0.236

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.986	0.657	0.678	0.909

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.964	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.163	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.465	0.85	Data Not Normal
Lilliefors (NDs = DL)	0.473	0.267	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.493	0.85	Data Not Normal
Lilliefors (NDs = DL/2)	0.383	0.267	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.854	0.85	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.335	0.267	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.993	0.844	0.85	0.935

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.181	0.683	
Kolmogorov-Smirnov (Detects Only)	0.166	0.359	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.37	0.753	
Kolmogorov-Smirnov (NDs = DL)	0.386	0.263	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.445	0.745	
Kolmogorov-Smirnov (NDs = DL/2)	0.315	0.261	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.742	0.731	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.239	0.256	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.994	0.909	0.893	0.946

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.979	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.147	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.857	0.85	Data Appear Lognormal
Lilliefors (NDs = DL)	0.297	0.267	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.832	0.85	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.242	0.267	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.921	0.85	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.243	0.267	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dibenzo(a,h)anthracene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	0	24	5	19	79.17%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	19	0.38	2.155	0.498	0.41	0.402
Statistics (Detects Only)	5	0.03	0.44	0.158	0.074	0.168
Statistics (All: NDs treated as DL value)	24	0.03	2.155	0.427	0.4	0.389
Statistics (All: NDs treated as DL/2 value)	24	0.03	1.078	0.23	0.2	0.195
Statistics (Normal ROS Estimated Data)	24	-0.0403	0.44	0.11	0.0983	0.0987
Statistics (Gamma ROS Estimated Data)	24	0.03	0.44	0.152	0.154	0.0734
Statistics (Lognormal ROS Estimated Data)	24	0.0288	0.44	0.0938	0.0697	0.0838

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.284	1.151	0.123	-2.285	1.042	-0.456
Statistics (NDs = DL)	1.999	1.777	0.214	-1.121	0.824	-0.735
Statistics (NDs = DL/2)	2.653	2.349	0.0867	-1.669	0.64	-0.384
Statistics (Gamma ROS Estimates)	5.07	4.464	0.03	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.585	0.62	-0.24

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.894	0.645	0.67	0.923

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.807	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.291	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.452	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.425	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.484	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.417	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.871	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.223	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.994	0.74	0.776	0.863

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.318	0.689	
Kolmogorov-Smirnov (Detects Only)	0.274	0.363	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	3.682	0.755	
Kolmogorov-Smirnov (NDs = DL)	0.364	0.18	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	3.42	0.752	
Kolmogorov-Smirnov (NDs = DL/2)	0.335	0.18	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.596	0.746	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.221	0.178	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.984	0.807	0.832	0.955

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.967	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.22	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.68	0.916	Data Not Lognormal
Lilliefors (NDs = DL)	0.407	0.181	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.727	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.357	0.181	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.92	0.916	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.22	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dieldrin (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	2	22	14	8	36.36%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	8	0.0038	0.042	0.021	0.0175	0.017
Statistics (Detects Only)	14	3.90E-04	0.375	0.0708	0.0119	0.12
Statistics (All: NDs treated as DL value)	22	3.90E-04	0.375	0.0527	0.0155	0.0977
Statistics (All: NDs treated as DL/2 value)	22	3.90E-04	0.375	0.0488	0.00915	0.0987
Statistics (Normal ROS Estimated Data)	22	-0.0522	0.375	0.0449	0.0102	0.101
Statistics (Gamma ROS Estimated Data)	22	3.90E-04	0.375	0.0631	0.036	0.0948
Statistics (Lognormal ROS Estimated Data)	22	3.90E-04	0.375	0.0458	0.00295	0.0999

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.358	0.339	0.198	-4.52	2.327	-0.515
Statistics (NDs = DL)	0.435	0.406	0.121	-4.438	1.94	-0.437
Statistics (NDs = DL/2)	0.395	0.371	0.124	-4.69	1.95	-0.416
Statistics (Gamma ROS Estimates)	0.521	0.48	0.121	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.167	2.062	-0.399

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.809	0.754	0.728	0.775

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.659	0.874	Data Not Normal
Lilliefors (Detects Only)	0.373	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.58	0.911	Data Not Normal
Lilliefors (NDs = DL)	0.362	0.189	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.541	0.911	Data Not Normal
Lilliefors (NDs = DL/2)	0.425	0.189	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.616	0.911	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.407	0.189	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.978	0.976	0.968	0.979

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.574	0.821	
Kolmogorov-Smirnov (Detects Only)	0.217	0.246	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.767	0.818	
Kolmogorov-Smirnov (NDs = DL)	0.174	0.198	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.265	0.827	
Kolmogorov-Smirnov (NDs = DL/2)	0.276	0.199	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.323	0.802	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.158	0.196	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.982	0.989	0.984	0.96

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.944	0.874	Data Appear Lognormal
Lilliefors (Detects Only)	0.115	0.237	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.969	0.911	Data Appear Lognormal
Lilliefors (NDs = DL)	0.0943	0.189	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.958	0.911	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.145	0.189	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.912	0.911	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.196	0.189	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dioxin TEQ-HH (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	6	14	10	4	28.57%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	4	6.60E-05	1.37E-04	1.06E-04	1.11E-04	2.97E-05
Statistics (Detects Only)	10	5.78E-05	0.00387	4.94E-04	8.80E-05	0.00119
Statistics (All: NDs treated as DL value)	14	5.78E-05	0.00387	3.83E-04	9.85E-05	0.00101
Statistics (All: NDs treated as DL/2 value)	14	3.30E-05	0.00387	3.68E-04	6.75E-05	0.00101
Statistics (Normal ROS Estimated Data)	14	-3.03E-04	0.00387	3.50E-04	7.55E-05	0.00102
Statistics (Gamma ROS Estimated Data)	14	1.00E-09	0.00387	3.95E-04	9.81E-05	0.00101
Statistics (Lognormal ROS Estimated Data)	14	4.23E-05	0.00387	3.72E-04	7.74E-05	0.00101

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.502	0.442	9.83E-04	-8.876	1.299	-0.146
Statistics (NDs = DL)	0.568	0.494	6.75E-04	-8.965	1.101	-0.123
Statistics (NDs = DL/2)	0.505	0.445	7.29E-04	-9.163	1.188	-0.13
Statistics (Gamma ROS Estimates)	0.361	0.331	0.0011	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-9.092	1.147	-0.126

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.624	0.565	0.565	0.613

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.421	0.842	Data Not Normal
Lilliefors (Detects Only)	0.437	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.351	0.874	Data Not Normal
Lilliefors (NDs = DL)	0.454	0.237	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.351	0.874	Data Not Normal
Lilliefors (NDs = DL/2)	0.448	0.237	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.412	0.874	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.419	0.237	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.893	0.836	0.847	0.888

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.972	0.777	
Kolmogorov-Smirnov (Detects Only)	0.403	0.281	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.956	0.787	
Kolmogorov-Smirnov (NDs = DL)	0.435	0.241	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.934	0.793	
Kolmogorov-Smirnov (NDs = DL/2)	0.405	0.242	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.661	0.82	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.312	0.246	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.83	0.806	0.821	0.804

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.705	0.842	Data Not Lognormal
Lilliefors (Detects Only)	0.311	0.28	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.672	0.874	Data Not Lognormal
Lilliefors (NDs = DL)	0.333	0.237	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.7	0.874	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.274	0.237	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.671	0.874	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.295	0.237	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Dioxin TEQ-HH (q south)

Raw Statistics	
Number of Valid Observations	22
Number of Missing Values	2
Number of Distinct Observations	22
Minimum	5.27E-05
Maximum	0.00711
Mean of Raw Data	5.55E-04
Standard Deviation of Raw Data	0.00148
Kstar	0.546
Mean of Log Transformed Data	-8.532
Standard Deviation of Log Transformed Data	1.159

Normal Distribution Test Results

Correlation Coefficient R	0.554
Shapiro Wilk Test Statistic	0.335
Shapiro Wilk Critical (0.95) Value	0.911
Lilliefors Test Statistic	0.393
Lilliefors Critical (0.95) Value	0.189

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.814
A-D Test Statistic	2.52
A-D Critical (0.95) Value	0.796
K-S Test Statistic	0.263
K-S Critical(0.95) Value	0.195

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.925
Shapiro Wilk Test Statistic	0.863
Shapiro Wilk Critical (0.95) Value	0.911
Lilliefors Test Statistic	0.169
Lilliefors Critical (0.95) Value	0.189

Data not Lognormal at (0.05) Significance Level

Mercury (q south)

Raw Statistics	
Number of Valid Observations	23
Number of Missing Values	1
Number of Distinct Observations	21
Minimum	0.021
Maximum	140
Mean of Raw Data	6.627
Standard Deviation of Raw Data	29.09
Kstar	0.232
Mean of Log Transformed Data	-1.187
Standard Deviation of Log Transformed Data	1.911

Normal Distribution Test Results

Correlation Coefficient R	0.454
Shapiro Wilk Test Statistic	0.233
Shapiro Wilk Critical (0.95) Value	0.914
Lilliefors Test Statistic	0.503
Lilliefors Critical (0.95) Value	0.185

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.821
A-D Test Statistic	4.12
A-D Critical (0.95) Value	0.879
K-S Test Statistic	0.37
K-S Critical(0.95) Value	0.2

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.936
Shapiro Wilk Test Statistic	0.89
Shapiro Wilk Critical (0.95) Value	0.914
Lilliefors Test Statistic	0.142
Lilliefors Critical (0.95) Value	0.185

Data not Lognormal at (0.05) Significance Level

Manganese (p)

Raw Statistics	
Number of Valid Observations	35
Number of Missing Values	12
Number of Distinct Observations	30
Minimum	1.2
Maximum	2700
Mean of Raw Data	258.9
Standard Deviation of Raw Data	445.4
Kstar	0.832
Mean of Log Transformed Data	4.898
Standard Deviation of Log Transformed Data	1.287

Normal Distribution Test Results

Correlation Coefficient R	0.626
Shapiro Wilk Test Statistic	0.432
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.299
Lilliefors Critical (0.95) Value	0.15

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.81
A-D Test Statistic	0.95
A-D Critical (0.95) Value	0.781
K-S Test Statistic	0.137
K-S Critical(0.95) Value	0.154

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.932
Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.126
Lilliefors Critical (0.95) Value	0.15

Data not Lognormal at (0.05) Significance Level

Manganese (q south)

Raw Statistics	
Number of Valid Observations	24
Number of Distinct Observations	19
Minimum	240
Maximum	2100
Mean of Raw Data	529.4
Standard Deviation of Raw Data	366.6
Kstar	3.8
Mean of Log Transformed Data	6.151
Standard Deviation of Log Transformed Data	0.44

Normal Distribution Test Results

Correlation Coefficient R	0.734
Shapiro Wilk Test Statistic	0.568
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.271
Lilliefors Critical (0.95) Value	0.181

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.833
A-D Test Statistic	1.572

A-D Critical (0.95) Value	0.748
K-S Test Statistic	0.216
K-S Critical(0.95) Value	0.179

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.919
Shapiro Wilk Test Statistic	0.864
Shapiro Wilk Critical (0.95) Value	0.916
Lilliefors Test Statistic	0.185
Lilliefors Critical (0.95) Value	0.181

Data not Lognormal at (0.05) Significance Level

Tetrachloroethene (p)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	47	13	34	17	17	50.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	17	0.0034	10	1.813	0.21	3.374
Statistics (Detects Only)	17	0.0019	140	12.21	0.24	35.85
Statistics (All: NDs treated as DL value)	34	0.0019	140	7.009	0.225	25.62
Statistics (All: NDs treated as DL/2 value)	34	0.0017	140	6.556	0.145	25.64
Statistics (Normal ROS Estimated Data)	34	-19.12	140	0.392	0.00255	28.33
Statistics (Gamma ROS Estimated Data)	34	0.0019	140	12.72	9.691	25.08
Statistics (Lognormal ROS Estimated Data)	34	0.00177	140	6.11	0.0137	25.72

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.184	0.188	66.24	-1.543	3.315	-2.148
Statistics (NDs = DL)	0.198	0.2	35.48	-1.785	3.095	-1.734
Statistics (NDs = DL/2)	0.186	0.189	35.33	-2.131	3.142	-1.474
Statistics (Gamma ROS Estimates)	0.33	0.32	38.57	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.35	3.087	-0.921

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.609	0.525	0.503	0.692

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.396	0.892	Data Not Normal
Lilliefors (Detects Only)	0.489	0.215	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.308	0.933	Data Not Normal
Lilliefors (NDs = DL)	0.423	0.152	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.285	0.933	Data Not Normal
Lilliefors (NDs = DL/2)	0.465	0.152	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.513	0.933	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.376	0.152	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.962	0.917	0.905	0.898

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.507	0.889	
Kolmogorov-Smirnov (Detects Only)	0.293	0.232	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.473	0.9	
Kolmogorov-Smirnov (NDs = DL)	0.216	0.167	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.922	0.907	
Kolmogorov-Smirnov (NDs = DL/2)	0.222	0.168	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.374	0.849	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.201	0.163	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.977	0.975	0.968	0.935

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.946	0.892	Data Appear Lognormal
Lilliefors (Detects Only)	0.111	0.215	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.937	0.933	Data Appear Lognormal
Lilliefors (NDs = DL)	0.164	0.152	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.923	0.933	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.152	0.152	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.864	0.933	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.175	0.152	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Tetrachloroethene (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	0	24	9	15	62.50%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	15	0.004	0.0075	0.00599	0.0062	0.00108
Statistics (Detects Only)	9	5.35E-04	1.7	0.233	0.0032	0.561
Statistics (All: NDs treated as DL value)	24	5.35E-04	1.7	0.0913	0.00595	0.35
Statistics (All: NDs treated as DL/2 value)	24	5.35E-04	1.7	0.0894	0.0031	0.35
Statistics (Normal ROS Estimated Data)	24	-0.0999	1.7	0.0982	0.0171	0.35
Statistics (Gamma ROS Estimated Data)	24	5.35E-04	1.7	0.243	0.249	0.332
Statistics (Lognormal ROS Estimated Data)	24	5.35E-04	1.7	0.0888	0.00215	0.35

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.228	0.228	1.022	-4.61	2.773	-0.601
Statistics (NDs = DL)	0.275	0.268	0.332	-4.938	1.662	-0.337
Statistics (NDs = DL/2)	0.242	0.239	0.37	-5.371	1.749	-0.326
Statistics (Gamma ROS Estimates)	0.529	0.49	0.459	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.624	1.845	-0.328

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.686	0.499	0.498	0.561

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.498	0.829	Data Not Normal
Lilliefors (Detects Only)	0.412	0.295	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.277	0.916	Data Not Normal
Lilliefors (NDs = DL)	0.474	0.181	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.276	0.916	Data Not Normal
Lilliefors (NDs = DL/2)	0.472	0.181	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.347	0.916	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.44	0.181	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.978	0.86	0.873	0.837

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.049	0.834	
Kolmogorov-Smirnov (Detects Only)	0.334	0.306	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	5.534	0.862	
Kolmogorov-Smirnov (NDs = DL)	0.486	0.194	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	6.204	0.876	
Kolmogorov-Smirnov (NDs = DL/2)	0.478	0.195	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.69	0.804	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.351	0.188	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.939	0.844	0.787	0.789

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.875	0.829	Data Appear Lognormal
Lilliefors (Detects Only)	0.251	0.295	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.735	0.916	Data Not Lognormal
Lilliefors (NDs = DL)	0.364	0.181	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.64	0.916	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.382	0.181	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.64	0.916	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.361	0.181	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Total PCBs (q central)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	20	4	16	5	11	68.75%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	11	0.0899	1.7	0.712	0.894	0.538
Statistics (Detects Only)	5	0.14	2.58	0.898	0.459	0.982
Statistics (All: NDs treated as DL value)	16	0.0899	2.58	0.77	0.865	0.677
Statistics (All: NDs treated as DL/2 value)	16	0.045	2.58	0.525	0.453	0.611
Statistics (Normal ROS Estimated Data)	16	-1.277	2.58	-0.241	-0.417	1.001
Statistics (Gamma ROS Estimated Data)	16	0.14	2.58	1.153	1.21	0.749
Statistics (Lognormal ROS Estimated Data)	16	0.048	2.58	0.346	0.128	0.637

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.232	1.043	0.729	-0.565	1.082	-1.915
Statistics (NDs = DL)	1.178	0.999	0.654	-0.742	1.137	-1.532
Statistics (NDs = DL/2)	1.003	0.857	0.524	-1.219	1.219	-1
Statistics (Gamma ROS Estimates)	2.018	1.681	0.571	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.86	1.128	-0.607

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.885	0.92	0.803	0.912

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.795	0.762	Data Appear Normal
Lilliefors (Detects Only)	0.289	0.396	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.851	0.887	Data Not Normal
Lilliefors (NDs = DL)	0.202	0.222	Data Appear Normal
Shapiro-Wilks (NDs = DL/2)	0.669	0.887	Data Not Normal
Lilliefors (NDs = DL/2)	0.283	0.222	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.841	0.887	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.257	0.222	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.99	0.971	0.933	0.917

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.284	0.689	
Kolmogorov-Smirnov (Detects Only)	0.239	0.363	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.761	0.76	
Kolmogorov-Smirnov (NDs = DL)	0.217	0.22	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	0.788	0.763	
Kolmogorov-Smirnov (NDs = DL/2)	0.208	0.221	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	1.042	0.75	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.238	0.218	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.988	0.939	0.937	0.919

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.984	0.762	Data Appear Lognormal
Lilliefors (Detects Only)	0.178	0.396	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.865	0.887	Data Not Lognormal
Lilliefors (NDs = DL)	0.252	0.222	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.871	0.887	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.275	0.222	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.846	0.887	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.288	0.222	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Total PCBs (q south)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	24	2	22	16	6	27.27%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	6	0.0965	5.3	1.323	0.294	2.063
Statistics (Detects Only)	16	0.093	13.94	3.148	1.291	4.382
Statistics (All: NDs treated as DL value)	22	0.093	13.94	2.65	1.111	3.927
Statistics (All: NDs treated as DL/2 value)	22	0.0483	13.94	2.47	1.039	3.905
Statistics (Normal ROS Estimated Data)	22	-2.77	13.94	1.968	1.039	4.258
Statistics (Gamma ROS Estimated Data)	22	1.00E-09	13.94	2.527	1.111	3.902
Statistics (Lognormal ROS Estimated Data)	22	0.093	13.94	2.353	0.898	3.936

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.656	0.597	4.8	0.217	1.579	7.279
Statistics (NDs = DL)	0.586	0.537	4.519	-0.0824	1.651	-20.04
Statistics (NDs = DL/2)	0.535	0.492	4.619	-0.271	1.773	-6.531
Statistics (Gamma ROS Estimates)	0.204	0.207	12.36	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.293	1.614	-5.509

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.82	0.81	0.786	0.86

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.675	0.887	Data Not Normal
Lilliefors (Detects Only)	0.304	0.222	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.659	0.911	Data Not Normal
Lilliefors (NDs = DL)	0.259	0.189	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.623	0.911	Data Not Normal
Lilliefors (NDs = DL/2)	0.285	0.189	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.747	0.911	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.246	0.189	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.956	0.967	0.957	0.951

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.422	0.783	
Kolmogorov-Smirnov (Detects Only)	0.142	0.225	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.574	0.797	
Kolmogorov-Smirnov (NDs = DL)	0.147	0.195	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.528	0.801	
Kolmogorov-Smirnov (NDs = DL/2)	0.128	0.195	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.265	0.89	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.264	0.205	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.972	0.967	0.974	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.931	0.887	Data Appear Lognormal
Lilliefors (Detects Only)	0.139	0.222	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.917	0.911	Data Appear Lognormal
Lilliefors (NDs = DL)	0.174	0.189	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.935	0.911	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.146	0.189	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.932	0.911	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.145	0.189	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Vanadium (p)

Raw Statistics	
Number of Valid Observations	35
Number of Missing Values	12
Number of Distinct Observations	23
Minimum	0.63
Maximum	260
Mean of Raw Data	29.62
Standard Deviation of Raw Data	41.27
Kstar	1.329
Mean of Log Transformed Data	3.001
Standard Deviation of Log Transformed Data	0.97

Normal Distribution Test Results

Correlation Coefficient R	0.576
Shapiro Wilk Test Statistic	0.374
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.372
Lilliefors Critical (0.95) Value	0.15

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.726
A-D Test Statistic	3.369
A-D Critical (0.95) Value	0.768
K-S Test Statistic	0.242
K-S Critical(0.95) Value	0.152

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.839
Shapiro Wilk Test Statistic	0.743
Shapiro Wilk Critical (0.95) Value	0.934
Lilliefors Test Statistic	0.255
Lilliefors Critical (0.95) Value	0.15

Data not Lognormal at (0.05) Significance Level

Upper Confidence Limit (UCL) Calculations and Histograms – Surface Soil

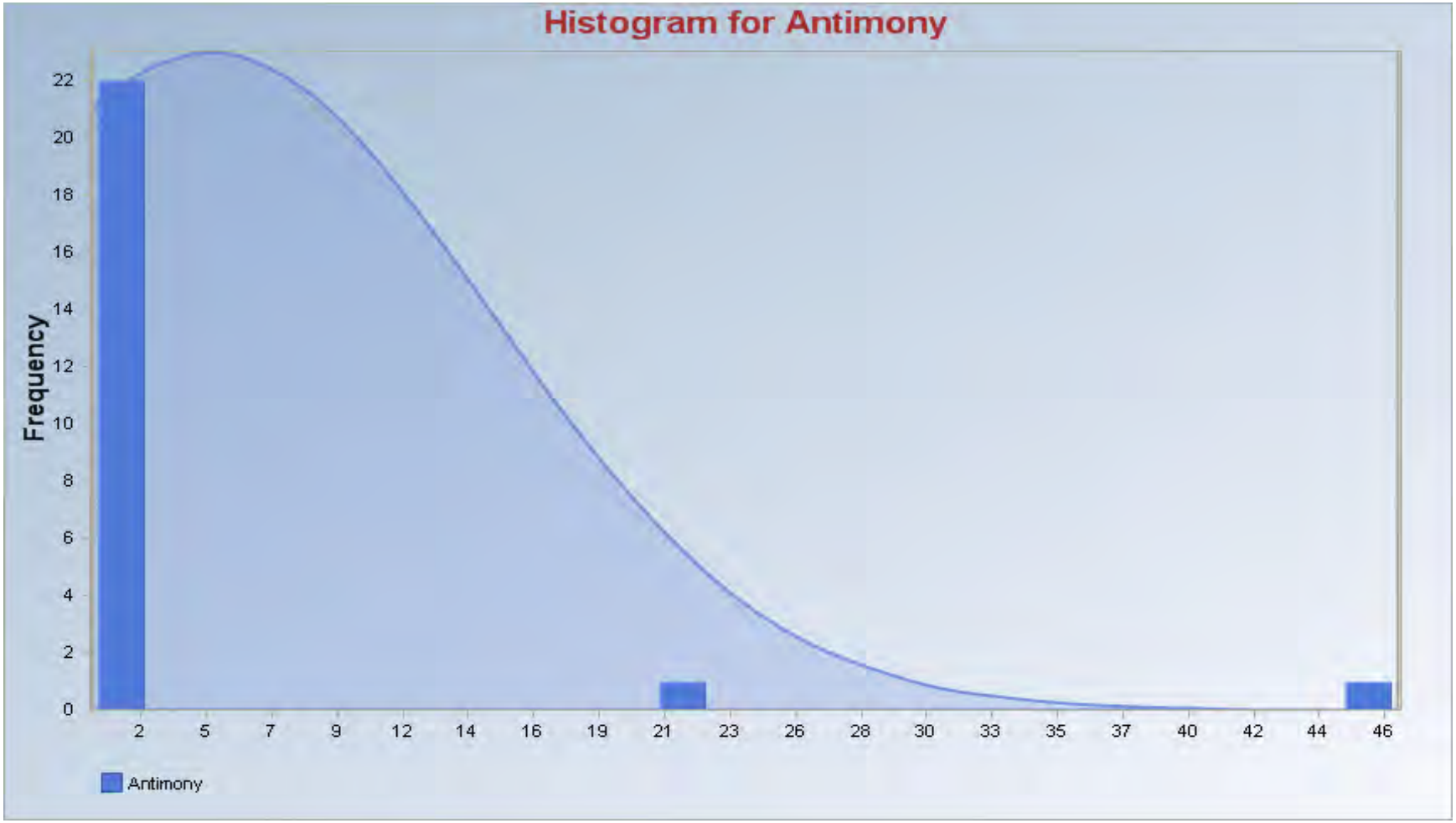
General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Antimony (Q South only))

General Statistics			
Number of Valid Data	24	Number of Detected Data	12
Number of Distinct Detected Data	11	Number of Non-Detect Data	12
Number of Missing Values	42	Percent Non-Detects	50.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.52	Minimum Detected	-0.654
Maximum Detected	47	Maximum Detected	3.85
Mean of Detected	7.163	Mean of Detected	0.843
SD of Detected	13.99	SD of Detected	1.365
Minimum Non-Detect	2	Minimum Non-Detect	0.693
Maximum Non-Detect	2.7	Maximum Non-Detect	0.993
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	83.33%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.528	Shapiro Wilk Test Statistic	0.845
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.16	Mean	0.493
SD	10.15	SD	1.012
95% DL/2 (t) UCL	7.712	95% H-Stat (DL/2) UCL	3.983
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.45
		SD in Log Scale	1.067
		Mean in Original Scale	4.155
		SD in Original Scale	10.16
		95% Percentile Bootstrap UCL	7.914
		95% BCA Bootstrap UCL	9.891
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.472	Data do not follow a Discernable Distribution (0.05)	
Theta Star	15.18		
nu star	11.33		
A-D Test Statistic	1.583	Nonparametric Statistics	
5% A-D Critical Value	0.781	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.781	Mean	4.151
5% K-S Critical Value	0.258	SD	9.948
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2.124
		95% KM (t) UCL	7.792
Assuming Gamma Distribution		95% KM (z) UCL	7.645
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7.713
Minimum	0.52	95% KM (bootstrap t) UCL	36.68
Maximum	47	95% KM (BCA) UCL	8.007
Mean	7.167	95% KM (Percentile Bootstrap) UCL	7.775
Median	5.756	95% KM (Chebyshev) UCL	13.41
SD	9.717	97.5% KM (Chebyshev) UCL	17.42
k star	0.912	99% KM (Chebyshev) UCL	25.29
Theta star	7.858		
Nu star	43.78	Potential UCLs to Use	
AppChi2	29.61	95% KM (BCA) UCL	8.007
95% Gamma Approximate UCL	10.6		
95% Adjusted Gamma UCL	10.9		

Note: DL/2 is not a recommended method.



Antimony only detected in Q South only.

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Arsenic (p)

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	10
Raw Statistics		Log-transformed Statistics	
Minimum	4	Minimum of Log Data	1.386
Maximum	26	Maximum of Log Data	3.258
Mean	11.3	Mean of log Data	2.255
Median	9.4	SD of log Data	0.623
SD	6.798		
Coefficient of Variation	0.602		
Skewness	0.917		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.898	Shapiro Wilk Test Statistic	0.933
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	15.01	95% H-UCL	18.38
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20.91
95% Adjusted-CLT UCL	15.27	97.5% Chebyshev (MVUE) UCL	25.05
95% Modified-t UCL	15.1	99% Chebyshev (MVUE) UCL	33.18
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.315	Data appear Normal at 5% Significance Level	
Theta Star	4.879		
nu star	50.93		
Approximate Chi Square Value (.05)	35.54	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	14.67
Adjusted Chi Square Value	33.46	95% Jackknife UCL	15.01
		95% Standard Bootstrap UCL	14.55
Anderson-Darling Test Statistic	0.37	95% Bootstrap-t UCL	15.98
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	15.86
Kolmogorov-Smirnov Test Statistic	0.173	95% Percentile Bootstrap UCL	14.59
Kolmogorov-Smirnov 5% Critical Value	0.257	95% BCA Bootstrap UCL	15.54
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20.23
		97.5% Chebyshev(Mean, Sd) UCL	24.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	31.69
95% Approximate Gamma UCL	16.19		
95% Adjusted Gamma UCL	17.19		
Potential UCL to Use		Use 95% Student's-t UCL	15.01

Arsenic (q central)

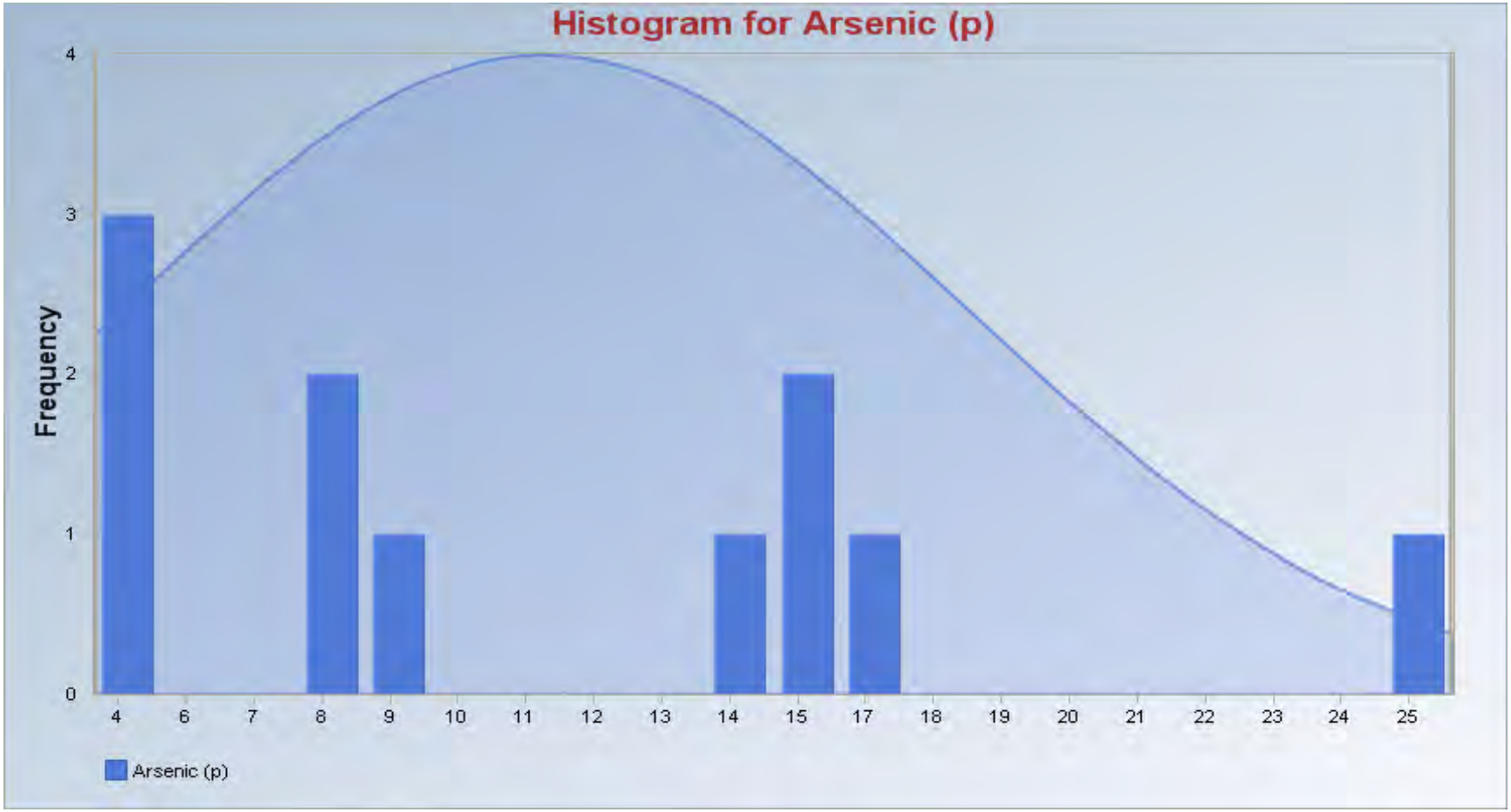
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	37
Number of Missing Values	5		
Raw Statistics		Log-transformed Statistics	
Minimum	1.1	Minimum of Log Data	0.0953
Maximum	100	Maximum of Log Data	4.605
Mean	17.77	Mean of log Data	2.079
Median	5.9	SD of log Data	1.195
SD	26.81		
Coefficient of Variation	1.509		
Skewness	2.054		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.605	Shapiro Wilk Test Statistic	0.903
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	24.48	95% H-UCL	25.85
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	31.08
95% Adjusted-CLT UCL	25.65	97.5% Chebyshev (MVUE) UCL	37.64
95% Modified-t UCL	24.69	99% Chebyshev (MVUE) UCL	50.53
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.714	Data do not follow a Discernable Distribution (0.05)	
Theta Star	24.87		
nu star	64.3		
Approximate Chi Square Value (.05)	46.85	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	24.34
Adjusted Chi Square Value	46.36	95% Jackknife UCL	24.48
		95% Standard Bootstrap UCL	24.2
Anderson-Darling Test Statistic	3.657	95% Bootstrap-t UCL	25.94
Anderson-Darling 5% Critical Value	0.79	95% Hall's Bootstrap UCL	24.77
Kolmogorov-Smirnov Test Statistic	0.274	95% Percentile Bootstrap UCL	24.65
Kolmogorov-Smirnov 5% Critical Value	0.137	95% BCA Bootstrap UCL	25.89
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	35.19
		97.5% Chebyshev(Mean, Sd) UCL	42.72
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	57.53
95% Approximate Gamma UCL	24.39		
95% Adjusted Gamma UCL	24.65		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	57.53

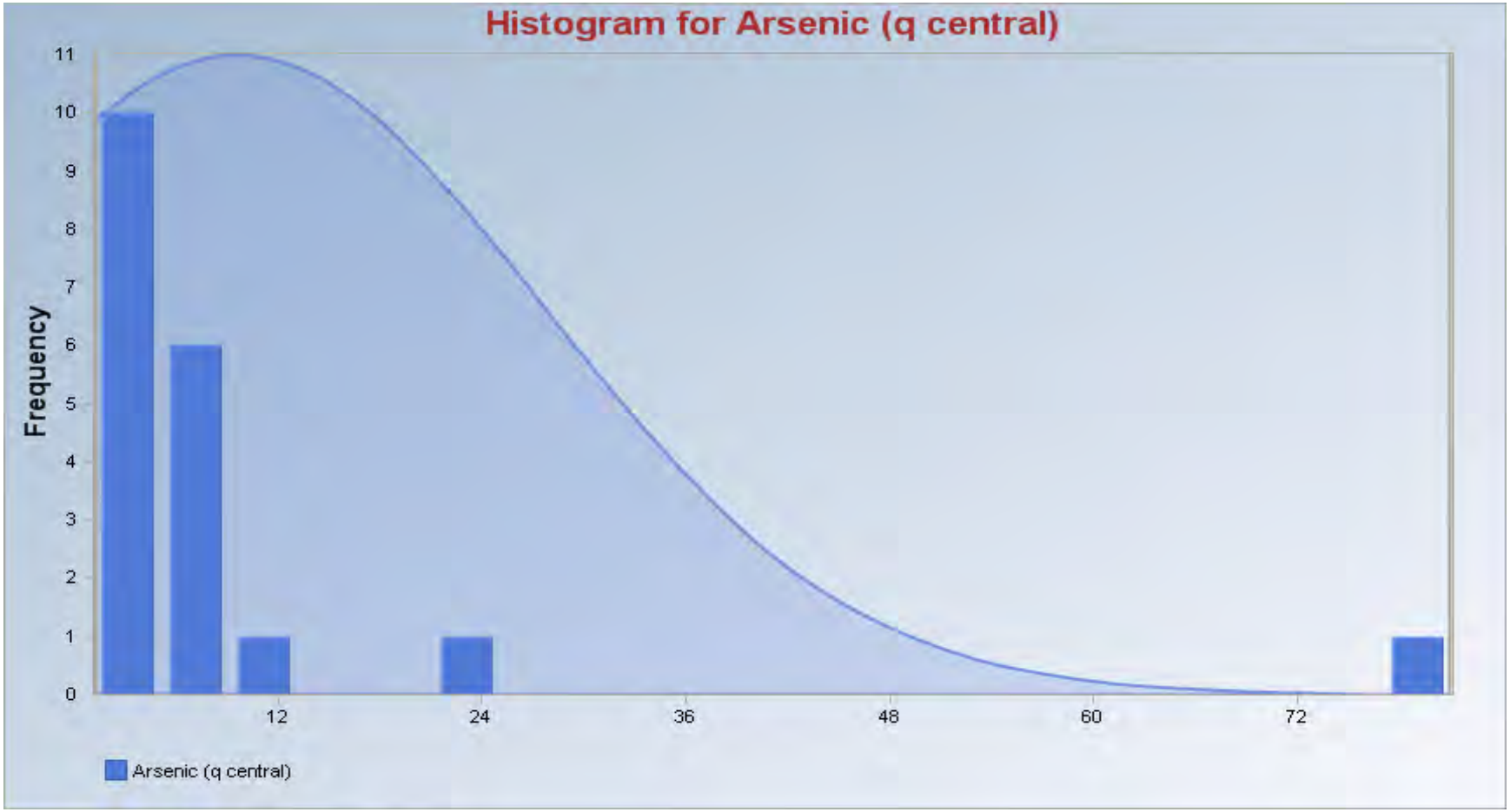
Arsenic (q north)

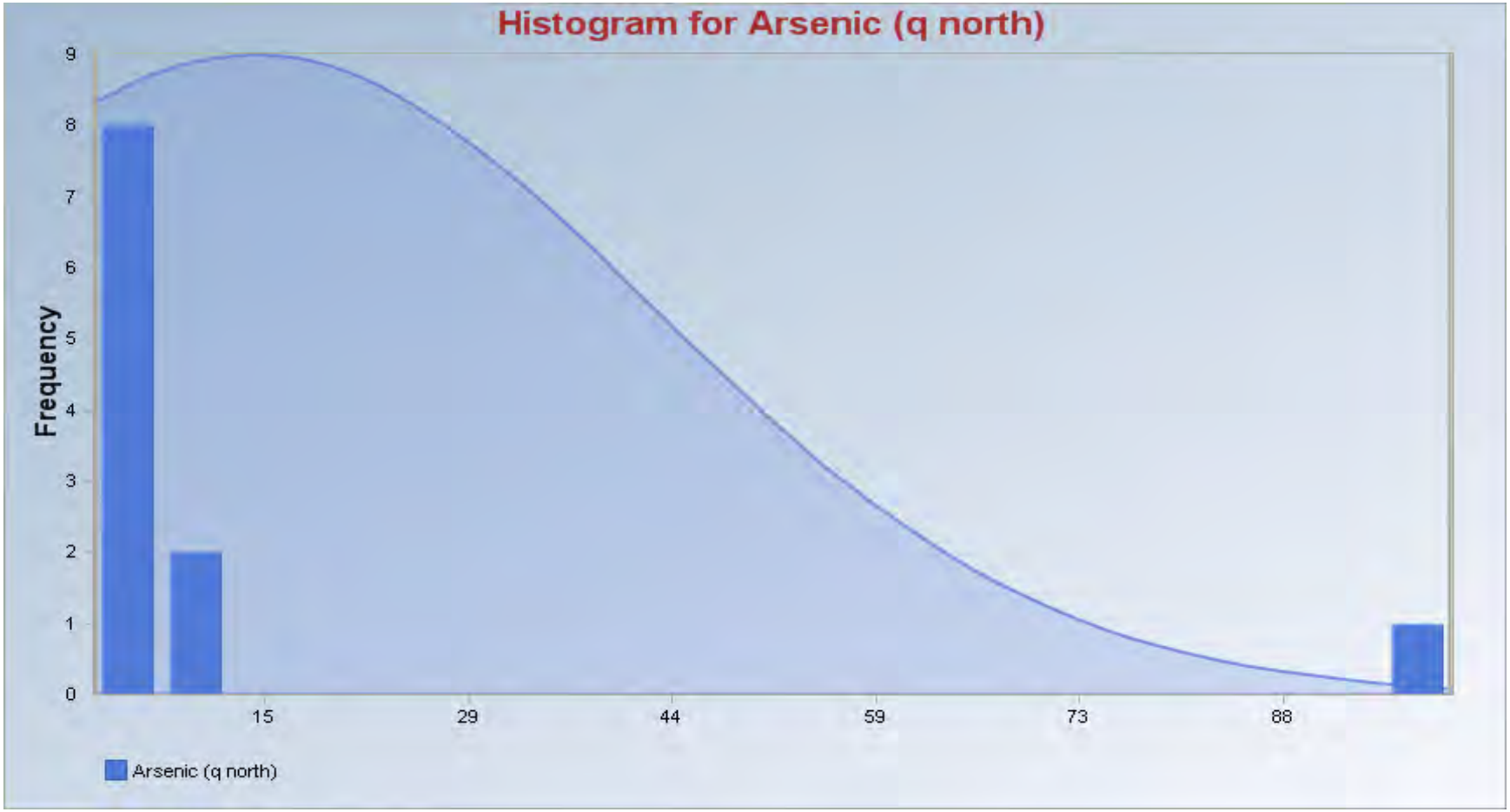
General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	2.3	Minimum of Log Data	0.833
Maximum	100	Maximum of Log Data	4.605
Mean	13.75	Mean of log Data	1.794
Median	4.5	SD of log Data	1.05
SD	28.73		
Coefficient of Variation	2.089		
Skewness	3.264		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.425	Shapiro Wilk Test Statistic	0.771
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	29.46	95% H-UCL	29.14
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	24.01
95% Adjusted-CLT UCL	37.11	97.5% Chebyshev (MVUE) UCL	30.18
95% Modified-t UCL	30.88	99% Chebyshev (MVUE) UCL	42.31
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.589	Data do not follow a Discernable Distribution (0.05)	
Theta Star	23.35		
nu star	12.96		
Approximate Chi Square Value (.05)	5.866	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	28
Adjusted Chi Square Value	5.108	95% Jackknife UCL	29.46
		95% Standard Bootstrap UCL	27.45
Anderson-Darling Test Statistic	1.81	95% Bootstrap-t UCL	156.7
Anderson-Darling 5% Critical Value	0.764	95% Hall's Bootstrap UCL	97.06
Kolmogorov-Smirnov Test Statistic	0.323	95% Percentile Bootstrap UCL	30.76
Kolmogorov-Smirnov 5% Critical Value	0.265	95% BCA Bootstrap UCL	39.9
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	51.51
		97.5% Chebyshev(Mean, Sd) UCL	67.85
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	99.95
95% Approximate Gamma UCL	30.39		
95% Adjusted Gamma UCL	34.89		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	99.95

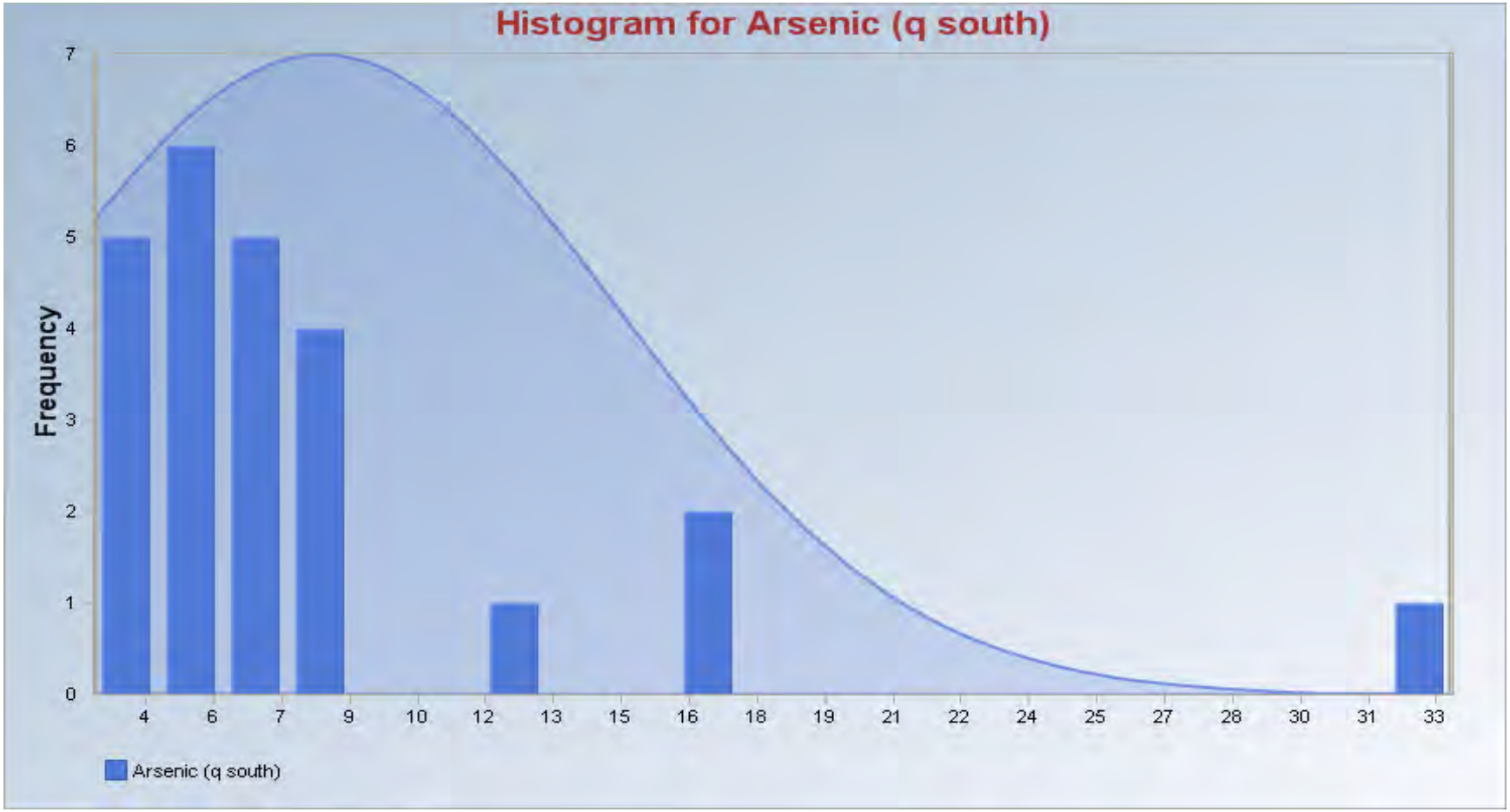
Arsenic (q south)

General Statistics			
Number of Valid Observations	24	Number of Distinct Observations	22
Raw Statistics		Log-transformed Statistics	
Minimum	3.3	Minimum of Log Data	1.194
Maximum	33	Maximum of Log Data	3.497
Mean	8.29	Mean of log Data	1.941
Median	6.35	SD of log Data	0.543
SD	6.444		
Coefficient of Variation	0.777		
Skewness	2.84		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.654	Shapiro Wilk Test Statistic	0.899
Shapiro Wilk Critical Value	0.916	Shapiro Wilk Critical Value	0.916
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	10.54	95% H-UCL	10.13
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	12.07
95% Adjusted-CLT UCL	11.27	97.5% Chebyshev (MVUE) UCL	13.83
95% Modified-t UCL	10.67	99% Chebyshev (MVUE) UCL	17.28
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.682	Data do not follow a Discernable Distribution (0.05)	
Theta Star	3.091		
nu star	128.7		
Approximate Chi Square Value (.05)	103.5	Nonparametric Statistics	
Adjusted Level of Significance	0.0392	95% CLT UCL	10.45
Adjusted Chi Square Value	101.9	95% Jackknife UCL	10.54
		95% Standard Bootstrap UCL	10.44
Anderson-Darling Test Statistic	1.428	95% Bootstrap-t UCL	12.76
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL	18.23
Kolmogorov-Smirnov Test Statistic	0.24	95% Percentile Bootstrap UCL	10.58
Kolmogorov-Smirnov 5% Critical Value	0.179	95% BCA Bootstrap UCL	11.2
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.02
		97.5% Chebyshev(Mean, Sd) UCL	16.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	21.38
95% Approximate Gamma UCL	10.31		
95% Adjusted Gamma UCL	10.47		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	14.02


Histogram for Arsenic (p)
Frequency
0
1
2
3
4
4
6
7
8
9
10
11
12
13
14
15
17
18
19
20
21
22
23
24
25
Arsenic (p)


Histogram for Arsenic (q central)
Frequency
11
10
9
8
7
6
5
4
3
2
1
0
12
24
36
48
60
72
Arsenic (q central)


Histogram for Arsenic (q north)
Frequency
0
1
2
3
4
5
6
7
8
9
15
29
44
59
73
88
Arsenic (q north)


Histogram for Arsenic (q south)
Frequency
0
1
2
3
4
5
6
7
4
6
7
9
10
12
13
15
16
18
19
21
22
24
25
27
28
30
31
33
Arsenic (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(a)anthracene (q central)

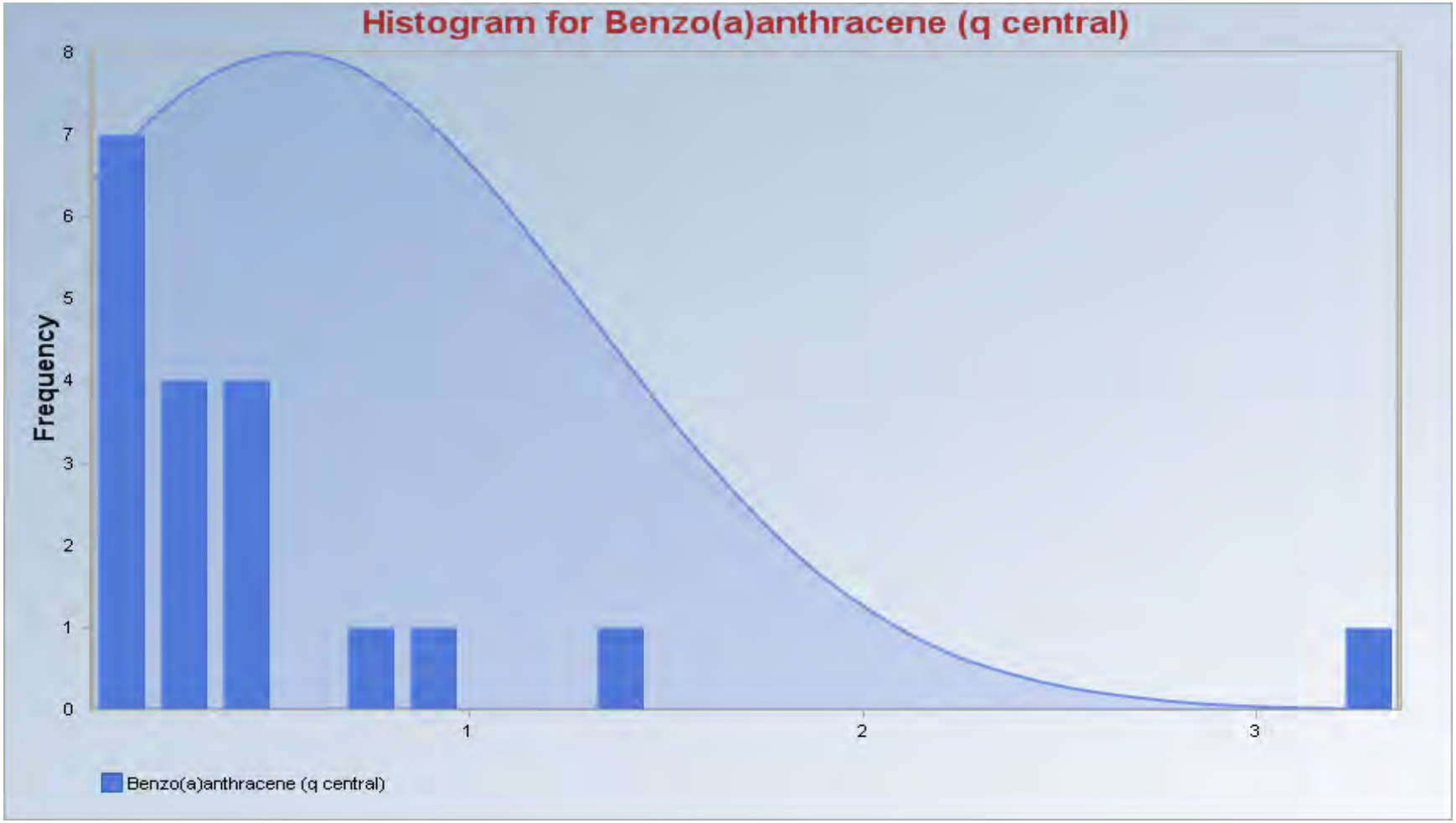
General Statistics			
Number of Valid Data	19	Number of Detected Data	15
Number of Distinct Detected Data	15	Number of Non-Detect Data	4
Number of Missing Values	1	Percent Non-Detects	21.05%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.035	Minimum Detected	-3.352
Maximum Detected	3.6	Maximum Detected	1.281
Mean of Detected	0.623	Mean of Detected	-1.144
SD of Detected	0.916	SD of Detected	1.161
Minimum Non-Detect	0.34	Minimum Non-Detect	-1.079
Maximum Non-Detect	0.46	Maximum Non-Detect	-0.777
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	15
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	78.95%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.618	Shapiro Wilk Test Statistic	0.971
5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.534	Mean	-1.246
SD	0.828	SD	1.045
95% DL/2 (t) UCL	0.863	95% H-Stat (DL/2) UCL	1.2
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	2.044	Mean in Log Scale	-1.275
SD	1.106	SD in Log Scale	1.057
95% MLE (t) UCL	2.484	Mean in Original Scale	0.528
95% MLE (Tiku) UCL	2.972	SD in Original Scale	0.83
		95% Percentile Bootstrap UCL	0.875
		95% BCA Bootstrap UCL	1.05
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.743	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.839		
nu star	22.29		
A-D Test Statistic	0.728	Nonparametric Statistics	
5% A-D Critical Value	0.769	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.769	Mean	0.531
5% K-S Critical Value	0.229	SD	0.808
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.192
		95% KM (t) UCL	0.864
Assuming Gamma Distribution		95% KM (z) UCL	0.847
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.861
Minimum	0.035	95% KM (bootstrap t) UCL	134.10%
Maximum	3.6	95% KM (BCA) UCL	0.86
Mean	0.607	95% KM (Percentile Bootstrap) UCL	0.855
Median	0.425	95% KM (Chebyshev) UCL	1.368
SD	0.809	97.5% KM (Chebyshev) UCL	1.73
k star	0.941	99% KM (Chebyshev) UCL	2.442
Theta star	0.645		
Nu star	35.74	Potential UCLs to Use	
AppChi2	23.06	95% KM (Chebyshev) UCL	1.368
95% Gamma Approximate UCL	0.94		
95% Adjusted Gamma UCL	0.978		

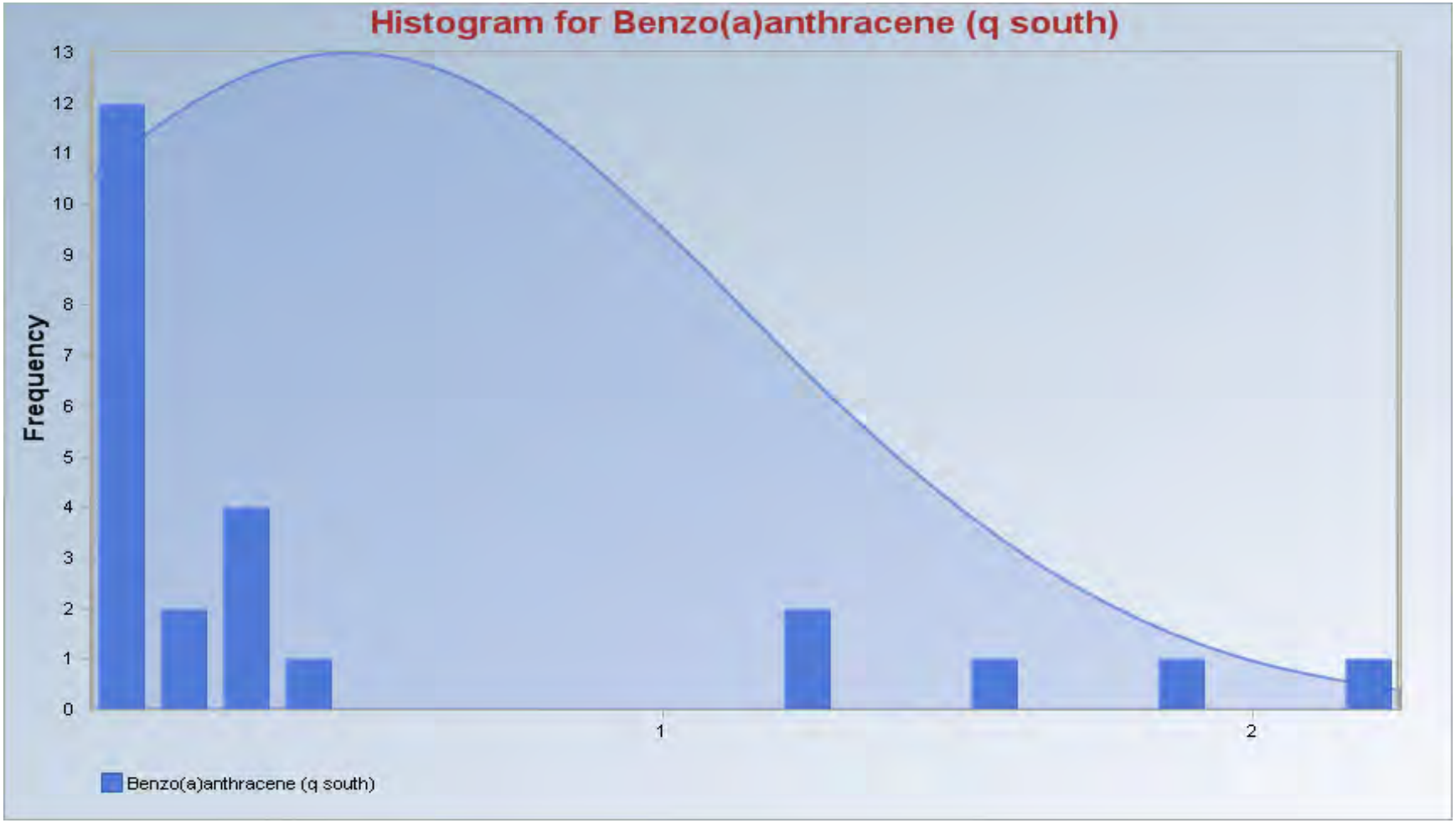
Note: DL/2 is not a recommended method.

Benzo(a)anthracene (q south)

General Statistics	
Number of Valid Data	24
Number of Distinct Detected Data	18
Raw Statistics	
Minimum Detected	0.03
Maximum Detected	2.515
Mean of Detected	0.555
SD of Detected	0.848
Minimum Non-Detect	0.36
Maximum Non-Detect	0.46
Note: Data have multiple DLs - Use of KM Method is recommended	
For all methods (except KM, DL/2, and ROS Methods),	
Observations < Largest ND are treated as NDs	
UCL Statistics	
Normal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.649
5% Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level	
Assuming Normal Distribution	
DL/2 Substitution Method	
Mean	0.481
SD	0.765
95% DL/2 (t) UCL	0.748
Maximum Likelihood Estimate(MLE) Method	N/A
MLE yields a negative mean	
Gamma Distribution Test with Detected Values Only	
k star (bias corrected)	0.468
Theta Star	1.185
nu star	17.79
A-D Test Statistic	2.327
5% A-D Critical Value	0.801
K-S Test Statistic	0.801
5% K-S Critical Value	0.21
Data not Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	0.03
Maximum	2.515
Mean	0.557
Median	0.14
SD	0.75
k star	0.579
Theta star	0.962
Nu star	27.79
AppChi2	16.77
95% Gamma Approximate UCL	0.923
95% Adjusted Gamma UCL	0.958
Note: DL/2 is not a recommended method.	

Number of Detected Data	19
Number of Non-Detect Data	5
Percent Non-Detects	20.83%
Log-transformed Statistics	
Minimum Detected	-3.507
Maximum Detected	0.922
Mean of Detected	-1.819
SD of Detected	1.565
Minimum Non-Detect	-1.022
Maximum Non-Detect	-0.777
Number treated as Non-Detect	19
Number treated as Detected	5
Single DL Non-Detect Percentage	79.17%
Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.797
5% Shapiro Wilk Critical Value	0.901
Data not Lognormal at 5% Significance Level	
Assuming Lognormal Distribution	
DL/2 Substitution Method	
Mean	-1.778
SD	1.388
95% H-Stat (DL/2) UCL	1.472
Log ROS Method	
Mean in Log Scale	-1.937
SD in Log Scale	1.413
Mean in Original Scale	0.46
SD in Original Scale	0.774
95% Percentile Bootstrap UCL	0.721
95% BCA Bootstrap UCL	0.792
Data Distribution Test with Detected Values Only	
Data do not follow a Discernable Distribution (0.05)	
Nonparametric Statistics	
Kaplan-Meier (KM) Method	
Mean	0.456
SD	0.76
SE of Mean	0.159
95% KM (t) UCL	0.729
95% KM (z) UCL	0.718
95% KM (jackknife) UCL	0.727
95% KM (bootstrap t) UCL	0.841
95% KM (BCA) UCL	0.735
95% KM (Percentile Bootstrap) UCL	0.728
95% KM (Chebyshev) UCL	1.151
97.5% KM (Chebyshev) UCL	1.451
99% KM (Chebyshev) UCL	2.042
Potential UCLs to Use	
99% KM (Chebyshev) UCL	2.042


Histogram for Benzo(a)anthracene (q central)
Frequency
0
1
2
3
4
5
6
7
8
1
2
3
Benzo(a)anthracene (q central)


Histogram for Benzo(a)anthracene (q south)
Frequency
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
Benzo(a)anthracene (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(a)pyrene (p)

General Statistics			
Number of Valid Data	11	Number of Detected Data	6
Number of Distinct Detected Data	5	Number of Non-Detect Data	5
		Percent Non-Detects	45.45%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.042	Minimum Detected	-3.17
Maximum Detected	0.67	Maximum Detected	-0.4
Mean of Detected	0.26	Mean of Detected	-1.642
SD of Detected	0.216	SD of Detected	0.902
Minimum Non-Detect	0.38	Minimum Non-Detect	-0.968
Maximum Non-Detect	8.6	Maximum Non-Detect	2.152

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.826	Shapiro Wilk Test Statistic	0.926
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.822	Mean	-1.014
SD	1.272	SD	1.301
95% DL/2 (t) UCL	1.518	95% H-Stat (DL/2) UCL	6.021
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.71
		SD in Log Scale	0.645
		Mean in Original Scale	0.218
		SD in Original Scale	0.16
		95% Percentile Bootstrap UCL	0.303
		95% BCA Bootstrap UCL	0.334
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.03	Data appear Normal at 5% Significance Level	
Theta Star	0.253		
nu star	12.36		
A-D Test Statistic	0.34	Nonparametric Statistics	
5% A-D Critical Value	0.705	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.705	Mean	0.24
5% K-S Critical Value	0.336	SD	0.178
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0714
		95% KM (t) UCL	0.369
Assuming Gamma Distribution		95% KM (z) UCL	0.357
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.371
Minimum	0.042	95% KM (bootstrap t) UCL	0.456
Maximum	0.67	95% KM (BCA) UCL	0.367
Mean	0.266	95% KM (Percentile Bootstrap) UCL	0.361
Median	0.26	95% KM (Chebyshev) UCL	0.551
SD	0.153	97.5% KM (Chebyshev) UCL	0.686
k star	2.418	99% KM (Chebyshev) UCL	0.951
Theta star	0.11		
Nu star	53.19	Potential UCLs to Use	
AppChi2	37.43	95% KM (t) UCL	0.369
95% Gamma Approximate UCL	0.378	95% KM (Percentile Bootstrap) UCL	0.361
95% Adjusted Gamma UCL	0.401		

Note: DL/2 is not a recommended method.

Benzo(a)pyrene (q central)

General Statistics			
Number of Valid Data	19	Number of Detected Data	15
Number of Distinct Detected Data	15	Number of Non-Detect Data	4
Number of Missing Values	1	Percent Non-Detects	21.05%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.028	Minimum Detected	-3.576
Maximum Detected	3.2	Maximum Detected	1.163
Mean of Detected	0.594	Mean of Detected	-1.263
SD of Detected	0.838	SD of Detected	1.296
Minimum Non-Detect	0.34	Minimum Non-Detect	-1.079
Maximum Non-Detect	0.4	Maximum Non-Detect	-0.916
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	13
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	68.42%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.668	Shapiro Wilk Test Statistic	0.983
5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.509	Mean	-1.35
SD	0.759	SD	1.156
95% DL/2 (t) UCL	0.81	95% H-Stat (DL/2) UCL	1.221
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.424
		SD in Log Scale	1.196
		Mean in Original Scale	0.498
		SD in Original Scale	0.764
		95% Percentile Bootstrap UCL	0.807
		95% BCA Bootstrap UCL	0.914
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.684	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.868		
nu star	20.53		
A-D Test Statistic	0.43	Nonparametric Statistics	
5% A-D Critical Value	0.773	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.773	Mean	0.503
5% K-S Critical Value	0.23	SD	0.742
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.177
		95% KM (t) UCL	0.809
Assuming Gamma Distribution		95% KM (z) UCL	0.794
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.807
Minimum	0.028	95% KM (bootstrap t) UCL	1.192
Maximum	3.2	95% KM (BCA) UCL	0.805
Mean	0.549	95% KM (Percentile Bootstrap) UCL	0.817
Median	0.3	95% KM (Chebyshev) UCL	1.273
SD	0.752	97.5% KM (Chebyshev) UCL	1.606
k star	0.788	99% KM (Chebyshev) UCL	2.261
Theta star	0.697		
Nu star	29.93	Potential UCLs to Use	
AppChi2	18.44	95% KM (Chebyshev) UCL	1.273
95% Gamma Approximate UCL	0.891		
95% Adjusted Gamma UCL	0.931		

Note: DL/2 is not a recommended method.

Benzo(a)pyrene (q north)

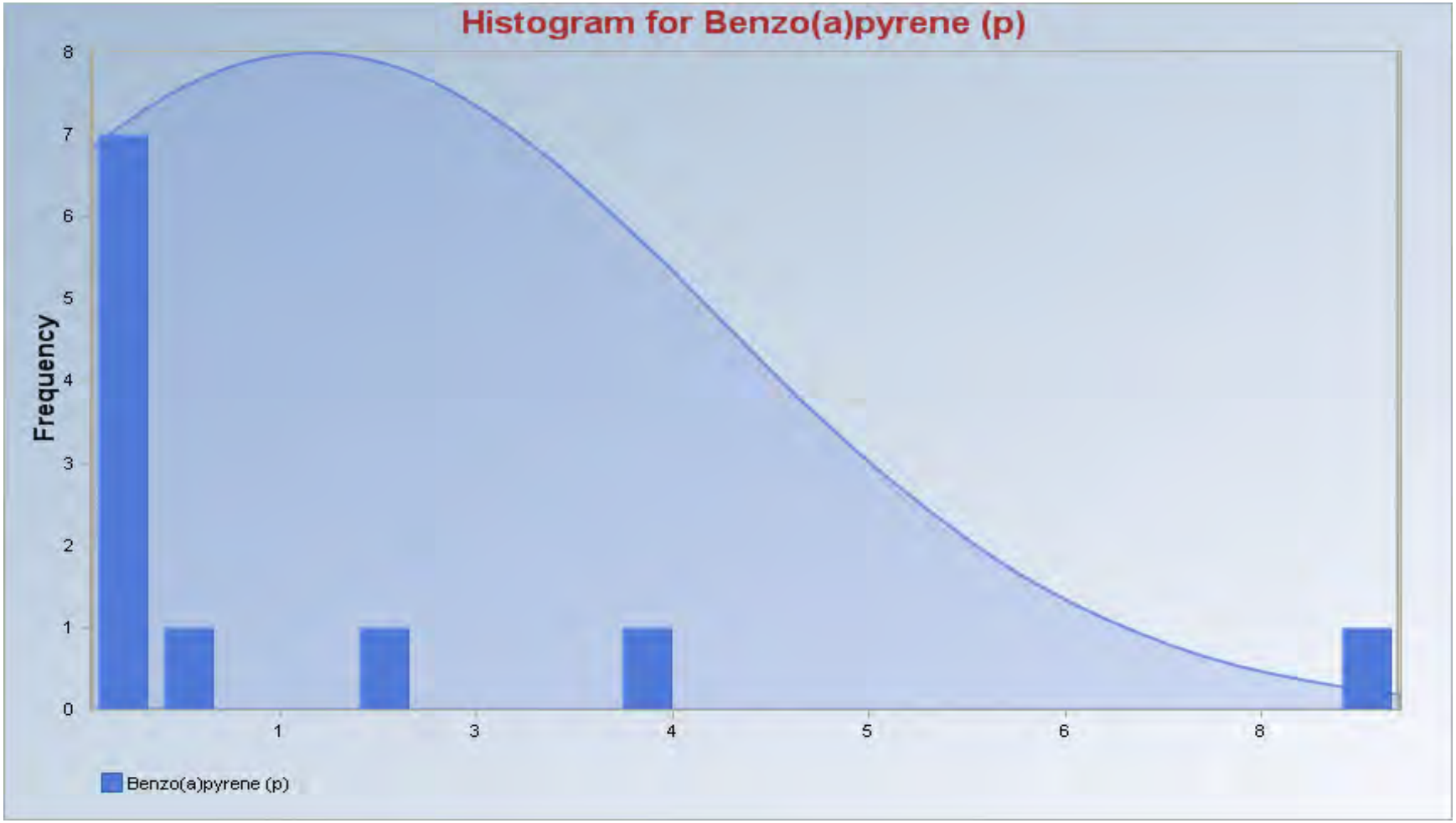
General Statistics			
Number of Valid Data	11	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	1
		Percent Non-Detects	9.09%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.024	Minimum Detected	-3.73
Maximum Detected	1.8	Maximum Detected	0.588
Mean of Detected	0.698	Mean of Detected	-1.209
SD of Detected	0.745	SD of Detected	1.579
Minimum Non-Detect	3.5	Minimum Non-Detect	1.253
Maximum Non-Detect	3.5	Maximum Non-Detect	1.253
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.794	Shapiro Wilk Test Statistic	0.909
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.794	Mean	-1.049
SD	0.775	SD	1.59
95% DL/2 (t) UCL	1.217	95% H-Stat (DL/2) UCL	15.87
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.209
		SD in Log Scale	1.498
		Mean in Original Scale	0.662
		SD in Original Scale	0.717
		95% Percentile Bootstrap UCL	1.018
		95% BCA Bootstrap UCL	1.033
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.564	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.238		
nu star	11.27		
A-D Test Statistic	0.49	Nonparametric Statistics	
5% A-D Critical Value	0.76	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.76	Mean	0.698
5% K-S Critical Value	0.277	SD	0.707
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.236
		95% KM (t) UCL	1.125
Assuming Gamma Distribution		95% KM (z) UCL	1.085
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.127
Minimum	0.024	95% KM (bootstrap t) UCL	1.268
Maximum	1.8	95% KM (BCA) UCL	1.072
Mean	0.685	95% KM (Percentile Bootstrap) UCL	1.103
Median	0.32	95% KM (Chebyshev) UCL	1.725
SD	0.708	97.5% KM (Chebyshev) UCL	2.169
k star	0.621	99% KM (Chebyshev) UCL	3.043
Theta star	1.104		
Nu star	13.66	Potential UCLs to Use	
AppChi2	6.338	95% KM (Chebyshev) UCL	1.725
95% Gamma Approximate UCL	1.476		
95% Adjusted Gamma UCL	1.687		

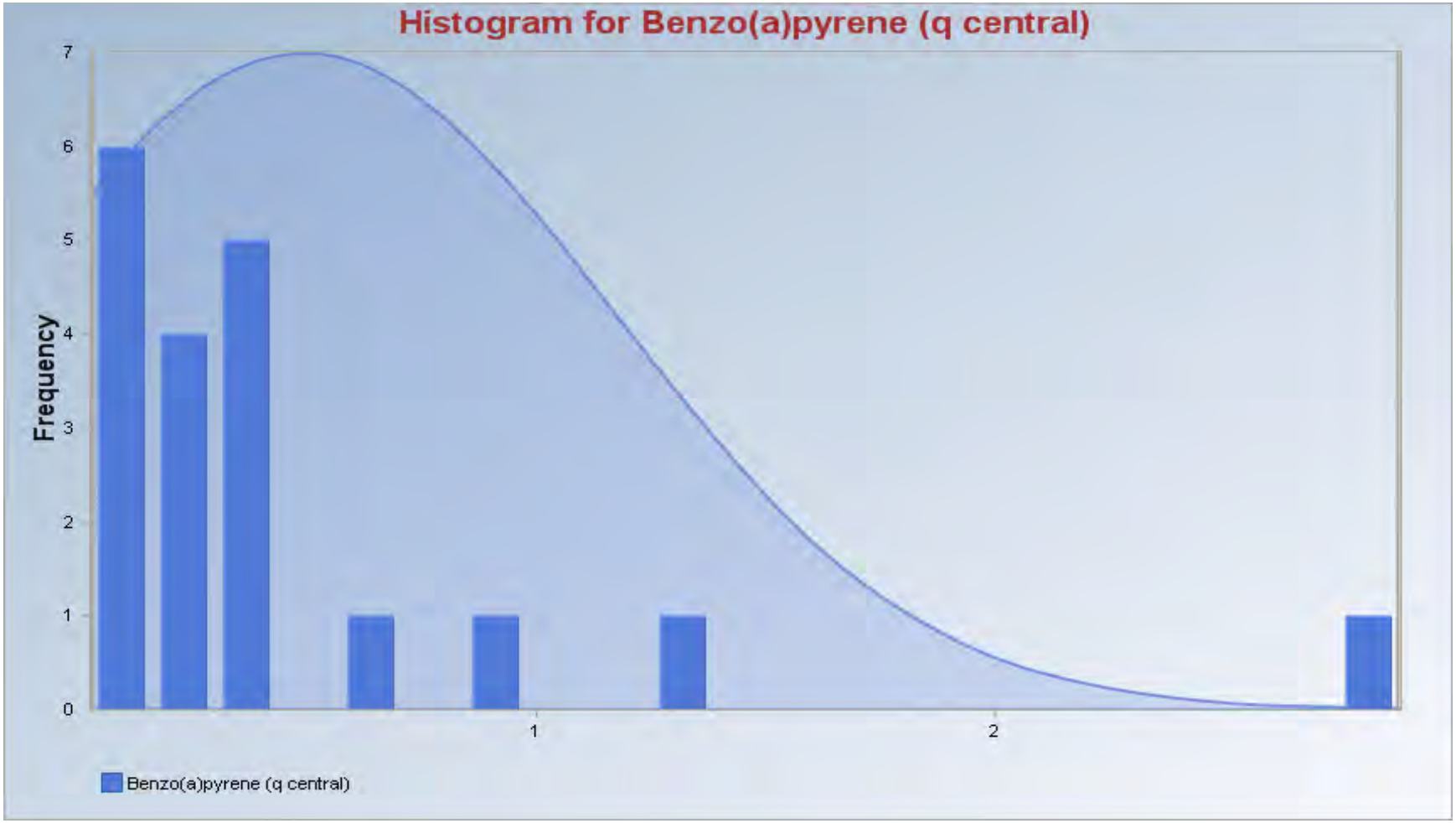
Note: DL/2 is not a recommended method.

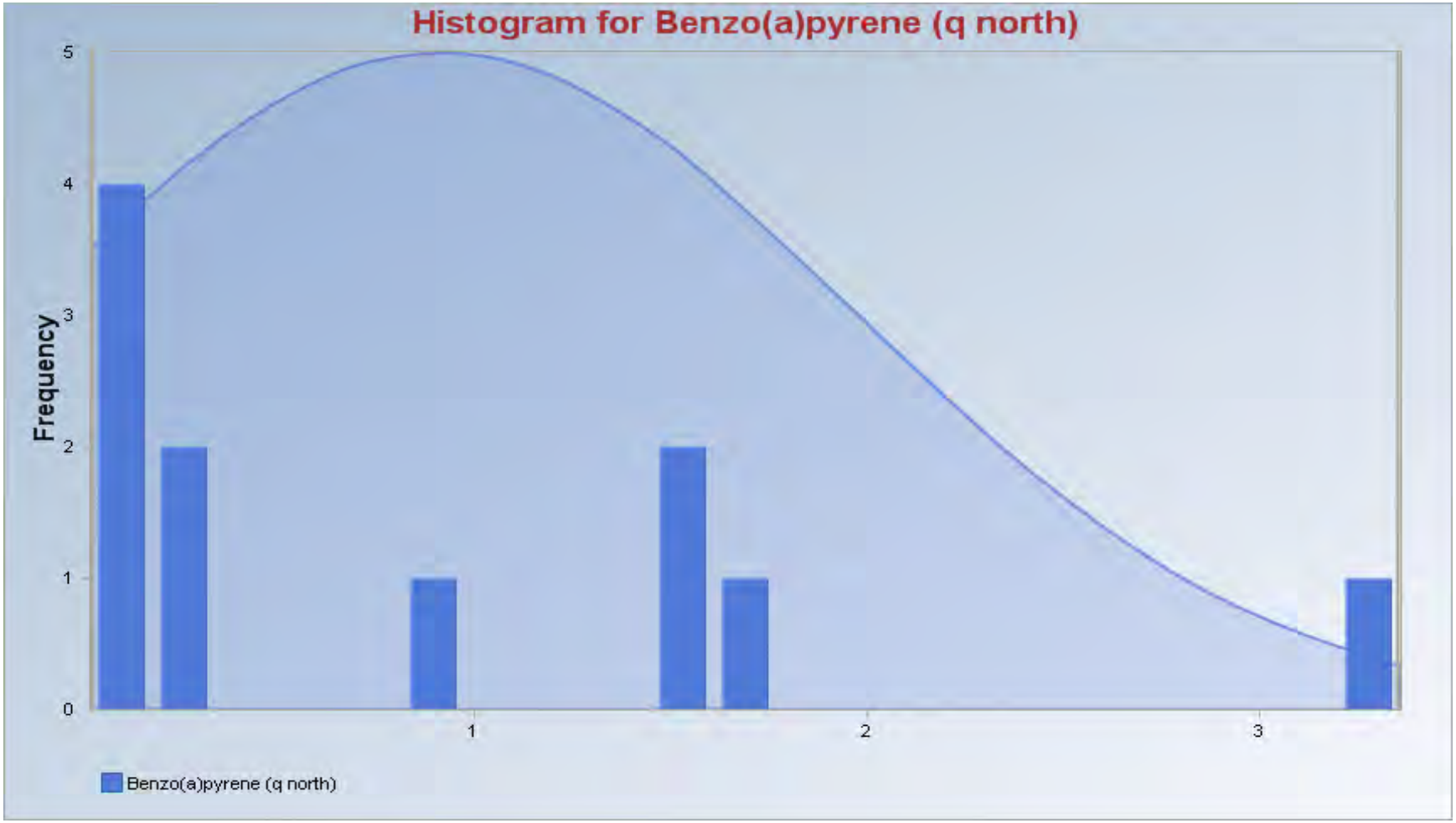
Benzo(a)pyrene (q south)

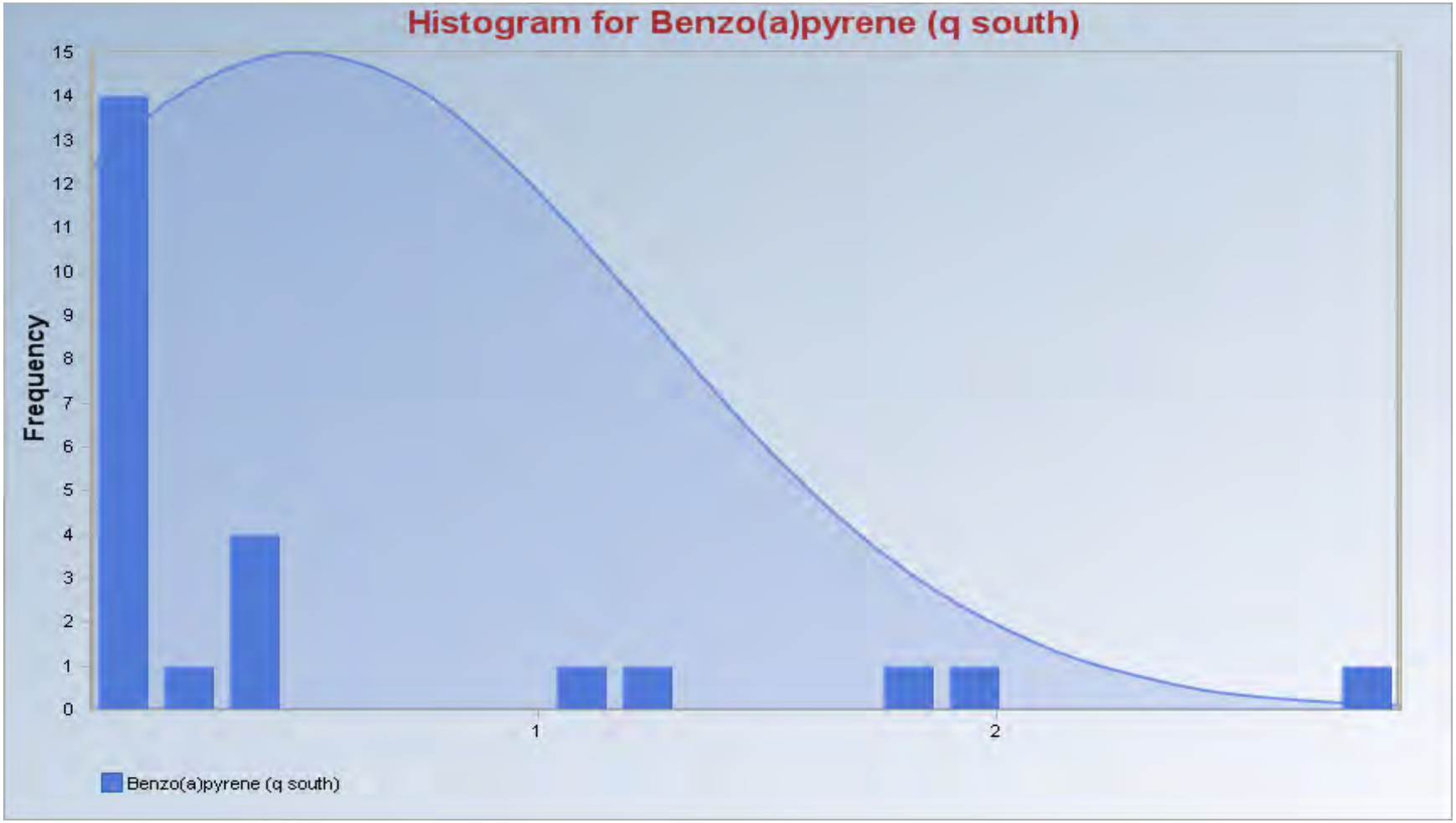
General Statistics			
Number of Valid Data	24	Number of Detected Data	20
Number of Distinct Detected Data	20	Number of Non-Detect Data	4
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.023	Minimum Detected	-3.772
Maximum Detected	2.975	Maximum Detected	1.09
Mean of Detected	0.518	Mean of Detected	-1.867
SD of Detected	0.85	SD of Detected	1.513
Minimum Non-Detect	0.38	Minimum Non-Detect	-0.968
Maximum Non-Detect	0.46	Maximum Non-Detect	-0.777
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	19
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	79.17%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.631	Shapiro Wilk Test Statistic	0.834
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.466	Mean	-1.819
SD	0.782	SD	1.379
95% DL/2 (t) UCL	0.739	95% H-Stat (DL/2) UCL	1.234
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.952
		SD in Log Scale	1.389
		Mean in Original Scale	0.447
		SD in Original Scale	0.789
		95% Percentile Bootstrap UCL	0.715
		95% BCA Bootstrap UCL	0.773
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.477	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.085		
nu star	19.09		
A-D Test Statistic	2.294	Nonparametric Statistics	
5% A-D Critical Value	0.8	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8	Mean	0.444
5% K-S Critical Value	0.205	SD	0.774
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.162
		95% KM (t) UCL	0.722
Assuming Gamma Distribution		95% KM (z) UCL	0.711
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.721
Minimum	0.023	95% KM (bootstrap t) UCL	0.941
Maximum	2.975	95% KM (BCA) UCL	0.721
Mean	0.501	95% KM (Percentile Bootstrap) UCL	0.726
Median	0.115	95% KM (Chebyshev) UCL	1.151
SD	0.773	97.5% KM (Chebyshev) UCL	1.457
k star	0.562	99% KM (Chebyshev) UCL	2.058
Theta star	0.891		
Nu star	26.96	Potential UCLs to Use	
AppChi2	16.12	99% KM (Chebyshev) UCL	2.058
95% Gamma Approximate UCL	0.837		
95% Adjusted Gamma UCL	0.869		

Note: DL/2 is not a recommended method.


Histogram for Benzo(a)pyrene (p)
Frequency
0
1
2
3
4
5
6
7
8
1
3
4
5
6
8
Benzo(a)pyrene (p)


Histogram for Benzo(a)pyrene (q central)
Frequency
0
1
2
3
4
5
6
7
1
2
Benzo(a)pyrene (q central)


Histogram for Benzo(a)pyrene (q north)
Frequency
5
4
3
2
1
0
1
2
3
Benzo(a)pyrene (q north)


Histogram for Benzo(a)pyrene (q south)
Frequency
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
Benzo(a)pyrene (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(b)fluoranthene (q central)

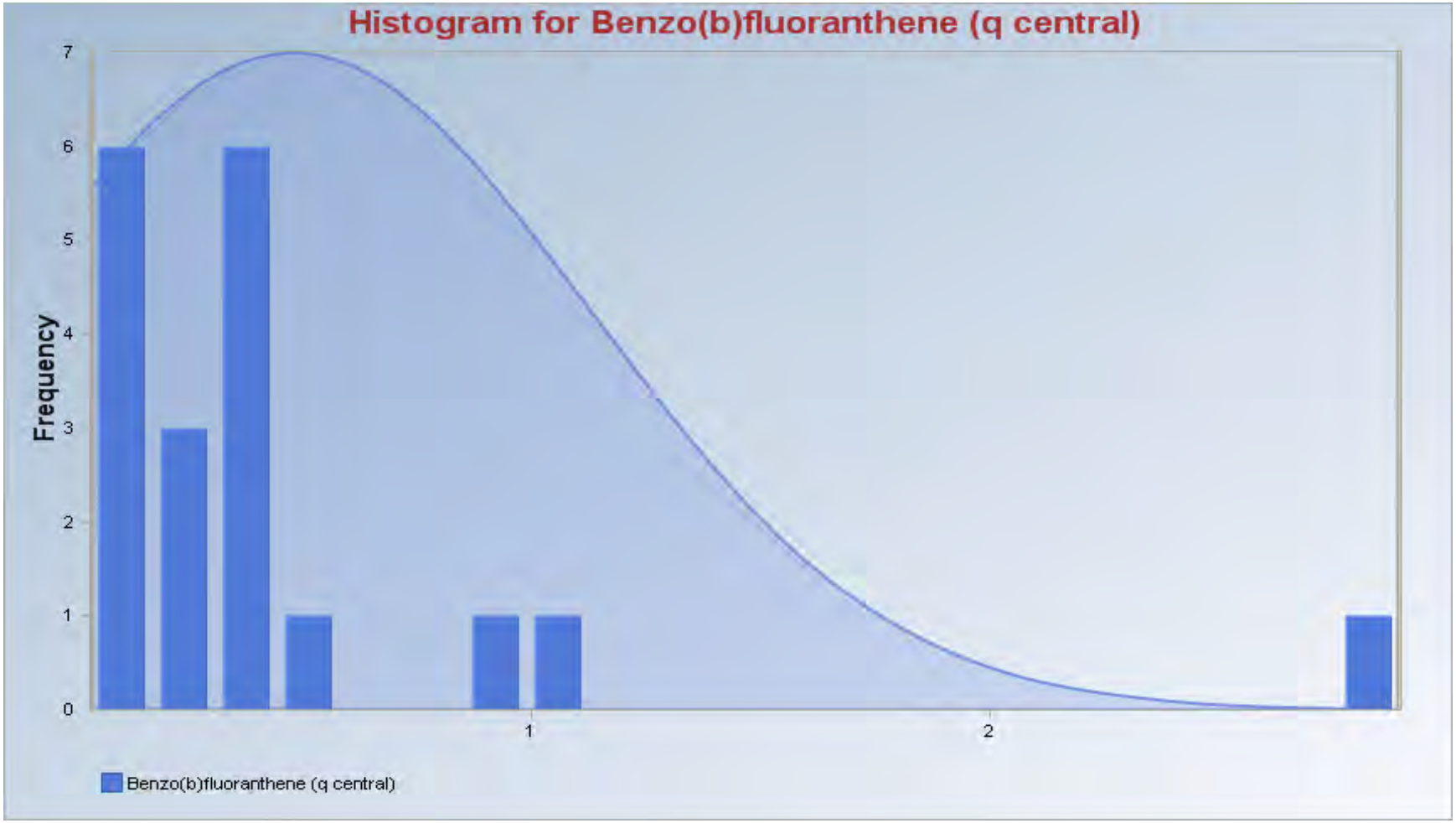
General Statistics			
Number of Valid Data	19	Number of Detected Data	15
Number of Distinct Detected Data	15	Number of Non-Detect Data	4
Number of Missing Values	1	Percent Non-Detects	21.05%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.039	Minimum Detected	-3.244
Maximum Detected	3.2	Maximum Detected	1.163
Mean of Detected	0.57	Mean of Detected	-1.235
SD of Detected	0.81	SD of Detected	1.204
Minimum Non-Detect	0.34	Minimum Non-Detect	-1.079
Maximum Non-Detect	0.4	Maximum Non-Detect	-0.916
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	73.68%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.639	Shapiro Wilk Test Statistic	0.984
5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.49	Mean	-1.328
SD	0.732	SD	1.078
95% DL/2 (t) UCL	0.781	95% H-Stat (DL/2) UCL	1.046
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.388
		SD in Log Scale	1.113
		Mean in Original Scale	0.481
		SD in Original Scale	0.736
		95% Percentile Bootstrap UCL	0.785
		95% BCA Bootstrap UCL	0.911
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.742	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.769		
nu star	22.25		
A-D Test Statistic	0.421	Nonparametric Statistics	
5% A-D Critical Value	0.769	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.769	Mean	0.486
5% K-S Critical Value	0.229	SD	0.715
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.17
		95% KM (t) UCL	0.782
Assuming Gamma Distribution		95% KM (z) UCL	0.767
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.78
Minimum	0.039	95% KM (bootstrap t) UCL	1.212
Maximum	3.2	95% KM (BCA) UCL	0.793
Mean	0.532	95% KM (Percentile Bootstrap) UCL	0.789
Median	0.32	95% KM (Chebyshev) UCL	1.229
SD	0.725	97.5% KM (Chebyshev) UCL	1.55
k star	0.873	99% KM (Chebyshev) UCL	2.182
Theta star	0.609		
Nu star	33.17	Potential UCLs to Use	
AppChi2	21.01	95% KM (Chebyshev) UCL	1.229
95% Gamma Approximate UCL	0.839		
95% Adjusted Gamma UCL	0.875		

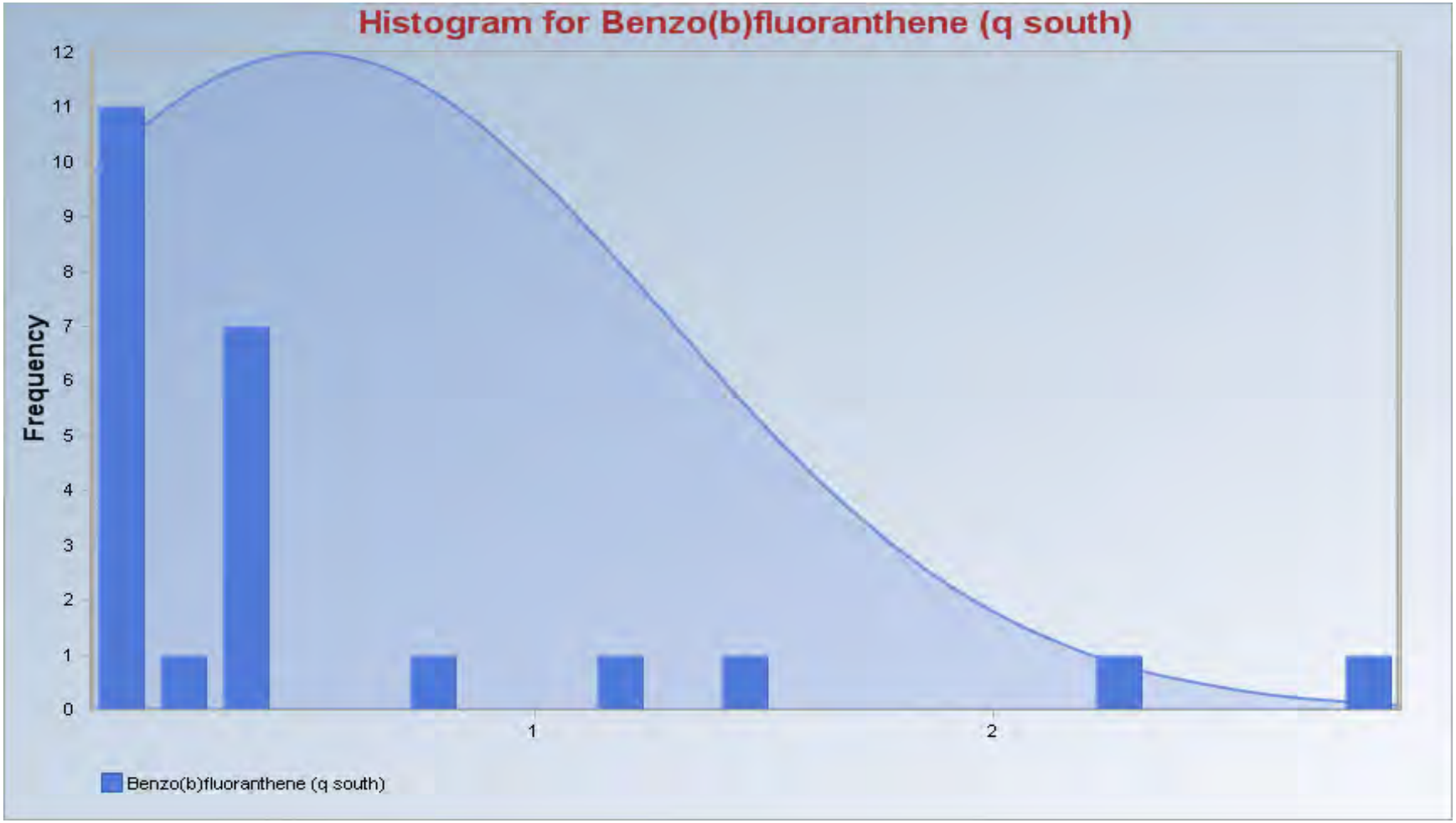
Note: DL/2 is not a recommended method.

Benzo(b)fluoranthene (q south)

General Statistics			
Number of Valid Data	24	Number of Detected Data	17
Number of Distinct Detected Data	17	Number of Non-Detect Data	7
		Percent Non-Detects	29.17%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.033	Minimum Detected	-3.411
Maximum Detected	3.3	Maximum Detected	1.194
Mean of Detected	0.665	Mean of Detected	-1.647
SD of Detected	1.034	SD of Detected	1.612
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.46	Maximum Non-Detect	-0.777
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	19
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	79.17%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.67	Shapiro Wilk Test Statistic	0.853
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.53	Mean	-1.637
SD	0.89	SD	1.345
95% DL/2 (t) UCL	0.841	95% H-Stat (DL/2) UCL	1.331
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	2.141	Mean in Log Scale	-1.847
SD	0.835	SD in Log Scale	1.405
95% MLE (t) UCL	2.433	Mean in Original Scale	0.503
95% MLE (Tiku) UCL	2.775	SD in Original Scale	0.901
		95% Percentile Bootstrap UCL	0.827
		95% BCA Bootstrap UCL	0.898
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.46	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.447		
nu star	15.63		
A-D Test Statistic	1.575	Nonparametric Statistics	
5% A-D Critical Value	0.797	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.797	Mean	0.497
5% K-S Critical Value	0.221	SD	0.885
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.186
		95% KM (t) UCL	0.816
Assuming Gamma Distribution		95% KM (z) UCL	0.803
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.814
Minimum	0.033	95% KM (bootstrap t) UCL	1.043
Maximum	3.3	95% KM (BCA) UCL	0.865
Mean	0.664	95% KM (Percentile Bootstrap) UCL	0.823
Median	0.424	95% KM (Chebyshev) UCL	1.309
SD	0.863	97.5% KM (Chebyshev) UCL	1.661
k star	0.631	99% KM (Chebyshev) UCL	2.351
Theta star	1.052		
Nu star	30.29	Potential UCLs to Use	
AppChi2	18.72	99% KM (Chebyshev) UCL	2.351
95% Gamma Approximate UCL	1.074		
95% Adjusted Gamma UCL	1.112		

Note: DL/2 is not a recommended method.


Histogram for Benzo(b)fluoranthene (q central)
Frequency
0
1
2
3
4
5
6
7
1
2
Benzo(b)fluoranthene (q central)


Histogram for Benzo(b)fluoranthene (q south)
Frequency
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
Benzo(b)fluoranthene (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

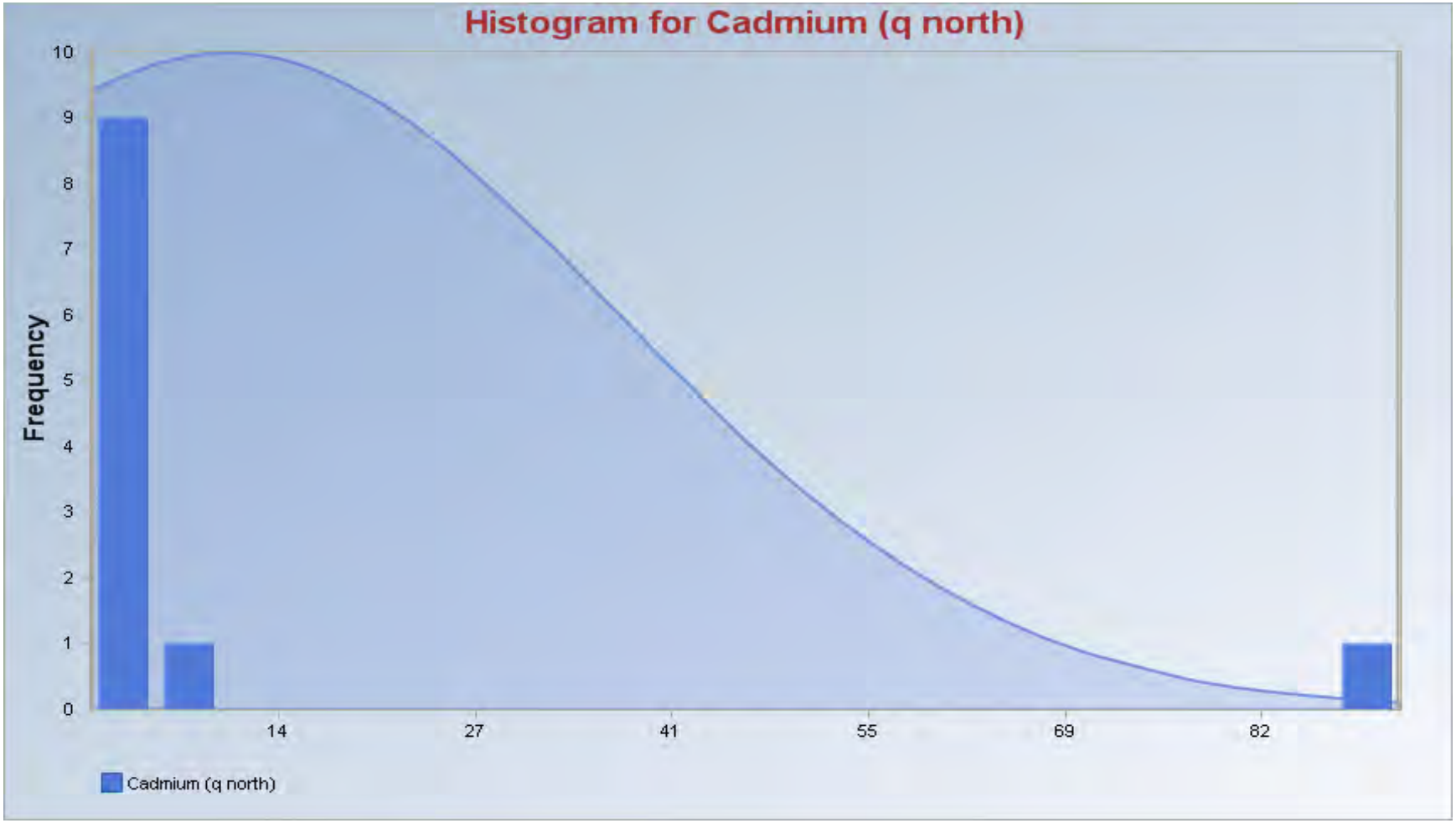
Cadmium (q north)

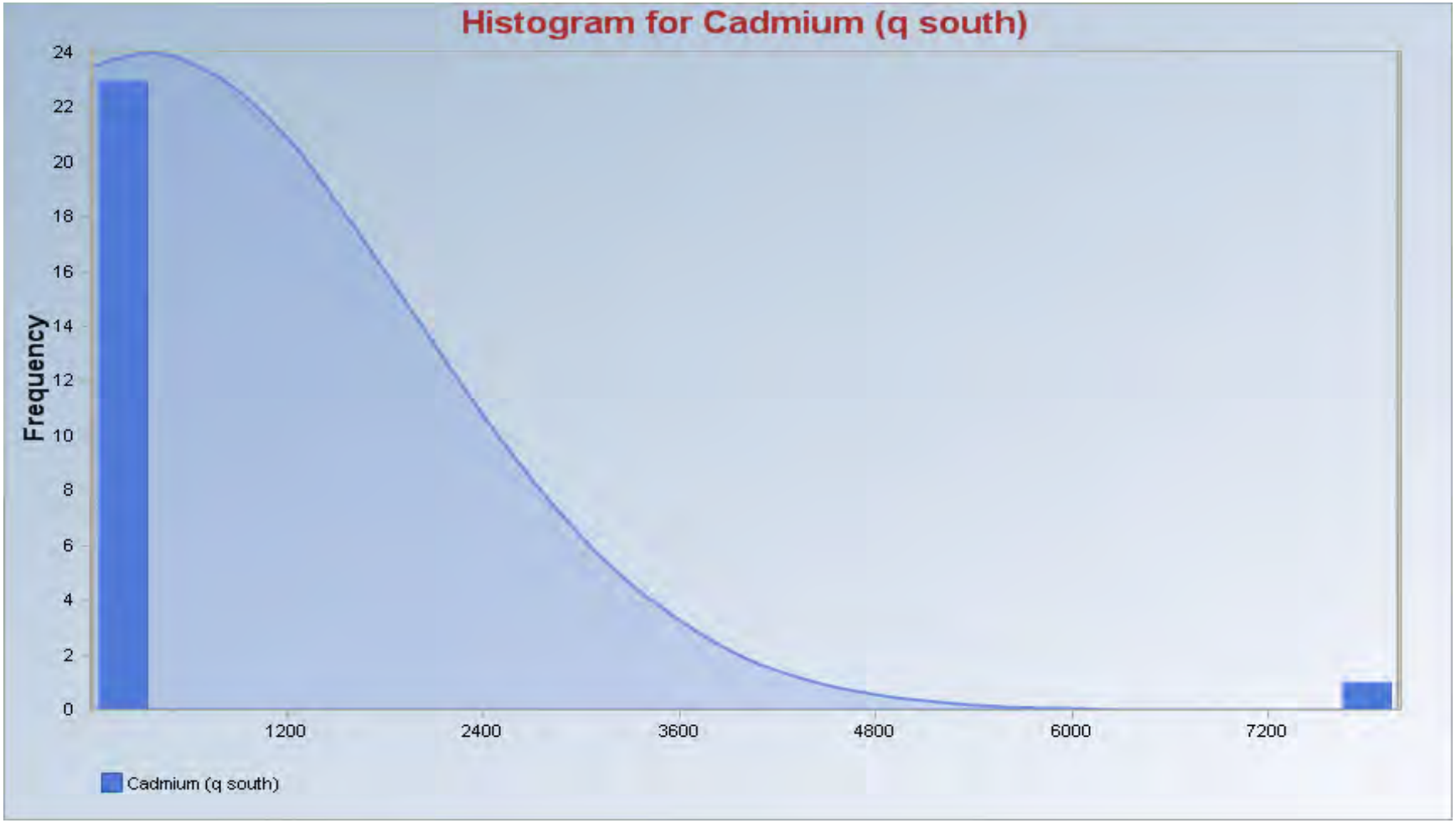
General Statistics			
Number of Valid Data	11	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	1
		Percent Non-Detects	9.09%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.49	Minimum Detected	-0.713
Maximum Detected	92	Maximum Detected	4.522
Mean of Detected	10.94	Mean of Detected	0.687
SD of Detected	28.54	SD of Detected	1.607
Minimum Non-Detect	0.53	Minimum Non-Detect	-0.635
Maximum Non-Detect	0.53	Maximum Non-Detect	-0.635
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.417	Shapiro Wilk Test Statistic	0.826
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.969	Mean	0.504
SD	27.27	SD	1.642
95% DL/2 (t) UCL	24.87	95% H-Stat (DL/2) UCL	51.86
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.335	Mean in Log Scale	0.504
SD	31.86	SD in Log Scale	1.641
95% MLE (t) UCL	20.75	Mean in Original Scale	9.969
95% MLE (Tiku) UCL	21.09	SD in Original Scale	27.27
		95% Percentile Bootstrap UCL	26.28
		95% BCA Bootstrap UCL	34.79
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.338	Data do not follow a Discernable Distribution (0.05)	
Theta Star	32.35		
nu star	6.764		
A-D Test Statistic	1.54	Nonparametric Statistics	
5% A-D Critical Value	0.798	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.798	Mean	9.99
5% K-S Critical Value	0.285	SD	25.99
Data not Gamma Distributed at 5% Significance Level		SE of Mean	8.26
		95% KM (t) UCL	24.96
Assuming Gamma Distribution		95% KM (z) UCL	23.58
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	24.89
Minimum	1.00E-09	95% KM (bootstrap t) UCL	244.1
Maximum	92	95% KM (BCA) UCL	26.41
Mean	9.945	95% KM (Percentile Bootstrap) UCL	26.31
Median	1.3	95% KM (Chebyshev) UCL	45.99
SD	27.27	97.5% KM (Chebyshev) UCL	61.57
k star	0.21	99% KM (Chebyshev) UCL	92.17
Theta star	47.26		
Nu star	4.629	Potential UCLs to Use	
AppChi2	0.985	99% KM (Chebyshev) UCL	92.17
95% Gamma Approximate UCL	46.74		
95% Adjusted Gamma UCL	61.9		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

Cadmium (q south)

General Statistics		
Number of Valid Observations	24	21
Raw Statistics		
Minimum	0.41	-0.892
Maximum	8000	8.987
Mean	338.6	1.312
Median	2.1	1.997
SD	1632	
Coefficient of Variation	4.82	
Skewness	4.899	
Relevant UCL Statistics		
Normal Distribution Test		
Shapiro Wilk Test Statistic	0.214	0.745
Shapiro Wilk Critical Value	0.916	0.916
Data not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Student's-t UCL	909.5	144.7
95% UCLs (Adjusted for Skewness)		72.73
95% Adjusted-CLT UCL	1242	94.61
95% Modified-t UCL	965	137.6
Gamma Distribution Test		
k star (bias corrected)	0.174	
Theta Star	1942	
nu star	8.37	
Approximate Chi Square Value (.05)	2.951	
Adjusted Level of Significance	0.0392	886.5
Adjusted Chi Square Value	2.729	909.5
		873.8
Anderson-Darling Test Statistic	6.281	105950
Anderson-Darling 5% Critical Value	0.908	65762
Kolmogorov-Smirnov Test Statistic	0.428	1005
Kolmogorov-Smirnov 5% Critical Value	0.198	1340
Data not Gamma Distributed at 5% Significance Level		1791
		2419
Assuming Gamma Distribution		3653
95% Approximate Gamma UCL	960.3	
95% Adjusted Gamma UCL	1038	
Potential UCL to Use		3653


Histogram for Cadmium (q north)
Frequency
10
9
8
7
6
5
4
3
2
1
0
14
27
41
55
69
82
Cadmium (q north)

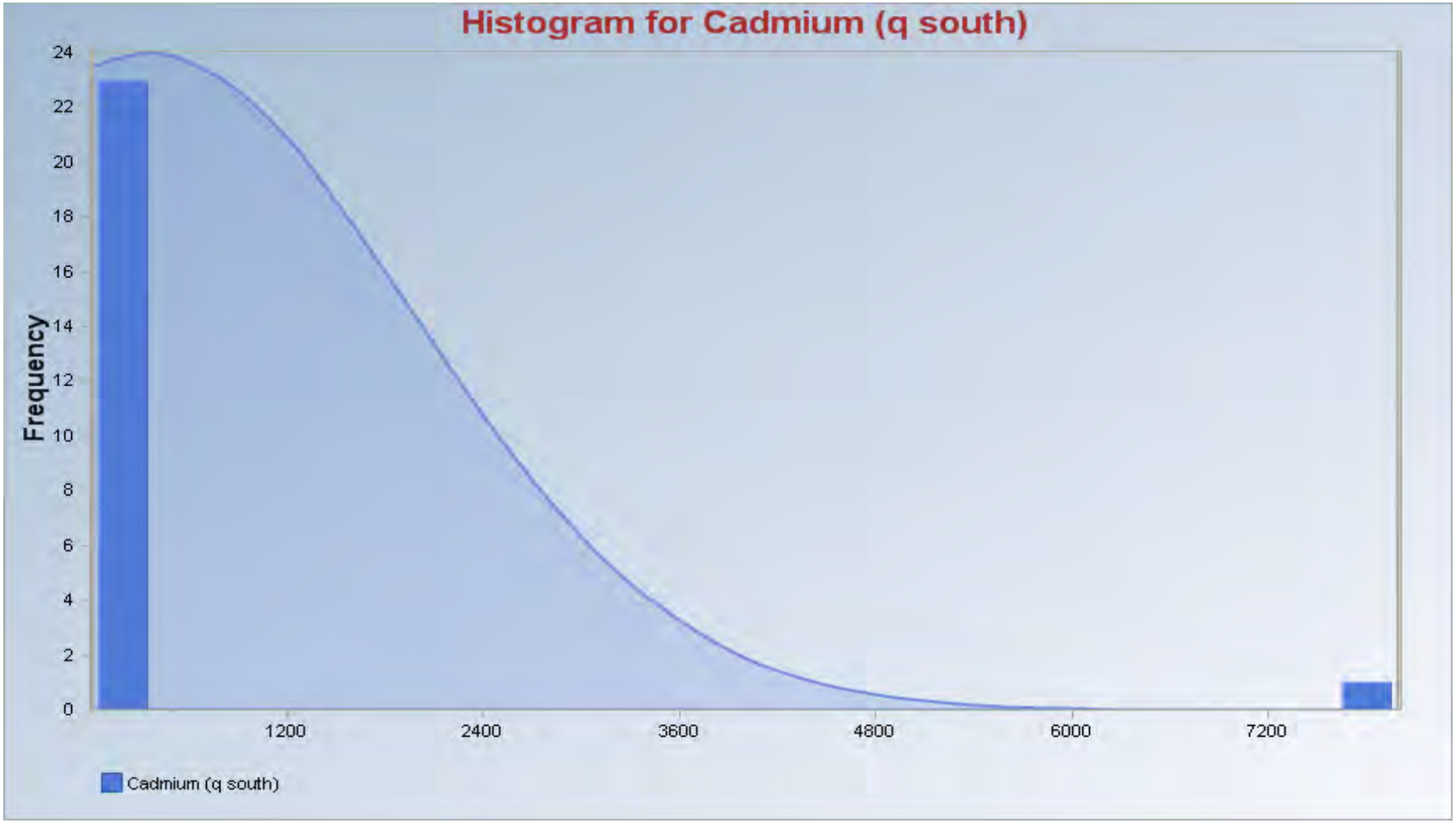

Histogram for Cadmium (q south)
Frequency
24
22
20
18
16
14
12
10
8
6
4
2
0
1200
2400
3600
4800
6000
7200
Cadmium (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Chromium (q south)

General Statistics			
Number of Valid Observations	24	Number of Distinct Observations	21
Raw Statistics		Log-transformed Statistics	
Minimum	8	Minimum of Log Data	2.079
Maximum	660	Maximum of Log Data	6.492
Mean	59.98	Mean of log Data	3.297
Median	20	SD of log Data	1.041
SD	132.7		
Coefficient of Variation	2.213		
Skewness	4.376		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.392	Shapiro Wilk Test Statistic	0.877
Shapiro Wilk Critical Value	0.916	Shapiro Wilk Critical Value	0.916
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	106.4	95% H-UCL	81.16
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	92.61
95% Adjusted-CLT UCL	130.4	97.5% Chebyshev (MVUE) UCL	113.2
95% Modified-t UCL	110.4	99% Chebyshev (MVUE) UCL	153.7
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.685	Data do not follow a Discernable Distribution (0.05)	
Theta Star	87.55		
nu star	32.89		
Approximate Chi Square Value (.05)	20.78	Nonparametric Statistics	
Adjusted Level of Significance	0.0392	95% CLT UCL	104.5
Adjusted Chi Square Value	20.1	95% Jackknife UCL	106.4
		95% Standard Bootstrap UCL	104
Anderson-Darling Test Statistic	2.405	95% Bootstrap-t UCL	264.4
Anderson-Darling 5% Critical Value	0.782	95% Hall's Bootstrap UCL	258.9
Kolmogorov-Smirnov Test Statistic	0.244	95% Percentile Bootstrap UCL	114.5
Kolmogorov-Smirnov 5% Critical Value	0.185	95% BCA Bootstrap UCL	142.2
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	178.1
		97.5% Chebyshev(Mean, Sd) UCL	229.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	329.6
95% Approximate Gamma UCL	94.95		
95% Adjusted Gamma UCL	98.15		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	329.6


Histogram for Cadmium (q south)
Frequency
24
22
20
18
16
14
12
10
8
6
4
2
0
1200
2400
3600
4800
6000
7200
Cadmium (q south)

Dibenzo(a,h)anthracene (q north)

General Statistics			
Number of Valid Data	11	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	6
		Percent Non-Detects	54.55%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.066	Minimum Detected	-2.718
Maximum Detected	0.37	Maximum Detected	-0.994
Mean of Detected	0.197	Mean of Detected	-1.795
SD of Detected	0.121	SD of Detected	0.683
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	3.5	Maximum Non-Detect	1.253

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.964	Shapiro Wilk Test Statistic	0.979
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.338	Mean	-1.507
SD	0.475	SD	0.816
95% DL/2 (t) UCL	0.597	95% H-Stat (DL/2) UCL	1.726
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.869
		SD in Log Scale	0.44
		Mean in Original Scale	0.169
		SD in Original Scale	0.0816
		95% Percentile Bootstrap UCL	0.21
		95% BCA Bootstrap UCL	0.22
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.356	Data appear Normal at 5% Significance Level	
Theta Star	0.145		
nu star	1.36E+01		
A-D Test Statistic	0.181	Nonparametric Statistics	
5% A-D Critical Value	0.683	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.683	Mean	0.185
5% K-S Critical Value	0.359	SD	0.102
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0475
		95% KM (t) UCL	0.271
Assuming Gamma Distribution		95% KM (z) UCL	0.263
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.276
Minimum	0.066	95% KM (bootstrap t) UCL	0.298
Maximum	0.37	95% KM (BCA) UCL	0.26
Mean	0.209	95% KM (Percentile Bootstrap) UCL	0.263
Median	0.227	95% KM (Chebyshev) UCL	0.392
SD	0.0781	97.5% KM (Chebyshev) UCL	0.482
k star	4.695	99% KM (Chebyshev) UCL	0.658
Theta star	0.0444		
Nu star	103.3	Potential UCLs to Use	
AppChi2	80.83	95% KM (t) UCL	0.271
95% Gamma Approximate UCL	0.266	95% KM (Percentile Bootstrap) UCL	0.263
95% Adjusted Gamma UCL	0.278		

Note: DL/2 is not a recommended method.

Dibenzo(a,h)anthracene (q south)

General Statistics			
Number of Valid Data	24	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	19
		Percent Non-Detects	79.17%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.03	Minimum Detected	-3.507
Maximum Detected	0.44	Maximum Detected	-0.821
Mean of Detected	0.158	Mean of Detected	-2.285
SD of Detected	0.168	SD of Detected	1.042
Minimum Non-Detect	0.38	Minimum Non-Detect	-0.968
Maximum Non-Detect	2.155	Maximum Non-Detect	0.768

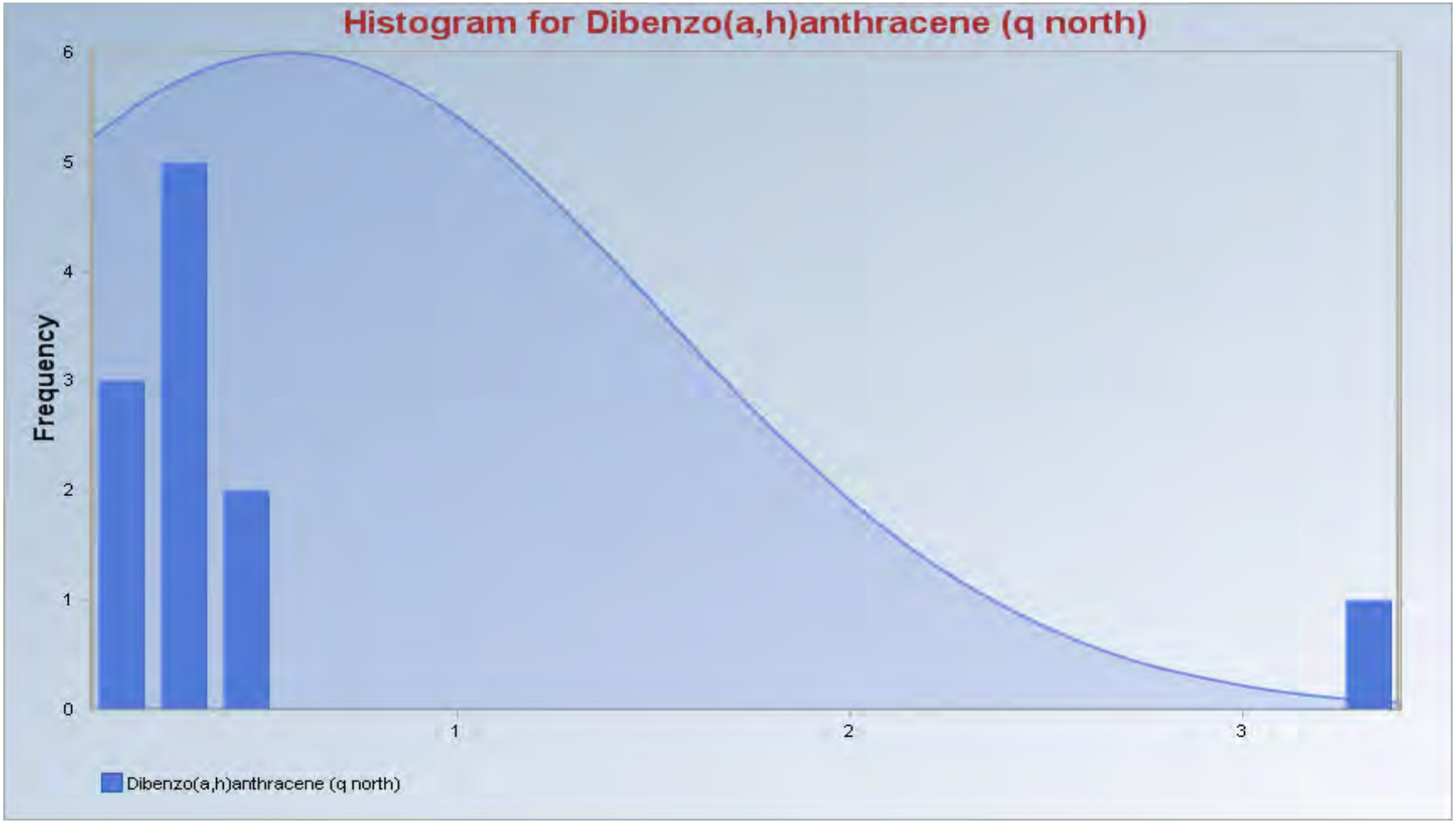
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	24
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

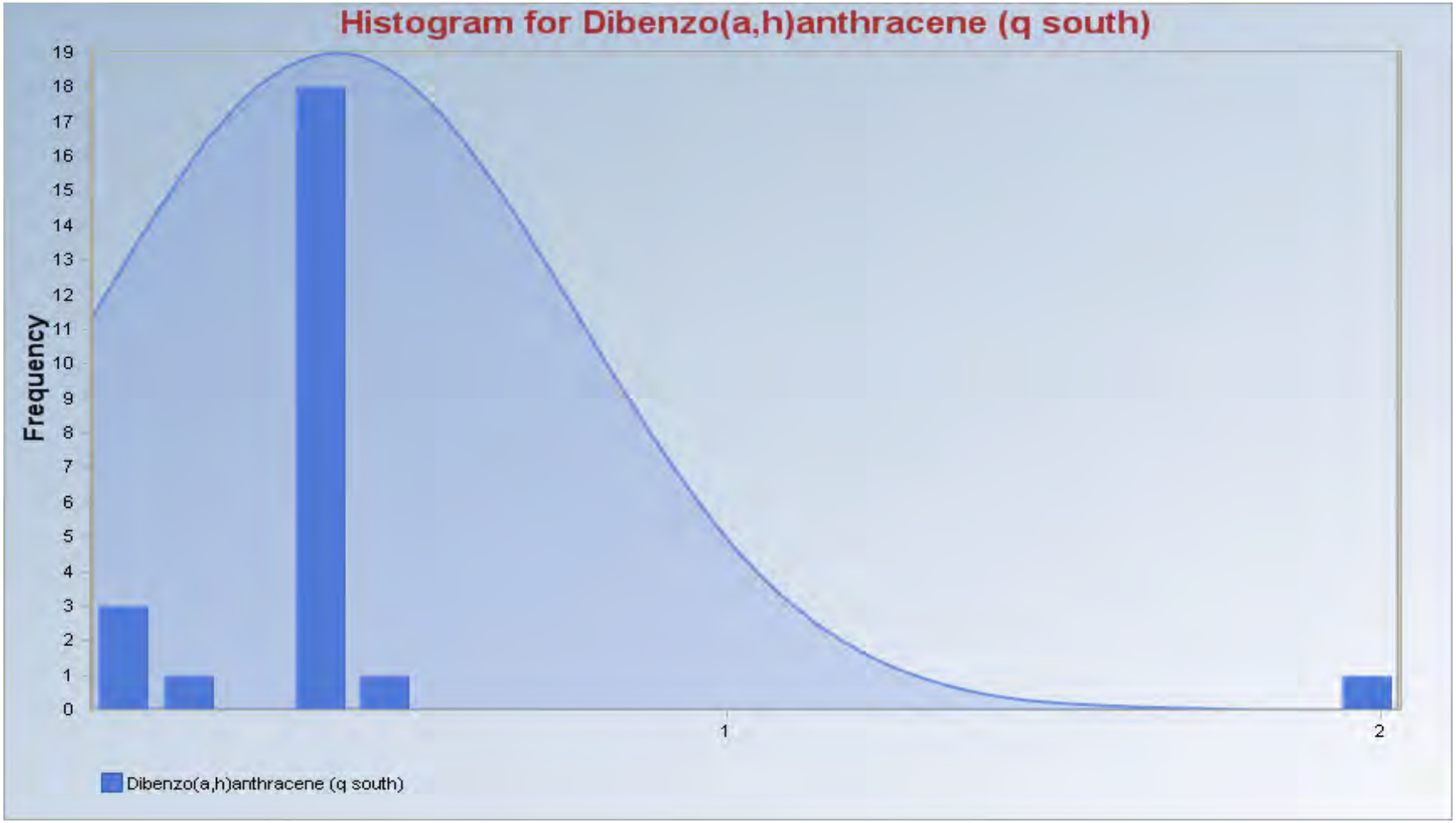
Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.807	Shapiro Wilk Test Statistic	0.967
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.23	Mean	-1.669
SD	0.195	SD	0.64
95% DL/2 (t) UCL	0.298	95% H-Stat (DL/2) UCL	0.406
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.585
		SD in Log Scale	0.62
		Mean in Original Scale	0.0938
		SD in Original Scale	0.0838
		95% Percentile Bootstrap UCL	0.126
		95% BCA Bootstrap UCL	0.137
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.647	Data appear Normal at 5% Significance Level	
Theta Star	0.244		
nu star	6.468		
A-D Test Statistic	0.318	Nonparametric Statistics	
5% A-D Critical Value	0.689	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.689	Mean	0.103
5% K-S Critical Value	0.363	SD	0.0926
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0354
		95% KM (t) UCL	0.164
Assuming Gamma Distribution		95% KM (z) UCL	0.161
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.17
Minimum	0.03	95% KM (bootstrap t) UCL	0.293
Maximum	0.44	95% KM (BCA) UCL	0.183
Mean	0.152	95% KM (Percentile Bootstrap) UCL	0.172
Median	0.154	95% KM (Chebyshev) UCL	0.257
SD	0.0734	97.5% KM (Chebyshev) UCL	0.324
k star	4.464	99% KM (Chebyshev) UCL	0.455
Theta star	0.0341		
Nu star	214.3	Potential UCLs to Use	
AppChi2	181.4	95% KM (t) UCL	0.164
95% Gamma Approximate UCL	0.18	95% KM (Percentile Bootstrap) UCL	0.172
95% Adjusted Gamma UCL	0.182		

Note: DL/2 is not a recommended method.

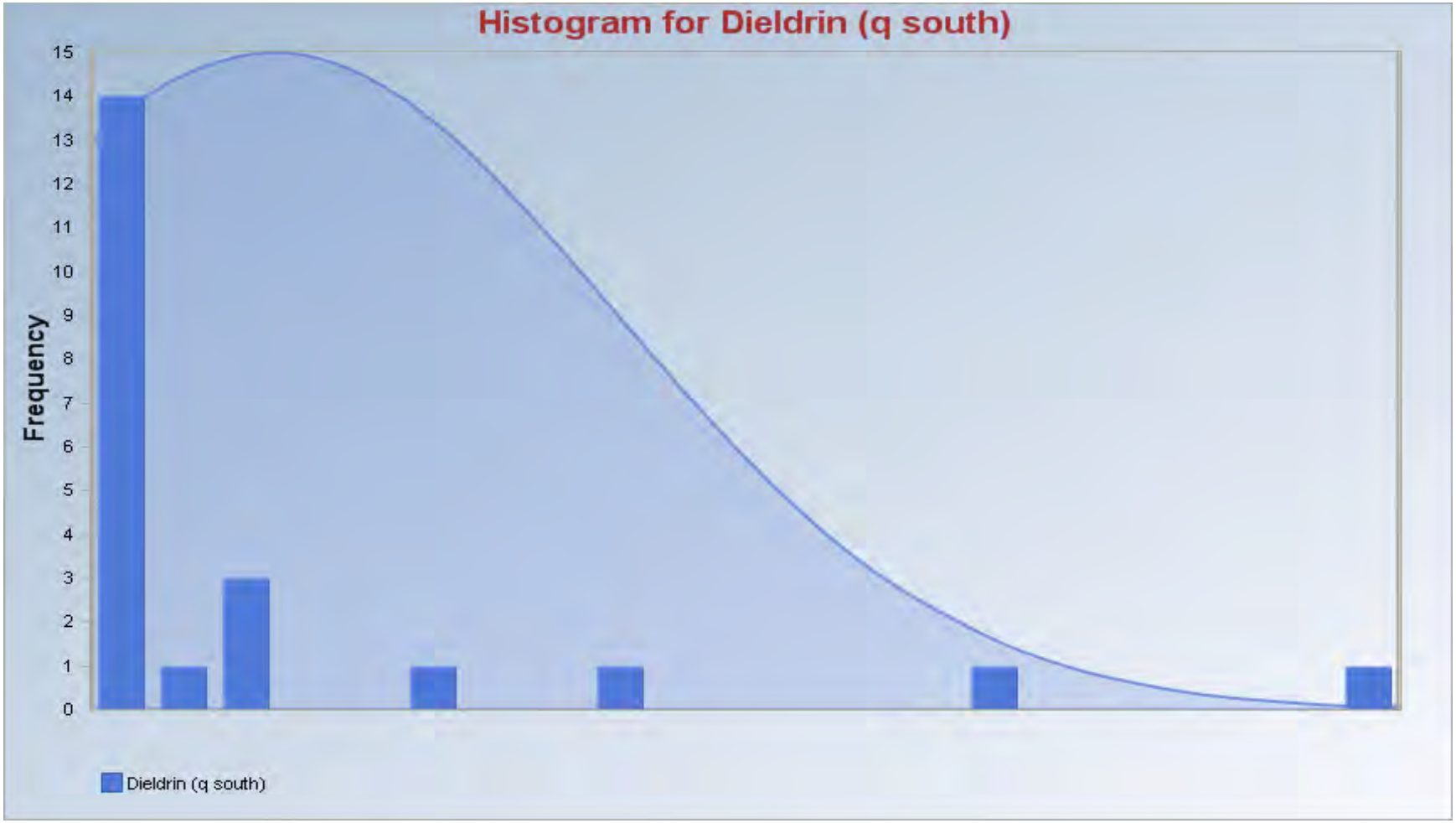

Histogram for Dibenzo(a,h)anthracene (q north)
Frequency
0
1
2
3
4
5
6
1
2
3
Dibenzo(a,h)anthracene (q north)


Histogram for Dibenzo(a,h)anthracene (q south)
Frequency
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
Dibenzo(a,h)anthracene (q south)

Dieldrin (q south)

General Statistics			
Number of Valid Data	22	Number of Detected Data	14
Number of Distinct Detected Data	14	Number of Non-Detect Data	8
Number of Missing Values	2	Percent Non-Detects	36.36%
Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	3.90E-04	Minimum Detected	-7.849
Maximum Detected	0.375	Maximum Detected	-0.981
Mean of Detected	0.0708	Mean of Detected	-4.52
SD of Detected	0.12	SD of Detected	2.327
Minimum Non-Detect	0.0038	Minimum Non-Detect	-5.573
Maximum Non-Detect	0.042	Maximum Non-Detect	-3.17
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	81.82%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk Test Statistic	0.944
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0488	Mean	-4.69
SD	0.0987	SD	1.95
95% DL/2 (t) UCL	0.0851	95% H-Stat (DL/2) UCL	0.349
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.244	Mean in Log Scale	-5.167
SD	0.106	SD in Log Scale	2.062
95% MLE (t) UCL	0.283	Mean in Original Scale	0.0458
95% MLE (Tiku) UCL	0.334	SD in Original Scale	0.0999
		95% Percentile Bootstrap UCL	0.0833
		95% BCA Bootstrap UCL	0.0993
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.329	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.215		
nu star	9.209		
A-D Test Statistic	0.574	Nonparametric Statistics	
5% A-D Critical Value	0.821	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.821	Mean	0.0464
5% K-S Critical Value	0.246	SD	0.0974
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0216
		95% KM (t) UCL	0.0835
Assuming Gamma Distribution		95% KM (z) UCL	0.0819
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.083
Minimum	3.90E-04	95% KM (bootstrap t) UCL	0.143
Maximum	0.375	95% KM (BCA) UCL	0.0834
Mean	0.0631	95% KM (Percentile Bootstrap) UCL	0.0822
Median	0.036	95% KM (Chebyshev) UCL	0.14
SD	0.0948	97.5% KM (Chebyshev) UCL	0.181
k star	0.48	99% KM (Chebyshev) UCL	0.261
Theta star	0.131		
Nu star	21.13	Potential UCLs to Use	
AppChi2	11.69	95% KM (BCA) UCL	0.0834
95% Gamma Approximate UCL	0.114		
95% Adjusted Gamma UCL	0.119		

Note: DL/2 is not a recommended method.


Histogram for Dieldrin (q south)
Frequency
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Dieldrin (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Dioxin TEQ-HH (q central)

General Statistics			
Number of Valid Data	14	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	4
Number of Missing Values	6	Percent Non-Detects	28.57%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.78E-05	Minimum Detected	-9.759
Maximum Detected	0.00387	Maximum Detected	-5.554
Mean of Detected	4.94E-04	Mean of Detected	-8.876
SD of Detected	0.00119	SD of Detected	1.299
Minimum Non-Detect	6.60E-05	Minimum Non-Detect	-9.627
Maximum Non-Detect	1.37E-04	Maximum Non-Detect	-8.898

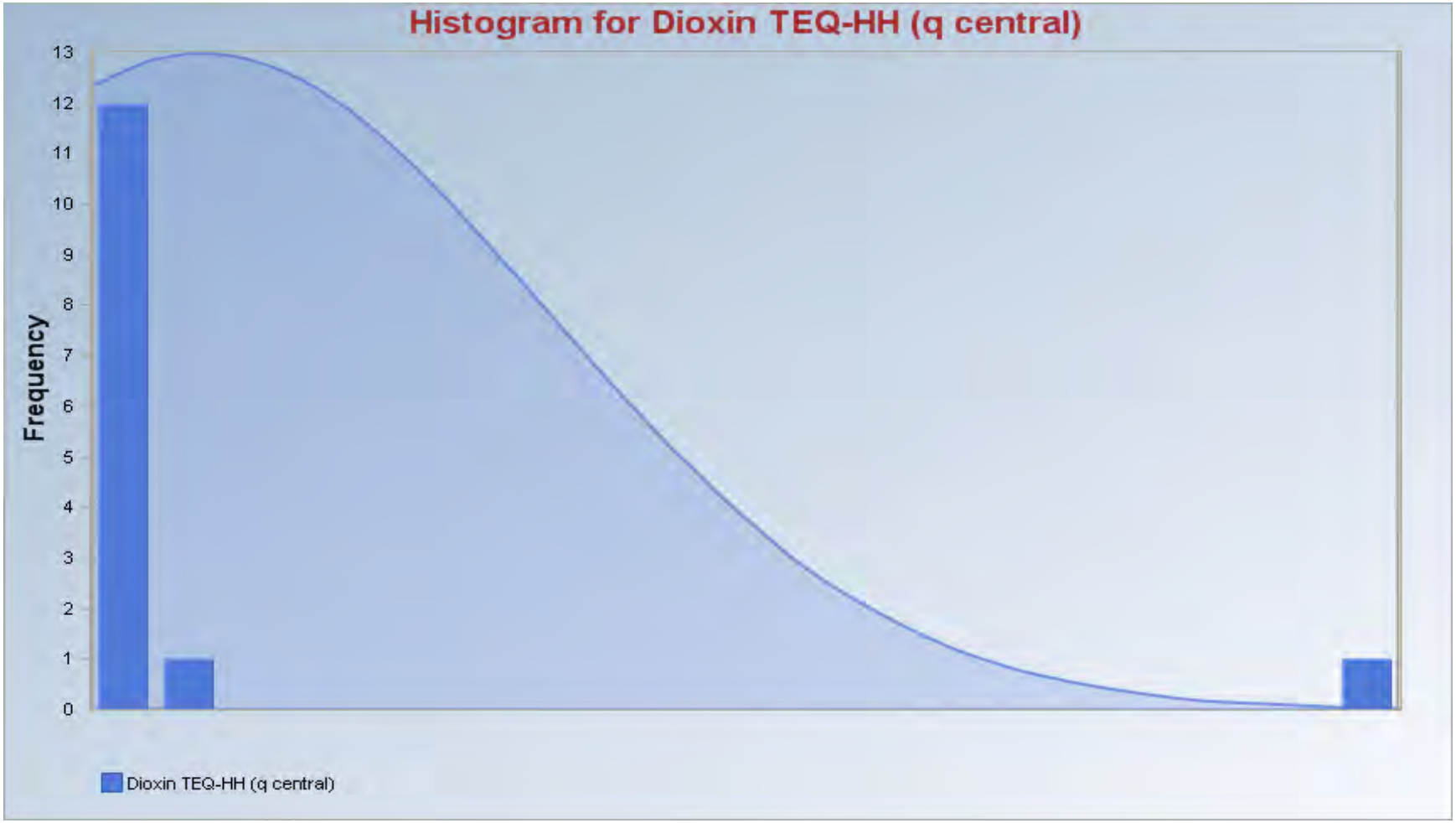
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	85.71%

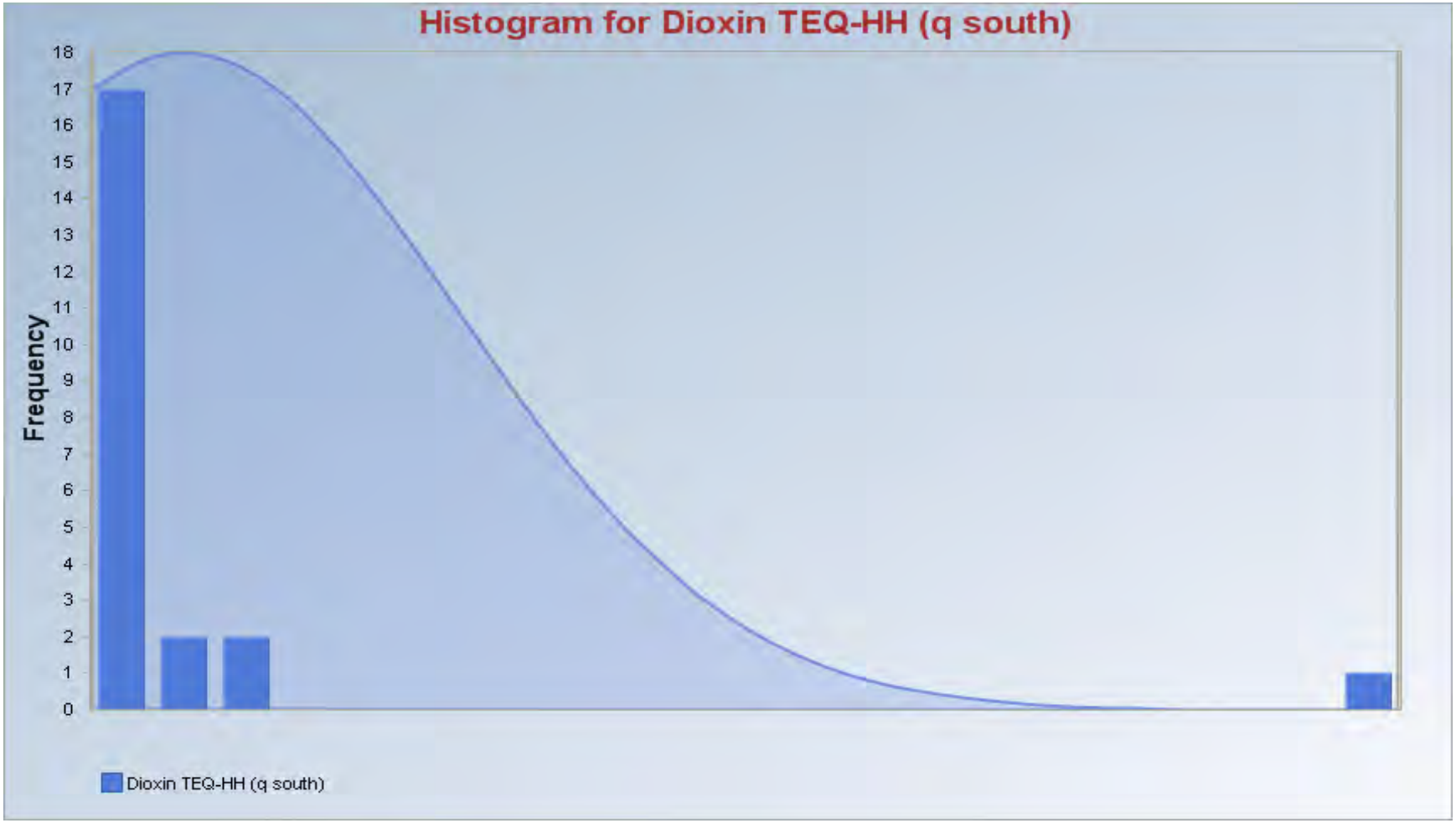
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.421	Shapiro Wilk Test Statistic	0.705
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.68E-04	Mean	-9.163
SD	0.00101	SD	1.188
95% DL/2 (t) UCL	8.47E-04	95% H-Stat (DL/2) UCL	6.14E-04
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-9.092
		SD in Log Scale	1.147
		Mean in Original Scale	3.72E-04
		SD in Original Scale	0.00101
		95% Percentile Bootstrap UCL	9.08E-04
		95% BCA Bootstrap UCL	0.00119
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.418	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.00118		
nu star	8.367		
A-D Test Statistic	1.972	Nonparametric Statistics	
5% A-D Critical Value	0.777	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.777	Mean	3.73E-04
5% K-S Critical Value	0.281	SD	9.74E-04
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2.74E-04
		95% KM (t) UCL	8.59E-04
Assuming Gamma Distribution		95% KM (z) UCL	8.24E-04
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8.51E-04
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0106
Maximum	0.00387	95% KM (BCA) UCL	9.06E-04
Mean	3.95E-04	95% KM (Percentile Bootstrap) UCL	8.99E-04
Median	9.81E-05	95% KM (Chebyshev) UCL	0.00157
SD	0.00101	97.5% KM (Chebyshev) UCL	0.00209
k star	0.331	99% KM (Chebyshev) UCL	0.0031
Theta star	0.00119		
Nu star	9.267	Potential UCLs to Use	
AppChi2	3.489	97.5% KM (Chebyshev) UCL	0.00209
95% Gamma Approximate UCL	0.00105		
95% Adjusted Gamma UCL	0.00121		

Note: DL/2 is not a recommended method.

Dioxin TEQ-HH (q south)

General Statistics			
Number of Valid Observations	22	Number of Distinct Observations	22
Number of Missing Values	2		
Raw Statistics		Log-transformed Statistics	
Minimum	5.27E-05	Minimum of Log Data	-9.85
Maximum	7.11E-03	Maximum of Log Data	-4.946
Mean	5.55E-04	Mean of log Data	-8.532
Median	1.45E-04	SD of log Data	1.159
SD	0.00148		
Coefficient of Variation	2.67		
Skewness	4.508		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.335	Shapiro Wilk Test Statistic	0.863
Shapiro Wilk Critical Value	0.911	Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0011	95% H-UCL	7.76E-04
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.26E-04
95% Adjusted-CLT UCL	1.40E-03	97.5% Chebyshev (MVUE) UCL	0.00102
95% Modified-t UCL	0.00115	99% Chebyshev (MVUE) UCL	0.00141
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.546	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.00102		
nu star	24.02		
Approximate Chi Square Value (.05)	13.86	Nonparametric Statistics	
Adjusted Level of Significance	0.0386	95% CLT UCL	0.00107
Adjusted Chi Square Value	13.29	95% Jackknife UCL	0.0011
		95% Standard Bootstrap UCL	0.00106
Anderson-Darling Test Statistic	2.52	95% Bootstrap-t UCL	0.00353
Anderson-Darling 5% Critical Value	0.796	95% Hall's Bootstrap UCL	0.00288
Kolmogorov-Smirnov Test Statistic	0.263	95% Percentile Bootstrap UCL	0.00117
Kolmogorov-Smirnov 5% Critical Value	0.195	95% BCA Bootstrap UCL	0.00152
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.00193
		97.5% Chebyshev(Mean, Sd) UCL	0.00253
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0037
95% Approximate Gamma UCL	9.62E-04		
95% Adjusted Gamma UCL	0.001		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0037


Histogram for Dioxin TEQ-HH (q central)
Frequency
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Dioxin TEQ-HH (q central)


Histogram for Dioxin TEQ-HH (q south)
Frequency
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Dioxin TEQ-HH (q south)

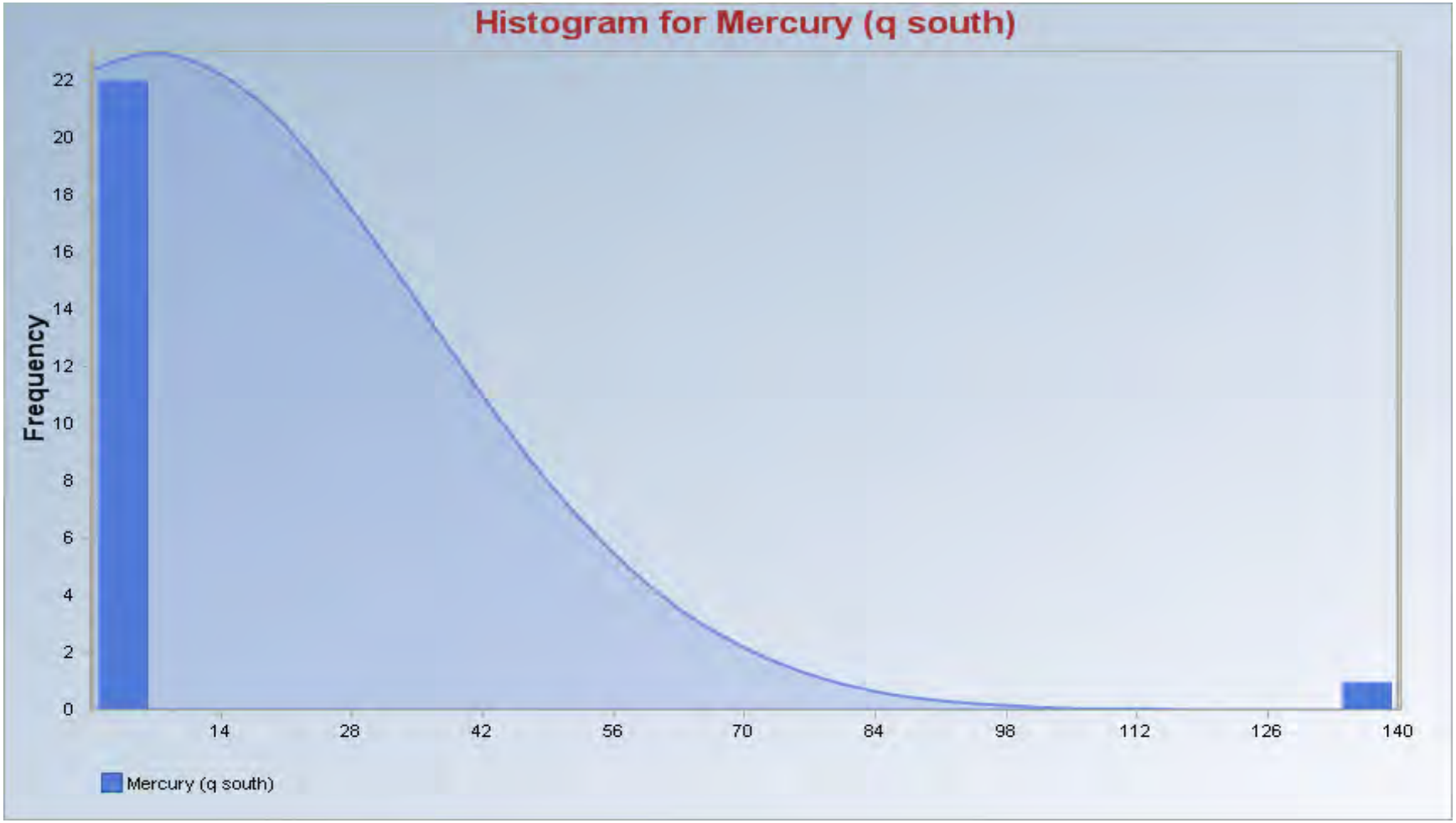
General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Mercury (q south)

General Statistics			
Number of Valid Observations	23	Number of Distinct Observations	21
Number of Missing Values	1		
Raw Statistics		Log-transformed Statistics	
Minimum	0.021	Minimum of Log Data	-3.863
Maximum	140	Maximum of Log Data	4.942
Mean	6.627	Mean of log Data	-1.187
Median	0.17	SD of log Data	1.911
SD	29.09		
Coefficient of Variation	4.389		
Skewness	4.79		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.233	Shapiro Wilk Test Statistic	89.00%
Shapiro Wilk Critical Value	0.914	Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	17.04	95% H-UCL	9.297
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.024
95% Adjusted-CLT UCL	23.07	97.5% Chebyshev (MVUE) UCL	6.519
95% Modified-t UCL	18.05	99% Chebyshev (MVUE) UCL	9.455
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.232	Data do not follow a Discernable Distribution (0.05)	
Theta Star	28.58		
nu star	10.67		
Approximate Chi Square Value (.05)	4.363	Nonparametric Statistics	
Adjusted Level of Significance	0.0389	95% CLT UCL	16.6
Adjusted Chi Square Value	4.073	95% Jackknife UCL	17.04
		95% Standard Bootstrap UCL	16.55
Anderson-Darling Test Statistic	4.12	95% Bootstrap-t UCL	326.7
Anderson-Darling 5% Critical Value	0.879	95% Hall's Bootstrap UCL	219.3
Kolmogorov-Smirnov Test Statistic	0.37	95% Percentile Bootstrap UCL	18.71
Kolmogorov-Smirnov 5% Critical Value	0.2	95% BCA Bootstrap UCL	24.89
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	33.06
		97.5% Chebyshev(Mean, Sd) UCL	44.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	66.97
95% Approximate Gamma UCL	16.2		
95% Adjusted Gamma UCL	17.35		

Potential UCL to Use	Use 99% Chebyshev (Mean, Sd) UCL	66.97


Histogram for Mercury (q south)
Frequency
0
2
4
6
8
10
12
14
16
18
20
22
14
28
42
56
70
84
98
112
126
140
Mercury (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

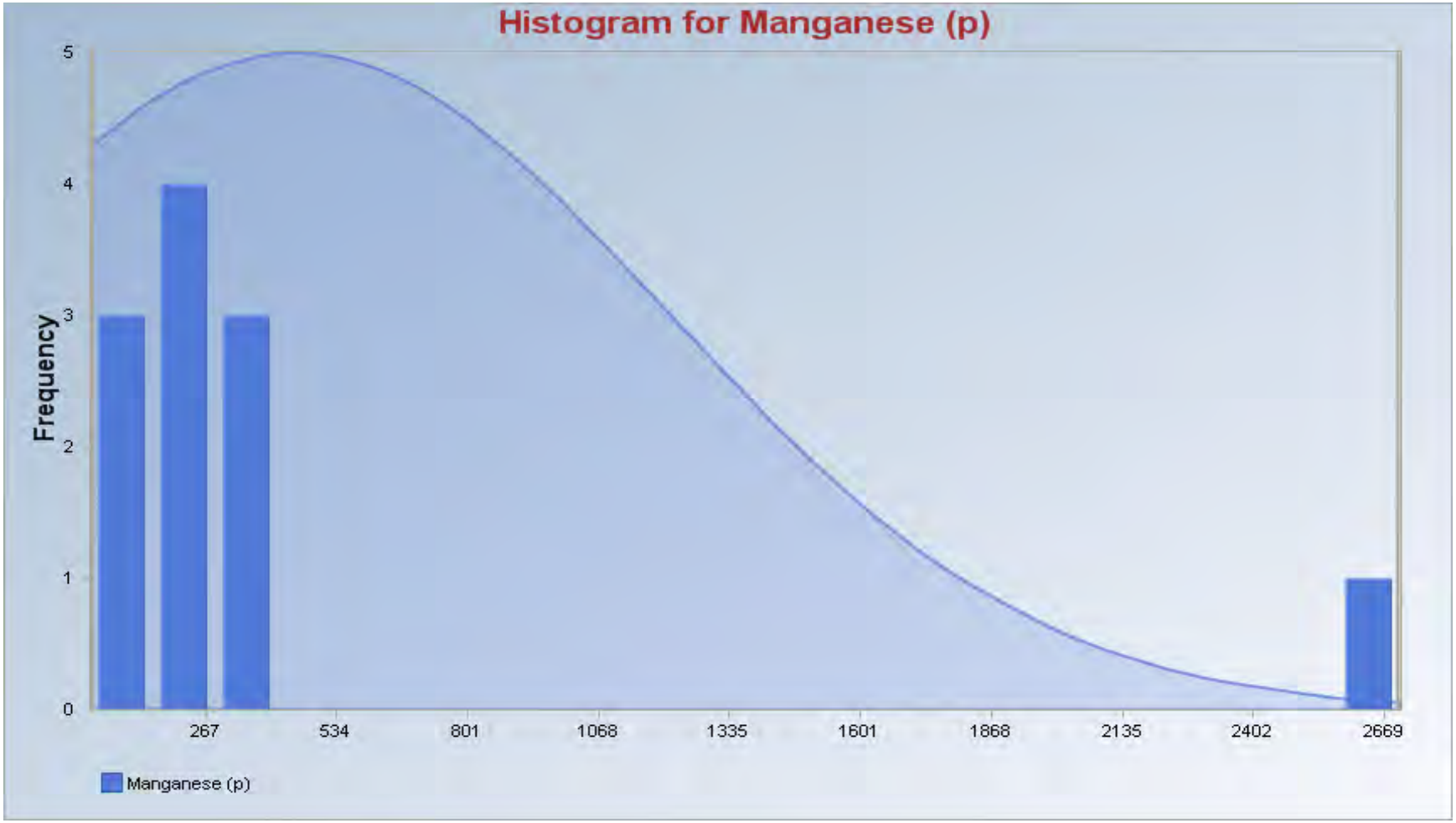
Manganese (p)

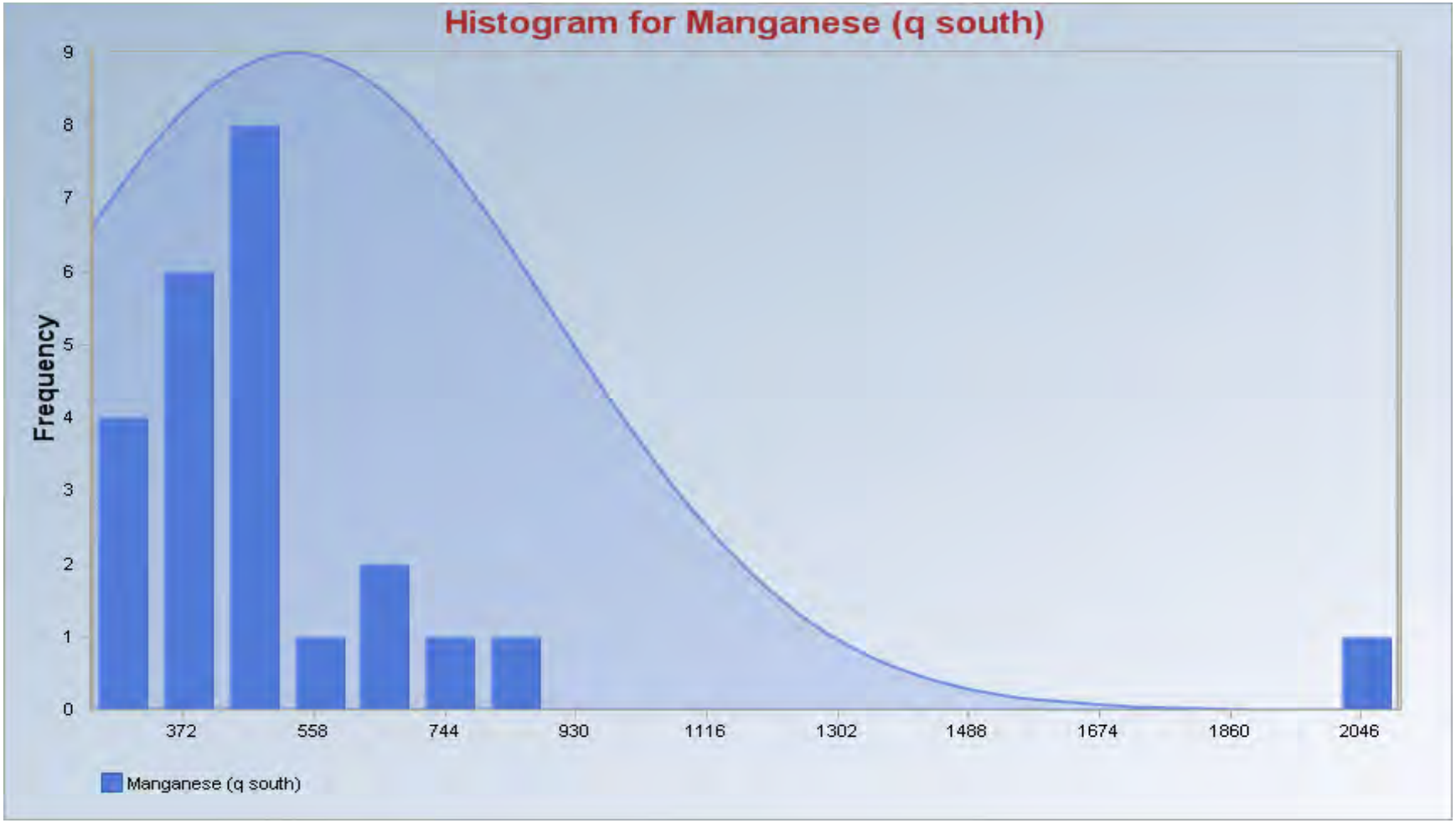
General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	10
Raw Statistics		**Log-transformed Statistics**	
Minimum	31	Minimum of Log Data	3.434
Maximum	2700	Maximum of Log Data	7.901
Mean	450.1	Mean of log Data	5.439
Median	250	SD of log Data	1.124
SD	755.6		
Coefficient of Variation	1.679		
Skewness	3.167		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.496	Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	863	95% H-UCL	1369
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1027
95% Adjusted-CLT UCL	1057	97.5% Chebyshev (MVUE) UCL	1299
95% Modified-t UCL	899.3	99% Chebyshev (MVUE) UCL	1833
Gamma Distribution Test		**Data Distribution**	
k star (bias corrected)	0.697	Data appear Lognormal at 5% Significance Level	
Theta Star	645.8		
nu star	15.33		
Approximate Chi Square Value (.05)	7.493	**Nonparametric Statistics**	
Adjusted Level of Significance	0.0278	95% CLT UCL	824.8
Adjusted Chi Square Value	6.619	95% Jackknife UCL	863
		95% Standard Bootstrap UCL	806.6
Anderson-Darling Test Statistic	0.951	95% Bootstrap-t UCL	2266
Anderson-Darling 5% Critical Value	0.757	95% Hall's Bootstrap UCL	2563
Kolmogorov-Smirnov Test Statistic	0.317	95% Percentile Bootstrap UCL	885.5
Kolmogorov-Smirnov 5% Critical Value	0.264	95% BCA Bootstrap UCL	1110
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1443
		97.5% Chebyshev(Mean, Sd) UCL	1873
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2717
95% Approximate Gamma UCL	921		
95% Adjusted Gamma UCL	1043		

Potential UCL to Use	Use 95% Chebyshev (MVUE) UCL	1027

Manganese (q south)

General Statistics			
Number of Valid Observations	24	Number of Distinct Observations	19
Raw Statistics		Log-transformed Statistics	
Minimum	240	Minimum of Log Data	5.481
Maximum	2100	Maximum of Log Data	7.65
Mean	529.4	Mean of log Data	6.151
Median	445	SD of log Data	0.44
SD	366.6		
Coefficient of Variation	0.693		
Skewness	3.706		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.568	Shapiro Wilk Test Statistic	0.864
Shapiro Wilk Critical Value	0.916	Shapiro Wilk Critical Value	0.916
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	657.6	95% H-UCL	616.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	722.5
95% Adjusted-CLT UCL	713	97.5% Chebyshev (MVUE) UCL	812.4
95% Modified-t UCL	667.1	99% Chebyshev (MVUE) UCL	989
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.8	Data do not follow a Discernable Distribution (0.05)	
Theta Star	139.3		
nu star	182.4		
Approximate Chi Square Value (.05)	152.2	Nonparametric Statistics	
Adjusted Level of Significance	0.0392	95% CLT UCL	652.5
Adjusted Chi Square Value	150.2	95% Jackknife UCL	657.6
		95% Standard Bootstrap UCL	644
Anderson-Darling Test Statistic	1.572	95% Bootstrap-t UCL	824.8
Anderson-Darling 5% Critical Value	0.748	95% Hall's Bootstrap UCL	1167
Kolmogorov-Smirnov Test Statistic	0.216	95% Percentile Bootstrap UCL	669.4
Kolmogorov-Smirnov 5% Critical Value	0.179	95% BCA Bootstrap UCL	731.5
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	855.6
		97.5% Chebyshev(Mean, Sd) UCL	996.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1274
95% Approximate Gamma UCL	634.6		
95% Adjusted Gamma UCL	642.8		
Potential UCL to Use		Use 95% Student's-t UCL	657.6
		or 95% Modified-t UCL	667.1


Histogram for Manganese (p)
Frequency
0
1
2
3
4
5
267
534
801
1068
1335
1601
1868
2135
2402
2669
Manganese (p)


Histogram for Manganese (q south)
Frequency
0
1
2
3
4
5
6
7
8
9
372
558
744
930
1116
1302
1488
1674
1860
2046
Manganese (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Tetrachloroethene (p)

General Statistics			
Number of Valid Data	11	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	6
		Percent Non-Detects	54.55%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0019	Minimum Detected	-6.266
Maximum Detected	59	Maximum Detected	4.078
Mean of Detected	11.8	Mean of Detected	-3.859
SD of Detected	26.38	SD of Detected	4.461
Minimum Non-Detect	0.0034	Minimum Non-Detect	-5.684
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	90.91%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.552	Shapiro Wilk Test Statistic	0.64
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.367	Mean	-4.932
SD	17.79	SD	3.018
95% DL/2 (t) UCL	15.09	95% H-Stat (DL/2) UCL	317.2
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.975
		SD in Log Scale	3.022
		Mean in Original Scale	5.366
		SD in Original Scale	17.79
		95% Percentile Bootstrap UCL	16.09
		95% BCA Bootstrap UCL	21.46
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.183	Data do not follow a Discernable Distribution (0.05)	
Theta Star	64.42		
nu star	1.832		
A-D Test Statistic	1.147	Nonparametric Statistics	
5% A-D Critical Value	0.814	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.814	Mean	5.366
5% K-S Critical Value	0.396	SD	16.96
Data not Gamma Distributed at 5% Significance Level		SE of Mean	5.717
		95% KM (t) UCL	15.73
Assuming Gamma Distribution		95% KM (z) UCL	14.77
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	15.09
Minimum	0.0019	95% KM (bootstrap t) UCL	108696
Maximum	59	95% KM (BCA) UCL	16.09
Mean	12.67	95% KM (Percentile Bootstrap) UCL	16.09
Median	12.34	95% KM (Chebyshev) UCL	30.29
SD	16.72	97.5% KM (Chebyshev) UCL	41.07
k star	0.24	99% KM (Chebyshev) UCL	62.25
Theta star	52.72		
Nu star	5.288	Potential UCLs to Use	
AppChi2	1.288	99% KM (Chebyshev) UCL	62.25
95% Gamma Approximate UCL	52.05		
95% Adjusted Gamma UCL	67.24		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

Tetrachloroethene (q south)

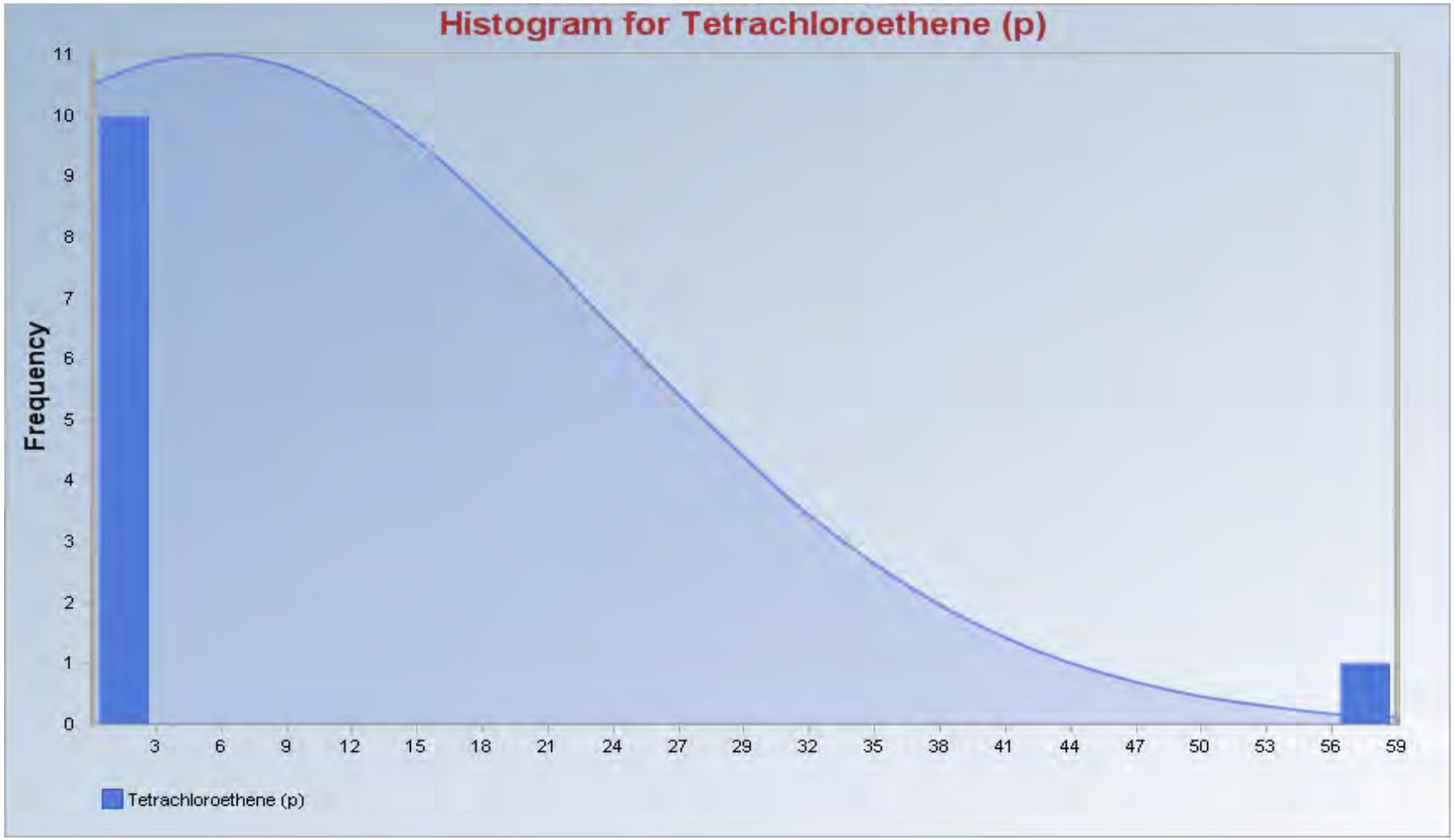
General Statistics			
Number of Valid Data	24	Number of Detected Data	9
Number of Distinct Detected Data	8	Number of Non-Detect Data	15
		Percent Non-Detects	62.50%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.35E-04	Minimum Detected	-7.533
Maximum Detected	1.7	Maximum Detected	0.531
Mean of Detected	0.233	Mean of Detected	-4.61
SD of Detected	0.561	SD of Detected	2.773
Minimum Non-Detect	0.004	Minimum Non-Detect	-5.521
Maximum Non-Detect	0.0075	Maximum Non-Detect	-4.893
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	21
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	87.50%

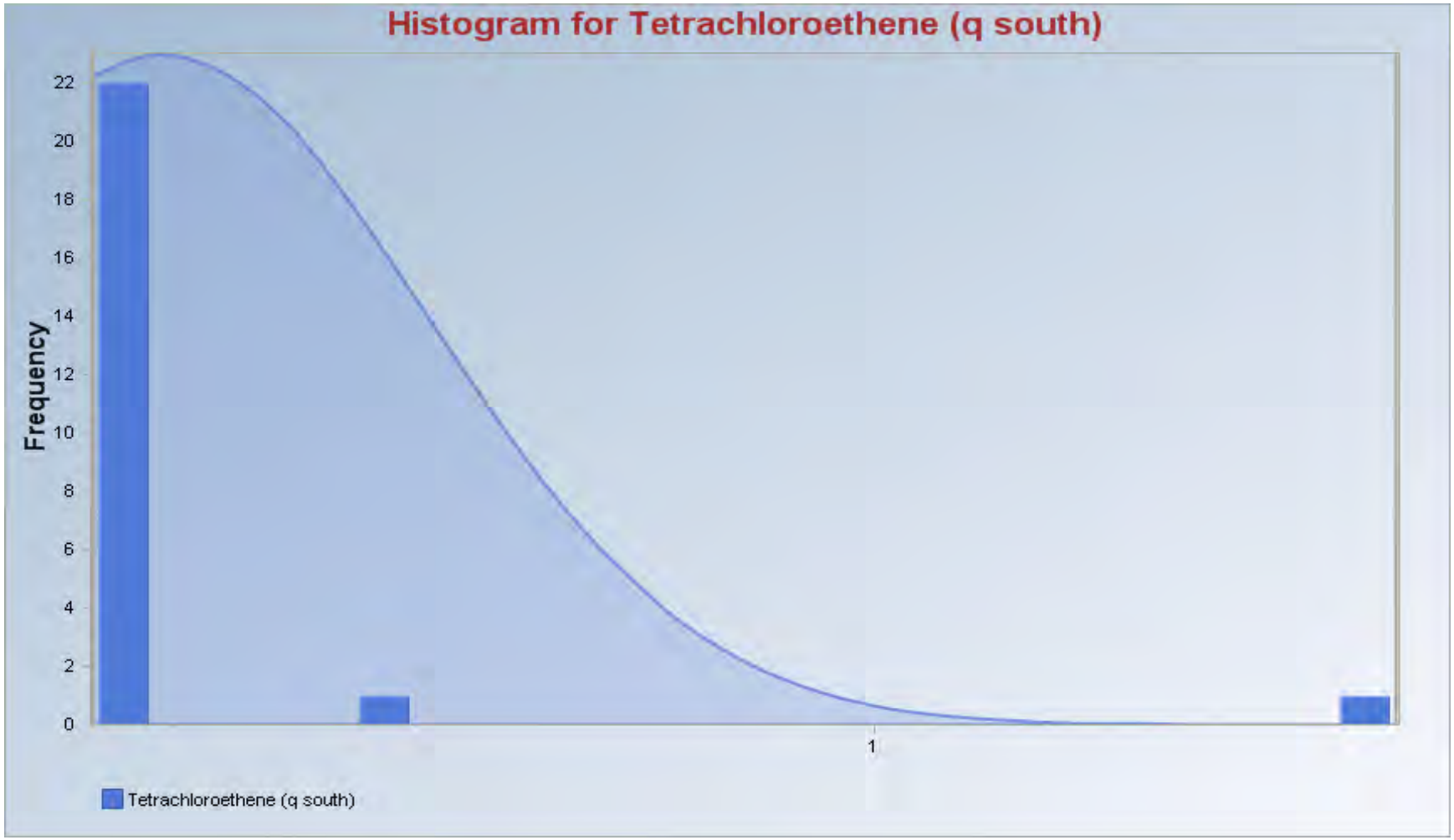
Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.498	Shapiro Wilk Test Statistic	0.875
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0894	Mean	-5.371
SD	0.35	SD	1.749
95% DL/2 (t) UCL	0.212	95% H-Stat (DL/2) UCL	0.0628
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.624
		SD in Log Scale	1.845
		Mean in Original Scale	0.0888
		SD in Original Scale	0.35
		95% Percentile Bootstrap UCL	0.219
		95% BCA Bootstrap UCL	0.319
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.226	Data appear Lognormal at 5% Significance Level	
Theta Star	1.031		
nu star	4.074		
A-D Test Statistic	1.049	Nonparametric Statistics	
5% A-D Critical Value	0.834	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.834	Mean	0.0888
5% K-S Critical Value	0.306	SD	0.343
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0742
		95% KM (t) UCL	0.216
Assuming Gamma Distribution		95% KM (z) UCL	0.211
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.211
Minimum	5.35E-04	95% KM (bootstrap t) UCL	3.762
Maximum	1.7	95% KM (BCA) UCL	0.231
Mean	0.243	95% KM (Percentile Bootstrap) UCL	0.221
Median	0.249	95% KM (Chebyshev) UCL	0.412
SD	0.332	97.5% KM (Chebyshev) UCL	0.552
k star	0.49	99% KM (Chebyshev) UCL	0.827
Theta star	0.495		
Nu star	23.54	Potential UCLs to Use	
AppChi2	13.5	99% KM (Chebyshev) UCL	0.827
95% Gamma Approximate UCL	0.423		
95% Adjusted Gamma UCL	0.441		

Note: DL/2 is not a recommended method.


Histogram for Tetrachloroethene (p)
Frequency
0
1
2
3
4
5
6
7
8
9
10
11
3
6
9
12
15
18
21
24
27
29
32
35
38
41
44
47
50
53
56
59
Tetrachloroethene (p)


Histogram for Tetrachloroethene (q south)
Frequency
22
20
18
16
14
12
10
8
6
4
2
0
1
Tetrachloroethene (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Total PCBs (q central)

General Statistics			
Number of Valid Data	16	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	11
Number of Missing Values	4	Percent Non-Detects	68.75%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.40E-01	Minimum Detected	-1.967
Maximum Detected	2.58	Maximum Detected	0.948
Mean of Detected	8.98E-01	Mean of Detected	-0.565
SD of Detected	0.982	SD of Detected	1.082
Minimum Non-Detect	8.99E-02	Minimum Non-Detect	-2.409
Maximum Non-Detect	1.70E+00	Maximum Non-Detect	0.531
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	15
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	93.75%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

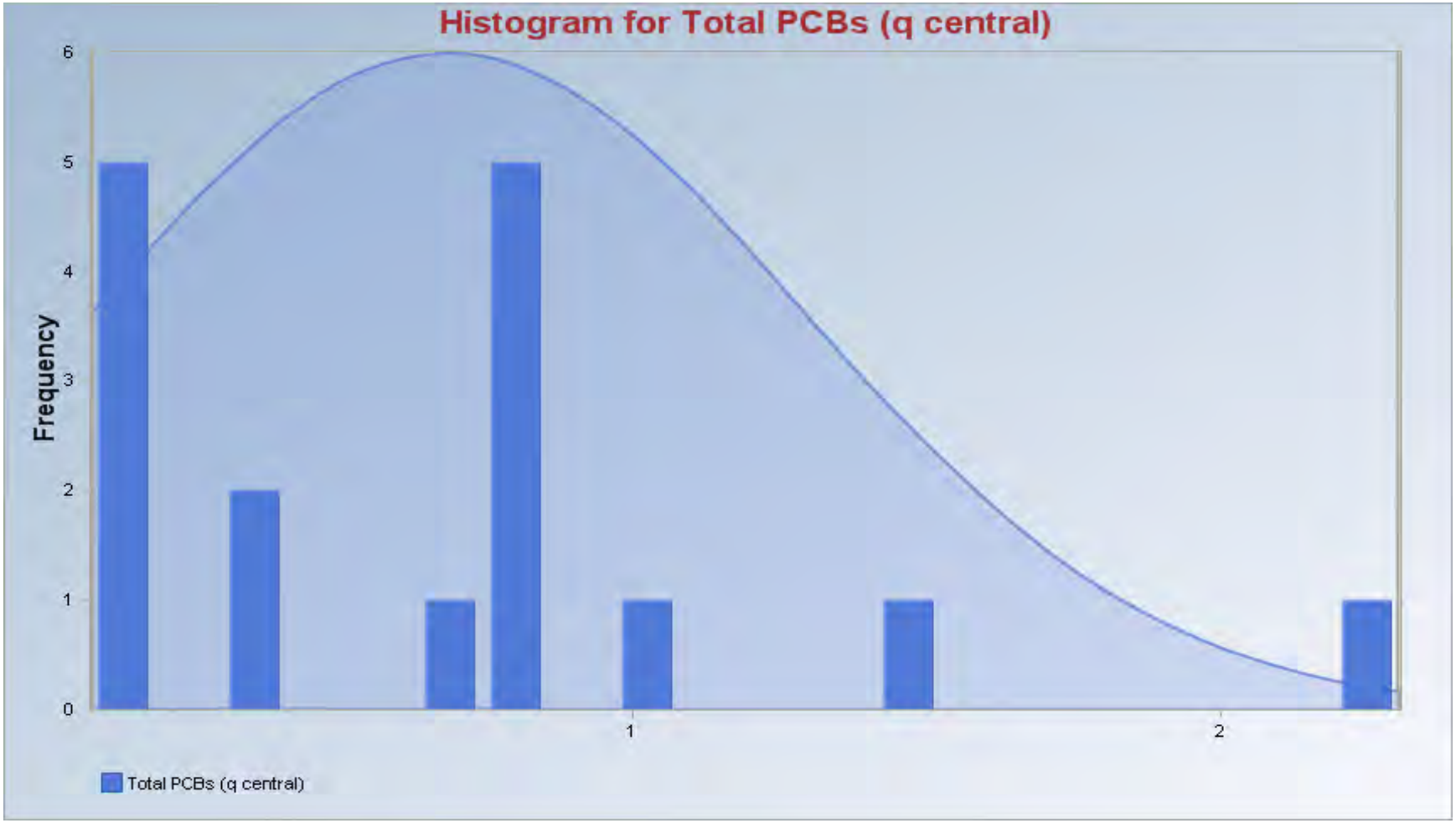
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.795	Shapiro Wilk Test Statistic	0.984
5% Shapiro Wilk Critical Value	7.62E-01	5% Shapiro Wilk Critical Value	7.62E-01
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.525	Mean	-1.22E+00
SD	0.611	SD	1.219
95% DL/2 (t) UCL	0.793	95% H-Stat (DL/2) UCL	1.59E+00
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.86
		SD in Log Scale	1.128
		Mean in Original Scale	0.346
		SD in Original Scale	0.637
		95% Percentile Bootstrap UCL	0.616
		95% BCA Bootstrap UCL	0.779
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.626	Data appear Normal at 5% Significance Level	
Theta Star	1.434		
nu star	6.262		
A-D Test Statistic	0.284	Nonparametric Statistics	
5% A-D Critical Value	6.89E-01	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.689	Mean	4.34E-01
5% K-S Critical Value	3.63E-01	SD	6.02E-01
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.176
		95% KM (t) UCL	0.743
Assuming Gamma Distribution		95% KM (z) UCL	0.724
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.701
Minimum	0.14	95% KM (bootstrap t) UCL	0.982
Maximum	2.58	95% KM (BCA) UCL	1.082
Mean	1.153	95% KM (Percentile Bootstrap) UCL	0.925
Median	1.21	95% KM (Chebyshev) UCL	1.202
SD	0.749	97.5% KM (Chebyshev) UCL	1.534
k star	1.681	99% KM (Chebyshev) UCL	2.186
Theta star	0.686		
Nu star	53.79	Potential UCLs to Use	
AppChi2	37.94	95% KM (t) UCL	0.743
95% Gamma Approximate UCL	1.635	95% KM (Percentile Bootstrap) UCL	0.925
95% Adjusted Gamma UCL	1.703		

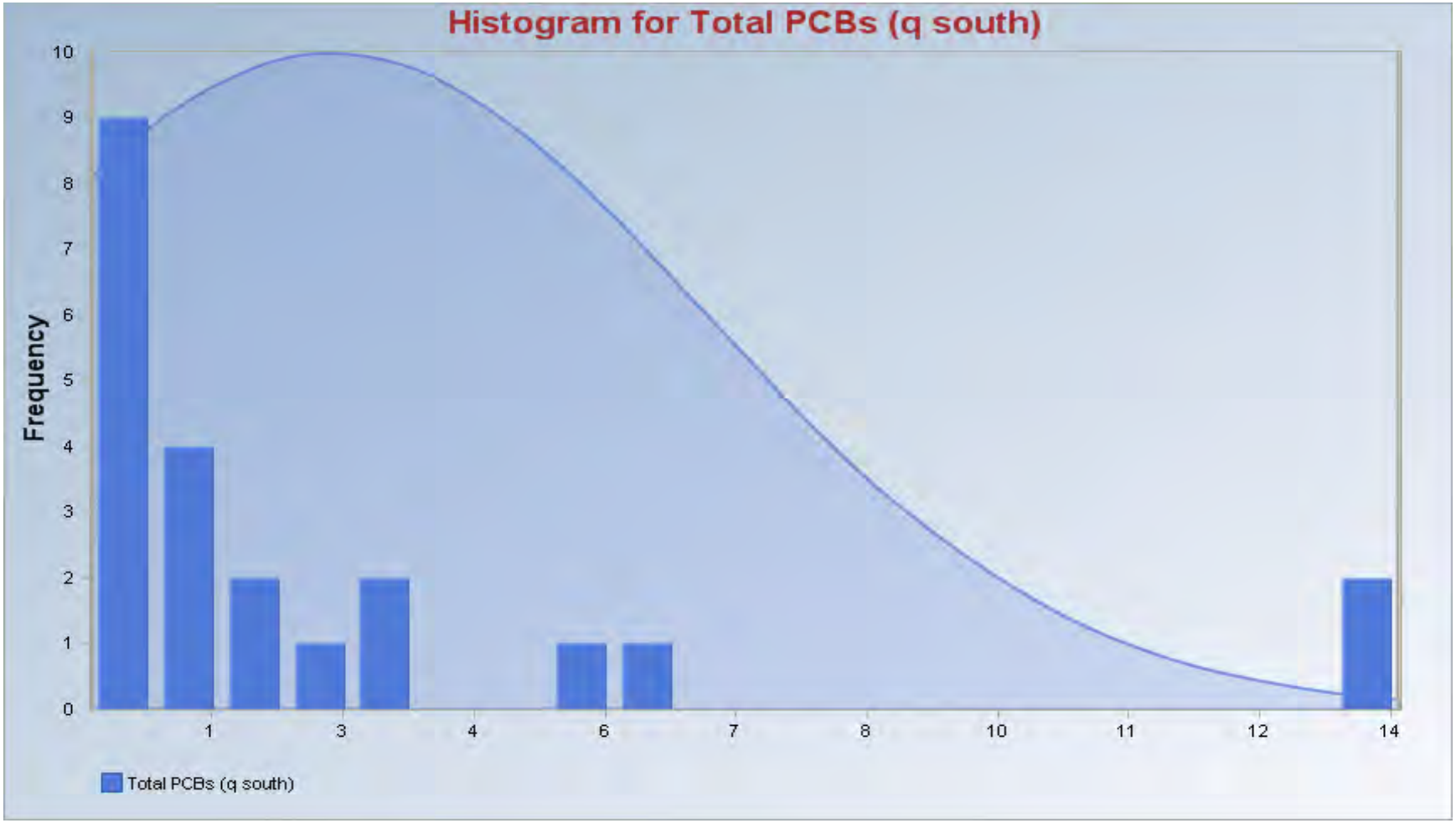
Note: DL/2 is not a recommended method.

Total PCBs (q south)

General Statistics			
Number of Valid Data	22	Number of Detected Data	16
Number of Distinct Detected Data	16	Number of Non-Detect Data	6
Number of Missing Values	2	Percent Non-Detects	27.27%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.093	Minimum Detected	-2.375
Maximum Detected	13.94	Maximum Detected	2.635
Mean of Detected	3.148	Mean of Detected	0.217
SD of Detected	4.382	SD of Detected	1.579
Minimum Non-Detect	0.0965	Minimum Non-Detect	-2.338
Maximum Non-Detect	5.3	Maximum Non-Detect	1.668
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	19
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	86.36%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.675	Shapiro Wilk Test Statistic	0.931
5% Shapiro Wilk Critical Value	0.887	5% Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.47	Mean	-0.271
SD	3.905	SD	1.773
95% DL/2 (t) UCL	3.903	95% H-Stat (DL/2) UCL	10.61
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.293
		SD in Log Scale	1.614
		Mean in Original Scale	2.353
		SD in Original Scale	3.936
		95% Percentile Bootstrap UCL	3.864
		95% BCA Bootstrap UCL	4.296
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.575	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	5.48		
nu star	18.39		
A-D Test Statistic	0.422	Nonparametric Statistics	
5% A-D Critical Value	0.783	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.783	Mean	2.378
5% K-S Critical Value	0.225	SD	3.842
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.848
		95% KM (t) UCL	3.837
Assuming Gamma Distribution		95% KM (z) UCL	3.773
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.825
Minimum	1.00E-09	95% KM (bootstrap t) UCL	5.948
Maximum	13.94	95% KM (BCA) UCL	3.921
Mean	2.527	95% KM (Percentile Bootstrap) UCL	3.775
Median	1.111	95% KM (Chebyshev) UCL	6.074
SD	3.902	97.5% KM (Chebyshev) UCL	7.674
k star	0.207	99% KM (Chebyshev) UCL	10.82
Theta star	12.21		
Nu star	9.103	Potential UCLs to Use	
AppChi2	3.39	95% KM (Chebyshev) UCL	6.074
95% Gamma Approximate UCL	6.787		
95% Adjusted Gamma UCL	7.342		

Note: DL/2 is not a recommended method.


Histogram for Total PCBs (q central)
Frequency
6
5
4
3
2
1
0
1
2
Total PCBs (q central)


Histogram for Total PCBs (q south)
Frequency
10
9
8
7
6
5
4
3
2
1
0
1
3
4
6
7
8
10
11
12
14
Total PCBs (q south)

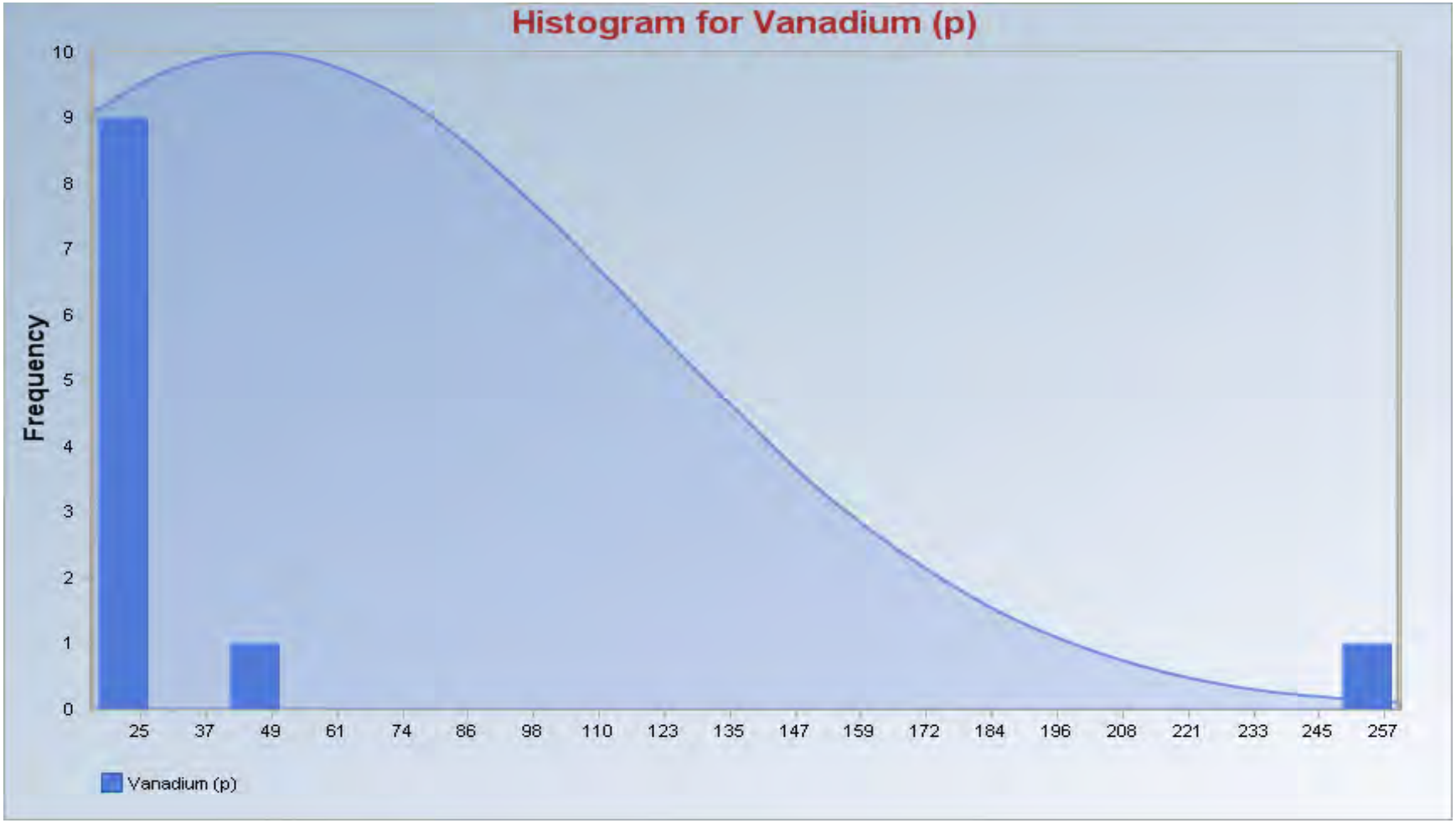
General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Vanadium (p)

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	8
Raw Statistics		Log-transformed Statistics	
Minimum	15	Minimum of Log Data	2.708
Maximum	260	Maximum of Log Data	5.561
Mean	46.55	Mean of log Data	3.409
Median	25	SD of log Data	0.755
SD	71.14		
Coefficient of Variation	1.528		
Skewness	3.261		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.42	Shapiro Wilk Test Statistic	0.619
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	85.42	95% H-UCL	74.11
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	79.32
95% Adjusted-CLT UCL	104.4	97.5% Chebyshev (MVUE) UCL	96.77
95% Modified-t UCL	88.93	99% Chebyshev (MVUE) UCL	131
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.007	Data do not follow a Discernable Distribution (0.05)	
Theta Star	46.21		
nu star	22.16		
Approximate Chi Square Value (.05)	12.46	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	81.82
Adjusted Chi Square Value	11.29	95% Jackknife UCL	85.42
		95% Standard Bootstrap UCL	79.86
Anderson-Darling Test Statistic	2.446	95% Bootstrap-t UCL	586
Anderson-Darling 5% Critical Value	0.746	95% Hall's Bootstrap UCL	589.7
Kolmogorov-Smirnov Test Statistic	0.436	95% Percentile Bootstrap UCL	88.73
Kolmogorov-Smirnov 5% Critical Value	0.261	95% BCA Bootstrap UCL	110.8
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	140
		97.5% Chebyshev(Mean, Sd) UCL	180.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	260
95% Approximate Gamma UCL	82.79		
95% Adjusted Gamma UCL	91.37		

Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	140


Histogram for Vanadium (p)
Frequency
10
9
8
7
6
5
4
3
2
1
0
25
37
49
61
74
86
98
110
123
135
147
159
172
184
196
208
221
233
245
257
Vanadium (p)

Upper Confidence Limit (UCL) Calculations and Histograms – Combined Soil

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

1,2-Dichloroethane (r)

General Statistics

Number of Valid Data	12	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	5
Number of Missing Values	4	Percent Non-Detects	41.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0014	Minimum Detected	-6.571
Maximum Detected	87	Maximum Detected	4.466
Mean of Detected	28.57	Mean of Detected	-0.636
SD of Detected	36.77	SD of Detected	5.38
Minimum Non-Detect	0.0049	Minimum Non-Detect	-5.319
Maximum Non-Detect	3.4	Maximum Non-Detect	1.224

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	66.67%

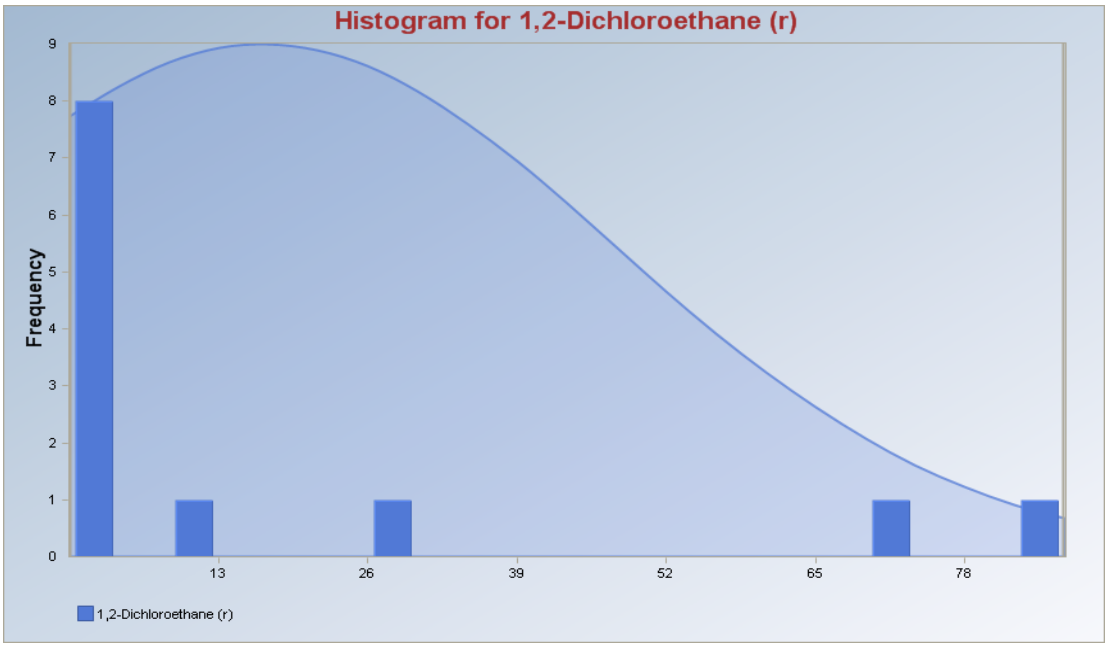
Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.794	Shapiro Wilk Test Statistic	0.755
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	16.83	Mean	-1.913
SD	30.79	SD	4.65
95% DL/2 (t) UCL	32.79	95% H-Stat (DL/2) UCL	1.68E+10
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-2.568
		SD in Log Scale	4.636
		Mean in Original Scale	16.67
		SD in Original Scale	30.88
		95% Percentile Bootstrap UCL	32
		95% BCA Bootstrap UCL	37.25
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.202	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	141.6		
nu star	2.825		
A-D Test Statistic	0.768	Nonparametric Statistics	
5% A-D Critical Value	0.826	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.826	Mean	16.67
5% K-S Critical Value	0.343	SD	29.57
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	9.22
		95% KM (t) UCL	33.23
Assuming Gamma Distribution		95% KM (z) UCL	31.83
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	32.68
Minimum	0.0014	95% KM (bootstrap t) UCL	64.44
Maximum	87	95% KM (BCA) UCL	32.5
Mean	29.91	95% KM (Percentile Bootstrap) UCL	32.75
Median	31.78	95% KM (Chebyshev) UCL	56.86
SD	27.21	97.5% KM (Chebyshev) UCL	74.25
k star	0.278	99% KM (Chebyshev) UCL	108.4
Theta star	107.5		
Nu star	6.675	Potential UCLs to Use	
AppChi2	1.994	95% KM (BCA) UCL	32.5
95% Gamma Approximate UCL	100.1		
95% Adjusted Gamma UCL	122.6		

Note: DL/2 is not a recommended method.


Histogram for 1,2-Dichloroethane (r)
Frequency
0
1
2
3
4
5
6
7
8
9
13
26
39
52
65
78
1,2-Dichloroethane (r)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1,2-Dichloroethene (total) (r)

General Statistics			
Number of Valid Data	12	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	7
Number of Missing Values	4	Percent Non-Detects	58.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.80E-04	Minimum Detected	-7.642
Maximum Detected	51	Maximum Detected	3.932
Mean of Detected	13.52	Mean of Detected	-1.334
SD of Detected	21.52	SD of Detected	5.524
Minimum Non-Detect	0.0094	Minimum Non-Detect	-4.667
Maximum Non-Detect	6.8	Maximum Non-Detect	1.917

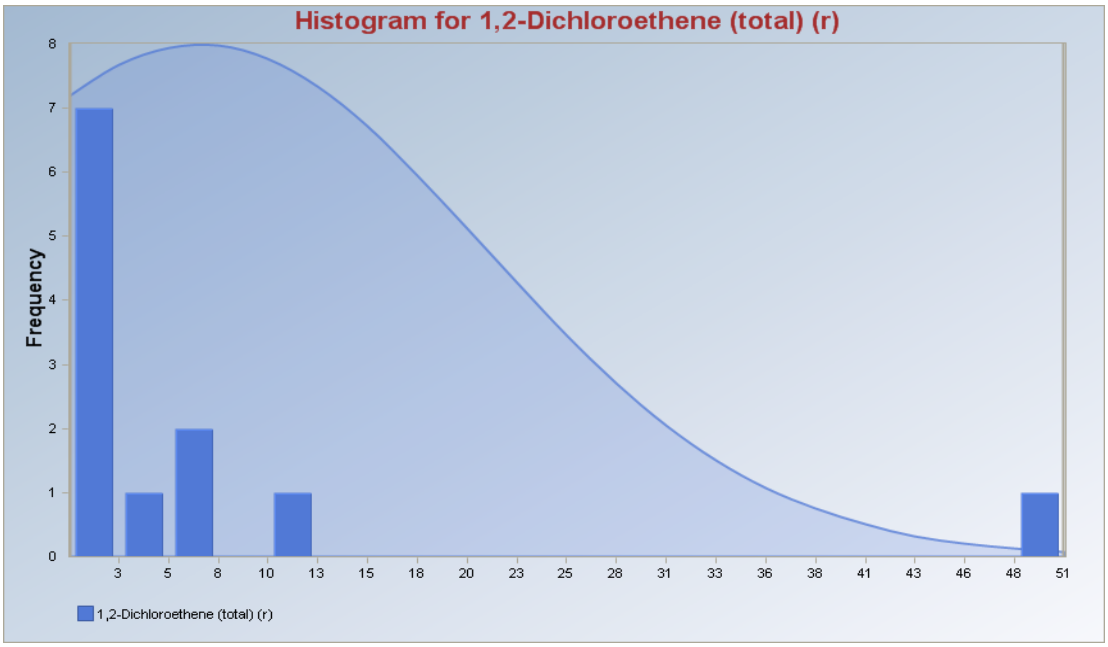
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	83.33%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.731	Shapiro Wilk Test Statistic	0.815
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.177	Mean	-2.528
SD	14.55	SD	4.184
95% DL/2 (t) UCL	13.72	95% H-Stat (DL/2) UCL	48461829
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.277
		SD in Log Scale	4.31
		Mean in Original Scale	5.635
		SD in Original Scale	14.73
		95% Percentile Bootstrap UCL	13.52
		95% BCA Bootstrap UCL	18
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.209	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	64.76		
nu star	2.088		
A-D Test Statistic	0.433	Nonparametric Statistics	
5% A-D Critical Value	0.781	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.781	Mean	5.73
5% K-S Critical Value	0.39	SD	14.08
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	4.548
		95% KM (t) UCL	13.9
Assuming Gamma Distribution		95% KM (z) UCL	13.21
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	13.36
Minimum	1.00E-09	95% KM (bootstrap t) UCL	32.19
Maximum	51	95% KM (BCA) UCL	17.43
Mean	12.68	95% KM (Percentile Bootstrap) UCL	15.25
Median	10.8	95% KM (Chebyshev) UCL	25.56
SD	13.85	97.5% KM (Chebyshev) UCL	34.13
k star	0.212	99% KM (Chebyshev) UCL	50.99
Theta star	59.96		
Nu star	5.076	Potential UCLs to Use	
AppChi2	1.188	95% KM (t) UCL	13.9
95% Gamma Approximate UCL	54.21		
95% Adjusted Gamma UCL	69.33		

Note: DL/2 is not a recommended method.


Histogram for 1,2-Dichloroethene (total) (r)
Frequency
0
1
2
3
4
5
6
7
8
3
5
8
10
13
15
18
20
23
25
28
31
33
36
38
41
43
46
48
51
1,2-Dichloroethene (total) (r)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

1,2,4-Trichlorobenzene (o)

General Statistics

Number of Valid Data	13	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	8
Number of Missing Values	4	Percent Non-Detects	61.54%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.03	Minimum Detected	-3.507
Maximum Detected	23	Maximum Detected	3.135
Mean of Detected	11.23	Mean of Detected	1.217
SD of Detected	10.58	SD of Detected	2.741
Minimum Non-Detect	0.38	Minimum Non-Detect	-0.968
Maximum Non-Detect	26	Maximum Non-Detect	3.258

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	13
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

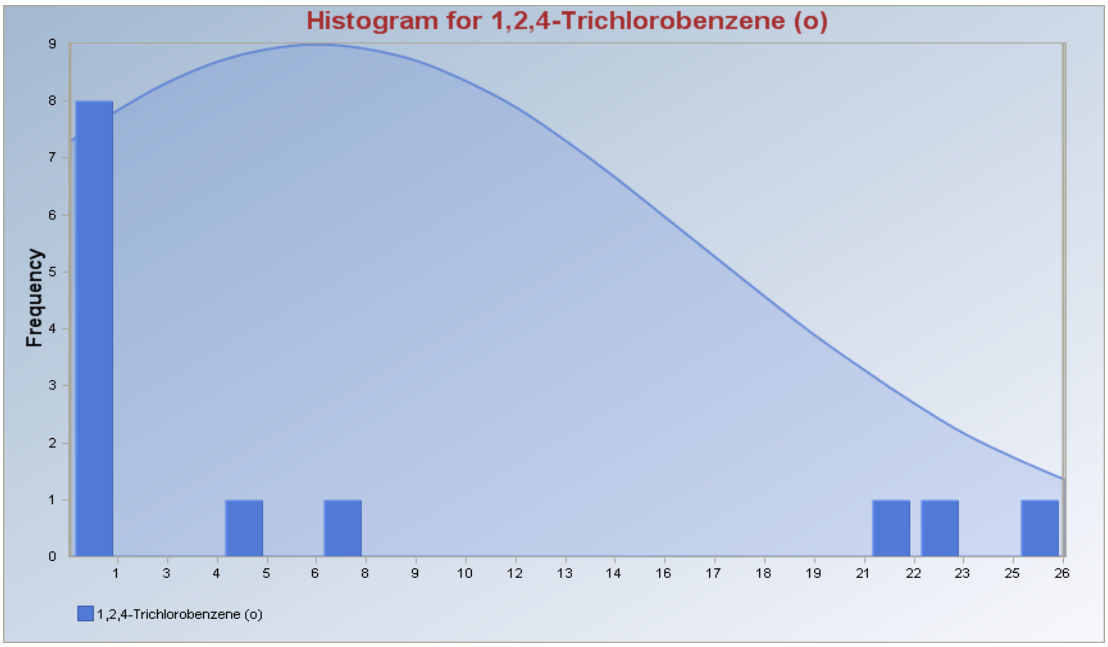
Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.854	Shapiro Wilk Test Statistic	0.771
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.425	Mean	-0.203
SD	8.49	SD	2.268
95% DL/2 (t) UCL	9.622	95% H-Stat (DL/2) UCL	216.6
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.3
		SD in Log Scale	2.725
		Mean in Original Scale	4.371
		SD in Original Scale	8.317
		95% Percentile Bootstrap UCL	8.325
		95% BCA Bootstrap UCL	9.618
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.343	Data appear Normal at 5% Significance Level	
Theta Star	32.7		
nu star	3.433		
A-D Test Statistic	0.462	Nonparametric Statistics	
5% A-D Critical Value	0.71	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.71	Mean	4.695
5% K-S Critical Value	0.371	SD	8.235
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.658
		95% KM (t) UCL	9.432
Assuming Gamma Distribution		95% KM (z) UCL	9.067
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8.982
Minimum	0.03	95% KM (bootstrap t) UCL	12.76
Maximum	23	95% KM (BCA) UCL	22.15
Mean	12.16	95% KM (Percentile Bootstrap) UCL	12
Median	11.28	95% KM (Chebyshev) UCL	16.28
SD	6.736	97.5% KM (Chebyshev) UCL	21.29
k star	0.952	99% KM (Chebyshev) UCL	31.14
Theta star	12.77		
Nu star	24.76	Potential UCLs to Use	
AppChi2	14.43	95% KM (t) UCL	9.432
95% Gamma Approximate UCL	20.86	95% KM (Percentile Bootstrap) UCL	12
95% Adjusted Gamma UCL	22.61		

Note: DL/2 is not a recommended method.


Histogram for 1,2,4-Trichlorobenzene (o)
Frequency
0
1
2
3
4
5
6
7
8
9
1
3
4
5
6
8
9
10
12
13
14
16
17
18
19
21
22
23
25
26
1,2,4-Trichlorobenzene (o)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1,4-Dichlorobenzene (o)

General Statistics			
Number of Valid Data	13	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	7
Number of Missing Values	4	Percent Non-Detects	53.85%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.046	Minimum Detected	-3.079
Maximum Detected	47	Maximum Detected	3.85
Mean of Detected	19.42	Mean of Detected	1.755
SD of Detected	21.3	SD of Detected	2.559
Minimum Non-Detect	0.38	Minimum Non-Detect	-0.968
Maximum Non-Detect	0.42	Maximum Non-Detect	-0.868

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	61.54%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.781	Shapiro Wilk Test Statistic	0.811
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.069	Mean	-0.0587
SD	16.99	SD	2.405
95% DL/2 (t) UCL	17.46	95% H-Stat (DL/2) UCL	223
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.577
		SD in Log Scale	2.857
		Mean in Original Scale	9.016
		SD in Original Scale	17.02
		95% Percentile Bootstrap UCL	16.76
		95% BCA Bootstrap UCL	20
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.372	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	52.23		
nu star	4.461		
A-D Test Statistic	0.377	Nonparametric Statistics	
5% A-D Critical Value	0.735	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.735	Mean	8.986
5% K-S Critical Value	0.348	SD	16.36
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	4.972
		95% KM (t) UCL	17.85
Assuming Gamma Distribution		95% KM (z) UCL	17.16
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	16.62
Minimum	0.046	95% KM (bootstrap t) UCL	35.2
Maximum	47	95% KM (BCA) UCL	21.47
Mean	19.38	95% KM (Percentile Bootstrap) UCL	18.82
Median	18.89	95% KM (Chebyshev) UCL	30.66
SD	13.85	97.5% KM (Chebyshev) UCL	40.03
k star	0.839	99% KM (Chebyshev) UCL	58.45
Theta star	23.1		
Nu star	21.81	Potential UCLs to Use	
AppChi2	12.19	95% KM (t) UCL	17.85
95% Gamma Approximate UCL	34.65		
95% Adjusted Gamma UCL	37.79		

Note: DL/2 is not a recommended method.

1,4-Dichlorobenzene (p)

General Statistics			
Number of Valid Data	33	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	24
Number of Missing Values	14	Percent Non-Detects	72.73%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.033	Minimum Detected	-3.411
Maximum Detected	160	Maximum Detected	5.075
Mean of Detected	29.92	Mean of Detected	0.782
SD of Detected	53.97	SD of Detected	3.029
Minimum Non-Detect	0.38	Minimum Non-Detect	-0.968
Maximum Non-Detect	2000	Maximum Non-Detect	7.601
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	33
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

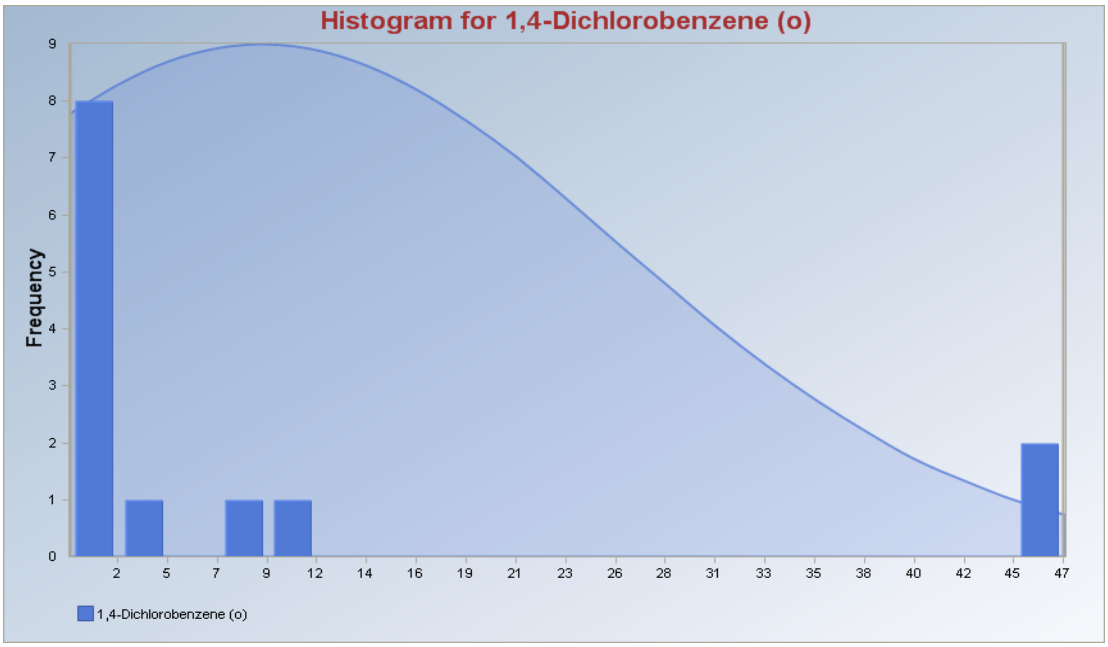
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.648	Shapiro Wilk Test Statistic	0.924
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	70.25	Mean	0.524
SD	241.7	SD	2.55
95% DL/2 (t) UCL	141.5	95% H-Stat (DL/2) UCL	431.1
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.872
		SD in Log Scale	2.445
		Mean in Original Scale	8.239
		SD in Original Scale	30.16
		95% Percentile Bootstrap UCL	17.95
		95% BCA Bootstrap UCL	24.41
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.253	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	118.2		
nu star	4.554		
A-D Test Statistic	0.531	Nonparametric Statistics	
5% A-D Critical Value	0.819	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.819	Mean	8.83
5% K-S Critical Value	0.303	SD	30.55
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	5.821
		95% KM (t) UCL	18.69
Assuming Gamma Distribution		95% KM (z) UCL	18.41
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	18.29
Minimum	0.033	95% KM (bootstrap t) UCL	41.3
Maximum	160	95% KM (BCA) UCL	20.4
Mean	34.8	95% KM (Percentile Bootstrap) UCL	19.09
Median	29.08	95% KM (Chebyshev) UCL	34.21
SD	30.33	97.5% KM (Chebyshev) UCL	45.19
k star	0.728	99% KM (Chebyshev) UCL	66.75
Theta star	47.78		
Nu star	48.07	Potential UCLs to Use	
AppChi2	33.16	95% KM (t) UCL	18.69
95% Gamma Approximate UCL	50.45		
95% Adjusted Gamma UCL	51.44		

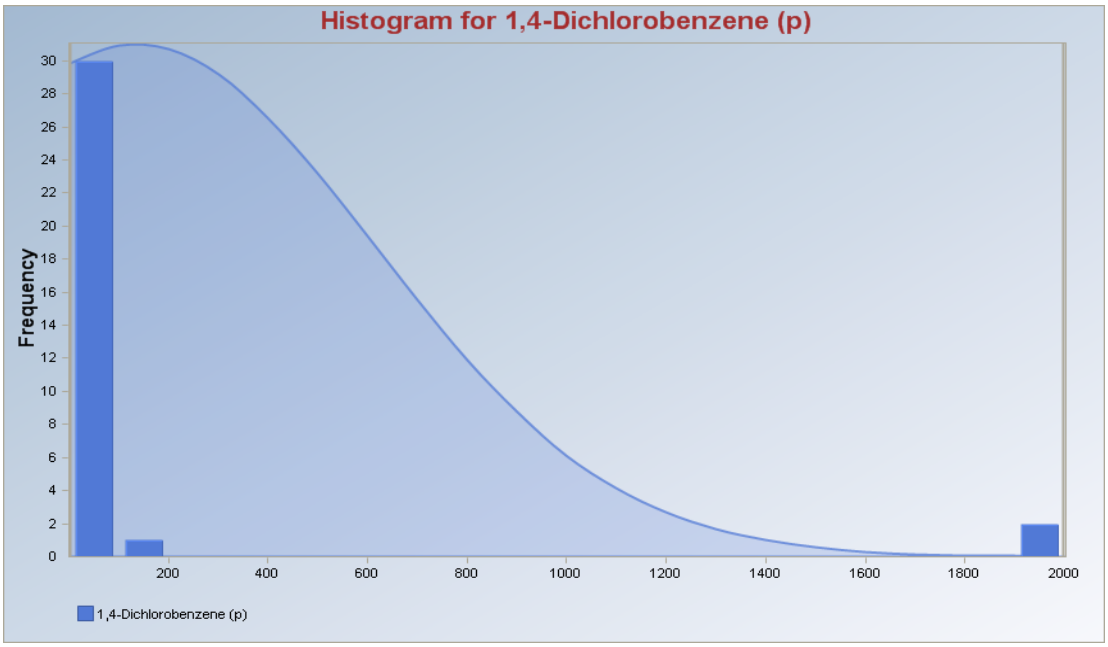
Note: DL/2 is not a recommended method.

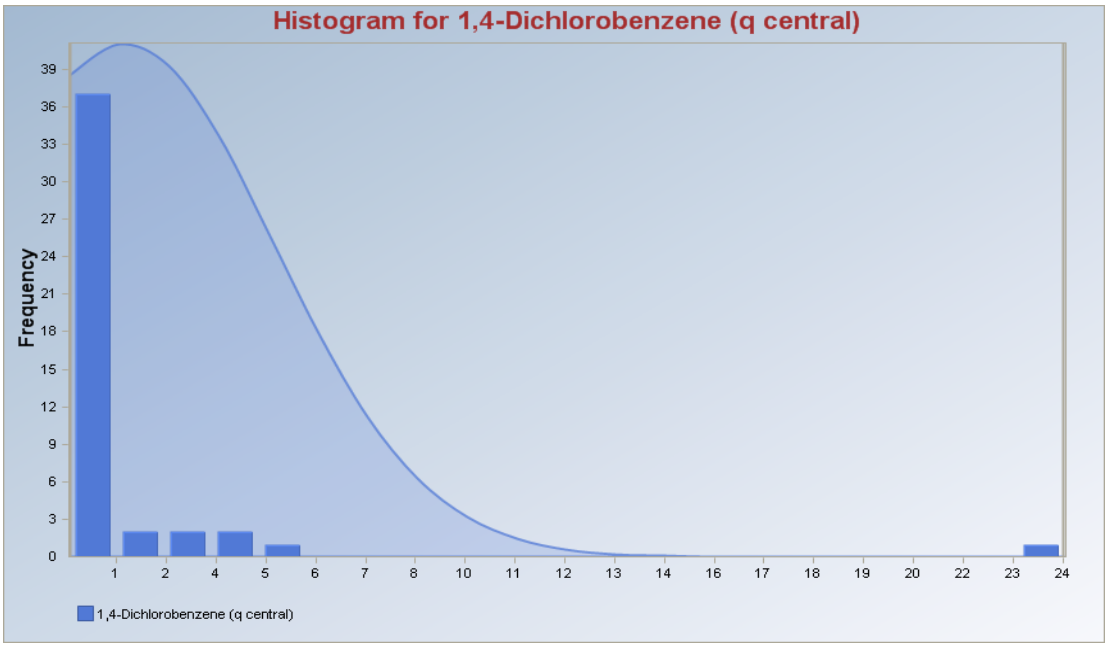
1,4-Dichlorobenzene (q central)

General Statistics			
Number of Valid Data	45	Number of Detected Data	14
Number of Distinct Detected Data	11	Number of Non-Detect Data	31
Number of Missing Values	5	Percent Non-Detects	68.89%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.045	Minimum Detected	-3.101
Maximum Detected	24	Maximum Detected	3.178
Mean of Detected	2.648	Mean of Detected	-0.93
SD of Detected	6.373	SD of Detected	1.894
Minimum Non-Detect	0.34	Minimum Non-Detect	-1.079
Maximum Non-Detect	3.9	Maximum Non-Detect	1.361
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	43
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	95.56%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.466	Shapiro Wilk Test Statistic	0.842
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.088	Mean	-1.18
SD	3.642	SD	1.189
95% DL/2 (t) UCL	2.001	95% H-Stat (DL/2) UCL	1.364
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.55
		SD in Log Scale	1.186
		Mean in Original Scale	0.948
		SD in Original Scale	3.653
		95% Percentile Bootstrap UCL	1.957
		95% BCA Bootstrap UCL	2.84
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.325	Data do not follow a Discernable Distribution (0.05)	
Theta Star	8.154		
nu star	9.094		
A-D Test Statistic	1.681	Nonparametric Statistics	
5% A-D Critical Value	0.822	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.822	Mean	0.931
5% K-S Critical Value	0.246	SD	3.618
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.56
		95% KM (t) UCL	1.872
Assuming Gamma Distribution		95% KM (z) UCL	1.852
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.848
Minimum	0.045	95% KM (bootstrap t) UCL	6.4
Maximum	24	95% KM (BCA) UCL	1.976
Mean	2.679	95% KM (Percentile Bootstrap) UCL	1.966
Median	2.792	95% KM (Chebyshev) UCL	3.373
SD	3.486	97.5% KM (Chebyshev) UCL	4.43
k star	0.91	99% KM (Chebyshev) UCL	6.506
Theta star	2.943		
Nu star	81.92	Potential UCLs to Use	
AppChi2	62.07	95% KM (Chebyshev) UCL	3.373
95% Gamma Approximate UCL	3.536		
95% Adjusted Gamma UCL	3.569		

Note: DL/2 is not a recommended method.


Histogram for 1,4-Dichlorobenzene (o)
Frequency
0
1
2
3
4
5
6
7
8
9
2
5
7
9
12
14
16
19
21
23
26
28
31
33
35
38
40
42
45
47
1,4-Dichlorobenzene (o)


Histogram for 1,4-Dichlorobenzene (p)
Frequency
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
200
400
600
800
1000
1200
1400
1600
1800
2000
1,4-Dichlorobenzene (p)


Histogram for 1,4-Dichlorobenzene (q central)
Frequency
39
36
33
30
27
24
21
18
15
12
9
6
3
0
1
2
4
5
6
7
8
10
11
12
13
14
16
17
18
19
20
22
23
24
1,4-Dichlorobenzene (q central)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

2,4-Dichlorophenol (q north)

General Statistics			
Number of Valid Data	29	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	24
Number of Missing Values	7	Percent Non-Detects	82.76%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.03	Minimum Detected	-3.507
Maximum Detected	270	Maximum Detected	5.598
Mean of Detected	67.79	Mean of Detected	1.466
SD of Detected	116.4	SD of Detected	3.586
Minimum Non-Detect	0.35	Minimum Non-Detect	-1.05
Maximum Non-Detect	21	Maximum Non-Detect	3.045

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	27
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	93.10%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.701	Shapiro Wilk Test Statistic	0.968
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	12.52	Mean	-0.512
SD	50.96	SD	1.929
95% DL/2 (t) UCL	28.62	95% H-Stat (DL/2) UCL	10.98
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-3.152
		SD in Log Scale	2.699
		Mean in Original Scale	11.71
		SD in Original Scale	51.12
		95% Percentile Bootstrap UCL	30.2
		95% BCA Bootstrap UCL	41.74
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.236	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	287		
nu star	2.362		
A-D Test Statistic	0.258	Nonparametric Statistics	
5% A-D Critical Value	0.755	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.755	Mean	11.74
5% K-S Critical Value	0.384	SD	50.22
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	10.43
		95% KM (t) UCL	29.47
Assuming Gamma Distribution		95% KM (z) UCL	28.89
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	27.21
Minimum	1.00E-09	95% KM (bootstrap t) UCL	678.1
Maximum	310.6	95% KM (BCA) UCL	72.07
Mean	81.39	95% KM (Percentile Bootstrap) UCL	37.36
Median	42	95% KM (Chebyshev) UCL	57.19
SD	95.32	97.5% KM (Chebyshev) UCL	76.85
k star	0.164	99% KM (Chebyshev) UCL	115.5
Theta star	497		
Nu star	9.498	Potential UCLs to Use	
AppChi2	3.631	95% KM (t) UCL	29.47
95% Gamma Approximate UCL	212.9		
95% Adjusted Gamma UCL	226.3		

Note: DL/2 is not a recommended method.

2,4-Dichlorophenol (r)

General Statistics

Number of Valid Data	12	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	6
Number of Missing Values	4	Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.03	Minimum Detected	-3.507
Maximum Detected	3500	Maximum Detected	8.161
Mean of Detected	654.7	Mean of Detected	2.948
SD of Detected	1397	SD of Detected	4.413
Minimum Non-Detect	0.35	Minimum Non-Detect	-1.05
Maximum Non-Detect	0.39	Maximum Non-Detect	-0.942

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	66.67%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.556	Shapiro Wilk Test Statistic	0.92
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

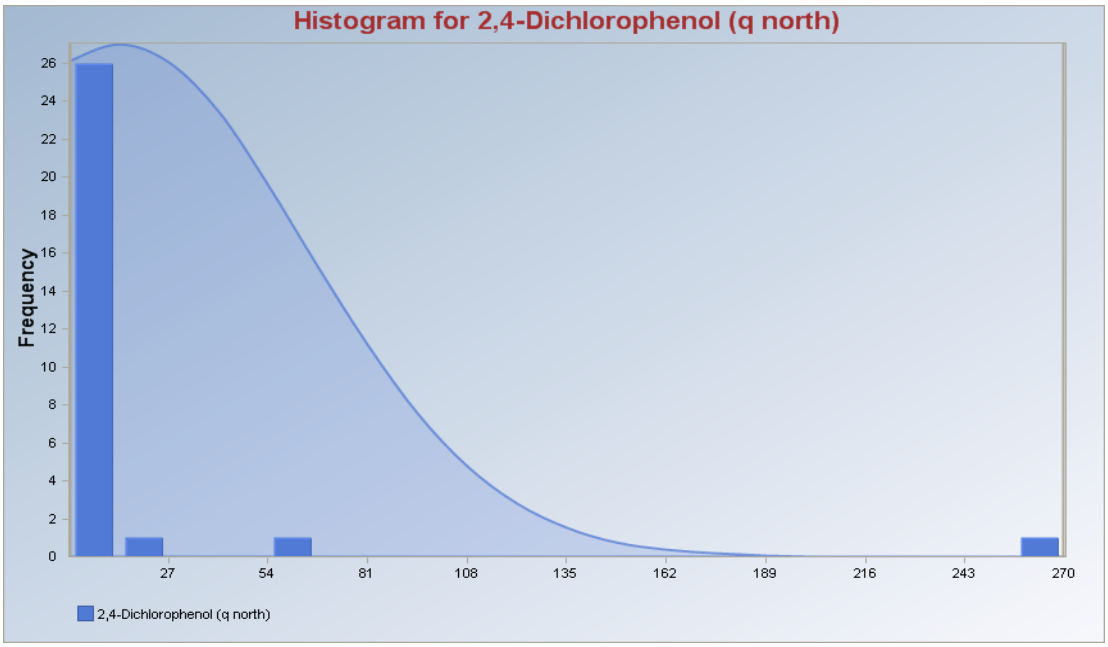
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	327.5	Mean	0.625
SD	1002	SD	3.839
95% DL/2 (t) UCL	847	95% H-Stat (DL/2) UCL	41970340

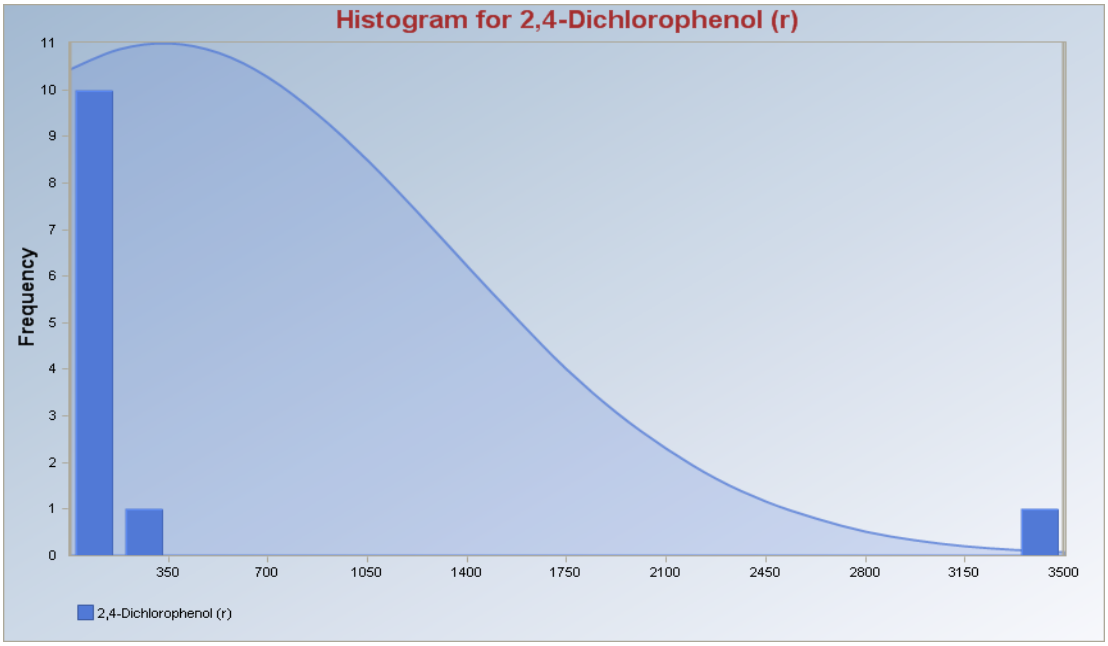
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.418
		SD in Log Scale	4.04
		Mean in Original Scale	327.5
		SD in Original Scale	1002
		95% Percentile Bootstrap UCL	897.6
		95% BCA Bootstrap UCL	1225

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.215	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3051		
nu star	2.575		

A-D Test Statistic	0.272	Nonparametric Statistics	
5% A-D Critical Value	0.8	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8	Mean	327.4
5% K-S Critical Value	0.363	SD	959.6
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	303.4
		95% KM (t) UCL	872.4
Assuming Gamma Distribution		95% KM (z) UCL	826.6
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	847
Minimum	0.03	95% KM (bootstrap t) UCL	9222
Maximum	3500	95% KM (BCA) UCL	909.6
Mean	680.9	95% KM (Percentile Bootstrap) UCL	902.5
Median	534.7	95% KM (Chebyshev) UCL	1650
SD	952.3	97.5% KM (Chebyshev) UCL	2222
k star	0.334	99% KM (Chebyshev) UCL	3347
Theta star	2039		
Nu star	8.015	Potential UCLs to Use	
AppChi2	2.744	95% KM (t) UCL	872.4
95% Gamma Approximate UCL	1989		
95% Adjusted Gamma UCL	2377		

Note: DL/2 is not a recommended method.


Histogram for 2,4-Dichlorophenol (q north)
Frequency
26
24
22
20
18
16
14
12
10
8
6
4
2
0
27
54
81
108
135
162
189
216
243
270
2,4-Dichlorophenol (q north)


Histogram for 2,4-Dichlorophenol (r)
Frequency
11
10
9
8
7
6
5
4
3
2
1
0
350
700
1050
1400
1750
2100
2450
2800
3150
3500
2,4-Dichlorophenol (r)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

2,4,6-Trichlorophenol (o)

General Statistics

Number of Valid Data	13	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	8
Number of Missing Values	4	Percent Non-Detects	61.54%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.1	Minimum Detected	0.0953
Maximum Detected	6.9	Maximum Detected	1.932
Mean of Detected	3.5	Mean of Detected	1.029
SD of Detected	2.509	SD of Detected	0.763
Minimum Non-Detect	0.38	Minimum Non-Detect	-0.968
Maximum Non-Detect	0.42	Maximum Non-Detect	-0.868

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	61.54%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.877	Shapiro Wilk Test Statistic	0.932
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.468	Mean	-0.599
SD	2.212	SD	1.41
95% DL/2 (t) UCL	2.562	95% H-Stat (DL/2) UCL	3.142
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.563
		SD in Log Scale	1.438
		Mean in Original Scale	1.491
		SD in Original Scale	2.199
		95% Percentile Bootstrap UCL	2.532
		95% BCA Bootstrap UCL	2.846

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.087	Data appear Normal at 5% Significance Level	
Theta Star	3.219		
nu star	10.87		
A-D Test Statistic	0.355	Nonparametric Statistics	
5% A-D Critical Value	0.684	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.684	Mean	2.023
5% K-S Critical Value	0.36	SD	1.817
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.563
		95% KM (t) UCL	3.027
Assuming Gamma Distribution		95% KM (z) UCL	2.95
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.903
Minimum	1.1	95% KM (bootstrap t) UCL	4.877
Maximum	6.9	95% KM (BCA) UCL	5.515
Mean	3.543	95% KM (Percentile Bootstrap) UCL	3.438
Median	3.572	95% KM (Chebyshev) UCL	4.479
SD	1.471	97.5% KM (Chebyshev) UCL	5.541
k star	4.518	99% KM (Chebyshev) UCL	7.628
Theta star	0.784		
Nu star	117.5	Potential UCLs to Use	
AppChi2	93.45	95% KM (t) UCL	3.027
95% Gamma Approximate UCL	4.454	95% KM (Percentile Bootstrap) UCL	3.438
95% Adjusted Gamma UCL	4.604		

Note: DL/2 is not a recommended method.

2,4,6-Trichlorophenol (r)

General Statistics

Number of Valid Data	12	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	7
Number of Missing Values	4	Percent Non-Detects	58.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.1	Minimum Detected	-2.303
Maximum Detected	650	Maximum Detected	6.477
Mean of Detected	176	Mean of Detected	3.299
SD of Detected	269.4	SD of Detected	3.361
Minimum Non-Detect	0.35	Minimum Non-Detect	-1.05
Maximum Non-Detect	0.39	Maximum Non-Detect	-0.942

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	66.67%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.716	Shapiro Wilk Test Statistic	0.866
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

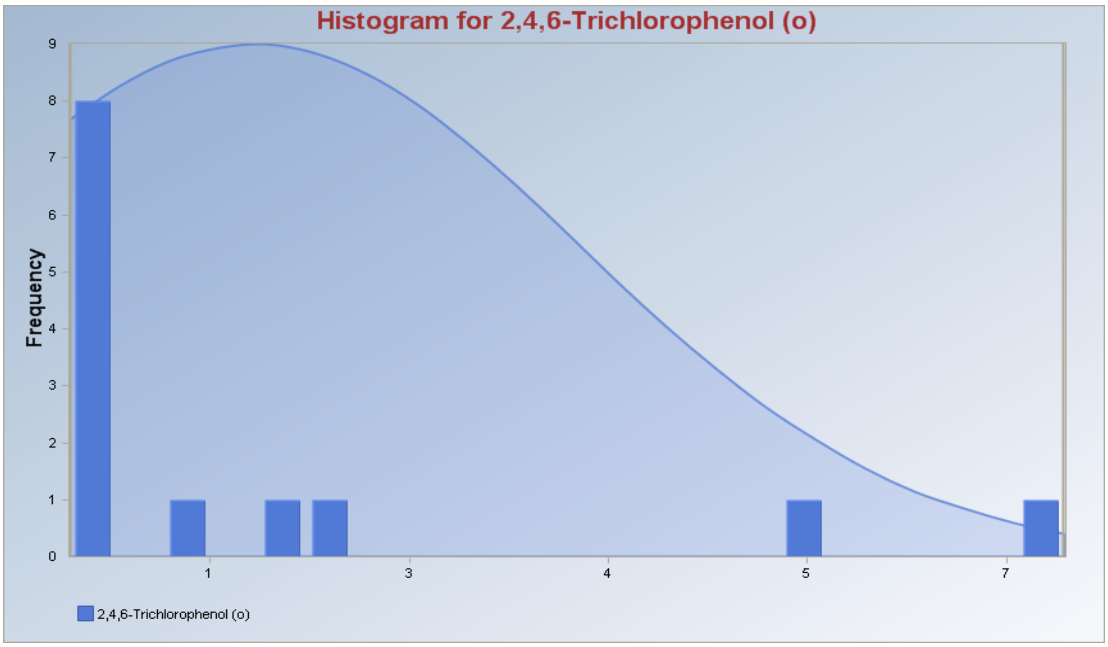
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	73.45	Mean	0.388
SD	186	SD	3.273
95% DL/2 (t) UCL	169.9	95% H-Stat (DL/2) UCL	275150

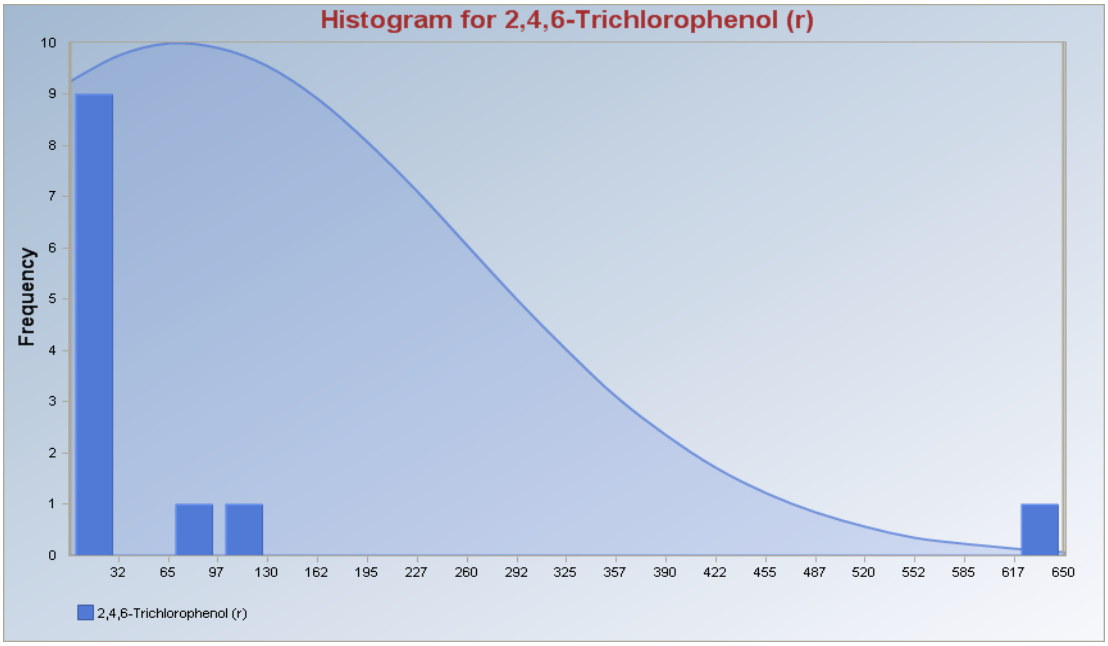
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.164
		SD in Log Scale	3.538
		Mean in Original Scale	73.46
		SD in Original Scale	186
		95% Percentile Bootstrap UCL	174.3
		95% BCA Bootstrap UCL	231.5

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.277	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	636.5		
nu star	2.765		

A-D Test Statistic	0.24	Nonparametric Statistics	
5% A-D Critical Value	0.731	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.731	Mean	73.4
5% K-S Critical Value	0.378	SD	178.1
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	57.48
		95% KM (t) UCL	176.6
Assuming Gamma Distribution		95% KM (z) UCL	167.9
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	162.7
Minimum	0.1	95% KM (bootstrap t) UCL	394
Maximum	650	95% KM (BCA) UCL	252.8
Mean	175.4	95% KM (Percentile Bootstrap) UCL	190
Median	168.5	95% KM (Chebyshev) UCL	323.9
SD	162.7	97.5% KM (Chebyshev) UCL	432.4
k star	0.629	99% KM (Chebyshev) UCL	645.3
Theta star	279		
Nu star	15.09	Potential UCLs to Use	
AppChi2	7.327	95% KM (t) UCL	176.6
95% Gamma Approximate UCL	361.4		
95% Adjusted Gamma UCL	406.3		

Note: DL/2 is not a recommended method.


Histogram for 2,4,6-Trichlorophenol (o)
Frequency
0
1
2
3
4
5
6
7
8
9
1
3
4
5
7
2,4,6-Trichlorophenol (o)


Histogram for 2,4,6-Trichlorophenol (r)
Frequency
10
9
8
7
6
5
4
3
2
1
0
32
65
97
130
162
195
227
260
292
325
357
390
422
455
487
520
552
585
617
650
2,4,6-Trichlorophenol (r)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

2-Methylnaphthalene (o)

General Statistics

Number of Valid Data	13	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	6
Number of Missing Values	4	Percent Non-Detects	46.15%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.038	Minimum Detected	-3.27
Maximum Detected	29.5	Maximum Detected	3.384
Mean of Detected	11.23	Mean of Detected	1.061
SD of Detected	11.03	SD of Detected	2.629
Minimum Non-Detect	0.38	Minimum Non-Detect	-0.968
Maximum Non-Detect	0.42	Maximum Non-Detect	-0.868

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	61.54%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

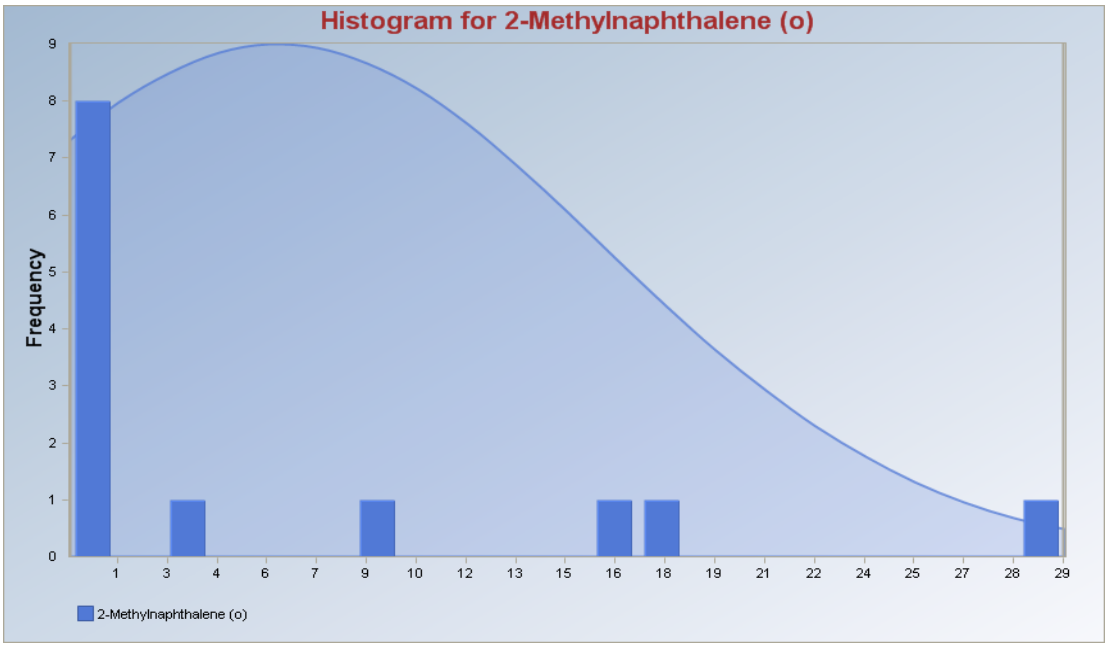
It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.908	Shapiro Wilk Test Statistic	0.825
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.136	Mean	-0.174
SD	9.673	SD	2.32
95% DL/2 (t) UCL	10.92	95% H-Stat (DL/2) UCL	134.9
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.437
		SD in Log Scale	2.538
		Mean in Original Scale	6.104
		SD in Original Scale	9.694
		95% Percentile Bootstrap UCL	10.62
		95% BCA Bootstrap UCL	11.69

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.365	Data appear Normal at 5% Significance Level	
Theta Star	30.75		
nu star	5.111		
A-D Test Statistic	0.48	Nonparametric Statistics	
5% A-D Critical Value	0.756	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.756	Mean	6.086
5% K-S Critical Value	0.328	SD	9.326
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.794
		95% KM (t) UCL	11.07
Assuming Gamma Distribution		95% KM (z) UCL	10.68
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	10.88
Minimum	0.038	95% KM (bootstrap t) UCL	13.25
Maximum	29.5	95% KM (BCA) UCL	13.62
Mean	11.2	95% KM (Percentile Bootstrap) UCL	11.85
Median	11.12	95% KM (Chebyshev) UCL	18.26
SD	7.805	97.5% KM (Chebyshev) UCL	23.53
k star	0.675	99% KM (Chebyshev) UCL	33.88
Theta star	16.61		
Nu star	17.54	Potential UCLs to Use	
AppChi2	9.061	95% KM (t) UCL	11.07
95% Gamma Approximate UCL	21.69	95% KM (Percentile Bootstrap) UCL	11.85
95% Adjusted Gamma UCL	23.96		

Note: DL/2 is not a recommended method.


Histogram for 2-Methylnaphthalene (o)
Frequency
0
1
2
3
4
5
6
7
8
9
1
3
4
6
7
9
10
12
13
15
16
18
19
21
22
24
25
27
28
29
2-Methylnaphthalene (o)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

4-Chloroaniline (p)

General Statistics

Number of Valid Data	33	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	26
Number of Missing Values	14	Percent Non-Detects	78.79%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.22	Minimum Detected	-1.514
Maximum Detected	930	Maximum Detected	6.835
Mean of Detected	138.3	Mean of Detected	1.42
SD of Detected	349.2	SD of Detected	2.944
Minimum Non-Detect	0.75	Minimum Non-Detect	-0.288
Maximum Non-Detect	4000	Maximum Non-Detect	8.294

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	33
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

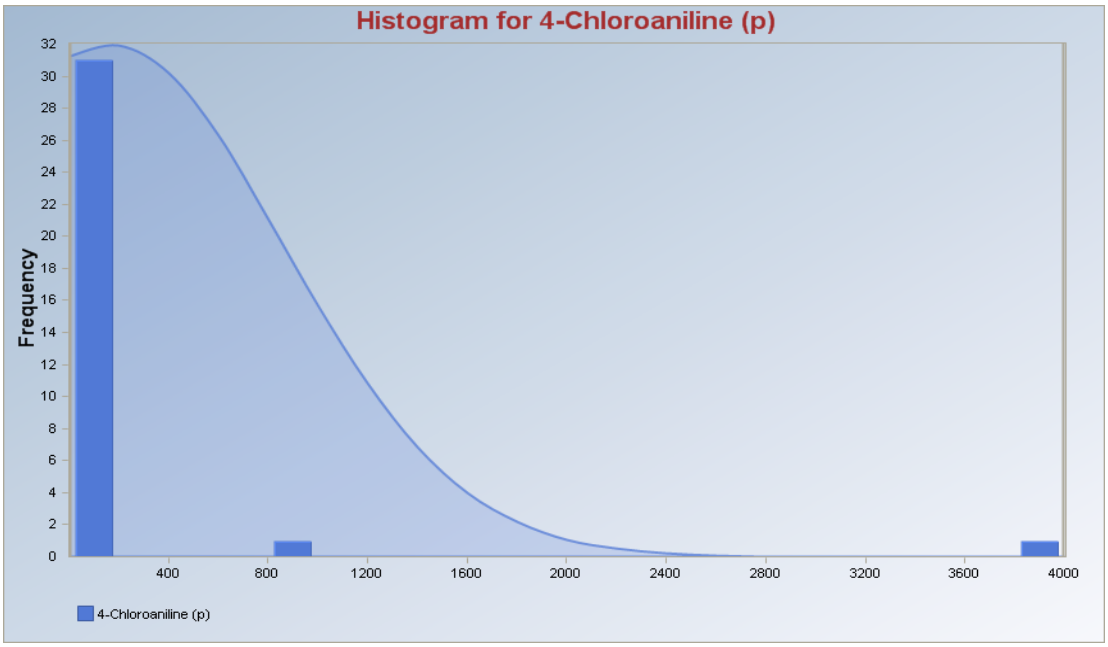
UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.472	Shapiro Wilk Test Statistic	0.872
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	92.78	Mean	0.804
SD	378.5	SD	2.152
95% DL/2 (t) UCL	204.4	95% H-Stat (DL/2) UCL	141.4

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.364
		SD in Log Scale	1.662
		Mean in Original Scale	29.74
		SD in Original Scale	161.7
		95% Percentile Bootstrap UCL	85.65
		95% BCA Bootstrap UCL	114.8

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.214	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	645.5		
nu star	3		
A-D Test Statistic	0.942	Nonparametric Statistics	
5% A-D Critical Value	0.818	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.818	Mean	30.69
5% K-S Critical Value	0.341	SD	161.6
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	30.85
		95% KM (t) UCL	82.95
Assuming Gamma Distribution		95% KM (z) UCL	81.44
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	79.87
Minimum	1.00E-09	95% KM (bootstrap t) UCL	1825
Maximum	930	95% KM (BCA) UCL	89.84
Mean	140.6	95% KM (Percentile Bootstrap) UCL	87.95
Median	148	95% KM (Chebyshev) UCL	165.2
SD	155.4	97.5% KM (Chebyshev) UCL	223.4
k star	0.41	99% KM (Chebyshev) UCL	337.7
Theta star	342.9		
Nu star	27.06	Potential UCLs to Use	
AppChi2	16.2	95% KM (t) UCL	82.95
95% Gamma Approximate UCL	234.9		
95% Adjusted Gamma UCL	241.3		

Note: DL/2 is not a recommended method.


Histogram for 4-Chloroaniline (p)
Frequency
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
400
800
1200
1600
2000
2400
2800
3200
3600
4000
4-Chloroaniline (p)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

4,4'-DDT (p)

General Statistics
Number of Valid Data 24
Number of Distinct Detected Data 13
Number of Missing Values 23

Number of Detected Data 13
Number of Non-Detect Data 11
Percent Non-Detects 45.83%

Raw Statistics
Minimum Detected 0.0081
Maximum Detected 14
Mean of Detected 1.503
SD of Detected 3.798
Minimum Non-Detect 0.019
Maximum Non-Detect 4.5

Log-transformed Statistics
Minimum Detected -4.816
Maximum Detected 2.639
Mean of Detected -1.692
SD of Detected 227.20%
Minimum Non-Detect -3.963
Maximum Non-Detect 1.504

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

Number treated as Non-Detect 23
Number treated as Detected 1
Single DL Non-Detect Percentage 95.83%

UCL Statistics
Normal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.431
5% Shapiro Wilk Critical Value 0.866
Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.953
5% Shapiro Wilk Critical Value 0.866
Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution
DL/2 Substitution Method
Mean 1.031
SD 2.838
95% DL/2 (t) UCL 2.024

Assuming Lognormal Distribution
DL/2 Substitution Method
Mean -1.911
SD 2.047
95% H-Stat (DL/2) UCL 7.491

Maximum Likelihood Estimate(MLE) Method N/A
MLE method failed to converge properly

Log ROS Method
Mean in Log Scale -2.584
SD in Log Scale 1.985
Mean in Original Scale 0.831
SD in Original Scale 2.843
95% Percentile Bootstrap UCL 1.962
95% BCA Bootstrap UCL 2.537

Gamma Distribution Test with Detected Values Only
k star (bias corrected) 0.301
Theta Star 4.997
nu star 7.819

Data Distribution Test with Detected Values Only
Data appear Gamma Distributed at 5% Significance Level

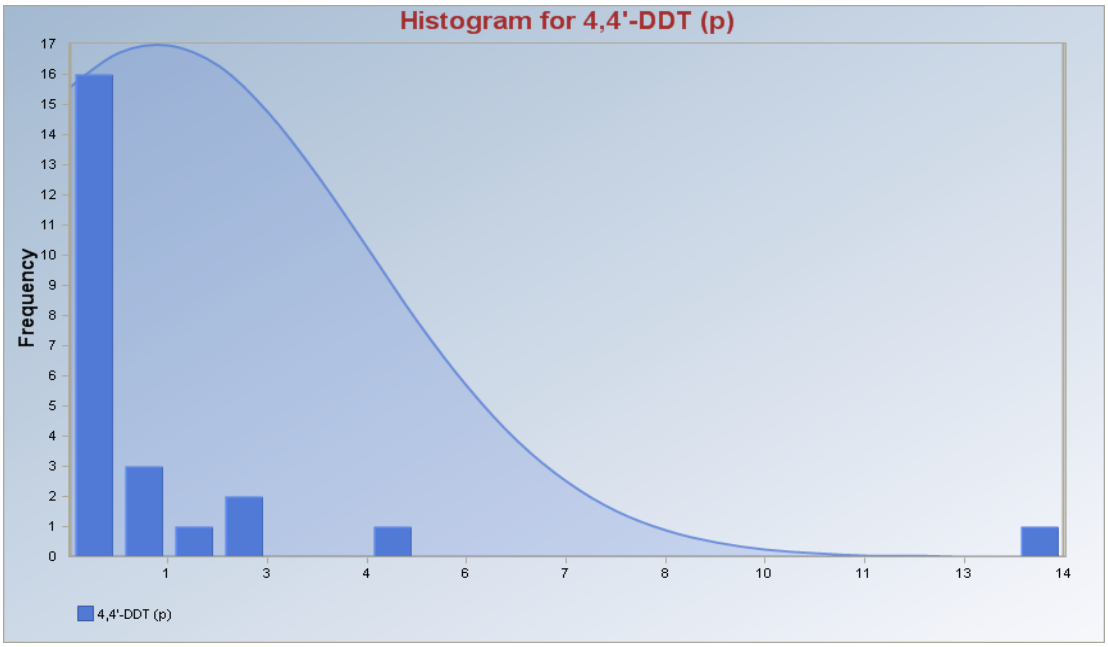
A-D Test Statistic 0.745
5% A-D Critical Value 0.825
K-S Test Statistic 0.825
5% K-S Critical Value 0.256
Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics
Kaplan-Meier (KM) Method
Mean 0.858
SD 2.782
SE of Mean 0.593
95% KM (t) UCL 1.874
95% KM (z) UCL 1.833
95% KM (jackknife) UCL 1.855
95% KM (bootstrap t) UCL 5.772
95% KM (BCA) UCL 2.047
95% KM (Percentile Bootstrap) UCL 2.02
95% KM (Chebyshev) UCL 3.441
97.5% KM (Chebyshev) UCL 4.558
99% KM (Chebyshev) UCL 6.753

Assuming Gamma Distribution
Gamma ROS Statistics using Extrapolated Data
Minimum 0.0081
Maximum 14
Mean 1.495
Median 1.243
SD 2.761
k star 0.488
Theta star 3.064
Nu star 23.43
AppChi2 13.42
95% Gamma Approximate UCL 2.612
95% Adjusted Gamma UCL 2.72

Potential UCLs to Use
95% KM (BCA) UCL 2.047

Note: DL/2 is not a recommended method.


Histogram for 4,4'-DDT (p)
Frequency
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
3
4
6
7
8
10
11
13
14
4,4'-DDT (p)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Aldrin (q south)

General Statistics			
Number of Valid Data	41	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	36
Number of Missing Values	8	Percent Non-Detects	87.80%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0011	Minimum Detected	-6.812
Maximum Detected	0.3	Maximum Detected	-1.204
Mean of Detected	0.129	Mean of Detected	-3.522
SD of Detected	0.131	SD of Detected	2.662
Minimum Non-Detect	0.0018	Minimum Non-Detect	-6.32
Maximum Non-Detect	0.25	Maximum Non-Detect	-1.386

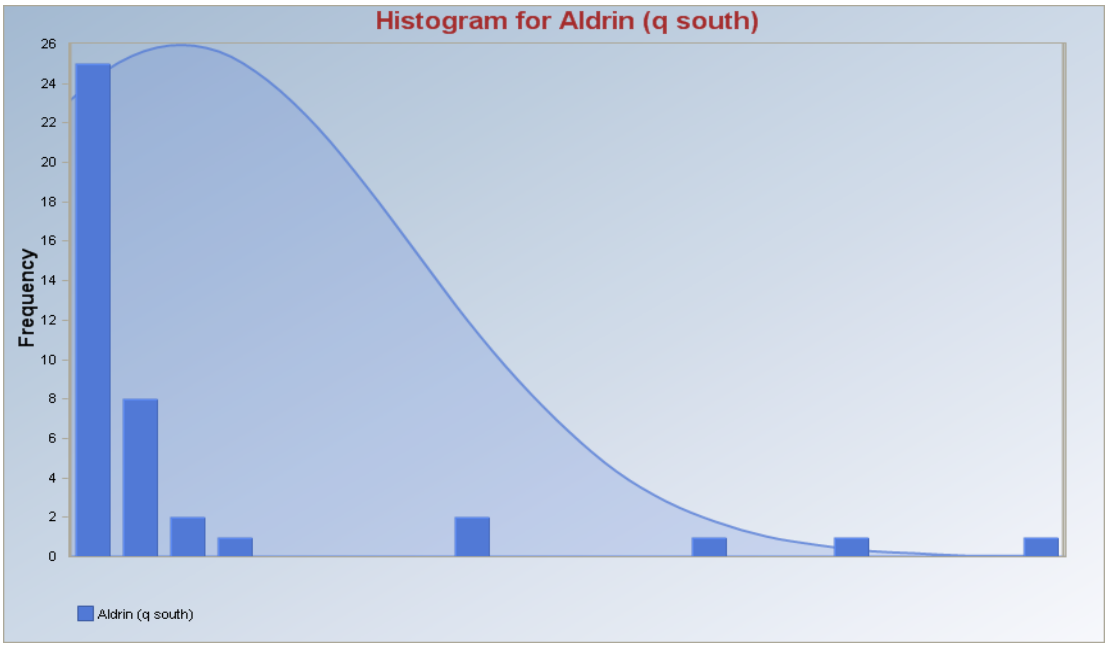
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	40
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	97.56%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.908	Shapiro Wilk Test Statistic	0.812
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0251	Mean	-5.394
SD	0.0608	SD	1.717
95% DL/2 (t) UCL	0.0411	95% H-Stat (DL/2) UCL	0.0436
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.777
		SD in Log Scale	1.725
		Mean in Original Scale	0.0166
		SD in Original Scale	0.0591
		95% Percentile Bootstrap UCL	0.0322
		95% BCA Bootstrap UCL	0.0393
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.309	Data appear Normal at 5% Significance Level	
Theta Star	0.416		
nu star	3.095		
A-D Test Statistic	0.535	Nonparametric Statistics	
5% A-D Critical Value	0.719	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.719	Mean	0.0169
5% K-S Critical Value	0.374	SD	0.0586
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0103
		95% KM (t) UCL	0.0342
Assuming Gamma Distribution		95% KM (z) UCL	0.0338
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0316
Minimum	0.0011	95% KM (bootstrap t) UCL	0.0358
Maximum	0.3	95% KM (BCA) UCL	0.214
Mean	0.131	95% KM (Percentile Bootstrap) UCL	0.148
Median	0.13	95% KM (Chebyshev) UCL	0.0618
SD	0.0418	97.5% KM (Chebyshev) UCL	0.0812
k star	2.726	99% KM (Chebyshev) UCL	0.119
Theta star	0.0482		
Nu star	223.5	Potential UCLs to Use	
AppChi2	189.9	95% KM (t) UCL	0.0342
95% Gamma Approximate UCL	0.154	95% KM (Percentile Bootstrap) UCL	0.148
95% Adjusted Gamma UCL	0.155		

Note: DL/2 is not a recommended method.


Histogram for Aldrin (q south)
Frequency
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Aldrin (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

Antimony (q north)

General Statistics
Number of Valid Data 29
Number of Distinct Detected Data 19
Number of Missing Values 7
Number of Detected Data 20
Number of Non-Detect Data 9
Percent Non-Detects 31.03%

Raw Statistics
Minimum Detected 0.54
Maximum Detected 84
Mean of Detected 7.584
SD of Detected 19.02
Minimum Non-Detect 1.8
Maximum Non-Detect 3.2

Log-transformed Statistics
Minimum Detected -0.616
Maximum Detected 4.431
Mean of Detected 0.748
SD of Detected 1.347
Minimum Non-Detect 0.588
Maximum Non-Detect 1.163

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

Number treated as Non-Detect 23
Number treated as Detected 6
Single DL Non-Detect Percentage 79.31%

UCL Statistics
Normal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.407
5% Shapiro Wilk Critical Value 0.905
Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.833
5% Shapiro Wilk Critical Value 0.905
Data not Lognormal at 5% Significance Level

Assuming Normal Distribution
DL/2 Substitution Method
Mean 5.58
SD 15.96
95% DL/2 (t) UCL 10.62

Assuming Lognormal Distribution
DL/2 Substitution Method
Mean 0.549
SD 1.153
95% H-Stat (DL/2) UCL 6.047

Maximum Likelihood Estimate(MLE) Method N/A
MLE yields a negative mean

Log ROS Method
Mean in Log Scale 0.56
SD in Log Scale 1.152
Mean in Original Scale 5.597
SD in Original Scale 15.95
95% Percentile Bootstrap UCL 10.93
95% BCA Bootstrap UCL 14.75

Gamma Distribution Test with Detected Values Only
k star (bias corrected) 0.456
Theta Star 16.63
nu star 18.24

Data Distribution Test with Detected Values Only
Data do not follow a Discernable Distribution (0.05)

A-D Test Statistic 2.568
5% A-D Critical Value 0.803
K-S Test Statistic 0.803
5% K-S Critical Value 0.205
Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution
Gamma ROS Statistics using Extrapolated Data
Minimum 0.54
Maximum 84
Mean 7.645
Median 3.8
SD 15.67
k star 0.639
Theta star 11.96
Nu star 37.06
AppChi2 24.13
95% Gamma Approximate UCL 11.74
95% Adjusted Gamma UCL 12.06

Nonparametric Statistics
Kaplan-Meier (KM) Method
Mean 5.556
SD 15.69
SE of Mean 2.99
95% KM (t) UCL 10.64
95% KM (z) UCL 10.47
95% KM (jackknife) UCL 10.6
95% KM (bootstrap t) UCL 38.73
95% KM (BCA) UCL 11.67
95% KM (Percentile Bootstrap) UCL 11.36
95% KM (Chebyshev) UCL 18.59
97.5% KM (Chebyshev) UCL 24.23
99% KM (Chebyshev) UCL 35.3

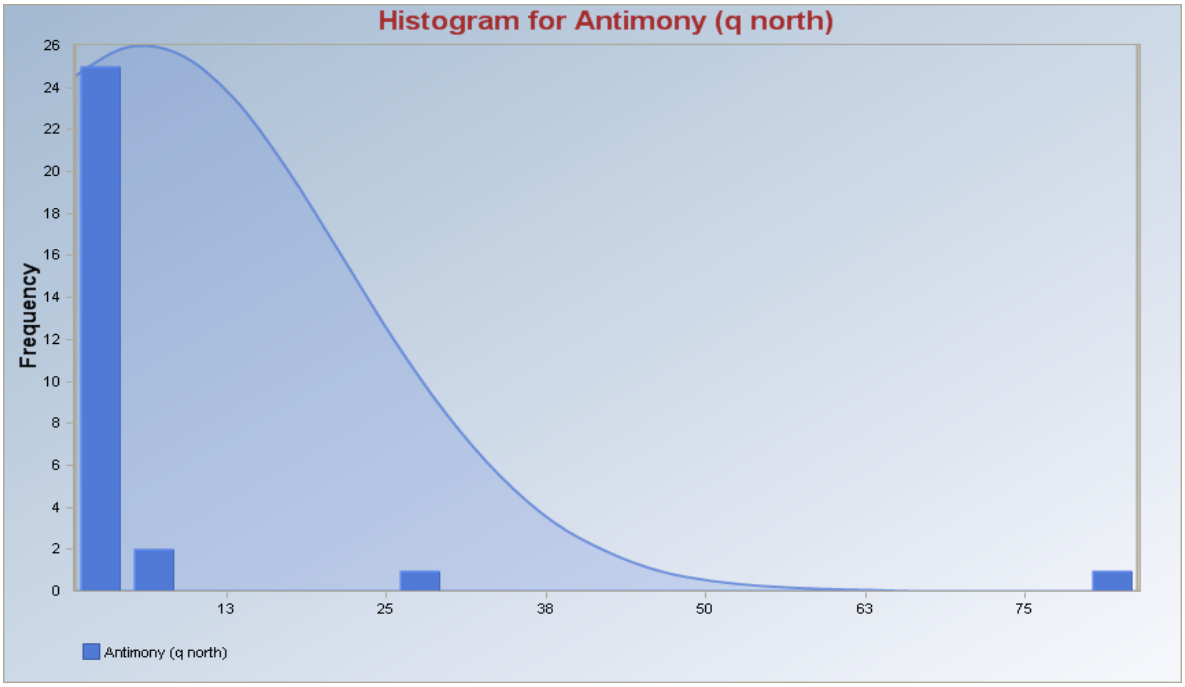
Potential UCLs to Use
97.5% KM (Chebyshev) UCL 24.23

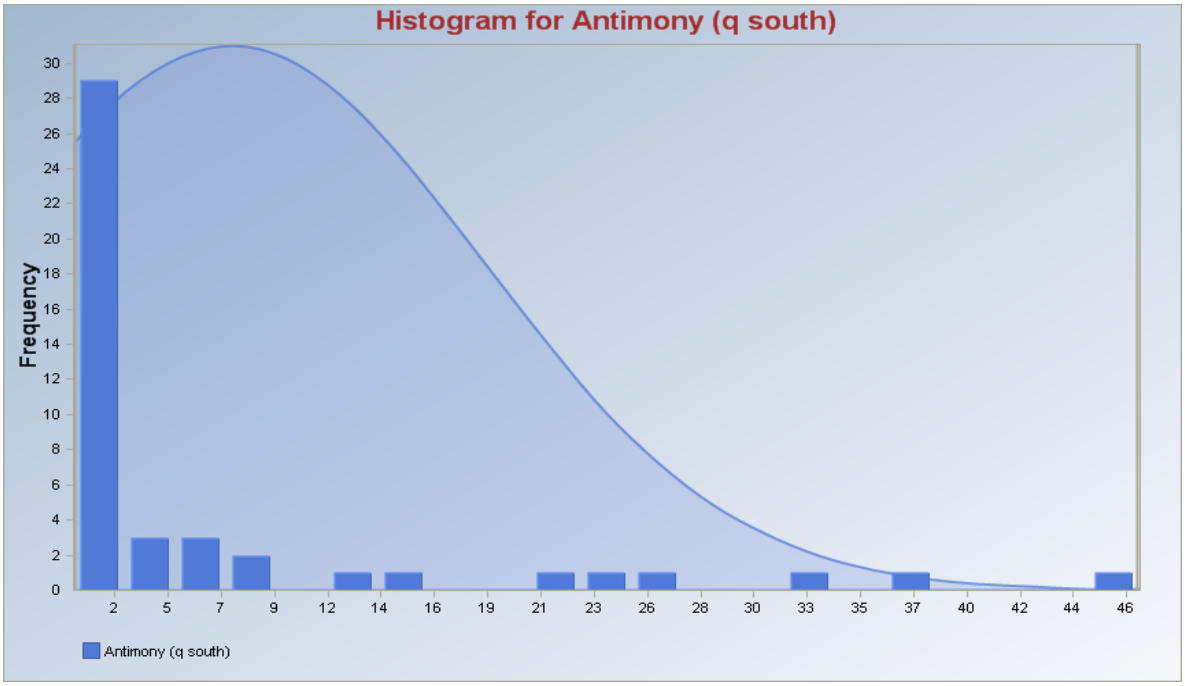
Note: DL/2 is not a recommended method.

Antimony (q south)

General Statistics			
Number of Valid Data	45	Number of Detected Data	28
Number of Distinct Detected Data	27	Number of Non-Detect Data	17
Number of Missing Values	4	Percent Non-Detects	37.78%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.52	Minimum Detected	-0.654
Maximum Detected	47	Maximum Detected	3.85
Mean of Detected	10.48	Mean of Detected	1.586
SD of Detected	13.01	SD of Detected	1.308
Minimum Non-Detect	1.9	Minimum Non-Detect	0.642
Maximum Non-Detect	2.7	Maximum Non-Detect	0.993
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	27
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	18
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	60.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.748	Shapiro Wilk Test Statistic	0.959
5% Shapiro Wilk Critical Value	0.924	5% Shapiro Wilk Critical Value	0.924
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.958	Mean	1.037
SD	11.17	SD	1.25
95% DL/2 (t) UCL	9.756	95% H-Stat (DL/2) UCL	8.155
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.008
		SD in Log Scale	1.303
		Mean in Original Scale	6.966
		SD in Original Scale	11.17
		95% Percentile Bootstrap UCL	9.757
		95% BCA Bootstrap UCL	10.54
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.72	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	14.56		
nu star	40.32		
A-D Test Statistic	0.845	Nonparametric Statistics	
5% A-D Critical Value	0.783	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.783	Mean	6.981
5% K-S Critical Value	0.172	SD	11.04
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	1.678
		95% KM (t) UCL	9.799
Assuming Gamma Distribution		95% KM (z) UCL	9.74
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	9.781
Minimum	0.52	95% KM (bootstrap t) UCL	10.79
Maximum	47	95% KM (BCA) UCL	9.672
Mean	10.01	95% KM (Percentile Bootstrap) UCL	9.74
Median	6.742	95% KM (Chebyshev) UCL	14.29
SD	10.39	97.5% KM (Chebyshev) UCL	17.46
k star	1.077	99% KM (Chebyshev) UCL	23.67
Theta star	9.29		
Nu star	96.96	Potential UCLs to Use	
AppChi2	75.24	95% KM (BCA) UCL	9.672
95% Gamma Approximate UCL	12.9		
95% Adjusted Gamma UCL	13.01		

Note: DL/2 is not a recommended method.


Histogram for Antimony (q north)
Frequency
26
24
22
20
18
16
14
12
10
8
6
4
2
0
13
25
38
50
63
75
Antimony (q north)


Histogram for Antimony (q south)
Frequency
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
2
5
7
9
12
14
16
19
21
23
26
28
30
33
35
37
40
42
44
46
Antimony (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Arsenic (o)

General Statistics			
Number of Valid Observations	14	Number of Distinct Observations	11
Number of Missing Values	3		
Raw Statistics		Log-transformed Statistics	
Minimum	4.4	Minimum of Log Data	1.482
Maximum	160	Maximum of Log Data	5.075
Mean	18.71	Mean of log Data	2.119
Median	5.85	SD of log Data	0.988
SD	41.12		
Coefficient of Variation	2.198		
Skewness	3.609		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.387	Shapiro Wilk Test Statistic	0.646
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	38.17	95% H-UCL	28.95
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	29.03
95% Adjusted-CLT UCL	48.11	97.5% Chebyshev (MVUE) UCL	36.01
95% Modified-t UCL	39.93	99% Chebyshev (MVUE) UCL	49.7
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.629	Data do not follow a Discernable Distribution (0.05)	
Theta Star	29.74		
nu star	17.61		
Approximate Chi Square Value (.05)	9.113	Nonparametric Statistics	
Adjusted Level of Significance	0.0312	95% CLT UCL	36.78
Adjusted Chi Square Value	8.312	95% Jackknife UCL	38.17
		95% Standard Bootstrap UCL	35.91
Anderson-Darling Test Statistic	2.854	95% Bootstrap-t UCL	222.5
Anderson-Darling 5% Critical Value	0.772	95% Hall's Bootstrap UCL	194.3
Kolmogorov-Smirnov Test Statistic	0.4	95% Percentile Bootstrap UCL	39.55
Kolmogorov-Smirnov 5% Critical Value	0.238	95% BCA Bootstrap UCL	51.72
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	66.61
		97.5% Chebyshev(Mean, Sd) UCL	87.33
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	128
95% Approximate Gamma UCL	36.16		
95% Adjusted Gamma UCL	39.64		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	66.61

Arsenic (p)

General Statistics			
Number of Valid Data	35	Number of Detected Data	34
Number of Distinct Detected Data	24	Number of Non-Detect Data	1
Number of Missing Values	12	Percent Non-Detects	2.86%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.6	Minimum Detected	0.47
Maximum Detected	27	Maximum Detected	3.296
Mean of Detected	10.93	Mean of Detected	2.173
SD of Detected	6.319	SD of Detected	0.753
Minimum Non-Detect	0.95	Minimum Non-Detect	-0.0513
Maximum Non-Detect	0.95	Maximum Non-Detect	-0.0513
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.941	Shapiro Wilk Test Statistic	0.895
5% Shapiro Wilk Critical Value	0.933	5% Shapiro Wilk Critical Value	0.933
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	10.63	Mean	2.09
SD	6.472	SD	0.89
95% DL/2 (t) UCL	12.48	95% H-Stat (DL/2) UCL	15.85
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	10.56	Mean in Log Scale	2.121
SD	6.514	SD in Log Scale	0.803
95% MLE (t) UCL	12.43	Mean in Original Scale	10.66
95% MLE (Tiku) UCL	12.4	SD in Original Scale	6.43
		95% Percentile Bootstrap UCL	12.46
		95% BCA Bootstrap UCL	12.4
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.243	Data appear Normal at 5% Significance Level	
Theta Star	4.874		
nu star	152.5		
A-D Test Statistic	0.777	Nonparametric Statistics	
5% A-D Critical Value	0.757	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.757	Mean	10.67
5% K-S Critical Value	0.153	SD	6.33
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.086
		95% KM (t) UCL	12.5
Assuming Gamma Distribution		95% KM (z) UCL	12.45
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	12.5
Minimum	1.00E-09	95% KM (bootstrap t) UCL	12.68
Maximum	27	95% KM (BCA) UCL	12.47
Mean	10.62	95% KM (Percentile Bootstrap) UCL	12.43
Median	12	95% KM (Chebyshev) UCL	15.4
SD	6.494	97.5% KM (Chebyshev) UCL	17.45
k star	0.672	99% KM (Chebyshev) UCL	21.47
Theta star	15.81		
Nu star	47.03	Potential UCLs to Use	
AppChi2	32.3	95% KM (t) UCL	12.5
95% Gamma Approximate UCL	15.47	95% KM (Percentile Bootstrap) UCL	12.43
95% Adjusted Gamma UCL	15.75		

Note: DL/2 is not a recommended method.

Arsenic (q central)

General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	37
Number of Missing Values	5		
Raw Statistics		Log-transformed Statistics	
Minimum	1.1	Minimum of Log Data	0.0953
Maximum	100	Maximum of Log Data	4.605
Mean	17.77	Mean of log Data	2.079
Median	5.9	SD of log Data	1.195
SD	26.81		
Coefficient of Variation	1.509		
Skewness	2.054		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.605	Shapiro Wilk Test Statistic	0.903
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	24.48	95% H-UCL	25.85
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	31.08
95% Adjusted-CLT UCL	25.65	97.5% Chebyshev (MVUE) UCL	37.64
95% Modified-t UCL	24.69	99% Chebyshev (MVUE) UCL	50.53
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.714	Data do not follow a Discernable Distribution (0.05)	
Theta Star	24.87		
nu star	64.3		
Approximate Chi Square Value (.05)	46.85	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	24.34
Adjusted Chi Square Value	46.36	95% Jackknife UCL	24.48
		95% Standard Bootstrap UCL	24.32
Anderson-Darling Test Statistic	3.657	95% Bootstrap-t UCL	26.87
Anderson-Darling 5% Critical Value	0.79	95% Hall's Bootstrap UCL	24.71
Kolmogorov-Smirnov Test Statistic	0.274	95% Percentile Bootstrap UCL	24.61
Kolmogorov-Smirnov 5% Critical Value	0.137	95% BCA Bootstrap UCL	26.01
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	35.19
		97.5% Chebyshev(Mean, Sd) UCL	42.72
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	57.53
95% Approximate Gamma UCL	24.39		
95% Adjusted Gamma UCL	24.65		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	57.53

Arsenic (q north)

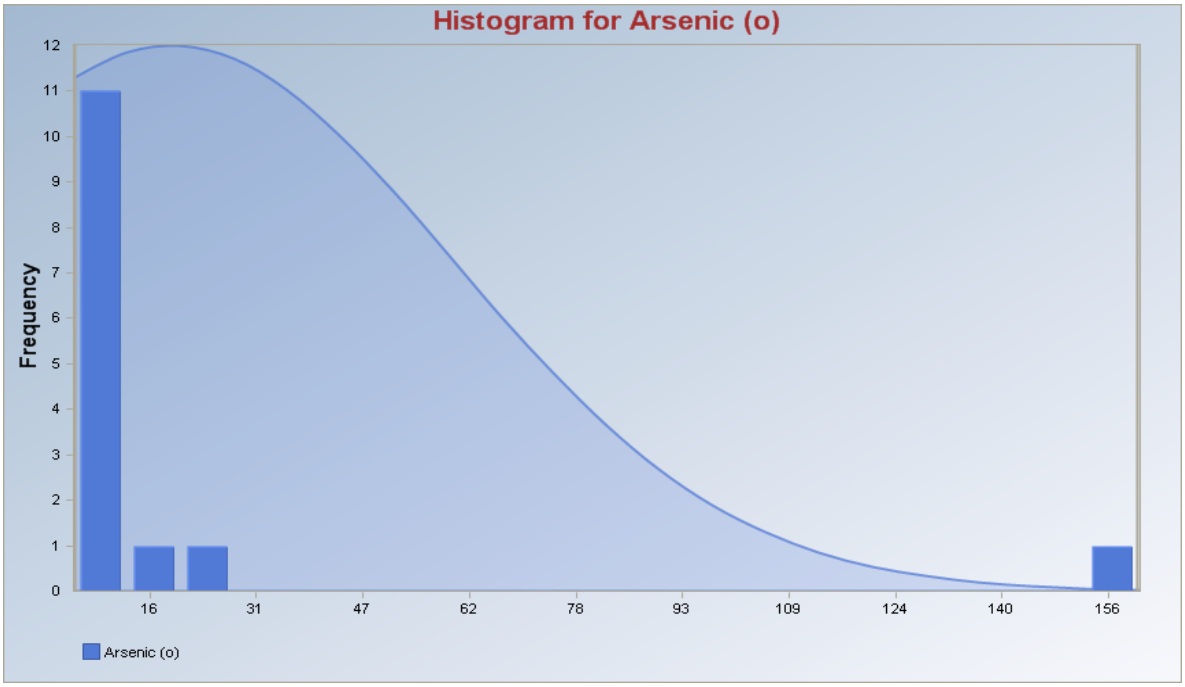
General Statistics			
Number of Valid Observations	29	Number of Distinct Observations	25
Number of Missing Values	7		
Raw Statistics		Log-transformed Statistics	
Minimum	2.3	Minimum of Log Data	0.833
Maximum	100	Maximum of Log Data	4.605
Mean	12.94	Mean of log Data	2.138
Median	8.9	SD of log Data	0.815
SD	18.52		
Coefficient of Variation	1.432		
Skewness	4.07		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.501	Shapiro Wilk Test Statistic	0.939
Shapiro Wilk Critical Value	0.926	Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	18.79	95% H-UCL	16.69
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20.15
95% Adjusted-CLT UCL	21.37	97.5% Chebyshev (MVUE) UCL	23.83
95% Modified-t UCL	19.22	99% Chebyshev (MVUE) UCL	31.05
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.212	Data appear Lognormal at 5% Significance Level	
Theta Star	10.68		
nu star	70.28		
Approximate Chi Square Value (.05)	51.98	Nonparametric Statistics	
Adjusted Level of Significance	0.0407	95% CLT UCL	18.6
Adjusted Chi Square Value	51.04	95% Jackknife UCL	18.79
		95% Standard Bootstrap UCL	18.51
Anderson-Darling Test Statistic	1.622	95% Bootstrap-t UCL	29.74
Anderson-Darling 5% Critical Value	0.767	95% Hall's Bootstrap UCL	40.48
Kolmogorov-Smirnov Test Statistic	0.213	95% Percentile Bootstrap UCL	18.77
Kolmogorov-Smirnov 5% Critical Value	0.166	95% BCA Bootstrap UCL	22.17
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	27.93
		97.5% Chebyshev(Mean, Sd) UCL	34.42
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	47.16
95% Approximate Gamma UCL	17.49		
95% Adjusted Gamma UCL	17.81		
Potential UCL to Use		Use 95% H-UCL	16.69

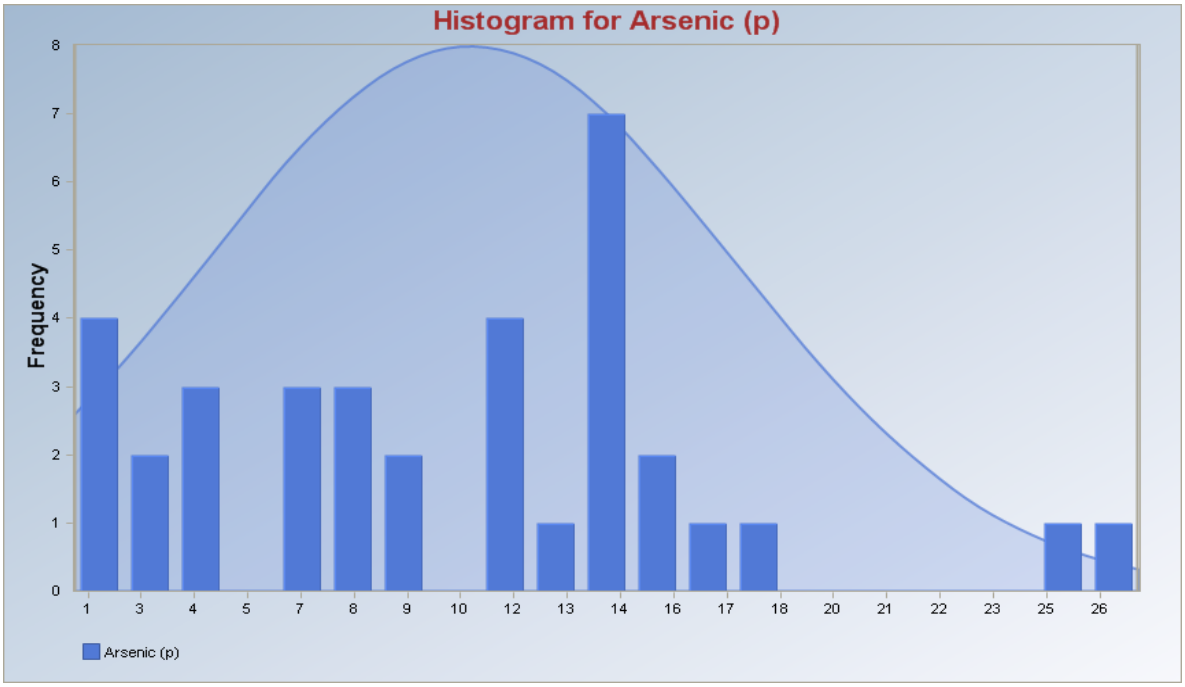
Arsenic (q south)

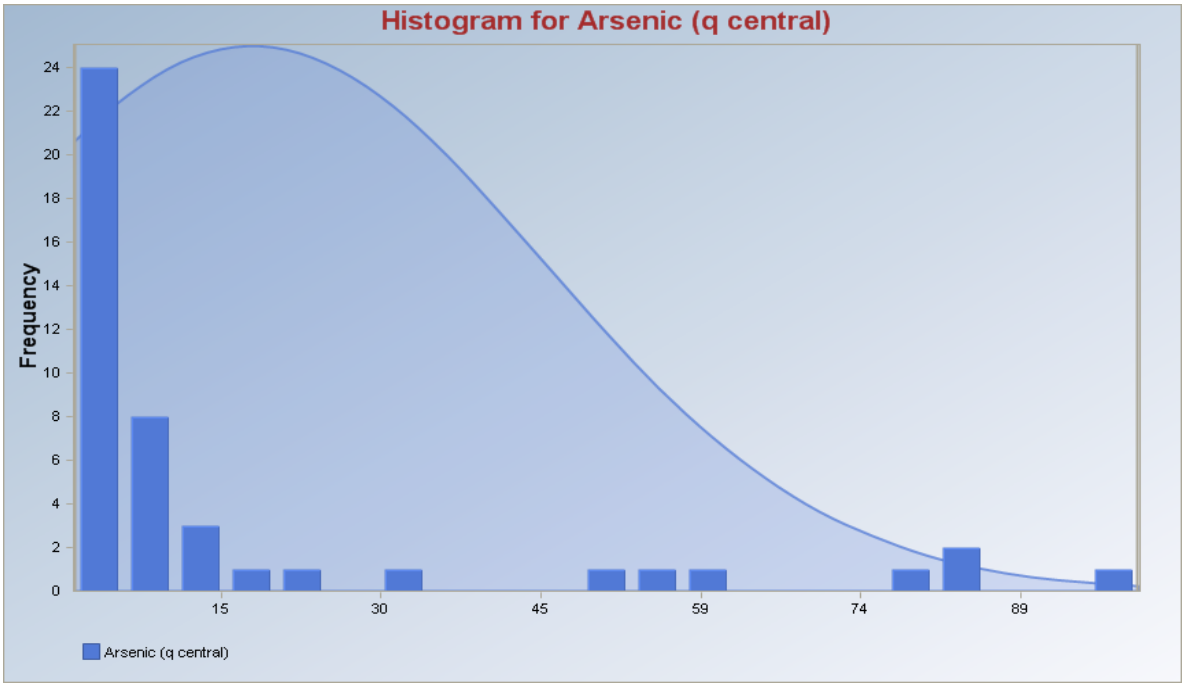
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	39
Number of Missing Values	4		
Raw Statistics		Log-transformed Statistics	
Minimum	2	Minimum of Log Data	0.693
Maximum	36	Maximum of Log Data	3.584
Mean	11.29	Mean of log Data	2.177
Median	8.3	SD of log Data	0.702
SD	8.593		
Coefficient of Variation	0.761		
Skewness	1.483		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.819	Shapiro Wilk Test Statistic	0.971
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	13.44	95% H-UCL	14.01
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16.81
95% Adjusted-CLT UCL	13.7	97.5% Chebyshev (MVUE) UCL	19.23
95% Modified-t UCL	13.49	99% Chebyshev (MVUE) UCL	23.99
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.051	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	5.504		
nu star	184.6		
Approximate Chi Square Value (.05)	154.2	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	13.39
Adjusted Chi Square Value	153.2	95% Jackknife UCL	13.44
		95% Standard Bootstrap UCL	13.36
Anderson-Darling Test Statistic	0.82	95% Bootstrap-t UCL	13.83
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	13.93
Kolmogorov-Smirnov Test Statistic	0.122	95% Percentile Bootstrap UCL	13.48
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	13.7
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	16.87
		97.5% Chebyshev(Mean, Sd) UCL	19.29
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	24.03
95% Approximate Gamma UCL	13.52		
95% Adjusted Gamma UCL	13.6		
Potential UCL to Use		Use 95% Approximate Gamma UCL	13.52

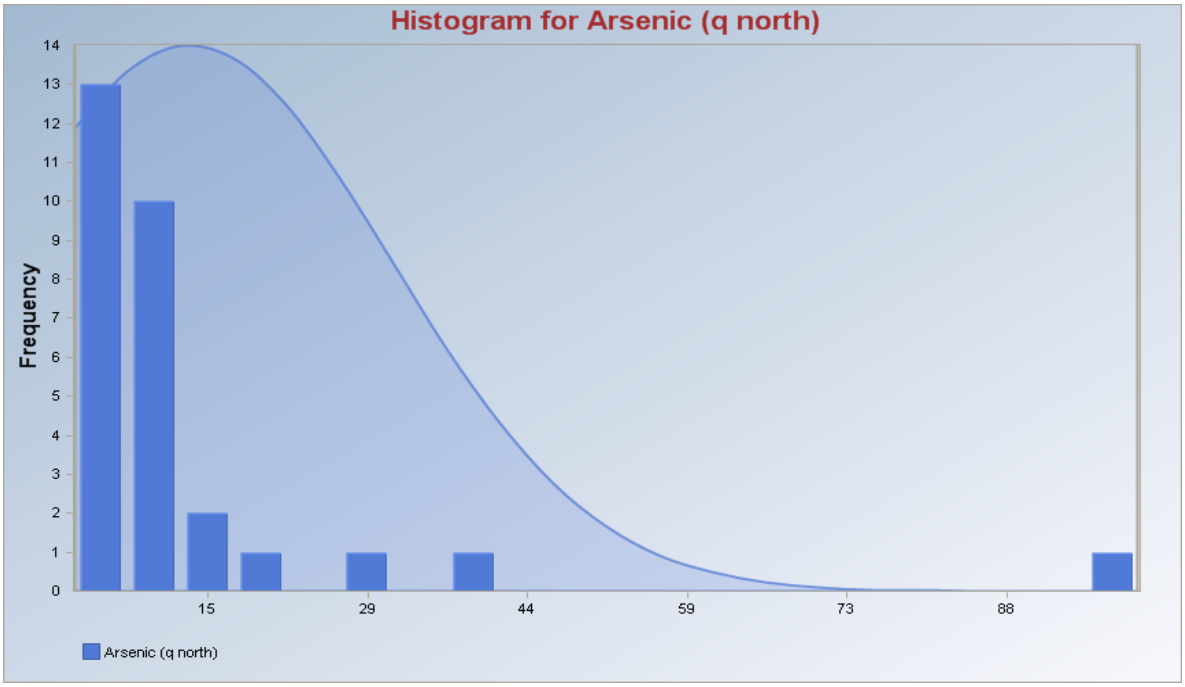
Arsenic (r)

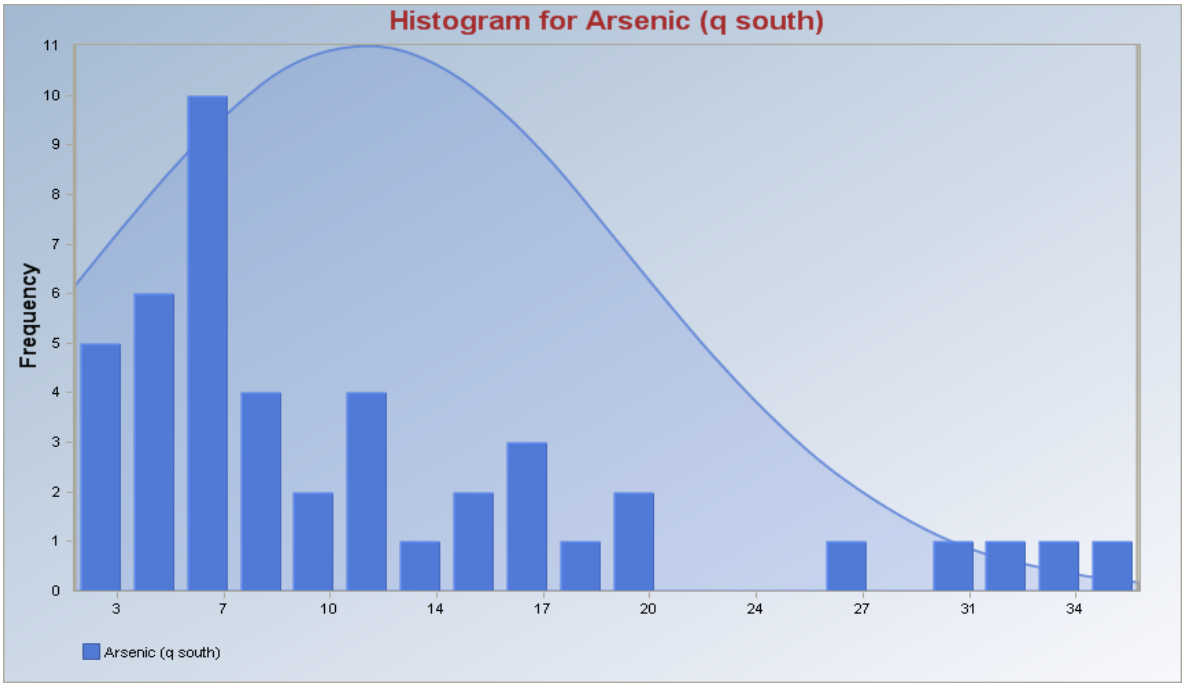
General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Number of Missing Values	4		
Raw Statistics		Log-transformed Statistics	
Minimum	2.5	Minimum of Log Data	0.916
Maximum	12	Maximum of Log Data	2.485
Mean	6.117	Mean of log Data	1.745
Median	6.15	SD of log Data	0.386
SD	2.328		
Coefficient of Variation	0.381		
Skewness	1.208		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.885	Shapiro Wilk Test Statistic	0.93
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.323	95% H-UCL	7.802
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	9.156
95% Adjusted-CLT UCL	7.472	97.5% Chebyshev (MVUE) UCL	10.46
95% Modified-t UCL	7.362	99% Chebyshev (MVUE) UCL	13.04
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.896	Data appear Normal at 5% Significance Level	
Theta Star	1.037		
nu star	141.5		
Approximate Chi Square Value (.05)	115	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	7.222
Adjusted Chi Square Value	111.4	95% Jackknife UCL	7.323
		95% Standard Bootstrap UCL	7.169
Anderson-Darling Test Statistic	0.458	95% Bootstrap-t UCL	7.556
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	9.215
Kolmogorov-Smirnov Test Statistic	0.196	95% Percentile Bootstrap UCL	7.192
Kolmogorov-Smirnov 5% Critical Value	0.246	95% BCA Bootstrap UCL	7.45
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	9.046
		97.5% Chebyshev(Mean, Sd) UCL	10.31
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	12.8
95% Approximate Gamma UCL	7.525		
95% Adjusted Gamma UCL	7.771		
Potential UCL to Use		Use 95% Student's-t UCL	7.323

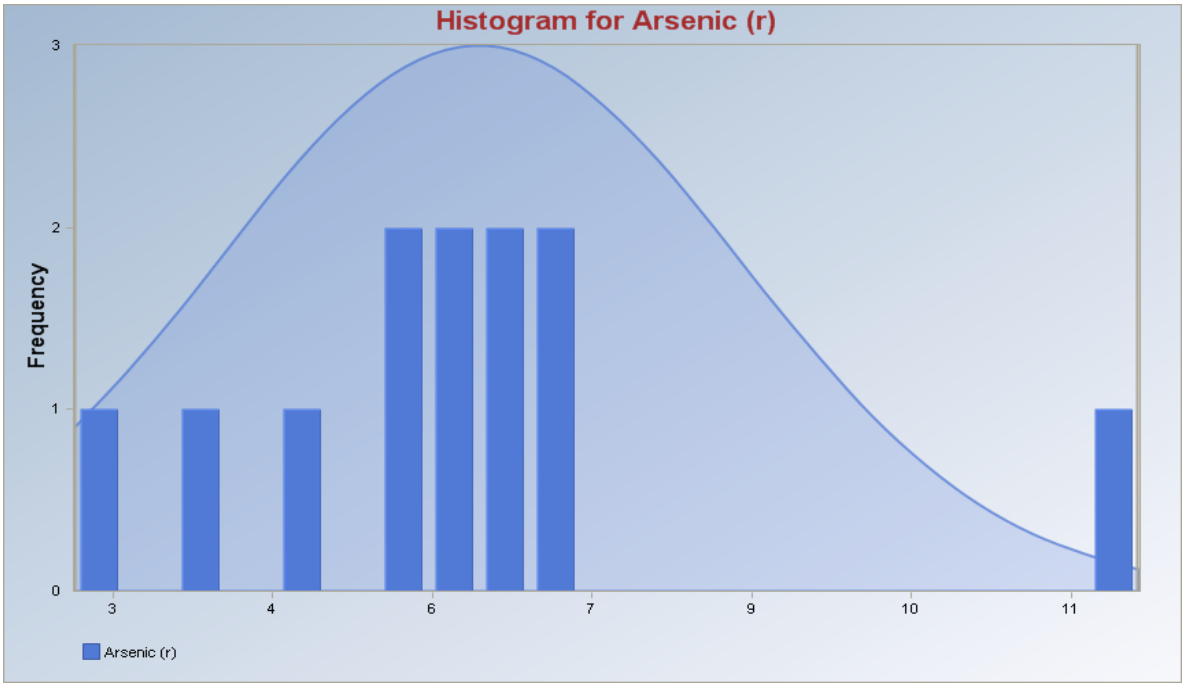

Histogram for Arsenic (o)
Frequency
12
11
10
9
8
7
6
5
4
3
2
1
0
16
31
47
62
78
93
109
124
140
156
Arsenic (o)


Histogram for Arsenic (p)
Frequency
0
1
2
3
4
5
6
7
8
1
3
4
5
7
8
9
10
12
13
14
16
17
18
20
21
22
23
25
26
Arsenic (p)


Histogram for Arsenic (q central)
Frequency
24
22
20
18
16
14
12
10
8
6
4
2
0
15
30
45
59
74
89
Arsenic (q central)


Histogram for Arsenic (q north)
Frequency
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
15
29
44
59
73
88
Arsenic (q north)


Histogram for Arsenic (q south)
Frequency
11
10
9
8
7
6
5
4
3
2
1
0
3
7
10
14
17
20
24
27
31
34
Arsenic (q south)


Histogram for Arsenic (r)
Frequency
0
1
2
3
3
4
6
7
9
10
11
Arsenic (r)

General UCL Statistics for Data Sets with Non-Detects

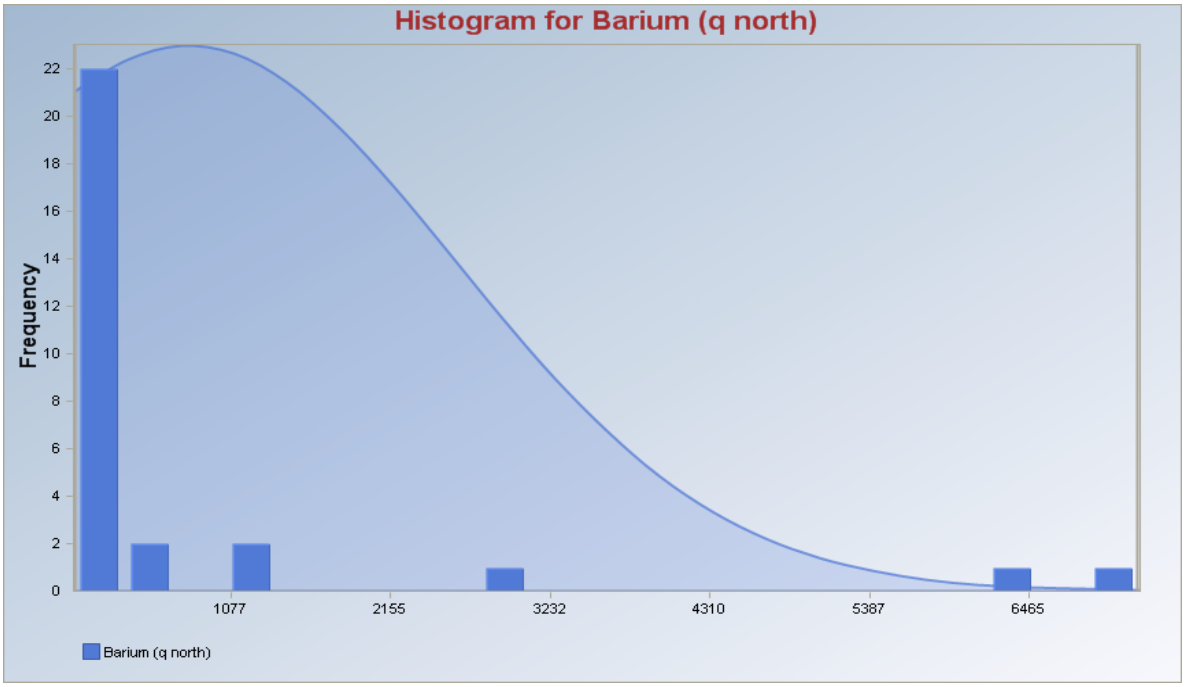
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

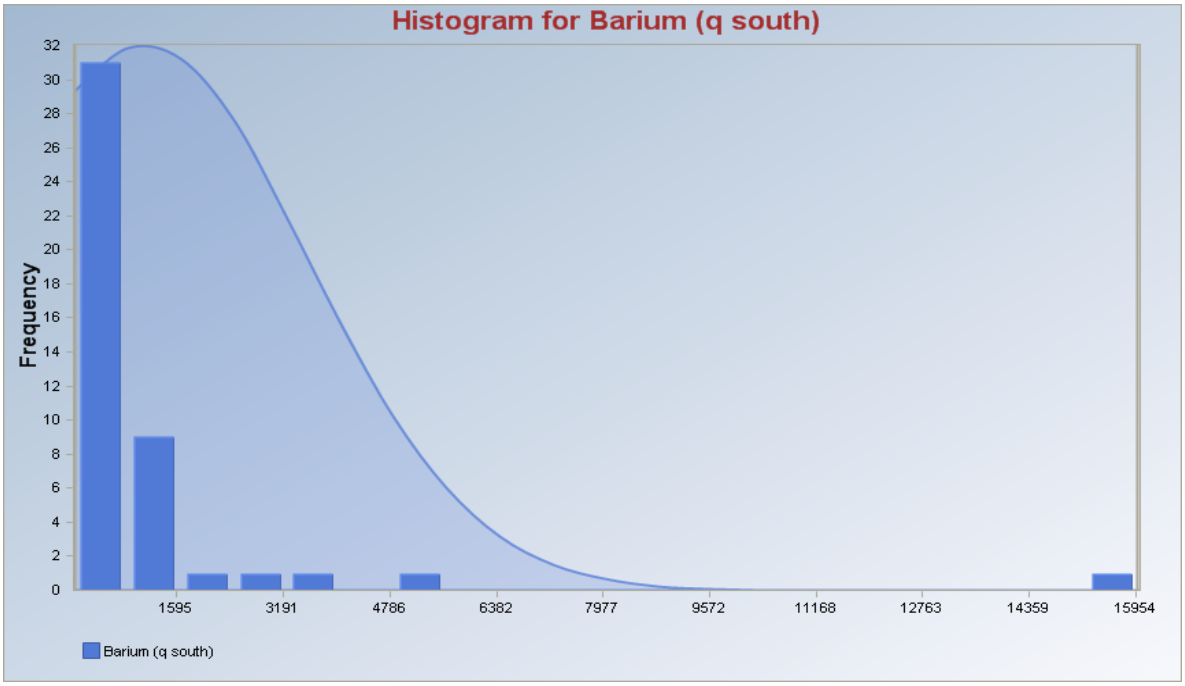
Barium (q north)

General Statistics			
Number of Valid Observations	29	Number of Distinct Observations	27
Number of Missing Values	7		
Raw Statistics		Log-transformed Statistics	
Minimum	17	Minimum of Log Data	2.833
Maximum	7200	Maximum of Log Data	8.882
Mean	780.7	Mean of log Data	5.191
Median	120	SD of log Data	1.546
SD	1807		
Coefficient of Variation	2.315		
Skewness	3.086		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.455	Shapiro Wilk Test Statistic	0.904
Shapiro Wilk Critical Value	0.926	Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1352	95% H-UCL	1504
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1414
95% Adjusted-CLT UCL	1538	97.5% Chebyshev (MVUE) UCL	1790
95% Modified-t UCL	1384	99% Chebyshev (MVUE) UCL	2527
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.418	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1866		
nu star	24.26		
Approximate Chi Square Value (.05)	14.05	Nonparametric Statistics	
Adjusted Level of Significance	0.0407	95% CLT UCL	1333
Adjusted Chi Square Value	13.58	95% Jackknife UCL	1352
		95% Standard Bootstrap UCL	1314
Anderson-Darling Test Statistic	3.134	95% Bootstrap-t UCL	2723
Anderson-Darling 5% Critical Value	0.825	95% Hall's Bootstrap UCL	3018
Kolmogorov-Smirnov Test Statistic	0.295	95% Percentile Bootstrap UCL	1397
Kolmogorov-Smirnov 5% Critical Value	0.173	95% BCA Bootstrap UCL	1555
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2243
		97.5% Chebyshev(Mean, Sd) UCL	2876
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4120
95% Approximate Gamma UCL	1348		
95% Adjusted Gamma UCL	1394		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	4120

Barium (q south)

General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	36
Number of Missing Values	4		
Raw Statistics		Log-transformed Statistics	
Minimum	46	Minimum of Log Data	3.829
Maximum	16000	Maximum of Log Data	9.68
Mean	1095	Mean of log Data	6.101
Median	350	SD of log Data	1.216
SD	2477		
Coefficient of Variation	2.263		
Skewness	5.293		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.406	Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1715	95% H-UCL	1497
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1795
95% Adjusted-CLT UCL	2014	97.5% Chebyshev (MVUE) UCL	2178
95% Modified-t UCL	1764	99% Chebyshev (MVUE) UCL	2931
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.646	Data appear Lognormal at 5% Significance Level	
Theta Star	1694		
nu star	58.17		
Approximate Chi Square Value (.05)	41.64	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	1702
Adjusted Chi Square Value	41.17	95% Jackknife UCL	1715
		95% Standard Bootstrap UCL	1703
Anderson-Darling Test Statistic	2.358	95% Bootstrap-t UCL	2899
Anderson-Darling 5% Critical Value	0.797	95% Hall's Bootstrap UCL	3995
Kolmogorov-Smirnov Test Statistic	0.152	95% Percentile Bootstrap UCL	1766
Kolmogorov-Smirnov 5% Critical Value	0.138	95% BCA Bootstrap UCL	2171
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2705
		97.5% Chebyshev(Mean, Sd) UCL	3401
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4769
95% Approximate Gamma UCL	1530		
95% Adjusted Gamma UCL	1547		
Potential UCL to Use		Use 95% H-UCL	1497


Histogram for Barium (q north)
Frequency
22
20
18
16
14
12
10
8
6
4
2
0
1077
2155
3232
4310
5387
6465
Barium (q north)


Histogram for Barium (q south)
Frequency
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
1595
3191
4786
6382
7977
9572
11168
12763
14359
15954
Barium (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

Benzene (o)

General Statistics
Number of Valid Data 14
Number of Distinct Detected Data 10
Number of Missing Values 3
Number of Detected Data 10
Number of Non-Detect Data 4
Percent Non-Detects 28.57%

Raw Statistics
Minimum Detected 0.0011
Maximum Detected 500
Mean of Detected 63.4
SD of Detected 155.3
Minimum Non-Detect 0.0038
Maximum Non-Detect 0.0098

Log-transformed Statistics
Minimum Detected -6.812
Maximum Detected 6.215
Mean of Detected 0.22
SD of Detected 4.397
Minimum Non-Detect -5.573
Maximum Non-Detect -4.625

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs
Number treated as Non-Detect 6
Number treated as Detected 8
Single DL Non-Detect Percentage 42.86%

UCL Statistics
Normal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.476
5% Shapiro Wilk Critical Value 0.842
Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.941
5% Shapiro Wilk Critical Value 0.842
Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution
DL/2 Substitution Method
Mean 45.29
SD 132.6
95% DL/2 (t) UCL 108.1

Assuming Lognormal Distribution
DL/2 Substitution Method
Mean -1.531
SD 4.656
95% H-Stat (DL/2) UCL 1.55E+09

Maximum Likelihood Estimate(MLE) Method N/A
MLE yields a negative mean

Log ROS Method
Mean in Log Scale -1.59
SD in Log Scale 4.711
Mean in Original Scale 45.29
SD in Original Scale 132.6
95% Percentile Bootstrap UCL 111.7
95% BCA Bootstrap UCL 146.9

Gamma Distribution Test with Detected Values Only
k star (bias corrected) 0.199
Theta Star 318.7
nu star 3.978

Data Distribution Test with Detected Values Only
Data appear Gamma Distributed at 5% Significance Level

A-D Test Statistic 0.245
5% A-D Critical Value 0.858
K-S Test Statistic 0.858
5% K-S Critical Value 0.295
Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution
Gamma ROS Statistics using Extrapolated Data
Minimum 1.00E-09
Maximum 500
Mean 45.29
Median 0.323
SD 132.6
k star 0.115
Theta star 392.2
Nu star 3.233
AppChi2 0.445
95% Gamma Approximate UCL 329.3
95% Adjusted Gamma UCL 435.9

Nonparametric Statistics
Kaplan-Meier (KM) Method
Mean 45.29
SD 127.8
SE of Mean 36
95% KM (t) UCL 109
95% KM (z) UCL 104.5
95% KM (jackknife) UCL 108.1
95% KM (bootstrap t) UCL 699.9
95% KM (BCA) UCL 115.9
95% KM (Percentile Bootstrap) UCL 114.7
95% KM (Chebyshev) UCL 202.2
97.5% KM (Chebyshev) UCL 270.1
99% KM (Chebyshev) UCL 403.5

Potential UCLs to Use
95% KM (Chebyshev) UCL 202.2

Note: DL/2 is not a recommended method.

Benzene (p)

General Statistics			
Number of Valid Data	33	Number of Detected Data	21
Number of Distinct Detected Data	21	Number of Non-Detect Data	12
Number of Missing Values	14	Percent Non-Detects	36.36%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00126	Minimum Detected	-6.677
Maximum Detected	14	Maximum Detected	2.639
Mean of Detected	1.194	Mean of Detected	-2.263
SD of Detected	3.044	SD of Detected	2.764
Minimum Non-Detect	0.0034	Minimum Non-Detect	-5.684
Maximum Non-Detect	10	Maximum Non-Detect	2.303
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	32
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	96.97%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.415	Shapiro Wilk Test Statistic	0.945
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.197	Mean	-2.335
SD	2.663	SD	2.853
95% DL/2 (t) UCL	1.982	95% H-Stat (DL/2) UCL	118.1
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-3.152
		SD in Log Scale	2.609
		Mean in Original Scale	0.767
		SD in Original Scale	2.474
		95% Percentile Bootstrap UCL	1.557
		95% BCA Bootstrap UCL	2.004
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.276	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	4.324		
nu star	11.59		
A-D Test Statistic	0.639	Nonparametric Statistics	
5% A-D Critical Value	0.852	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.852	Mean	0.806
5% K-S Critical Value	0.206	SD	2.437
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.437
		95% KM (t) UCL	1.546
Assuming Gamma Distribution		95% KM (z) UCL	1.525
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.54
Minimum	1.00E-09	95% KM (bootstrap t) UCL	3.258
Maximum	14	95% KM (BCA) UCL	1.672
Mean	0.94	95% KM (Percentile Bootstrap) UCL	1.571
Median	0.057	95% KM (Chebyshev) UCL	2.71
SD	2.517	97.5% KM (Chebyshev) UCL	3.534
k star	0.141	99% KM (Chebyshev) UCL	5.152
Theta star	6.66		
Nu star	9.314	Potential UCLs to Use	
AppChi2	3.518	95% KM (BCA) UCL	1.672
95% Gamma Approximate UCL	2.488		
95% Adjusted Gamma UCL	2.624		

Note: DL/2 is not a recommended method.

Benzene (q north)

General Statistics			
Number of Valid Data	29	Number of Detected Data	17
Number of Distinct Detected Data	16	Number of Non-Detect Data	12
Number of Missing Values	7	Percent Non-Detects	41.38%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	7.60E-04	Minimum Detected	-7.182
Maximum Detected	8.8	Maximum Detected	2.175
Mean of Detected	0.635	Mean of Detected	-4.14
SD of Detected	2.118	SD of Detected	2.905
Minimum Non-Detect	0.00445	Minimum Non-Detect	-5.415
Maximum Non-Detect	0.0108	Maximum Non-Detect	-4.533
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	21
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	72.41%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.333	Shapiro Wilk Test Statistic	0.878
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.374	Mean	-4.774
SD	1.632	SD	2.333
95% DL/2 (t) UCL	0.89	95% H-Stat (DL/2) UCL	0.717
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.935
		SD in Log Scale	2.411
		Mean in Original Scale	0.374
		SD in Original Scale	1.632
		95% Percentile Bootstrap UCL	0.963
		95% BCA Bootstrap UCL	1.283
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.204	Data do not follow a Discernable Distribution (0.05)	
Theta Star	3.12		
nu star	6.924		
A-D Test Statistic	1.799	Nonparametric Statistics	
5% A-D Critical Value	0.883	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.883	Mean	0.373
5% K-S Critical Value	0.231	SD	1.604
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.307
		95% KM (t) UCL	0.895
Assuming Gamma Distribution		95% KM (z) UCL	0.878
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.889
Minimum	7.60E-04	95% KM (bootstrap t) UCL	6.388
Maximum	8.8	95% KM (BCA) UCL	0.965
Mean	0.669	95% KM (Percentile Bootstrap) UCL	0.963
Median	0.5	95% KM (Chebyshev) UCL	1.711
SD	1.602	97.5% KM (Chebyshev) UCL	2.29
k star	0.306	99% KM (Chebyshev) UCL	3.428
Theta star	2.186		
Nu star	17.76	Potential UCLs to Use	
AppChi2	9.22	99% KM (Chebyshev) UCL	3.428
95% Gamma Approximate UCL	1.29		
95% Adjusted Gamma UCL	1.343		

Note: DL/2 is not a recommended method.

Benzene (q south)

General Statistics			
Number of Valid Data	45	Number of Detected Data	29
Number of Distinct Detected Data	26	Number of Non-Detect Data	16
Number of Missing Values	4	Percent Non-Detects	35.56%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	8.60E-04	Minimum Detected	-7.059
Maximum Detected	2	Maximum Detected	0.693
Mean of Detected	0.0968	Mean of Detected	-5.047
SD of Detected	0.377	SD of Detected	1.857
Minimum Non-Detect	0.004	Minimum Non-Detect	-5.521
Maximum Non-Detect	0.21	Maximum Non-Detect	-1.561
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	43
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	95.56%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.281	Shapiro Wilk Test Statistic	0.83
5% Shapiro Wilk Critical Value	0.926	5% Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0658	Mean	-5.235
SD	0.304	SD	1.597
95% DL/2 (t) UCL	0.142	95% H-Stat (DL/2) UCL	0.0421
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.406
		SD in Log Scale	1.576
		Mean in Original Scale	0.0633
		SD in Original Scale	0.304
		95% Percentile Bootstrap UCL	0.147
		95% BCA Bootstrap UCL	0.207
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.256	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.378		
nu star	14.86		
A-D Test Statistic	4.927	Nonparametric Statistics	
5% A-D Critical Value	0.873	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.873	Mean	0.0634
5% K-S Critical Value	0.178	SD	0.301
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0456
		95% KM (t) UCL	0.14
Assuming Gamma Distribution		95% KM (z) UCL	0.138
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.139
Minimum	8.60E-04	95% KM (bootstrap t) UCL	0.718
Maximum	2	95% KM (BCA) UCL	0.153
Mean	0.0944	95% KM (Percentile Bootstrap) UCL	0.15
Median	0.016	95% KM (Chebyshev) UCL	0.262
SD	0.3	97.5% KM (Chebyshev) UCL	0.348
k star	0.369	99% KM (Chebyshev) UCL	0.517
Theta star	0.256		
Nu star	33.21	Potential UCLs to Use	
AppChi2	21.03	97.5% KM (Chebyshev) UCL	0.348
95% Gamma Approximate UCL	0.149		
95% Adjusted Gamma UCL	0.151		

Note: DL/2 is not a recommended method.

Benzene (r)

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Number of Missing Values	4		
Raw Statistics		Log-transformed Statistics	
Minimum	6.80E-04	Minimum of Log Data	-7.293
Maximum	1.50E+02	Maximum of Log Data	5.011
Mean	26.19	Mean of log Data	-2.019
Median	0.0145	SD of log Data	5.034
SD	50.14		
Coefficient of Variation	1.915		
Skewness	2.034		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.603	Shapiro Wilk Test Statistic	0.811
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	52.18	95% H-UCL	2.72E+12
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1463
95% Adjusted-CLT UCL	59.08	97.5% Chebyshev (MVUE) UCL	1977
95% Modified-t UCL	53.6	99% Chebyshev (MVUE) UCL	2985
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.165	Data do not follow a Discernable Distribution (0.05)	
Theta Star	158.6		
nu star	3.962		
Approximate Chi Square Value (.05)	0.707	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	50
Adjusted Chi Square Value	0.528	95% Jackknife UCL	52.18
		95% Standard Bootstrap UCL	49.39
Anderson-Darling Test Statistic	1.044	95% Bootstrap-t UCL	137.3
Anderson-Darling 5% Critical Value	0.884	95% Hall's Bootstrap UCL	170.2
Kolmogorov-Smirnov Test Statistic	0.294	95% Percentile Bootstrap UCL	51.34
Kolmogorov-Smirnov 5% Critical Value	0.273	95% BCA Bootstrap UCL	61.67
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	89.28
		97.5% Chebyshev(Mean, Sd) UCL	116.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	170.2
95% Approximate Gamma UCL	146.8		
95% Adjusted Gamma UCL	196.3		
Potential UCL to Use		Use 95% Hall's Bootstrap UCL	170.2

Recommended UCL exceeds the maximum observation
In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL

Benzene (s)

General Statistics

Number of Valid Data	11	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	6
Number of Missing Values	3	Percent Non-Detects	54.55%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0014	Minimum Detected	-6.571
Maximum Detected	35	Maximum Detected	3.555
Mean of Detected	14.28	Mean of Detected	-1.023
SD of Detected	18.49	SD of Detected	5.149
Minimum Non-Detect	0.0054	Minimum Non-Detect	-5.221
Maximum Non-Detect	3.9	Maximum Non-Detect	1.361

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	81.82%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.724	Shapiro Wilk Test Statistic	0.789
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

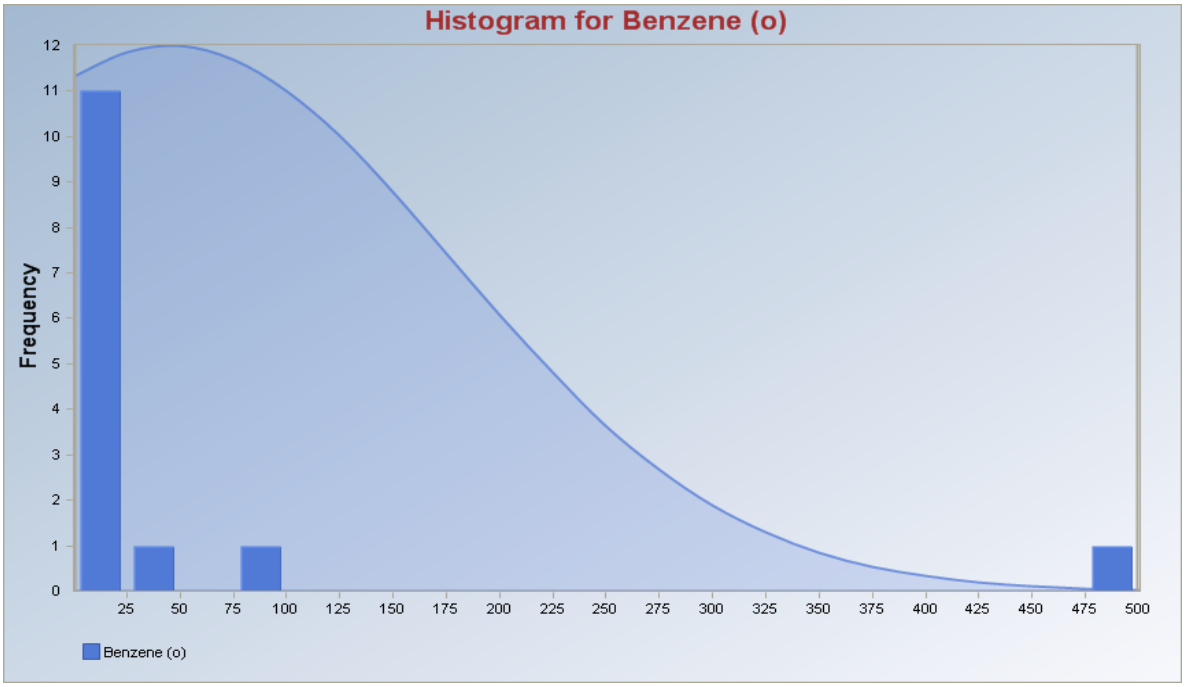
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.826	Mean	-1.761
SD	13.71	SD	3.901
95% DL/2 (t) UCL	14.32	95% H-Stat (DL/2) UCL	91643209

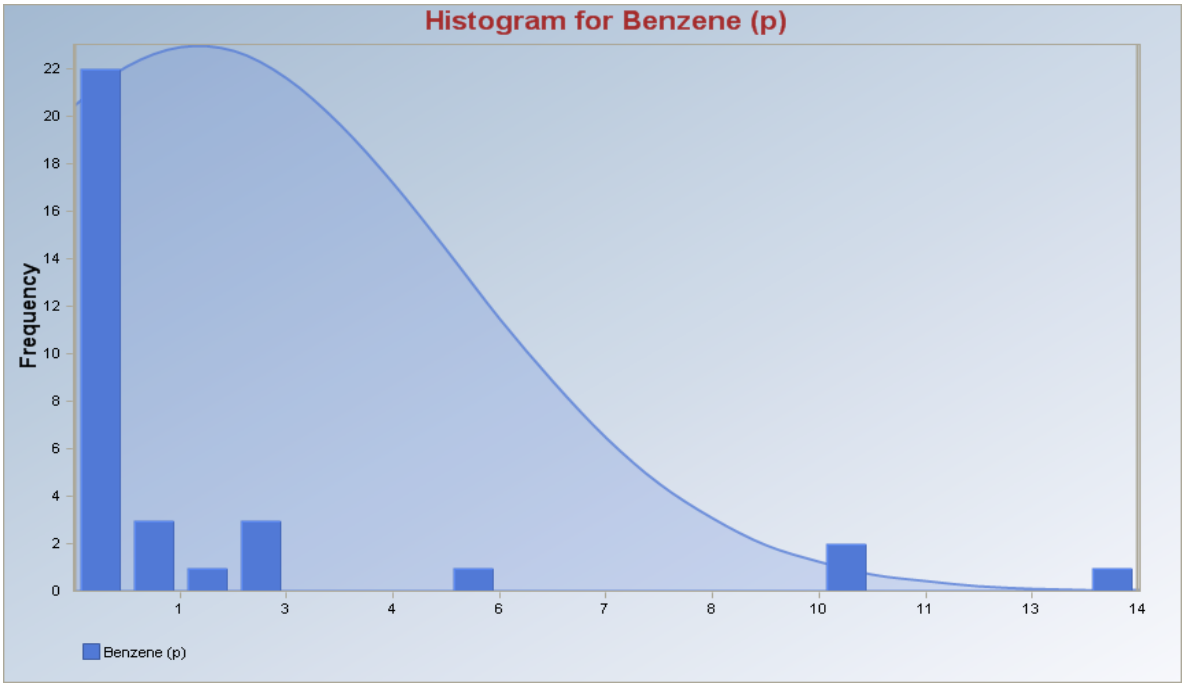
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-3.503
		SD in Log Scale	4.041
		Mean in Original Scale	6.493
		SD in Original Scale	13.87
		95% Percentile Bootstrap UCL	12.89
		95% BCA Bootstrap UCL	16.07

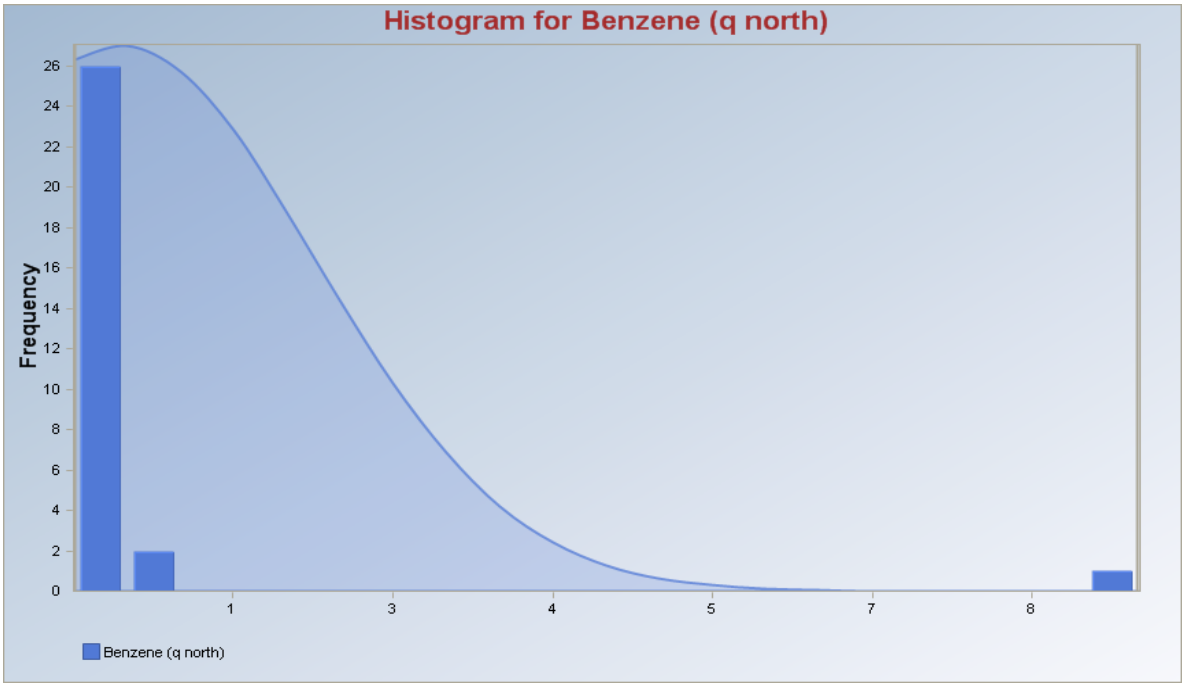
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.213	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	66.96		
nu star	2.133		

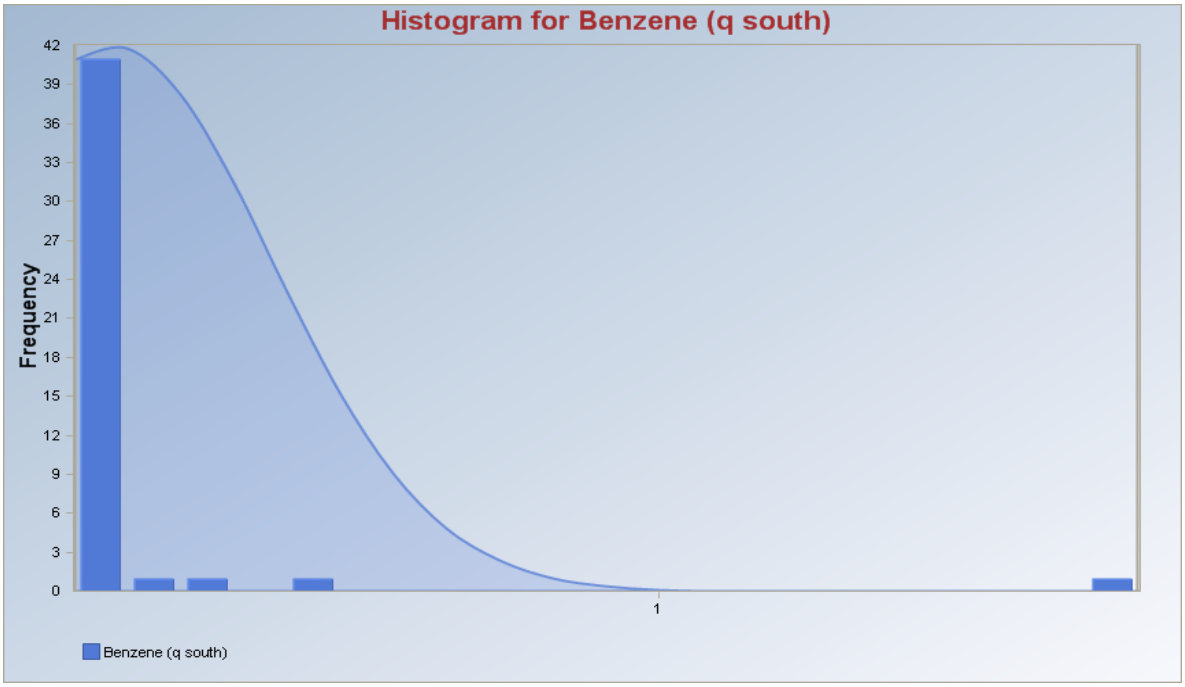
A-D Test Statistic	0.566	Nonparametric Statistics	
5% A-D Critical Value	0.775	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.775	Mean	6.554
5% K-S Critical Value	0.388	SD	13.2
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	4.451
		95% KM (t) UCL	14.62
Assuming Gamma Distribution		95% KM (z) UCL	13.88
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	14.12
Minimum	0.0014	95% KM (bootstrap t) UCL	71.1
Maximum	35	95% KM (BCA) UCL	19
Mean	14.37	95% KM (Percentile Bootstrap) UCL	15.64
Median	15.7	95% KM (Chebyshev) UCL	25.96
SD	11.77	97.5% KM (Chebyshev) UCL	34.35
k star	0.347	99% KM (Chebyshev) UCL	50.84
Theta star	41.47		
Nu star	7.625	Potential UCLs to Use	
AppChi2	2.52	95% KM (t) UCL	14.62
95% Gamma Approximate UCL	43.49		
95% Adjusted Gamma UCL	53		

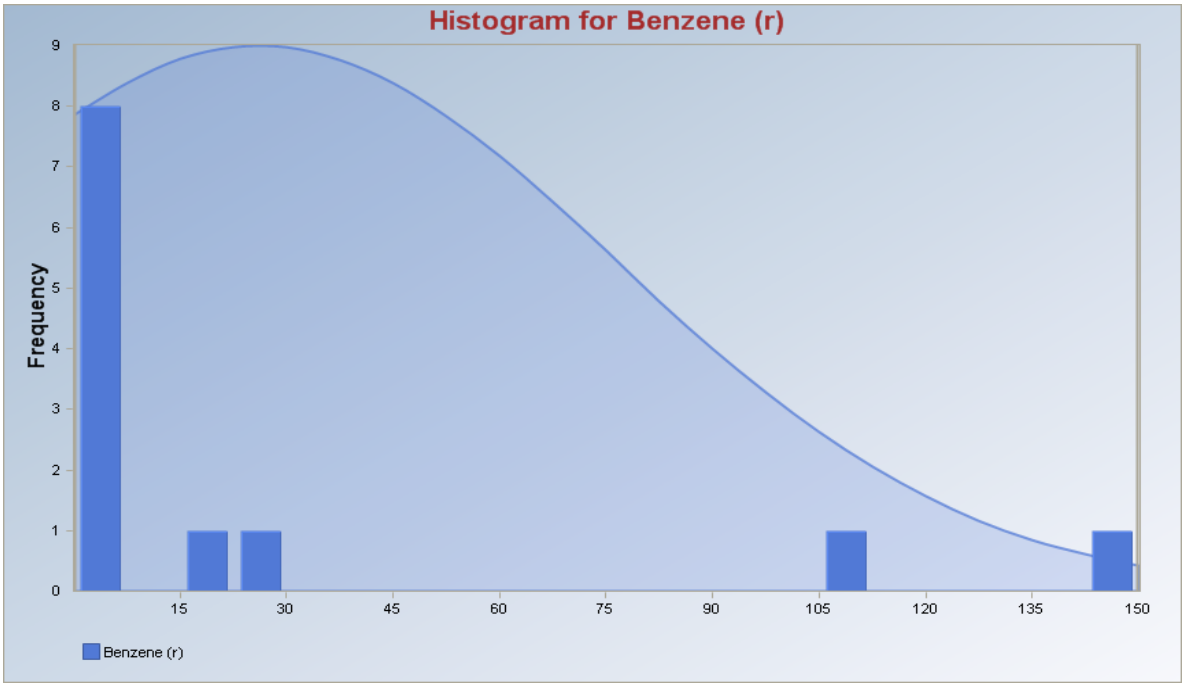
Note: DL/2 is not a recommended method.

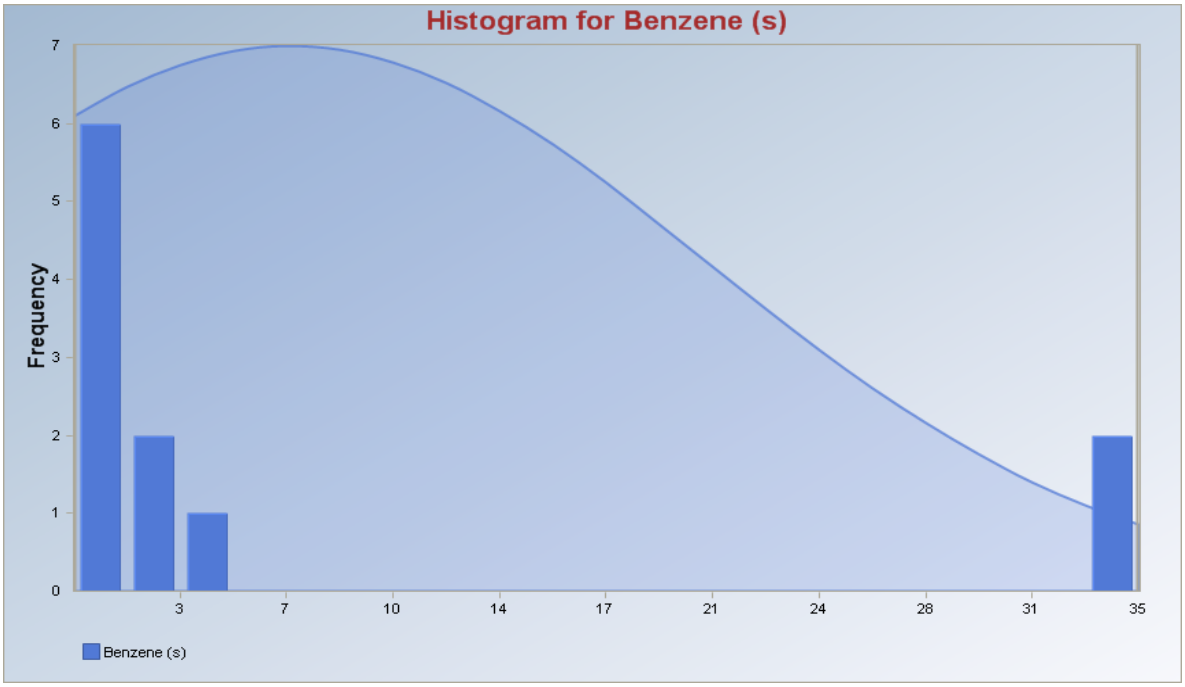

Histogram for Benzene (o)
Frequency
0
1
2
3
4
5
6
7
8
9
10
11
12
25
50
75
100
125
150
175
200
225
250
275
300
325
350
375
400
425
450
475
500
Benzene (o)


Histogram for Benzene (p)
Frequency
22
20
18
16
14
12
10
8
6
4
2
0
1
3
4
6
7
8
10
11
13
14
Benzene (p)


Histogram for Benzene (q north)
Frequency
26
24
22
20
18
16
14
12
10
8
6
4
2
0
1
3
4
5
7
8
Benzene (q north)


Histogram for Benzene (q south)
Frequency
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
1
Benzene (q south)


Histogram for Benzene (r)
Frequency
0
1
2
3
4
5
6
7
8
9
15
30
45
60
75
90
105
120
135
150
Benzene (r)


Histogram for Benzene (s)
Frequency
0
1
2
3
4
5
6
7
3
7
10
14
17
21
24
28
31
35
Benzene (s)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(a)anthracene (o)

General Statistics			
Number of Valid Data	13	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	7
Number of Missing Values	4	Percent Non-Detects	53.85%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.037	Minimum Detected	-3.297
Maximum Detected	14.35	Maximum Detected	2.664
Mean of Detected	6.208	Mean of Detected	-0.0269
SD of Detected	6.798	SD of Detected	2.826
Minimum Non-Detect	0.38	Minimum Non-Detect	-0.968
Maximum Non-Detect	110	Maximum Non-Detect	4.7

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	13
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.785	Shapiro Wilk Test Statistic	0.8
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	8.173	Mean	-0.126
SD	15.24	SD	2.506
95% DL/2 (t) UCL	15.71	95% H-Stat (DL/2) UCL	776.3
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.029
		SD in Log Scale	2.095
		Mean in Original Scale	2.957
		SD in Original Scale	5.392
		95% Percentile Bootstrap UCL	5.458
		95% BCA Bootstrap UCL	6.147
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.292	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	21.29		
nu star	3.5		
A-D Test Statistic	0.736	Nonparametric Statistics	
5% A-D Critical Value	0.757	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.757	Mean	3.432
5% K-S Critical Value	0.354	SD	5.501
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.817
		95% KM (t) UCL	6.67
Assuming Gamma Distribution		95% KM (z) UCL	6.421
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.557
Minimum	0.037	95% KM (bootstrap t) UCL	7.375
Maximum	14.35	95% KM (BCA) UCL	7.048
Mean	6.051	95% KM (Percentile Bootstrap) UCL	7.08
Median	6.688	95% KM (Chebyshev) UCL	11.35
SD	4.489	97.5% KM (Chebyshev) UCL	14.78
k star	0.587	99% KM (Chebyshev) UCL	21.51
Theta star	10.31		
Nu star	15.25	Potential UCLs to Use	
AppChi2	7.438	95% KM (t) UCL	6.67
95% Gamma Approximate UCL	12.41		
95% Adjusted Gamma UCL	13.83		

Note: DL/2 is not a recommended method.

Benzo(a)anthracene (q central)

General Statistics			
Number of Valid Data	44	Number of Detected Data	28
Number of Distinct Detected Data	28	Number of Non-Detect Data	16
Number of Missing Values	6	Percent Non-Detects	36.36%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.029	Minimum Detected	-3.54
Maximum Detected	3.6	Maximum Detected	1.281
Mean of Detected	0.643	Mean of Detected	-1.203
SD of Detected	0.893	SD of Detected	1.285
Minimum Non-Detect	0.34	Minimum Non-Detect	-1.079
Maximum Non-Detect	2	Maximum Non-Detect	0.693
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	42
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	95.45%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.672	Shapiro Wilk Test Statistic	0.98
5% Shapiro Wilk Critical Value	0.924	5% Shapiro Wilk Critical Value	0.924
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.525	Mean	-1.244
SD	0.74	SD	1.07
95% DL/2 (t) UCL	0.713	95% H-Stat (DL/2) UCL	0.906
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.467
		SD in Log Scale	1.093
		Mean in Original Scale	0.464
		SD in Original Scale	0.748
		95% Percentile Bootstrap UCL	0.653
		95% BCA Bootstrap UCL	0.714
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.723	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.889		
nu star	40.46		
A-D Test Statistic	0.65	Nonparametric Statistics	
5% A-D Critical Value	0.783	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.783	Mean	0.476
5% K-S Critical Value	0.172	SD	0.741
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.115
		95% KM (t) UCL	0.669
Assuming Gamma Distribution		95% KM (z) UCL	0.665
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.668
Minimum	0.029	95% KM (bootstrap t) UCL	0.796
Maximum	3.6	95% KM (BCA) UCL	0.675
Mean	0.635	95% KM (Percentile Bootstrap) UCL	0.664
Median	0.515	95% KM (Chebyshev) UCL	0.977
SD	0.711	97.5% KM (Chebyshev) UCL	1.194
k star	1.094	99% KM (Chebyshev) UCL	1.621
Theta star	0.581		
Nu star	96.31	Potential UCLs to Use	
AppChi2	74.67	95% KM (BCA) UCL	0.675
95% Gamma Approximate UCL	0.819		
95% Adjusted Gamma UCL	0.827		

Note: DL/2 is not a recommended method.

Benzo(a)anthracene (q north)

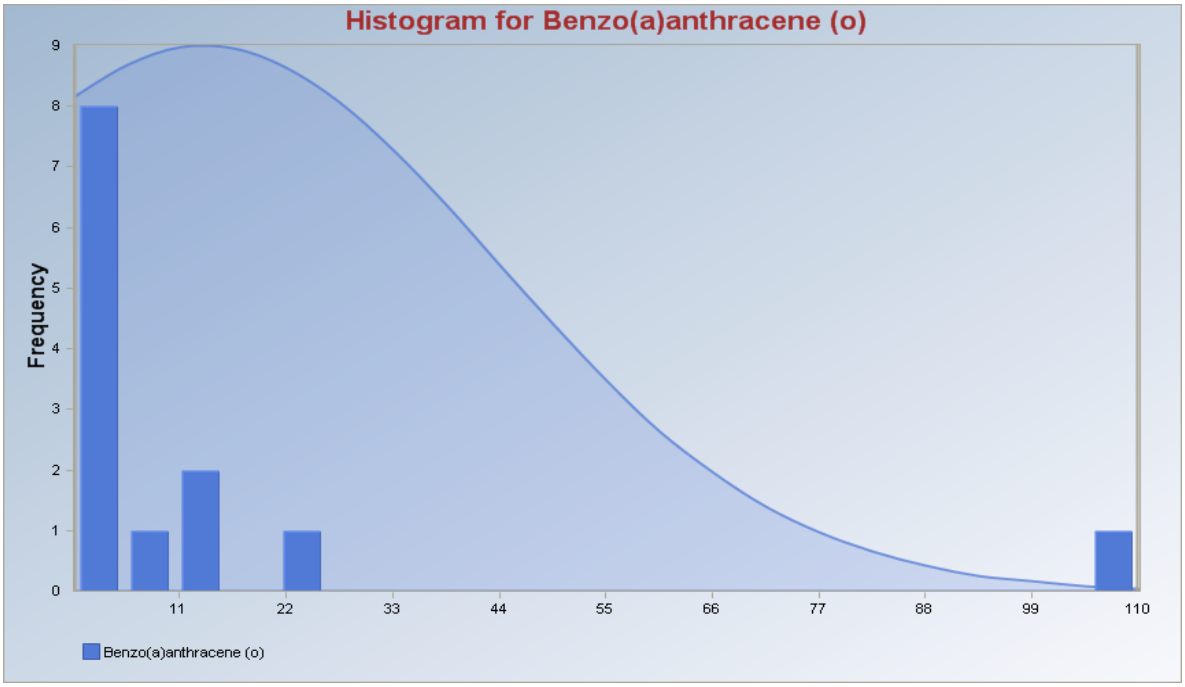
General Statistics			
Number of Valid Data	29	Number of Detected Data	21
Number of Distinct Detected Data	19	Number of Non-Detect Data	8
Number of Missing Values	7	Percent Non-Detects	27.59%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.06	Minimum Detected	-2.813
Maximum Detected	4.85	Maximum Detected	1.579
Mean of Detected	1.268	Mean of Detected	-0.389
SD of Detected	1.239	SD of Detected	1.344
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	230	Maximum Non-Detect	5.438
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	29
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.859	Shapiro Wilk Test Statistic	0.919
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.353	Mean	-0.246
SD	21.19	SD	1.638
95% DL/2 (t) UCL	12.05	95% H-Stat (DL/2) UCL	13.72
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.635
		SD in Log Scale	1.233
		Mean in Original Scale	1.004
		SD in Original Scale	1.137
		95% Percentile Bootstrap UCL	1.376
		95% BCA Bootstrap UCL	1.447
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.829	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.528		
nu star	34.84		
A-D Test Statistic	0.281	Nonparametric Statistics	
5% A-D Critical Value	0.773	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.773	Mean	1.061
5% K-S Critical Value	0.195	SD	1.157
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.231
		95% KM (t) UCL	1.455
Assuming Gamma Distribution		95% KM (z) UCL	1.442
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.454
Minimum	0.06	95% KM (bootstrap t) UCL	1.569
Maximum	4.85	95% KM (BCA) UCL	1.436
Mean	1.172	95% KM (Percentile Bootstrap) UCL	1.438
Median	0.795	95% KM (Chebyshev) UCL	2.07
SD	1.1	97.5% KM (Chebyshev) UCL	2.506
k star	1.012	99% KM (Chebyshev) UCL	3.364
Theta star	1.159		
Nu star	58.69	Potential UCLs to Use	
AppChi2	42.07	95% KM (Chebyshev) UCL	2.07
95% Gamma Approximate UCL	1.635		
95% Adjusted Gamma UCL	1.669		

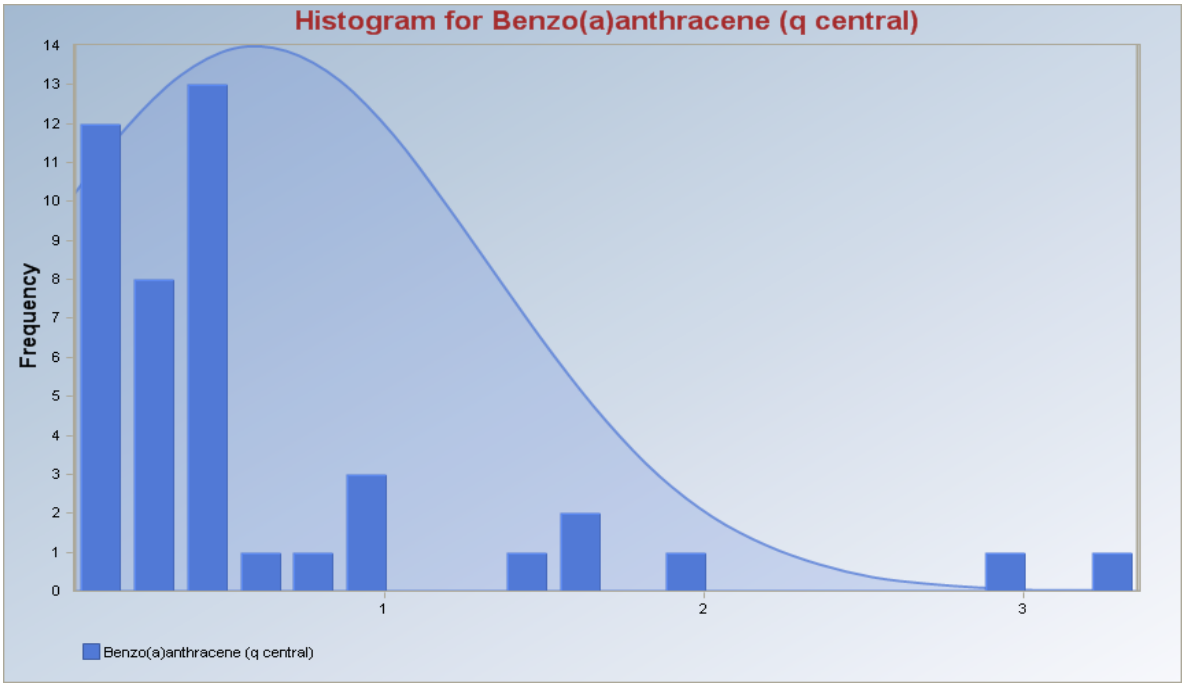
Note: DL/2 is not a recommended method.

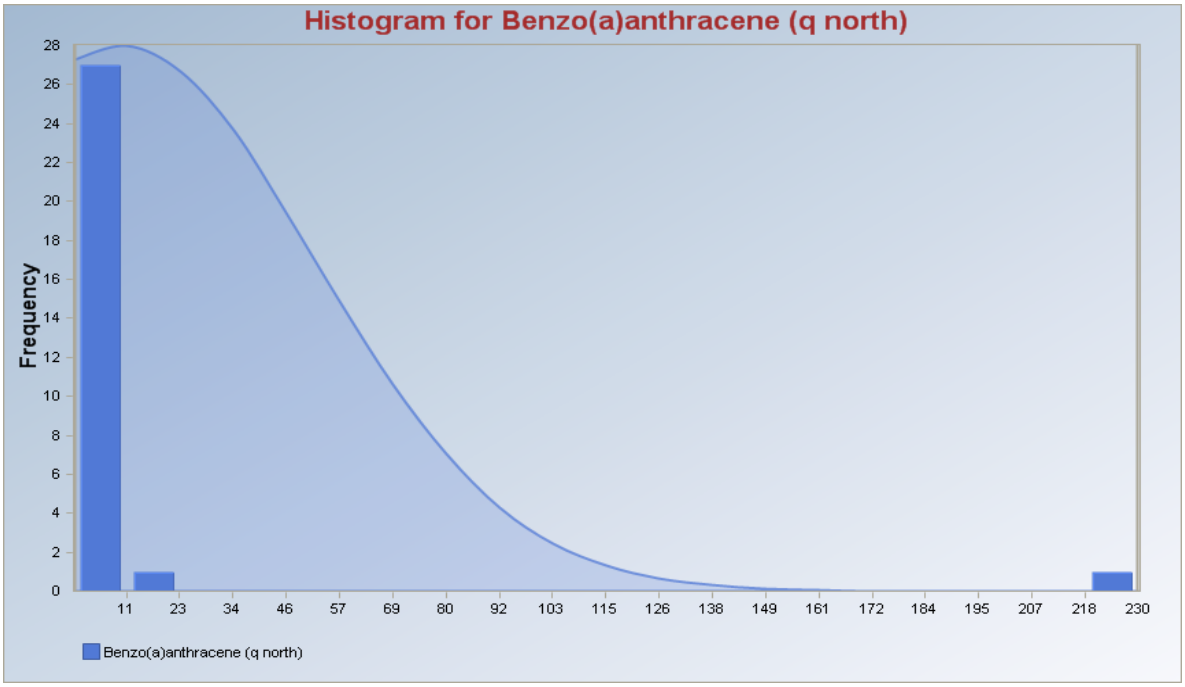
Benzo(a)anthracene (q south)

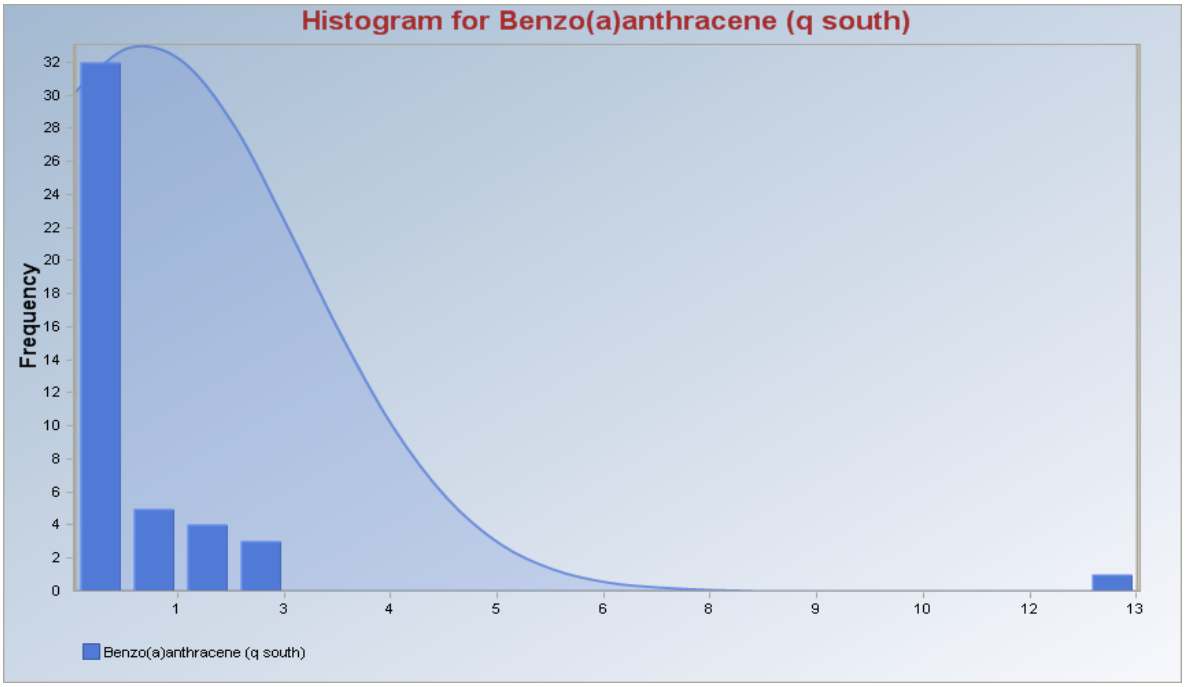
General Statistics			
Number of Valid Data	45	Number of Detected Data	34
Number of Distinct Detected Data	31	Number of Non-Detect Data	11
Number of Missing Values	4	Percent Non-Detects	24.44%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.03	Minimum Detected	-3.507
Maximum Detected	13	Maximum Detected	2.565
Mean of Detected	1.018	Mean of Detected	-1.233
SD of Detected	2.257	SD of Detected	1.609
Minimum Non-Detect	0.34	Minimum Non-Detect	-1.079
Maximum Non-Detect	0.49	Maximum Non-Detect	-0.713
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	31
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	14
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	68.89%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.438	Shapiro Wilk Test Statistic	0.92
5% Shapiro Wilk Critical Value	0.933	5% Shapiro Wilk Critical Value	0.933
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.818	Mean	-1.325
SD	1.986	SD	1.404
95% DL/2 (t) UCL	1.316	95% H-Stat (DL/2) UCL	1.323
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.474
		SD in Log Scale	1.462
		Mean in Original Scale	0.796
		SD in Original Scale	1.994
		95% Percentile Bootstrap UCL	1.327
		95% BCA Bootstrap UCL	1.638
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.482	Data do not follow a Discernable Distribution (0.05)	
Theta Star	2.114		
nu star	32.75		
A-D Test Statistic	1.521	Nonparametric Statistics	
5% A-D Critical Value	0.811	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.811	Mean	0.794
5% K-S Critical Value	0.159	SD	1.973
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.299
		95% KM (t) UCL	1.295
Assuming Gamma Distribution		95% KM (z) UCL	1.285
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.294
Minimum	0.0105	95% KM (bootstrap t) UCL	2.158
Maximum	13	95% KM (BCA) UCL	1.454
Mean	0.892	95% KM (Percentile Bootstrap) UCL	1.36
Median	0.478	95% KM (Chebyshev) UCL	2.095
SD	1.971	97.5% KM (Chebyshev) UCL	2.658
k star	0.561	99% KM (Chebyshev) UCL	3.764
Theta star	1.591		
Nu star	50.46	Potential UCLs to Use	
AppChi2	35.15	97.5% KM (Chebyshev) UCL	2.658
95% Gamma Approximate UCL	1.28		
95% Adjusted Gamma UCL	1.296		

Note: DL/2 is not a recommended method.


Histogram for Benzo(a)anthracene (o)
Frequency
0
1
2
3
4
5
6
7
8
9
11
22
33
44
55
66
77
88
99
110
Benzo(a)anthracene (o)


Histogram for Benzo(a)anthracene (q central)
Frequency
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
3
Benzo(a)anthracene (q central)


Histogram for Benzo(a)anthracene (q north)
Frequency
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
11
23
34
46
57
69
80
92
103
115
126
138
149
161
172
184
195
207
218
230
Benzo(a)anthracene (q north)


Histogram for Benzo(a)anthracene (q south)
Frequency
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
1
3
4
5
6
8
9
10
12
13
Benzo(a)anthracene (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

Benzo(a)pyrene (o)

General Statistics
Number of Valid Data 13
Number of Distinct Detected Data 6
Number of Missing Values 4
Number of Detected Data 6
Number of Non-Detect Data 7
Percent Non-Detects 53.85%

Raw Statistics
Minimum Detected 0.037
Maximum Detected 10.2
Mean of Detected 4.361
SD of Detected 4.247
Minimum Non-Detect 0.38
Maximum Non-Detect 26

Log-transformed Statistics
Minimum Detected -3.297
Maximum Detected 2.322
Mean of Detected 0.251
SD of Detected 2.365
Minimum Non-Detect -0.968
Maximum Non-Detect 3.258

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

Number treated as Non-Detect 13
Number treated as Detected 0
Single DL Non-Detect Percentage 100.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics
Normal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.882
5% Shapiro Wilk Critical Value 0.788
Data appear Normal at 5% Significance Level

Assuming Normal Distribution
DL/2 Substitution Method
Mean 3.105
SD 4.548
95% DL/2 (t) UCL 5.353

Maximum Likelihood Estimate(MLE) Method N/A
MLE method failed to converge properly

Gamma Distribution Test with Detected Values Only
k star (bias corrected) 0.37
Theta Star 11.8
nu star 4.436

A-D Test Statistic 0.483
5% A-D Critical Value 0.735
K-S Test Statistic 0.735
5% K-S Critical Value 0.348
Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution
Gamma ROS Statistics using Extrapolated Data
Minimum 0.037
Maximum 10.2
Mean 4.347
Median 4.386
SD 2.743
k star 0.836
Theta star 5.197
Nu star 21.74
AppChi2 12.15
95% Gamma Approximate UCL 7.781
95% Adjusted Gamma UCL 8.487
Note: DL/2 is not a recommended method.

Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.84
5% Shapiro Wilk Critical Value 0.788
Data appear Lognormal at 5% Significance Level

Assuming Lognormal Distribution
DL/2 Substitution Method
Mean -0.432
SD 2.003
95% H-Stat (DL/2) UCL 47.98

Log ROS Method
Mean in Log Scale -1.092
SD in Log Scale 2.058
Mean in Original Scale 2.082
SD in Original Scale 3.513
95% Percentile Bootstrap UCL 3.74
95% BCA Bootstrap UCL 4.253

Data Distribution Test with Detected Values Only
Data appear Normal at 5% Significance Level

Nonparametric Statistics
Kaplan-Meier (KM) Method
Mean 2.222
SD 3.477
SE of Mean 1.1
95% KM (t) UCL 4.183
95% KM (z) UCL 4.031
95% KM (jackknife) UCL 4.099
95% KM (bootstrap t) UCL 4.681
95% KM (BCA) UCL 6.869
95% KM (Percentile Bootstrap) UCL 4.592
95% KM (Chebyshev) UCL 7.016
97.5% KM (Chebyshev) UCL 9.091
99% KM (Chebyshev) UCL 13.17

Potential UCLs to Use
95% KM (t) UCL 4.183
95% KM (Percentile Bootstrap) UCL 4.592

Benzo(a)pyrene (p)

General Statistics			
Number of Valid Data	33	Number of Detected Data	8
Number of Distinct Detected Data	7	Number of Non-Detect Data	25
Number of Missing Values	14	Percent Non-Detects	75.76%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.042	Minimum Detected	-3.17
Maximum Detected	0.67	Maximum Detected	-0.4
Mean of Detected	0.258	Mean of Detected	-1.6
SD of Detected	0.19	SD of Detected	0.799
Minimum Non-Detect	0.38	Minimum Non-Detect	-0.968
Maximum Non-Detect	2000	Maximum Non-Detect	7.601
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	33
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.855	Shapiro Wilk Test Statistic	0.935
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	62.32	Mean	0.0901
SD	241.9	SD	2.222
95% DL/2 (t) UCL	133.6	95% H-Stat (DL/2) UCL	102.1
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.7
		SD in Log Scale	0.445
		Mean in Original Scale	0.201
		SD in Original Scale	0.104
		95% Percentile Bootstrap UCL	0.233
		95% BCA Bootstrap UCL	0.243
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.459	Data appear Normal at 5% Significance Level	
Theta Star	0.177		
nu star	23.35		
A-D Test Statistic	0.29	Nonparametric Statistics	
5% A-D Critical Value	0.723	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.723	Mean	0.228
5% K-S Critical Value	0.297	SD	0.144
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0461
		95% KM (t) UCL	0.306
Assuming Gamma Distribution		95% KM (z) UCL	0.304
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.309
Minimum	0.042	95% KM (bootstrap t) UCL	0.338
Maximum	0.67	95% KM (BCA) UCL	0.305
Mean	0.267	95% KM (Percentile Bootstrap) UCL	0.301
Median	0.27	95% KM (Chebyshev) UCL	0.429
SD	0.0989	97.5% KM (Chebyshev) UCL	0.516
k star	6.437	99% KM (Chebyshev) UCL	0.687
Theta star	0.0415		
Nu star	424.8	Potential UCLs to Use	
AppChi2	378	95% KM (t) UCL	0.306
95% Gamma Approximate UCL	0.3	95% KM (Percentile Bootstrap) UCL	0.301
95% Adjusted Gamma UCL	0.302		

Note: DL/2 is not a recommended method.

Benzo(a)pyrene (q central)

General Statistics			
Number of Valid Data	44	Number of Detected Data	27
Number of Distinct Detected Data	26	Number of Non-Detect Data	17
Number of Missing Values	6	Percent Non-Detects	38.64%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.024	Minimum Detected	-3.73
Maximum Detected	3.2	Maximum Detected	1.163
Mean of Detected	0.619	Mean of Detected	-1.26
SD of Detected	0.81	SD of Detected	1.364
Minimum Non-Detect	0.34	Minimum Non-Detect	-1.079
Maximum Non-Detect	2	Maximum Non-Detect	0.693
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	42
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	95.45%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.716	Shapiro Wilk Test Statistic	0.972
5% Shapiro Wilk Critical Value	0.923	5% Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.499	Mean	-1.296
SD	0.665	SD	1.111
95% DL/2 (t) UCL	0.668	95% H-Stat (DL/2) UCL	0.989
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.577
		SD in Log Scale	1.155
		Mean in Original Scale	0.431
		SD in Original Scale	0.674
		95% Percentile Bootstrap UCL	0.6
		95% BCA Bootstrap UCL	0.657
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.705	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.879		
nu star	38.05		
A-D Test Statistic	0.416	Nonparametric Statistics	
5% A-D Critical Value	0.783	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.783	Mean	0.448
5% K-S Critical Value	0.175	SD	0.668
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.104
		95% KM (t) UCL	0.623
Assuming Gamma Distribution		95% KM (z) UCL	0.619
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.622
Minimum	0.024	95% KM (bootstrap t) UCL	0.731
Maximum	3.2	95% KM (BCA) UCL	0.643
Mean	0.618	95% KM (Percentile Bootstrap) UCL	0.629
Median	0.532	95% KM (Chebyshev) UCL	0.902
SD	0.631	97.5% KM (Chebyshev) UCL	1.099
k star	1.114	99% KM (Chebyshev) UCL	1.485
Theta star	0.555		
Nu star	98.01	Potential UCLs to Use	
AppChi2	76.17	95% KM (BCA) UCL	0.643
95% Gamma Approximate UCL	0.796		
95% Adjusted Gamma UCL	0.803		

Note: DL/2 is not a recommended method.

Benzo(a)pyrene (q north)

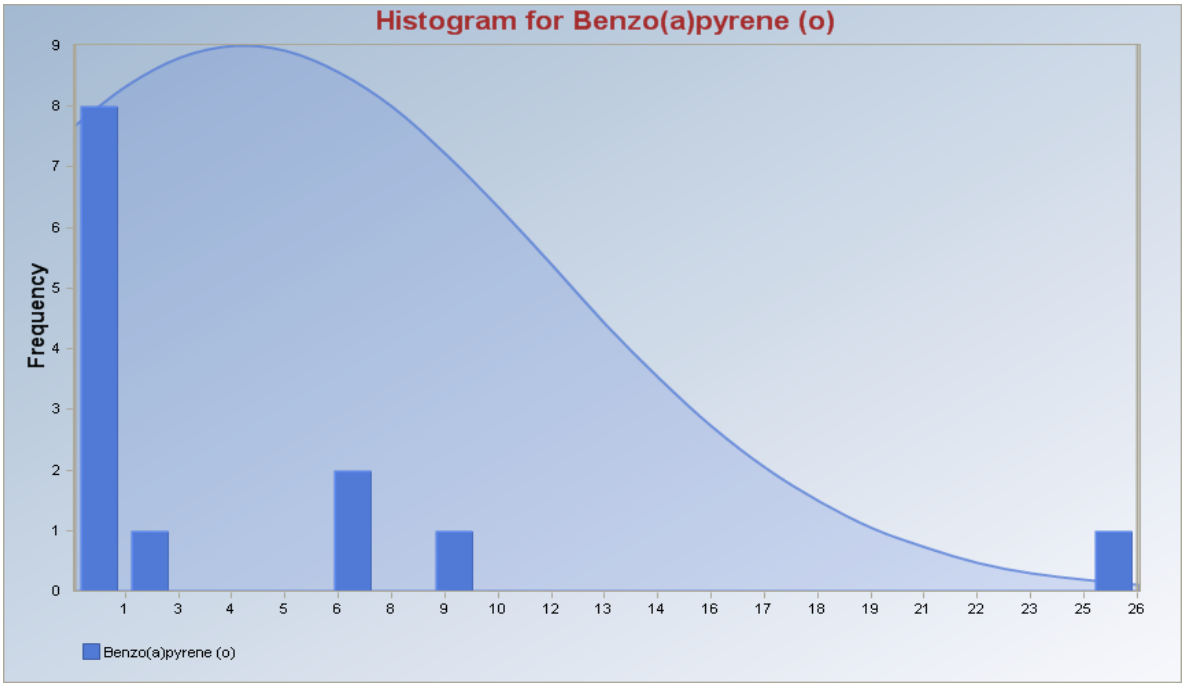
General Statistics			
Number of Valid Data	29	Number of Detected Data	23
Number of Distinct Detected Data	21	Number of Non-Detect Data	6
Number of Missing Values	7	Percent Non-Detects	20.69%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.024	Minimum Detected	-3.73
Maximum Detected	3.9	Maximum Detected	1.361
Mean of Detected	1.072	Mean of Detected	-0.69
SD of Detected	1.051	SD of Detected	1.526
Minimum Non-Detect	0.49	Minimum Non-Detect	-0.713
Maximum Non-Detect	230	Maximum Non-Detect	5.438
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	29
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.875	Shapiro Wilk Test Statistic	0.911
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.326	Mean	-0.349
SD	21.19	SD	1.802
95% DL/2 (t) UCL	12.02	95% H-Stat (DL/2) UCL	20.54
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.791
		SD in Log Scale	1.386
		Mean in Original Scale	0.921
		SD in Original Scale	0.981
		95% Percentile Bootstrap UCL	1.236
		95% BCA Bootstrap UCL	1.257
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.711	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.508		
nu star	32.69		
A-D Test Statistic	0.469	Nonparametric Statistics	
5% A-D Critical Value	0.78	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.78	Mean	0.997
5% K-S Critical Value	0.188	SD	1.01
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.206
		95% KM (t) UCL	1.346
Assuming Gamma Distribution		95% KM (z) UCL	1.335
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.347
Minimum	0.024	95% KM (bootstrap t) UCL	1.424
Maximum	3.9	95% KM (BCA) UCL	1.355
Mean	1.016	95% KM (Percentile Bootstrap) UCL	1.365
Median	0.98	95% KM (Chebyshev) UCL	1.893
SD	0.956	97.5% KM (Chebyshev) UCL	2.28
k star	0.828	99% KM (Chebyshev) UCL	3.042
Theta star	1.227		
Nu star	48.04	Potential UCLs to Use	
AppChi2	33.13	95% KM (Chebyshev) UCL	1.893
95% Gamma Approximate UCL	1.473		
95% Adjusted Gamma UCL	1.507		

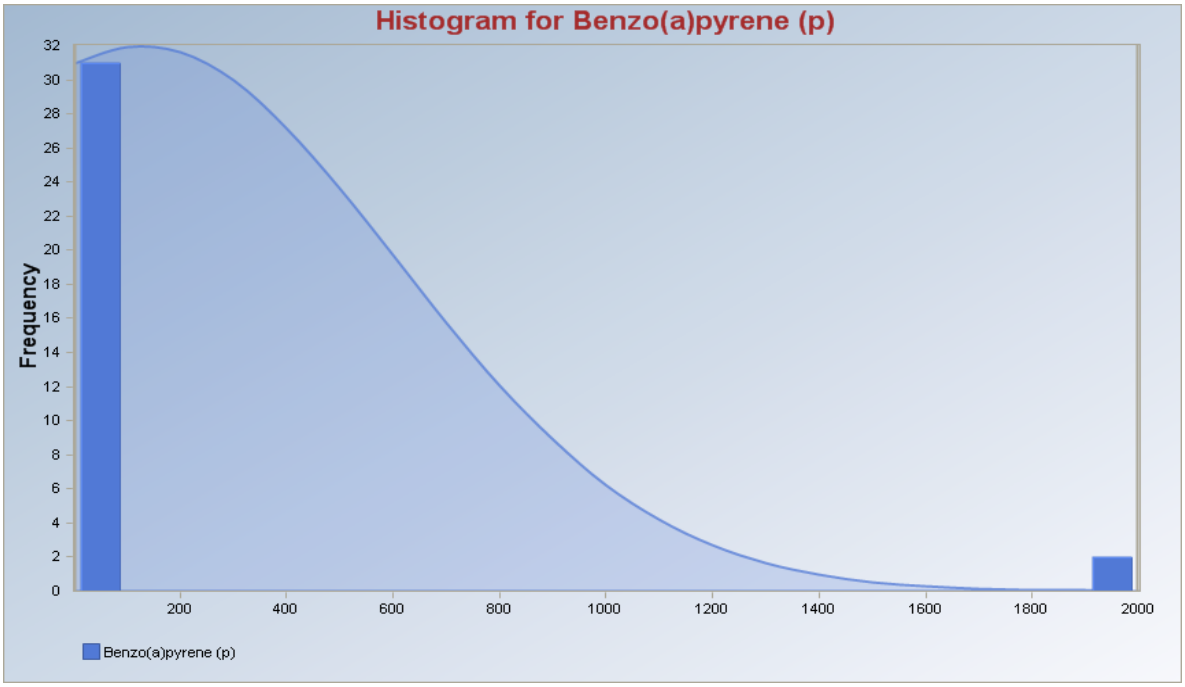
Note: DL/2 is not a recommended method.

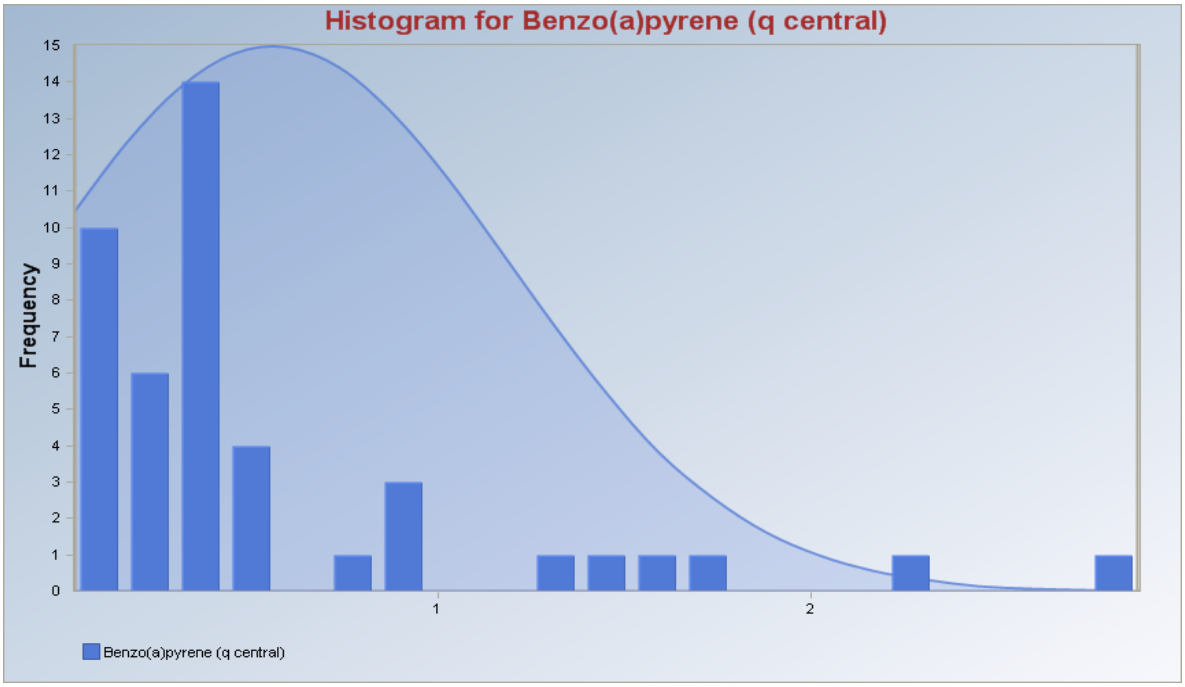
Benzo(a)pyrene (q south)

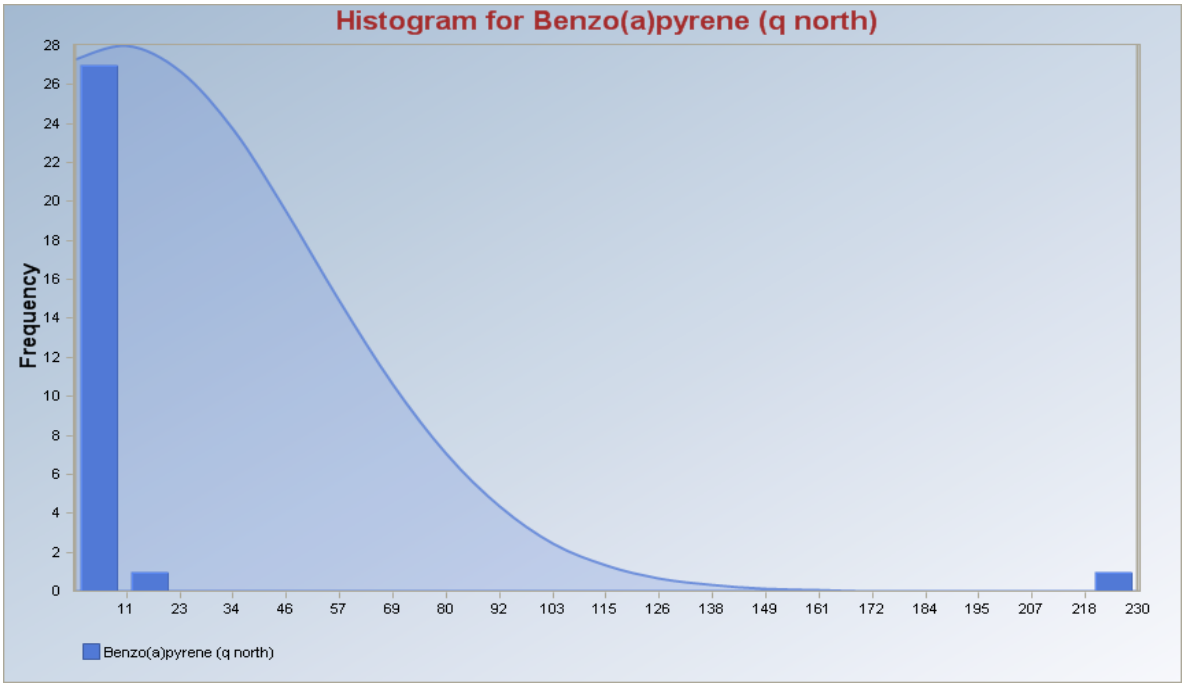
General Statistics			
Number of Valid Data	45	Number of Detected Data	33
Number of Distinct Detected Data	29	Number of Non-Detect Data	12
Number of Missing Values	4	Percent Non-Detects	26.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.023	Minimum Detected	-3.772
Maximum Detected	11	Maximum Detected	2.398
Mean of Detected	0.917	Mean of Detected	-1.32
SD of Detected	1.96	SD of Detected	1.582
Minimum Non-Detect	0.34	Minimum Non-Detect	-1.079
Maximum Non-Detect	4.6	Maximum Non-Detect	1.526
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	44
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	97.78%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.462	Shapiro Wilk Test Statistic	0.925
5% Shapiro Wilk Critical Value	0.931	5% Shapiro Wilk Critical Value	0.931
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.775	Mean	-1.334
SD	1.715	SD	1.394
95% DL/2 (t) UCL	1.204	95% H-Stat (DL/2) UCL	1.222
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.539
		SD in Log Scale	1.4
		Mean in Original Scale	0.704
		SD in Original Scale	1.709
		95% Percentile Bootstrap UCL	1.196
		95% BCA Bootstrap UCL	1.421
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.486	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.885		
nu star	32.11		
A-D Test Statistic	1.693	Nonparametric Statistics	
5% A-D Critical Value	0.81	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.81	Mean	0.709
5% K-S Critical Value	0.162	SD	1.693
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.257
		95% KM (t) UCL	1.14
Assuming Gamma Distribution		95% KM (z) UCL	1.131
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.138
Minimum	0.023	95% KM (bootstrap t) UCL	1.735
Maximum	11	95% KM (BCA) UCL	1.202
Mean	0.842	95% KM (Percentile Bootstrap) UCL	1.17
Median	0.577	95% KM (Chebyshev) UCL	1.828
SD	1.68	97.5% KM (Chebyshev) UCL	2.312
k star	0.629	99% KM (Chebyshev) UCL	3.264
Theta star	1.339		
Nu star	56.58	Potential UCLs to Use	
AppChi2	40.29	97.5% KM (Chebyshev) UCL	2.312
95% Gamma Approximate UCL	1.183		
95% Adjusted Gamma UCL	1.196		

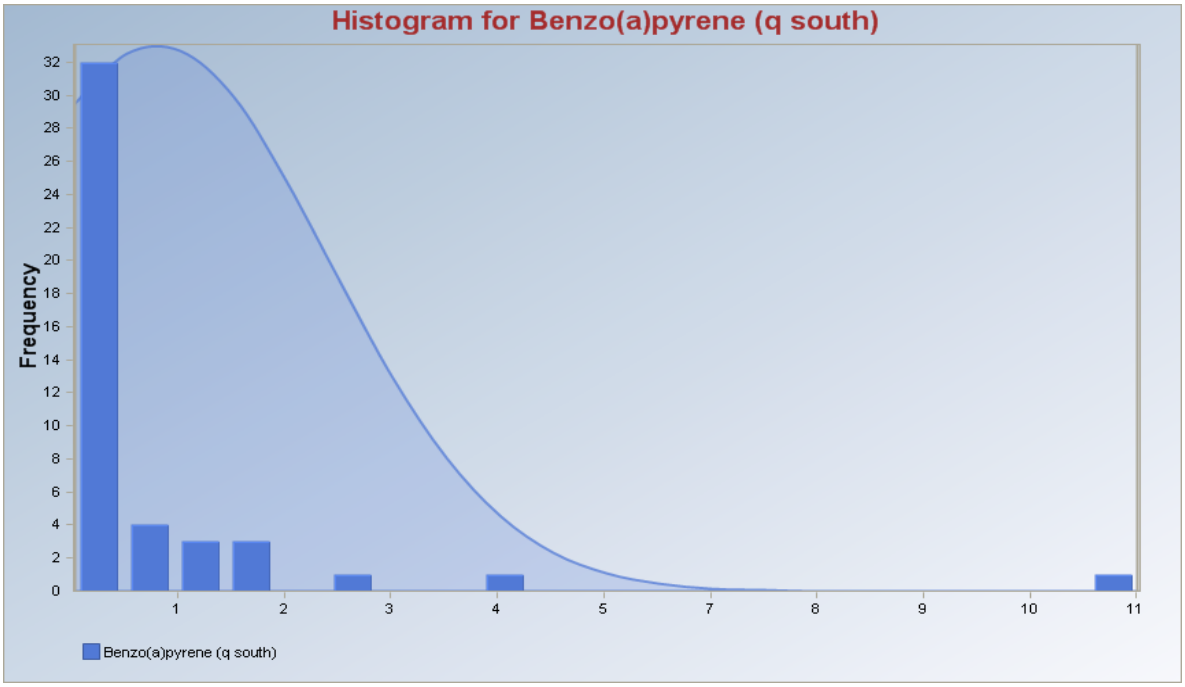
Note: DL/2 is not a recommended method.


Histogram for Benzo(a)pyrene (o)
Frequency
0
1
2
3
4
5
6
7
8
9
1
3
4
5
6
8
9
10
12
13
14
16
17
18
19
21
22
23
25
26
Benzo(a)pyrene (o)


Histogram for Benzo(a)pyrene (p)
Frequency
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
200
400
600
800
1000
1200
1400
1600
1800
2000
Benzo(a)pyrene (p)


Histogram for Benzo(a)pyrene (q central)
Frequency
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
Benzo(a)pyrene (q central)


Histogram for Benzo(a)pyrene (q north)
Frequency
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
11
23
34
46
57
69
80
92
103
115
126
138
149
161
172
184
195
207
218
230
Benzo(a)pyrene (q north)


Histogram for Benzo(a)pyrene (q south)
Frequency
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
1
2
3
4
5
7
8
9
10
11
Benzo(a)pyrene (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

Benzo(b)fluoranthene (o)

General Statistics
Number of Valid Data 13
Number of Distinct Detected Data 9
Number of Missing Values 4
Number of Detected Data 9
Number of Non-Detect Data 4
Percent Non-Detects 30.77%

Raw Statistics
Minimum Detected 0.04
Maximum Detected 8.95
Mean of Detected 3.06
SD of Detected 3.891
Minimum Non-Detect 0.39
Maximum Non-Detect 0.42

Log-transformed Statistics
Minimum Detected -3.219
Maximum Detected 2.192
Mean of Detected -0.363
SD of Detected 2.158
Minimum Non-Detect -0.942
Maximum Non-Detect -0.868

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

Number treated as Non-Detect 8
Number treated as Detected 5
Single DL Non-Detect Percentage 61.54%

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics
Normal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.737
5% Shapiro Wilk Critical Value 0.829
Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.869
5% Shapiro Wilk Critical Value 0.829
Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution
DL/2 Substitution Method
Mean 2.181
SD 3.461
95% DL/2 (t) UCL 3.891

Assuming Lognormal Distribution
DL/2 Substitution Method
Mean -0.743
SD 1.859
95% H-Stat (DL/2) UCL 13.17

Maximum Likelihood Estimate(MLE) Method N/A
MLE yields a negative mean

Log ROS Method
Mean in Log Scale -0.917
SD in Log Scale 1.963
Mean in Original Scale 2.154
SD in Original Scale 3.478
95% Percentile Bootstrap UCL 3.829
95% BCA Bootstrap UCL 4.116

Gamma Distribution Test with Detected Values Only
k star (bias corrected) 0.366
Theta Star 8.361
nu star 6.588

Data Distribution Test with Detected Values Only
Data appear Gamma Distributed at 5% Significance Level

A-D Test Statistic 0.688
5% A-D Critical Value 0.782
K-S Test Statistic 0.782
5% K-S Critical Value 0.296
Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution
Gamma ROS Statistics using Extrapolated Data
Minimum 0.04
Maximum 8.95
Mean 2.832
Median 2.318
SD 3.197
k star 0.511
Theta star 5.537
Nu star 13.3
AppChi2 6.093
95% Gamma Approximate UCL 6.18
95% Adjusted Gamma UCL 6.956
Note: DL/2 is not a recommended method.

Nonparametric Statistics
Kaplan-Meier (KM) Method
Mean 2.149
SD 3.344
SE of Mean 0.984
95% KM (t) UCL 3.903
95% KM (z) UCL 3.767
95% KM (jackknife) UCL 3.87
95% KM (bootstrap t) UCL 4.424
95% KM (BCA) UCL 3.633
95% KM (Percentile Bootstrap) UCL 3.794
95% KM (Chebyshev) UCL 6.438
97.5% KM (Chebyshev) UCL 8.293
99% KM (Chebyshev) UCL 11.94

Potential UCLs to Use
95% KM (BCA) UCL 3.633

Benzo(b)fluoranthene (q central)

General Statistics			
Number of Valid Data	44	Number of Detected Data	25
Number of Distinct Detected Data	25	Number of Non-Detect Data	19
Number of Missing Values	6	Percent Non-Detects	43.18%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.031	Minimum Detected	-3.474
Maximum Detected	3.2	Maximum Detected	1.163
Mean of Detected	0.602	Mean of Detected	-1.19
SD of Detected	0.777	SD of Detected	1.237
Minimum Non-Detect	0.34	Minimum Non-Detect	-1.079
Maximum Non-Detect	3.5	Maximum Non-Detect	1.253
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	44
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.703	Shapiro Wilk Test Statistic	0.981
5% Shapiro Wilk Critical Value	0.918	5% Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.507	Mean	-1.217
SD	0.646	SD	1.022
95% DL/2 (t) UCL	0.671	95% H-Stat (DL/2) UCL	0.897
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.486
		SD in Log Scale	1.011
		Mean in Original Scale	0.412
		SD in Original Scale	0.622
		95% Percentile Bootstrap UCL	0.572
		95% BCA Bootstrap UCL	0.622
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.785	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.767		
nu star	39.24		
A-D Test Statistic	0.469	Nonparametric Statistics	
5% A-D Critical Value	0.779	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.779	Mean	0.432
5% K-S Critical Value	0.181	SD	0.623
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.099
		95% KM (t) UCL	0.598
Assuming Gamma Distribution		95% KM (z) UCL	0.595
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.597
Minimum	0.031	95% KM (bootstrap t) UCL	0.704
Maximum	3.2	95% KM (BCA) UCL	0.595
Mean	0.6	95% KM (Percentile Bootstrap) UCL	0.602
Median	0.508	95% KM (Chebyshev) UCL	0.863
SD	0.586	97.5% KM (Chebyshev) UCL	1.05
k star	1.323	99% KM (Chebyshev) UCL	1.417
Theta star	0.454		
Nu star	116.4	Potential UCLs to Use	
AppChi2	92.52	95% KM (BCA) UCL	0.595
95% Gamma Approximate UCL	0.756		
95% Adjusted Gamma UCL	0.762		

Note: DL/2 is not a recommended method.

Benzo(b)fluoranthene (q north)

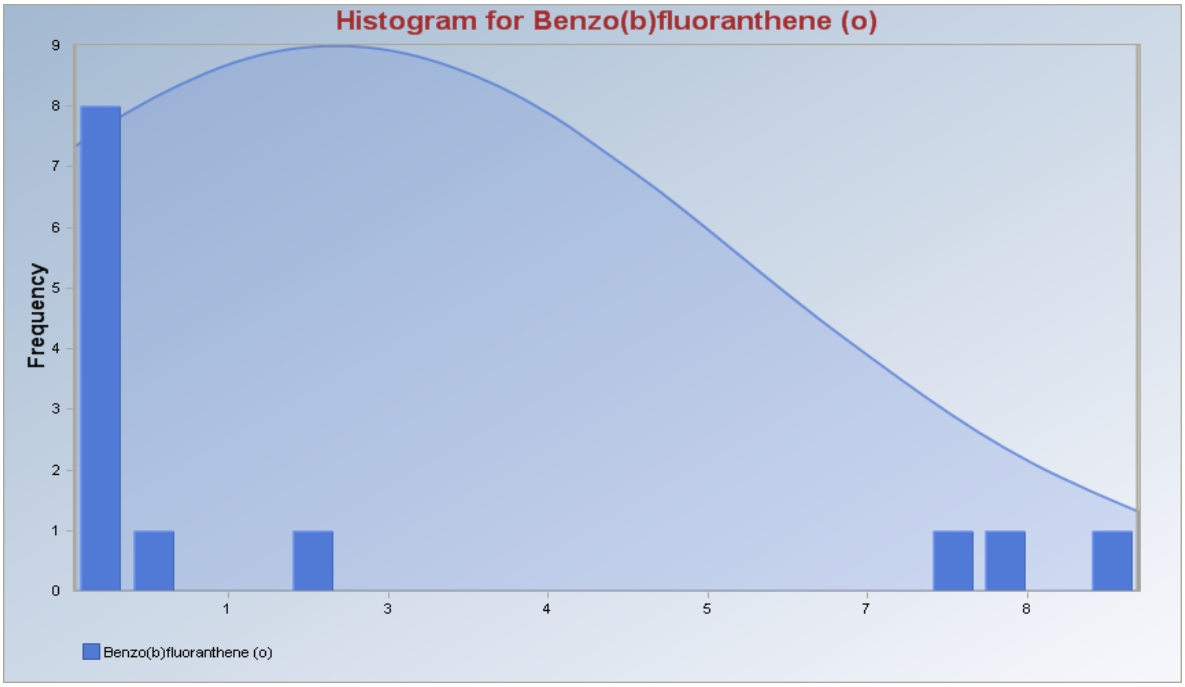
General Statistics			
Number of Valid Data	29	Number of Detected Data	22
Number of Distinct Detected Data	19	Number of Non-Detect Data	7
Number of Missing Values	7	Percent Non-Detects	24.14%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.09	Minimum Detected	-2.408
Maximum Detected	3.6	Maximum Detected	1.281
Mean of Detected	1.142	Mean of Detected	-0.359
SD of Detected	1.011	SD of Detected	1.132
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	230	Maximum Non-Detect	5.438
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	29
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.875	Shapiro Wilk Test Statistic	0.931
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.289	Mean	-0.2
SD	21.19	SD	1.522
95% DL/2 (t) UCL	11.98	95% H-Stat (DL/2) UCL	10.14
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.528
		SD in Log Scale	1.051
		Mean in Original Scale	0.959
		SD in Original Scale	0.939
		95% Percentile Bootstrap UCL	1.253
		95% BCA Bootstrap UCL	1.289
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.028	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.11		
nu star	45.25		
A-D Test Statistic	0.431	Nonparametric Statistics	
5% A-D Critical Value	0.767	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.767	Mean	1
5% K-S Critical Value	0.19	SD	0.962
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.193
		95% KM (t) UCL	1.327
Assuming Gamma Distribution		95% KM (z) UCL	1.317
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.327
Minimum	0.09	95% KM (bootstrap t) UCL	1.397
Maximum	3.6	95% KM (BCA) UCL	1.321
Mean	1.071	95% KM (Percentile Bootstrap) UCL	1.309
Median	0.735	95% KM (Chebyshev) UCL	1.839
SD	0.918	97.5% KM (Chebyshev) UCL	2.202
k star	1.164	99% KM (Chebyshev) UCL	2.916
Theta star	0.92		
Nu star	67.54	Potential UCLs to Use	
AppChi2	49.62	95% KM (BCA) UCL	1.321
95% Gamma Approximate UCL	1.458		
95% Adjusted Gamma UCL	1.485		

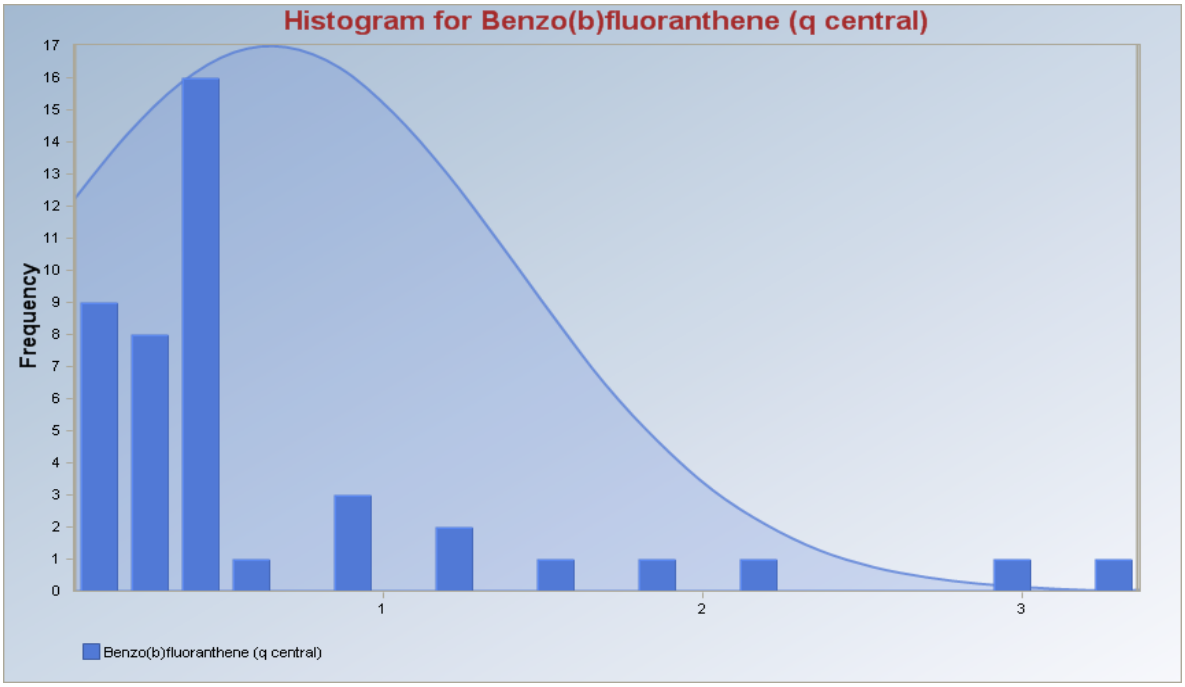
Note: DL/2 is not a recommended method.

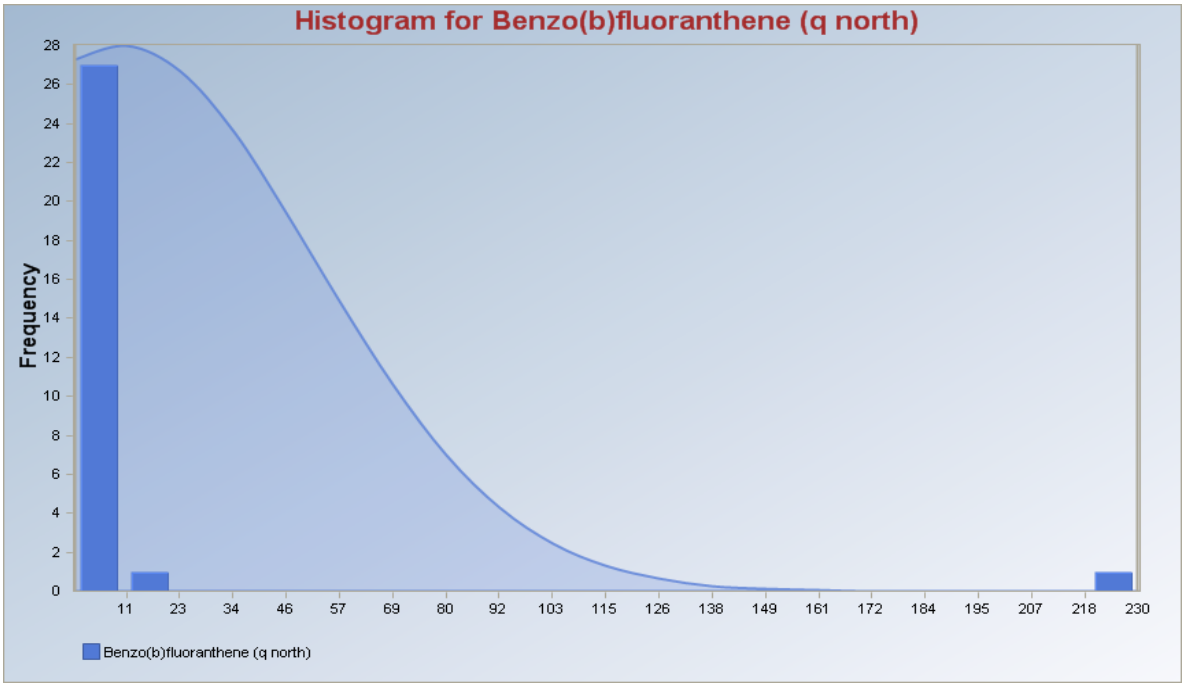
Benzo(b)fluoranthene (q south)

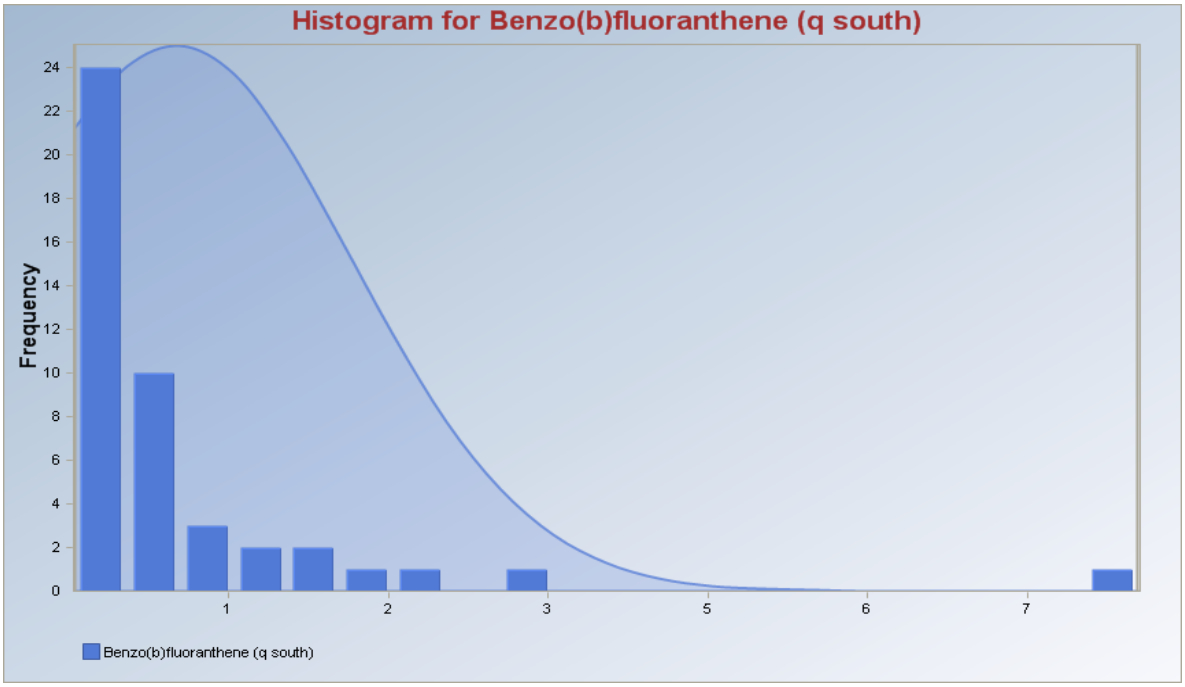
General Statistics			
Number of Valid Data	45	Number of Detected Data	30
Number of Distinct Detected Data	30	Number of Non-Detect Data	15
Number of Missing Values	4	Percent Non-Detects	33.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.033	Minimum Detected	-3.411
Maximum Detected	7.8	Maximum Detected	2.054
Mean of Detected	0.956	Mean of Detected	-1.123
SD of Detected	1.56	SD of Detected	1.571
Minimum Non-Detect	0.34	Minimum Non-Detect	-1.079
Maximum Non-Detect	0.5	Maximum Non-Detect	-0.693
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	33
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	12
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	73.33%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.618	Shapiro Wilk Test Statistic	0.939
5% Shapiro Wilk Critical Value	0.927	5% Shapiro Wilk Critical Value	0.927
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.706	Mean	-1.277
SD	1.316	SD	1.296
95% DL/2 (t) UCL	1.036	95% H-Stat (DL/2) UCL	0.984
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.491
		SD in Log Scale	1.4
		Mean in Original Scale	0.676
		SD in Original Scale	1.329
		95% Percentile Bootstrap UCL	1.013
		95% BCA Bootstrap UCL	1.174
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.541	Data appear Lognormal at 5% Significance Level	
Theta Star	1.767		
nu star	32.47		
A-D Test Statistic	0.942	Nonparametric Statistics	
5% A-D Critical Value	0.803	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.803	Mean	0.673
5% K-S Critical Value	0.168	SD	1.316
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.2
		95% KM (t) UCL	1.009
Assuming Gamma Distribution		95% KM (z) UCL	1.002
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.007
Minimum	0.033	95% KM (bootstrap t) UCL	1.282
Maximum	7.8	95% KM (BCA) UCL	1.025
Mean	0.939	95% KM (Percentile Bootstrap) UCL	1.023
Median	0.875	95% KM (Chebyshev) UCL	1.544
SD	1.269	97.5% KM (Chebyshev) UCL	1.92
k star	0.78	99% KM (Chebyshev) UCL	2.66
Theta star	1.203		
Nu star	70.2	Potential UCLs to Use	
AppChi2	51.91	97.5% KM (Chebyshev) UCL	1.92
95% Gamma Approximate UCL	1.269		
95% Adjusted Gamma UCL	1.282		

Note: DL/2 is not a recommended method.


Histogram for Benzo(b)fluoranthene (o)
Frequency
9
8
7
6
5
4
3
2
1
0
1
3
4
5
7
8
Benzo(b)fluoranthene (o)


Histogram for Benzo(b)fluoranthene (q central)
Frequency
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
3
Benzo(b)fluoranthene (q central)


Histogram for Benzo(b)fluoranthene (q north)
Frequency
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
11
23
34
46
57
69
80
92
103
115
126
138
149
161
172
184
195
207
218
230
Benzo(b)fluoranthene (q north)


Histogram for Benzo(b)fluoranthene (q south)
Frequency
24
22
20
18
16
14
12
10
8
6
4
2
0
1
2
3
5
6
7
Benzo(b)fluoranthene (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

beta-BHC (q north)

General Statistics			
Number of Valid Data	22	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	14
Number of Missing Values	14	Percent Non-Detects	63.64%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0013	Minimum Detected	-6.645
Maximum Detected	1.3	Maximum Detected	0.262
Mean of Detected	0.174	Mean of Detected	-4.265
SD of Detected	0.455	SD of Detected	2.163
Minimum Non-Detect	0.0019	Minimum Non-Detect	-6.266
Maximum Non-Detect	0.48	Maximum Non-Detect	-0.734

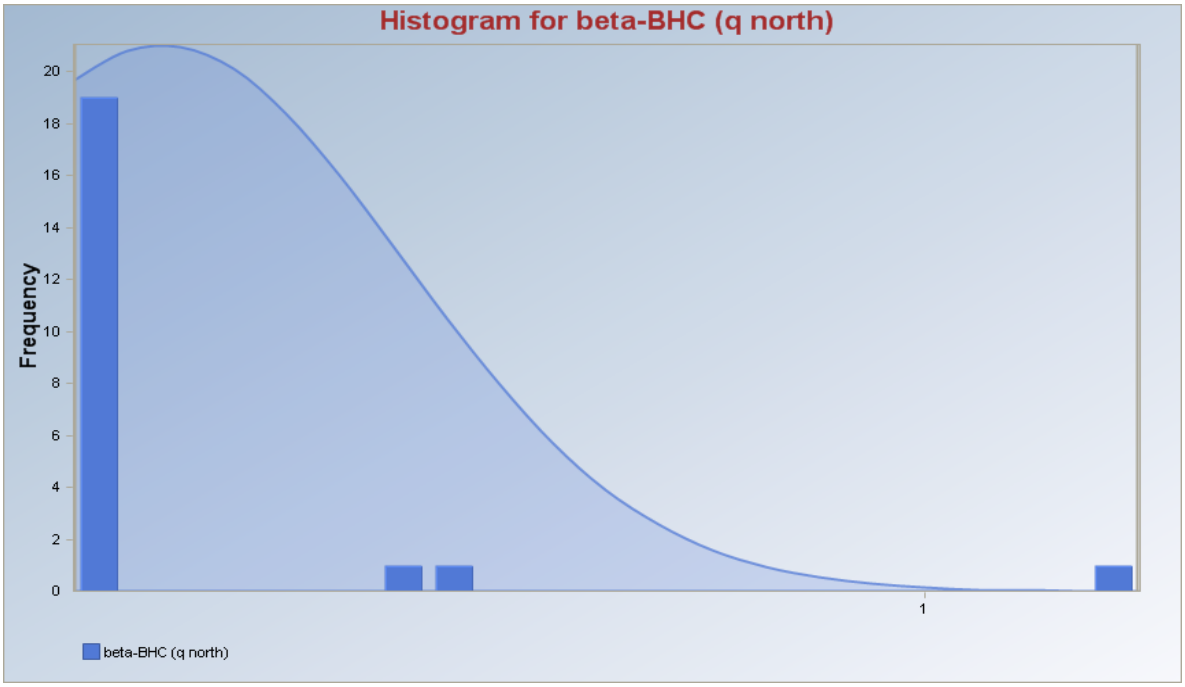
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	21
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	95.45%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.441	Shapiro Wilk Test Statistic	0.881
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.086	Mean	-4.926
SD	0.279	SD	2.01
95% DL/2 (t) UCL	0.188	95% H-Stat (DL/2) UCL	0.586
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.753
		SD in Log Scale	1.74
		Mean in Original Scale	0.0641
		SD in Original Scale	0.276
		95% Percentile Bootstrap UCL	0.181
		95% BCA Bootstrap UCL	0.245
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.257	Data appear Lognormal at 5% Significance Level	
Theta Star	0.676		
nu star	4.111		
A-D Test Statistic	1.223	Nonparametric Statistics	
5% A-D Critical Value	0.806	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.806	Mean	0.0649
5% K-S Critical Value	0.318	SD	0.27
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0615
		95% KM (t) UCL	0.171
Assuming Gamma Distribution		95% KM (z) UCL	0.166
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.166
Minimum	0.0013	95% KM (bootstrap t) UCL	3.255
Maximum	1.3	95% KM (BCA) UCL	0.184
Mean	0.15	95% KM (Percentile Bootstrap) UCL	0.182
Median	0.0734	95% KM (Chebyshev) UCL	0.333
SD	0.269	97.5% KM (Chebyshev) UCL	0.449
k star	0.551	99% KM (Chebyshev) UCL	0.677
Theta star	0.272		
Nu star	24.23	Potential UCLs to Use	
AppChi2	14.02	99% KM (Chebyshev) UCL	0.677
95% Gamma Approximate UCL	0.259		
95% Adjusted Gamma UCL	0.27		

Note: DL/2 is not a recommended method.

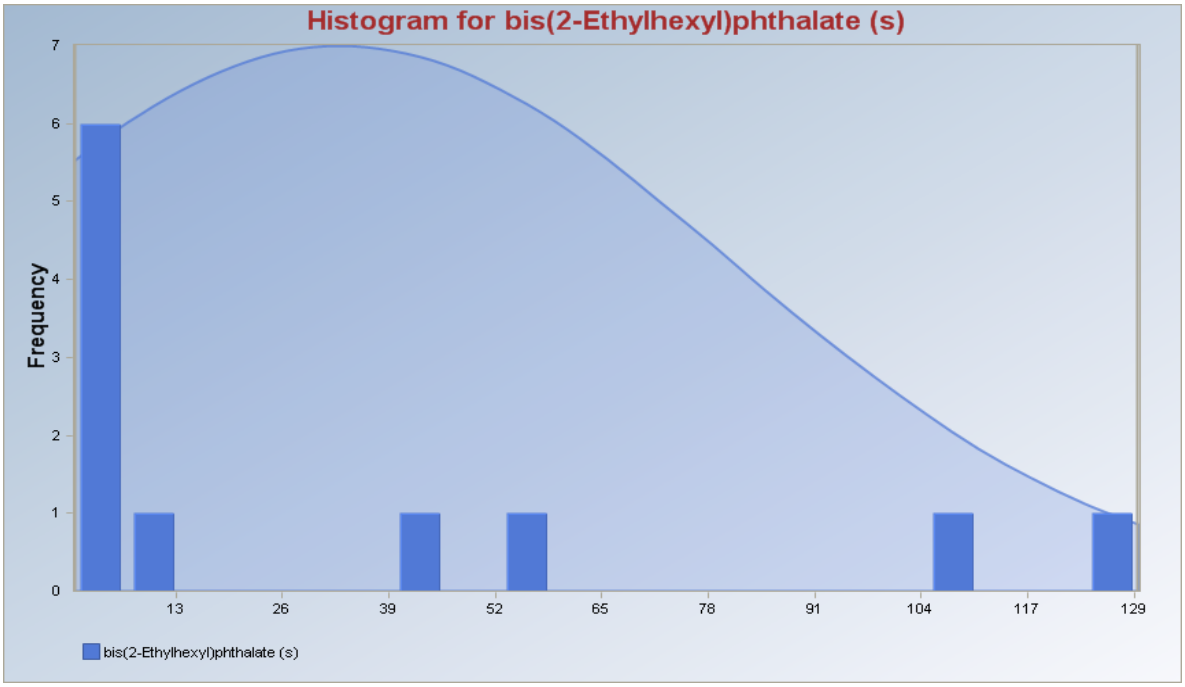

Histogram for beta-BHC (q north)
Frequency
20
18
16
14
12
10
8
6
4
2
0
1
beta-BHC (q north)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

bis(2-Ethylhexyl)phthalate (s)

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Number of Missing Values	3		
Raw Statistics		Log-transformed Statistics	
Minimum	0.53	Minimum of Log Data	-0.635
Maximum	130	Maximum of Log Data	4.868
Mean	33.08	Mean of log Data	1.943
Median	3.9	SD of log Data	2.131
SD	47.32		
Coefficient of Variation	1.43		
Skewness	1.368		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.734	Shapiro Wilk Test Statistic	0.896
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	58.94	95% H-UCL	2673
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	166.6
95% Adjusted-CLT UCL	62.84	97.5% Chebyshev (MVUE) UCL	220.3
95% Modified-t UCL	59.92	99% Chebyshev (MVUE) UCL	325.9
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.366	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	90.43		
nu star	8.049		
Approximate Chi Square Value (.05)	2.763	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	56.55
Adjusted Chi Square Value	2.284	95% Jackknife UCL	58.94
		95% Standard Bootstrap UCL	55.19
Anderson-Darling Test Statistic	0.591	95% Bootstrap-t UCL	83.23
Anderson-Darling 5% Critical Value	0.797	95% Hall's Bootstrap UCL	66.91
Kolmogorov-Smirnov Test Statistic	0.231	95% Percentile Bootstrap UCL	57.42
Kolmogorov-Smirnov 5% Critical Value	0.272	95% BCA Bootstrap UCL	65.41
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	95.27
		97.5% Chebyshev(Mean, Sd) UCL	122.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	175
95% Approximate Gamma UCL	96.36		
95% Adjusted Gamma UCL	116.6		
Potential UCL to Use		Use 95% Adjusted Gamma UCL	116.6


Histogram for bis(2-Ethylhexyl)phthalate (s)
Frequency
0
1
2
3
4
5
6
7
13
26
39
52
65
78
91
104
117
129
bis(2-Ethylhexyl)phthalate (s)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Cadmium (o)

General Statistics			
Number of Valid Observations	14	Number of Distinct Observations	14
Number of Missing Values	3		
Raw Statistics		Log-transformed Statistics	
Minimum	0.54	Minimum of Log Data	-0.616
Maximum	250	Maximum of Log Data	5.521
Mean	28.37	Mean of log Data	0.788
Median	0.735	SD of log Data	2.131
SD	69.07		
Coefficient of Variation	2.434		
Skewness	2.981		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.483	Shapiro Wilk Test Statistic	67.70%
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	61.06	95% H-UCL	394.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	54.65
95% Adjusted-CLT UCL	74.45	97.5% Chebyshev (MVUE) UCL	72.06
95% Modified-t UCL	63.51	99% Chebyshev (MVUE) UCL	106.2
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.263	Data do not follow a Discernable Distribution (0.05)	
Theta Star	108		
nu star	7.354		
Approximate Chi Square Value (.05)	2.367	Nonparametric Statistics	
Adjusted Level of Significance	0.0312	95% CLT UCL	58.73
Adjusted Chi Square Value	2.009	95% Jackknife UCL	61.06
		95% Standard Bootstrap UCL	57.12
Anderson-Darling Test Statistic	2.619	95% Bootstrap-t UCL	174.7
Anderson-Darling 5% Critical Value	0.843	95% Hall's Bootstrap UCL	201.2
Kolmogorov-Smirnov Test Statistic	0.427	95% Percentile Bootstrap UCL	60.79
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	78.7
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	108.8
		97.5% Chebyshev(Mean, Sd) UCL	143.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	212
95% Approximate Gamma UCL	88.15		
95% Adjusted Gamma UCL	103.8		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	212

Cadmium (p)

General Statistics			
Number of Valid Data	35	Number of Detected Data	30
Number of Distinct Detected Data	28	Number of Non-Detect Data	5
Number of Missing Values	12	Percent Non-Detects	14.29%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.62	Minimum Detected	-0.478
Maximum Detected	93	Maximum Detected	4.533
Mean of Detected	6.994	Mean of Detected	0.994
SD of Detected	17.01	SD of Detected	1.182
Minimum Non-Detect	0.48	Minimum Non-Detect	-0.734
Maximum Non-Detect	0.59	Maximum Non-Detect	-0.528
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	30
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	14.29%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.377	Shapiro Wilk Test Statistic	0.914
5% Shapiro Wilk Critical Value	0.927	5% Shapiro Wilk Critical Value	0.927
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.032	Mean	0.658
SD	15.89	SD	1.375
95% DL/2 (t) UCL	10.57	95% H-Stat (DL/2) UCL	8.352
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	4.296	Mean in Log Scale	0.618
SD	17.23	SD in Log Scale	1.439
95% MLE (t) UCL	9.22	Mean in Original Scale	6.023
95% MLE (Tiku) UCL	8.935	SD in Original Scale	15.89
		95% Percentile Bootstrap UCL	10.95
		95% BCA Bootstrap UCL	14.13
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.601	Data do not follow a Discernable Distribution (0.05)	
Theta Star	11.63		
nu star	36.07		
A-D Test Statistic	2.321	Nonparametric Statistics	
5% A-D Critical Value	0.797	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.797	Mean	6.083
5% K-S Critical Value	0.168	SD	15.64
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2.689
		95% KM (t) UCL	10.63
Assuming Gamma Distribution		95% KM (z) UCL	10.51
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	10.61
Minimum	1.00E-09	95% KM (bootstrap t) UCL	24.05
Maximum	93	95% KM (BCA) UCL	10.78
Mean	5.995	95% KM (Percentile Bootstrap) UCL	11.18
Median	1.5	95% KM (Chebyshev) UCL	17.8
SD	15.9	97.5% KM (Chebyshev) UCL	22.88
k star	0.193	99% KM (Chebyshev) UCL	32.84
Theta star	31.07		
Nu star	13.51	Potential UCLs to Use	
AppChi2	6.235	97.5% KM (Chebyshev) UCL	22.88
95% Gamma Approximate UCL	12.99		
95% Adjusted Gamma UCL	13.49		

Note: DL/2 is not a recommended method.

Cadmium (q north)

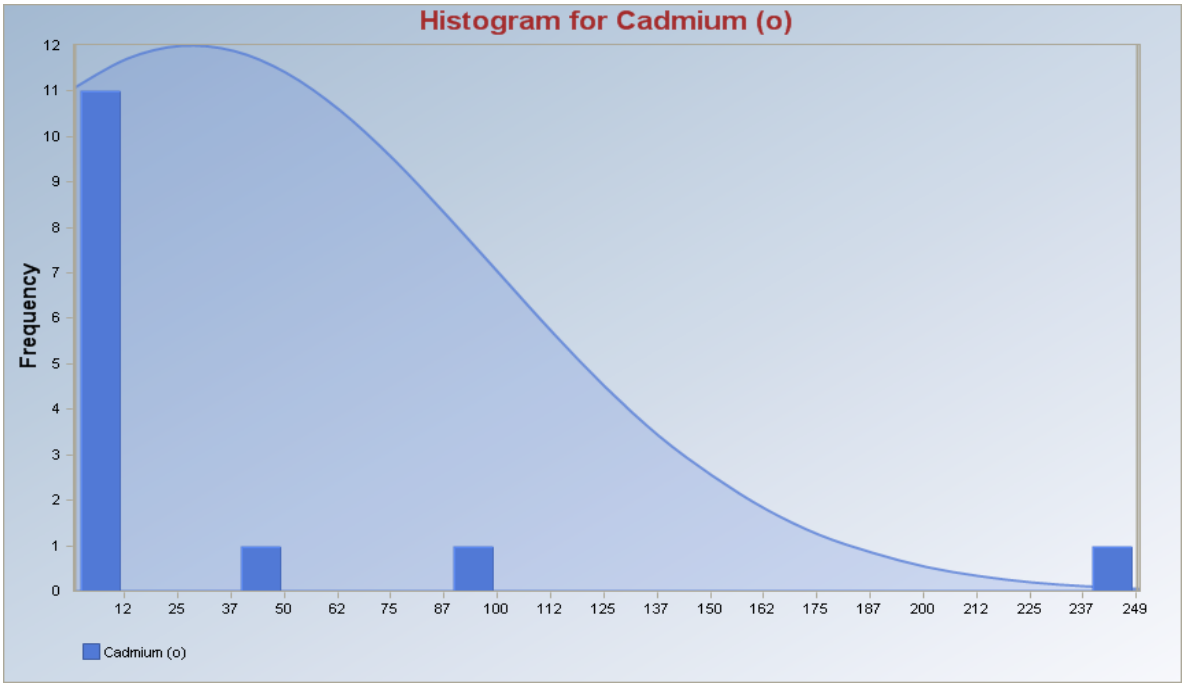
General Statistics			
Number of Valid Data	29	Number of Detected Data	28
Number of Distinct Detected Data	28	Number of Non-Detect Data	1
Number of Missing Values	7	Percent Non-Detects	3.45%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.4	Minimum Detected	-0.916
Maximum Detected	92	Maximum Detected	4.522
Mean of Detected	10.35	Mean of Detected	1.036
SD of Detected	21.29	SD of Detected	1.493
Minimum Non-Detect	0.53	Minimum Non-Detect	-0.635
Maximum Non-Detect	0.53	Maximum Non-Detect	-0.635
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.516	Shapiro Wilk Test Statistic	0.909
5% Shapiro Wilk Critical Value	0.924	5% Shapiro Wilk Critical Value	0.924
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.998	Mean	0.955
SD	20.99	SD	1.53
95% DL/2 (t) UCL	16.63	95% H-Stat (DL/2) UCL	20
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	7.845	Mean in Log Scale	0.953
SD	22.73	SD in Log Scale	1.533
95% MLE (t) UCL	15.03	Mean in Original Scale	9.998
95% MLE (Tiku) UCL	14.63	SD in Original Scale	20.99
		95% Percentile Bootstrap UCL	16.84
		95% BCA Bootstrap UCL	18.89
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.461	Data do not follow a Discernable Distribution (0.05)	
Theta Star	22.42		
nu star	25.84		
A-D Test Statistic	2.502	Nonparametric Statistics	
5% A-D Critical Value	0.812	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.812	Mean	10.01
5% K-S Critical Value	0.175	SD	20.62
Data not Gamma Distributed at 5% Significance Level		SE of Mean	3.899
		95% KM (t) UCL	16.64
Assuming Gamma Distribution		95% KM (z) UCL	16.42
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	16.63
Minimum	1.00E-09	95% KM (bootstrap t) UCL	23.12
Maximum	92	95% KM (BCA) UCL	16.96
Mean	9.989	95% KM (Percentile Bootstrap) UCL	17.01
Median	1.75	95% KM (Chebyshev) UCL	27
SD	20.99	97.5% KM (Chebyshev) UCL	34.36
k star	0.324	99% KM (Chebyshev) UCL	48.8
Theta star	30.82		
Nu star	18.8	Potential UCLs to Use	
AppChi2	9.971	97.5% KM (Chebyshev) UCL	34.36
95% Gamma Approximate UCL	18.83		
95% Adjusted Gamma UCL	19.59		

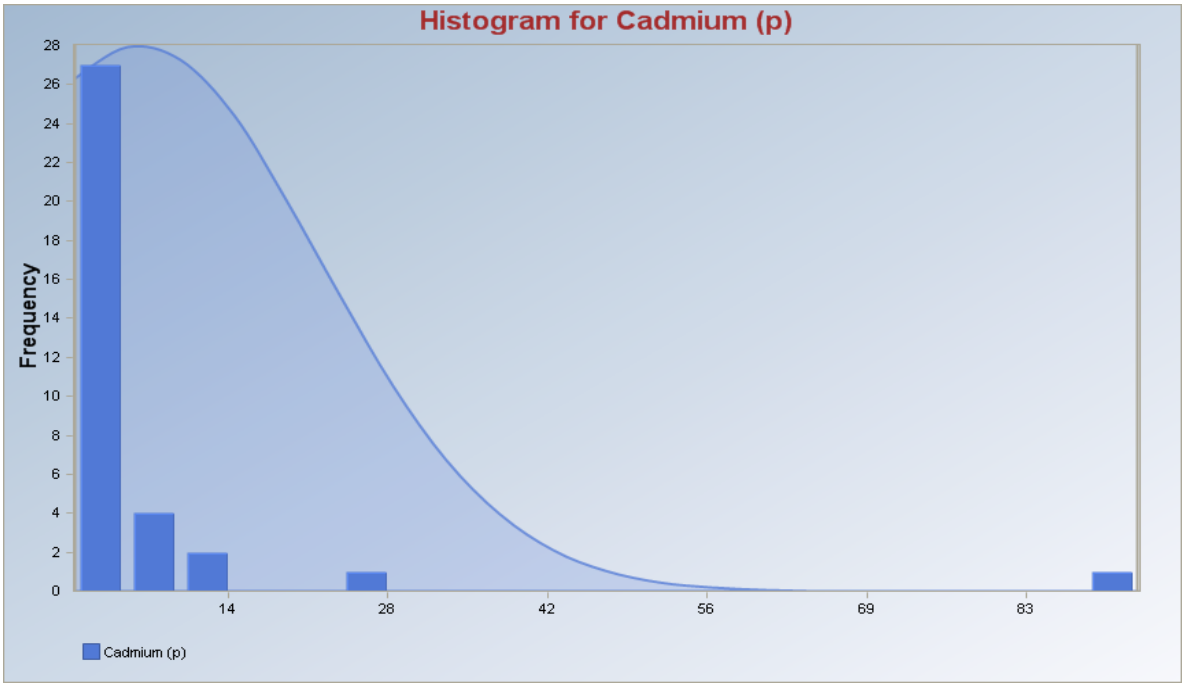
Note: DL/2 is not a recommended method.

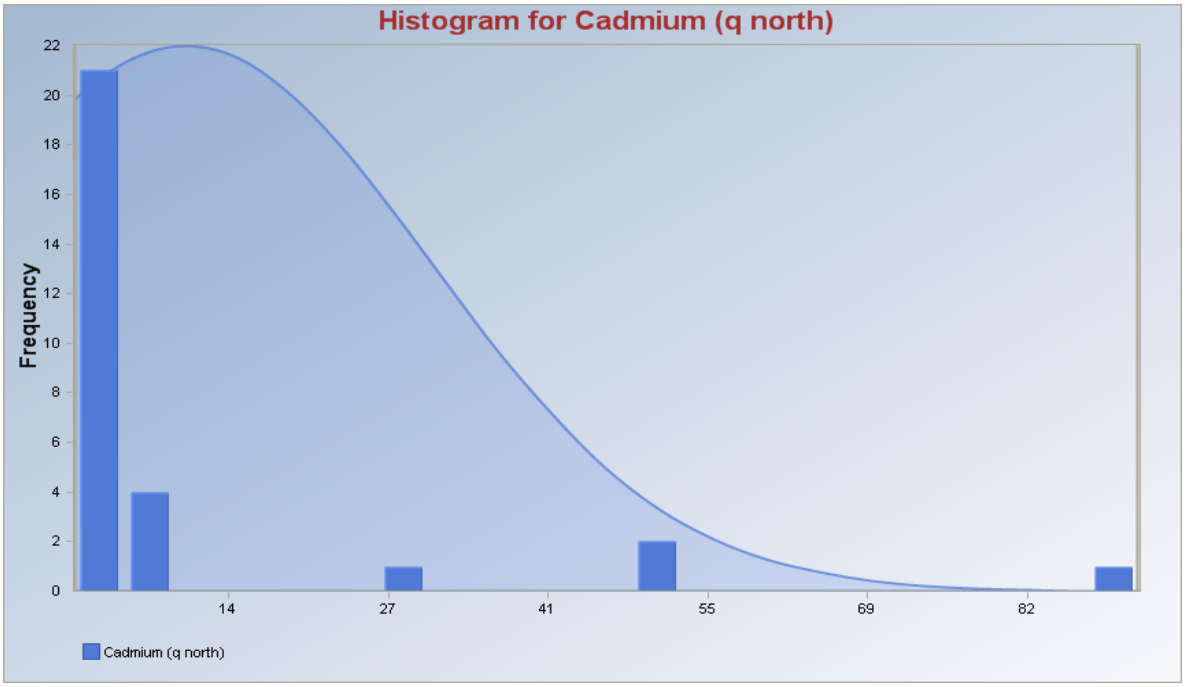
Cadmium (q south)

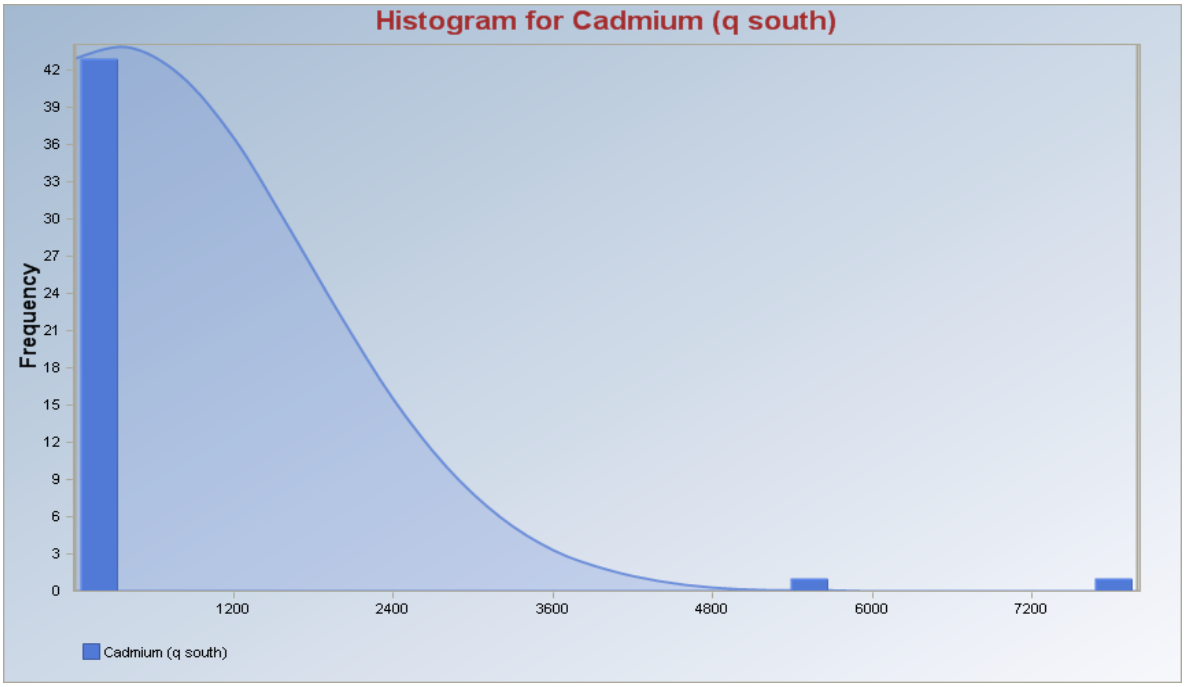
General Statistics			
Number of Valid Data	45	Number of Detected Data	43
Number of Distinct Detected Data	38	Number of Non-Detect Data	2
Number of Missing Values	4	Percent Non-Detects	4.44%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.13	Minimum Detected	-2.04
Maximum Detected	8000	Maximum Detected	8.987
Mean of Detected	330.7	Mean of Detected	1.875
SD of Detected	1479	SD of Detected	2.163
Minimum Non-Detect	0.47	Minimum Non-Detect	-0.755
Maximum Non-Detect	0.48	Maximum Non-Detect	-0.734
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	40
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	11.11%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.242	Shapiro Wilk Test Statistic	0.896
5% Shapiro Wilk Critical Value	0.943	5% Shapiro Wilk Critical Value	0.943
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	316	Mean	1.728
SD	1446	SD	2.223
95% DL/2 (t) UCL	678.3	95% H-Stat (DL/2) UCL	231.1
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	187.6	Mean in Log Scale	1.707
SD	1532	SD in Log Scale	2.254
95% MLE (t) UCL	571.2	Mean in Original Scale	316
95% MLE (Tiku) UCL	541.6	SD in Original Scale	1446
		95% Percentile Bootstrap UCL	719.7
		95% BCA Bootstrap UCL	920.3
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.191	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1728		
nu star	16.46		
A-D Test Statistic	8.406	Nonparametric Statistics	
5% A-D Critical Value	0.911	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.911	Mean	316.1
5% K-S Critical Value	0.15	SD	1430
Data not Gamma Distributed at 5% Significance Level		SE of Mean	215.7
		95% KM (t) UCL	678.5
Assuming Gamma Distribution		95% KM (z) UCL	670.8
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	678.3
Minimum	1.00E-09	95% KM (bootstrap t) UCL	23650
Maximum	8000	95% KM (BCA) UCL	746.4
Mean	316	95% KM (Percentile Bootstrap) UCL	674.4
Median	4.9	95% KM (Chebyshev) UCL	1256
SD	1446	97.5% KM (Chebyshev) UCL	1663
k star	0.161	99% KM (Chebyshev) UCL	2462
Theta star	1966		
Nu star	14.47	Potential UCLs to Use	
AppChi2	6.893	99% KM (Chebyshev) UCL	2462
95% Gamma Approximate UCL	663.3		
95% Adjusted Gamma UCL	680.5		

Note: DL/2 is not a recommended method.


Histogram for Cadmium (o)
Frequency
0
1
2
3
4
5
6
7
8
9
10
11
12
12
25
37
50
62
75
87
100
112
125
137
150
162
175
187
200
212
225
237
249
Cadmium (o)


Histogram for Cadmium (p)
Frequency
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
14
28
42
56
69
83
Cadmium (p)


Histogram for Cadmium (q north)
Frequency
22
20
18
16
14
12
10
8
6
4
2
0
14
27
41
55
69
82
Cadmium (q north)


Histogram for Cadmium (q south)
Frequency
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
1200
2400
3600
4800
6000
7200
Cadmium (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Chlorobenzene (o)

General Statistics			
Number of Valid Data	14	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	6
Number of Missing Values	3	Percent Non-Detects	42.86%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.065	Minimum Detected	-2.733
Maximum Detected	760	Maximum Detected	6.633
Mean of Detected	188.9	Mean of Detected	2.452
SD of Detected	297.3	SD of Detected	3.755
Minimum Non-Detect	0.0037	Minimum Non-Detect	-5.599
Maximum Non-Detect	0.0098	Maximum Non-Detect	-4.625

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	42.86%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.689	Shapiro Wilk Test Statistic	0.857
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	107.9	Mean	-1.182
SD	238.8	SD	5.158
95% DL/2 (t) UCL	220.9	95% H-Stat (DL/2) UCL	7.25E+10
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.589
		SD in Log Scale	5.572
		Mean in Original Scale	107.9
		SD in Original Scale	238.8
		95% Percentile Bootstrap UCL	219.6
		95% BCA Bootstrap UCL	271.4
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.242	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	780.2		
nu star	3.873		
A-D Test Statistic	0.433	Nonparametric Statistics	
5% A-D Critical Value	0.815	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.815	Mean	108
5% K-S Critical Value	0.32	SD	230.1
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	65.74
		95% KM (t) UCL	224.4
Assuming Gamma Distribution		95% KM (z) UCL	216.1
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	220.9
Minimum	0.065	95% KM (bootstrap t) UCL	906.2
Maximum	760	95% KM (BCA) UCL	231.9
Mean	123.5	95% KM (Percentile Bootstrap) UCL	215.7
Median	36.33	95% KM (Chebyshev) UCL	394.5
SD	231.8	97.5% KM (Chebyshev) UCL	518.5
k star	0.328	99% KM (Chebyshev) UCL	762
Theta star	376.1		
Nu star	9.195	Potential UCLs to Use	
AppChi2	3.445	95% KM (BCA) UCL	231.9
95% Gamma Approximate UCL	329.6		
95% Adjusted Gamma UCL	379.3		

Note: DL/2 is not a recommended method.

Chlorobenzene (q central)

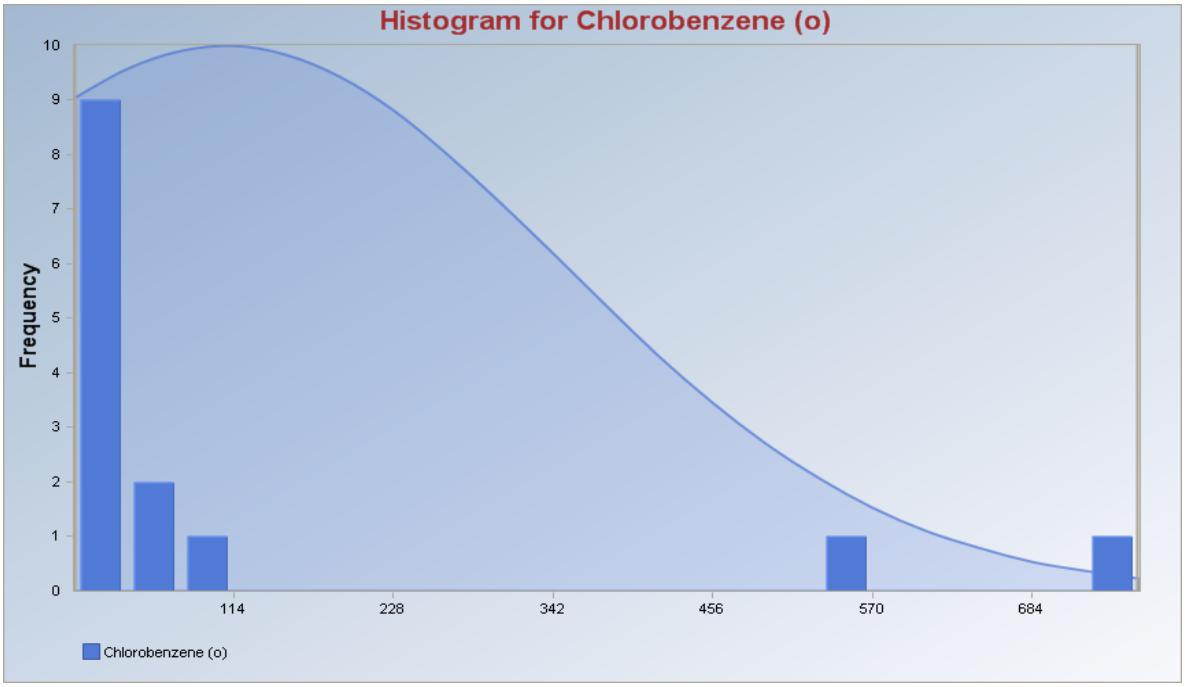
General Statistics			
Number of Valid Data	45	Number of Detected Data	20
Number of Distinct Detected Data	20	Number of Non-Detect Data	25
Number of Missing Values	5	Percent Non-Detects	55.56%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0013	Minimum Detected	-6.645
Maximum Detected	240	Maximum Detected	5.481
Mean of Detected	16.01	Mean of Detected	-1.491
SD of Detected	53.77	SD of Detected	3.397
Minimum Non-Detect	0.0036	Minimum Non-Detect	-5.627
Maximum Non-Detect	0.0073	Maximum Non-Detect	-4.92
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	27
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	18
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	60.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.334	Shapiro Wilk Test Statistic	0.966
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	7.118	Mean	-3.981
SD	36.24	SD	3.174
95% DL/2 (t) UCL	16.2	95% H-Stat (DL/2) UCL	23.04
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.115
		SD in Log Scale	4.031
		Mean in Original Scale	7.117
		SD in Original Scale	36.24
		95% Percentile Bootstrap UCL	17.62
		95% BCA Bootstrap UCL	23.36
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.183	Data appear Lognormal at 5% Significance Level	
Theta Star	87.54		
nu star	7.317		
A-D Test Statistic	1.594	Nonparametric Statistics	
5% A-D Critical Value	0.898	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.898	Mean	7.118
5% K-S Critical Value	0.215	SD	35.84
Data not Gamma Distributed at 5% Significance Level		SE of Mean	5.481
		95% KM (t) UCL	16.33
Assuming Gamma Distribution		95% KM (z) UCL	16.13
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	16.2
Minimum	1.00E-09	95% KM (bootstrap t) UCL	59.96
Maximum	240	95% KM (BCA) UCL	18.22
Mean	16.51	95% KM (Percentile Bootstrap) UCL	17.06
Median	18.45	95% KM (Chebyshev) UCL	31.01
SD	35.53	97.5% KM (Chebyshev) UCL	41.35
k star	0.283	99% KM (Chebyshev) UCL	61.65
Theta star	58.26		
Nu star	25.5	Potential UCLs to Use	
AppChi2	15	99% KM (Chebyshev) UCL	61.65
95% Gamma Approximate UCL	28.08		
95% Adjusted Gamma UCL	28.59		

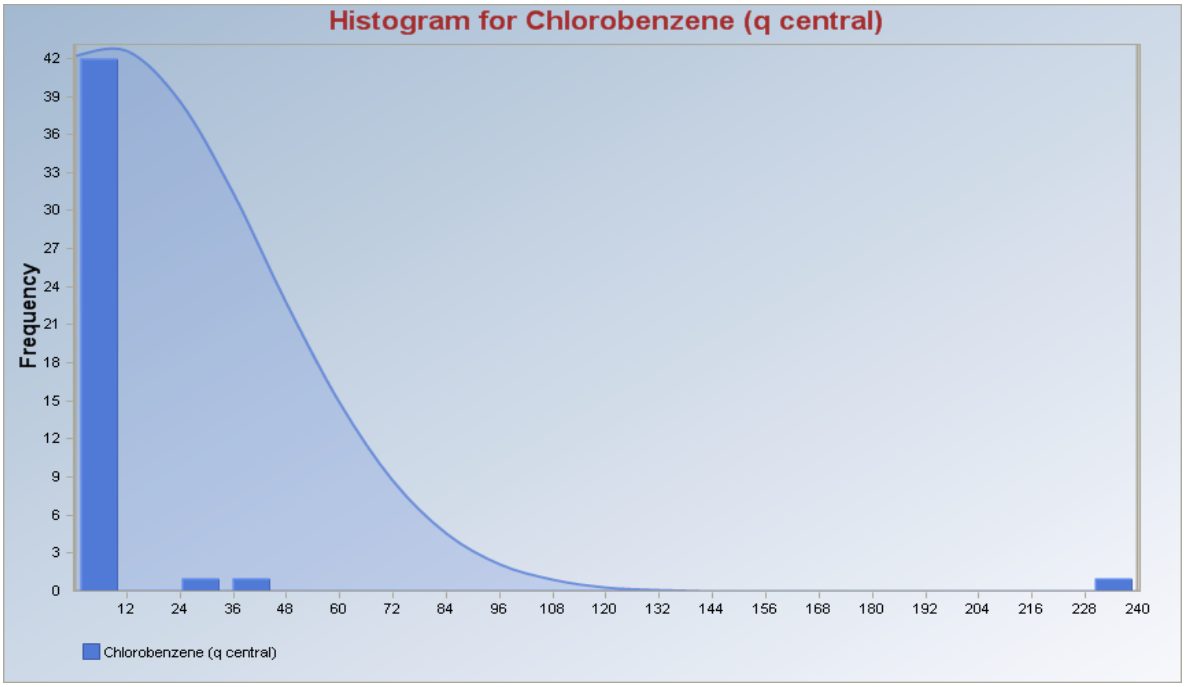
Note: DL/2 is not a recommended method.

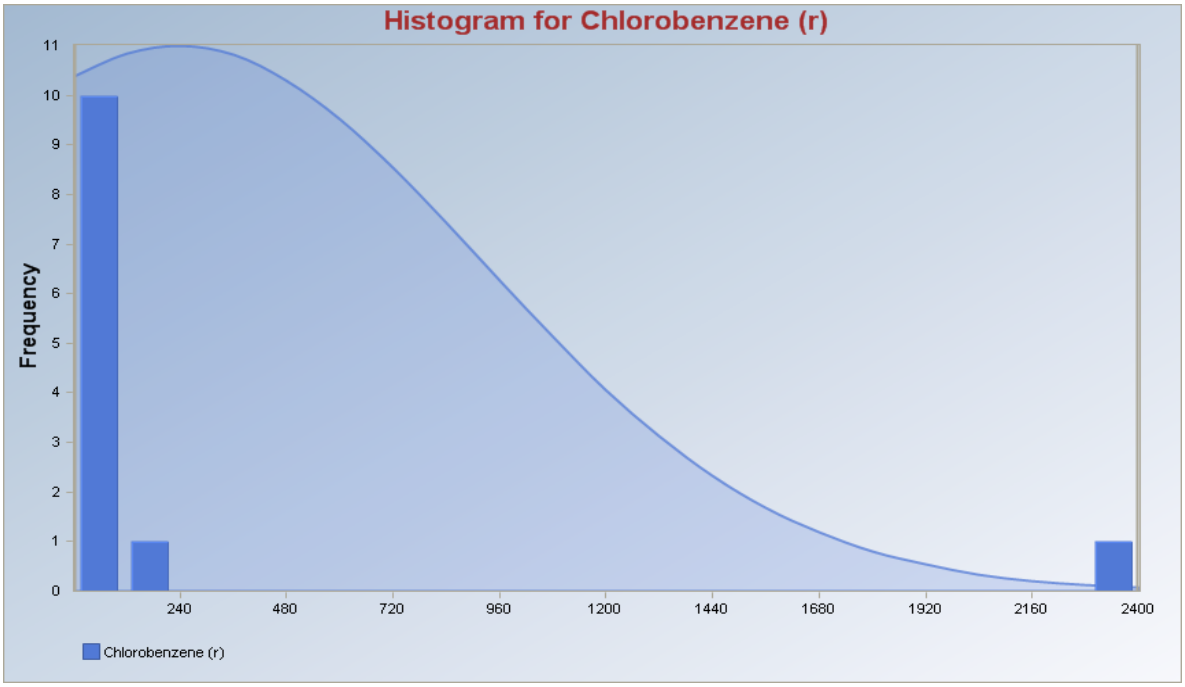
Chlorobenzene (r)

General Statistics			
Number of Valid Data	12	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	1
Number of Missing Values	4	Percent Non-Detects	8.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0014	Minimum Detected	-6.571
Maximum Detected	2400	Maximum Detected	7.783
Mean of Detected	254.4	Mean of Detected	-0.507
SD of Detected	715	SD of Detected	5.48
Minimum Non-Detect	0.0071	Minimum Non-Detect	-4.948
Maximum Non-Detect	0.0071	Maximum Non-Detect	-4.948
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.412	Shapiro Wilk Test Statistic	0.863
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	233.2	Mean	-0.935
SD	685.7	SD	5.431
95% DL/2 (t) UCL	588.7	95% H-Stat (DL/2) UCL	1.74E+14
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.945
		SD in Log Scale	5.441
		Mean in Original Scale	233.2
		SD in Original Scale	685.7
		95% Percentile Bootstrap UCL	620.6
		95% BCA Bootstrap UCL	830.9
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.155	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1641		
nu star	3.41		
A-D Test Statistic	0.72	Nonparametric Statistics	
5% A-D Critical Value	0.885	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.885	Mean	233.2
5% K-S Critical Value	0.285	SD	656.5
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	198.8
		95% KM (t) UCL	590.1
Assuming Gamma Distribution		95% KM (z) UCL	560.1
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	588.7
Minimum	1.00E-09	95% KM (bootstrap t) UCL	4510
Maximum	2400	95% KM (BCA) UCL	630.9
Mean	233.2	95% KM (Percentile Bootstrap) UCL	620
Median	0.0595	95% KM (Chebyshev) UCL	1100
SD	685.7	97.5% KM (Chebyshev) UCL	1474
k star	0.135	99% KM (Chebyshev) UCL	2211
Theta star	1731		
Nu star	3.233	Potential UCLs to Use	
AppChi2	0.445	95% KM (Chebyshev) UCL	1100
95% Gamma Approximate UCL	1695		
95% Adjusted Gamma UCL	2343		

Note: DL/2 is not a recommended method.


Histogram for Chlorobenzene (o)
Frequency
10
9
8
7
6
5
4
3
2
1
0
114
228
342
456
570
684
Chlorobenzene (o)


Histogram for Chlorobenzene (q central)
Frequency
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
12
24
36
48
60
72
84
96
108
120
132
144
156
168
180
192
204
216
228
240
Chlorobenzene (q central)


Histogram for Chlorobenzene (r)
Frequency
11
10
9
8
7
6
5
4
3
2
1
0
240
480
720
960
1200
1440
1680
1920
2160
2400
Chlorobenzene (r)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

Chloroform (r)

General Statistics
Number of Valid Data 12
Number of Distinct Detected Data 5
Number of Missing Values 4
Number of Detected Data 5
Number of Non-Detect Data 7
Percent Non-Detects 58.33%

Raw Statistics
Minimum Detected 0.0028
Maximum Detected 11
Mean of Detected 6.361
SD of Detected 4.338
Minimum Non-Detect 0.0049
Maximum Non-Detect 3.4

Log-transformed Statistics
Minimum Detected -5.878
Maximum Detected 2.398
Mean of Detected 0.442
SD of Detected 3.548
Minimum Non-Detect -5.319
Maximum Non-Detect 1.224

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs
Number treated as Non-Detect 8
Number treated as Detected 4
Single DL Non-Detect Percentage 66.67%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics
Normal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.931
5% Shapiro Wilk Critical Value 0.762
Data appear Normal at 5% Significance Level

Assuming Normal Distribution
DL/2 Substitution Method
Mean 2.793
SD 4.121
95% DL/2 (t) UCL 4.93

Maximum Likelihood Estimate(MLE) Method
Mean 8.162
SD 2.487
95% MLE (t) UCL 9.452
95% MLE (Tiku) UCL 10.37

Gamma Distribution Test with Detected Values Only
k star (bias corrected) 0.316
Theta Star 20.11
nu star 3.163

A-D Test Statistic 1.001
5% A-D Critical Value 0.717
K-S Test Statistic 0.717
5% K-S Critical Value 0.373
Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution
Gamma ROS Statistics using Extrapolated Data
Minimum 0.0028
Maximum 11
Mean 6.361
Median 6.361
SD 2.616
k star 0.795
Theta star 8.003
Nu star 19.08
AppChi2 10.17
95% Gamma Approximate UCL 11.93
95% Adjusted Gamma UCL 13.2
Note: DL/2 is not a recommended method.

Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.633
5% Shapiro Wilk Critical Value 0.762
Data not Lognormal at 5% Significance Level

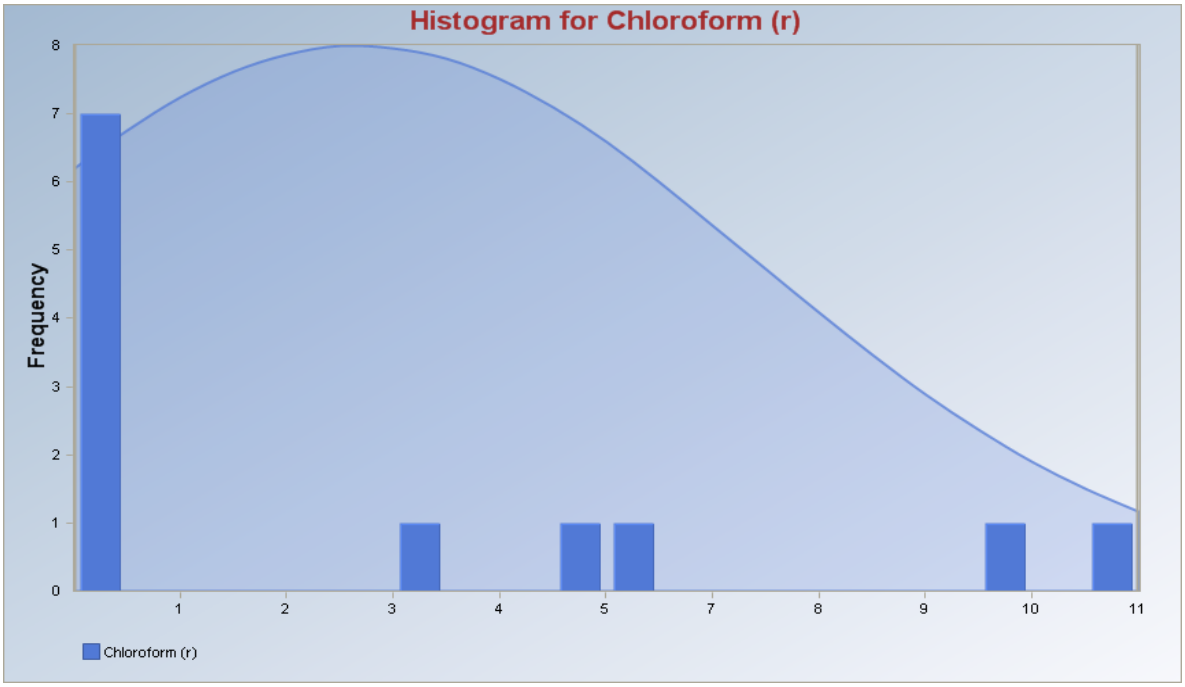
Assuming Lognormal Distribution
DL/2 Substitution Method
Mean -2.704
SD 3.935
95% H-Stat (DL/2) UCL 2883270

Log ROS Method
Mean in Log Scale -2.62
SD in Log Scale 3.448
Mean in Original Scale 2.655
SD in Original Scale 4.188
95% Percentile Bootstrap UCL 4.52
95% BCA Bootstrap UCL 4.87

Data Distribution Test with Detected Values Only
Data appear Normal at 5% Significance Level

Nonparametric Statistics
Kaplan-Meier (KM) Method
Mean 2.652
SD 4.012
SE of Mean 1.295
95% KM (t) UCL 4.977
95% KM (z) UCL 4.782
95% KM (jackknife) UCL 5.952
95% KM (bootstrap t) UCL 4.483
95% KM (BCA) UCL 9.8
95% KM (Percentile Bootstrap) UCL 7.267
95% KM (Chebyshev) UCL 8.296
97.5% KM (Chebyshev) UCL 10.74
99% KM (Chebyshev) UCL 15.54

Potential UCLs to Use
95% KM (t) UCL 4.977
95% KM (Percentile Bootstrap) UCL 7.267


Histogram for Chloroform (r)
Frequency
0
1
2
3
4
5
6
7
8
1
2
3
4
5
7
8
9
10
11
Chloroform (r)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Chromium (q central)

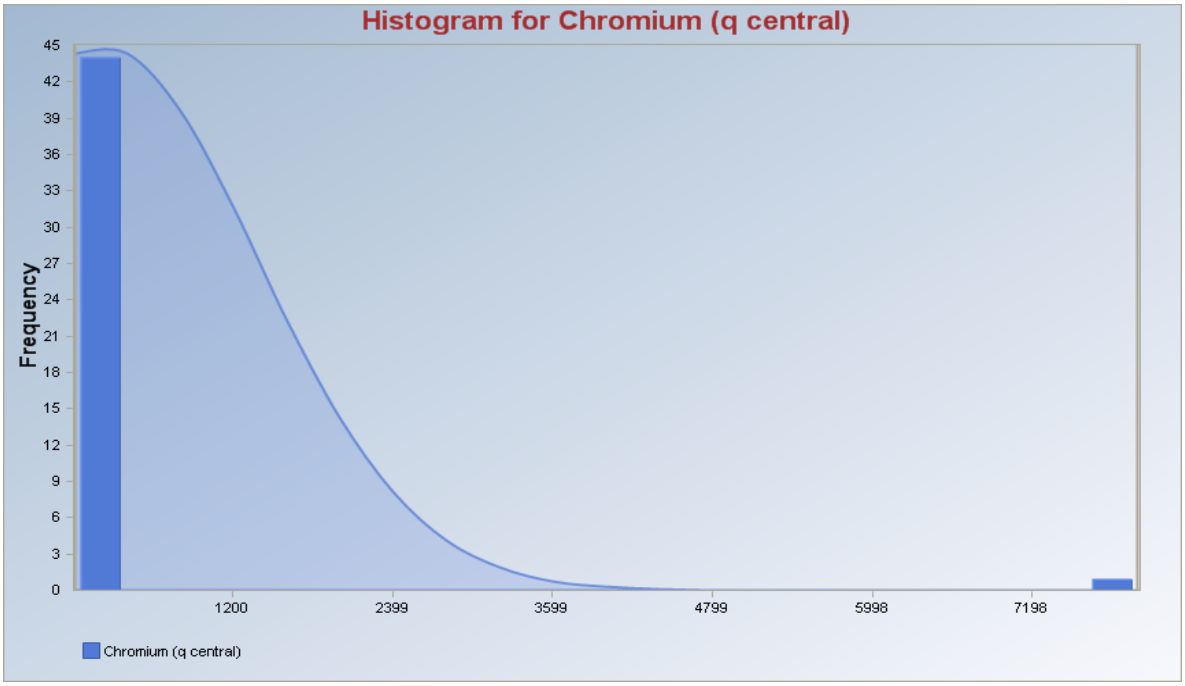
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	30
Number of Missing Values	5		
Raw Statistics		Log-transformed Statistics	
Minimum	2.2	Minimum of Log Data	0.788
Maximum	8000	Maximum of Log Data	8.987
Mean	199	Mean of log Data	2.995
Median	17	SD of log Data	1.129
SD	1189		
Coefficient of Variation	5.977		
Skewness	6.706		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.16	Shapiro Wilk Test Statistic	0.714
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	496.9	95% H-UCL	57.55
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	69.7
95% Adjusted-CLT UCL	680	97.5% Chebyshev (MVUE) UCL	83.87
95% Modified-t UCL	526.5	99% Chebyshev (MVUE) UCL	111.7
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.295	Data do not follow a Discernable Distribution (0.05)	
Theta Star	674.8		
nu star	26.54		
Approximate Chi Square Value (.05)	15.79	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	490.6
Adjusted Chi Square Value	15.52	95% Jackknife UCL	496.9
		95% Standard Bootstrap UCL	488.7
Anderson-Darling Test Statistic	12.35	95% Bootstrap-t UCL	1.92E+04
Anderson-Darling 5% Critical Value	0.862	95% Hall's Bootstrap UCL	7802
Kolmogorov-Smirnov Test Statistic	0.451	95% Percentile Bootstrap UCL	553.5
Kolmogorov-Smirnov 5% Critical Value	0.143	95% BCA Bootstrap UCL	906.6
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	971.9
		97.5% Chebyshev(Mean, Sd) UCL	1306
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1963
95% Approximate Gamma UCL	334.3		
95% Adjusted Gamma UCL	340.3		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	1963

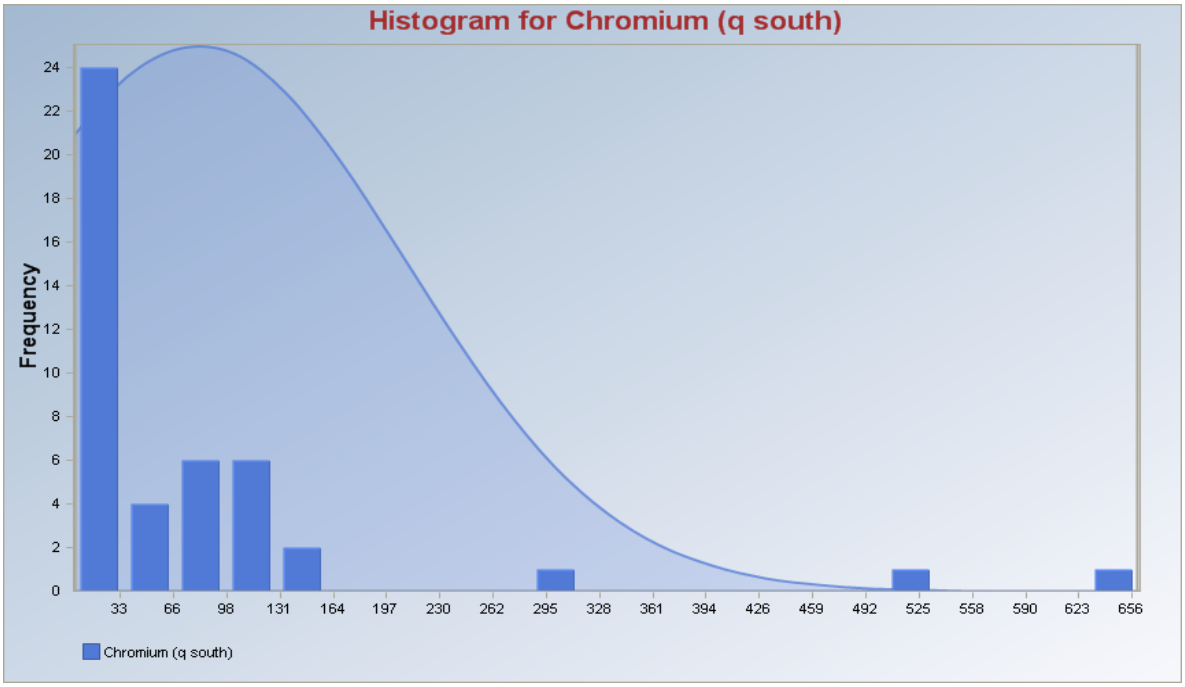
Chromium (q south)

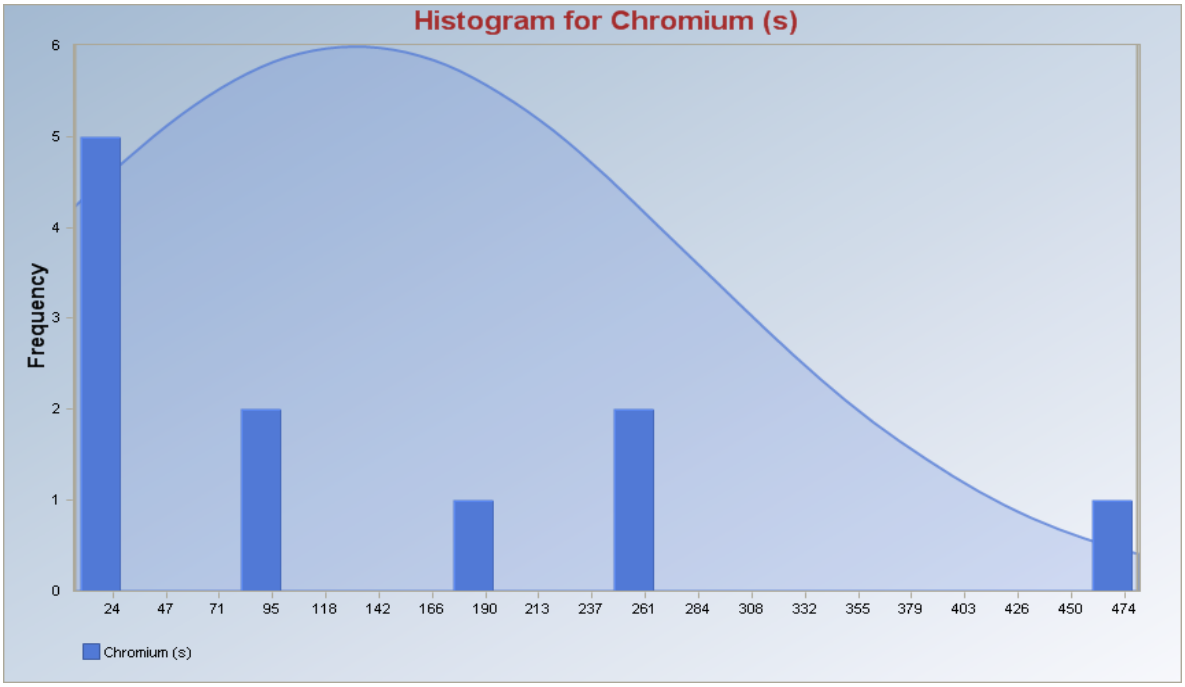
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	37
Number of Missing Values	4		
Raw Statistics		Log-transformed Statistics	
Minimum	4	Minimum of Log Data	1.386
Maximum	660	Maximum of Log Data	6.492
Mean	80.55	Mean of log Data	3.643
Median	31	SD of log Data	1.197
SD	127.8		
Coefficient of Variation	1.587		
Skewness	3.375		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.569	Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	112.6	95% H-UCL	123.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	148.9
95% Adjusted-CLT UCL	122.1	97.5% Chebyshev (MVUE) UCL	180.4
95% Modified-t UCL	114.2	99% Chebyshev (MVUE) UCL	242.2
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.758	Data appear Lognormal at 5% Significance Level	
Theta Star	106.3		
nu star	68.23		
Approximate Chi Square Value (.05)	50.21	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	111.9
Adjusted Chi Square Value	49.7	95% Jackknife UCL	112.6
		95% Standard Bootstrap UCL	111.2
Anderson-Darling Test Statistic	1.611	95% Bootstrap-t UCL	140.4
Anderson-Darling 5% Critical Value	0.787	95% Hall's Bootstrap UCL	258.8
Kolmogorov-Smirnov Test Statistic	0.158	95% Percentile Bootstrap UCL	114
Kolmogorov-Smirnov 5% Critical Value	0.137	95% BCA Bootstrap UCL	124.7
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	163.6
		97.5% Chebyshev(Mean, Sd) UCL	199.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	270.2
95% Approximate Gamma UCL	109.4		
95% Adjusted Gamma UCL	110.6		
Potential UCL to Use		Use 95% H-UCL	123.9

Chromium (s)

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Number of Missing Values	3		
Raw Statistics		Log-transformed Statistics	
Minimum	6.2	Minimum of Log Data	1.825
Maximum	480	Maximum of Log Data	6.174
Mean	132	Mean of log Data	4.05
Median	96	SD of log Data	1.53
SD	150.2		
Coefficient of Variation	1.138		
Skewness	1.368		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.824	Shapiro Wilk Test Statistic	0.919
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	214	95% H-UCL	1343
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	486.1
95% Adjusted-CLT UCL	226.4	97.5% Chebyshev (MVUE) UCL	629.9
95% Modified-t UCL	217.2	99% Chebyshev (MVUE) UCL	912.5
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.586	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	225.2		
nu star	12.89		
Approximate Chi Square Value (.05)	5.82	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	206.5
Adjusted Chi Square Value	5.066	95% Jackknife UCL	214
		95% Standard Bootstrap UCL	202
Anderson-Darling Test Statistic	0.401	95% Bootstrap-t UCL	244.7
Anderson-Darling 5% Critical Value	0.765	95% Hall's Bootstrap UCL	236.3
Kolmogorov-Smirnov Test Statistic	0.222	95% Percentile Bootstrap UCL	207.3
Kolmogorov-Smirnov 5% Critical Value	0.265	95% BCA Bootstrap UCL	219.1
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	329.4
		97.5% Chebyshev(Mean, Sd) UCL	414.8
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	582.6
95% Approximate Gamma UCL	292.3		
95% Adjusted Gamma UCL	335.8		
Potential UCL to Use		Use 95% Approximate Gamma UCL	292.3


Histogram for Chromium (q central)
Frequency
45
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
1200
2399
3599
4799
5998
7198
Chromium (q central)


Histogram for Chromium (q south)
Frequency
0
2
4
6
8
10
12
14
16
18
20
22
24
33
66
98
131
164
197
230
262
295
328
361
394
426
459
492
525
558
590
623
656
Chromium (q south)


Histogram for Chromium (s)
Frequency
0
1
2
3
4
5
6
24
47
71
95
118
142
166
190
213
237
261
284
308
332
355
379
403
426
450
474
Chromium (s)

General UCL Statistics for Data Sets with Non-Detects

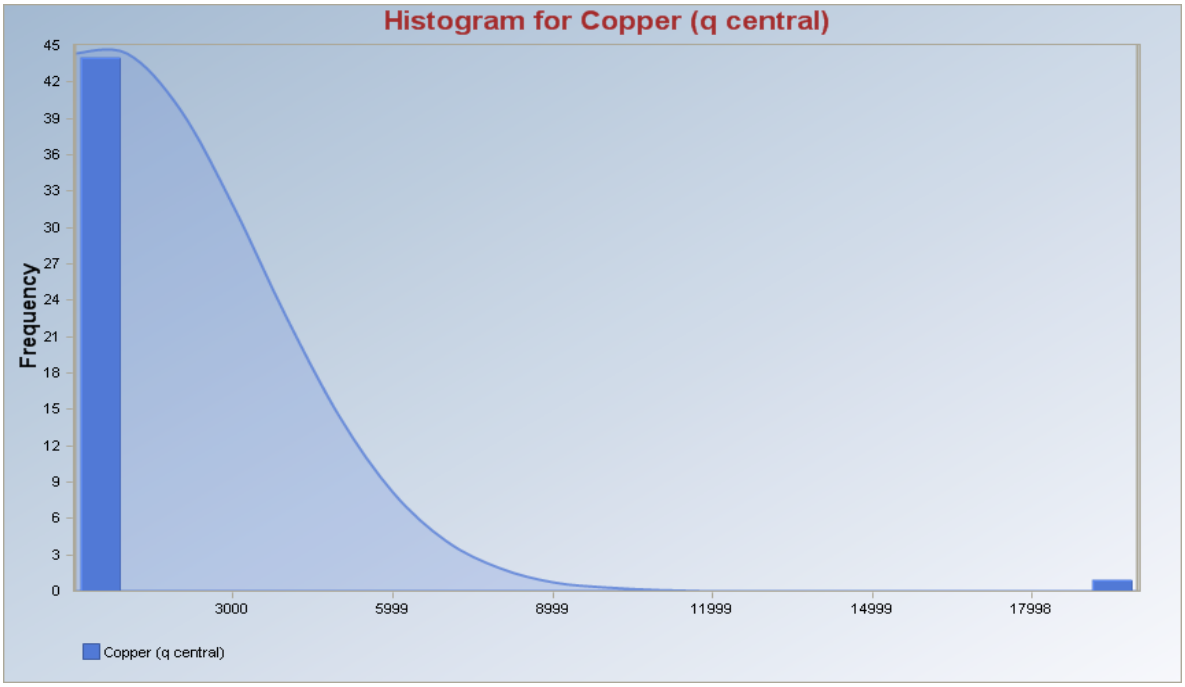
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

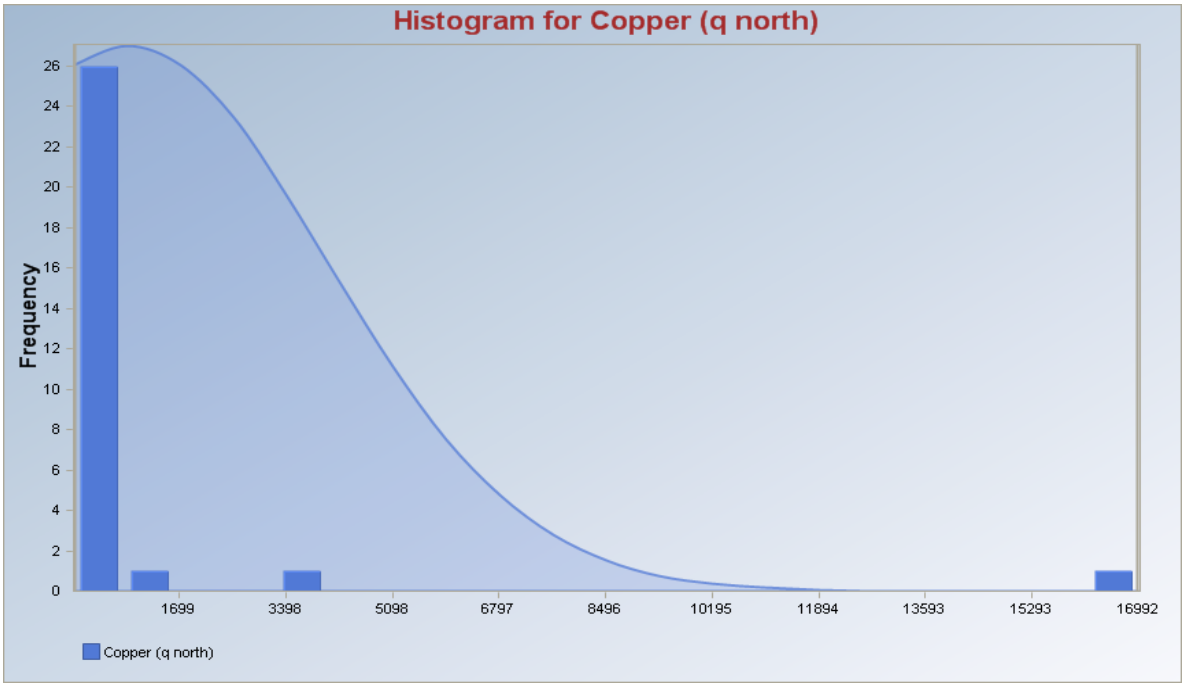
Copper (q central)

General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	37
Number of Missing Values	5		
Raw Statistics		Log-transformed Statistics	
Minimum	1.75	Minimum of Log Data	0.56
Maximum	20000	Maximum of Log Data	9.903
Mean	513.4	Mean of log Data	3.567
Median	27	SD of log Data	1.556
SD	2974		
Coefficient of Variation	5.792		
Skewness	6.688		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.172	Shapiro Wilk Test Statistic	0.887
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1258	95% H-UCL	240.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	263.9
95% Adjusted-CLT UCL	1715	97.5% Chebyshev (MVUE) UCL	329.4
95% Modified-t UCL	1332	99% Chebyshev (MVUE) UCL	458.1
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.261	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1970		
nu star	23.46		
Approximate Chi Square Value (.05)	13.44	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	1243
Adjusted Chi Square Value	13.19	95% Jackknife UCL	1258
		95% Standard Bootstrap UCL	1212
Anderson-Darling Test Statistic	9.054	95% Bootstrap-t UCL	1.80E+04
Anderson-Darling 5% Critical Value	0.878	95% Hall's Bootstrap UCL	11489
Kolmogorov-Smirnov Test Statistic	0.361	95% Percentile Bootstrap UCL	1400
Kolmogorov-Smirnov 5% Critical Value	0.144	95% BCA Bootstrap UCL	2275
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2446
		97.5% Chebyshev(Mean, Sd) UCL	3282
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4924
95% Approximate Gamma UCL	896.3		
95% Adjusted Gamma UCL	913.4		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	4924

Copper (q north)

General Statistics			
Number of Valid Observations	29	Number of Distinct Observations	28
Number of Missing Values	7		
Raw Statistics		Log-transformed Statistics	
Minimum	8.3	Minimum of Log Data	2.116
Maximum	17000	Maximum of Log Data	9.741
Mean	854.9	Mean of log Data	4.399
Median	44	SD of log Data	1.803
SD	3189		
Coefficient of Variation	3.73		
Skewness	4.995		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.288	Shapiro Wilk Test Statistic	0.895
Shapiro Wilk Critical Value	0.926	Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1862	95% H-UCL	1389
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1057
95% Adjusted-CLT UCL	2416	97.5% Chebyshev (MVUE) UCL	1358
95% Modified-t UCL	1954	99% Chebyshev (MVUE) UCL	1948
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.287	Data do not follow a Discernable Distribution (0.05)	
Theta Star	2982		
nu star	16.63		
Approximate Chi Square Value (.05)	8.408	Nonparametric Statistics	
Adjusted Level of Significance	0.0407	95% CLT UCL	1829
Adjusted Chi Square Value	8.059	95% Jackknife UCL	1862
		95% Standard Bootstrap UCL	1813
Anderson-Darling Test Statistic	3.981	95% Bootstrap-t UCL	10353
Anderson-Darling 5% Critical Value	0.859	95% Hall's Bootstrap UCL	7464
Kolmogorov-Smirnov Test Statistic	0.292	95% Percentile Bootstrap UCL	1939
Kolmogorov-Smirnov 5% Critical Value	0.177	95% BCA Bootstrap UCL	2783
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3436
		97.5% Chebyshev(Mean, Sd) UCL	4553
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6746
95% Approximate Gamma UCL	1691		
95% Adjusted Gamma UCL	1764		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	6746


Histogram for Copper (q central)
Frequency
45
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
3000
5999
8999
11999
14999
17998
Copper (q central)


Histogram for Copper (q north)
Frequency
26
24
22
20
18
16
14
12
10
8
6
4
2
0
1699
3398
5098
6797
8496
10195
11894
13593
15293
16992
Copper (q north)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Dibenzo(a,h)anthracene (o)

General Statistics			
Number of Valid Data	13	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	8
Number of Missing Values	4	Percent Non-Detects	61.54%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.078	Minimum Detected	-2.551
Maximum Detected	6	Maximum Detected	1.792
Mean of Detected	1.998	Mean of Detected	-0.39
SD of Detected	2.534	SD of Detected	1.897
Minimum Non-Detect	0.39	Minimum Non-Detect	-0.942
Maximum Non-Detect	39.5	Maximum Non-Detect	3.676
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	13
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.834	Shapiro Wilk Test Statistic	0.923
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.38	Mean	-0.464
SD	6.167	SD	1.9
95% DL/2 (t) UCL	6.429	95% H-Stat (DL/2) UCL	64.01
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.421
		SD in Log Scale	1.465
		Mean in Original Scale	0.859
		SD in Original Scale	1.738
		95% Percentile Bootstrap UCL	1.727
		95% BCA Bootstrap UCL	2.037
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.363	Data appear Normal at 5% Significance Level	
Theta Star	5.499		
nu star	3.633		
A-D Test Statistic	0.297	Nonparametric Statistics	
5% A-D Critical Value	0.707	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.707	Mean	0.965
5% K-S Critical Value	0.37	SD	1.796
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.605
		95% KM (t) UCL	2.044
Assuming Gamma Distribution		95% KM (z) UCL	1.961
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.985
Minimum	0.078	95% KM (bootstrap t) UCL	5.798
Maximum	6	95% KM (BCA) UCL	3
Mean	1.902	95% KM (Percentile Bootstrap) UCL	2.299
Median	1.565	95% KM (Chebyshev) UCL	3.604
SD	1.489	97.5% KM (Chebyshev) UCL	4.745
k star	1.062	99% KM (Chebyshev) UCL	6.988
Theta star	1.791		
Nu star	27.61	Potential UCLs to Use	
AppChi2	16.62	95% KM (t) UCL	2.044
95% Gamma Approximate UCL	3.159	95% KM (Percentile Bootstrap) UCL	2.299
95% Adjusted Gamma UCL	3.406		

Note: DL/2 is not a recommended method.

Dibenzo(a,h)anthracene (q north)

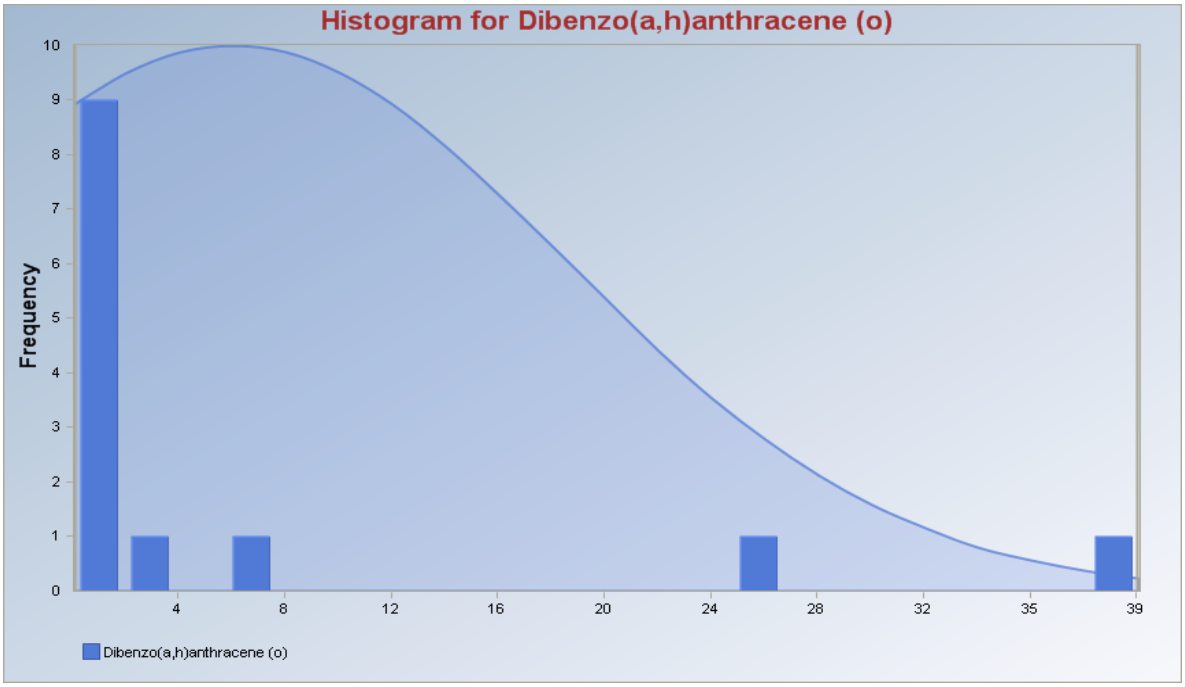
General Statistics			
Number of Valid Data	29	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	19
Number of Missing Values	7	Percent Non-Detects	65.52%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.066	Minimum Detected	-2.718
Maximum Detected	0.4	Maximum Detected	-0.916
Mean of Detected	0.205	Mean of Detected	-1.724
SD of Detected	0.112	SD of Detected	0.572
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	230	Maximum Non-Detect	5.438
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	29
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.922	Shapiro Wilk Test Statistic	0.967
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.892	Mean	-0.789
SD	21.28	SD	1.575
95% DL/2 (t) UCL	11.61	95% H-Stat (DL/2) UCL	9.162
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.783
		SD in Log Scale	0.341
		Mean in Original Scale	0.178
		SD in Original Scale	0.0681
		95% Percentile Bootstrap UCL	0.2
		95% BCA Bootstrap UCL	0.205
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.675	Data appear Normal at 5% Significance Level	
Theta Star	0.0767		
nu star	53.49		
A-D Test Statistic	0.212	Nonparametric Statistics	
5% A-D Critical Value	0.73	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.73	Mean	0.194
5% K-S Critical Value	0.268	SD	0.0984
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0303
		95% KM (t) UCL	0.245
Assuming Gamma Distribution		95% KM (z) UCL	0.243
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.246
Minimum	0.066	95% KM (bootstrap t) UCL	0.253
Maximum	0.4	95% KM (BCA) UCL	0.248
Mean	0.219	95% KM (Percentile Bootstrap) UCL	0.243
Median	0.229	95% KM (Chebyshev) UCL	0.326
SD	0.0653	97.5% KM (Chebyshev) UCL	0.383
k star	8.959	99% KM (Chebyshev) UCL	0.495
Theta star	0.0244		
Nu star	519.6	Potential UCLs to Use	
AppChi2	467.8	95% KM (t) UCL	0.245
95% Gamma Approximate UCL	0.243	95% KM (Percentile Bootstrap) UCL	0.243
95% Adjusted Gamma UCL	0.245		

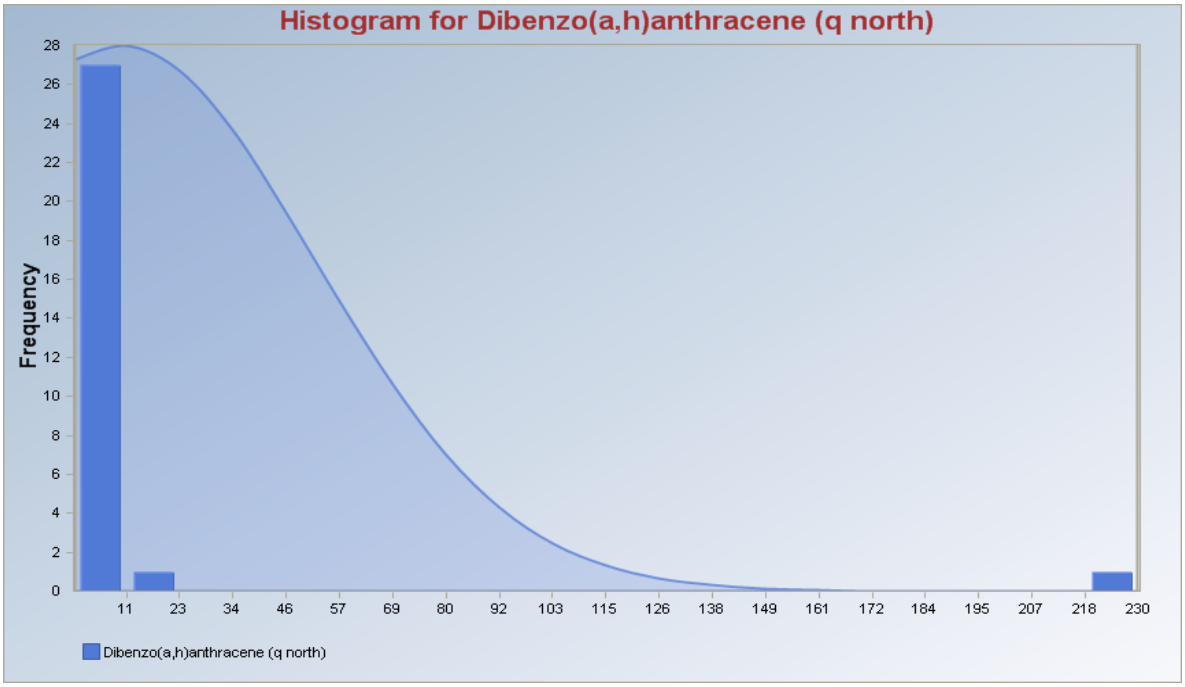
Note: DL/2 is not a recommended method.

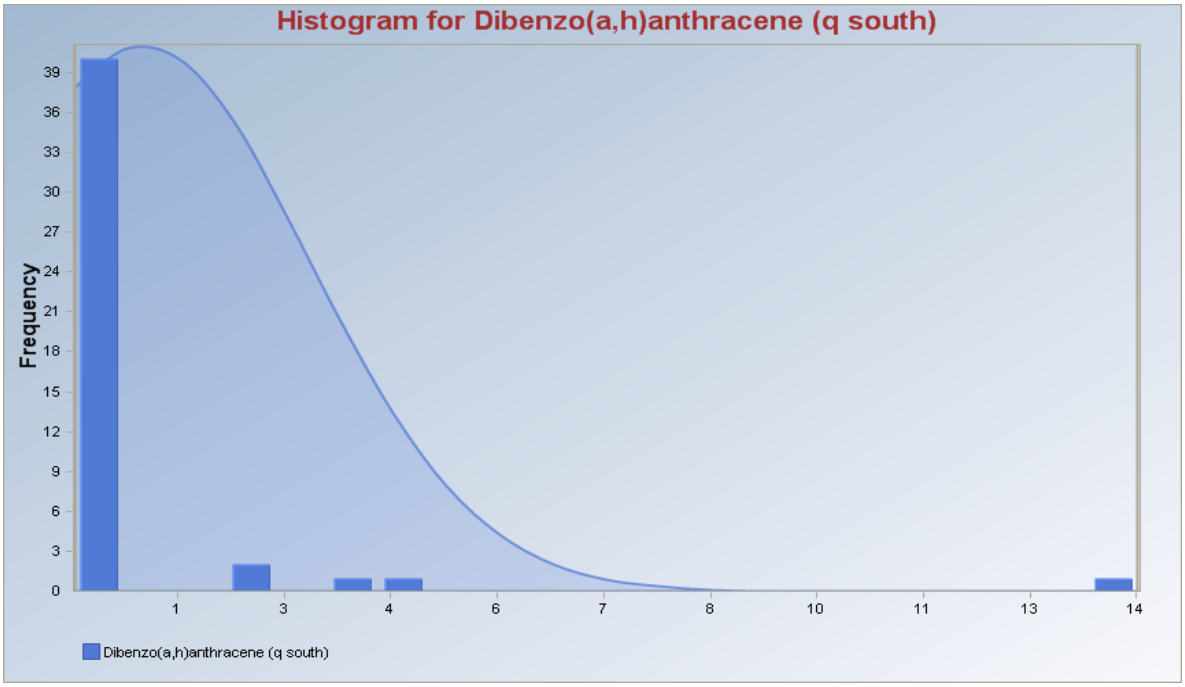
Dibenzo(a,h)anthracene (q south)

General Statistics			
Number of Valid Data	45	Number of Detected Data	13
Number of Distinct Detected Data	13	Number of Non-Detect Data	32
Number of Missing Values	4	Percent Non-Detects	71.11%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.03	Minimum Detected	-3.507
Maximum Detected	2.8	Maximum Detected	1.03
Mean of Detected	0.362	Mean of Detected	-1.91
SD of Detected	0.743	SD of Detected	1.204
Minimum Non-Detect	0.34	Minimum Non-Detect	-1.079
Maximum Non-Detect	14	Maximum Non-Detect	2.639
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	45
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.456	Shapiro Wilk Test Statistic	0.931
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.511	Mean	-1.452
SD	1.145	SD	1.008
95% DL/2 (t) UCL	0.798	95% H-Stat (DL/2) UCL	0.584
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.158
		SD in Log Scale	0.757
		Mean in Original Scale	0.187
		SD in Original Scale	0.407
		95% Percentile Bootstrap UCL	0.306
		95% BCA Bootstrap UCL	0.376
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.573	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.633		
nu star	14.9		
A-D Test Statistic	1.124	Nonparametric Statistics	
5% A-D Critical Value	0.776	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.776	Mean	0.203
5% K-S Critical Value	0.247	SD	0.419
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.0711
		95% KM (t) UCL	0.322
Assuming Gamma Distribution		95% KM (z) UCL	0.319
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.32
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.494
Maximum	2.8	95% KM (BCA) UCL	0.332
Mean	0.345	95% KM (Percentile Bootstrap) UCL	0.324
Median	0.274	95% KM (Chebyshev) UCL	0.512
SD	0.456	97.5% KM (Chebyshev) UCL	0.646
k star	0.271	99% KM (Chebyshev) UCL	0.91
Theta star	1.275		
Nu star	24.36	Potential UCLs to Use	
AppChi2	14.12	95% KM (t) UCL	0.322
95% Gamma Approximate UCL	0.595		
95% Adjusted Gamma UCL	0.606		

Note: DL/2 is not a recommended method.


Histogram for Dibenzo(a,h)anthracene (o)
Frequency
10
9
8
7
6
5
4
3
2
1
0
4
8
12
16
20
24
28
32
35
39
Dibenzo(a,h)anthracene (o)


Histogram for Dibenzo(a,h)anthracene (q north)
Frequency
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
11
23
34
46
57
69
80
92
103
115
126
138
149
161
172
184
195
207
218
230
Dibenzo(a,h)anthracene (q north)


Histogram for Dibenzo(a,h)anthracene (q south)
Frequency
39
36
33
30
27
24
21
18
15
12
9
6
3
0
1
3
4
6
7
8
10
11
13
14
Dibenzo(a,h)anthracene (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

Dichloromethane (s)

General Statistics

Number of Valid Data	11	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	6
Number of Missing Values	3	Percent Non-Detects	54.55%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.1	Minimum Detected	0.742
Maximum Detected	57	Maximum Detected	4.043
Mean of Detected	20.14	Mean of Detected	2.313
SD of Detected	22.79	SD of Detected	1.437
Minimum Non-Detect	0.0045	Minimum Non-Detect	-5.404
Maximum Non-Detect	6.8	Maximum Non-Detect	1.917

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	72.73%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

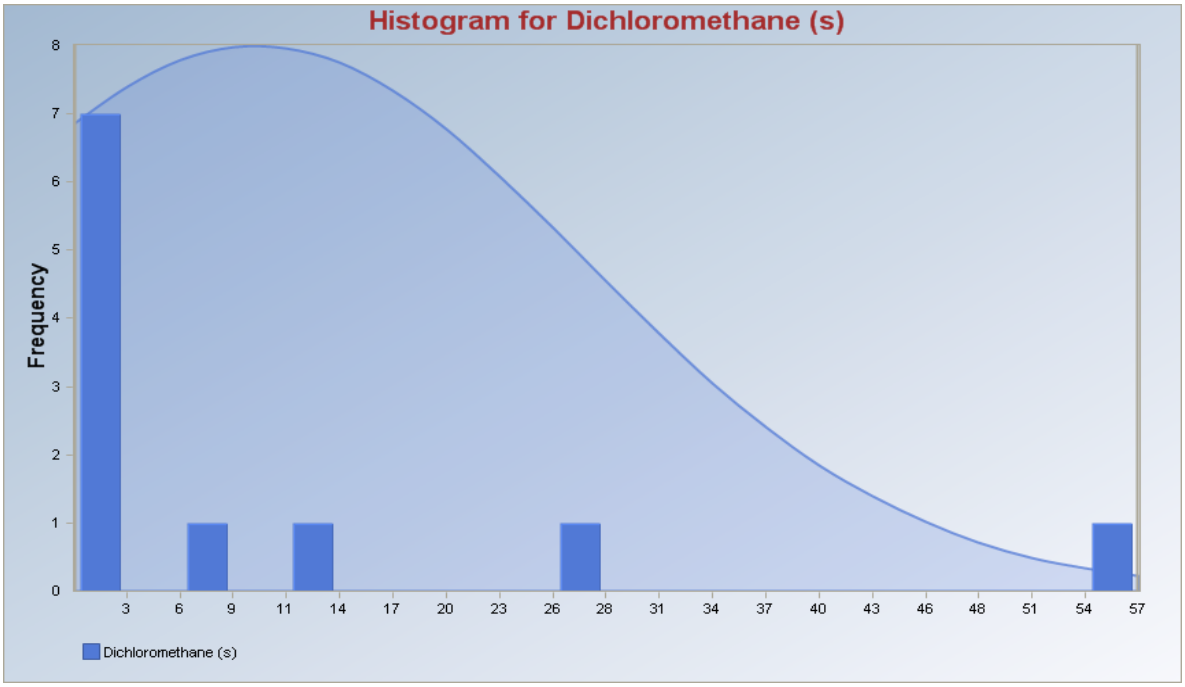
UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.855	Shapiro Wilk Test Statistic	0.915
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.473	Mean	-1.214
SD	17.69	SD	4.092
95% DL/2 (t) UCL	19.14	95% H-Stat (DL/2) UCL	8676606

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.172
		SD in Log Scale	2.281
		Mean in Original Scale	9.279
		SD in Original Scale	17.77
		95% Percentile Bootstrap UCL	18.22
		95% BCA Bootstrap UCL	22.57

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.475	Data appear Normal at 5% Significance Level	
Theta Star	42.44		
nu star	4.745		
A-D Test Statistic	0.293	Nonparametric Statistics	
5% A-D Critical Value	0.695	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.695	Mean	10.31
5% K-S Critical Value	0.366	SD	16.41
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	5.533
		95% KM (t) UCL	20.34
Assuming Gamma Distribution		95% KM (z) UCL	19.41
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	19.54
Minimum	2.1	95% KM (bootstrap t) UCL	33.84
Maximum	57	95% KM (BCA) UCL	28.82
Mean	19.76	95% KM (Percentile Bootstrap) UCL	23.4
Median	20.36	95% KM (Chebyshev) UCL	34.42
SD	14.53	97.5% KM (Chebyshev) UCL	44.86
k star	1.312	99% KM (Chebyshev) UCL	65.36
Theta star	15.06		
Nu star	28.87	Potential UCLs to Use	
AppChi2	17.61	95% KM (t) UCL	20.34
95% Gamma Approximate UCL	32.41	95% KM (Percentile Bootstrap) UCL	23.4
95% Adjusted Gamma UCL	35.25		

Note: DL/2 is not a recommended method.


Histogram for Dichloromethane (s)
Frequency
0
1
2
3
4
5
6
7
8
3
6
9
11
14
17
20
23
26
28
31
34
37
40
43
46
48
51
54
57
Dichloromethane (s)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Dieldrin (o)

General Statistics			
Number of Valid Data	11	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	6
Number of Missing Values	6	Percent Non-Detects	54.55%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.005	Minimum Detected	-5.298
Maximum Detected	3.8	Maximum Detected	1.335
Mean of Detected	1.519	Mean of Detected	-1.764
SD of Detected	1.993	SD of Detected	3.1
Minimum Non-Detect	0.0033	Minimum Non-Detect	-5.714
Maximum Non-Detect	25	Maximum Non-Detect	3.219

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.722	Shapiro Wilk Test Statistic	0.871
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.92	Mean	-2.416
SD	4.836	SD	3.69
95% DL/2 (t) UCL	5.563	95% H-Stat (DL/2) UCL	188553
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.003
		SD in Log Scale	3.977
		Mean in Original Scale	0.692
		SD in Original Scale	1.489
		95% Percentile Bootstrap UCL	1.379
		95% BCA Bootstrap UCL	1.707
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.259	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	5.871		
nu star	2.588		
A-D Test Statistic	0.487	Nonparametric Statistics	
5% A-D Critical Value	0.737	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.737	Mean	0.846
5% K-S Critical Value	0.379	SD	1.527
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.569
		95% KM (t) UCL	1.878
Assuming Gamma Distribution		95% KM (z) UCL	1.783
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.834
Minimum	0.005	95% KM (bootstrap t) UCL	16
Maximum	3.8	95% KM (BCA) UCL	2.169
Mean	1.298	95% KM (Percentile Bootstrap) UCL	2.047
Median	0.258	95% KM (Chebyshev) UCL	3.327
SD	1.522	97.5% KM (Chebyshev) UCL	4.4
k star	0.419	99% KM (Chebyshev) UCL	6.509
Theta star	3.096		
Nu star	9.222	Potential UCLs to Use	
AppChi2	3.462	95% KM (t) UCL	1.878
95% Gamma Approximate UCL	3.458		
95% Adjusted Gamma UCL	4.113		

Note: DL/2 is not a recommended method.

Dieldrin (p)

General Statistics			
Number of Valid Data	24	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	14
Number of Missing Values	23	Percent Non-Detects	58.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.002	Minimum Detected	-6.215
Maximum Detected	1.3	Maximum Detected	0.262
Mean of Detected	0.271	Mean of Detected	-2.818
SD of Detected	0.42	SD of Detected	2.178
Minimum Non-Detect	0.019	Minimum Non-Detect	-3.963
Maximum Non-Detect	4.5	Maximum Non-Detect	1.504
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	24
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.697	Shapiro Wilk Test Statistic	0.952
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.326	Mean	-2.761
SD	0.589	SD	1.917
95% DL/2 (t) UCL	0.532	95% H-Stat (DL/2) UCL	4.291
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-3.903
		SD in Log Scale	1.739
		Mean in Original Scale	0.12
		SD in Original Scale	0.293
		95% Percentile Bootstrap UCL	0.226
		95% BCA Bootstrap UCL	0.271
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.368	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.735		
nu star	7.361		
A-D Test Statistic	0.331	Nonparametric Statistics	
5% A-D Critical Value	0.79	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.79	Mean	0.136
5% K-S Critical Value	0.283	SD	0.304
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0699
		95% KM (t) UCL	0.256
Assuming Gamma Distribution		95% KM (z) UCL	0.251
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.253
Minimum	0.002	95% KM (bootstrap t) UCL	0.382
Maximum	1.3	95% KM (BCA) UCL	0.264
Mean	0.28	95% KM (Percentile Bootstrap) UCL	0.259
Median	0.252	95% KM (Chebyshev) UCL	0.441
SD	0.269	97.5% KM (Chebyshev) UCL	0.573
k star	0.822	99% KM (Chebyshev) UCL	0.832
Theta star	0.341		
Nu star	39.43	Potential UCLs to Use	
AppChi2	26.05	95% KM (t) UCL	0.256
95% Gamma Approximate UCL	0.425		
95% Adjusted Gamma UCL	0.437		

Note: DL/2 is not a recommended method.

Dieldrin (q central)

General Statistics			
Number of Valid Data	37	Number of Detected Data	17
Number of Distinct Detected Data	17	Number of Non-Detect Data	20
Number of Missing Values	13	Percent Non-Detects	54.05%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.20E-04	Minimum Detected	-7.562
Maximum Detected	0.39	Maximum Detected	-0.942
Mean of Detected	0.0436	Mean of Detected	-4.371
SD of Detected	0.0916	SD of Detected	1.718
Minimum Non-Detect	0.00185	Minimum Non-Detect	-6.293
Maximum Non-Detect	0.07	Maximum Non-Detect	-2.659
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	36
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	97.30%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.454	Shapiro Wilk Test Statistic	0.962
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0224	Mean	-5.179
SD	0.0644	SD	1.473
95% DL/2 (t) UCL	0.0403	95% H-Stat (DL/2) UCL	0.0305
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.604
		SD in Log Scale	1.656
		Mean in Original Scale	0.0208
		SD in Original Scale	0.0647
		95% Percentile Bootstrap UCL	0.0406
		95% BCA Bootstrap UCL	0.0523
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.46	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0947		
nu star	15.65		
A-D Test Statistic	0.657	Nonparametric Statistics	
5% A-D Critical Value	0.797	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.797	Mean	0.0212
5% K-S Critical Value	0.221	SD	0.0638
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0108
		95% KM (t) UCL	0.0395
Assuming Gamma Distribution		95% KM (z) UCL	0.039
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0392
Minimum	5.20E-04	95% KM (bootstrap t) UCL	0.0797
Maximum	0.39	95% KM (BCA) UCL	0.0412
Mean	0.0436	95% KM (Percentile Bootstrap) UCL	0.0413
Median	0.0435	95% KM (Chebyshev) UCL	0.0684
SD	0.0611	97.5% KM (Chebyshev) UCL	0.0888
k star	0.949	99% KM (Chebyshev) UCL	0.129
Theta star	0.0459		
Nu star	70.24	Potential UCLs to Use	
AppChi2	51.95	95% KM (t) UCL	0.0395
95% Gamma Approximate UCL	0.0589		
95% Adjusted Gamma UCL	0.0597		

Note: DL/2 is not a recommended method.

Dieldrin (q north)

General Statistics			
Number of Valid Data	22	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	11
Number of Missing Values	14	Percent Non-Detects	50.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00395	Minimum Detected	-5.534
Maximum Detected	3.2	Maximum Detected	1.163
Mean of Detected	0.458	Mean of Detected	-2.924
SD of Detected	0.978	SD of Detected	2.203
Minimum Non-Detect	0.0037	Minimum Non-Detect	-5.599
Maximum Non-Detect	0.2	Maximum Non-Detect	-1.609
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	19
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	86.36%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.549	Shapiro Wilk Test Statistic	0.91
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.238	Mean	-3.944
SD	0.712	SD	2.077
95% DL/2 (t) UCL	0.499	95% H-Stat (DL/2) UCL	1.145
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.946
		SD in Log Scale	2.656
		Mean in Original Scale	0.23
		SD in Original Scale	0.714
		95% Percentile Bootstrap UCL	0.494
		95% BCA Bootstrap UCL	0.667
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.292	Data appear Lognormal at 5% Significance Level	
Theta Star	1.567		
nu star	6.431		
A-D Test Statistic	0.991	Nonparametric Statistics	
5% A-D Critical Value	0.816	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.816	Mean	0.232
5% K-S Critical Value	0.275	SD	0.697
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.156
		95% KM (t) UCL	0.5
Assuming Gamma Distribution		95% KM (z) UCL	0.489
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.493
Minimum	1.00E-09	95% KM (bootstrap t) UCL	1.813
Maximum	3.2	95% KM (BCA) UCL	0.504
Mean	0.309	95% KM (Percentile Bootstrap) UCL	0.501
Median	0.0155	95% KM (Chebyshev) UCL	0.912
SD	0.709	97.5% KM (Chebyshev) UCL	1.206
k star	0.151	99% KM (Chebyshev) UCL	1.783
Theta star	2.047		
Nu star	6.634	Potential UCLs to Use	
AppChi2	1.972	99% KM (Chebyshev) UCL	1.783
95% Gamma Approximate UCL	1.038		
95% Adjusted Gamma UCL	1.145		

Note: DL/2 is not a recommended method.

Dieldrin (q south)

General Statistics			
Number of Valid Data	41	Number of Detected Data	27
Number of Distinct Detected Data	26	Number of Non-Detect Data	14
Number of Missing Values	8	Percent Non-Detects	34.15%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.90E-04	Minimum Detected	-7.849
Maximum Detected	0.825	Maximum Detected	-0.192
Mean of Detected	0.113	Mean of Detected	-3.709
SD of Detected	0.186	SD of Detected	2.188
Minimum Non-Detect	0.0034	Minimum Non-Detect	-5.684
Maximum Non-Detect	0.085	Maximum Non-Detect	-2.465
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	31
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	75.61%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.65	Shapiro Wilk Test Statistic	0.956
5% Shapiro Wilk Critical Value	0.923	5% Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0787	Mean	-4.135
SD	0.158	SD	1.991
95% DL/2 (t) UCL	0.12	95% H-Stat (DL/2) UCL	0.37
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.505
		SD in Log Scale	2.118
		Mean in Original Scale	0.0753
		SD in Original Scale	0.159
		95% Percentile Bootstrap UCL	0.119
		95% BCA Bootstrap UCL	0.133
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.404	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.28		
nu star	21.79		
A-D Test Statistic	0.26	Nonparametric Statistics	
5% A-D Critical Value	0.824	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.824	Mean	0.0761
5% K-S Critical Value	0.18	SD	0.157
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.025
		95% KM (t) UCL	0.118
Assuming Gamma Distribution		95% KM (z) UCL	0.117
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.118
Minimum	3.90E-04	95% KM (bootstrap t) UCL	0.149
Maximum	0.825	95% KM (BCA) UCL	0.123
Mean	0.094	95% KM (Percentile Bootstrap) UCL	0.121
Median	0.042	95% KM (Chebyshev) UCL	0.185
SD	0.153	97.5% KM (Chebyshev) UCL	0.232
k star	0.549	99% KM (Chebyshev) UCL	0.324
Theta star	0.171		
Nu star	45.05	Potential UCLs to Use	
AppChi2	30.65	95% KM (BCA) UCL	0.123
95% Gamma Approximate UCL	0.138		
95% Adjusted Gamma UCL	0.14		

Note: DL/2 is not a recommended method.

Dieldrin (r)

General Statistics			
Number of Valid Data	11	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	4
Number of Missing Values	5	Percent Non-Detects	36.36%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.70E-04	Minimum Detected	-7.902
Maximum Detected	1.8	Maximum Detected	0.588
Mean of Detected	0.503	Mean of Detected	-3.877
SD of Detected	0.821	SD of Detected	3.531
Minimum Non-Detect	0.0035	Minimum Non-Detect	-5.655
Maximum Non-Detect	0.44	Maximum Non-Detect	-0.821

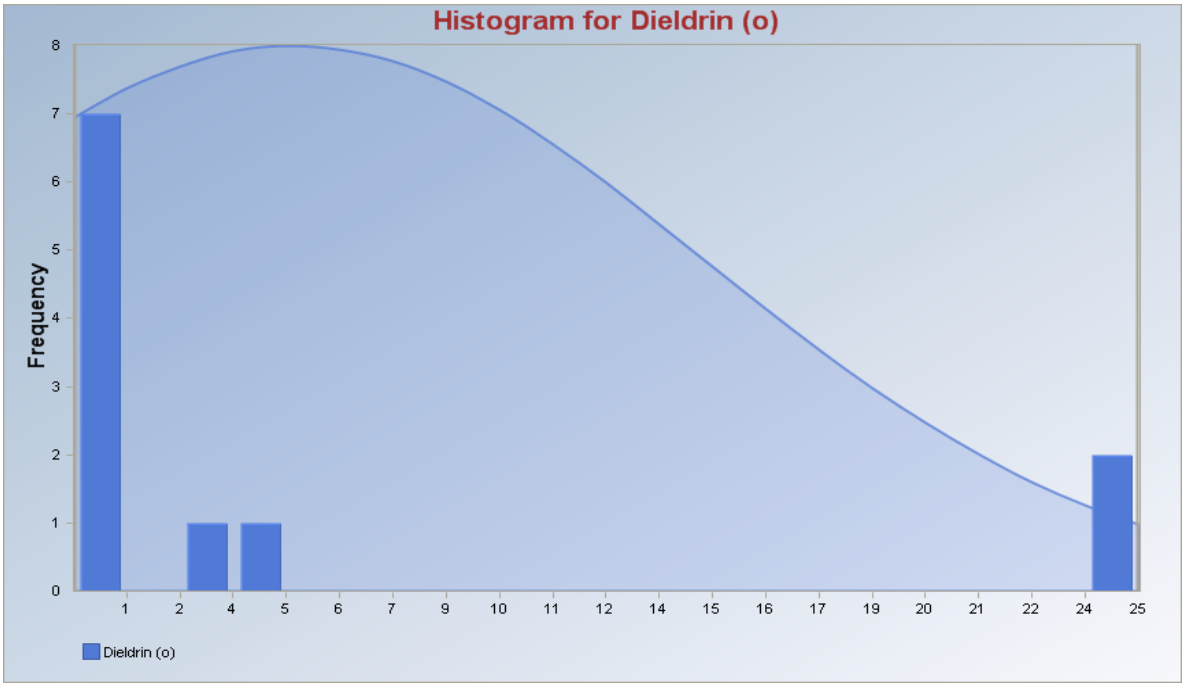
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	81.82%

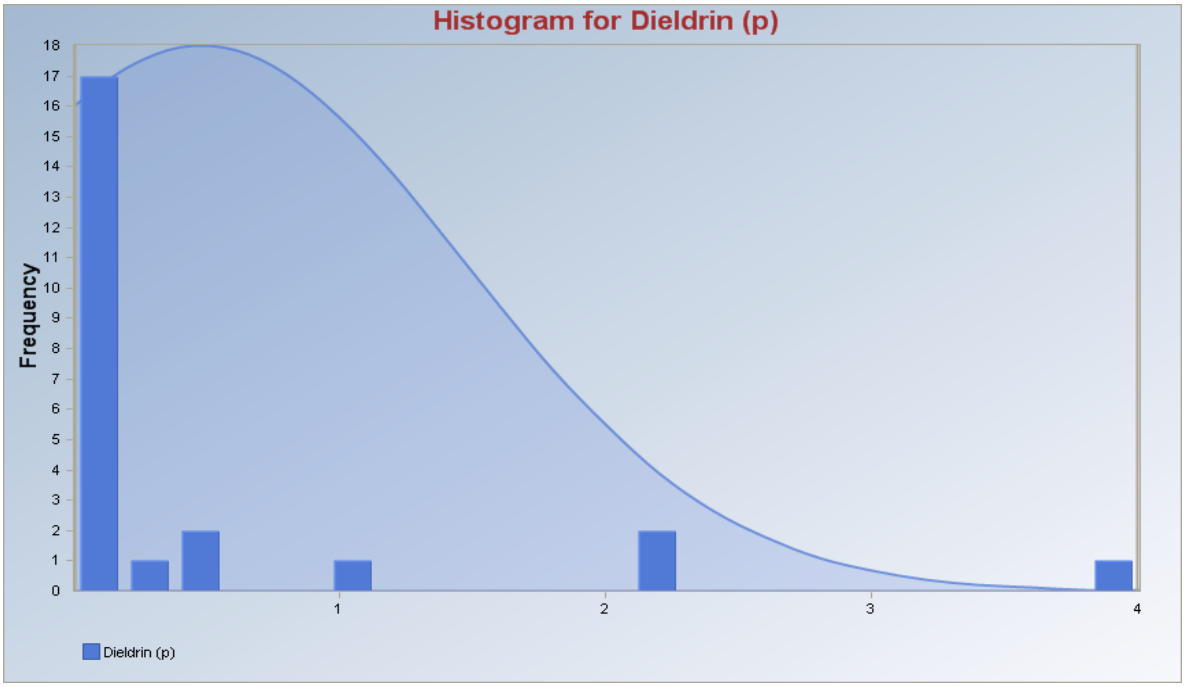
Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

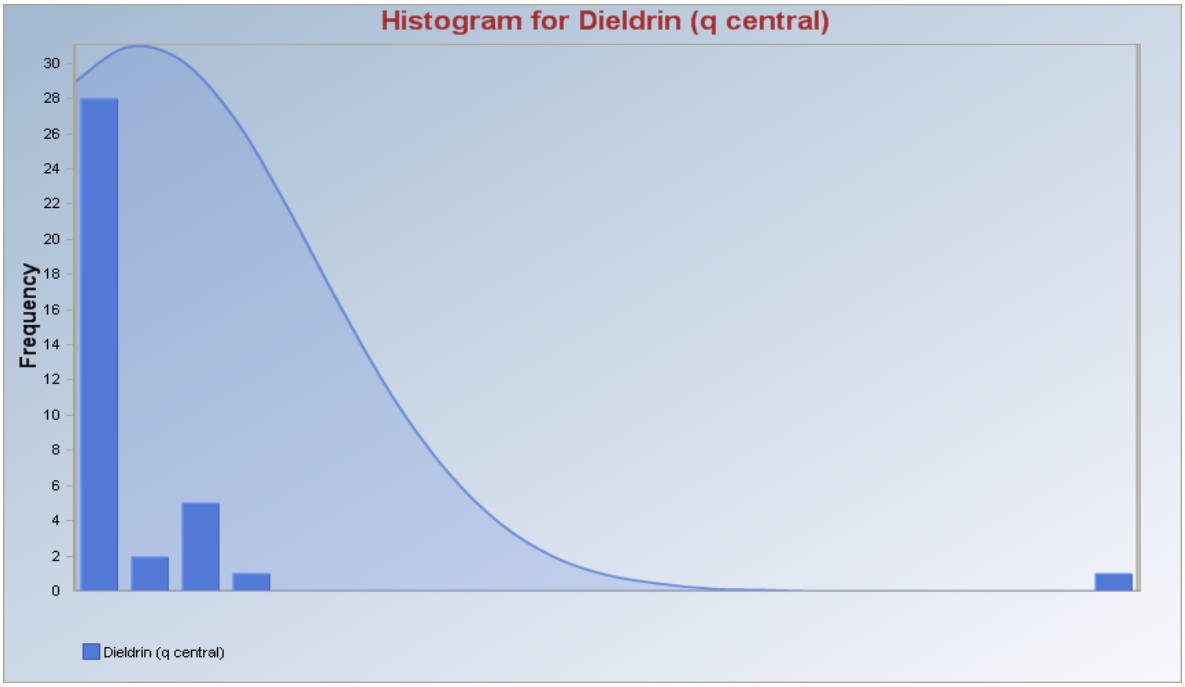
It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

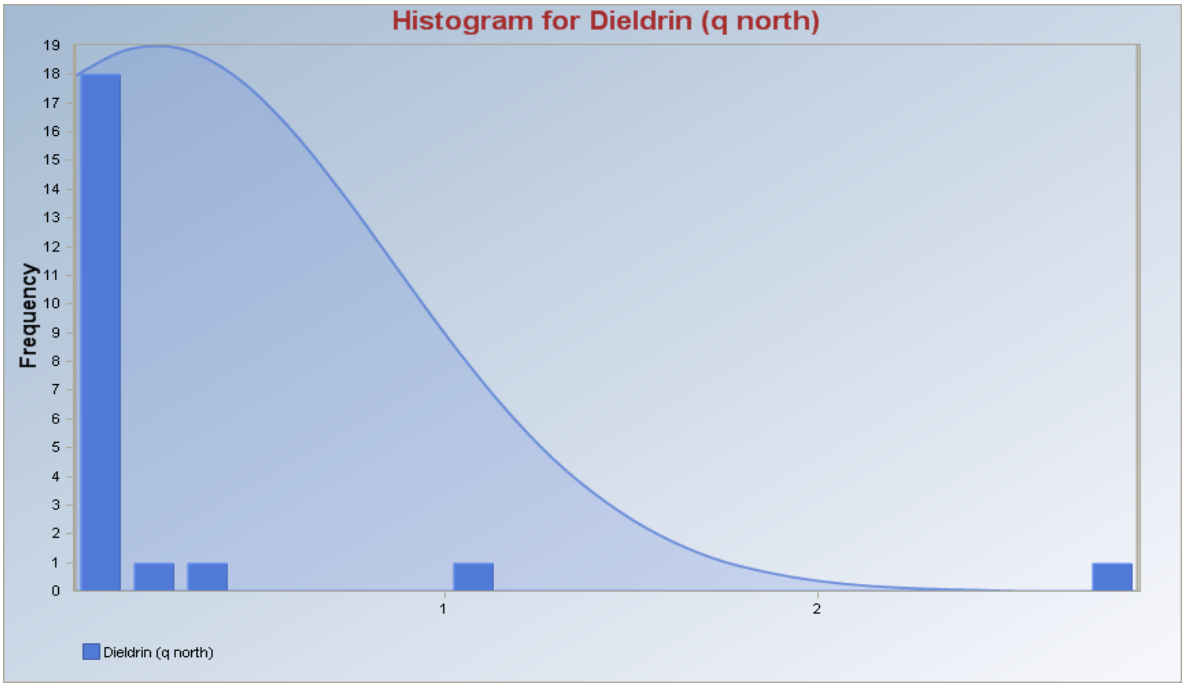
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.651	Shapiro Wilk Test Statistic	0.886
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.341	Mean	-4.319
SD	0.677	SD	3.092
95% DL/2 (t) UCL	0.711	95% H-Stat (DL/2) UCL	7316
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.896
		SD in Log Scale	3.092
		Mean in Original Scale	0.321
		SD in Original Scale	0.684
		95% Percentile Bootstrap UCL	0.657
		95% BCA Bootstrap UCL	0.774
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.225	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.241		
nu star	3.143		
A-D Test Statistic	0.586	Nonparametric Statistics	
5% A-D Critical Value	0.811	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.811	Mean	0.322
5% K-S Critical Value	0.34	SD	0.652
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.212
		95% KM (t) UCL	0.707
Assuming Gamma Distribution		95% KM (z) UCL	0.671
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.696
Minimum	3.70E-04	95% KM (bootstrap t) UCL	6.033
Maximum	1.8	95% KM (BCA) UCL	0.661
Mean	0.428	95% KM (Percentile Bootstrap) UCL	0.658
Median	0.269	95% KM (Chebyshev) UCL	1.247
SD	0.645	97.5% KM (Chebyshev) UCL	1.648
k star	0.3	99% KM (Chebyshev) UCL	2.434
Theta star	1.428		
Nu star	6.597	Potential UCLs to Use	
AppChi2	1.952	95% KM (BCA) UCL	0.661
95% Gamma Approximate UCL	1.447		
95% Adjusted Gamma UCL	1.801		

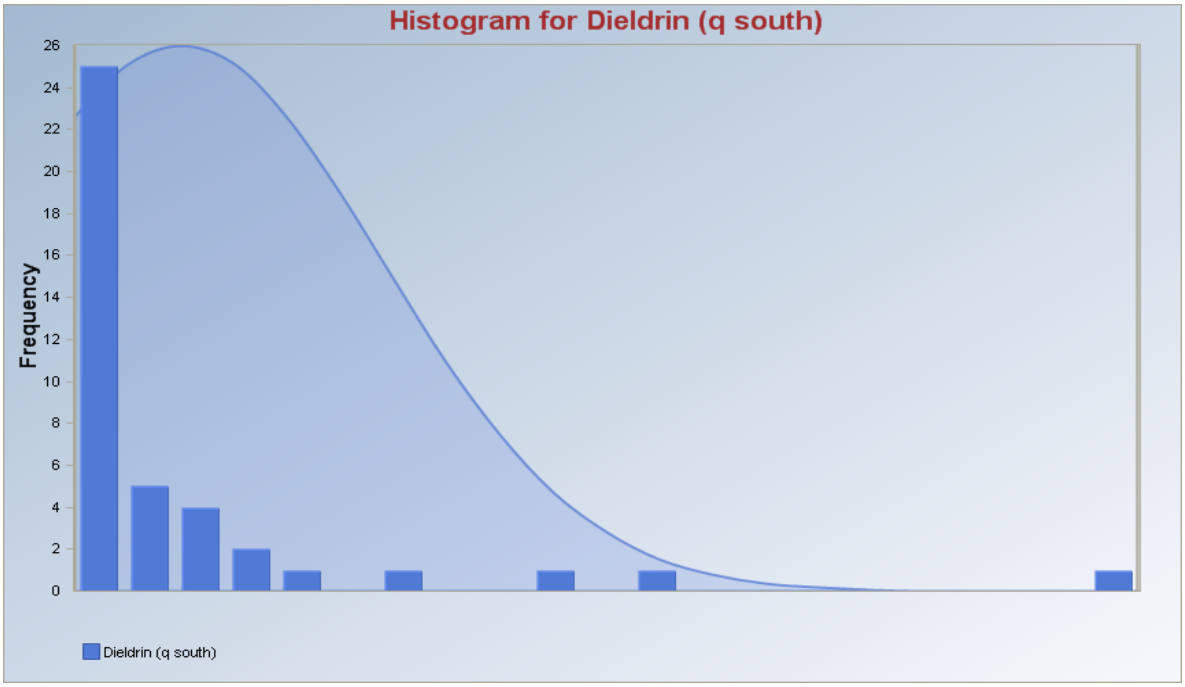
Note: DL/2 is not a recommended method.

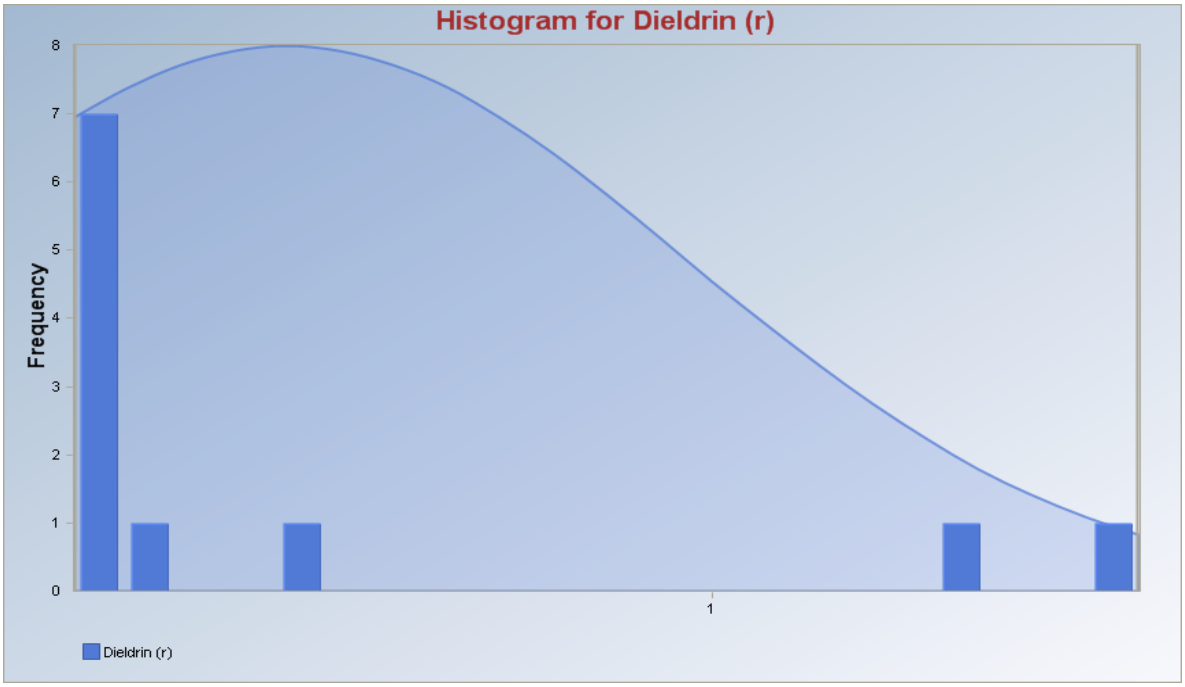

Histogram for Dieldrin (o)
Frequency
0
1
2
3
4
5
6
7
8
1
2
4
5
6
7
9
10
11
12
14
15
16
17
19
20
21
22
24
25
Dieldrin (o)


Histogram for Dieldrin (p)
Frequency
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
3
4
Dieldrin (p)


Histogram for Dieldrin (q central)
Frequency
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Dieldrin (q central)


Histogram for Dieldrin (q north)
Frequency
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
Dieldrin (q north)


Histogram for Dieldrin (q south)
Frequency
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Dieldrin (q south)


Histogram for Dieldrin (r)
Frequency
8
7
6
5
4
3
2
1
0
1
Dieldrin (r)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Dioxin TEQ-HH (p)

General Statistics			
Number of Valid Data	21	Number of Detected Data	18
Number of Distinct Detected Data	18	Number of Non-Detect Data	3
Number of Missing Values	26	Percent Non-Detects	14.29%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.79E-04	Minimum Detected	-8.627
Maximum Detected	0.00701	Maximum Detected	-4.961
Mean of Detected	0.00173	Mean of Detected	-6.905
SD of Detected	0.00207	SD of Detected	104.30%
Minimum Non-Detect	4.04E-04	Minimum Non-Detect	-7.815
Maximum Non-Detect	0.0139	Maximum Non-Detect	-4.278
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	21
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.683	Shapiro Wilk Test Statistic	0.932
5% Shapiro Wilk Critical Value	0.897	5% Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00213	Mean	-6.801
SD	0.00246	SD	1.184
95% DL/2 (t) UCL	0.00305	95% H-Stat (DL/2) UCL	0.00682
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.984
		SD in Log Scale	1.016
		Mean in Original Scale	0.00158
		SD in Original Scale	0.00195
		95% Percentile Bootstrap UCL	0.00231
		95% BCA Bootstrap UCL	0.00252
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.915	Data appear Lognormal at 5% Significance Level	
Theta Star	0.00189		
nu star	32.92		
A-D Test Statistic	1.131	Nonparametric Statistics	
5% A-D Critical Value	0.766	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.766	Mean	0.00165
5% K-S Critical Value	0.209	SD	0.00199
Data not Gamma Distributed at 5% Significance Level		SE of Mean	4.70E-04
		95% KM (t) UCL	0.00246
Assuming Gamma Distribution		95% KM (z) UCL	0.00242
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00246
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.00297
Maximum	0.00701	95% KM (BCA) UCL	0.00252
Mean	0.00166	95% KM (Percentile Bootstrap) UCL	0.00241
Median	8.62E-04	95% KM (Chebyshev) UCL	0.0037
SD	0.00195	97.5% KM (Chebyshev) UCL	0.00458
k star	0.516	99% KM (Chebyshev) UCL	0.00632
Theta star	0.00321		
Nu star	21.69	Potential UCLs to Use	
AppChi2	12.1	97.5% KM (Chebyshev) UCL	0.00458
95% Gamma Approximate UCL	0.00297		
95% Adjusted Gamma UCL	0.00311		

Note: DL/2 is not a recommended method.

Dioxin TEQ-HH (q central)

General Statistics			
Number of Valid Data	25	Number of Detected Data	20
Number of Distinct Detected Data	20	Number of Non-Detect Data	5
Number of Missing Values	25	Percent Non-Detects	20.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	6.66E-05	Minimum Detected	-9.617
Maximum Detected	0.0182	Maximum Detected	-4.006
Mean of Detected	0.00241	Mean of Detected	-7.409
SD of Detected	0.00529	SD of Detected	1.481
Minimum Non-Detect	1.90E-04	Minimum Non-Detect	-8.566
Maximum Non-Detect	4.67E-04	Maximum Non-Detect	-7.669
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	11
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	56.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.465	Shapiro Wilk Test Statistic	0.869
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00196	Mean	-7.701
SD	0.0048	SD	1.455
95% DL/2 (t) UCL	0.0036	95% H-Stat (DL/2) UCL	0.26%
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-7.764
		SD in Log Scale	1.512
		Mean in Original Scale	0.00195
		SD in Original Scale	0.0048
		95% Percentile Bootstrap UCL	0.00356
		95% BCA Bootstrap UCL	0.0044
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.429	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.00561		
nu star	17.16		
A-D Test Statistic	2.64	Nonparametric Statistics	
5% A-D Critical Value	0.81	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.81	Mean	0.00196
5% K-S Critical Value	0.206	SD	0.0047
Data not Gamma Distributed at 5% Significance Level		SE of Mean	9.65E-04
		95% KM (t) UCL	0.00361
Assuming Gamma Distribution		95% KM (z) UCL	0.00354
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0036
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.00919
Maximum	0.0182	95% KM (BCA) UCL	0.0035
Mean	0.00193	95% KM (Percentile Bootstrap) UCL	0.00358
Median	3.76E-04	95% KM (Chebyshev) UCL	0.00616
SD	0.00481	97.5% KM (Chebyshev) UCL	0.00798
k star	0.197	99% KM (Chebyshev) UCL	0.0116
Theta star	0.00978		
Nu star	9.854	Potential UCLs to Use	
AppChi2	3.85	97.5% KM (Chebyshev) UCL	0.00798
95% Gamma Approximate UCL	0.00493		
95% Adjusted Gamma UCL	0.00528		

Note: DL/2 is not a recommended method.

Dioxin TEQ-HH (q north)

General Statistics			
Number of Valid Data	17	Number of Detected Data	15
Number of Distinct Detected Data	15	Number of Non-Detect Data	2
Number of Missing Values	19	Percent Non-Detects	11.76%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.88E-05	Minimum Detected	-9.742
Maximum Detected	0.0678	Maximum Detected	-2.691
Mean of Detected	0.00704	Mean of Detected	-6.846
SD of Detected	0.0173	SD of Detected	1.971
Minimum Non-Detect	1.59E-04	Minimum Non-Detect	-8.749
Maximum Non-Detect	1.94E-04	Maximum Non-Detect	-8.548
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	12
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	29.41%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.449	Shapiro Wilk Test Statistic	0.939
5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00622	Mean	-7.14
SD	0.0164	SD	2.022
95% DL/2 (t) UCL	0.0132	95% H-Stat (DL/2) UCL	0.0234
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.00173	Mean in Log Scale	-7.229
SD	0.0199	SD in Log Scale	2.144
95% MLE (t) UCL	0.0102	Mean in Original Scale	0.00622
95% MLE (Tiku) UCL	0.0105	SD in Original Scale	0.0164
		95% Percentile Bootstrap UCL	0.014
		95% BCA Bootstrap UCL	0.018
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.328	Data appear Lognormal at 5% Significance Level	
Theta Star	0.0214		
nu star	9.851		
A-D Test Statistic	1.173	Nonparametric Statistics	
5% A-D Critical Value	0.824	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.824	Mean	0.00622
5% K-S Critical Value	0.238	SD	0.0159
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.00399
		95% KM (t) UCL	0.0132
Assuming Gamma Distribution		95% KM (z) UCL	0.0128
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0132
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0365
Maximum	0.0678	95% KM (BCA) UCL	0.0141
Mean	0.00621	95% KM (Percentile Bootstrap) UCL	0.0137
Median	4.04E-04	95% KM (Chebyshev) UCL	0.0236
SD	0.0164	97.5% KM (Chebyshev) UCL	0.0311
k star	0.216	99% KM (Chebyshev) UCL	0.0459
Theta star	0.0288		
Nu star	7.333	Potential UCLs to Use	
AppChi2	2.355	99% KM (Chebyshev) UCL	0.0459
95% Gamma Approximate UCL	0.0193		
95% Adjusted Gamma UCL	0.022		

Note: DL/2 is not a recommended method.

Dioxin TEQ-HH (q south)

General Statistics			
Number of Valid Observations	32	Number of Distinct Observations	32
Number of Missing Values	17		
Raw Statistics		Log-transformed Statistics	
Minimum	5.27E-05	Minimum of Log Data	-9.85
Maximum	3.20E-02	Maximum of Log Data	-3.441
Mean	0.00161	Mean of log Data	-8.041
Median	2.40E-04	SD of log Data	1.441
SD	0.00569		
Coefficient of Variation	3.526		
Skewness	5.273		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.283	Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical Value	0.93	Shapiro Wilk Critical Value	0.93
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.00332	95% H-UCL	0.00197
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.00205
95% Adjusted-CLT UCL	0.00427	97.5% Chebyshev (MVUE) UCL	0.00257
95% Modified-t UCL	0.00348	99% Chebyshev (MVUE) UCL	0.00358
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.39	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.00414		
nu star	24.95		
Approximate Chi Square Value (.05)	14.57	Nonparametric Statistics	
Adjusted Level of Significance	0.0416	95% CLT UCL	0.00327
Adjusted Chi Square Value	14.15	95% Jackknife UCL	0.00332
		95% Standard Bootstrap UCL	0.00328
Anderson-Darling Test Statistic	3.795	95% Bootstrap-t UCL	0.019
Anderson-Darling 5% Critical Value	0.831	95% Hall's Bootstrap UCL	0.00997
Kolmogorov-Smirnov Test Statistic	0.261	95% Percentile Bootstrap UCL	0.00355
Kolmogorov-Smirnov 5% Critical Value	0.166	95% BCA Bootstrap UCL	0.00481
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.006
		97.5% Chebyshev(Mean, Sd) UCL	0.0079
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.0116
95% Approximate Gamma UCL	0.00276		
95% Adjusted Gamma UCL	0.00285		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	0.0116

Dioxin TEQ-HH (r)

General Statistics			
Number of Valid Data	12	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	7
Number of Missing Values	4	Percent Non-Detects	58.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.23E-04	Minimum Detected	-9.007
Maximum Detected	0.0128	Maximum Detected	-4.356
Mean of Detected	0.00323	Mean of Detected	-6.793
SD of Detected	0.00539	SD of Detected	1.66
Minimum Non-Detect	3.53E-05	Minimum Non-Detect	-10.25
Maximum Non-Detect	2.49E-04	Maximum Non-Detect	-8.299

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	66.67%

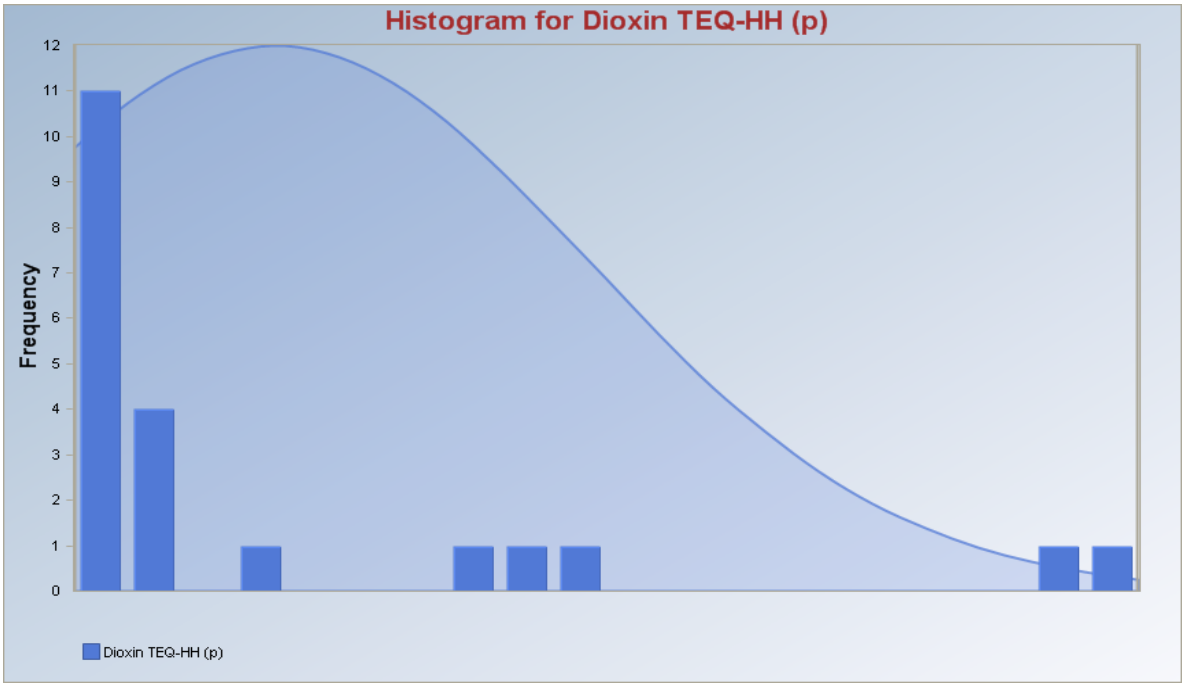
Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

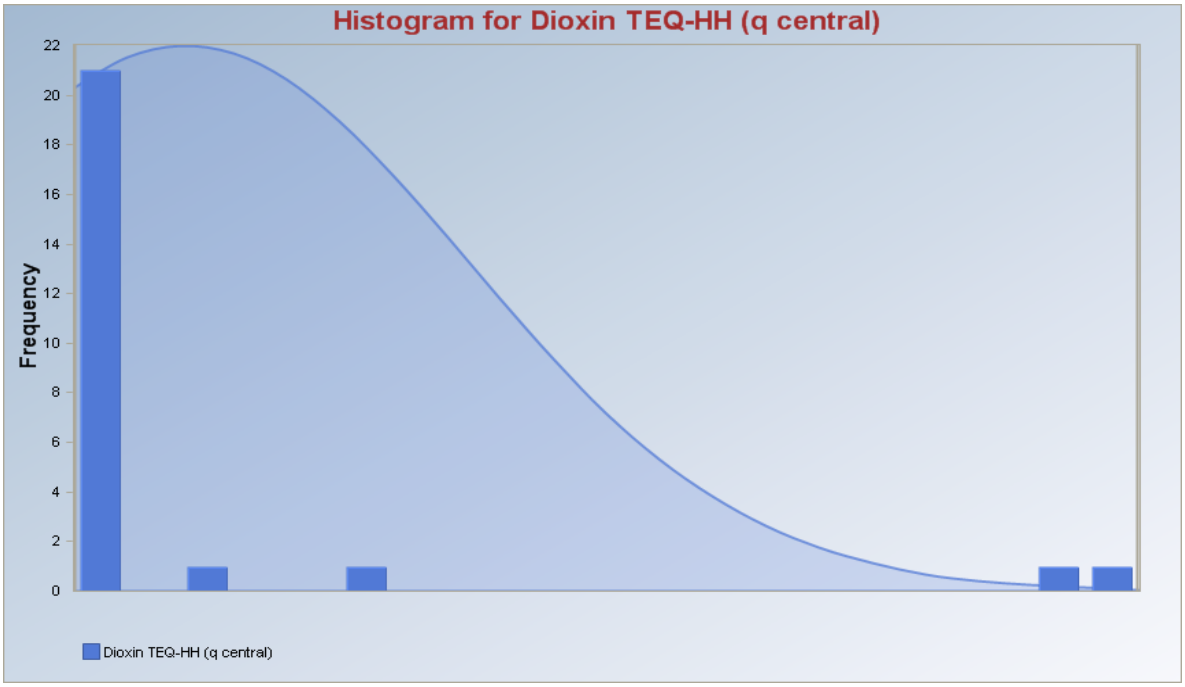
It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

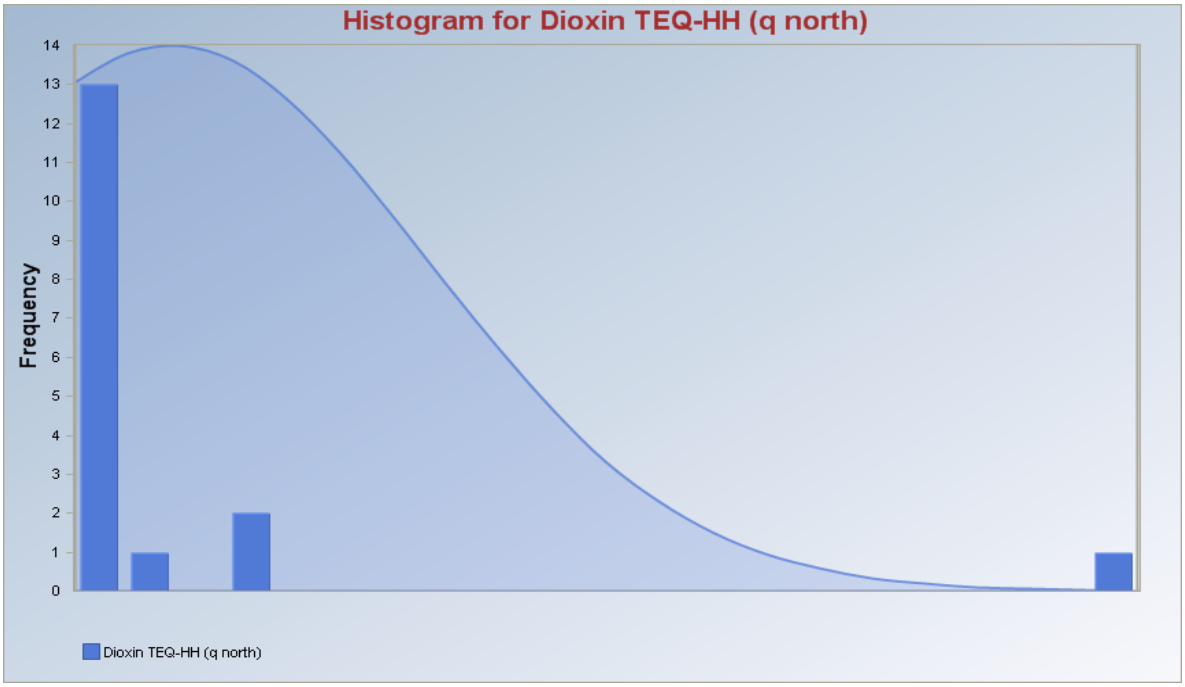
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.634	Shapiro Wilk Test Statistic	0.942
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00138	Mean	-8.582
SD	0.00364	SD	1.933
95% DL/2 (t) UCL	0.00327	95% H-Stat (DL/2) UCL	0.00915
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-9.567
		SD in Log Scale	2.657
		Mean in Original Scale	0.00135
		SD in Original Scale	0.00365
		95% Percentile Bootstrap UCL	0.00342
		95% BCA Bootstrap UCL	0.00462

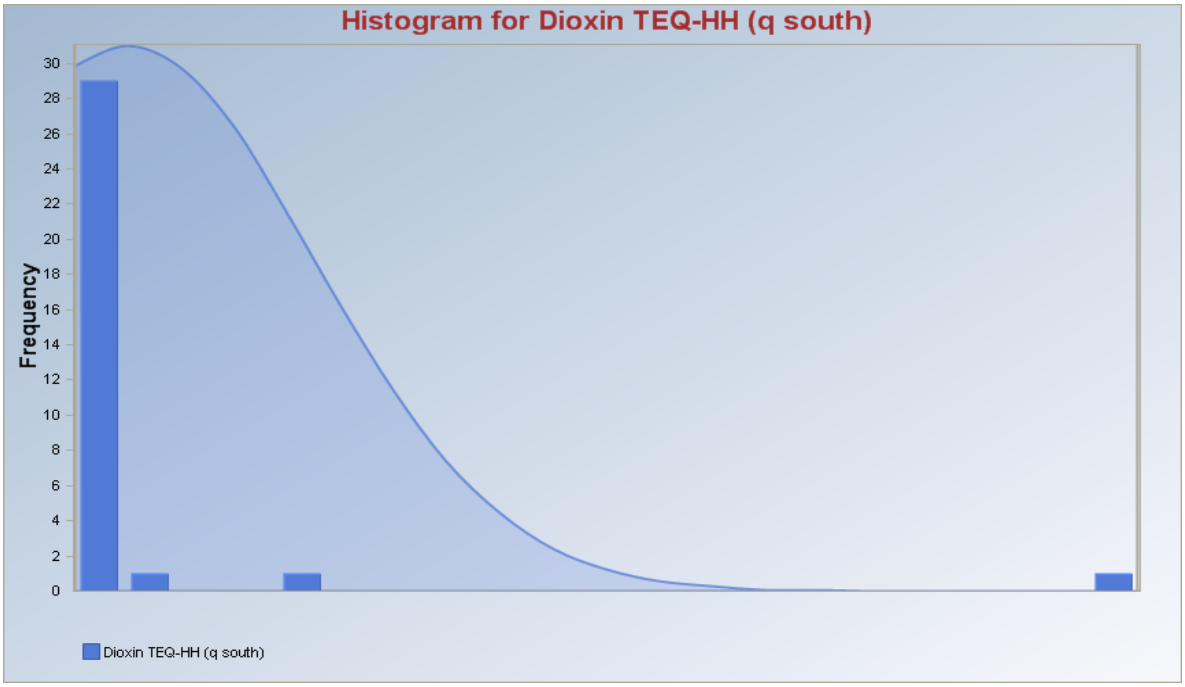
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.368	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.00879		
nu star	3.677		
A-D Test Statistic	0.507	Nonparametric Statistics	
5% A-D Critical Value	0.707	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.707	Mean	0.00142
5% K-S Critical Value	0.37	SD	0.00347
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00112
		95% KM (t) UCL	0.00343
Assuming Gamma Distribution		95% KM (z) UCL	0.00326
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00311
Minimum	1.23E-04	95% KM (bootstrap t) UCL	0.0125
Maximum	0.0128	95% KM (BCA) UCL	0.00392
Mean	0.00214	95% KM (Percentile Bootstrap) UCL	0.00355
Median	9.86E-04	95% KM (Chebyshev) UCL	0.0063
SD	0.00342	97.5% KM (Chebyshev) UCL	0.00841
k star	0.787	99% KM (Chebyshev) UCL	0.0126
Theta star	0.00272		
Nu star	18.9	Potential UCLs to Use	
AppChi2	10.04	95% KM (t) UCL	0.00343
95% Gamma Approximate UCL	0.00403		
95% Adjusted Gamma UCL	0.00446		

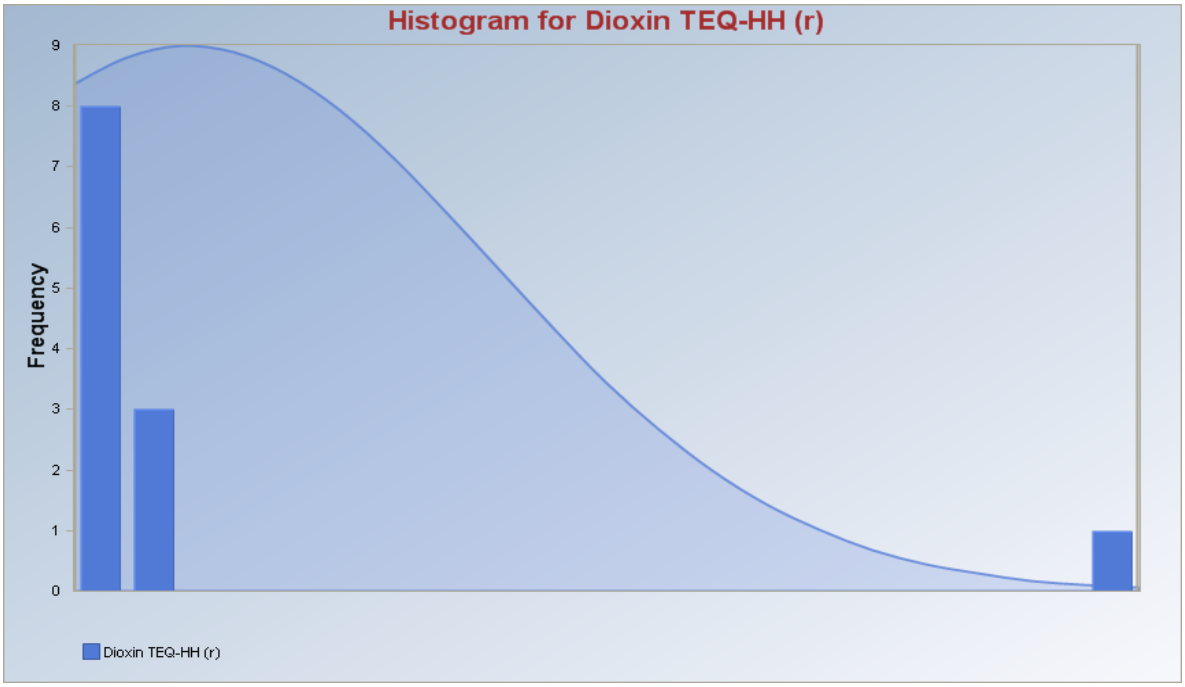
Note: DL/2 is not a recommended method.


Histogram for Dioxin TEQ-HH (p)
Frequency
0
1
2
3
4
5
6
7
8
9
10
11
12
Dioxin TEQ-HH (p)


Histogram for Dioxin TEQ-HH (q central)
Frequency
22
20
18
16
14
12
10
8
6
4
2
0
Dioxin TEQ-HH (q central)


Histogram for Dioxin TEQ-HH (q north)
Frequency
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Dioxin TEQ-HH (q north)


Histogram for Dioxin TEQ-HH (q south)
Frequency
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Dioxin TEQ-HH (q south)


Histogram for Dioxin TEQ-HH (r)
Frequency
0
1
2
3
4
5
6
7
8
9
Dioxin TEQ-HH (r)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Ethylbenzene (o)

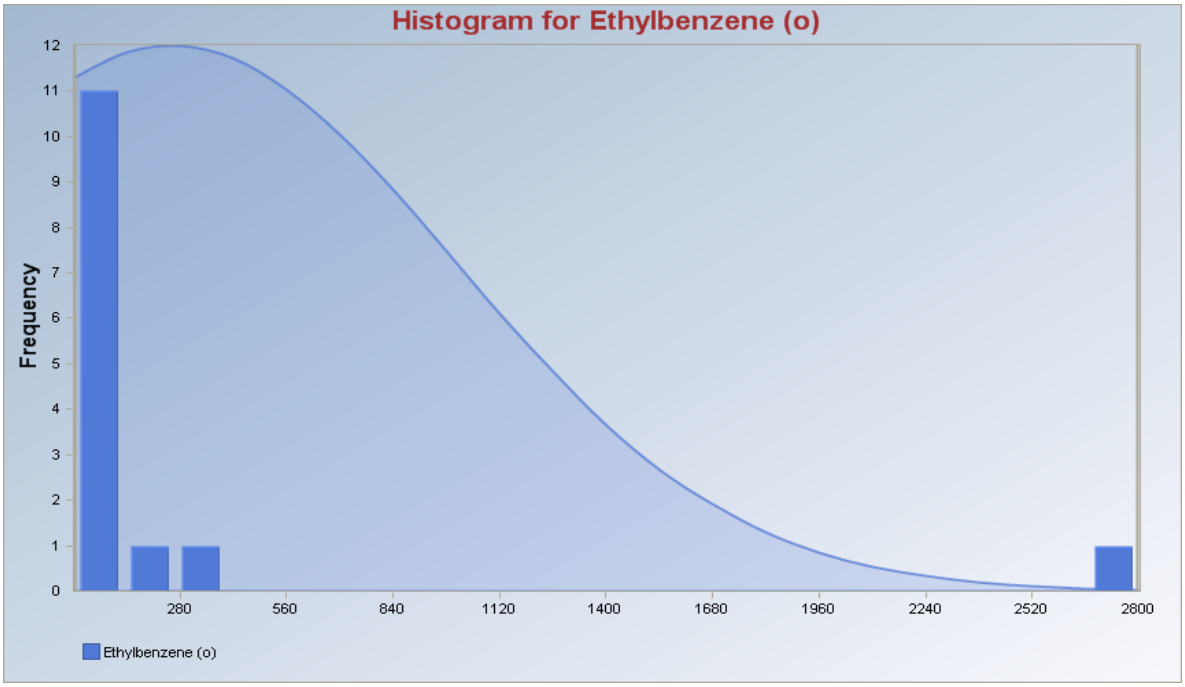
General Statistics			
Number of Valid Data	14	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	3
Number of Missing Values	3	Percent Non-Detects	21.43%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.80E-04	Minimum Detected	-7.875
Maximum Detected	2800	Maximum Detected	7.937
Mean of Detected	330.1	Mean of Detected	0.16
SD of Detected	829.2	SD of Detected	5.774
Minimum Non-Detect	0.0038	Minimum Non-Detect	-5.573
Maximum Non-Detect	0.0056	Maximum Non-Detect	-5.185
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	42.86%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.457	Shapiro Wilk Test Statistic	0.895
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	259.3	Mean	-1.182
SD	740.7	SD	5.724
95% DL/2 (t) UCL	609.9	95% H-Stat (DL/2) UCL	3.75E+14
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.303
		SD in Log Scale	5.839
		Mean in Original Scale	259.3
		SD in Original Scale	740.7
		95% Percentile Bootstrap UCL	638.6
		95% BCA Bootstrap UCL	857.9
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.161	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2051		
nu star	3.54		
A-D Test Statistic	0.519	Nonparametric Statistics	
5% A-D Critical Value	0.882	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.882	Mean	259.3
5% K-S Critical Value	0.285	SD	713.8
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	200.1
		95% KM (t) UCL	613.7
Assuming Gamma Distribution		95% KM (z) UCL	588.4
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	609.9
Minimum	1.00E-09	95% KM (bootstrap t) UCL	3080
Maximum	2800	95% KM (BCA) UCL	657.9
Mean	259.3	95% KM (Percentile Bootstrap) UCL	640
Median	0.0863	95% KM (Chebyshev) UCL	1131
SD	740.7	97.5% KM (Chebyshev) UCL	1509
k star	0.114	99% KM (Chebyshev) UCL	2250
Theta star	2282		
Nu star	3.182	Potential UCLs to Use	
AppChi2	0.428	95% KM (Chebyshev) UCL	1131
95% Gamma Approximate UCL	1927		
95% Adjusted Gamma UCL	2555		

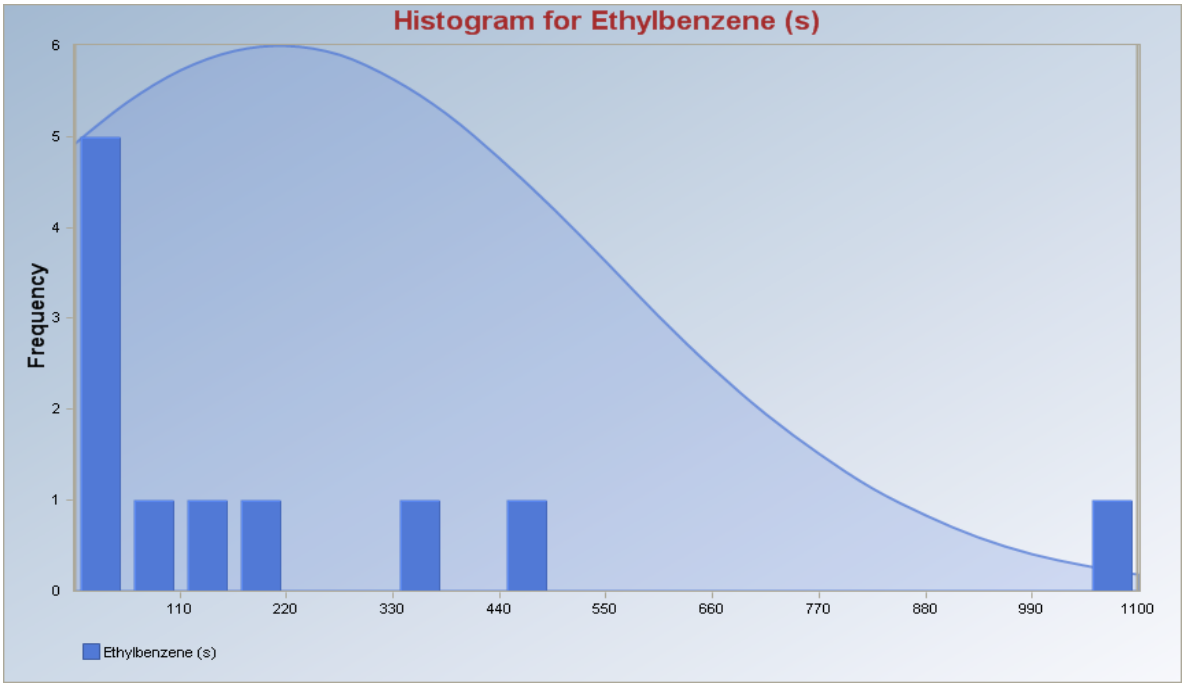
Note: DL/2 is not a recommended method.

Ethylbenzene (s)

General Statistics			
Number of Valid Data	11	Number of Detected Data	10
Number of Distinct Detected Data	9	Number of Non-Detect Data	1
Number of Missing Values	3	Percent Non-Detects	9.09%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0011	Minimum Detected	-6.812
Maximum Detected	1100	Maximum Detected	7.003
Mean of Detected	232.8	Mean of Detected	1.318
SD of Detected	346.1	SD of Detected	5.675
Minimum Non-Detect	0.0054	Minimum Non-Detect	-5.221
Maximum Non-Detect	0.0054	Maximum Non-Detect	-5.221
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.732	Shapiro Wilk Test Statistic	0.812
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	211.6	Mean	0.66
SD	335.7	SD	5.808
95% DL/2 (t) UCL	395.1	95% H-Stat (DL/2) UCL	5.35E+18
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	136	Mean in Log Scale	0.637
SD	403.6	SD in Log Scale	5.838
95% MLE (t) UCL	356.6	Mean in Original Scale	211.6
95% MLE (Tiku) UCL	363.2	SD in Original Scale	335.7
		95% Percentile Bootstrap UCL	371.6
		95% BCA Bootstrap UCL	450.9
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.193	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1205		
nu star	3.865		
A-D Test Statistic	0.686	Nonparametric Statistics	
5% A-D Critical Value	0.86	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.86	Mean	211.6
5% K-S Critical Value	0.295	SD	320.1
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	101.7
		95% KM (t) UCL	396
Assuming Gamma Distribution		95% KM (z) UCL	379
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	395.1
Minimum	0.0011	95% KM (bootstrap t) UCL	600.3
Maximum	1100	95% KM (BCA) UCL	381.8
Mean	212.3	95% KM (Percentile Bootstrap) UCL	368.5
Median	58	95% KM (Chebyshev) UCL	655.1
SD	335.3	97.5% KM (Chebyshev) UCL	847
k star	0.196	99% KM (Chebyshev) UCL	1224
Theta star	1081		
Nu star	4.32	Potential UCLs to Use	
AppChi2	0.852	95% KM (Chebyshev) UCL	655.1
95% Gamma Approximate UCL	1076		
95% Adjusted Gamma UCL	1445		

Note: DL/2 is not a recommended method.


Histogram for Ethylbenzene (o)
Frequency
0
1
2
3
4
5
6
7
8
9
10
11
12
280
560
840
1120
1400
1680
1960
2240
2520
2800
Ethylbenzene (o)


Histogram for Ethylbenzene (s)
Frequency
0
1
2
3
4
5
6
110
220
330
440
550
660
770
880
990
1100
Ethylbenzene (s)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

Heptachlor (o)

General Statistics
Number of Valid Data 11
Number of Distinct Detected Data 6
Number of Missing Values 6
Number of Detected Data 6
Number of Non-Detect Data 5
Percent Non-Detects 45.45%

Raw Statistics
Minimum Detected 0.0073
Maximum Detected 2.775
Mean of Detected 0.983
SD of Detected 1.175
Minimum Non-Detect 0.0017
Maximum Non-Detect 13

Log-transformed Statistics
Minimum Detected -4.92
Maximum Detected 1.021
Mean of Detected -1.865
SD of Detected 2.743
Minimum Non-Detect -6.377
Maximum Non-Detect 2.565

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

Number treated as Non-Detect 11
Number treated as Detected 0
Single DL Non-Detect Percentage 100.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics
Normal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.841
5% Shapiro Wilk Critical Value 0.788
Data appear Normal at 5% Significance Level

Assuming Normal Distribution
DL/2 Substitution Method
Mean 1.673
SD 2.453
95% DL/2 (t) UCL 3.013

Maximum Likelihood Estimate(MLE) Method N/A
MLE method failed to converge properly

Gamma Distribution Test with Detected Values Only
k star (bias corrected) 0.292
Theta Star 3.365
nu star 3.505

A-D Test Statistic 0.632
5% A-D Critical Value 0.757
K-S Test Statistic 0.757
5% K-S Critical Value 0.354
Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution
Gamma ROS Statistics using Extrapolated Data
Minimum 0.0073
Maximum 2.775
Mean 0.833
Median 0.111
SD 0.97
k star 0.402
Theta star 2.07
Nu star 8.852
AppChi2 3.238
95% Gamma Approximate UCL 2.277
95% Adjusted Gamma UCL 2.722
Note: DL/2 is not a recommended method.

Lognormal Distribution Test with Detected Values Only
Shapiro Wilk Test Statistic 0.81
5% Shapiro Wilk Critical Value 0.788
Data appear Lognormal at 5% Significance Level

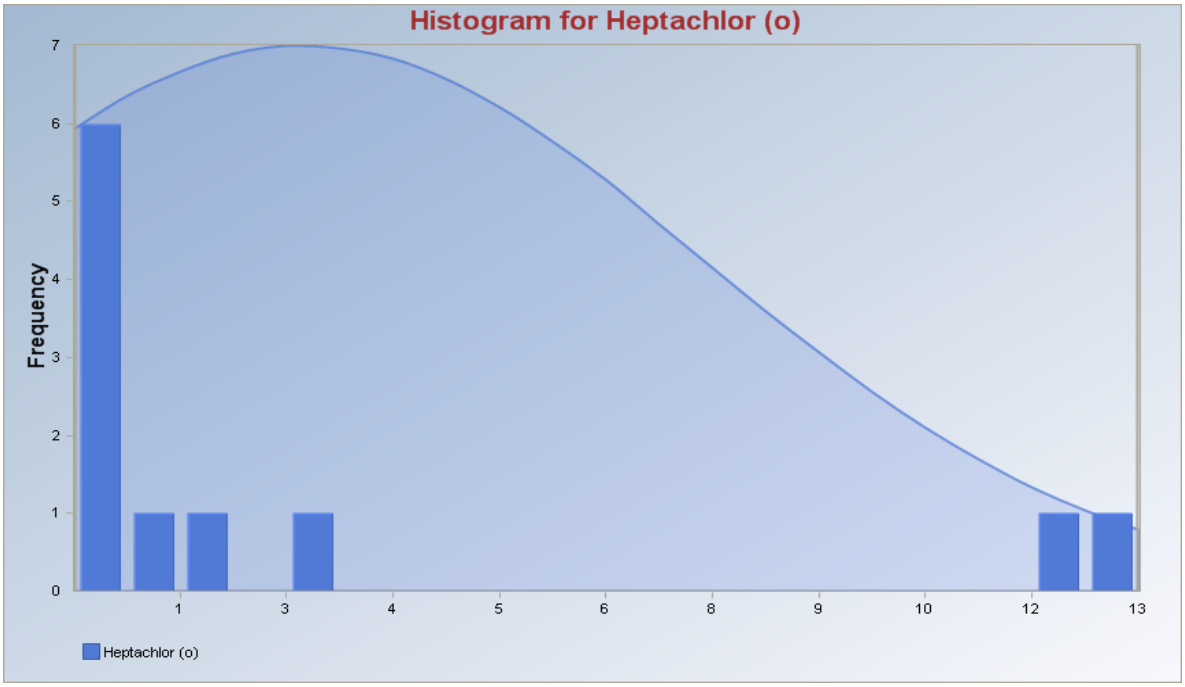
Assuming Lognormal Distribution
DL/2 Substitution Method
Mean -2.583
SD 3.705
95% H-Stat (DL/2) UCL 284629

Log ROS Method
Mean in Log Scale -4.109
SD in Log Scale 3.578
Mean in Original Scale 0.539
SD in Original Scale 0.975
95% Percentile Bootstrap UCL 1.026
95% BCA Bootstrap UCL 1.214

Data Distribution Test with Detected Values Only
Data appear Normal at 5% Significance Level

Nonparametric Statistics
Kaplan-Meier (KM) Method
Mean 0.658
SD 0.989
SE of Mean 0.361
95% KM (t) UCL 1.313
95% KM (z) UCL 1.252
95% KM (jackknife) UCL 1.297
95% KM (bootstrap t) UCL 1.835
95% KM (BCA) UCL 1.405
95% KM (Percentile Bootstrap) UCL 1.386
95% KM (Chebyshev) UCL 2.233
97.5% KM (Chebyshev) UCL 2.914
99% KM (Chebyshev) UCL 4.252

Potential UCLs to Use
95% KM (t) UCL 1.313
95% KM (Percentile Bootstrap) UCL 1.386


Histogram for Heptachlor (o)
Frequency
0
1
2
3
4
5
6
7
1
3
4
5
6
8
9
10
12
13
Heptachlor (o)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Heptachlor Epoxide (p)

General Statistics			
Number of Valid Data	24	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	1800.00%
Number of Missing Values	23	Percent Non-Detects	75.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0079	Minimum Detected	-4.841
Maximum Detected	2.1	Maximum Detected	0.742
Mean of Detected	0.366	Mean of Detected	-3.253
SD of Detected	0.85	SD of Detected	2.007
Minimum Non-Detect	0.0021	Minimum Non-Detect	-6.166
Maximum Non-Detect	2.3	Maximum Non-Detect	0.833
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	24
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0.00%
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

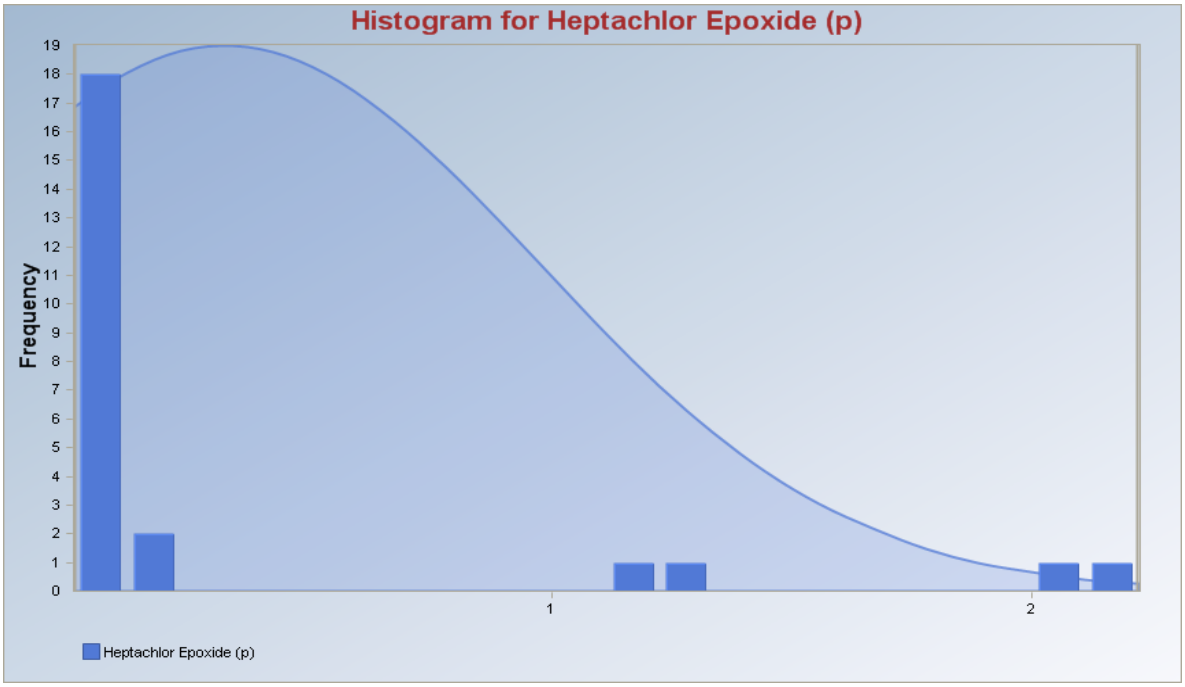
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.505	Shapiro Wilk Test Statistic	0.709
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.21	Mean	-3.337
SD	0.488	SD	1.794
95% DL/2 (t) UCL	0.381	95% H-Stat (DL/2) UCL	0.575
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.854
		SD in Log Scale	1.464
		Mean in Original Scale	0.0955
		SD in Original Scale	0.427
		95% Percentile Bootstrap UCL	0.27
		95% BCA Bootstrap UCL	0.443
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.264	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.385		
nu star	3.168		
A-D Test Statistic	1.313	Nonparametric Statistics	
5% A-D Critical Value	0.766	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.766	Mean	0.105
5% K-S Critical Value	0.357	SD	0.425
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0972
		95% KM (t) UCL	0.271
Assuming Gamma Distribution		95% KM (z) UCL	0.264
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.258
Minimum	0.0079	95% KM (bootstrap t) UCL	5.797
Maximum	2.1	95% KM (BCA) UCL	0.364
Mean	0.386	95% KM (Percentile Bootstrap) UCL	0.285
Median	0.414	95% KM (Chebyshev) UCL	0.528
SD	0.399	97.5% KM (Chebyshev) UCL	0.712
k star	0.914	99% KM (Chebyshev) UCL	1.072
Theta star	0.422		
Nu star	43.89	Potential UCLs to Use	
AppChi2	29.7	99% KM (Chebyshev) UCL	1.072
95% Gamma Approximate UCL	0.57		
95% Adjusted Gamma UCL	0.586		

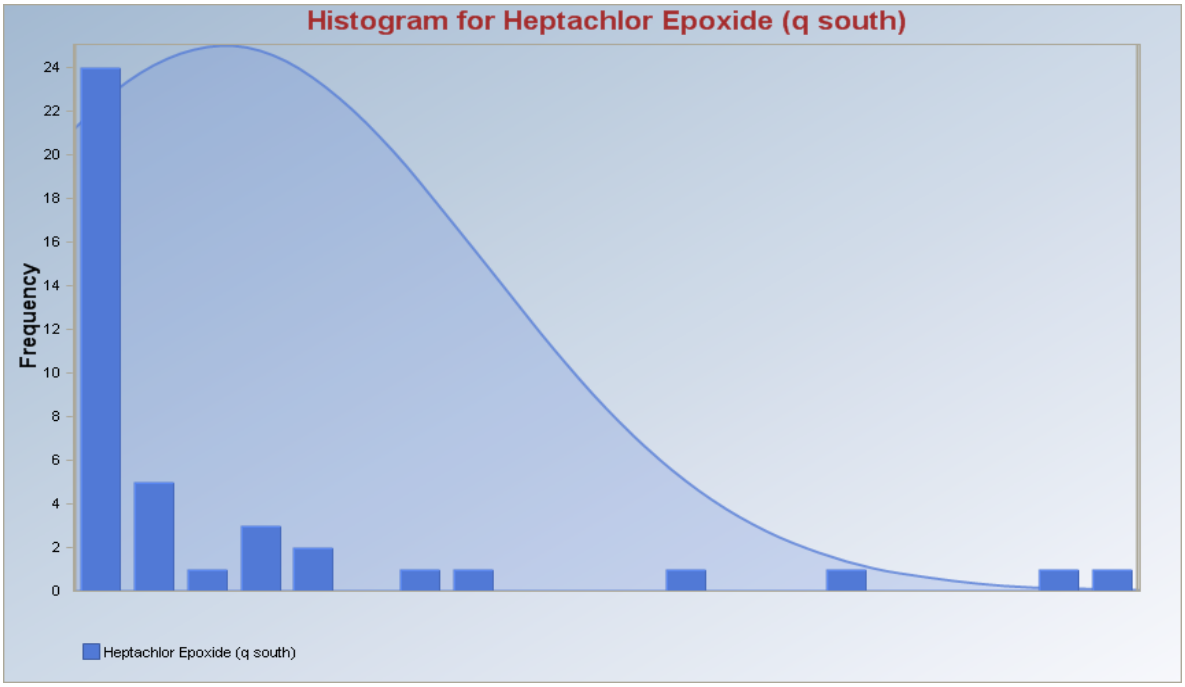
Note: DL/2 is not a recommended method.

Heptachlor Epoxide (q south)

General Statistics			
Number of Valid Data	41	Number of Detected Data	19
Number of Distinct Detected Data	18	Number of Non-Detect Data	22
Number of Missing Values	8	Percent Non-Detects	53.66%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.30E-04	Minimum Detected	-8.377
Maximum Detected	0.23	Maximum Detected	-1.47
Mean of Detected	0.042	Mean of Detected	-4.522
SD of Detected	0.064	SD of Detected	2.012
Minimum Non-Detect	0.0018	Minimum Non-Detect	-6.32
Maximum Non-Detect	0.25	Maximum Non-Detect	-1.386
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	41
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.686	Shapiro Wilk Test Statistic	0.962
5% Shapiro Wilk Critical Value	0.901	5% Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0274	Mean	-5.09
SD	0.0498	SD	1.872
95% DL/2 (t) UCL	0.0405	95% H-Stat (DL/2) UCL	0.108
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.82
		SD in Log Scale	1.904
		Mean in Original Scale	0.0201
		SD in Original Scale	0.0476
		95% Percentile Bootstrap UCL	0.033
		95% BCA Bootstrap UCL	0.0368
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.434	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0967		
nu star	16.5		
A-D Test Statistic	0.303	Nonparametric Statistics	
5% A-D Critical Value	0.808	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.808	Mean	0.0212
5% K-S Critical Value	0.211	SD	0.0475
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00776
		95% KM (t) UCL	0.0342
Assuming Gamma Distribution		95% KM (z) UCL	0.0339
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0341
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0453
Maximum	0.23	95% KM (BCA) UCL	0.0351
Mean	0.0407	95% KM (Percentile Bootstrap) UCL	0.0347
Median	0.0171	95% KM (Chebyshev) UCL	0.055
SD	0.0489	97.5% KM (Chebyshev) UCL	0.0697
k star	0.468	99% KM (Chebyshev) UCL	0.0984
Theta star	0.087		
Nu star	38.4	Potential UCLs to Use	
AppChi2	25.2	95% KM (t) UCL	0.0342
95% Gamma Approximate UCL	0.062		
95% Adjusted Gamma UCL	0.063		

Note: DL/2 is not a recommended method.


Histogram for Heptachlor Epoxide (p)
Frequency
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
Heptachlor Epoxide (p)


Histogram for Heptachlor Epoxide (q south)
Frequency
24
22
20
18
16
14
12
10
8
6
4
2
0
Heptachlor Epoxide (q south)

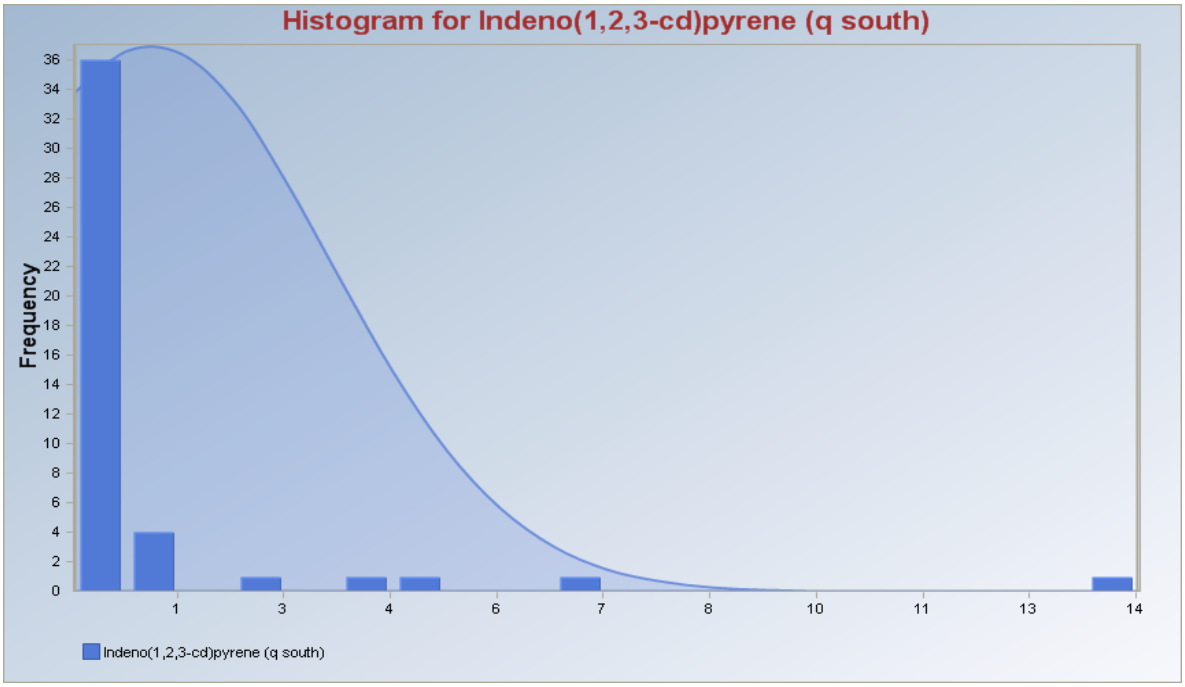
General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Indeno(1,2,3-cd)pyrene (q south)

General Statistics			
Number of Valid Data	45	Number of Detected Data	21
Number of Distinct Detected Data	19	Number of Non-Detect Data	24
Number of Missing Values	4	Percent Non-Detects	53.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.037	Minimum Detected	-3.297
Maximum Detected	6.8	Maximum Detected	1.917
Mean of Detected	0.644	Mean of Detected	-1.574
SD of Detected	1.458	SD of Detected	1.417
Minimum Non-Detect	0.34	Minimum Non-Detect	-1.079
Maximum Non-Detect	14	Maximum Non-Detect	2.639
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	45
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.422	Shapiro Wilk Test Statistic	0.915
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.671	Mean	-1.351
SD	1.444	SD	1.21
95% DL/2 (t) UCL	1.033	95% H-Stat (DL/2) UCL	0.778
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.931
		SD in Log Scale	1.043
		Mean in Original Scale	0.36
		SD in Original Scale	1.019
		95% Percentile Bootstrap UCL	0.639
		95% BCA Bootstrap UCL	0.836
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.505	Data appear Lognormal at 5% Significance Level	
Theta Star	1.275		
nu star	21.2		
A-D Test Statistic	1.39	Nonparametric Statistics	
5% A-D Critical Value	0.801	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.801	Mean	0.374
5% K-S Critical Value	0.2	SD	1.021
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.159
		95% KM (t) UCL	0.642
Assuming Gamma Distribution		95% KM (z) UCL	0.636
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.638
Minimum	0.037	95% KM (bootstrap t) UCL	1.167
Maximum	6.8	95% KM (BCA) UCL	0.676
Mean	0.643	95% KM (Percentile Bootstrap) UCL	0.668
Median	0.639	95% KM (Chebyshev) UCL	1.067
SD	0.983	97.5% KM (Chebyshev) UCL	1.367
k star	1.024	99% KM (Chebyshev) UCL	1.956
Theta star	0.628		
Nu star	92.16	Potential UCLs to Use	
AppChi2	71.02	95% KM (BCA) UCL	0.676
95% Gamma Approximate UCL	0.834		
95% Adjusted Gamma UCL	0.841		

Note: DL/2 is not a recommended method.


Histogram for Indeno(1,2,3-cd)pyrene (q south)
Frequency
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
1
3
4
6
7
8
10
11
13
14
Indeno(1,2,3-cd)pyrene (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Lead (q north)

General Statistics			
Number of Valid Data	29	Number of Detected Data	28
Number of Distinct Detected Data	26	Number of Non-Detect Data	1
Number of Missing Values	7	Percent Non-Detects	3.45%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	7.6	Minimum Detected	2.028
Maximum Detected	24000	Maximum Detected	10.09
Mean of Detected	1196	Mean of Detected	4.968
SD of Detected	4511	SD of Detected	1.825
Minimum Non-Detect	1100	Minimum Non-Detect	7.003
Maximum Non-Detect	1100	Maximum Non-Detect	7.003
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.271	Shapiro Wilk Test Statistic	0.963
5% Shapiro Wilk Critical Value	0.924	5% Shapiro Wilk Critical Value	0.924
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1174	Mean	5.014
SD	4432	SD	1.809
95% DL/2 (t) UCL	2574	95% H-Stat (DL/2) UCL	2842
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	4.955
		SD in Log Scale	1.793
		Mean in Original Scale	1158
		SD in Original Scale	4435
		95% Percentile Bootstrap UCL	2766
		95% BCA Bootstrap UCL	4285
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.311	Data appear Lognormal at 5% Significance Level	
Theta Star	3845		
nu star	17.42		
A-D Test Statistic	2.77	Nonparametric Statistics	
5% A-D Critical Value	0.849	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.849	Mean	1161
5% K-S Critical Value	0.179	SD	4357
Data not Gamma Distributed at 5% Significance Level		SE of Mean	824
		95% KM (t) UCL	2562
Assuming Gamma Distribution		95% KM (z) UCL	2516
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2561
Minimum	1.00E-09	95% KM (bootstrap t) UCL	14996
Maximum	24000	95% KM (BCA) UCL	2769
Mean	1155	95% KM (Percentile Bootstrap) UCL	2745
Median	130	95% KM (Chebyshev) UCL	4752
SD	4436	97.5% KM (Chebyshev) UCL	6306
k star	0.239	99% KM (Chebyshev) UCL	9359
Theta star	4838		
Nu star	13.85	Potential UCLs to Use	
AppChi2	6.466	99% KM (Chebyshev) UCL	9359
95% Gamma Approximate UCL	2473		
95% Adjusted Gamma UCL	2593		

Note: DL/2 is not a recommended method.

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

MCPP (r)

General Statistics

Number of Valid Data	12	Number of Detected Data	8
Number of Distinct Detected Data	7	Number of Non-Detect Data	4
Number of Missing Values	4	Percent Non-Detects	33.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.2	Minimum Detected	1.649
Maximum Detected	85	Maximum Detected	4.443
Mean of Detected	49.53	Mean of Detected	3.69
SD of Detected	24.36	SD of Detected	0.872
Minimum Non-Detect	49	Minimum Non-Detect	3.892
Maximum Non-Detect	10000	Maximum Non-Detect	9.21

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

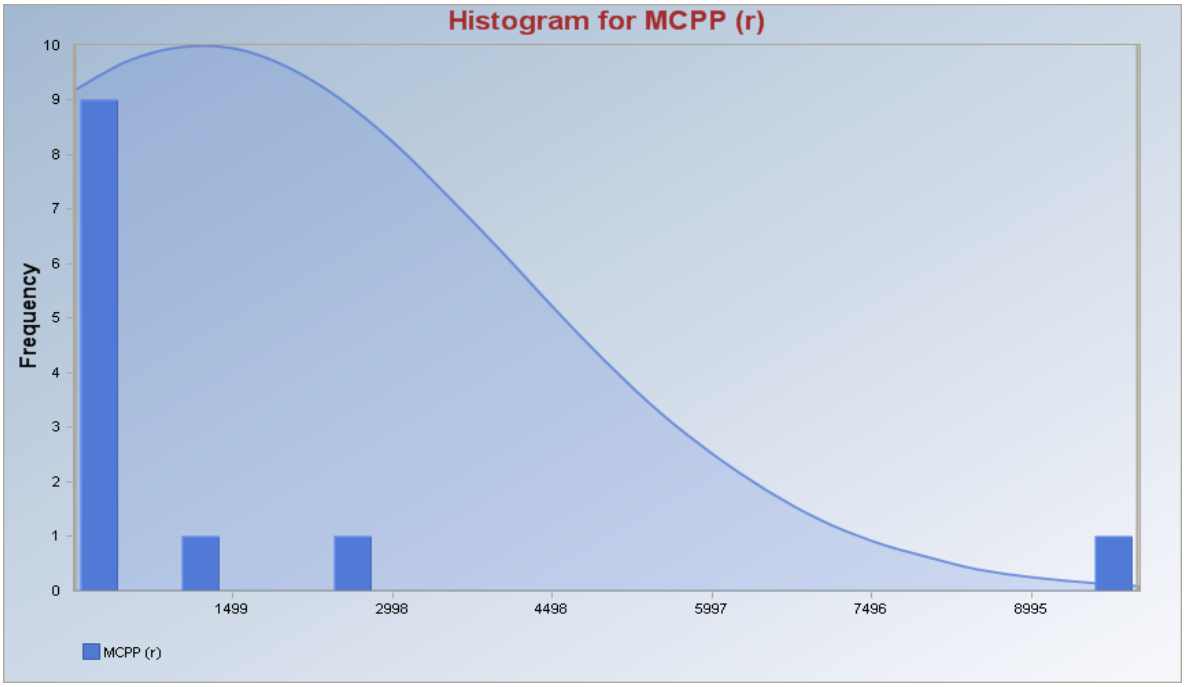
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.939	Shapiro Wilk Test Statistic	0.722
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	618.4	Mean	4.577
SD	1436	SD	1.897
95% DL/2 (t) UCL	1363	95% H-Stat (DL/2) UCL	16987

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	3.608
		SD in Log Scale	0.725
		Mean in Original Scale	43.82
		SD in Original Scale	21.66
		95% Percentile Bootstrap UCL	53.86
		95% BCA Bootstrap UCL	54.44

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.652	Data appear Normal at 5% Significance Level	
Theta Star	29.97		
nu star	26.44		
A-D Test Statistic	0.739	Nonparametric Statistics	
5% A-D Critical Value	0.723	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.723	Mean	47.14
5% K-S Critical Value	0.297	SD	23.17
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	8.559
		95% KM (t) UCL	62.51
Assuming Gamma Distribution		95% KM (z) UCL	61.22
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	63.19
Minimum	5.2	95% KM (bootstrap t) UCL	61.59
Maximum	85	95% KM (BCA) UCL	60.33
Mean	49.47	95% KM (Percentile Bootstrap) UCL	60.48
Median	51	95% KM (Chebyshev) UCL	84.45
SD	20.43	97.5% KM (Chebyshev) UCL	100.6
k star	2.662	99% KM (Chebyshev) UCL	132.3
Theta star	18.59		
Nu star	63.88	Potential UCLs to Use	
AppChi2	46.49	95% KM (t) UCL	62.51
95% Gamma Approximate UCL	67.97	95% KM (Percentile Bootstrap) UCL	60.48
95% Adjusted Gamma UCL	71.44		

Note: DL/2 is not a recommended method.


Histogram for MCPP (r)
Frequency
10
9
8
7
6
5
4
3
2
1
0
1499
2998
4498
5997
7496
8995
MCPP (r)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Mercury (q north)

General Statistics			
Number of Valid Observations	27	Number of Distinct Observations	23
Number of Missing Values	9		
Raw Statistics		Log-transformed Statistics	
Minimum	0.016	Minimum of Log Data	-4.135
Maximum	170	Maximum of Log Data	5.136
Mean	7.539	Mean of log Data	-0.982
Median	0.29	SD of log Data	2.091
SD	32.6		
Coefficient of Variation	4.325		
Skewness	5.129		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.242	Shapiro Wilk Test Statistic	0.945
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	18.24	95% H-UCL	17.63
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.93
95% Adjusted-CLT UCL	24.48	97.5% Chebyshev (MVUE) UCL	11.63
95% Modified-t UCL	19.27	99% Chebyshev (MVUE) UCL	16.94
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.237	Data appear Lognormal at 5% Significance Level	
Theta Star	31.87		
nu star	12.78		
Approximate Chi Square Value (.05)	5.742	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	17.86
Adjusted Chi Square Value	5.442	95% Jackknife UCL	18.24
		95% Standard Bootstrap UCL	17.78
Anderson-Darling Test Statistic	3.695	95% Bootstrap-t UCL	233.2
Anderson-Darling 5% Critical Value	0.879	95% Hall's Bootstrap UCL	141
Kolmogorov-Smirnov Test Statistic	0.287	95% Percentile Bootstrap UCL	19.79
Kolmogorov-Smirnov 5% Critical Value	0.185	95% BCA Bootstrap UCL	26.44
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	34.89
		97.5% Chebyshev(Mean, Sd) UCL	46.72
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	69.97
95% Approximate Gamma UCL	16.77		
95% Adjusted Gamma UCL	17.7		
Potential UCL to Use		Use 97.5% Chebyshev (MVUE) UCL	11.63

Mercury (q south)

General Statistics

Number of Valid Data	41	Number of Detected Data	40
Number of Distinct Detected Data	35	Number of Non-Detect Data	1
Number of Missing Values	8	Percent Non-Detects	2.44%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.021	Minimum Detected	-3.863
Maximum Detected	140	Maximum Detected	4.942
Mean of Detected	5.817	Mean of Detected	-0.807
SD of Detected	22.87	SD of Detected	1.97
Minimum Non-Detect	0.021	Minimum Non-Detect	-3.863
Maximum Non-Detect	0.021	Maximum Non-Detect	-3.863

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.279	Shapiro Wilk Test Statistic	0.94
5% Shapiro Wilk Critical Value	0.94	5% Shapiro Wilk Critical Value	0.94
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.676	Mean	-0.898
SD	22.6	SD	2.032
95% DL/2 (t) UCL	11.62	95% H-Stat (DL/2) UCL	10.3

Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	5.279	Mean in Log Scale	-0.928
SD	22.65	SD in Log Scale	2.094
95% MLE (t) UCL	11.24	Mean in Original Scale	5.676
95% MLE (Tiku) UCL	10.54	SD in Original Scale	22.6
		95% Percentile Bootstrap UCL	12.38
		95% BCA Bootstrap UCL	16.41

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.269	Data appear Lognormal at 5% Significance Level	
Theta Star	21.63		
nu star	21.52		

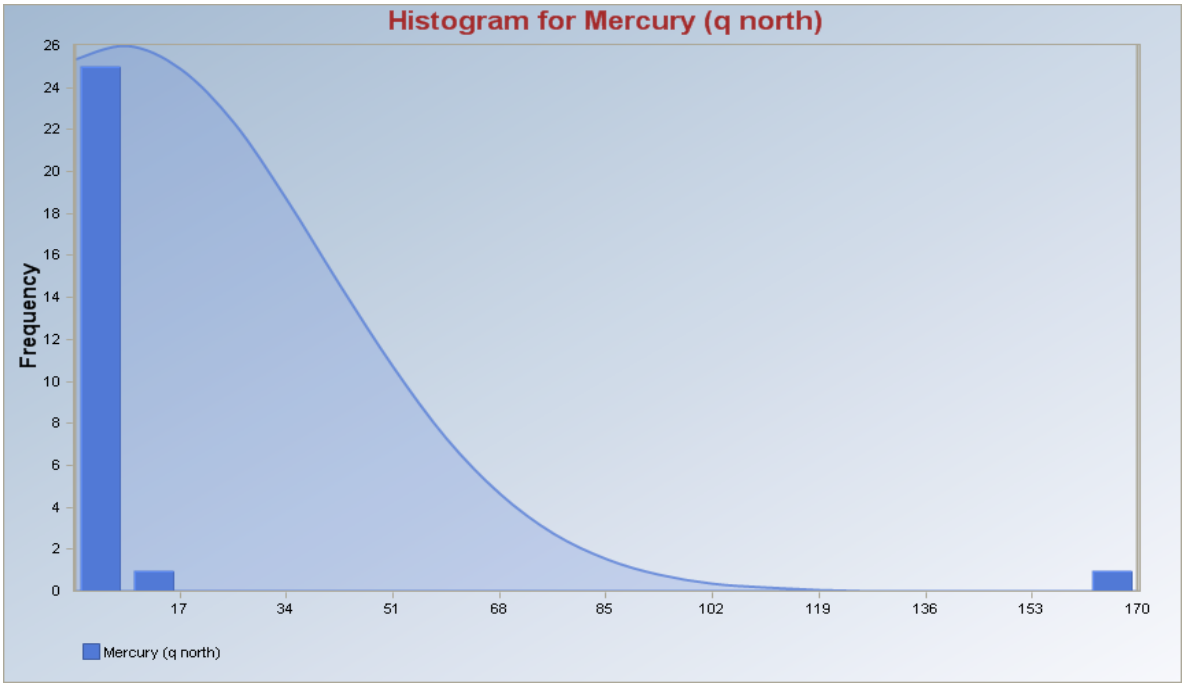
A-D Test Statistic	4.903	Nonparametric Statistics	
5% A-D Critical Value	0.87	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.87	Mean	5.676
5% K-S Critical Value	0.152	SD	22.32
Data not Gamma Distributed at 5% Significance Level		SE of Mean	3.531
		95% KM (t) UCL	11.62
Assuming Gamma Distribution		95% KM (z) UCL	11.48
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	11.62
Minimum	1.00E-09	95% KM (bootstrap t) UCL	29.2
Maximum	140	95% KM (BCA) UCL	13.14
Mean	5.676	95% KM (Percentile Bootstrap) UCL	12.18
Median	0.38	95% KM (Chebyshev) UCL	21.07
SD	22.6	97.5% KM (Chebyshev) UCL	27.72
k star	0.236	99% KM (Chebyshev) UCL	40.81
Theta star	24.1		
Nu star	19.31	Potential UCLs to Use	
AppChi2	10.35	97.5% KM (Chebyshev) UCL	27.72
95% Gamma Approximate UCL	10.59		
95% Adjusted Gamma UCL	10.85		

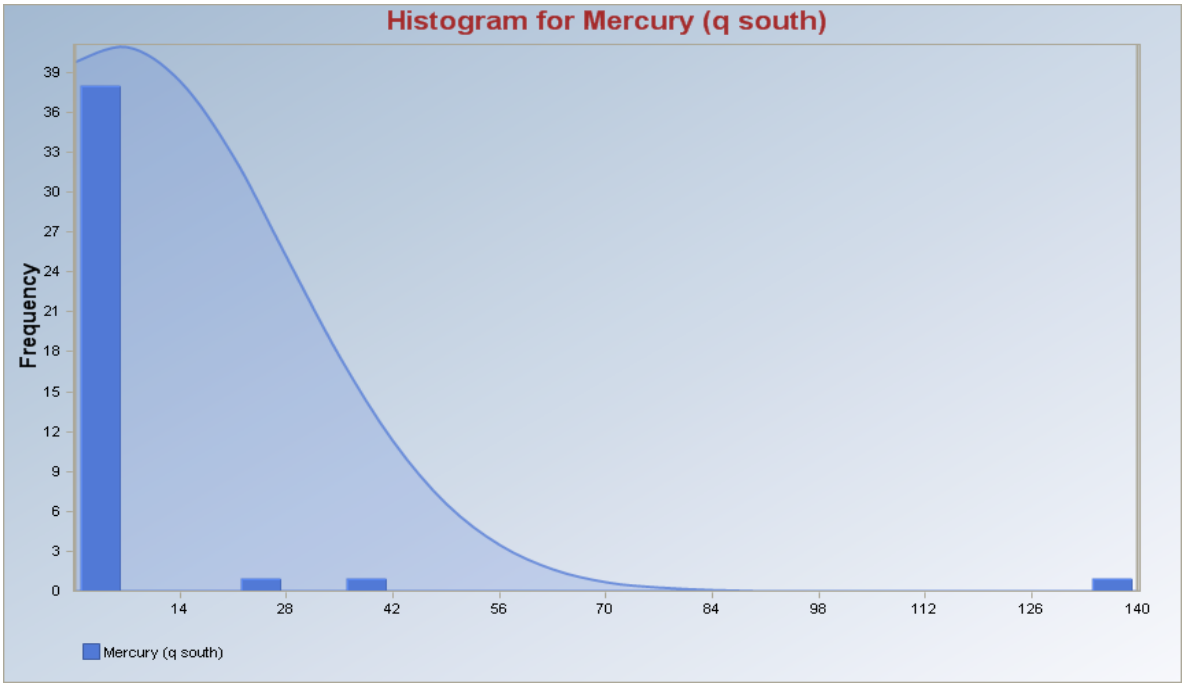
Note: DL/2 is not a recommended method.

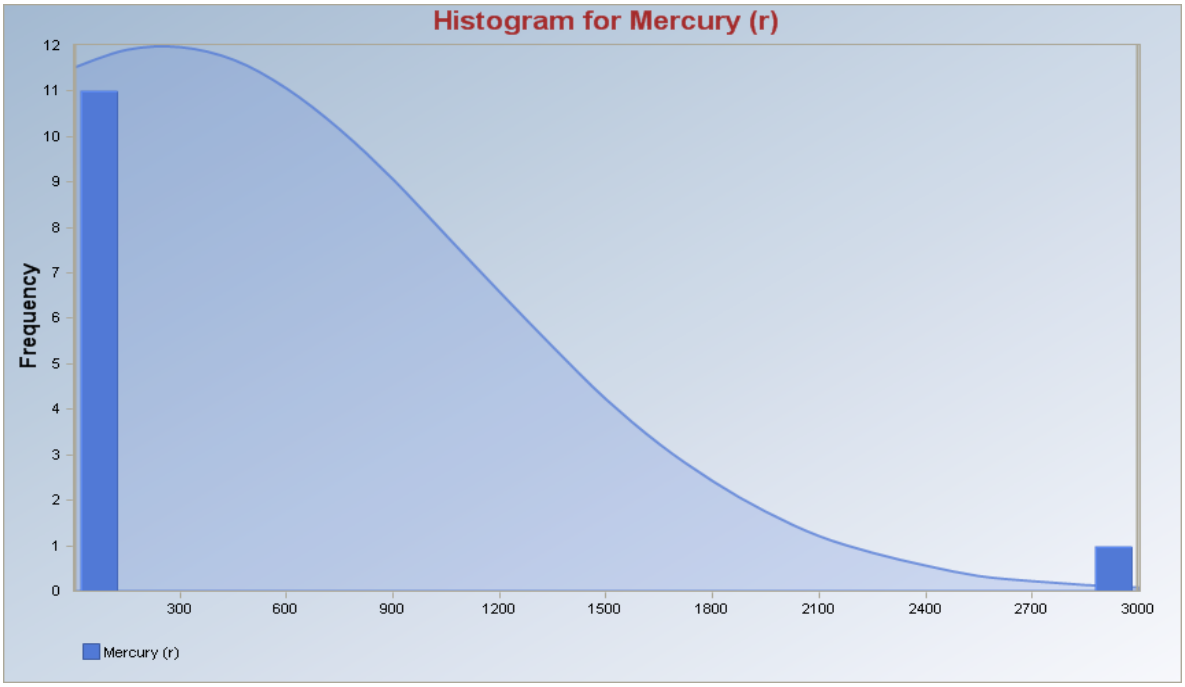
Mercury (r)

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Number of Missing Values	4		
Raw Statistics		Log-transformed Statistics	
Minimum	0.037	Minimum of Log Data	-3.297
Maximum	3000	Maximum of Log Data	8.006
Mean	250.5	Mean of log Data	-0.912
Median	0.123	SD of log Data	3.182
SD	865.9		
Coefficient of Variation	3.456		
Skewness	3.464		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.328	Shapiro Wilk Test Statistic	0.715
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	699.4	95% H-UCL	93696
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	75.61
95% Adjusted-CLT UCL	928.7	97.5% Chebyshev (MVUE) UCL	101.5
95% Modified-t UCL	741.1	99% Chebyshev (MVUE) UCL	152.3
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.148	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1696		
nu star	3.544		
Approximate Chi Square Value (.05)	0.55	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	661.7
Adjusted Chi Square Value	0.404	95% Jackknife UCL	699.4
		95% Standard Bootstrap UCL	630.3
Anderson-Darling Test Statistic	2.875	95% Bootstrap-t UCL	360939
Anderson-Darling 5% Critical Value	0.891	95% Hall's Bootstrap UCL	290076
Kolmogorov-Smirnov Test Statistic	0.449	95% Percentile Bootstrap UCL	750.4
Kolmogorov-Smirnov 5% Critical Value	0.274	95% BCA Bootstrap UCL	1000
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1340
		97.5% Chebyshev(Mean, Sd) UCL	1811
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2738
95% Approximate Gamma UCL	1613		
95% Adjusted Gamma UCL	2199		
Potential UCL to Use		Use 95% Hall's Bootstrap UCL	290076

Recommended UCL exceeds the maximum observation
In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL


Histogram for Mercury (q north)
Frequency
26
24
22
20
18
16
14
12
10
8
6
4
2
0
17
34
51
68
85
102
119
136
153
170
Mercury (q north)


Histogram for Mercury (q south)
Frequency
39
36
33
30
27
24
21
18
15
12
9
6
3
0
14
28
42
56
70
84
98
112
126
140
Mercury (q south)


Histogram for Mercury (r)
Frequency
0
1
2
3
4
5
6
7
8
9
10
11
12
300
600
900
1200
1500
1800
2100
2400
2700
3000
Mercury (r)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Manganese (o)

General Statistics			
Number of Valid Data	14	Number of Detected Data	14
Number of Distinct Detected Data	13	Number of Non-Detect Data	0
Number of Missing Values	3	Percent Non-Detects	0.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	345	Minimum Detected	5.844
Maximum Detected	2000	Maximum Detected	7.601
Mean of Detected	620.4	Mean of Detected	6.321
SD of Detected	410.6	SD of Detected	0.421
Minimum Non-Detect	N/A	Minimum Non-Detect	N/A
Maximum Non-Detect	N/A	Maximum Non-Detect	N/A
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.539	Shapiro Wilk Test Statistic	0.77
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	620.4	Mean	6.321
SD	410.6	SD	0.421
95% DL/2 (t) UCL	814.7	95% H-Stat (DL/2) UCL	766.6
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	3.754	Data do not follow a Discernable Distribution (0.05)	
Theta Star	165.3		
nu star	105.1		
A-D Test Statistic	1.545	Nonparametric Statistics	
5% A-D Critical Value	0.739	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.739	Mean	620.4
5% K-S Critical Value	0.229	SD	395.7
Data not Gamma Distributed at 5% Significance Level		SE of Mean	109.8
		95% KM (t) UCL	814.7
Assuming Gamma Distribution		95% KM (z) UCL	800.9
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	814.7
Minimum	345	95% KM (bootstrap t) UCL	1230
Maximum	2000	95% KM (BCA) UCL	829.6
Mean	620.4	95% KM (Percentile Bootstrap) UCL	833.2
Median	515	95% KM (Chebyshev) UCL	1099
SD	410.6	97.5% KM (Chebyshev) UCL	1306
k star	3.754	99% KM (Chebyshev) UCL	1712
Theta star	165.3		
Nu star	105.1	Potential UCLs to Use	
AppChi2	82.44	95% KM (Chebyshev) UCL	1099
95% Gamma Approximate UCL	790.8		
95% Adjusted Gamma UCL	817.2		

Note: DL/2 is not a recommended method.

Manganese (p)

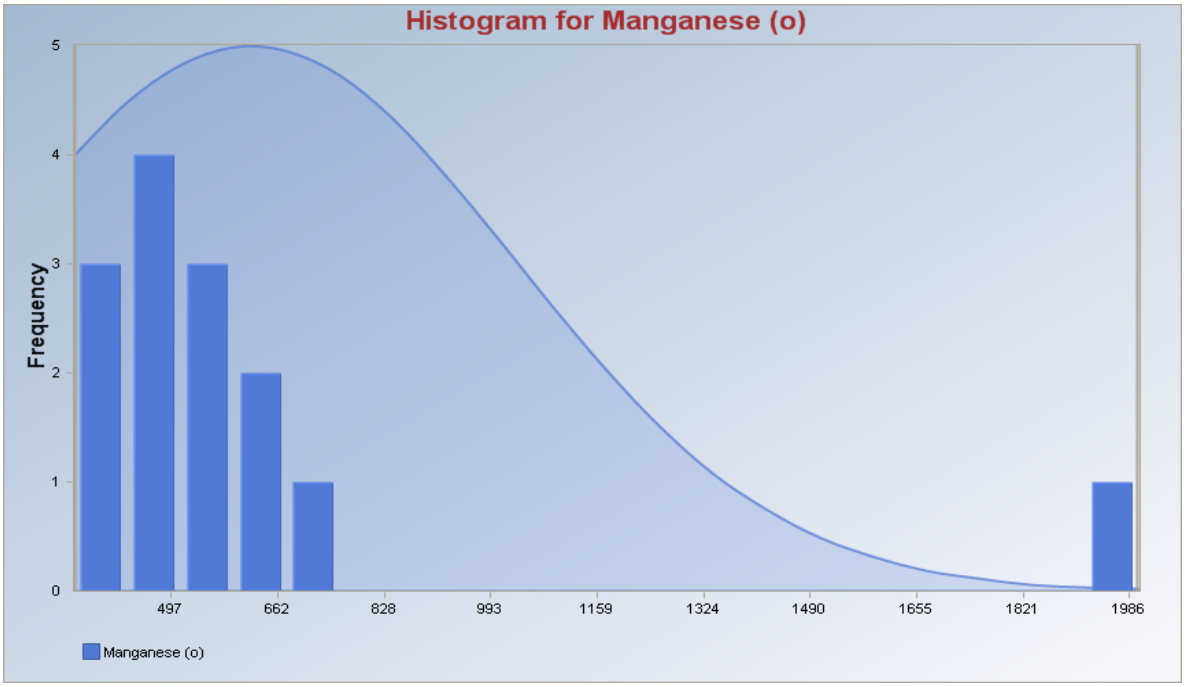
General Statistics			
Number of Valid Observations	35	Number of Distinct Observations	30
Number of Missing Values	12		
Raw Statistics		Log-transformed Statistics	
Minimum	1.2	Minimum of Log Data	0.182
Maximum	2700	Maximum of Log Data	7.901
Mean	258.9	Mean of log Data	4.898
Median	190	SD of log Data	1.287
SD	445.4		
Coefficient of Variation	1.721		
Skewness	5.102		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.432	Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical Value	0.934	Shapiro Wilk Critical Value	0.934
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	386.2	95% H-UCL	561.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	638.2
95% Adjusted-CLT UCL	452.1	97.5% Chebyshev (MVUE) UCL	787
95% Modified-t UCL	397	99% Chebyshev (MVUE) UCL	1079
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.832	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	311.1		
nu star	58.24		
Approximate Chi Square Value (.05)	41.69	Nonparametric Statistics	
Adjusted Level of Significance	0.0425	95% CLT UCL	382.7
Adjusted Chi Square Value	41.03	95% Jackknife UCL	386.2
		95% Standard Bootstrap UCL	378.8
Anderson-Darling Test Statistic	0.95	95% Bootstrap-t UCL	620.8
Anderson-Darling 5% Critical Value	0.781	95% Hall's Bootstrap UCL	875.1
Kolmogorov-Smirnov Test Statistic	0.137	95% Percentile Bootstrap UCL	398.4
Kolmogorov-Smirnov 5% Critical Value	0.154	95% BCA Bootstrap UCL	477.2
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	587
		97.5% Chebyshev(Mean, Sd) UCL	729
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1008
95% Approximate Gamma UCL	361.6		
95% Adjusted Gamma UCL	367.4		
Potential UCL to Use		Use 95% Approximate Gamma UCL	361.6

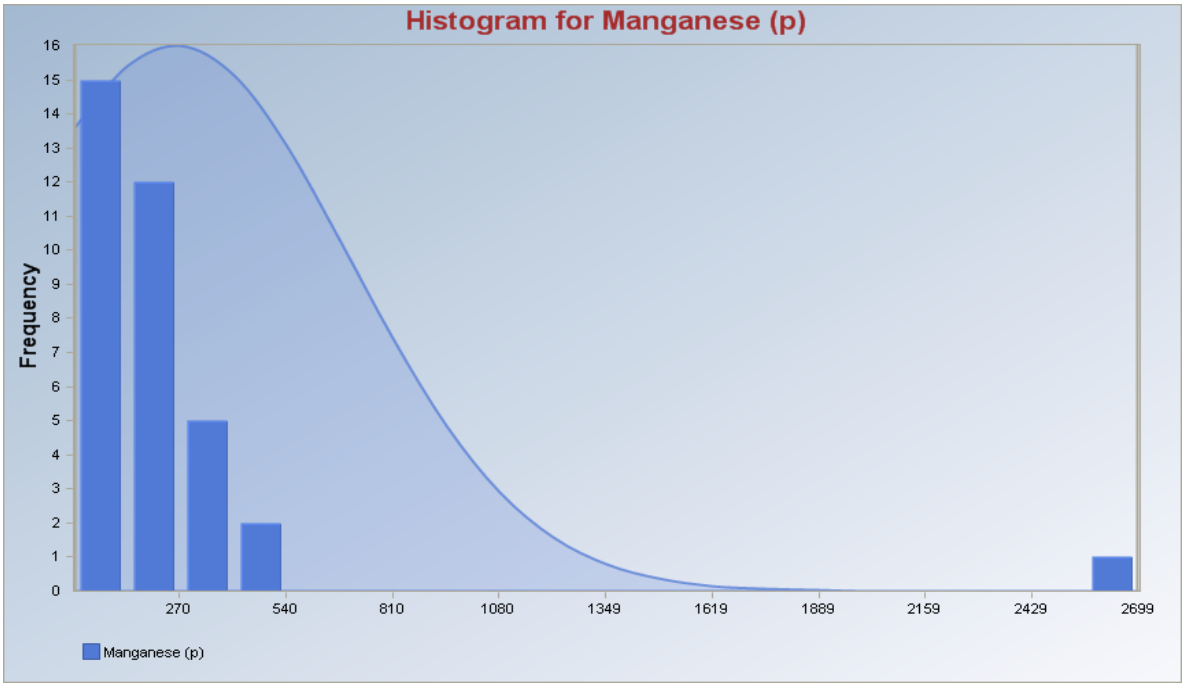
Manganese (q central)

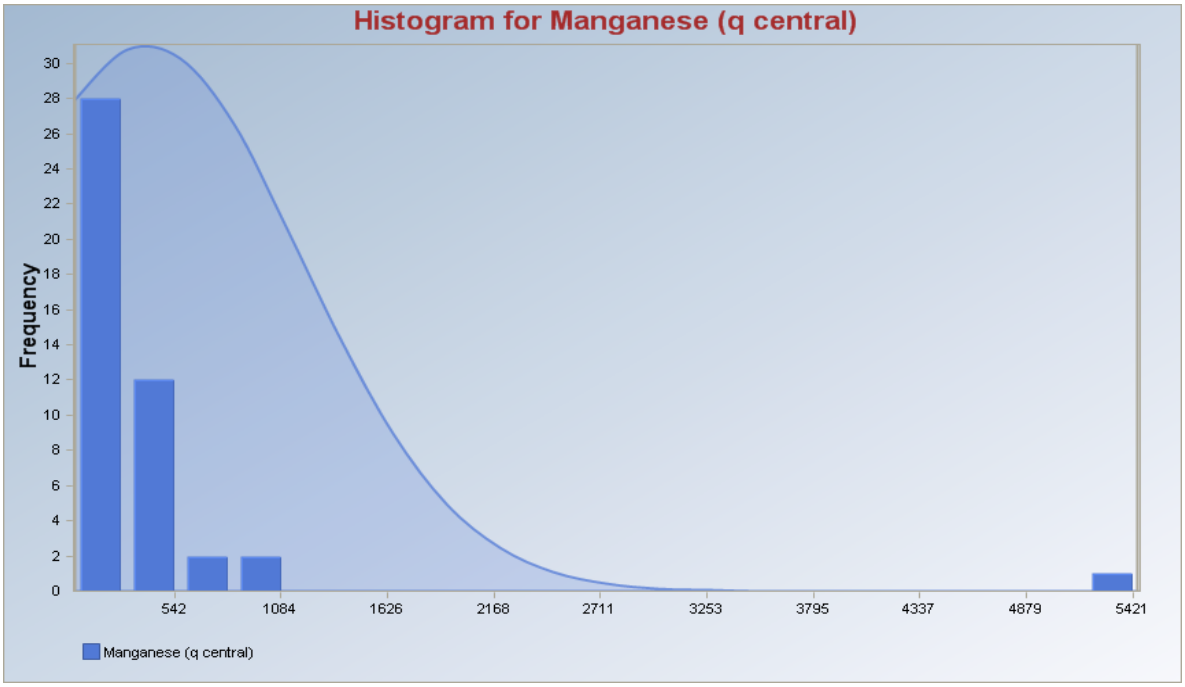
General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	37
Number of Missing Values	5		
Raw Statistics		Log-transformed Statistics	
Minimum	29	Minimum of Log Data	3.367
Maximum	5450	Maximum of Log Data	8.603
Mean	396.2	Mean of log Data	5.444
Median	250	SD of log Data	0.92
SD	799.2		
Coefficient of Variation	2.017		
Skewness	6.018		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.343	Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	596.4	95% H-UCL	482.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	588.2
95% Adjusted-CLT UCL	706.4	97.5% Chebyshev (MVUE) UCL	691.8
95% Modified-t UCL	614.2	99% Chebyshev (MVUE) UCL	895.4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.009	Data do not follow a Discernable Distribution (0.05)	
Theta Star	392.8		
nu star	90.79		
Approximate Chi Square Value (.05)	69.82	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	592.2
Adjusted Chi Square Value	69.21	95% Jackknife UCL	596.4
		95% Standard Bootstrap UCL	588.8
Anderson-Darling Test Statistic	2.683	95% Bootstrap-t UCL	1127
Anderson-Darling 5% Critical Value	0.776	95% Hall's Bootstrap UCL	1311
Kolmogorov-Smirnov Test Statistic	0.245	95% Percentile Bootstrap UCL	616.6
Kolmogorov-Smirnov 5% Critical Value	0.135	95% BCA Bootstrap UCL	765.2
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	915.5
		97.5% Chebyshev(Mean, Sd) UCL	1140
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1582
95% Approximate Gamma UCL	515.2		
95% Adjusted Gamma UCL	519.8		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	915.5

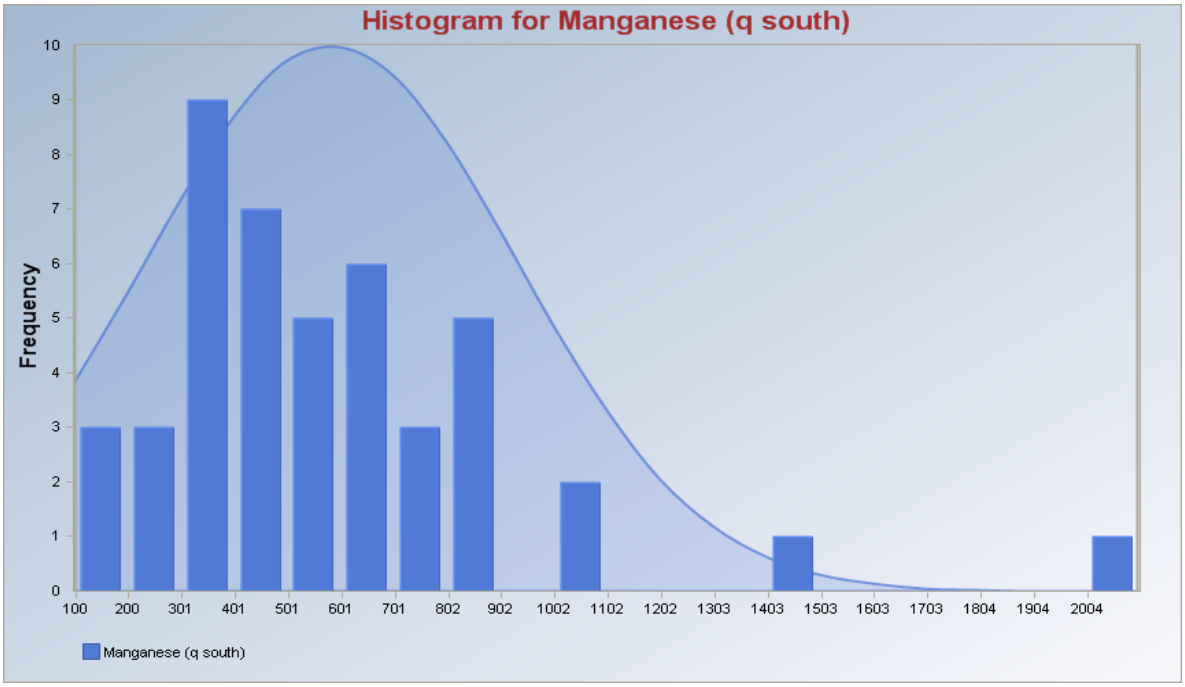
Manganese (q south)

General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	34
Number of Missing Values	4		
Raw Statistics		Log-transformed Statistics	
Minimum	96	Minimum of Log Data	4.564
Maximum	2100	Maximum of Log Data	7.65
Mean	579.9	Mean of log Data	6.209
Median	500	SD of log Data	0.574
SD	348.9		
Coefficient of Variation	0.602		
Skewness	2.159		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.84	Shapiro Wilk Test Statistic	0.977
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	667.3	95% H-UCL	693.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	815.3
95% Adjusted-CLT UCL	683.3	97.5% Chebyshev (MVUE) UCL	915.4
95% Modified-t UCL	670.1	99% Chebyshev (MVUE) UCL	1112
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.198	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	181.3		
nu star	287.8		
Approximate Chi Square Value (.05)	249.5	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	665.5
Adjusted Chi Square Value	248.4	95% Jackknife UCL	667.3
		95% Standard Bootstrap UCL	663.8
Anderson-Darling Test Statistic	0.378	95% Bootstrap-t UCL	689.5
Anderson-Darling 5% Critical Value	0.754	95% Hall's Bootstrap UCL	722.3
Kolmogorov-Smirnov Test Statistic	0.0872	95% Percentile Bootstrap UCL	672.8
Kolmogorov-Smirnov 5% Critical Value	0.133	95% BCA Bootstrap UCL	694.2
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	806.6
		97.5% Chebyshev(Mean, Sd) UCL	904.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1097
95% Approximate Gamma UCL	668.9		
95% Adjusted Gamma UCL	672.1		
Potential UCL to Use		Use 95% Approximate Gamma UCL	668.9


Histogram for Manganese (o)
Frequency
0
1
2
3
4
5
497
662
828
993
1159
1324
1490
1655
1821
1986
Manganese (o)


Histogram for Manganese (p)
Frequency
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
270
540
810
1080
1349
1619
1889
2159
2429
2699
Manganese (p)


Histogram for Manganese (q central)
Frequency
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
542
1084
1626
2168
2711
3253
3795
4337
4879
5421
Manganese (q central)


Histogram for Manganese (q south)
Frequency
0
1
2
3
4
5
6
7
8
9
10
100
200
301
401
501
601
701
802
902
1002
1102
1202
1303
1403
1503
1603
1703
1804
1904
2004
Manganese (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File WorkSheet.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

Naphthalene (s)

General Statistics

Number of Valid Data	11	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	4
Number of Missing Values	3	Percent Non-Detects	36.36%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.15	Minimum Detected	-1.897
Maximum Detected	48	Maximum Detected	3.871
Mean of Detected	21.89	Mean of Detected	2.2
SD of Detected	18.4	SD of Detected	2.085
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.46	Maximum Non-Detect	-0.777

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	45.45%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk Test Statistic	0.806
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

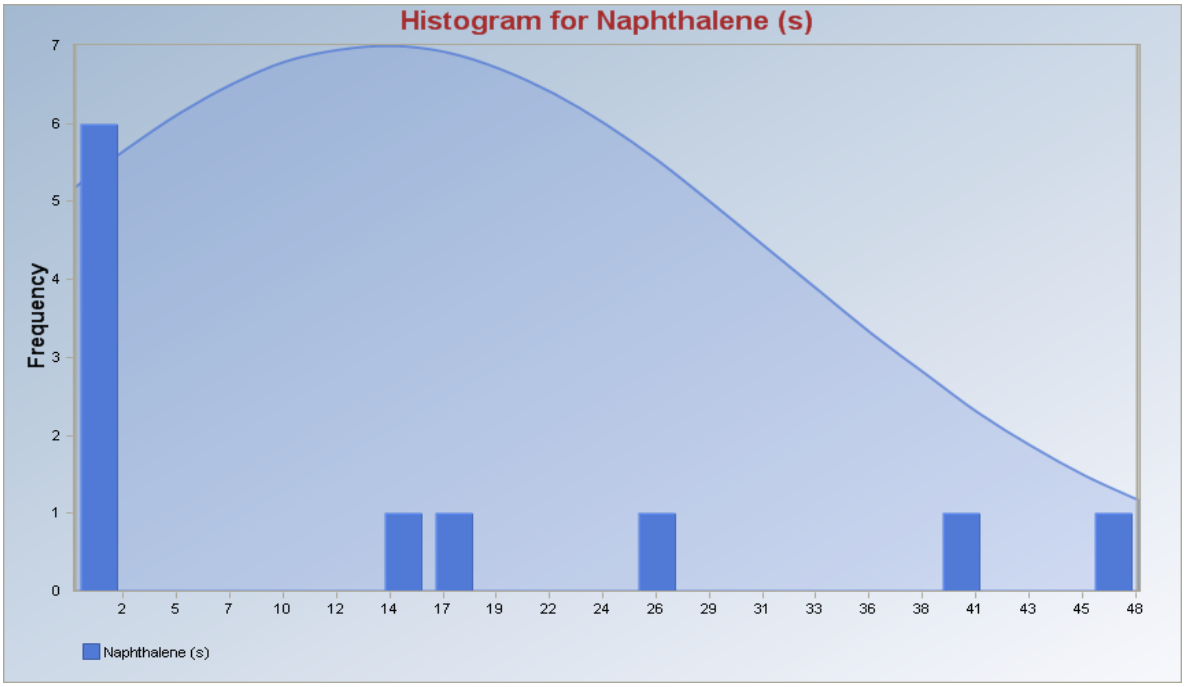
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	14	Mean	0.806
SD	17.97	SD	2.52
95% DL/2 (t) UCL	23.83	95% H-Stat (DL/2) UCL	819

Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	4.763	Mean in Log Scale	0.969
SD	27.69	SD in Log Scale	2.351
95% MLE (t) UCL	19.9	Mean in Original Scale	14.04
95% MLE (Tiku) UCL	22.6	SD in Original Scale	17.94
		95% Percentile Bootstrap UCL	22.73
		95% BCA Bootstrap UCL	24.46

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.486	Data appear Normal at 5% Significance Level	
Theta Star	45.02		
nu star	6.808		

A-D Test Statistic	0.451	Nonparametric Statistics	
5% A-D Critical Value	0.74	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.74	Mean	13.99
5% K-S Critical Value	0.324	SD	17.15
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	5.586
		95% KM (t) UCL	24.11
Assuming Gamma Distribution		95% KM (z) UCL	23.17
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	23.51
Minimum	0.15	95% KM (bootstrap t) UCL	27.3
Maximum	48	95% KM (BCA) UCL	27.09
Mean	18.59	95% KM (Percentile Bootstrap) UCL	25.91
Median	12.8	95% KM (Chebyshev) UCL	38.33
SD	14.98	97.5% KM (Chebyshev) UCL	48.87
k star	0.768	99% KM (Chebyshev) UCL	69.56
Theta star	24.19		
Nu star	16.9	Potential UCLs to Use	
AppChi2	8.601	95% KM (t) UCL	24.11
95% Gamma Approximate UCL	36.52	95% KM (Percentile Bootstrap) UCL	25.91
95% Adjusted Gamma UCL	41.04		

Note: DL/2 is not a recommended method.


Histogram for Naphthalene (s)
Frequency
0
1
2
3
4
5
6
7
2
5
7
10
12
14
17
19
22
24
26
29
31
33
36
38
41
43
45
48
Naphthalene (s)

General UCL Statistics for Data Sets with Non-Detects

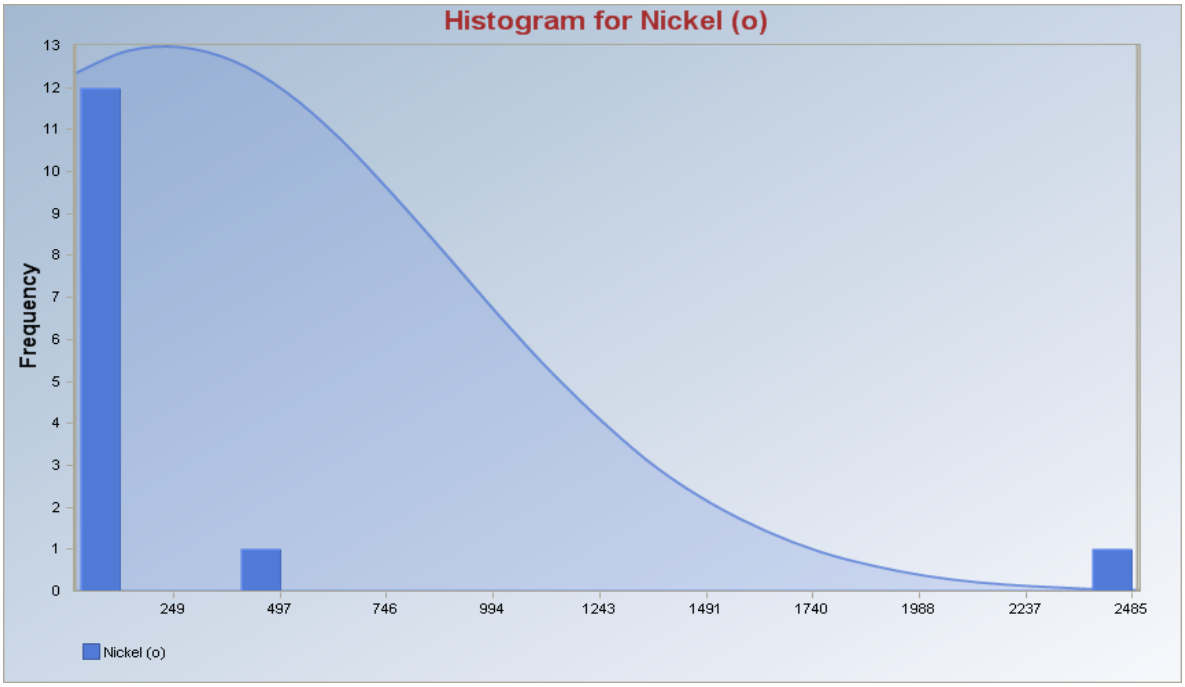
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

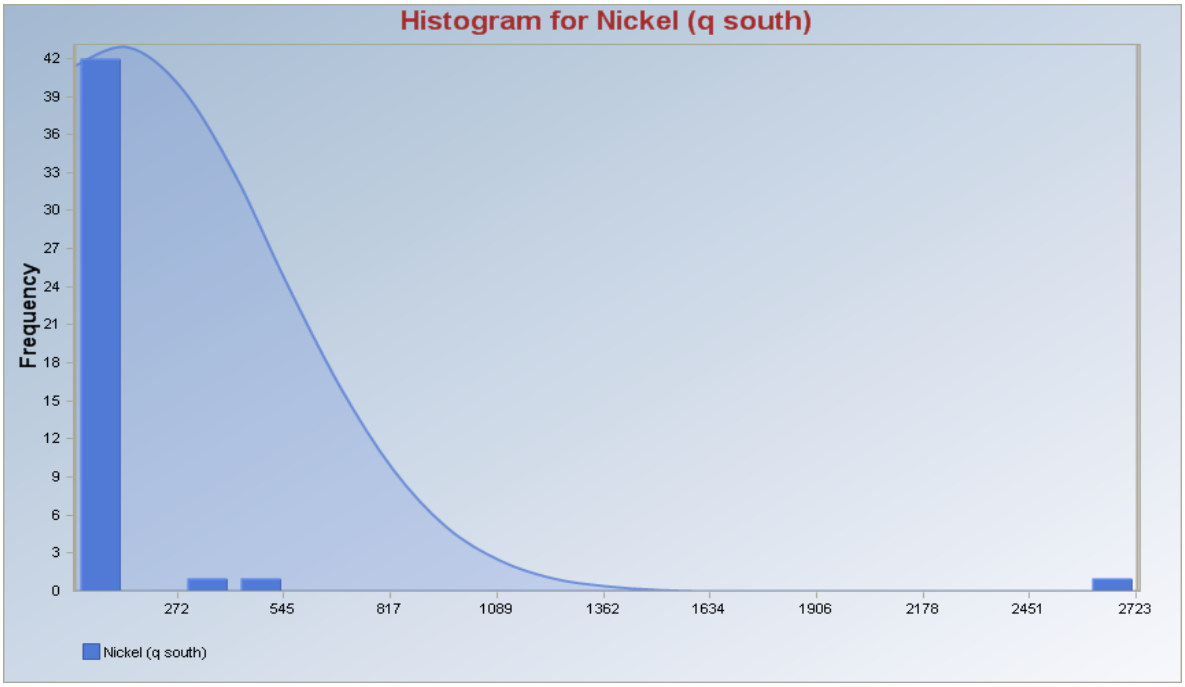
Nickel (o)

General Statistics			
Number of Valid Observations	14	Number of Distinct Observations	9
Number of Missing Values	3		
Raw Statistics		Log-transformed Statistics	
Minimum	15	Minimum of Log Data	2.708
Maximum	2500	Maximum of Log Data	7.824
Mean	230	Mean of log Data	3.483
Median	18	SD of log Data	1.538
SD	665.9		
Coefficient of Variation	2.895		
Skewness	3.527		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.375	Shapiro Wilk Test Statistic	0.525
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	545.1	95% H-UCL	529
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	275.5
95% Adjusted-CLT UCL	701.9	97.5% Chebyshev (MVUE) UCL	355.2
95% Modified-t UCL	573.1	99% Chebyshev (MVUE) UCL	511.9
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.319	Data do not follow a Discernable Distribution (0.05)	
Theta Star	721.9		
nu star	8.92		
Approximate Chi Square Value (.05)	3.279	Nonparametric Statistics	
Adjusted Level of Significance	0.0312	95% CLT UCL	522.7
Adjusted Chi Square Value	2.841	95% Jackknife UCL	545.1
		95% Standard Bootstrap UCL	523.4
Anderson-Darling Test Statistic	3.73	95% Bootstrap-t UCL	46885
Anderson-Darling 5% Critical Value	0.823	95% Hall's Bootstrap UCL	28987
Kolmogorov-Smirnov Test Statistic	0.488	95% Percentile Bootstrap UCL	583.2
Kolmogorov-Smirnov 5% Critical Value	0.246	95% BCA Bootstrap UCL	796
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1006
		97.5% Chebyshev(Mean, Sd) UCL	1341
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2001
95% Approximate Gamma UCL	625.6		
95% Adjusted Gamma UCL	722.1		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	2001

Nickel (q south)

General Statistics			
Number of Valid Observations	45	Number of Distinct Observations	35
Number of Missing Values	4		
Raw Statistics		Log-transformed Statistics	
Minimum	6.95	Minimum of Log Data	1.939
Maximum	2730	Maximum of Log Data	7.912
Mean	118.7	Mean of log Data	3.686
Median	28.5	SD of log Data	1.11
SD	407.1		
Coefficient of Variation	3.431		
Skewness	6.292		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.259	Shapiro Wilk Test Statistic	0.894
Shapiro Wilk Critical Value	0.945	Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	220.6	95% H-UCL	111.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	134.9
95% Adjusted-CLT UCL	279.3	97.5% Chebyshev (MVUE) UCL	162.1
95% Modified-t UCL	230.1	99% Chebyshev (MVUE) UCL	215.3
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.548	Data do not follow a Discernable Distribution (0.05)	
Theta Star	216.7		
nu star	49.28		
Approximate Chi Square Value (.05)	34.16	Nonparametric Statistics	
Adjusted Level of Significance	0.0447	95% CLT UCL	218.5
Adjusted Chi Square Value	33.74	95% Jackknife UCL	220.6
		95% Standard Bootstrap UCL	219.2
Anderson-Darling Test Statistic	5.25	95% Bootstrap-t UCL	816
Anderson-Darling 5% Critical Value	0.807	95% Hall's Bootstrap UCL	572.5
Kolmogorov-Smirnov Test Statistic	0.262	95% Percentile Bootstrap UCL	232.9
Kolmogorov-Smirnov 5% Critical Value	0.139	95% BCA Bootstrap UCL	311.9
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	383.2
		97.5% Chebyshev(Mean, Sd) UCL	497.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	722.4
95% Approximate Gamma UCL	171.2		
95% Adjusted Gamma UCL	173.3		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	722.4


Histogram for Nickel (o)
Frequency
13
12
11
10
9
8
7
6
5
4
3
2
1
0
249
497
746
994
1243
1491
1740
1988
2237
2485
Nickel (o)


Histogram for Nickel (q south)
Frequency
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
272
545
817
1089
1362
1634
1906
2178
2451
2723
Nickel (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Tetrachloroethene (p)

General Statistics			
Number of Valid Data	34	Number of Detected Data	17
Number of Distinct Detected Data	16	Number of Non-Detect Data	1700.00%
Number of Missing Values	13	Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0019	Minimum Detected	-6.266
Maximum Detected	140	Maximum Detected	4.942
Mean of Detected	12.21	Mean of Detected	-1.543
SD of Detected	35.85	SD of Detected	3.315
Minimum Non-Detect	0.0034	Minimum Non-Detect	-5.684
Maximum Non-Detect	10	Maximum Non-Detect	2.303

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	32
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	94.12%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.396	Shapiro Wilk Test Statistic	0.946
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.556	Mean	-2.131
SD	25.64	SD	3.142
95% DL/2 (t) UCL	14	95% H-Stat (DL/2) UCL	710.2

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-3.35
		SD in Log Scale	3.087
		Mean in Original Scale	6.11
		SD in Original Scale	25.72
		95% Percentile Bootstrap UCL	14.3
		95% BCA Bootstrap UCL	18.8

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.191	Data appear Lognormal at 5% Significance Level	
Theta Star	63.92		
nu star	6.492		

A-D Test Statistic	1.507	Nonparametric Statistics	
5% A-D Critical Value	0.889	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.889	Mean	6.146
5% K-S Critical Value	0.232	SD	25.33
Data not Gamma Distributed at 5% Significance Level		SE of Mean	4.478
		95% KM (t) UCL	13.72
Assuming Gamma Distribution		95% KM (z) UCL	13.51
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	13.61
Minimum	0.0019	95% KM (bootstrap t) UCL	235.8
Maximum	140	95% KM (BCA) UCL	14.32
Mean	12.72	95% KM (Percentile Bootstrap) UCL	14.14
Median	9.691	95% KM (Chebyshev) UCL	25.66
SD	25.08	97.5% KM (Chebyshev) UCL	34.11
k star	0.32	99% KM (Chebyshev) UCL	50.7
Theta star	39.71		
Nu star	21.78	Potential UCLs to Use	
AppChi2	12.18	99% KM (Chebyshev) UCL	50.7
95% Gamma Approximate UCL	22.76		
95% Adjusted Gamma UCL	23.44		

Note: DL/2 is not a recommended method.

Tetrachloroethene (q north)

General Statistics			
Number of Valid Data	29	Number of Detected Data	16
Number of Distinct Detected Data	16	Number of Non-Detect Data	13
Number of Missing Values	7	Percent Non-Detects	44.83%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.30E-04	Minimum Detected	-7.752
Maximum Detected	28	Maximum Detected	3.332
Mean of Detected	1.822	Mean of Detected	-5.333
SD of Detected	6.986	SD of Detected	3.065
Minimum Non-Detect	0.00445	Minimum Non-Detect	-5.415
Maximum Non-Detect	0.39	Maximum Non-Detect	-0.942
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	27
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	93.10%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.288	Shapiro Wilk Test Statistic	0.752
5% Shapiro Wilk Critical Value	0.887	5% Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.017	Mean	-5.261
SD	5.194	SD	2.435
95% DL/2 (t) UCL	2.657	95% H-Stat (DL/2) UCL	1.955
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.938
		SD in Log Scale	2.349
		Mean in Original Scale	1.006
		SD in Original Scale	5.196
		95% Percentile Bootstrap UCL	2.936
		95% BCA Bootstrap UCL	3.941
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.149	Data do not follow a Discernable Distribution (0.05)	
Theta Star	12.24		
nu star	4.764		
A-D Test Statistic	3.489	Nonparametric Statistics	
5% A-D Critical Value	0.904	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.904	Mean	1.006
5% K-S Critical Value	0.241	SD	5.105
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.979
		95% KM (t) UCL	2.672
Assuming Gamma Distribution		95% KM (z) UCL	2.616
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.647
Minimum	4.30E-04	95% KM (bootstrap t) UCL	1421
Maximum	28	95% KM (BCA) UCL	2.936
Mean	1.944	95% KM (Percentile Bootstrap) UCL	2.936
Median	1.1	95% KM (Chebyshev) UCL	5.274
SD	5.115	97.5% KM (Chebyshev) UCL	7.121
k star	0.221	99% KM (Chebyshev) UCL	10.75
Theta star	8.786		
Nu star	12.83	Potential UCLs to Use	
AppChi2	5.78	99% KM (Chebyshev) UCL	10.75
95% Gamma Approximate UCL	4.315		
95% Adjusted Gamma UCL	4.537		

Note: DL/2 is not a recommended method.

Tetrachloroethene (q south)

General Statistics			
Number of Valid Data	45	Number of Detected Data	25
Number of Distinct Detected Data	23	Number of Non-Detect Data	20
Number of Missing Values	4	Percent Non-Detects	44.44%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.35E-04	Minimum Detected	-7.533
Maximum Detected	8.8	Maximum Detected	2.175
Mean of Detected	0.483	Mean of Detected	-4.384
SD of Detected	1.774	SD of Detected	2.526
Minimum Non-Detect	0.004	Minimum Non-Detect	-5.521
Maximum Non-Detect	0.029	Maximum Non-Detect	-3.54
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	38
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	84.44%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.303	Shapiro Wilk Test Statistic	0.878
5% Shapiro Wilk Critical Value	0.918	5% Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.27	Mean	-5.001
SD	1.332	SD	2.009
95% DL/2 (t) UCL	0.604	95% H-Stat (DL/2) UCL	0.146
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.083
		SD in Log Scale	2.065
		Mean in Original Scale	0.27
		SD in Original Scale	1.332
		95% Percentile Bootstrap UCL	0.652
		95% BCA Bootstrap UCL	0.943
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.204	Data do not follow a Discernable Distribution (0.05)	
Theta Star	2.374		
nu star	10.18		
A-D Test Statistic	3.544	Nonparametric Statistics	
5% A-D Critical Value	0.895	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.895	Mean	0.27
5% K-S Critical Value	0.193	SD	1.317
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.2
		95% KM (t) UCL	0.607
Assuming Gamma Distribution		95% KM (z) UCL	0.599
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.603
Minimum	5.35E-04	95% KM (bootstrap t) UCL	2.519
Maximum	8.8	95% KM (BCA) UCL	0.66
Mean	0.513	95% KM (Percentile Bootstrap) UCL	0.661
Median	0.349	95% KM (Chebyshev) UCL	1.143
SD	1.311	97.5% KM (Chebyshev) UCL	1.522
k star	0.325	99% KM (Chebyshev) UCL	2.264
Theta star	1.576		
Nu star	29.28	Potential UCLs to Use	
AppChi2	17.93	99% KM (Chebyshev) UCL	2.264
95% Gamma Approximate UCL	0.837		
95% Adjusted Gamma UCL	0.851		

Note: DL/2 is not a recommended method.

Tetrachloroethene (r)

General Statistics			
Number of Valid Data	12	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	2
Number of Missing Values	4	Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0026	Minimum Detected	-5.952
Maximum Detected	1200	Maximum Detected	7.09
Mean of Detected	269.4	Mean of Detected	-0.418
SD of Detected	454.7	SD of Detected	5.514
Minimum Non-Detect	0.0049	Minimum Non-Detect	-5.319
Maximum Non-Detect	0.0071	Maximum Non-Detect	-4.948
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	41.67%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.661	Shapiro Wilk Test Statistic	0.818
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	224.5	Mean	-1.319
SD	424.4	SD	5.414
95% DL/2 (t) UCL	444.6	95% H-Stat (DL/2) UCL	1.16E+14
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	30.13	Mean in Log Scale	-1.387
SD	598.2	SD in Log Scale	5.477
95% MLE (t) UCL	340.3	Mean in Original Scale	224.5
95% MLE (Tiku) UCL	383.4	SD in Original Scale	424.4
		95% Percentile Bootstrap UCL	424.5
		95% BCA Bootstrap UCL	470.8
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.158	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	1706		
nu star	3.158		
A-D Test Statistic	1.015	Nonparametric Statistics	
5% A-D Critical Value	0.878	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.878	Mean	224.5
5% K-S Critical Value	0.297	SD	406.4
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	123.7
		95% KM (t) UCL	446.6
Assuming Gamma Distribution		95% KM (z) UCL	427.9
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	444.6
Minimum	0.0026	95% KM (bootstrap t) UCL	642.6
Maximum	1200	95% KM (BCA) UCL	426.6
Mean	225.7	95% KM (Percentile Bootstrap) UCL	426
Median	2.15	95% KM (Chebyshev) UCL	763.5
SD	423.8	97.5% KM (Chebyshev) UCL	996.7
k star	0.162	99% KM (Chebyshev) UCL	1455
Theta star	1391		
Nu star	3.892	Potential UCLs to Use	
AppChi2	0.68	95% KM (Chebyshev) UCL	763.5
95% Gamma Approximate UCL	1292		
95% Adjusted Gamma UCL	1734		

Note: DL/2 is not a recommended method.

Tetrachloroethene (s)

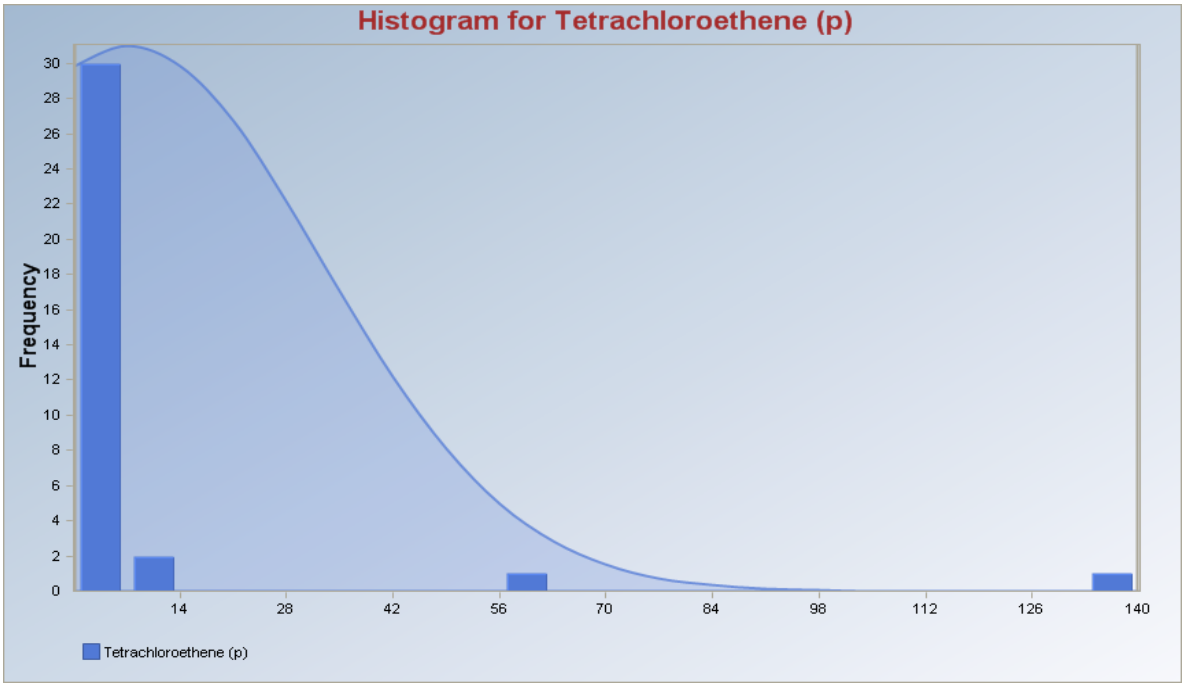
General Statistics			
Number of Valid Data	11	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	2
Number of Missing Values	3	Percent Non-Detects	18.18%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	8.30E-04	Minimum Detected	-7.094
Maximum Detected	33	Maximum Detected	3.497
Mean of Detected	11.65	Mean of Detected	-0.346
SD of Detected	12.67	SD of Detected	4.528
Minimum Non-Detect	0.0054	Minimum Non-Detect	-5.221
Maximum Non-Detect	0.19	Maximum Non-Detect	-1.661
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	45.45%

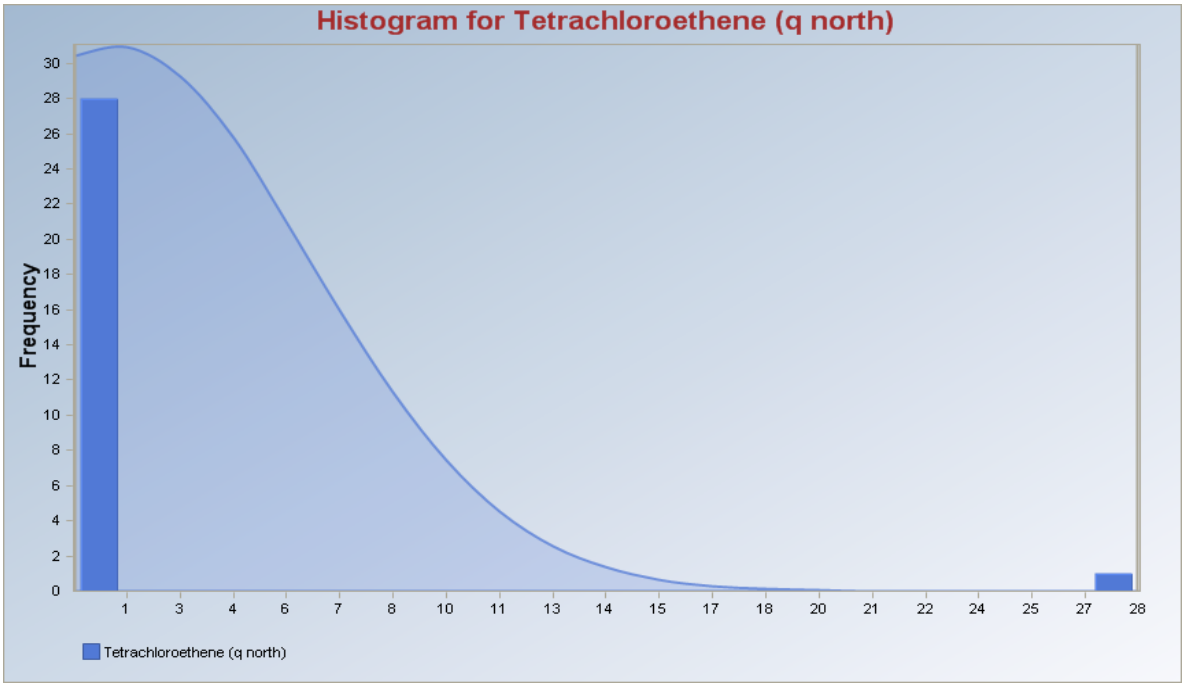
Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

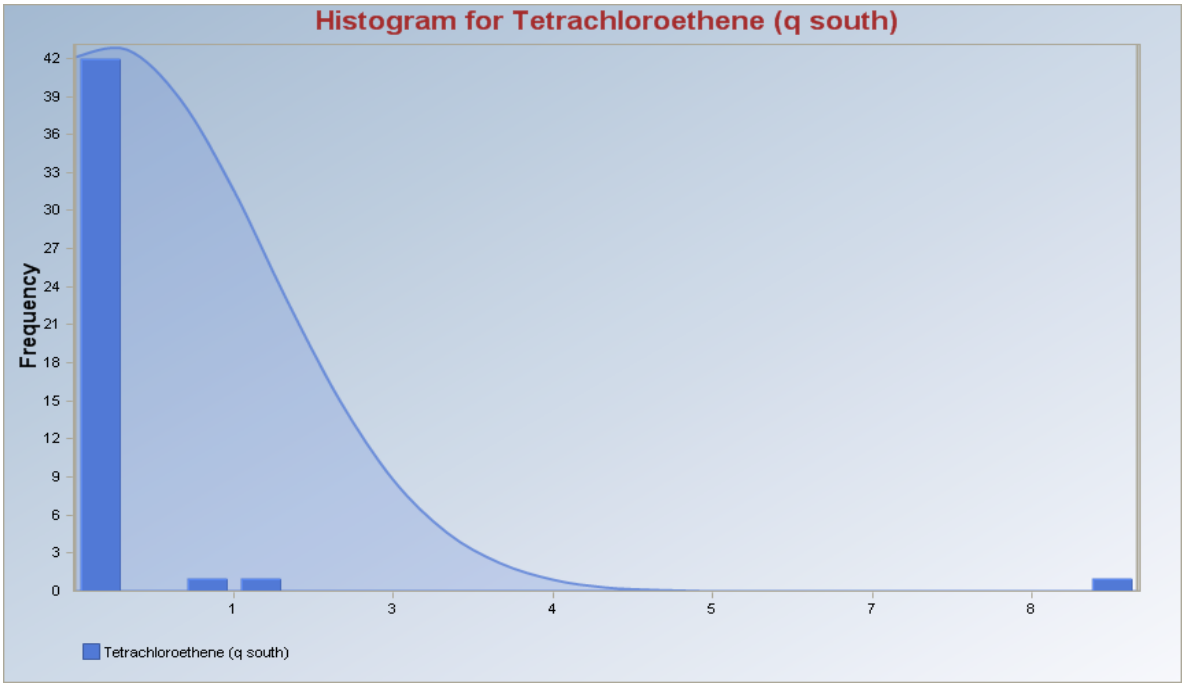
It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

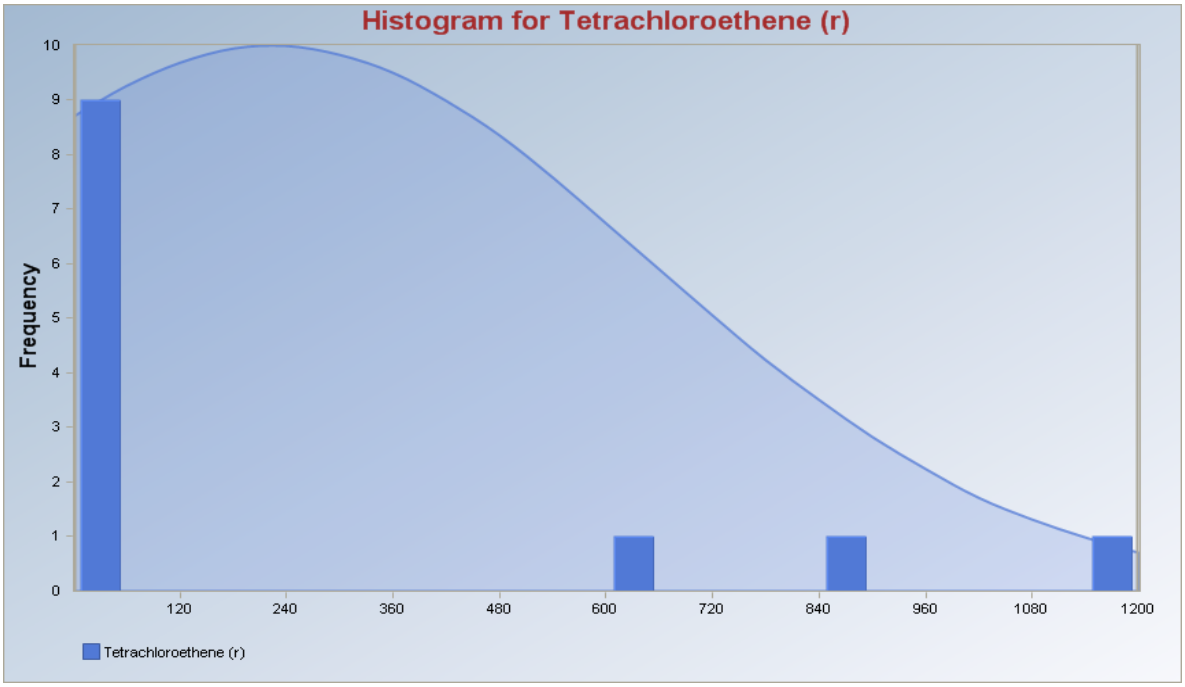
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.856	Shapiro Wilk Test Statistic	0.749
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.537	Mean	-1.035
SD	12.26	SD	4.403
95% DL/2 (t) UCL	16.24	95% H-Stat (DL/2) UCL	4.45E+09
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.226	Mean in Log Scale	-1.178
SD	18.93	SD in Log Scale	4.453
95% MLE (t) UCL	13.57	Mean in Original Scale	9.529
95% MLE (Tiku) UCL	15.42	SD in Original Scale	12.27
		95% Percentile Bootstrap UCL	15.44
		95% BCA Bootstrap UCL	16.53
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.243	Data appear Normal at 5% Significance Level	
Theta Star	47.96		
nu star	4.37		
A-D Test Statistic	0.937	Nonparametric Statistics	
5% A-D Critical Value	0.825	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.825	Mean	9.528
5% K-S Critical Value	0.304	SD	11.7
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	3.742
		95% KM (t) UCL	16.31
Assuming Gamma Distribution		95% KM (z) UCL	15.68
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	16.23
Minimum	8.30E-04	95% KM (bootstrap t) UCL	18.87
Maximum	33	95% KM (BCA) UCL	16.55
Mean	10.1	95% KM (Percentile Bootstrap) UCL	15.91
Median	5.8	95% KM (Chebyshev) UCL	25.84
SD	11.84	97.5% KM (Chebyshev) UCL	32.9
k star	0.272	99% KM (Chebyshev) UCL	46.76
Theta star	37.15		
Nu star	5.978	Potential UCLs to Use	
AppChi2	1.629	95% KM (t) UCL	16.31
95% Gamma Approximate UCL	37.06	95% KM (Percentile Bootstrap) UCL	15.91
95% Adjusted Gamma UCL	46.86		

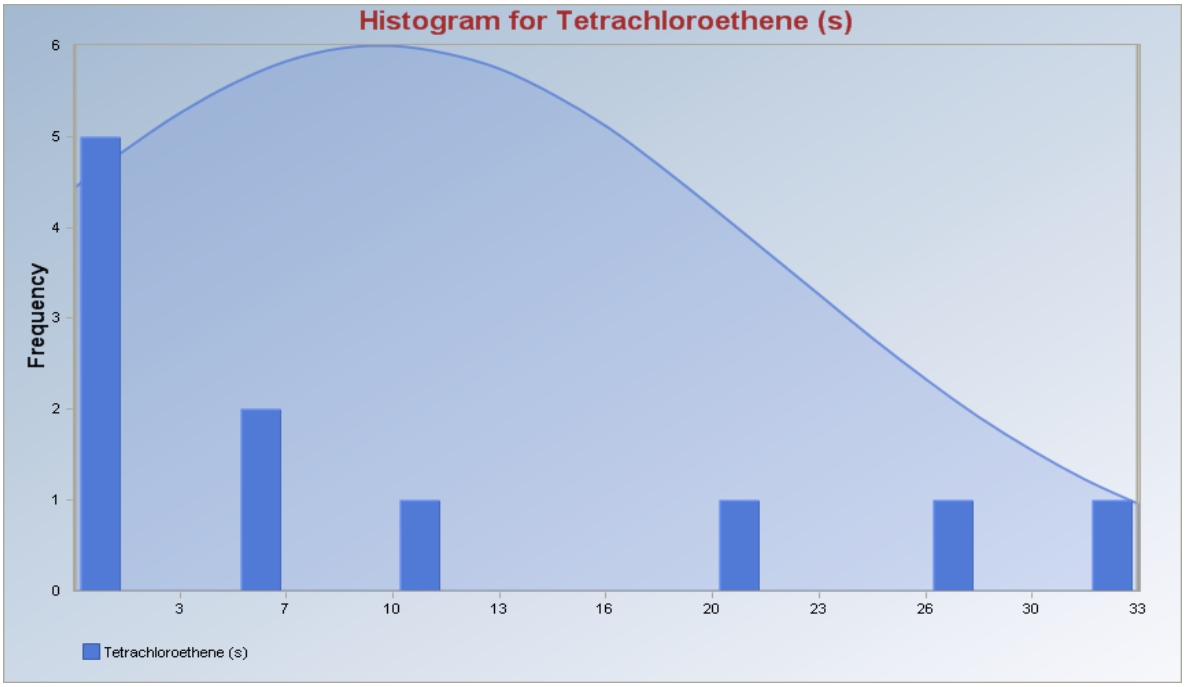
Note: DL/2 is not a recommended method.


Histogram for Tetrachloroethene (p)
Frequency
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
14
28
42
56
70
84
98
112
126
140
Tetrachloroethene (p)


Histogram for Tetrachloroethene (q north)
Frequency
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
1
3
4
6
7
8
10
11
13
14
15
17
18
20
21
22
24
25
27
28
Tetrachloroethene (q north)


Histogram for Tetrachloroethene (q south)
Frequency
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
1
3
4
5
7
8
Tetrachloroethene (q south)


Histogram for Tetrachloroethene (r)
Frequency
10
9
8
7
6
5
4
3
2
1
0
120
240
360
480
600
720
840
960
1080
1200
Tetrachloroethene (r)


Histogram for Tetrachloroethene (s)
Frequency
0
1
2
3
4
5
6
3
7
10
13
16
20
23
26
30
33
Tetrachloroethene (s)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Pentachlorophenol (o)

General Statistics			
Number of Valid Data	14	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	5
Number of Missing Values	3	Percent Non-Detects	35.71%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.023	Minimum Detected	-3.772
Maximum Detected	7900	Maximum Detected	8.975
Mean of Detected	1260	Mean of Detected	2.066
SD of Detected	2627	SD of Detected	4.817
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	470	Maximum Non-Detect	6.153

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	78.57%

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.577	Shapiro Wilk Test Statistic	0.91
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	832.9	Mean	1.793
SD	2146	SD	4.453
95% DL/2 (t) UCL	1849	95% H-Stat (DL/2) UCL	1.67E+11
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.119
		SD in Log Scale	4.983
		Mean in Original Scale	810
		SD in Original Scale	2154
		95% Percentile Bootstrap UCL	1760
		95% BCA Bootstrap UCL	2569
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.175	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	7202		
nu star	3.149		
A-D Test Statistic	0.607	Nonparametric Statistics	
5% A-D Critical Value	0.863	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.863	Mean	810.4
5% K-S Critical Value	0.31	SD	2076
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	588.4
		95% KM (t) UCL	1852
Assuming Gamma Distribution		95% KM (z) UCL	1778
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1830
Minimum	0.023	95% KM (bootstrap t) UCL	7294
Maximum	7900	95% KM (BCA) UCL	1872
Mean	1194	95% KM (Percentile Bootstrap) UCL	1843
Median	989.5	95% KM (Chebyshev) UCL	3375
SD	2063	97.5% KM (Chebyshev) UCL	4485
k star	0.222	99% KM (Chebyshev) UCL	6665
Theta star	5380		
Nu star	6.213	Potential UCLs to Use	
AppChi2	1.75	95% KM (BCA) UCL	1872
95% Gamma Approximate UCL	4239		
95% Adjusted Gamma UCL	5098		

Note: DL/2 is not a recommended method.

Pentachlorophenol (p)

General Statistics			
Number of Valid Data	34	Number of Detected Data	31
Number of Distinct Detected Data	30	Number of Non-Detect Data	3
Number of Missing Values	13	Percent Non-Detects	8.82%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0043	Minimum Detected	-5.449
Maximum Detected	88	Maximum Detected	4.477
Mean of Detected	3.466	Mean of Detected	-1.724
SD of Detected	15.73	SD of Detected	2.3
Minimum Non-Detect	0.012	Minimum Non-Detect	-4.423
Maximum Non-Detect	0.47	Maximum Non-Detect	-0.755
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	23
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	11
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	67.65%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.225	Shapiro Wilk Test Statistic	0.966
5% Shapiro Wilk Critical Value	0.929	5% Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.169	Mean	-1.855
SD	15.03	SD	2.28
95% DL/2 (t) UCL	7.531	95% H-Stat (DL/2) UCL	10.84
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.933
		SD in Log Scale	2.315
		Mean in Original Scale	3.163
		SD in Original Scale	15.03
		95% Percentile Bootstrap UCL	8.261
		95% BCA Bootstrap UCL	10.98
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.239	Data appear Lognormal at 5% Significance Level	
Theta Star	14.5		
nu star	14.82		
A-D Test Statistic	3.107	Nonparametric Statistics	
5% A-D Critical Value	0.88	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.88	Mean	3.164
5% K-S Critical Value	0.173	SD	14.81
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2.581
		95% KM (t) UCL	7.533
Assuming Gamma Distribution		95% KM (z) UCL	7.41
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7.526
Minimum	1.00E-09	95% KM (bootstrap t) UCL	67.86
Maximum	88	95% KM (BCA) UCL	8.415
Mean	3.16	95% KM (Percentile Bootstrap) UCL	8.27
Median	0.155	95% KM (Chebyshev) UCL	14.42
SD	15.03	97.5% KM (Chebyshev) UCL	19.28
k star	0.171	99% KM (Chebyshev) UCL	28.85
Theta star	18.45		
Nu star	11.65	Potential UCLs to Use	
AppChi2	4.995	99% KM (Chebyshev) UCL	28.85
95% Gamma Approximate UCL	7.369		
95% Adjusted Gamma UCL	7.7		

Note: DL/2 is not a recommended method.

Pentachlorophenol (q central)

General Statistics			
Number of Valid Data	45	Number of Detected Data	21
Number of Distinct Detected Data	19	Number of Non-Detect Data	24
Number of Missing Values	5	Percent Non-Detects	53.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0033	Minimum Detected	-5.714
Maximum Detected	10.15	Maximum Detected	2.317
Mean of Detected	0.84	Mean of Detected	-2.562
SD of Detected	2.234	SD of Detected	2.256
Minimum Non-Detect	0.0052	Minimum Non-Detect	-5.259
Maximum Non-Detect	0.028	Maximum Non-Detect	-3.576
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	34
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	11
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	75.56%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.417	Shapiro Wilk Test Statistic	0.912
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.396	Mean	-3.808
SD	1.564	SD	1.949
95% DL/2 (t) UCL	0.788	95% H-Stat (DL/2) UCL	0.338
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.441
		SD in Log Scale	2.441
		Mean in Original Scale	0.394
		SD in Original Scale	1.564
		95% Percentile Bootstrap UCL	0.832
		95% BCA Bootstrap UCL	1.114
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.281	Data appear Lognormal at 5% Significance Level	
Theta Star	2.995		
nu star	11.78		
A-D Test Statistic	1.82	Nonparametric Statistics	
5% A-D Critical Value	0.85	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.85	Mean	0.396
5% K-S Critical Value	0.206	SD	1.546
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.236
		95% KM (t) UCL	0.793
Assuming Gamma Distribution		95% KM (z) UCL	0.784
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.787
Minimum	0.0033	95% KM (bootstrap t) UCL	1.876
Maximum	10.15	95% KM (BCA) UCL	0.807
Mean	0.875	95% KM (Percentile Bootstrap) UCL	0.8
Median	0.882	95% KM (Chebyshev) UCL	1.425
SD	1.511	97.5% KM (Chebyshev) UCL	1.871
k star	0.533	99% KM (Chebyshev) UCL	2.746
Theta star	1.642		
Nu star	47.97	Potential UCLs to Use	
AppChi2	33.07	99% KM (Chebyshev) UCL	2.746
95% Gamma Approximate UCL	1.27		
95% Adjusted Gamma UCL	1.286		

Note: DL/2 is not a recommended method.

Pentachlorophenol (q north)

General Statistics			
Number of Valid Data	28	Number of Detected Data	22
Number of Distinct Detected Data	22	Number of Non-Detect Data	6
Number of Missing Values	8	Percent Non-Detects	21.43%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.002	Minimum Detected	-6.215
Maximum Detected	2300	Maximum Detected	7.741
Mean of Detected	164.2	Mean of Detected	-1.037
SD of Detected	496.8	SD of Detected	4.237
Minimum Non-Detect	0.009	Minimum Non-Detect	-4.711
Maximum Non-Detect	0.023	Maximum Non-Detect	-3.772
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	16
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	42.86%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.376	Shapiro Wilk Test Statistic	0.827
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	129	Mean	-1.898
SD	443.4	SD	4.1
95% DL/2 (t) UCL	271.8	95% H-Stat (DL/2) UCL	139809
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-2.296
		SD in Log Scale	4.476
		Mean in Original Scale	129
		SD in Original Scale	443.4
		95% Percentile Bootstrap UCL	281.6
		95% BCA Bootstrap UCL	389.7
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.141	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1165		
nu star	6.199		
A-D Test Statistic	3.021	Nonparametric Statistics	
5% A-D Critical Value	0.922	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.922	Mean	129
5% K-S Critical Value	0.208	SD	435.5
Data not Gamma Distributed at 5% Significance Level		SE of Mean	84.23
		95% KM (t) UCL	272.5
Assuming Gamma Distribution		95% KM (z) UCL	267.6
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	271.8
Minimum	1.00E-09	95% KM (bootstrap t) UCL	683.4
Maximum	2300	95% KM (BCA) UCL	289.4
Mean	129	95% KM (Percentile Bootstrap) UCL	286.8
Median	0.0465	95% KM (Chebyshev) UCL	496.2
SD	443.4	97.5% KM (Chebyshev) UCL	655
k star	0.0972	99% KM (Chebyshev) UCL	967.1
Theta star	1327		
Nu star	5.444	Potential UCLs to Use	
AppChi2	1.362	99% KM (Chebyshev) UCL	967.1
95% Gamma Approximate UCL	515.5		
95% Adjusted Gamma UCL	565.6		

Note: DL/2 is not a recommended method.

Pentachlorophenol (q south)

General Statistics			
Number of Valid Data	45	Number of Detected Data	32
Number of Distinct Detected Data	30	Number of Non-Detect Data	13
Number of Missing Values	4	Percent Non-Detects	28.89%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0011	Minimum Detected	-6.812
Maximum Detected	470	Maximum Detected	6.153
Mean of Detected	22.33	Mean of Detected	-3.173
SD of Detected	92.03	SD of Detected	2.944
Minimum Non-Detect	0.00865	Minimum Non-Detect	-4.75
Maximum Non-Detect	0.031	Maximum Non-Detect	-3.474
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	32
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	13
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	71.11%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.272	Shapiro Wilk Test Statistic	0.824
5% Shapiro Wilk Critical Value	0.93	5% Shapiro Wilk Critical Value	0.93
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	15.88	Mean	-3.664
SD	77.92	SD	2.606
95% DL/2 (t) UCL	35.4	95% H-Stat (DL/2) UCL	3.034
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-3.924
		SD in Log Scale	2.77
		Mean in Original Scale	15.88
		SD in Original Scale	77.92
		95% Percentile Bootstrap UCL	36.89
		95% BCA Bootstrap UCL	47.23
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.135	Data do not follow a Discernable Distribution (0.05)	
Theta Star	165.9		
nu star	8.613		
A-D Test Statistic	7.145	Nonparametric Statistics	
5% A-D Critical Value	0.937	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.937	Mean	15.88
5% K-S Critical Value	0.175	SD	77.05
Data not Gamma Distributed at 5% Significance Level		SE of Mean	11.67
		95% KM (t) UCL	35.49
Assuming Gamma Distribution		95% KM (z) UCL	35.08
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	35.4
Minimum	0.0011	95% KM (bootstrap t) UCL	2818
Maximum	470	95% KM (BCA) UCL	41.82
Mean	23.71	95% KM (Percentile Bootstrap) UCL	36.94
Median	0.0675	95% KM (Chebyshev) UCL	66.75
SD	77.28	97.5% KM (Chebyshev) UCL	88.76
k star	0.173	99% KM (Chebyshev) UCL	132
Theta star	137.4		
Nu star	15.53	Potential UCLs to Use	
AppChi2	7.629	99% KM (Chebyshev) UCL	132
95% Gamma Approximate UCL	48.25		
95% Adjusted Gamma UCL	49.44		

Note: DL/2 is not a recommended method.

Pentachlorophenol (s)

General Statistics			
Number of Valid Data	11	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	5
Number of Missing Values	3	Percent Non-Detects	45.45%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.011	Minimum Detected	-4.51
Maximum Detected	440	Maximum Detected	6.087
Mean of Detected	73.64	Mean of Detected	-0.744
SD of Detected	179.5	SD of Detected	3.812
Minimum Non-Detect	0.0095	Minimum Non-Detect	-4.656
Maximum Non-Detect	440	Maximum Non-Detect	6.087

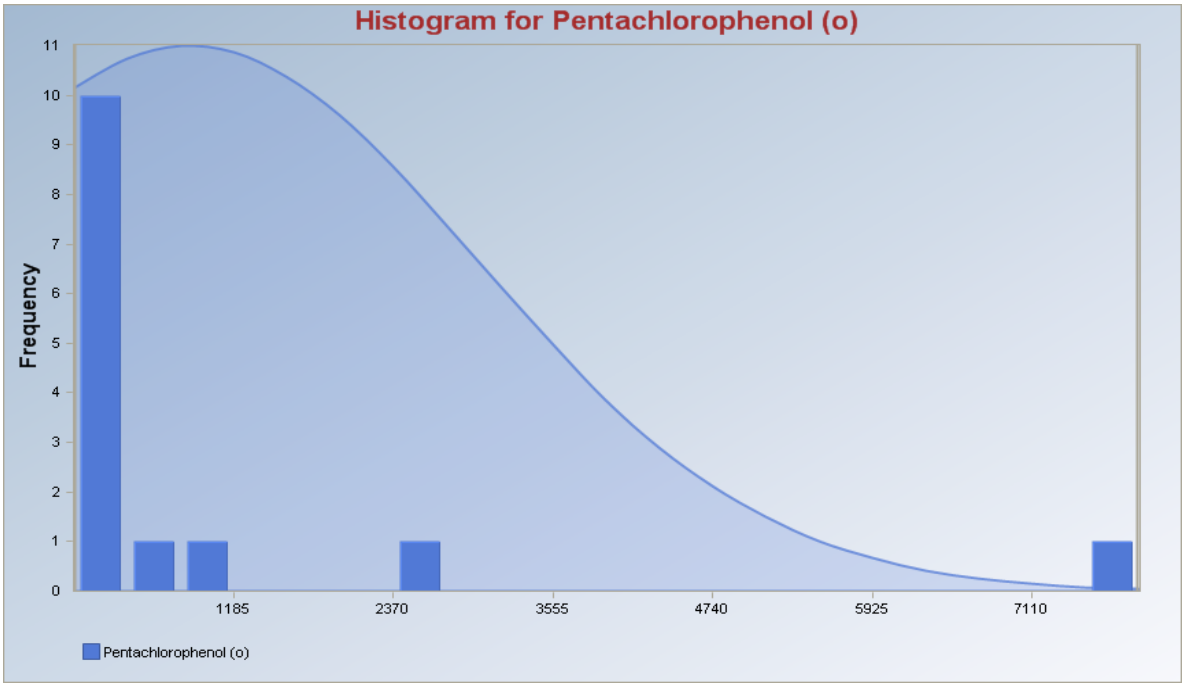
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	90.91%

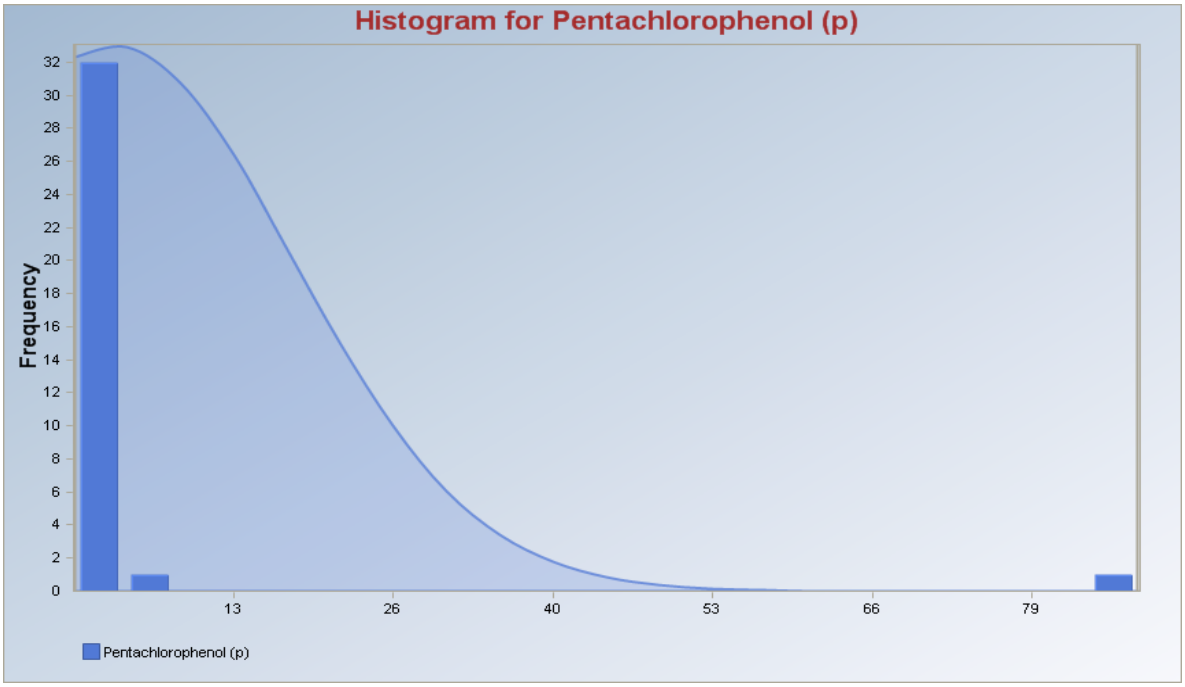
Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

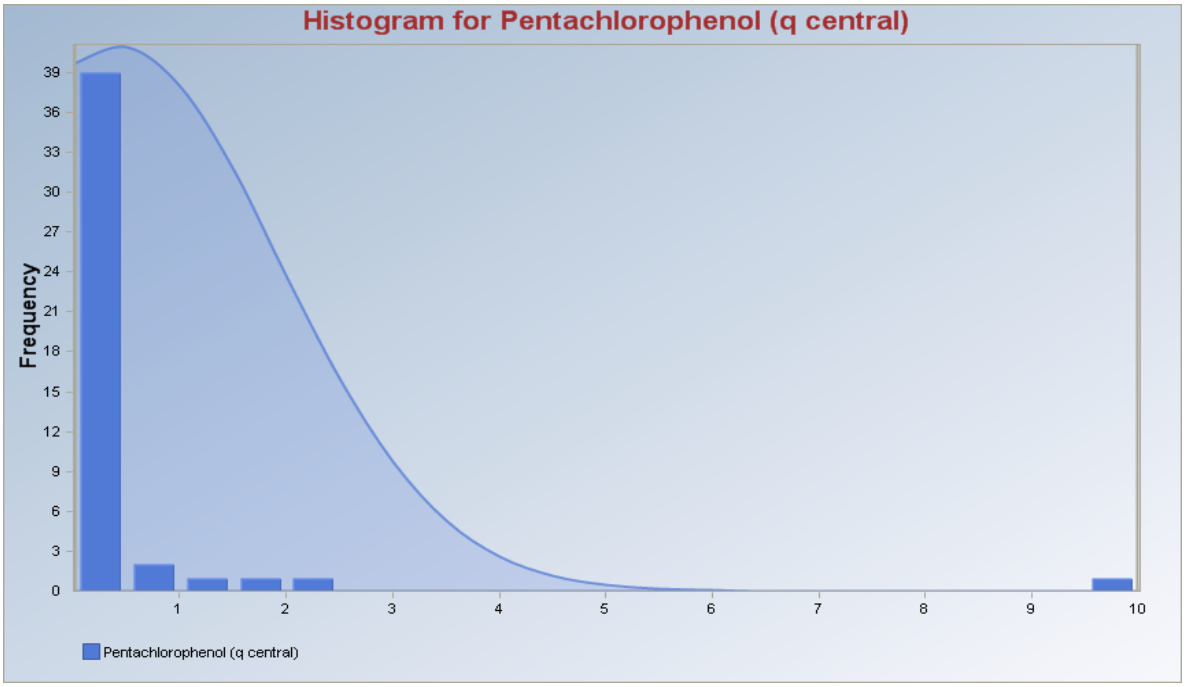
It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

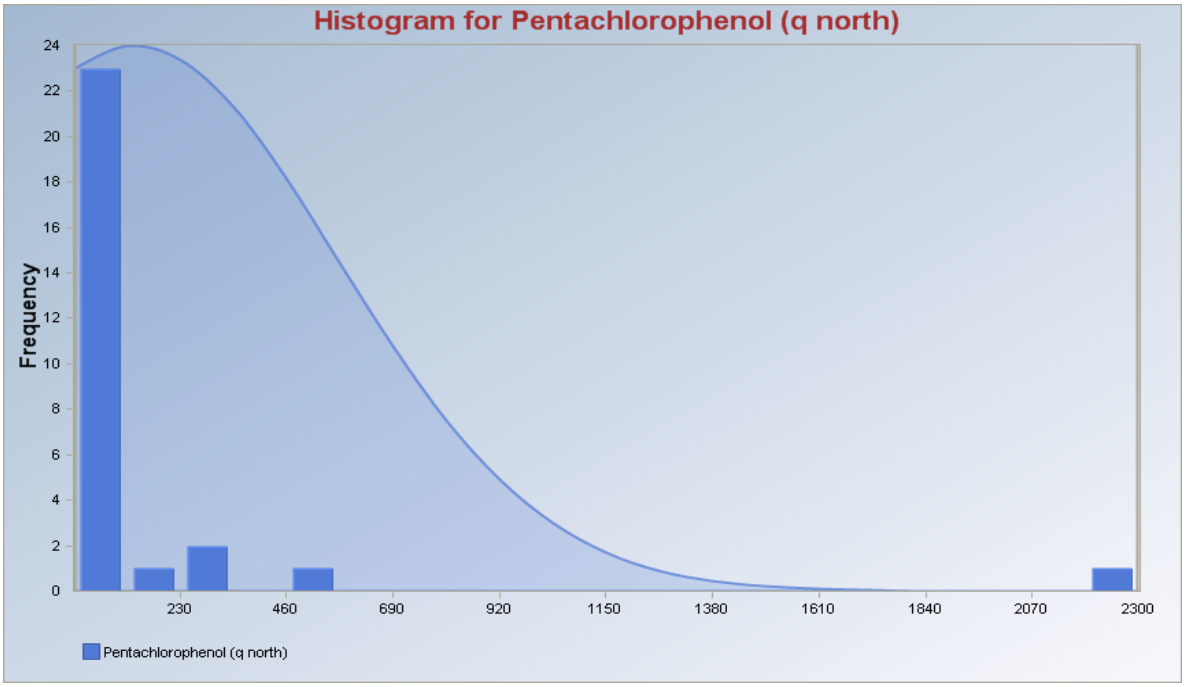
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.498	Shapiro Wilk Test Statistic	0.886
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	62.68	Mean	-0.679
SD	141.3	SD	4.007
95% DL/2 (t) UCL	139.9	95% H-Stat (DL/2) UCL	5.05E+09
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-3.003
		SD in Log Scale	4.024
		Mean in Original Scale	40.17
		SD in Original Scale	132.6
		95% Percentile Bootstrap UCL	120.1
		95% BCA Bootstrap UCL	160.1
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.187	Data appear Lognormal at 5% Significance Level	
Theta Star	393.5		
nu star	2.246		
A-D Test Statistic	0.905	Nonparametric Statistics	
5% A-D Critical Value	0.823	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.823	Mean	40.22
5% K-S Critical Value	0.366	SD	126.4
Data not Gamma Distributed at 5% Significance Level		SE of Mean	41.76
		95% KM (t) UCL	115.9
Assuming Gamma Distribution		95% KM (z) UCL	108.9
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	112.7
Minimum	1.00E-09	95% KM (bootstrap t) UCL	26372
Maximum	440	95% KM (BCA) UCL	120.3
Mean	49.42	95% KM (Percentile Bootstrap) UCL	120.2
Median	0.25	95% KM (Chebyshev) UCL	222.2
SD	131.1	97.5% KM (Chebyshev) UCL	301
k star	0.125	99% KM (Chebyshev) UCL	455.7
Theta star	394		
Nu star	2.759	Potential UCLs to Use	
AppChi2	0.305	99% KM (Chebyshev) UCL	455.7
95% Gamma Approximate UCL	447.3		
95% Adjusted Gamma UCL	639		

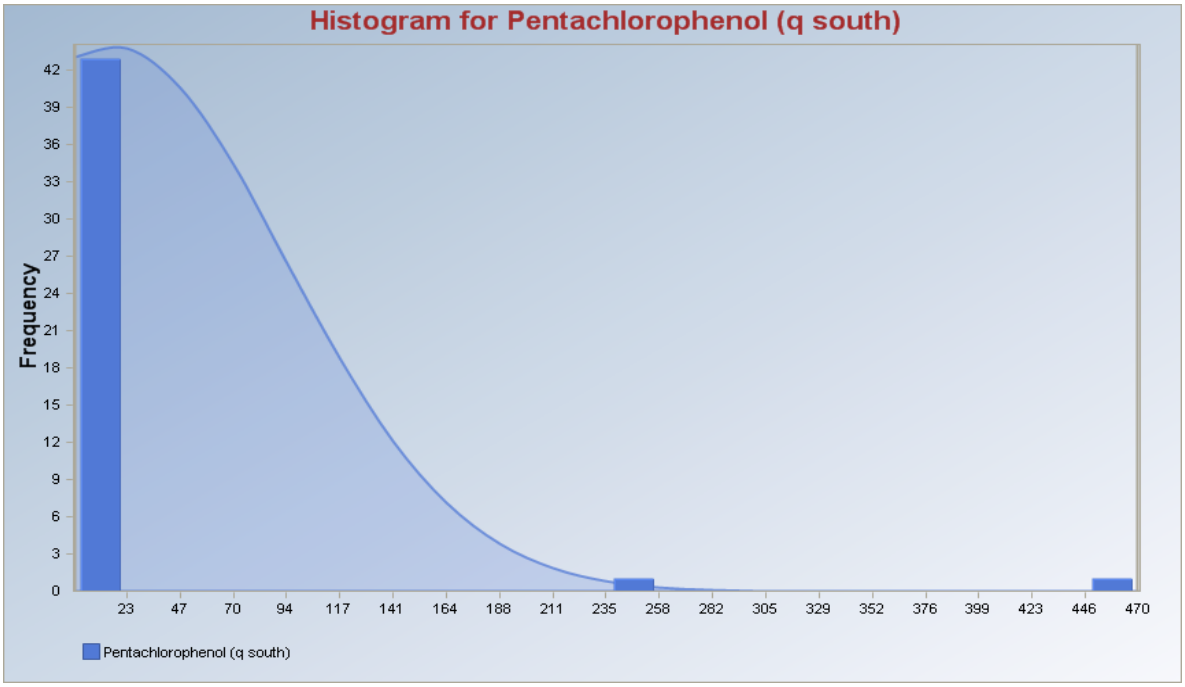
Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

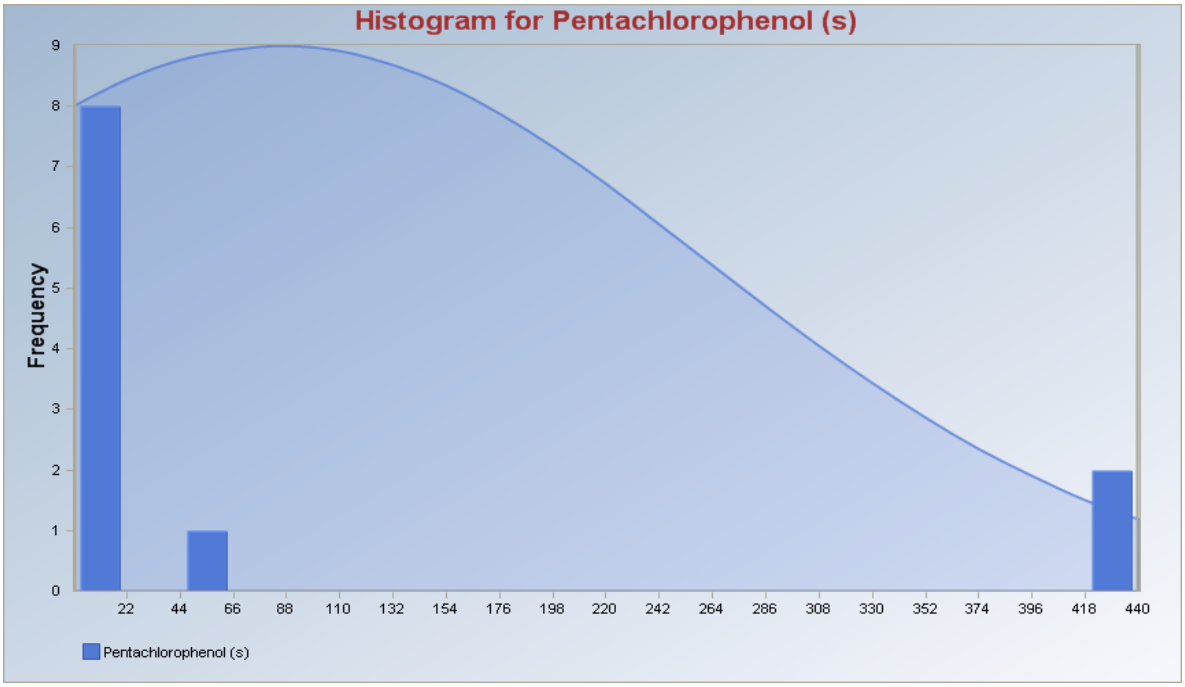

Histogram for Pentachlorophenol (o)
Frequency
11
10
9
8
7
6
5
4
3
2
1
0
1185
2370
3555
4740
5925
7110
Pentachlorophenol (o)


Histogram for Pentachlorophenol (p)
Frequency
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
13
26
40
53
66
79
Pentachlorophenol (p)


Histogram for Pentachlorophenol (q central)
Frequency
39
36
33
30
27
24
21
18
15
12
9
6
3
0
1
2
3
4
5
6
7
8
9
10
Pentachlorophenol (q central)


Histogram for Pentachlorophenol (q north)
Frequency
24
22
20
18
16
14
12
10
8
6
4
2
0
230
460
690
920
1150
1380
1610
1840
2070
2300
Pentachlorophenol (q north)


Histogram for Pentachlorophenol (q south)
Frequency
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
23
47
70
94
117
141
164
188
211
235
258
282
305
329
352
376
399
423
446
470
Pentachlorophenol (q south)


Histogram for Pentachlorophenol (s)
Frequency
0
1
2
3
4
5
6
7
8
9
22
44
66
88
110
132
154
176
198
220
242
264
286
308
330
352
374
396
418
440
Pentachlorophenol (s)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Trichloroethene (p)

General Statistics			
Number of Valid Data	33	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	2600.00%
Number of Missing Values	14	Percent Non-Detects	78.79%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	7.90E-04	Minimum Detected	-7.143
Maximum Detected	0.99	Maximum Detected	-0.0101
Mean of Detected	0.197	Mean of Detected	-3.802
SD of Detected	0.356	SD of Detected	2.884
Minimum Non-Detect	0.0034	Minimum Non-Detect	-5.684
Maximum Non-Detect	10	Maximum Non-Detect	2.303

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	33
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0.00%
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.619	Shapiro Wilk Test Statistic	8.62E-01
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.554	Mean	-3.017
SD	1.262	SD	2.681
95% DL/2 (t) UCL	0.926	95% H-Stat (DL/2) UCL	49.7
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.498
		SD in Log Scale	1.654
		Mean in Original Scale	0.0446
		SD in Original Scale	0.174
		95% Percentile Bootstrap UCL	0.103
		95% BCA Bootstrap UCL	0.141
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.275	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.717		
nu star	3.847		
A-D Test Statistic	4.49E-01	Nonparametric Statistics	
5% A-D Critical Value	0.782	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.782	Mean	0.0617
5% K-S Critical Value	0.335	SD	0.193
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0415
		95% KM (t) UCL	0.132
Assuming Gamma Distribution		95% KM (z) UCL	0.13
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.128
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.269
Maximum	0.99	95% KM (BCA) UCL	0.162
Mean	0.18	95% KM (Percentile Bootstrap) UCL	0.143
Median	0.166	95% KM (Chebyshev) UCL	0.243
SD	0.163	97.5% KM (Chebyshev) UCL	0.321
k star	0.4	99% KM (Chebyshev) UCL	0.475
Theta star	0.45		
Nu star	26.41	Potential UCLs to Use	
AppChi2	15.7	95% KM (t) UCL	0.132
95% Gamma Approximate UCL	0.303		
95% Adjusted Gamma UCL	0.311		

Note: DL/2 is not a recommended method.

Trichloroethene (q north)

General Statistics			
Number of Valid Data	28	Number of Detected Data	14
Number of Distinct Detected Data	13	Number of Non-Detect Data	14
Number of Missing Values	8	Percent Non-Detects	50.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.90E-04	Minimum Detected	-7.621
Maximum Detected	0.73	Maximum Detected	-0.315
Mean of Detected	0.1	Mean of Detected	-6.035
SD of Detected	0.252	SD of Detected	2.455
Minimum Non-Detect	0.0042	Minimum Non-Detect	-5.473
Maximum Non-Detect	0.39	Maximum Non-Detect	-0.942
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	26
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	92.86%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.439	Shapiro Wilk Test Statistic	0.616
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0619	Mean	-5.618
SD	0.183	SD	2.004
95% DL/2 (t) UCL	0.121	95% H-Stat (DL/2) UCL	0.301
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.285
		SD in Log Scale	1.722
		Mean in Original Scale	0.0508
		SD in Original Scale	0.182
		95% Percentile Bootstrap UCL	0.105
		95% BCA Bootstrap UCL	0.129
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.203	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.494		
nu star	5.678		
A-D Test Statistic	3.356	Nonparametric Statistics	
5% A-D Critical Value	0.874	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.874	Mean	0.0506
5% K-S Critical Value	0.253	SD	0.179
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0351
		95% KM (t) UCL	0.11
Assuming Gamma Distribution		95% KM (z) UCL	0.108
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.109
Minimum	4.90E-04	95% KM (bootstrap t) UCL	11.39
Maximum	0.73	95% KM (BCA) UCL	0.105
Mean	0.112	95% KM (Percentile Bootstrap) UCL	0.103
Median	0.123	95% KM (Chebyshev) UCL	0.204
SD	0.176	97.5% KM (Chebyshev) UCL	0.27
k star	0.343	99% KM (Chebyshev) UCL	0.4
Theta star	0.326		
Nu star	19.22	Potential UCLs to Use	
AppChi2	10.28	99% KM (Chebyshev) UCL	0.4
95% Gamma Approximate UCL	0.209		
95% Adjusted Gamma UCL	0.218		

Note: DL/2 is not a recommended method.

Trichloroethene (q south)

General Statistics			
Number of Valid Data	45	Number of Detected Data	25
Number of Distinct Detected Data	23	Number of Non-Detect Data	20
Number of Missing Values	4	Percent Non-Detects	44.44%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0011	Minimum Detected	-6.812
Maximum Detected	0.38	Maximum Detected	-0.968
Mean of Detected	0.028	Mean of Detected	-5.159
SD of Detected	0.0789	SD of Detected	1.497
Minimum Non-Detect	0.004	Minimum Non-Detect	-5.521
Maximum Non-Detect	0.011	Maximum Non-Detect	-4.51
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	40
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	88.89%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.377	Shapiro Wilk Test Statistic	0.864
5% Shapiro Wilk Critical Value	0.918	5% Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0169	Mean	-5.453
SD	0.0596	SD	1.164
95% DL/2 (t) UCL	0.0318	95% H-Stat (DL/2) UCL	0.0139
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.569
		SD in Log Scale	1.227
		Mean in Original Scale	0.0167
		SD in Original Scale	0.0596
		95% Percentile Bootstrap UCL	0.0314
		95% BCA Bootstrap UCL	0.045
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.39	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0718		
nu star	19.51		
A-D Test Statistic	3.188	Nonparametric Statistics	
5% A-D Critical Value	0.826	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.826	Mean	0.0167
5% K-S Critical Value	0.187	SD	0.059
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.00898
		95% KM (t) UCL	0.0317
Assuming Gamma Distribution		95% KM (z) UCL	0.0314
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0316
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.112
Maximum	0.38	95% KM (BCA) UCL	0.0335
Mean	0.0226	95% KM (Percentile Bootstrap) UCL	0.0331
Median	0.0058	95% KM (Chebyshev) UCL	0.0558
SD	0.0594	97.5% KM (Chebyshev) UCL	0.0727
k star	0.321	99% KM (Chebyshev) UCL	0.106
Theta star	0.0704		
Nu star	28.88	Potential UCLs to Use	
AppChi2	17.61	95% KM (Chebyshev) UCL	0.0558
95% Gamma Approximate UCL	0.037		
95% Adjusted Gamma UCL	0.0377		

Note: DL/2 is not a recommended method.

Trichloroethene (r)

General Statistics			
Number of Valid Data	12	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	3
Number of Missing Values	4	Percent Non-Detects	25.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.00E-04	Minimum Detected	-8.112
Maximum Detected	2200	Maximum Detected	7.696
Mean of Detected	337.8	Mean of Detected	-1.1
SD of Detected	747.5	SD of Detected	5.86
Minimum Non-Detect	0.0049	Minimum Non-Detect	-5.319
Maximum Non-Detect	3.1	Maximum Non-Detect	1.131
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	75.00%

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.547	Shapiro Wilk Test Statistic	0.905
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	253.5	Mean	-1.759
SD	655.5	SD	5.365
95% DL/2 (t) UCL	593.3	95% H-Stat (DL/2) UCL	4.97E+13
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-2.68
		SD in Log Scale	5.83
		Mean in Original Scale	253.4
		SD in Original Scale	655.5
		95% Percentile Bootstrap UCL	619.9
		95% BCA Bootstrap UCL	754.9
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.151	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2239		
nu star	2.716		
A-D Test Statistic	0.729	Nonparametric Statistics	
5% A-D Critical Value	0.876	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.876	Mean	253.4
5% K-S Critical Value	0.312	SD	627.6
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	192.2
		95% KM (t) UCL	598.5
Assuming Gamma Distribution		95% KM (z) UCL	569.4
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	593.2
Minimum	3.00E-04	95% KM (bootstrap t) UCL	19907
Maximum	2200	95% KM (BCA) UCL	571.7
Mean	323.5	95% KM (Percentile Bootstrap) UCL	571.7
Median	15.1	95% KM (Chebyshev) UCL	1091
SD	638	97.5% KM (Chebyshev) UCL	1453
k star	0.167	99% KM (Chebyshev) UCL	2165
Theta star	1940		
Nu star	4.001	Potential UCLs to Use	
AppChi2	0.722	95% KM (Chebyshev) UCL	1091
95% Gamma Approximate UCL	1792		
95% Adjusted Gamma UCL	2393		

Note: DL/2 is not a recommended method.

Trichloroethene (s)

General Statistics			
Number of Valid Data	11	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	4
Number of Missing Values	3	Percent Non-Detects	36.36%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.70E-04	Minimum Detected	-7.663
Maximum Detected	240	Maximum Detected	5.481
Mean of Detected	47.36	Mean of Detected	-0.218
SD of Detected	90.07	SD of Detected	5.016
Minimum Non-Detect	0.0045	Minimum Non-Detect	-5.404
Maximum Non-Detect	6.8	Maximum Non-Detect	1.917

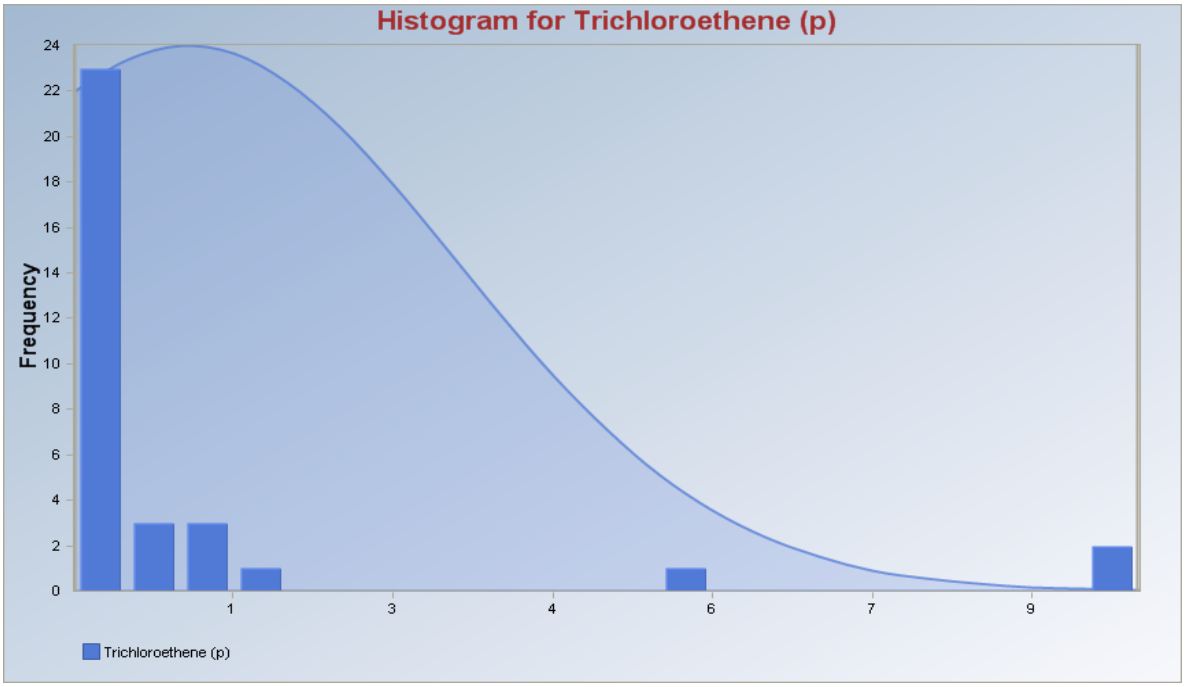
Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	3
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	72.73%

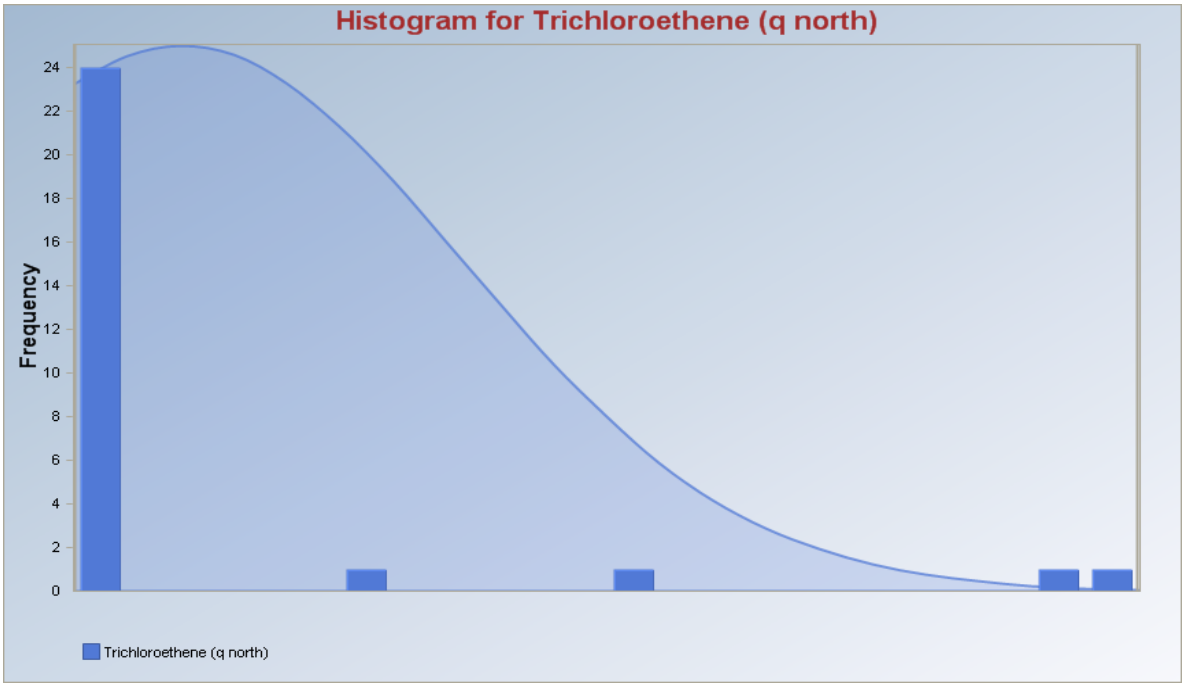
Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

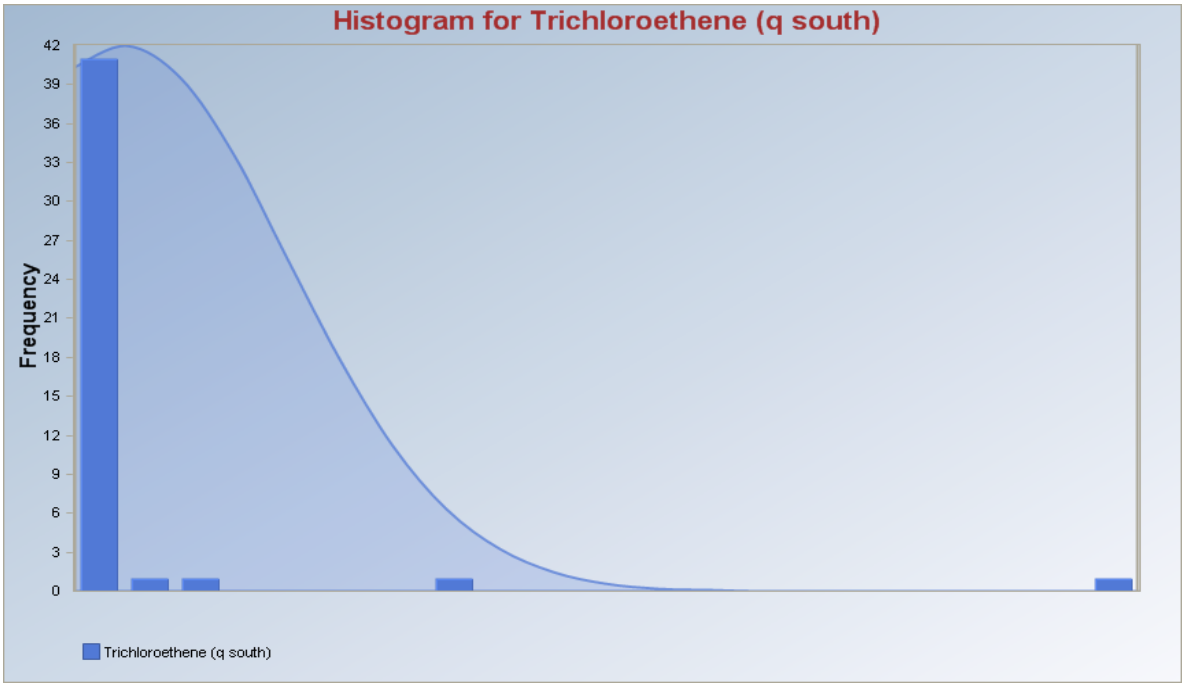
It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

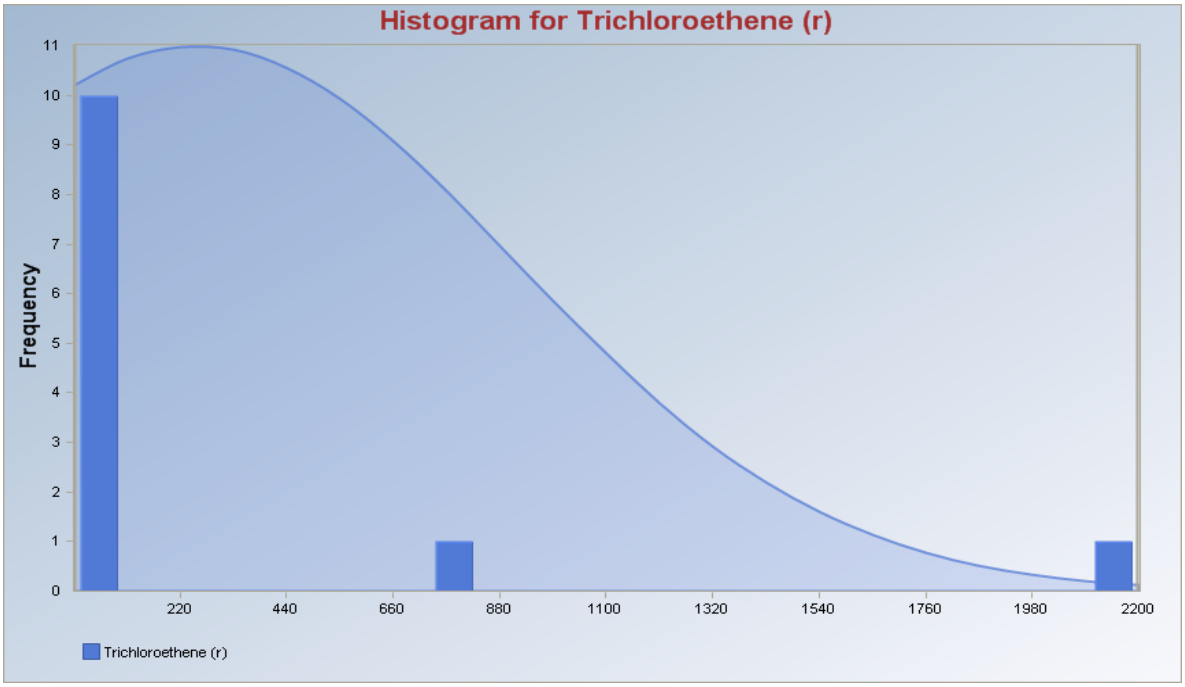
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.631	Shapiro Wilk Test Statistic	0.9
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	30.45	Mean	-1.333
SD	73.61	SD	4.593
95% DL/2 (t) UCL	70.68	95% H-Stat (DL/2) UCL	7.39E+09
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-2.238
		SD in Log Scale	4.814
		Mean in Original Scale	30.14
		SD in Original Scale	73.74
		95% Percentile Bootstrap UCL	72.91
		95% BCA Bootstrap UCL	95.47
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.2	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	237		
nu star	2.798		
A-D Test Statistic	0.269	Nonparametric Statistics	
5% A-D Critical Value	0.828	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.828	Mean	30.17
5% K-S Critical Value	0.343	SD	70.3
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	22.89
		95% KM (t) UCL	71.67
Assuming Gamma Distribution		95% KM (z) UCL	67.83
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	70.46
Minimum	1.00E-09	95% KM (bootstrap t) UCL	1051
Maximum	240	95% KM (BCA) UCL	67.22
Mean	30.75	95% KM (Percentile Bootstrap) UCL	66.84
Median	1.3	95% KM (Chebyshev) UCL	130
SD	73.5	97.5% KM (Chebyshev) UCL	173.1
k star	0.127	99% KM (Chebyshev) UCL	258
Theta star	242.7		
Nu star	2.787	Potential UCLs to Use	
AppChi2	0.312	95% KM (BCA) UCL	67.22
95% Gamma Approximate UCL	274.4		
95% Adjusted Gamma UCL	392.1		

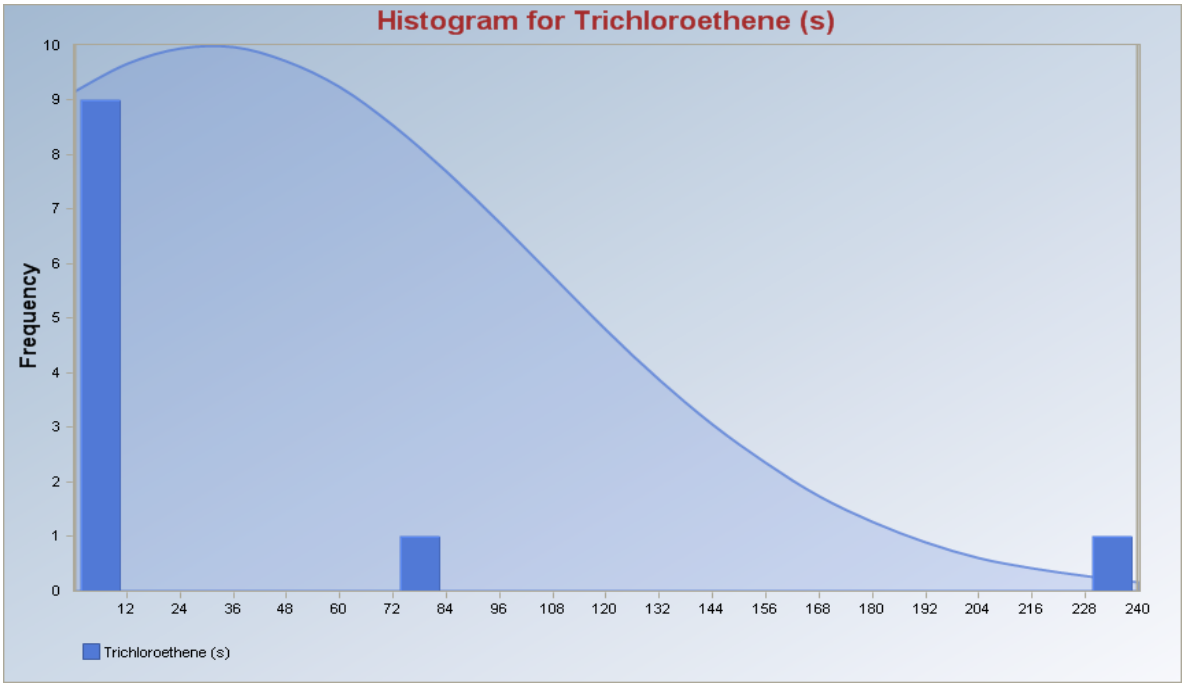
Note: DL/2 is not a recommended method.


Histogram for Trichloroethene (p)
Frequency
24
22
20
18
16
14
12
10
8
6
4
2
0
1
3
4
6
7
9
Trichloroethene (p)


Histogram for Trichloroethene (q north)
Frequency
24
22
20
18
16
14
12
10
8
6
4
2
0
Trichloroethene (q north)


Histogram for Trichloroethene (q south)
Frequency
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
Trichloroethene (q south)


Histogram for Trichloroethene (r)
Frequency
11
10
9
8
7
6
5
4
3
2
1
0
220
440
660
880
1100
1320
1540
1760
1980
2200
Trichloroethene (r)


Histogram for Trichloroethene (s)
Frequency
0
1
2
3
4
5
6
7
8
9
10
12
24
36
48
60
72
84
96
108
120
132
144
156
168
180
192
204
216
228
240
Trichloroethene (s)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Thallium (q south)

General Statistics			
Number of Valid Data	45	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	39
Number of Missing Values	4	Percent Non-Detects	86.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.79	Minimum Detected	-0.236
Maximum Detected	7	Maximum Detected	1.946
Mean of Detected	2.51	Mean of Detected	0.602
SD of Detected	2.386	SD of Detected	0.839
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	4.2	Maximum Non-Detect	1.435

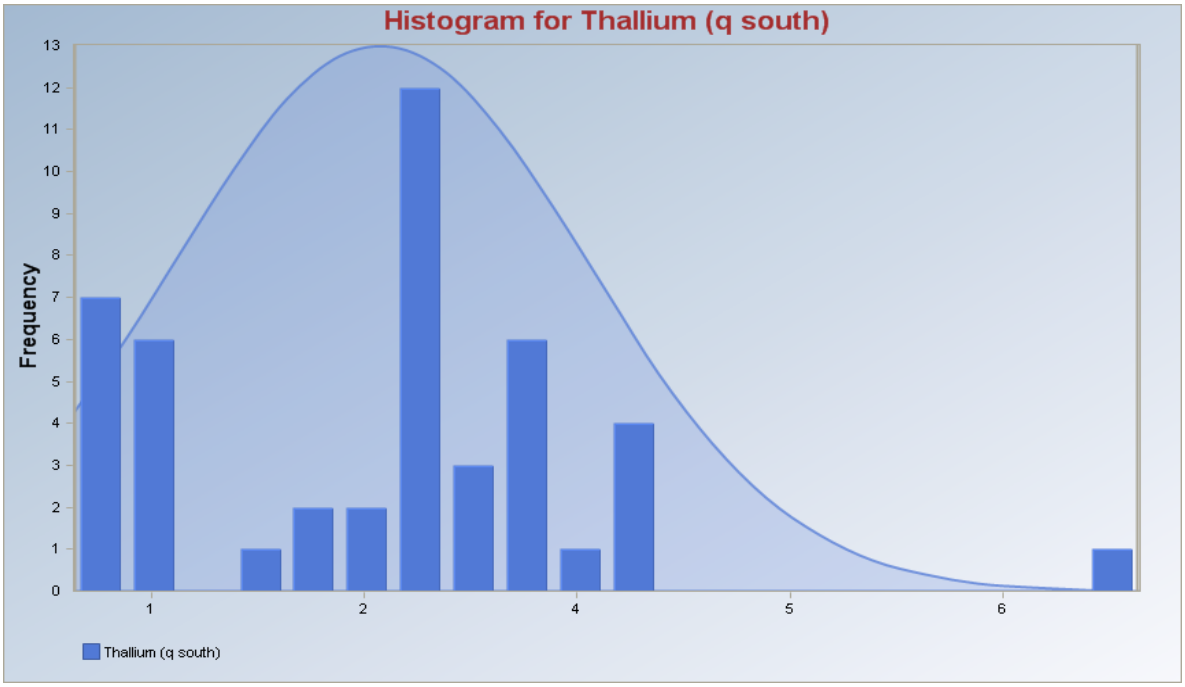
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	44
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	97.78%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.782	Shapiro Wilk Test Statistic	0.916
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.457	Mean	0.232
SD	1.009	SD	0.521
95% DL/2 (t) UCL	1.71	95% H-Stat (DL/2) UCL	1.802
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.0317
		SD in Log Scale	0.483
		Mean in Original Scale	1.136
		SD in Original Scale	1.011
		95% Percentile Bootstrap UCL	1.41
		95% BCA Bootstrap UCL	1.535
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.97	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.588		
nu star	11.64		
A-D Test Statistic	0.426	Nonparametric Statistics	
5% A-D Critical Value	0.706	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.706	Mean	1.181
5% K-S Critical Value	0.337	SD	0.994
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.184
		95% KM (t) UCL	1.49
Assuming Gamma Distribution		95% KM (z) UCL	1.484
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.498
Minimum	0.051	95% KM (bootstrap t) UCL	1.636
Maximum	7	95% KM (BCA) UCL	2.134
Mean	3.224	95% KM (Percentile Bootstrap) UCL	1.9
Median	3.437	95% KM (Chebyshev) UCL	1.984
SD	1.73	97.5% KM (Chebyshev) UCL	2.332
k star	2.155	99% KM (Chebyshev) UCL	3.015
Theta star	1.496		
Nu star	193.9	Potential UCLs to Use	
AppChi2	162.7	95% KM (t) UCL	1.49
95% Gamma Approximate UCL	3.843		
95% Adjusted Gamma UCL	3.865		

Note: DL/2 is not a recommended method.


Histogram for Thallium (q south)
Frequency
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
4
5
6
Thallium (q south)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Toluene (o)

General Statistics			
Number of Valid Data	14	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	3
Number of Missing Values	3	Percent Non-Detects	21.43%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0016	Minimum Detected	-6.438
Maximum Detected	390	Maximum Detected	5.966
Mean of Detected	41.58	Mean of Detected	-0.785
SD of Detected	116	SD of Detected	4.365
Minimum Non-Detect	0.0038	Minimum Non-Detect	-5.573
Maximum Non-Detect	0.0098	Maximum Non-Detect	-4.625
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	42.86%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.408	Shapiro Wilk Test Statistic	0.914
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	32.67	Mean	-1.864
SD	103.2	SD	4.392
95% DL/2 (t) UCL	81.52	95% H-Stat (DL/2) UCL	1.51E+08
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.897
		SD in Log Scale	4.42
		Mean in Original Scale	32.67
		SD in Original Scale	103.2
		95% Percentile Bootstrap UCL	85.72
		95% BCA Bootstrap UCL	118.7
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.182	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	227.9		
nu star	4.014		
A-D Test Statistic	0.574	Nonparametric Statistics	
5% A-D Critical Value	0.871	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.871	Mean	32.67
5% K-S Critical Value	0.283	SD	99.47
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	27.88
		95% KM (t) UCL	82.04
Assuming Gamma Distribution		95% KM (z) UCL	78.53
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	81.52
Minimum	1.00E-09	95% KM (bootstrap t) UCL	545.4
Maximum	390	95% KM (BCA) UCL	88.9
Mean	32.67	95% KM (Percentile Bootstrap) UCL	86.82
Median	0.055	95% KM (Chebyshev) UCL	154.2
SD	103.2	97.5% KM (Chebyshev) UCL	206.8
k star	0.123	99% KM (Chebyshev) UCL	310.1
Theta star	266.2		
Nu star	3.436	Potential UCLs to Use	
AppChi2	0.513	95% KM (Chebyshev) UCL	154.2
95% Gamma Approximate UCL	219		
95% Adjusted Gamma UCL	287.7		

Note: DL/2 is not a recommended method.

Toluene (q south)

General Statistics			
Number of Valid Data	45	Number of Detected Data	34
Number of Distinct Detected Data	31	Number of Non-Detect Data	11
Number of Missing Values	4	Percent Non-Detects	24.44%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.001	Minimum Detected	-6.908
Maximum Detected	1300	Maximum Detected	7.17
Mean of Detected	38.27	Mean of Detected	-4.371
SD of Detected	222.9	SD of Detected	2.515
Minimum Non-Detect	0.004	Minimum Non-Detect	-5.521
Maximum Non-Detect	0.21	Maximum Non-Detect	-1.561
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	42
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	93.33%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.176	Shapiro Wilk Test Statistic	0.715
5% Shapiro Wilk Critical Value	0.933	5% Shapiro Wilk Critical Value	0.933
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	28.92	Mean	-4.589
SD	193.8	SD	2.269
95% DL/2 (t) UCL	77.46	95% H-Stat (DL/2) UCL	0.451
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.732
		SD in Log Scale	2.285
		Mean in Original Scale	28.91
		SD in Original Scale	193.8
		95% Percentile Bootstrap UCL	86.69
		95% BCA Bootstrap UCL	144.5
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.112	Data do not follow a Discernable Distribution (0.05)	
Theta Star	342.1		
nu star	7.606		
A-D Test Statistic	10.31	Nonparametric Statistics	
5% A-D Critical Value	0.953	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.953	Mean	28.92
5% K-S Critical Value	0.171	SD	191.6
Data not Gamma Distributed at 5% Significance Level		SE of Mean	29
		95% KM (t) UCL	77.63
Assuming Gamma Distribution		95% KM (z) UCL	76.61
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	77.45
Minimum	1.00E-09	95% KM (bootstrap t) UCL	151002
Maximum	1300	95% KM (BCA) UCL	86.69
Mean	28.91	95% KM (Percentile Bootstrap) UCL	86.69
Median	0.0043	95% KM (Chebyshev) UCL	155.3
SD	193.8	97.5% KM (Chebyshev) UCL	210
k star	0.082	99% KM (Chebyshev) UCL	317.4
Theta star	352.8		
Nu star	7.377	Potential UCLs to Use	
AppChi2	2.38	99% KM (Chebyshev) UCL	317.4
95% Gamma Approximate UCL	89.63		
95% Adjusted Gamma UCL	93.28		

Note: DL/2 is not a recommended method.

Toluene (r)

General Statistics			
Number of Valid Data	12	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	4
Number of Missing Values	4	Percent Non-Detects	33.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0018	Minimum Detected	-6.32
Maximum Detected	830	Maximum Detected	6.721
Mean of Detected	267.5	Mean of Detected	1.814
SD of Detected	285.3	SD of Detected	5.798
Minimum Non-Detect	0.0049	Minimum Non-Detect	-5.319
Maximum Non-Detect	0.0071	Maximum Non-Detect	-4.948
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	50.00%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.867	Shapiro Wilk Test Statistic	0.745
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	178.3	Mean	-0.729
SD	262.9	SD	5.959
95% DL/2 (t) UCL	314.7	95% H-Stat (DL/2) UCL	4.56E+17
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	6.526	Mean in Log Scale	-0.499
SD	433.6	SD in Log Scale	5.75
95% MLE (t) UCL	231.3	Mean in Original Scale	178.3
95% MLE (Tiku) UCL	283.3	SD in Original Scale	262.9
		95% Percentile Bootstrap UCL	303.3
		95% BCA Bootstrap UCL	335
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.206	Data appear Normal at 5% Significance Level	
Theta Star	1301		
nu star	3.289		
A-D Test Statistic	1.128	Nonparametric Statistics	
5% A-D Critical Value	0.837	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.837	Mean	178.3
5% K-S Critical Value	0.324	SD	251.8
Data not Gamma Distributed at 5% Significance Level		SE of Mean	77.69
		95% KM (t) UCL	317.9
Assuming Gamma Distribution		95% KM (z) UCL	306.1
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	314.7
Minimum	0.0018	95% KM (bootstrap t) UCL	371.5
Maximum	830	95% KM (BCA) UCL	331.7
Mean	225.6	95% KM (Percentile Bootstrap) UCL	320.8
Median	141.9	95% KM (Chebyshev) UCL	517
SD	235.8	97.5% KM (Chebyshev) UCL	663.5
k star	0.261	99% KM (Chebyshev) UCL	951.4
Theta star	865.2		
Nu star	6.259	Potential UCLs to Use	
AppChi2	1.773	95% KM (t) UCL	317.9
95% Gamma Approximate UCL	796.3	95% KM (Percentile Bootstrap) UCL	320.8
95% Adjusted Gamma UCL	984.4		

Note: DL/2 is not a recommended method.

Toluene (s)

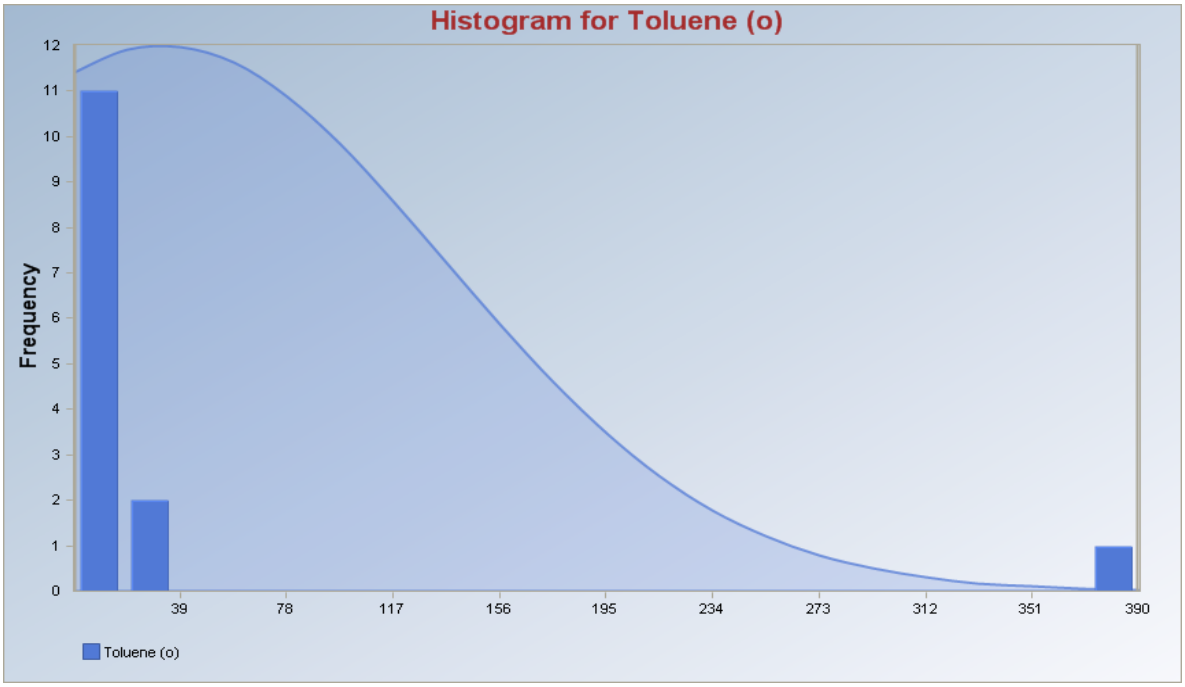
General Statistics			
Number of Valid Data	11	Number of Detected Data	9
Number of Distinct Detected Data	8	Number of Non-Detect Data	2
Number of Missing Values	3	Percent Non-Detects	18.18%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0062	Minimum Detected	-5.083
Maximum Detected	6000	Maximum Detected	8.7
Mean of Detected	1072	Mean of Detected	3.542
SD of Detected	1914	SD of Detected	5.083
Minimum Non-Detect	0.0054	Minimum Non-Detect	-5.221
Maximum Non-Detect	0.0068	Maximum Non-Detect	-4.991
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	27.27%

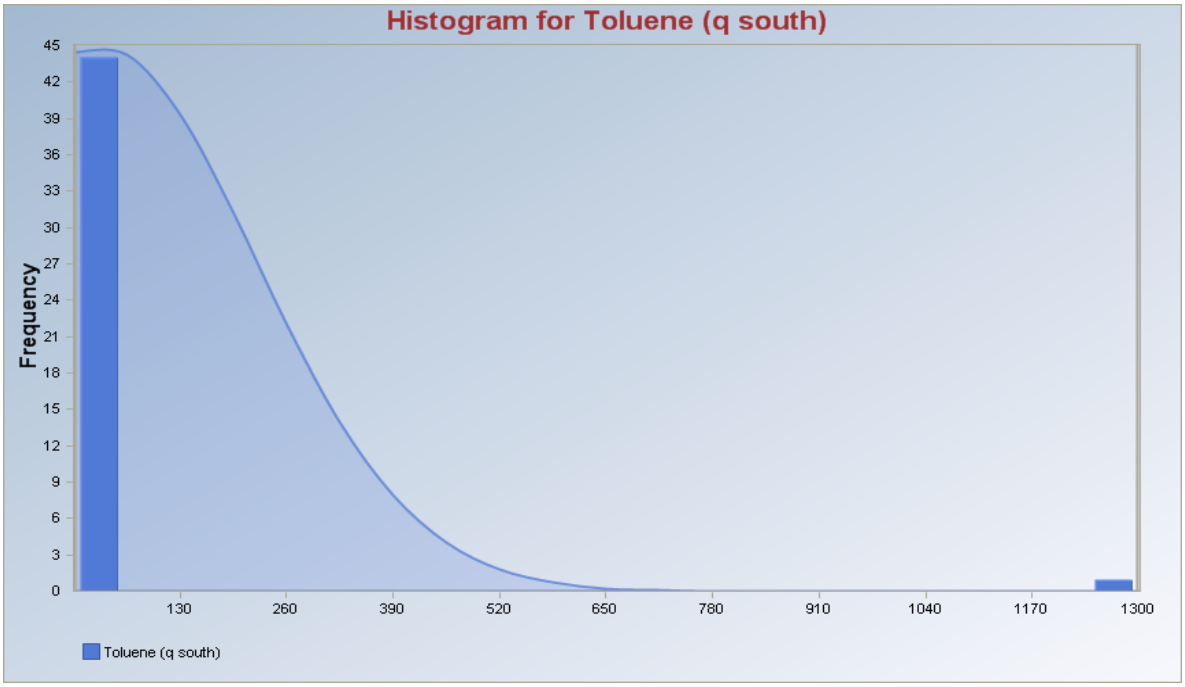
Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

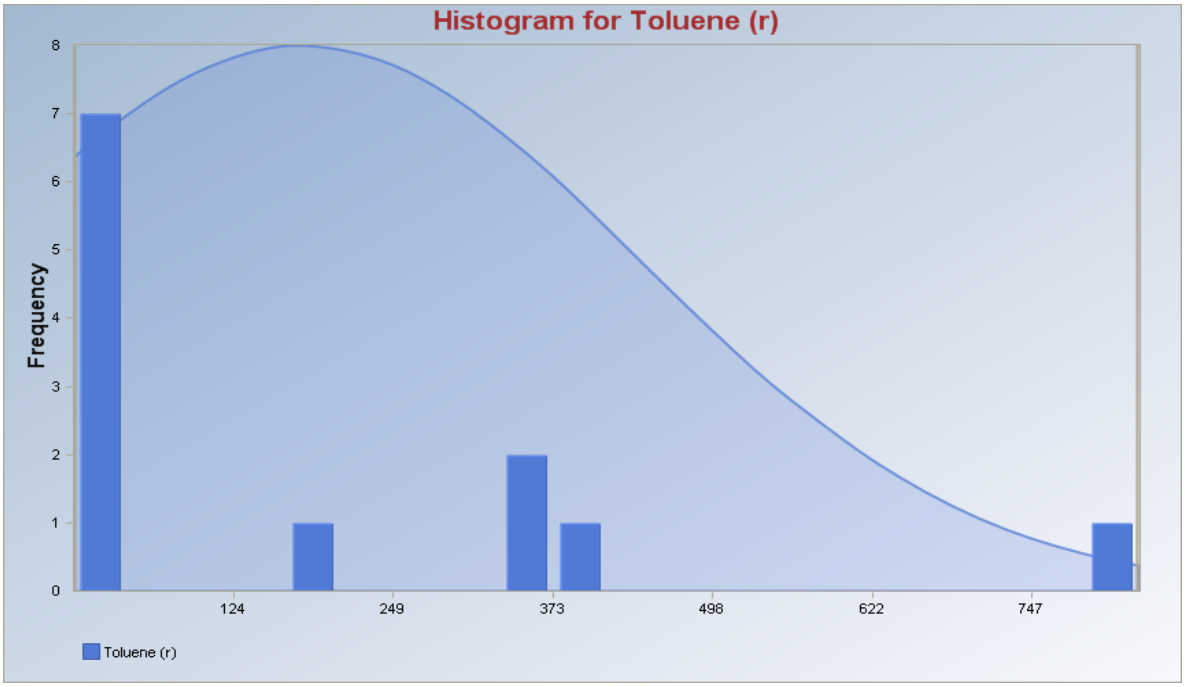
It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

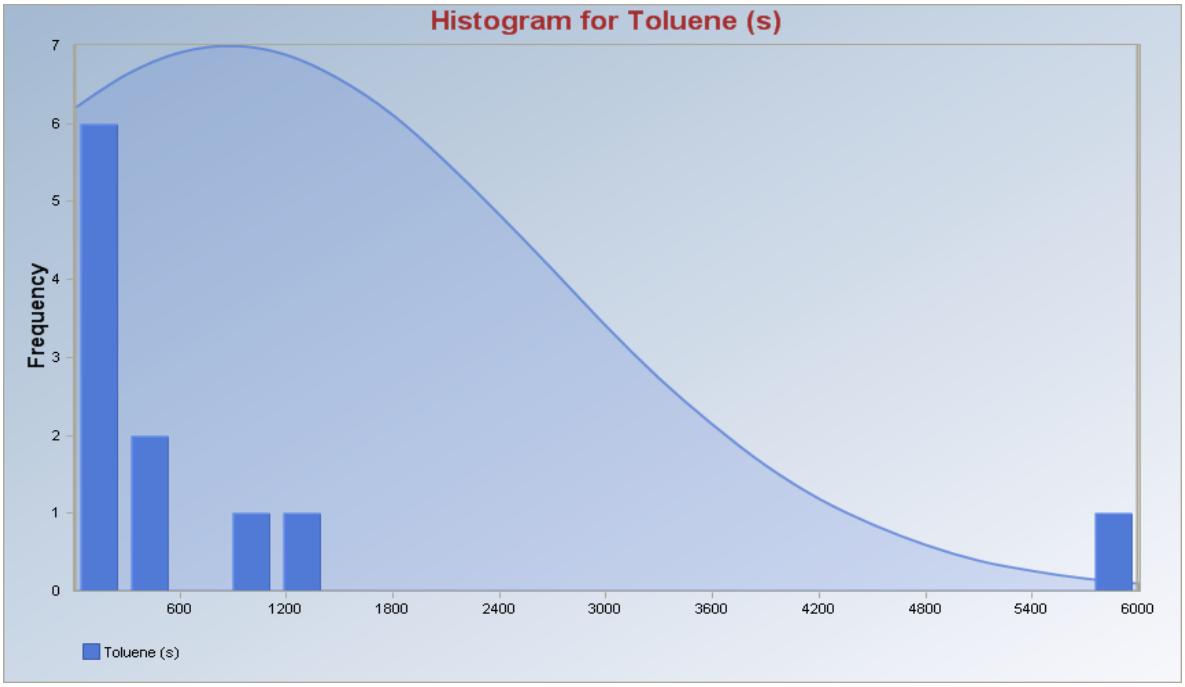
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.61	Shapiro Wilk Test Statistic	0.829
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	877.4	Mean	1.844
SD	1766	SD	5.912
95% DL/2 (t) UCL	1842	95% H-Stat (DL/2) UCL	5.70E+19
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	464.1	Mean in Log Scale	1.662
SD	2097	SD in Log Scale	6.206
95% MLE (t) UCL	1610	Mean in Original Scale	877.4
95% MLE (Tiku) UCL	1636	SD in Original Scale	1766
		95% Percentile Bootstrap UCL	1773
		95% BCA Bootstrap UCL	2325
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.216	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	4974		
nu star	3.88		
A-D Test Statistic	0.448	Nonparametric Statistics	
5% A-D Critical Value	0.84	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.84	Mean	877.4
5% K-S Critical Value	0.307	SD	1684
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	538.5
		95% KM (t) UCL	1853
Assuming Gamma Distribution		95% KM (z) UCL	1763
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1842
Minimum	1.00E-09	95% KM (bootstrap t) UCL	4057
Maximum	6000	95% KM (BCA) UCL	1898
Mean	877.4	95% KM (Percentile Bootstrap) UCL	1836
Median	210	95% KM (Chebyshev) UCL	3225
SD	1766	97.5% KM (Chebyshev) UCL	4240
k star	0.137	99% KM (Chebyshev) UCL	6235
Theta star	6389		
Nu star	3.021	Potential UCLs to Use	
AppChi2	0.379	95% KM (Chebyshev) UCL	3225
95% Gamma Approximate UCL	6999		
95% Adjusted Gamma UCL	9966		

Note: DL/2 is not a recommended method.


Histogram for Toluene (o)
Frequency
12
11
10
9
8
7
6
5
4
3
2
1
0
39
78
117
156
195
234
273
312
351
390
Toluene (o)


Histogram for Toluene (q south)
Frequency
45
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
130
260
390
520
650
780
910
1040
1170
1300
Toluene (q south)


Histogram for Toluene (r)
Frequency
0
1
2
3
4
5
6
7
8
124
249
373
498
622
747
Toluene (r)


Histogram for Toluene (s)
Frequency
0
1
2
3
4
5
6
7
600
1200
1800
2400
3000
3600
4200
4800
5400
6000
Toluene (s)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Total PCBs (o)

General Statistics			
Number of Valid Data	11	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	2
Number of Missing Values	6	Percent Non-Detects	18.18%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0532	Minimum Detected	-2.934
Maximum Detected	298	Maximum Detected	5.697
Mean of Detected	51.51	Mean of Detected	1.569
SD of Detected	98.97	SD of Detected	2.782
Minimum Non-Detect	0.0644	Minimum Non-Detect	-2.743
Maximum Non-Detect	1.256	Maximum Non-Detect	0.228

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	36.36%

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.612	Shapiro Wilk Test Statistic	0.967
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	42.2	Mean	0.929
SD	90.91	SD	2.943
95% DL/2 (t) UCL	91.88	95% H-Stat (DL/2) UCL	33461
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	9.385	Mean in Log Scale	0.765
SD	118	SD in Log Scale	3.071
95% MLE (t) UCL	73.85	Mean in Original Scale	42.15
95% MLE (Tiku) UCL	79.67	SD in Original Scale	90.94
		95% Percentile Bootstrap UCL	91.55
		95% BCA Bootstrap UCL	118.8
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.269	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	191.7		
nu star	4.836		
A-D Test Statistic	0.438	Nonparametric Statistics	
5% A-D Critical Value	0.81	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.81	Mean	42.16
5% K-S Critical Value	0.302	SD	86.7
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	27.73
		95% KM (t) UCL	92.42
Assuming Gamma Distribution		95% KM (z) UCL	87.77
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	91.82
Minimum	1.00E-09	95% KM (bootstrap t) UCL	307.2
Maximum	298	95% KM (BCA) UCL	92.59
Mean	42.14	95% KM (Percentile Bootstrap) UCL	91.55
Median	1.567	95% KM (Chebyshev) UCL	163
SD	90.94	97.5% KM (Chebyshev) UCL	215.3
k star	0.153	99% KM (Chebyshev) UCL	318
Theta star	276.2		
Nu star	3.357	Potential UCLs to Use	
AppChi2	0.486	95% KM (Chebyshev) UCL	163
95% Gamma Approximate UCL	291.3		
95% Adjusted Gamma UCL	409.6		

Note: DL/2 is not a recommended method.

Total PCBs (p)

General Statistics			
Number of Valid Data	20	Number of Detected Data	16
Number of Distinct Detected Data	16	Number of Non-Detect Data	4
Number of Missing Values	27	Percent Non-Detects	20.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0519	Minimum Detected	-2.958
Maximum Detected	403	Maximum Detected	5.999
Mean of Detected	35.48	Mean of Detected	1.408
SD of Detected	99.36	SD of Detected	2.332
Minimum Non-Detect	0.103	Minimum Non-Detect	-2.271
Maximum Non-Detect	498	Maximum Non-Detect	6.211
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.385	Shapiro Wilk Test Statistic	0.966
5% Shapiro Wilk Critical Value	0.887	5% Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	41.5	Mean	1.417
SD	101.5	SD	2.501
95% DL/2 (t) UCL	80.76	95% H-Stat (DL/2) UCL	2380
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.055
		SD in Log Scale	2.271
		Mean in Original Scale	28.64
		SD in Original Scale	89.39
		95% Percentile Bootstrap UCL	65.57
		95% BCA Bootstrap UCL	88.58
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.299	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	118.8		
nu star	9.557		
A-D Test Statistic	0.953	Nonparametric Statistics	
5% A-D Critical Value	0.834	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.834	Mean	30.17
5% K-S Critical Value	0.232	SD	89.14
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	21.12
		95% KM (t) UCL	66.69
Assuming Gamma Distribution		95% KM (z) UCL	64.91
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	66.55
Minimum	0.0519	95% KM (bootstrap t) UCL	239.7
Maximum	403	95% KM (BCA) UCL	73.88
Mean	35.11	95% KM (Percentile Bootstrap) UCL	68.89
Median	6.654	95% KM (Chebyshev) UCL	122.2
SD	88.29	97.5% KM (Chebyshev) UCL	162.1
k star	0.359	99% KM (Chebyshev) UCL	240.3
Theta star	97.8		
Nu star	14.36	Potential UCLs to Use	
AppChi2	6.819	95% KM (Chebyshev) UCL	122.2
95% Gamma Approximate UCL	73.95		
95% Adjusted Gamma UCL	78.66		

Note: DL/2 is not a recommended method.

Total PCBs (q central)

General Statistics			
Number of Valid Data	38	Number of Detected Data	18
Number of Distinct Detected Data	18	Number of Non-Detect Data	20
Number of Missing Values	12	Percent Non-Detects	52.63%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0687	Minimum Detected	-2.678
Maximum Detected	11.44	Maximum Detected	2.437
Mean of Detected	2.059	Mean of Detected	-0.00655
SD of Detected	2.672	SD of Detected	1.376
Minimum Non-Detect	0.0849	Minimum Non-Detect	-2.466
Maximum Non-Detect	24.48	Maximum Non-Detect	3.198
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	38
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.677	Shapiro Wilk Test Statistic	0.957
5% Shapiro Wilk Critical Value	0.897	5% Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.536	Mean	-0.594
SD	2.689	SD	1.512
95% DL/2 (t) UCL	2.272	95% H-Stat (DL/2) UCL	3.091
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.024
		SD in Log Scale	1.414
		Mean in Original Scale	1.063
		SD in Original Scale	2.049
		95% Percentile Bootstrap UCL	1.655
		95% BCA Bootstrap UCL	2.036
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.714	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.881		
nu star	25.72		
A-D Test Statistic	0.333	Nonparametric Statistics	
5% A-D Critical Value	0.775	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.775	Mean	1.129
5% K-S Critical Value	0.211	SD	2.044
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.349
		95% KM (t) UCL	1.718
Assuming Gamma Distribution		95% KM (z) UCL	1.703
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.701
Minimum	0.0687	95% KM (bootstrap t) UCL	2.141
Maximum	11.44	95% KM (BCA) UCL	1.804
Mean	1.987	95% KM (Percentile Bootstrap) UCL	1.759
Median	1.919	95% KM (Chebyshev) UCL	2.65
SD	1.84	97.5% KM (Chebyshev) UCL	3.309
k star	1.433	99% KM (Chebyshev) UCL	4.602
Theta star	1.387		
Nu star	108.9	Potential UCLs to Use	
AppChi2	85.81	95% KM (t) UCL	1.718
95% Gamma Approximate UCL	2.521		
95% Adjusted Gamma UCL	2.546		

Note: DL/2 is not a recommended method.

Total PCBs (q north)

General Statistics			
Number of Valid Data	22	Number of Detected Data	17
Number of Distinct Detected Data	17	Number of Non-Detect Data	5
Number of Missing Values	14	Percent Non-Detects	22.73%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.451	Minimum Detected	-0.797
Maximum Detected	220.6	Maximum Detected	5.396
Mean of Detected	31.18	Mean of Detected	1.305
SD of Detected	65.03	SD of Detected	2.054
Minimum Non-Detect	0.1	Minimum Non-Detect	-2.3
Maximum Non-Detect	2.98	Maximum Non-Detect	1.092
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	16
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	72.73%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.544	Shapiro Wilk Test Statistic	0.843
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	24.24	Mean	0.748
SD	58.26	SD	2.186
95% DL/2 (t) UCL	45.61	95% H-Stat (DL/2) UCL	93.23
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.625
		SD in Log Scale	2.293
		Mean in Original Scale	24.17
		SD in Original Scale	58.29
		95% Percentile Bootstrap UCL	45.8
		95% BCA Bootstrap UCL	51.73
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.303	Data do not follow a Discernable Distribution (0.05)	
Theta Star	103.1		
nu star	10.29		
A-D Test Statistic	2.05	Nonparametric Statistics	
5% A-D Critical Value	0.837	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.837	Mean	24.25
5% K-S Critical Value	0.226	SD	56.91
Data not Gamma Distributed at 5% Significance Level		SE of Mean	12.51
		95% KM (t) UCL	45.77
Assuming Gamma Distribution		95% KM (z) UCL	44.82
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	45.62
Minimum	1.00E-09	95% KM (bootstrap t) UCL	65.58
Maximum	220.6	95% KM (BCA) UCL	47.43
Mean	24.85	95% KM (Percentile Bootstrap) UCL	45.76
Median	1.685	95% KM (Chebyshev) UCL	78.77
SD	58.04	97.5% KM (Chebyshev) UCL	102.4
k star	0.166	99% KM (Chebyshev) UCL	148.7
Theta star	149.2		
Nu star	7.325	Potential UCLs to Use	
AppChi2	2.351	99% KM (Chebyshev) UCL	148.7
95% Gamma Approximate UCL	77.43		
95% Adjusted Gamma UCL	84.82		

Note: DL/2 is not a recommended method.

Total PCBs (q south)

General Statistics			
Number of Valid Data	41	Number of Detected Data	31
Number of Distinct Detected Data	31	Number of Non-Detect Data	10
Number of Missing Values	8	Percent Non-Detects	24.39%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0434	Minimum Detected	-3.137
Maximum Detected	38	Maximum Detected	3.638
Mean of Detected	5.129	Mean of Detected	0.459
SD of Detected	8.327	SD of Detected	1.739
Minimum Non-Detect	0.0965	Minimum Non-Detect	-2.338
Maximum Non-Detect	6.35	Maximum Non-Detect	1.848
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	34
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	82.93%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.635	Shapiro Wilk Test Statistic	0.959
5% Shapiro Wilk Critical Value	0.929	5% Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.129	Mean	0.0522
SD	7.456	SD	1.88
95% DL/2 (t) UCL	6.089	95% H-Stat (DL/2) UCL	13.59
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	20.43	Mean in Log Scale	-0.0436
SD	9.68	SD in Log Scale	1.793
95% MLE (t) UCL	22.97	Mean in Original Scale	3.943
95% MLE (Tiku) UCL	26.4	SD in Original Scale	7.515
		95% Percentile Bootstrap UCL	5.913
		95% BCA Bootstrap UCL	6.599
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.504	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	10.17		
nu star	31.28		
A-D Test Statistic	0.788	Nonparametric Statistics	
5% A-D Critical Value	0.807	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.807	Mean	3.978
5% K-S Critical Value	0.166	SD	7.415
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.178
		95% KM (t) UCL	5.963
Assuming Gamma Distribution		95% KM (z) UCL	5.917
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.955
Minimum	0.0434	95% KM (bootstrap t) UCL	7.523
Maximum	38	95% KM (BCA) UCL	5.85
Mean	4.578	95% KM (Percentile Bootstrap) UCL	6.084
Median	1.934	95% KM (Chebyshev) UCL	9.115
SD	7.3	97.5% KM (Chebyshev) UCL	11.34
k star	0.621	99% KM (Chebyshev) UCL	15.7
Theta star	7.37		
Nu star	50.94	Potential UCLs to Use	
AppChi2	35.55	95% KM (Chebyshev) UCL	9.115
95% Gamma Approximate UCL	6.56		
95% Adjusted Gamma UCL	6.648		

Note: DL/2 is not a recommended method.

Total PCBs (r)

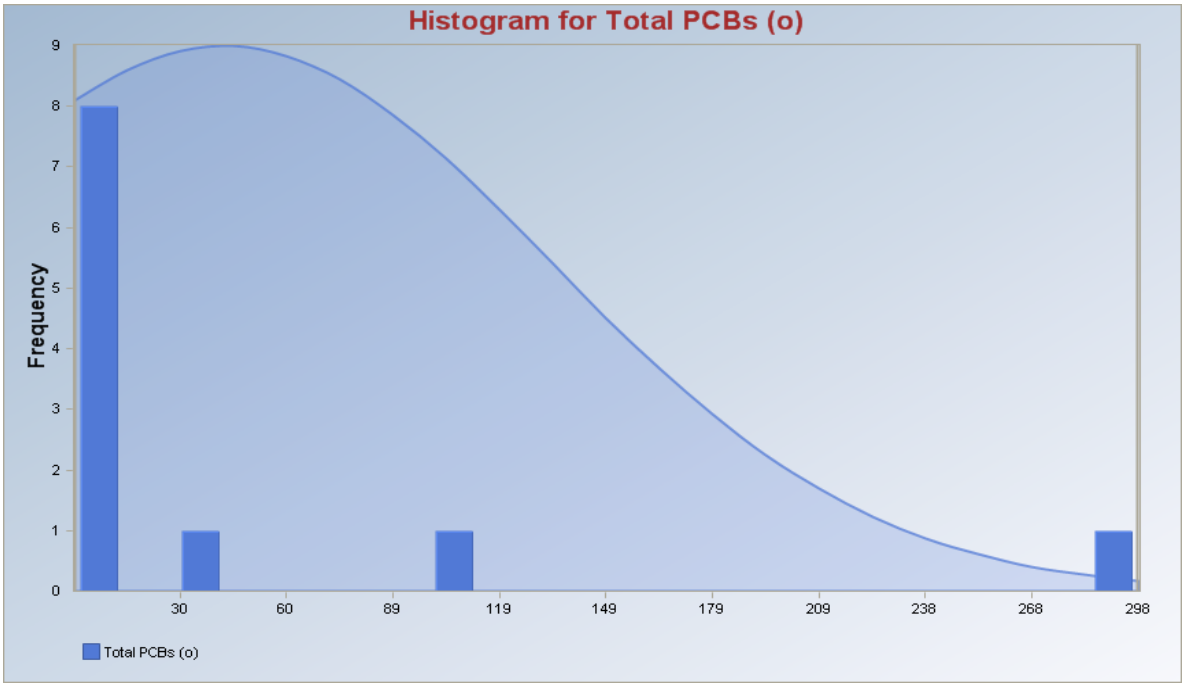
General Statistics			
Number of Valid Data	12	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	4
Number of Missing Values	4	Percent Non-Detects	33.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0791	Minimum Detected	-2.537
Maximum Detected	278.2	Maximum Detected	5.628
Mean of Detected	64.05	Mean of Detected	1.25
SD of Detected	113.5	SD of Detected	3.194
Minimum Non-Detect	0.0898	Minimum Non-Detect	-2.41
Maximum Non-Detect	0.0994	Maximum Non-Detect	-2.309
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	50.00%

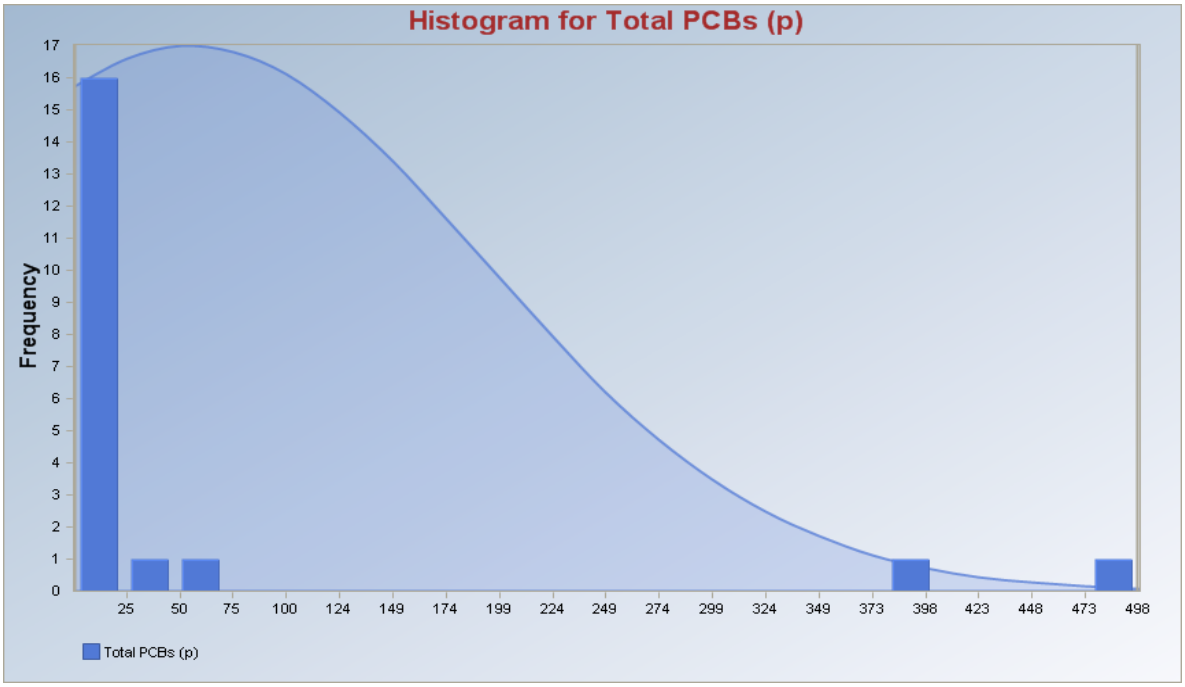
Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

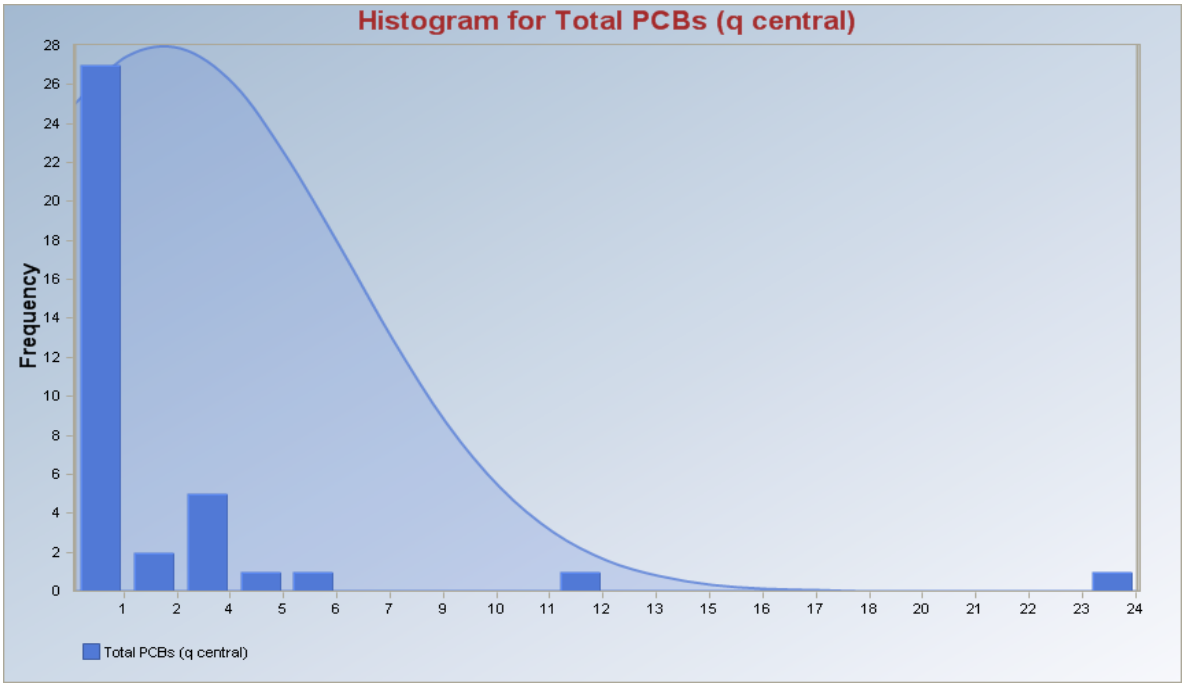
It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

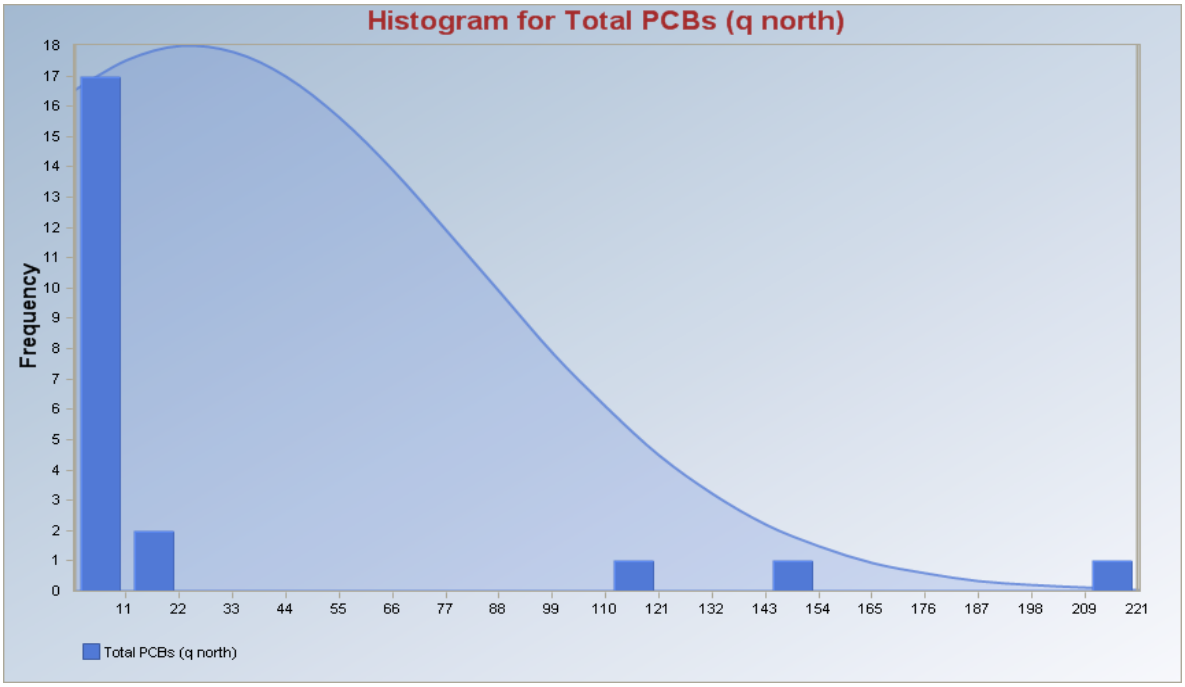
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.628	Shapiro Wilk Test Statistic	0.916
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	42.72	Mean	-0.189
SD	95.86	SD	3.318
95% DL/2 (t) UCL	92.41	95% H-Stat (DL/2) UCL	138094
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.47
		SD in Log Scale	3.603
		Mean in Original Scale	42.71
		SD in Original Scale	95.86
		95% Percentile Bootstrap UCL	89.59
		95% BCA Bootstrap UCL	101.2
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.236	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	270.9		
nu star	3.783		
A-D Test Statistic	0.549	Nonparametric Statistics	
5% A-D Critical Value	0.819	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.819	Mean	42.73
5% K-S Critical Value	0.32	SD	91.77
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	28.32
		95% KM (t) UCL	93.59
Assuming Gamma Distribution		95% KM (z) UCL	89.31
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	92.42
Minimum	1.00E-09	95% KM (bootstrap t) UCL	1069
Maximum	278.2	95% KM (BCA) UCL	95.26
Mean	42.72	95% KM (Percentile Bootstrap) UCL	88.51
Median	0.271	95% KM (Chebyshev) UCL	166.2
SD	95.86	97.5% KM (Chebyshev) UCL	219.6
k star	0.13	99% KM (Chebyshev) UCL	324.5
Theta star	329.4		
Nu star	3.112	Potential UCLs to Use	
AppChi2	0.406	95% KM (BCA) UCL	95.26
95% Gamma Approximate UCL	327.1		
95% Adjusted Gamma UCL	454		

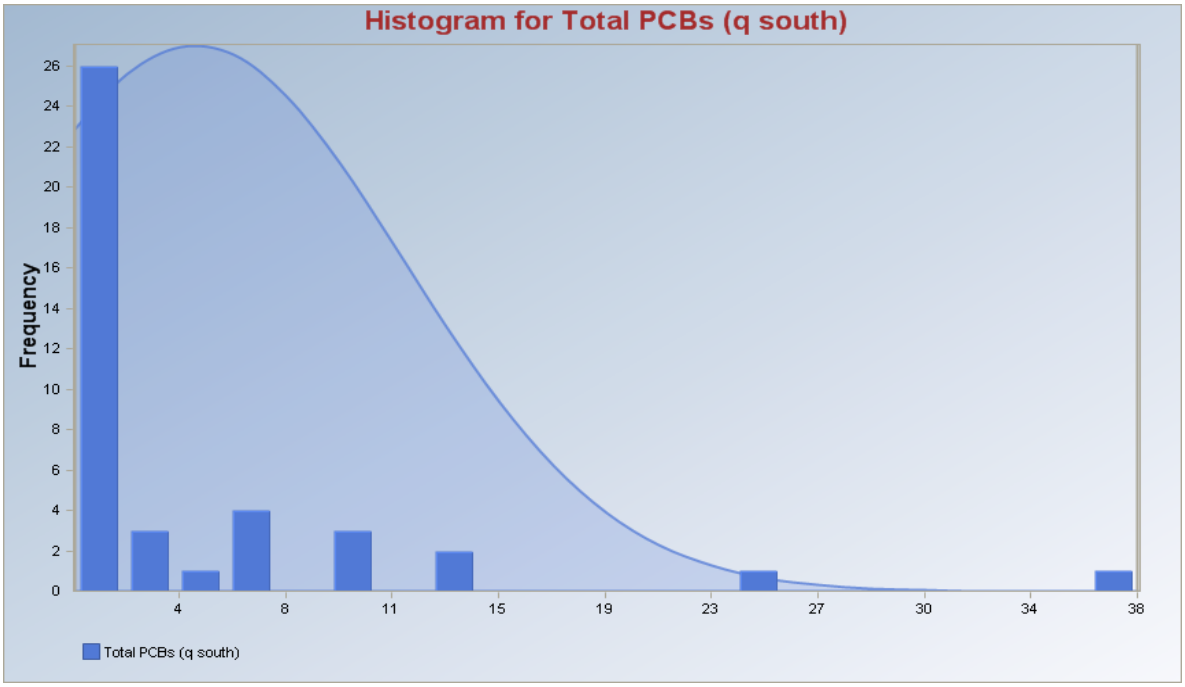
Note: DL/2 is not a recommended method.

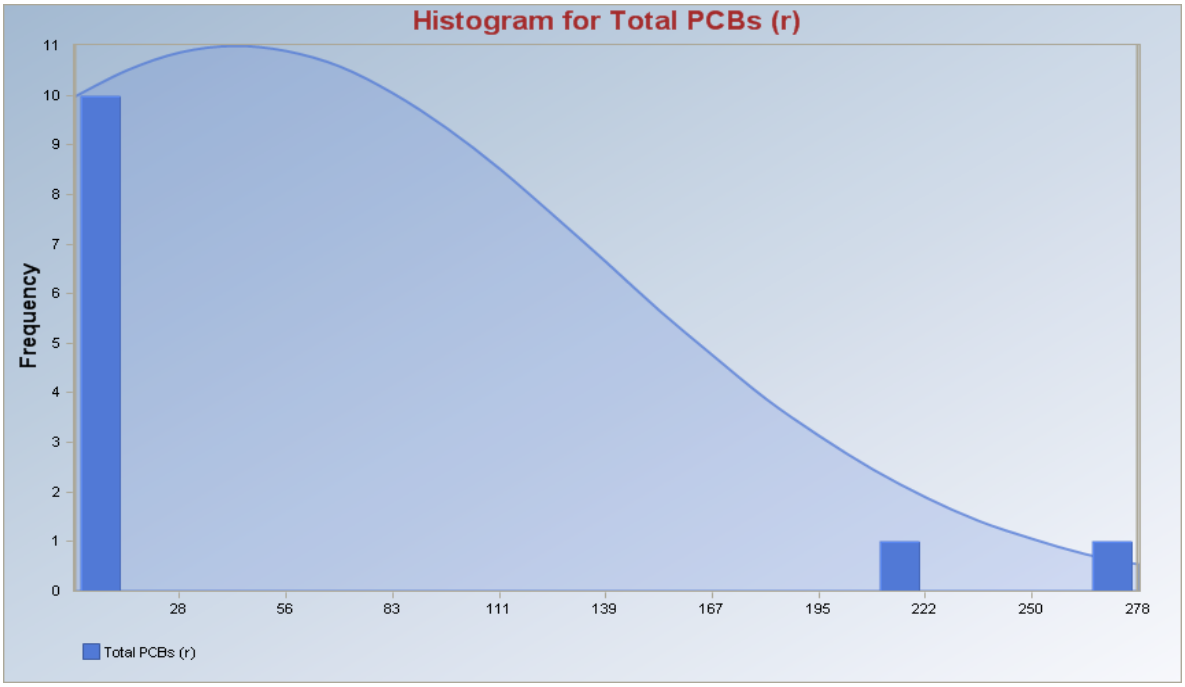

Histogram for Total PCBs (o)
Frequency
0
1
2
3
4
5
6
7
8
9
30
60
89
119
149
179
209
238
268
298
Total PCBs (o)


Histogram for Total PCBs (p)
Frequency
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
25
50
75
100
124
149
174
199
224
249
274
299
324
349
373
398
423
448
473
498
Total PCBs (p)


Histogram for Total PCBs (q central)
Frequency
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
1
2
4
5
6
7
9
10
11
12
13
15
16
17
18
20
21
22
23
24
Total PCBs (q central)


Histogram for Total PCBs (q north)
Frequency
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
11
22
33
44
55
66
77
88
99
110
121
132
143
154
165
176
187
198
209
221
Total PCBs (q north)


Histogram for Total PCBs (q south)
Frequency
26
24
22
20
18
16
14
12
10
8
6
4
2
0
4
8
11
15
19
23
27
30
34
38
Total PCBs (q south)


Histogram for Total PCBs (r)
Frequency
11
10
9
8
7
6
5
4
3
2
1
0
28
56
83
111
139
167
195
222
250
278
Total PCBs (r)

General UCL Statistics for Data Sets with Non-Detects

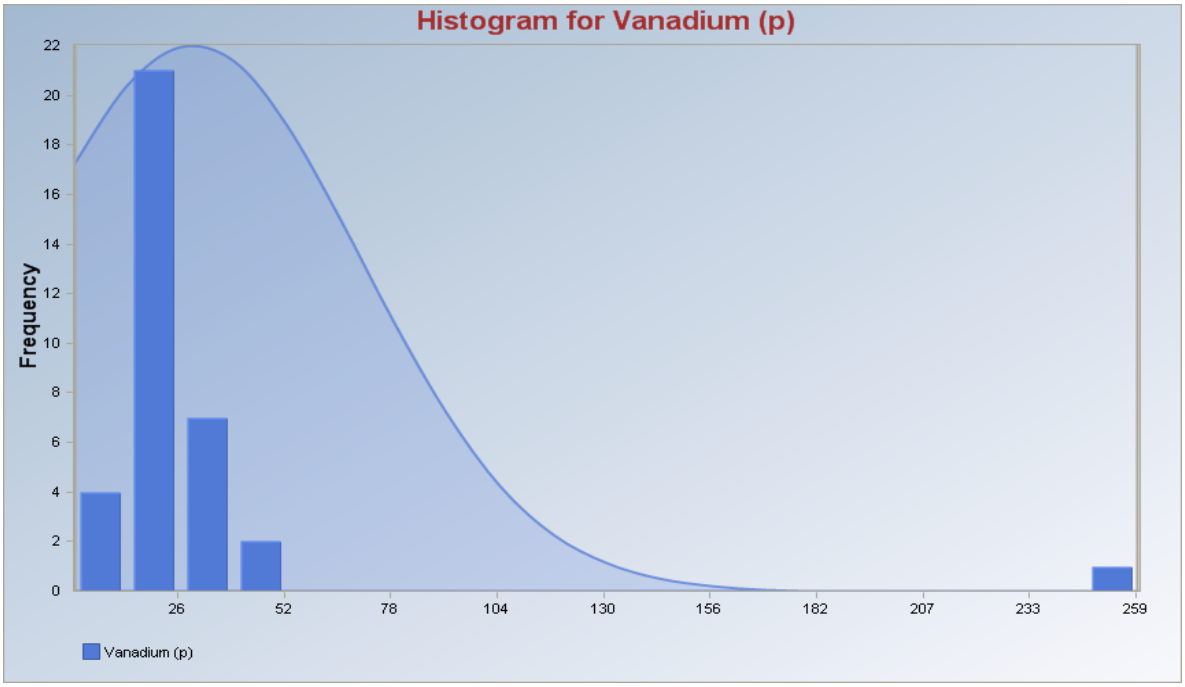
User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

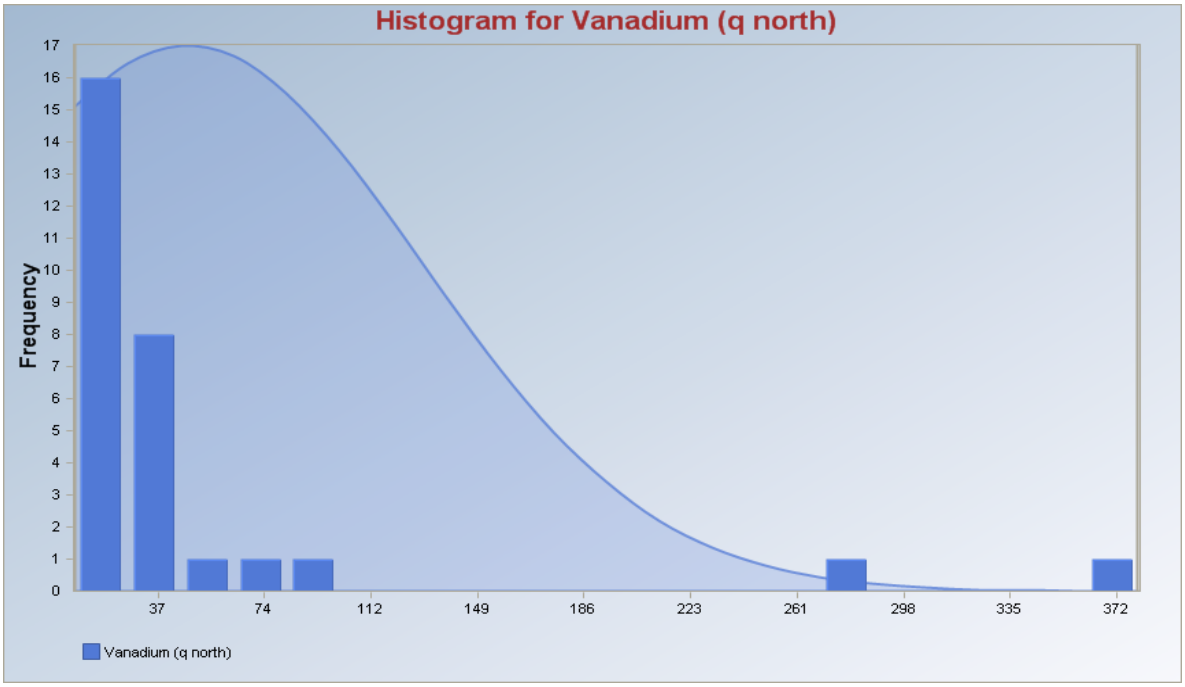
Vanadium (p)

General Statistics			
Number of Valid Observations	35	Number of Distinct Observations	23
Number of Missing Values	12		
Raw Statistics		Log-transformed Statistics	
Minimum	0.63	Minimum of Log Data	-0.462
Maximum	260	Maximum of Log Data	5.561
Mean	29.62	Mean of log Data	3.001
Median	25	SD of log Data	0.97
SD	41.27		
Coefficient of Variation	1.393		
Skewness	5.392		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.374	Shapiro Wilk Test Statistic	0.743
Shapiro Wilk Critical Value	0.934	Shapiro Wilk Critical Value	0.934
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	41.41	95% H-UCL	47.64
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	57.54
95% Adjusted-CLT UCL	47.89	97.5% Chebyshev (MVUE) UCL	68.78
95% Modified-t UCL	42.47	99% Chebyshev (MVUE) UCL	90.86
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.329	Data do not follow a Discernable Distribution (0.05)	
Theta Star	22.28		
nu star	93.04		
Approximate Chi Square Value (.05)	71.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0425	95% CLT UCL	41.09
Adjusted Chi Square Value	70.91	95% Jackknife UCL	41.41
		95% Standard Bootstrap UCL	41
Anderson-Darling Test Statistic	3.369	95% Bootstrap-t UCL	67.88
Anderson-Darling 5% Critical Value	0.768	95% Hall's Bootstrap UCL	91.62
Kolmogorov-Smirnov Test Statistic	0.242	95% Percentile Bootstrap UCL	42.62
Kolmogorov-Smirnov 5% Critical Value	0.152	95% BCA Bootstrap UCL	51.39
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	60.02
		97.5% Chebyshev(Mean, Sd) UCL	73.18
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	99.02
95% Approximate Gamma UCL	38.38		
95% Adjusted Gamma UCL	38.86		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	60.02

Vanadium (q north)

General Statistics			
Number of Valid Observations	29	Number of Distinct Observations	26
Number of Missing Values	7		
Raw Statistics		Log-transformed Statistics	
Minimum	7.7	Minimum of Log Data	2.041
Maximum	380	Maximum of Log Data	5.94
Mean	47.49	Mean of log Data	3.264
Median	24	SD of log Data	0.934
SD	81.45		
Coefficient of Variation	1.715		
Skewness	3.466		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.47	Shapiro Wilk Test Statistic	0.89
Shapiro Wilk Critical Value	0.926	Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	73.22	95% H-UCL	61.44
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	73.52
95% Adjusted-CLT UCL	82.77	97.5% Chebyshev (MVUE) UCL	88.19
95% Modified-t UCL	74.84	99% Chebyshev (MVUE) UCL	117
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.894	Data do not follow a Discernable Distribution (0.05)	
Theta Star	53.14		
nu star	51.84		
Approximate Chi Square Value (.05)	36.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0407	95% CLT UCL	72.37
Adjusted Chi Square Value	35.52	95% Jackknife UCL	73.22
		95% Standard Bootstrap UCL	72.38
Anderson-Darling Test Statistic	2.558	95% Bootstrap-t UCL	152.3
Anderson-Darling 5% Critical Value	0.775	95% Hall's Bootstrap UCL	186.5
Kolmogorov-Smirnov Test Statistic	0.251	95% Percentile Bootstrap UCL	75.55
Kolmogorov-Smirnov 5% Critical Value	0.168	95% BCA Bootstrap UCL	85.28
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	113.4
		97.5% Chebyshev(Mean, Sd) UCL	141.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	198
95% Approximate Gamma UCL	67.81		
95% Adjusted Gamma UCL	69.3		
Potential UCL to Use		Use 95% Chebyshev (Mean, Sd) UCL	113.4


Histogram for Vanadium (p)
Frequency
22
20
18
16
14
12
10
8
6
4
2
0
26
52
78
104
130
156
182
207
233
259
Vanadium (p)


Histogram for Vanadium (q north)
Frequency
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
37
74
112
149
186
223
261
298
335
372
Vanadium (q north)

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Xylenes, Total (o)

General Statistics			
Number of Valid Data	14	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	3
Number of Missing Values	3	Percent Non-Detects	21.43%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0013	Minimum Detected	-6.645
Maximum Detected	14000	Maximum Detected	9.547
Mean of Detected	1603	Mean of Detected	1.582
SD of Detected	4141	SD of Detected	5.927
Minimum Non-Detect	0.0076	Minimum Non-Detect	-4.88
Maximum Non-Detect	0.011	Maximum Non-Detect	-4.51
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	42.86%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.437	Shapiro Wilk Test Statistic	0.89
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1260	Mean	0.0816
SD	3696	SD	5.993
95% DL/2 (t) UCL	3009	95% H-Stat (DL/2) UCL	3.13E+16
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.083
		SD in Log Scale	5.992
		Mean in Original Scale	1260
		SD in Original Scale	3696
		95% Percentile Bootstrap UCL	3163
		95% BCA Bootstrap UCL	4219
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.159	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	10115		
nu star	3.487		
A-D Test Statistic	0.566	Nonparametric Statistics	
5% A-D Critical Value	0.883	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.883	Mean	1260
5% K-S Critical Value	0.285	SD	3561
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	998.2
		95% KM (t) UCL	3028
Assuming Gamma Distribution		95% KM (z) UCL	2902
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3009
Minimum	1.00E-09	95% KM (bootstrap t) UCL	14694
Maximum	14000	95% KM (BCA) UCL	3357
Mean	1260	95% KM (Percentile Bootstrap) UCL	3163
Median	0.328	95% KM (Chebyshev) UCL	5611
SD	3696	97.5% KM (Chebyshev) UCL	7494
k star	0.111	99% KM (Chebyshev) UCL	11192
Theta star	11353		
Nu star	3.107	Potential UCLs to Use	
AppChi2	0.405	95% KM (Chebyshev) UCL	5611
95% Gamma Approximate UCL	9669		
95% Adjusted Gamma UCL	12850		

Note: DL/2 is not a recommended method.

Xylenes, Total (p)

General Statistics			
Number of Valid Data	34	Number of Detected Data	26
Number of Distinct Detected Data	25	Number of Non-Detect Data	8
Number of Missing Values	13	Percent Non-Detects	23.53%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	9.70E-04	Minimum Detected	-6.938
Maximum Detected	600	Maximum Detected	6.397
Mean of Detected	48.02	Mean of Detected	0.523
SD of Detected	135.3	SD of Detected	3.58
Minimum Non-Detect	0.0068	Minimum Non-Detect	-4.991
Maximum Non-Detect	20	Maximum Non-Detect	2.996
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	29
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	85.29%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.4	Shapiro Wilk Test Statistic	0.941
5% Shapiro Wilk Critical Value	0.92	5% Shapiro Wilk Critical Value	0.92
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	37.08	Mean	-0.389
SD	119.4	SD	3.805
95% DL/2 (t) UCL	71.74	95% H-Stat (DL/2) UCL	49926
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.564
		SD in Log Scale	3.749
		Mean in Original Scale	36.73
		SD in Original Scale	119.5
		95% Percentile Bootstrap UCL	74.78
		95% BCA Bootstrap UCL	97
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.218	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	220.7		
nu star	11.31		
A-D Test Statistic	0.832	Nonparametric Statistics	
5% A-D Critical Value	0.886	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.886	Mean	36.84
5% K-S Critical Value	0.189	SD	117.7
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	20.59
		95% KM (t) UCL	71.69
Assuming Gamma Distribution		95% KM (z) UCL	70.71
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	71.53
Minimum	1.00E-09	95% KM (bootstrap t) UCL	263.9
Maximum	600	95% KM (BCA) UCL	76.51
Mean	36.72	95% KM (Percentile Bootstrap) UCL	73.3
Median	1.3	95% KM (Chebyshev) UCL	126.6
SD	119.5	97.5% KM (Chebyshev) UCL	165.4
k star	0.111	99% KM (Chebyshev) UCL	241.7
Theta star	330.2		
Nu star	7.562	Potential UCLs to Use	
AppChi2	2.484	95% KM (Chebyshev) UCL	126.6
95% Gamma Approximate UCL	111.8		
95% Adjusted Gamma UCL	118.6		

Note: DL/2 is not a recommended method.

Xylenes, Total (q central)

General Statistics			
Number of Valid Data	44	Number of Detected Data	27
Number of Distinct Detected Data	26	Number of Non-Detect Data	17
Number of Missing Values	6	Percent Non-Detects	38.64%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0012	Minimum Detected	-6.725
Maximum Detected	630	Maximum Detected	6.446
Mean of Detected	26.54	Mean of Detected	-2.824
SD of Detected	121.1	SD of Detected	3.582
Minimum Non-Detect	0.0076	Minimum Non-Detect	-4.88
Maximum Non-Detect	0.015	Maximum Non-Detect	-4.2
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	30
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	14
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	68.18%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.234	Shapiro Wilk Test Statistic	0.849
5% Shapiro Wilk Critical Value	0.923	5% Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	16.29	Mean	-3.746
SD	95.09	SD	3.025
95% DL/2 (t) UCL	40.39	95% H-Stat (DL/2) UCL	21.65
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-3.84
		SD in Log Scale	3.128
		Mean in Original Scale	16.29
		SD in Original Scale	95.09
		95% Percentile Bootstrap UCL	44.61
		95% BCA Bootstrap UCL	73.23
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.139	Data do not follow a Discernable Distribution (0.05)	
Theta Star	190.8		
nu star	7.511		
A-D Test Statistic	4.147	Nonparametric Statistics	
5% A-D Critical Value	0.93	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.93	Mean	16.29
5% K-S Critical Value	0.189	SD	94
Data not Gamma Distributed at 5% Significance Level		SE of Mean	14.44
		95% KM (t) UCL	40.57
Assuming Gamma Distribution		95% KM (z) UCL	40.04
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	40.39
Minimum	0.0012	95% KM (bootstrap t) UCL	785.3
Maximum	630	95% KM (BCA) UCL	44.61
Mean	27.47	95% KM (Percentile Bootstrap) UCL	44.76
Median	5.05	95% KM (Chebyshev) UCL	79.24
SD	94.2	97.5% KM (Chebyshev) UCL	106.5
k star	0.199	99% KM (Chebyshev) UCL	160
Theta star	138.3		
Nu star	17.48	Potential UCLs to Use	
AppChi2	9.015	99% KM (Chebyshev) UCL	160
95% Gamma Approximate UCL	53.26		
95% Adjusted Gamma UCL	54.51		

Note: DL/2 is not a recommended method.

Xylenes, Total (q north)

General Statistics			
Number of Valid Data	28	Number of Detected Data	19
Number of Distinct Detected Data	19	Number of Non-Detect Data	9
Number of Missing Values	8	Percent Non-Detects	32.14%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.90E-04	Minimum Detected	-7.849
Maximum Detected	300	Maximum Detected	5.704
Mean of Detected	20.44	Mean of Detected	-3.12
SD of Detected	70.12	SD of Detected	3.781
Minimum Non-Detect	0.0083	Minimum Non-Detect	-4.791
Maximum Non-Detect	0.0215	Maximum Non-Detect	-3.84
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	64.29%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.335	Shapiro Wilk Test Statistic	0.891
5% Shapiro Wilk Critical Value	0.901	5% Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	13.87	Mean	-3.733
SD	58.07	SD	3.223
95% DL/2 (t) UCL	32.57	95% H-Stat (DL/2) UCL	110.5
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.143
		SD in Log Scale	3.456
		Mean in Original Scale	13.87
		SD in Original Scale	58.07
		95% Percentile Bootstrap UCL	35.01
		95% BCA Bootstrap UCL	51.96
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.143	Data do not follow a Discernable Distribution (0.05)	
Theta Star	143		
nu star	5.431		
A-D Test Statistic	2.807	Nonparametric Statistics	
5% A-D Critical Value	0.915	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.915	Mean	13.87
5% K-S Critical Value	0.223	SD	57.03
Data not Gamma Distributed at 5% Significance Level		SE of Mean	11.07
		95% KM (t) UCL	32.73
Assuming Gamma Distribution		95% KM (z) UCL	32.08
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	32.56
Minimum	1.00E-09	95% KM (bootstrap t) UCL	681.9
Maximum	300	95% KM (BCA) UCL	32.67
Mean	14.08	95% KM (Percentile Bootstrap) UCL	35.08
Median	0.0047	95% KM (Chebyshev) UCL	62.13
SD	58.03	97.5% KM (Chebyshev) UCL	83.02
k star	0.0941	99% KM (Chebyshev) UCL	124
Theta star	149.7		
Nu star	5.268	Potential UCLs to Use	
AppChi2	1.278	99% KM (Chebyshev) UCL	124
95% Gamma Approximate UCL	58.04		
95% Adjusted Gamma UCL	63.82		

Note: DL/2 is not a recommended method.

Xylenes, Total (q south)

General Statistics			
Number of Valid Data	45	Number of Detected Data	32
Number of Distinct Detected Data	30	Number of Non-Detect Data	13
Number of Missing Values	4	Percent Non-Detects	28.89%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.60E-04	Minimum Detected	-7.488
Maximum Detected	1900	Maximum Detected	7.55
Mean of Detected	59.62	Mean of Detected	-4.168
SD of Detected	335.8	SD of Detected	3.154
Minimum Non-Detect	0.008	Minimum Non-Detect	-4.828
Maximum Non-Detect	0.42	Maximum Non-Detect	-0.868
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	41
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.11%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.182	Shapiro Wilk Test Statistic	0.819
5% Shapiro Wilk Critical Value	0.93	5% Shapiro Wilk Critical Value	0.93
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	42.41	Mean	-4.395
SD	283.2	SD	2.728
95% DL/2 (t) UCL	113.3	95% H-Stat (DL/2) UCL	4.08
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.65
		SD in Log Scale	2.776
		Mean in Original Scale	42.4
		SD in Original Scale	283.2
		95% Percentile Bootstrap UCL	126.8
		95% BCA Bootstrap UCL	169.2
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.11	Data do not follow a Discernable Distribution (0.05)	
Theta Star	541.3		
nu star	7.049		
A-D Test Statistic	7.969	Nonparametric Statistics	
5% A-D Critical Value	0.962	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.962	Mean	42.4
5% K-S Critical Value	0.177	SD	280
Data not Gamma Distributed at 5% Significance Level		SE of Mean	42.41
		95% KM (t) UCL	113.7
Assuming Gamma Distribution		95% KM (z) UCL	112.2
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	113.3
Minimum	1.00E-09	95% KM (bootstrap t) UCL	36660
Maximum	1900	95% KM (BCA) UCL	126.9
Mean	42.6	95% KM (Percentile Bootstrap) UCL	126.8
Median	0.0036	95% KM (Chebyshev) UCL	227.3
SD	283.2	97.5% KM (Chebyshev) UCL	307.3
k star	0.0797	99% KM (Chebyshev) UCL	464.4
Theta star	534.7		
Nu star	7.17	Potential UCLs to Use	
AppChi2	2.264	99% KM (Chebyshev) UCL	464.4
95% Gamma Approximate UCL	134.9		
95% Adjusted Gamma UCL	140.5		

Note: DL/2 is not a recommended method.

Xylenes, Total (r)

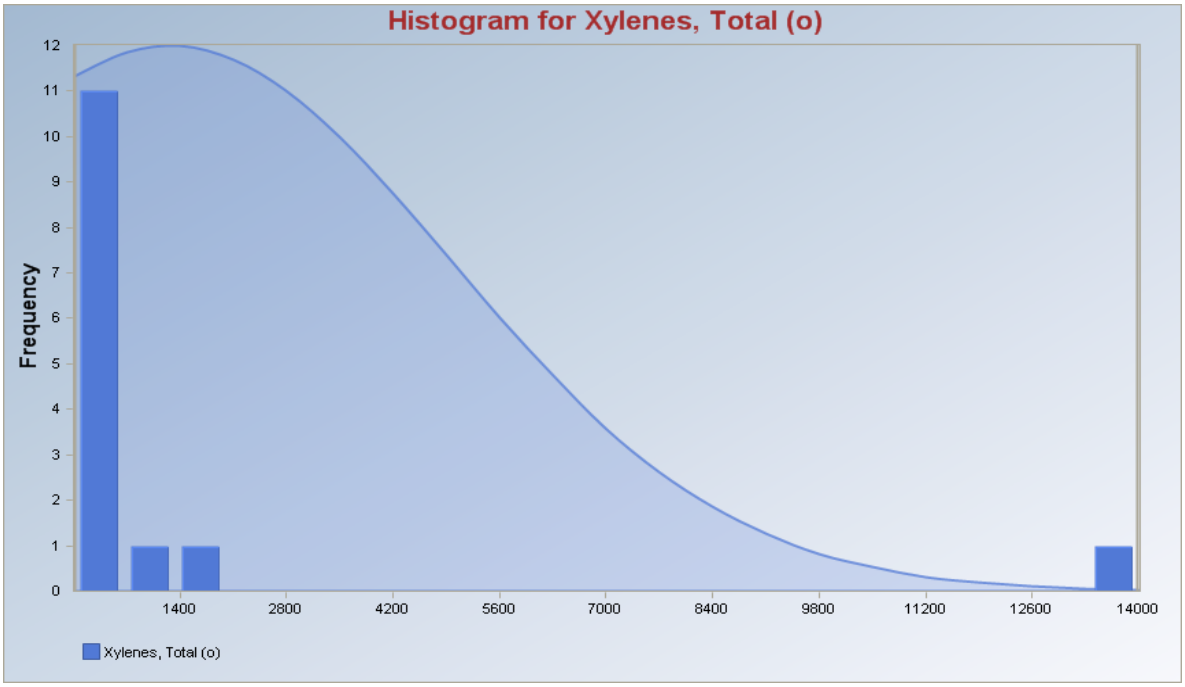
General Statistics			
Number of Valid Data	12	Number of Detected Data	11
Number of Distinct Detected Data	10	Number of Non-Detect Data	1
Number of Missing Values	4	Percent Non-Detects	8.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	9.50E-04	Minimum Detected	-6.959
Maximum Detected	280	Maximum Detected	5.635
Mean of Detected	49.46	Mean of Detected	-1.279
SD of Detected	86.63	SD of Detected	5.469
Minimum Non-Detect	0.014	Minimum Non-Detect	-4.269
Maximum Non-Detect	0.014	Maximum Non-Detect	-4.269
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk Test Statistic	0.805
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	45.34	Mean	-1.586
SD	83.82	SD	5.321
95% DL/2 (t) UCL	88.79	95% H-Stat (DL/2) UCL	3.36E+13
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.635
		SD in Log Scale	5.358
		Mean in Original Scale	45.34
		SD in Original Scale	83.82
		95% Percentile Bootstrap UCL	88.84
		95% BCA Bootstrap UCL	102.5
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.169	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	293.2		
nu star	3.711		
A-D Test Statistic	0.881	Nonparametric Statistics	
5% A-D Critical Value	0.878	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.878	Mean	45.34
5% K-S Critical Value	0.284	SD	80.25
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	24.3
		95% KM (t) UCL	88.97
Assuming Gamma Distribution		95% KM (z) UCL	85.3
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	88.79
Minimum	1.00E-09	95% KM (bootstrap t) UCL	138.1
Maximum	280	95% KM (BCA) UCL	85.92
Mean	45.34	95% KM (Percentile Bootstrap) UCL	86.42
Median	0.0251	95% KM (Chebyshev) UCL	151.3
SD	83.82	97.5% KM (Chebyshev) UCL	197.1
k star	0.144	99% KM (Chebyshev) UCL	287.1
Theta star	314.2		
Nu star	3.464	Potential UCLs to Use	
AppChi2	0.522	95% KM (Chebyshev) UCL	151.3
95% Gamma Approximate UCL	300.8		
95% Adjusted Gamma UCL	411.6		

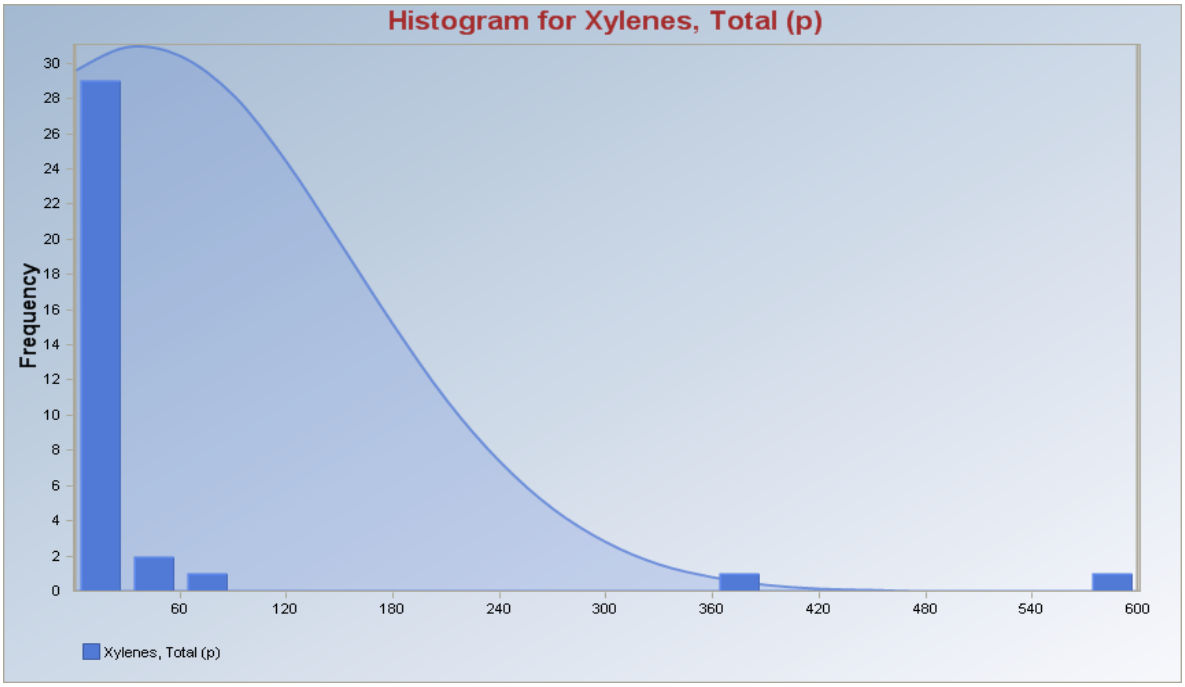
Note: DL/2 is not a recommended method.

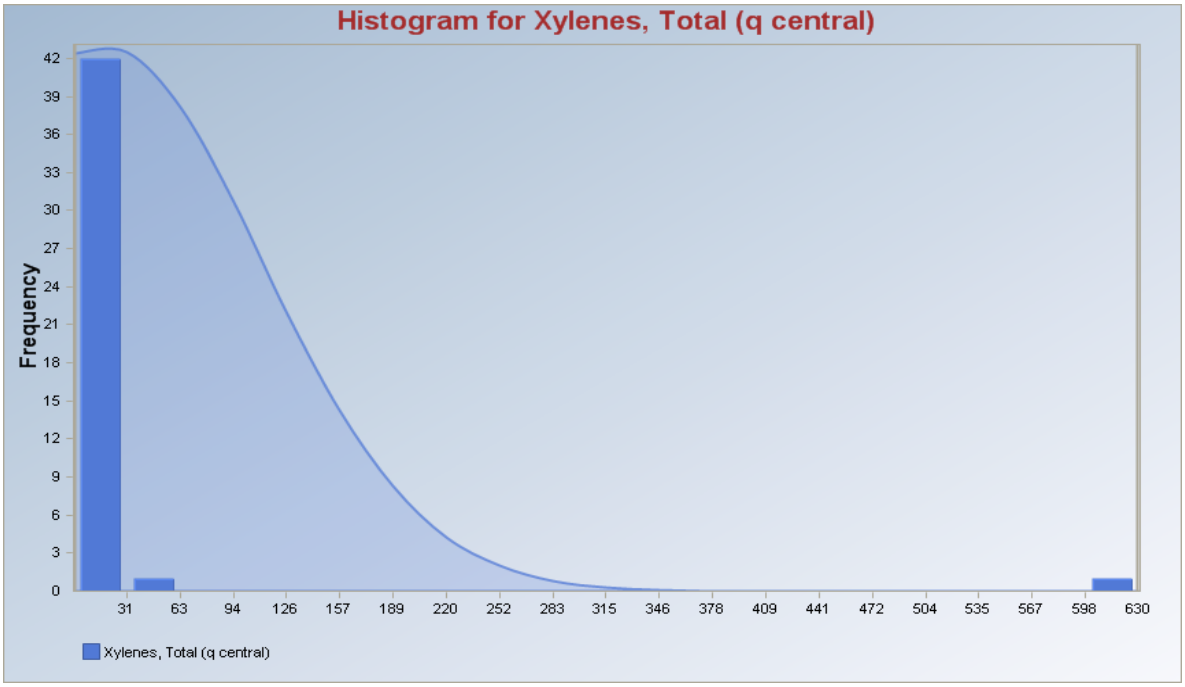
Xylenes, Total (s)

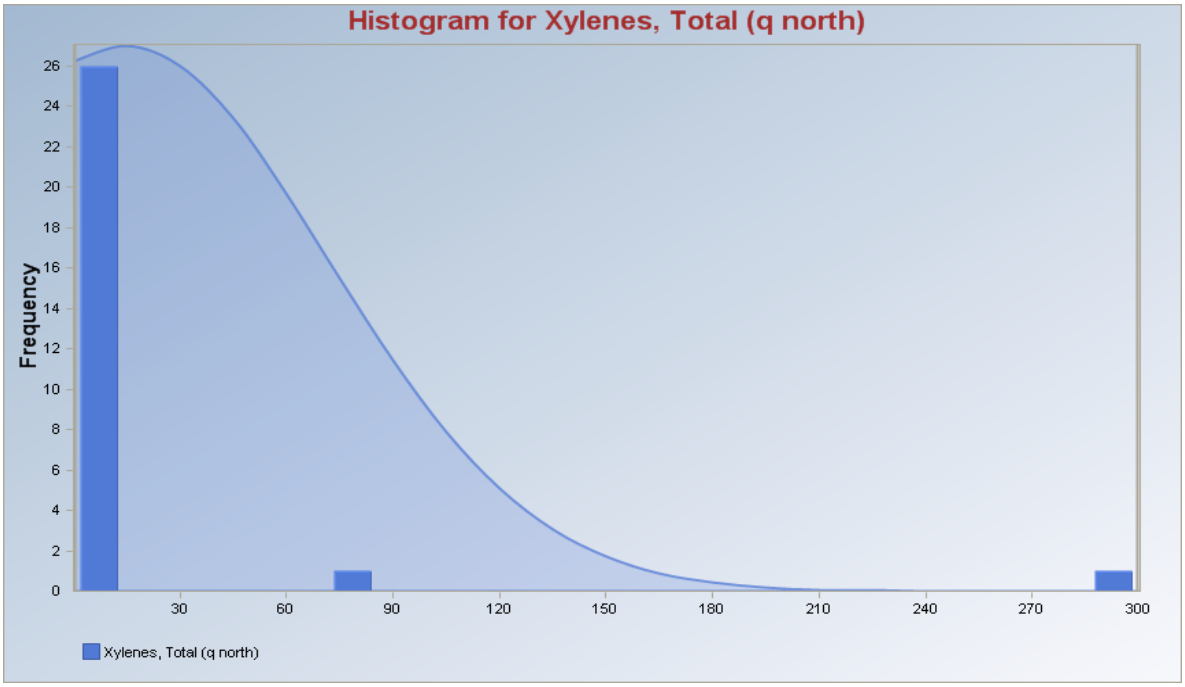
General Statistics			
Number of Valid Data	11	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	1
Number of Missing Values	3	Percent Non-Detects	9.09%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0042	Minimum Detected	-5.473
Maximum Detected	7300	Maximum Detected	8.896
Mean of Detected	1368	Mean of Detected	2.983
SD of Detected	2229	SD of Detected	5.791
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	0.011	Maximum Non-Detect	-4.51
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.662	Shapiro Wilk Test Statistic	0.814
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1244	Mean	2.239
SD	2154	SD	6.023
95% DL/2 (t) UCL	2421	95% H-Stat (DL/2) UCL	5.38E+20
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	751.1	Mean in Log Scale	2.287
SD	2577	SD in Log Scale	5.96
95% MLE (t) UCL	2160	Mean in Original Scale	1244
95% MLE (Tiku) UCL	2197	SD in Original Scale	2154
		95% Percentile Bootstrap UCL	2427
		95% BCA Bootstrap UCL	2961
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.191	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	7180		
nu star	3.811		
A-D Test Statistic	0.68	Nonparametric Statistics	
5% A-D Critical Value	0.862	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.862	Mean	1244
5% K-S Critical Value	0.295	SD	2054
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	652.8
		95% KM (t) UCL	2427
Assuming Gamma Distribution		95% KM (z) UCL	2317
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2421
Minimum	1.00E-09	95% KM (bootstrap t) UCL	4136
Maximum	7300	95% KM (BCA) UCL	2282
Mean	1244	95% KM (Percentile Bootstrap) UCL	2414
Median	310	95% KM (Chebyshev) UCL	4089
SD	2154	97.5% KM (Chebyshev) UCL	5320
k star	0.152	99% KM (Chebyshev) UCL	7739
Theta star	8201		
Nu star	3.336	Potential UCLs to Use	
AppChi2	0.479	95% KM (Chebyshev) UCL	4089
95% Gamma Approximate UCL	8669		
95% Adjusted Gamma UCL	12198		

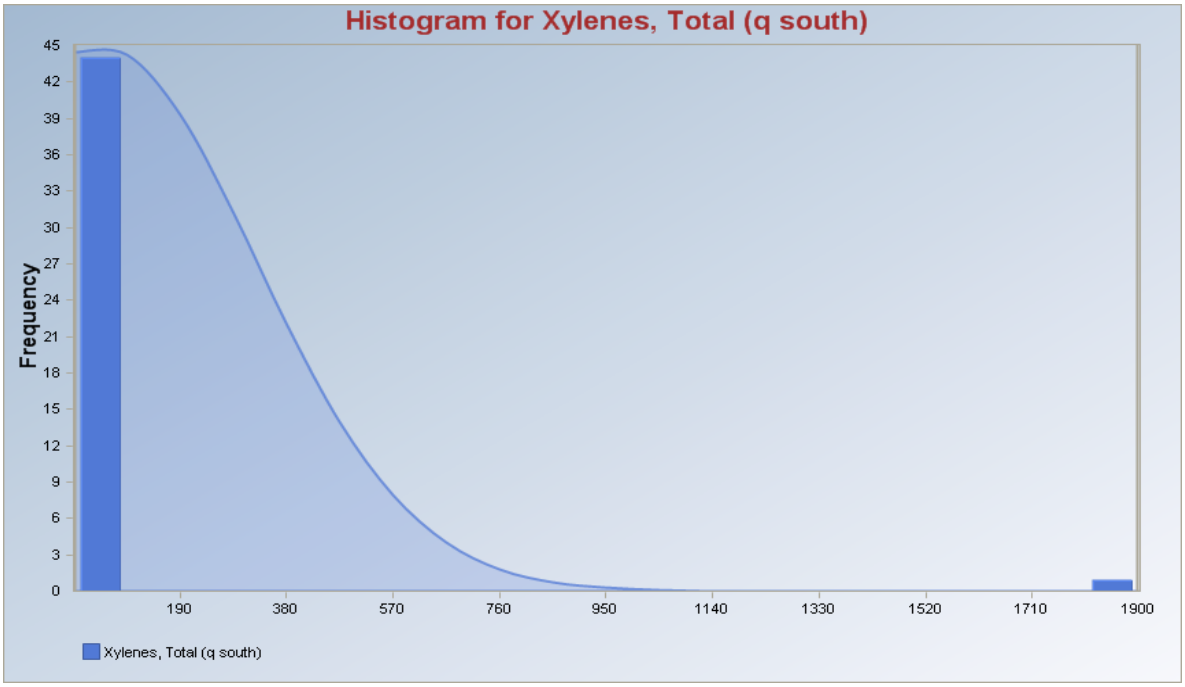
Note: DL/2 is not a recommended method.

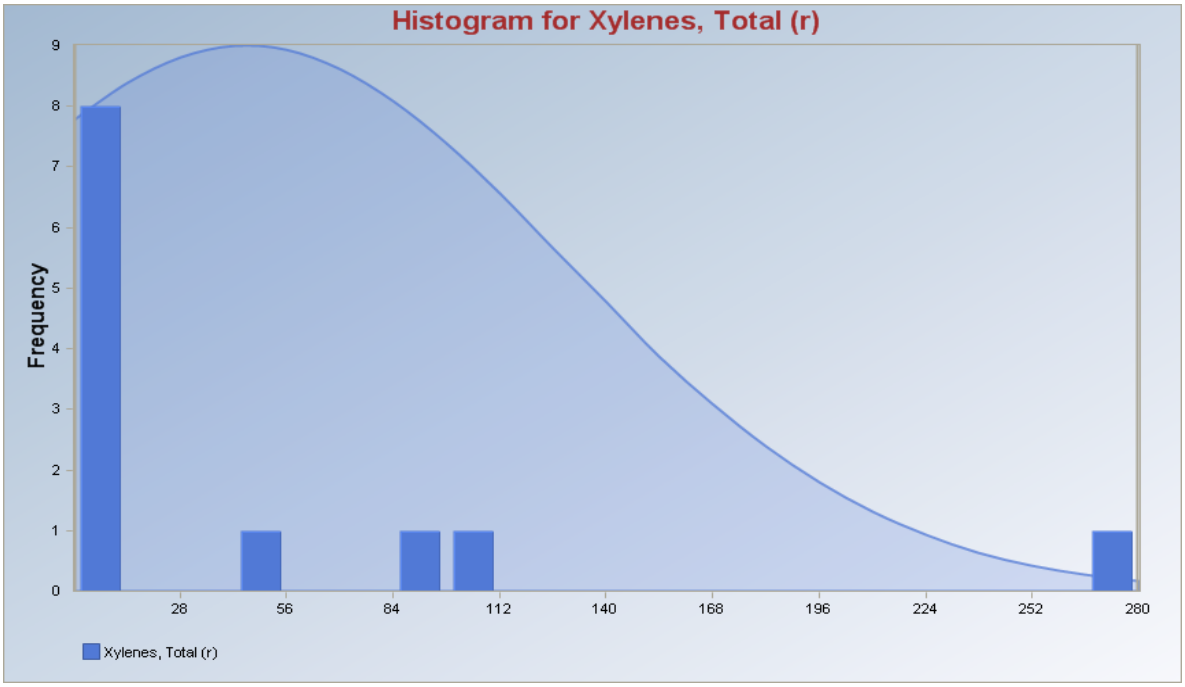

Histogram for Xylenes, Total (o)
Frequency
0
1
2
3
4
5
6
7
8
9
10
11
12
1400
2800
4200
5600
7000
8400
9800
11200
12600
14000
Xylenes, Total (o)

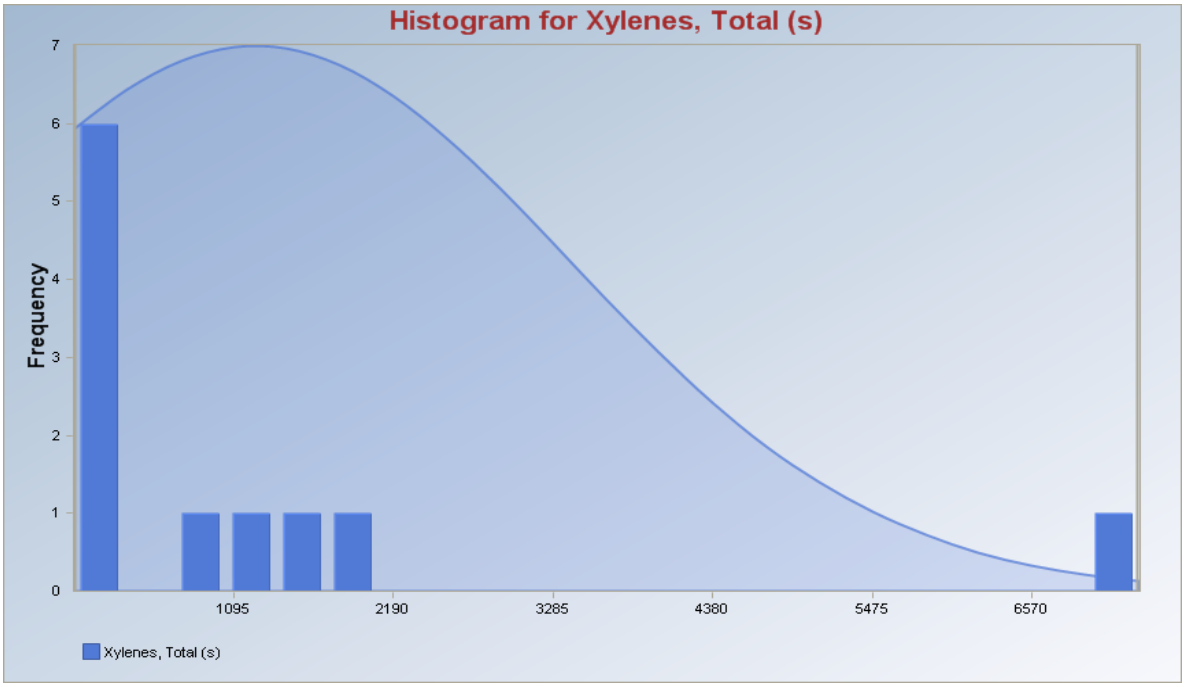

Histogram for Xylenes, Total (p)
Frequency
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
60
120
180
240
300
360
420
480
540
600
Xylenes, Total (p)


Histogram for Xylenes, Total (q central)
Frequency
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
31
63
94
126
157
189
220
252
283
315
346
378
409
441
472
504
535
567
598
630
Xylenes, Total (q central)


Histogram for Xylenes, Total (q north)
Frequency
26
24
22
20
18
16
14
12
10
8
6
4
2
0
30
60
90
120
150
180
210
240
270
300
Xylenes, Total (q north)


Histogram for Xylenes, Total (q south)
Frequency
45
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
190
380
570
760
950
1140
1330
1520
1710
1900
Xylenes, Total (q south)


Histogram for Xylenes, Total (r)
Frequency
0
1
2
3
4
5
6
7
8
9
28
56
84
112
140
168
196
224
252
280
Xylenes, Total (r)


Histogram for Xylenes, Total (s)
Frequency
0
1
2
3
4
5
6
7
1095
2190
3285
4380
5475
6570
Xylenes, Total (s)

Upper Confidence Limit (UCL) Calculations and Histograms – Sediment

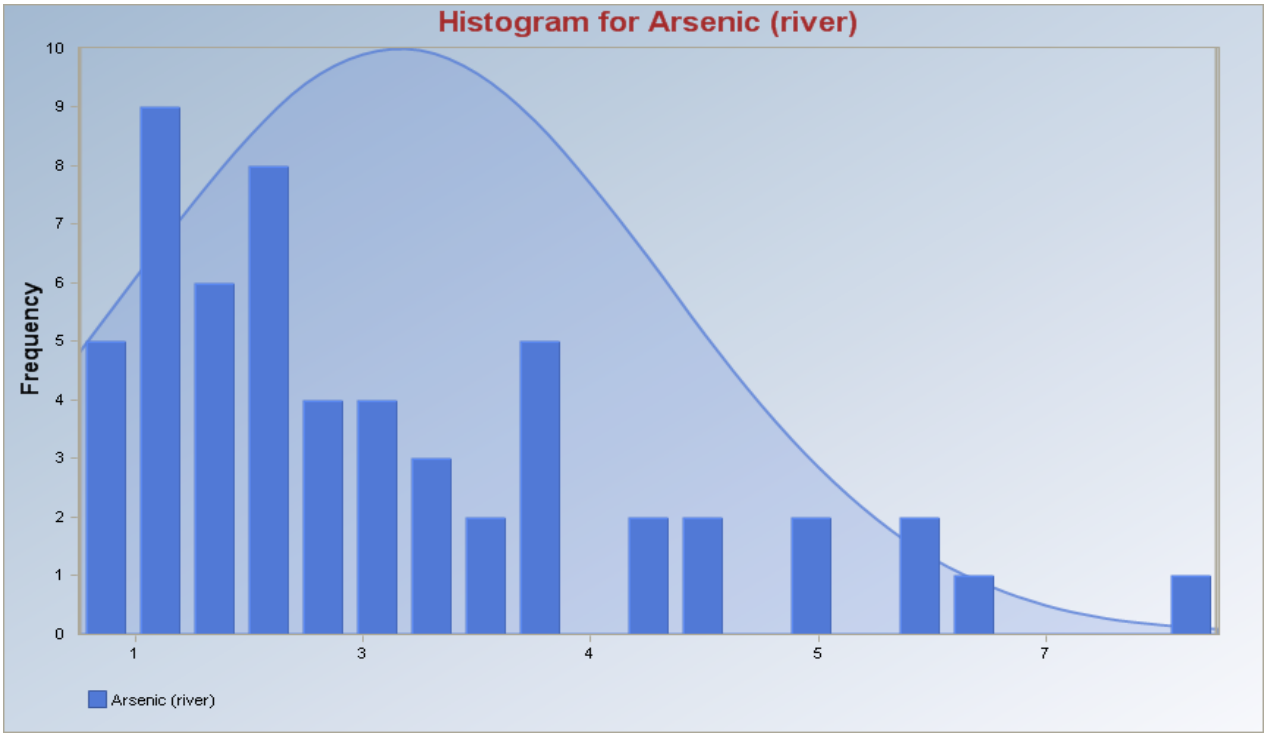
General UCL Statistics for Full Data Sets

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Arsenic (river)

General Statistics			
Number of Valid Observations	56	Number of Distinct Observations	35
Raw Statistics		Log-transformed Statistics	
Minimum	0.98	Minimum of Log Data	-0.0202
Maximum	7.5	Maximum of Log Data	2.015
Mean	2.814	Mean of log Data	0.906
Median	2.25	SD of log Data	0.506
SD	1.514		
Coefficient of Variation	0.538		
Skewness	1.165		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Lilliefors Test Statistic	0.157	Lilliefors Test Statistic	0.0916
Lilliefors Critical Value	0.118	Lilliefors Critical Value	0.118
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.152	95% H-UCL	3.195
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.675
95% Adjusted-CLT UCL	3.18	97.5% Chebyshev (MVUE) UCL	4.051
95% Modified-t UCL	3.158	99% Chebyshev (MVUE) UCL	4.791
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.835	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.734		
nu star	429.5		
Approximate Chi Square Value (.05)	382.5	Nonparametric Statistics	
Adjusted Level of Significance	0.0457	95% CLT UCL	3.147
Adjusted Chi Square Value	381.3	95% Jackknife UCL	3.152
		95% Standard Bootstrap UCL	3.148
Anderson-Darling Test Statistic	0.734	95% Bootstrap-t UCL	3.211
Anderson-Darling 5% Critical Value	0.754	95% Hall's Bootstrap UCL	3.184
Kolmogorov-Smirnov Test Statistic	0.12	95% Percentile Bootstrap UCL	3.164
Kolmogorov-Smirnov 5% Critical Value	0.119	95% BCA Bootstrap UCL	3.163
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.696
		97.5% Chebyshev(Mean, Sd) UCL	4.078
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.827
95% Approximate Gamma UCL	3.16		
95% Adjusted Gamma UCL	3.17		

Potential UCL to Use	Use 95% Approximate Gamma UCL	3.16


Histogram for Arsenic (river)
Frequency
10
9
8
7
6
5
4
3
2
1
0
1
3
4
5
7
Arsenic (river)

Upper Confidence Limit (UCL) Calculations and Histograms – Surface Water

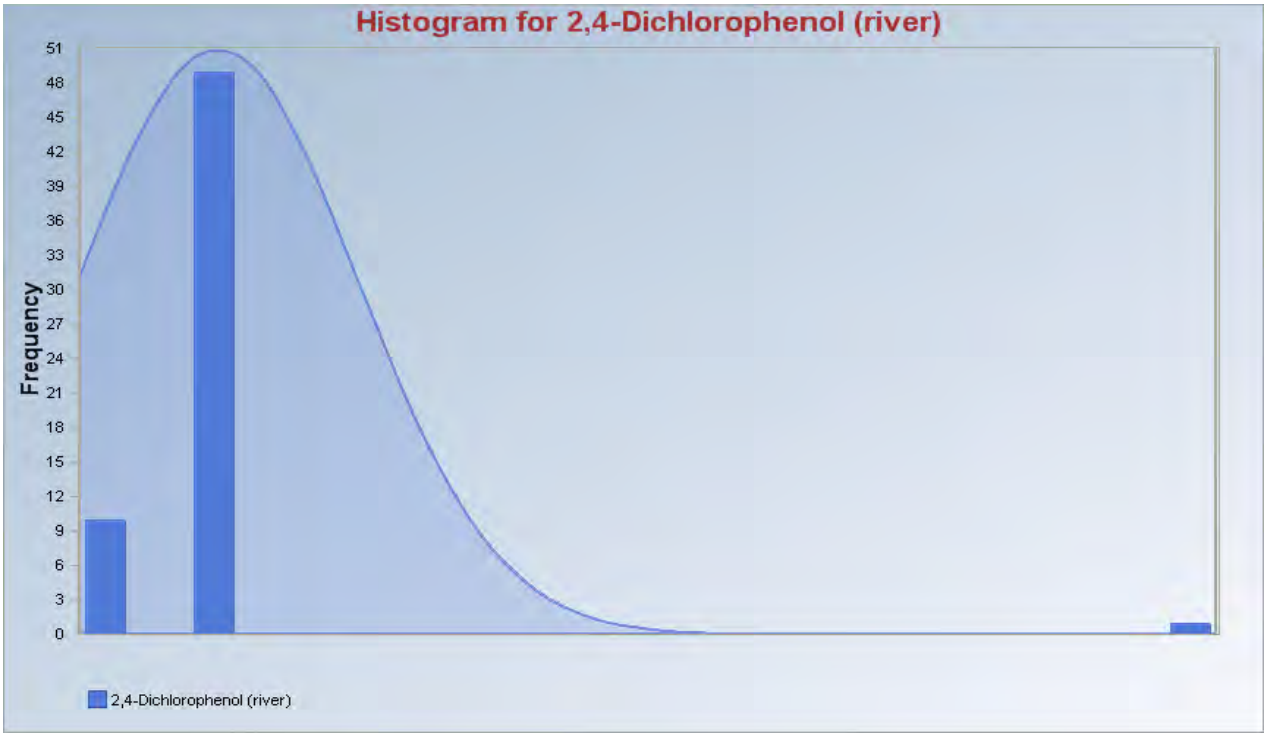
General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_a.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

2,4-Dichlorophenol (river)

General Statistics			
Number of Valid Data	60	Number of Detected Data	11
Number of Distinct Detected Data	9	Number of Non-Detect Data	49
		Percent Non-Detects	81.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0012	Minimum Detected	-6.725
Maximum Detected	0.069	Maximum Detected	-2.674
Mean of Detected	0.00831	Mean of Detected	-5.866
SD of Detected	0.0202	SD of Detected	1.135
Minimum Non-Detect	0.0094	Minimum Non-Detect	-4.667
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	59
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	98.33%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.386	Lilliefors Test Statistic	0.682
5% Lilliefors Critical Value	0.85	5% Lilliefors Critical Value	0.85
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00551	Mean	-5.422
SD	0.0084	SD	0.514
95% DL/2 (t) UCL	0.00733	95% H-Stat (DL/2) UCL	0.00694
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.04
		SD in Log Scale	0.833
		Mean in Original Scale	0.00398
		SD in Original Scale	0.0088
		95% Percentile Bootstrap UCL	0.00608
		95% BCA Bootstrap UCL	0.00766
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.481	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0173		
nu star	10.58		
A-D Test Statistic	2.336	Nonparametric Statistics	
5% A-D Critical Value	0.775	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.775	Mean	0.00335
5% K-S Critical Value	0.268	SD	0.0086
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0012
		95% KM (t) UCL	0.00535
Assuming Gamma Distribution		95% KM (z) UCL	0.00532
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00529
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0109
Maximum	0.069	95% KM (BCA) UCL	0.00571
Mean	0.0081	95% KM (Percentile Bootstrap) UCL	0.00566
Median	0.00748	95% KM (Chebyshev) UCL	0.00857
SD	0.00939	97.5% KM (Chebyshev) UCL	0.0108
k star	0.357	99% KM (Chebyshev) UCL	0.0153
Theta star	0.0227		
Nu star	42.86	Potential UCLs to Use	
AppChi2	28.85	95% KM (BCA) UCL	0.00571
95% Gamma Approximate UCL	0.012		
95% Adjusted Gamma UCL	0.0121		

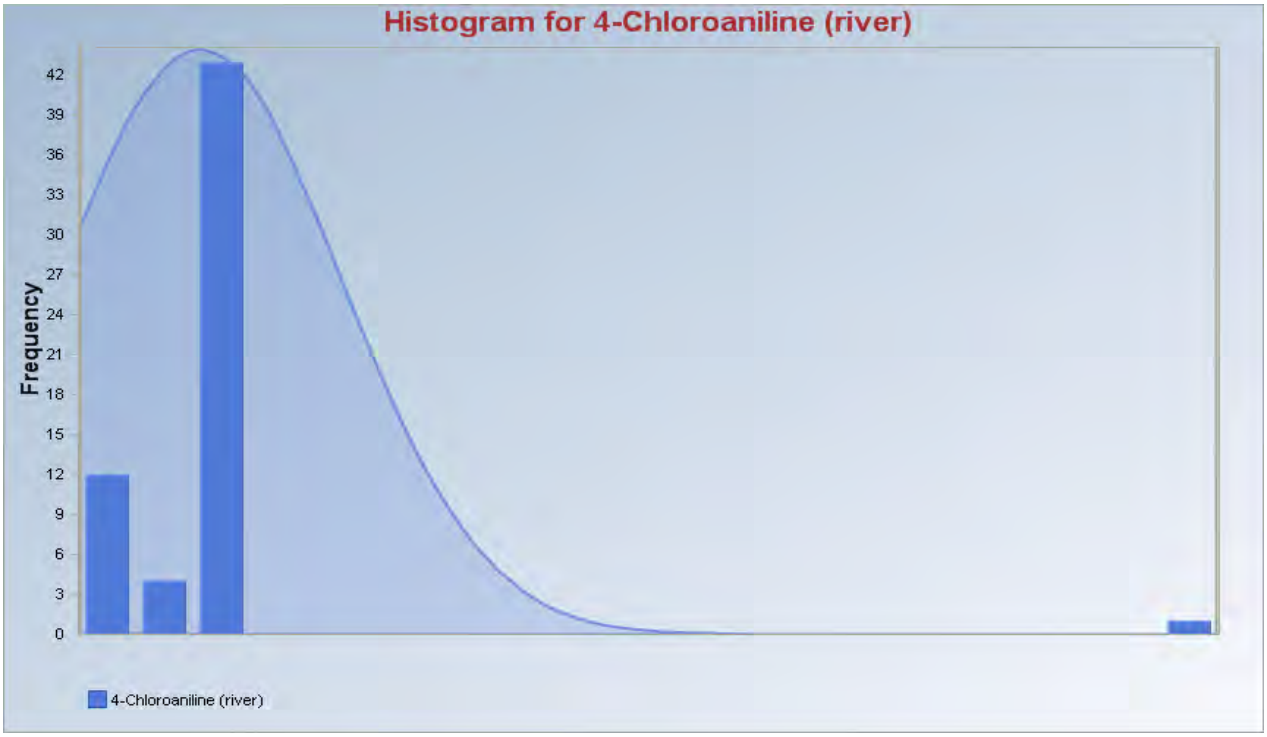
Note: DL/2 is not a recommended method.


Histogram for 2,4-Dichlorophenol (river)
Frequency
51
48
45
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
2,4-Dichlorophenol (river)

4-Chloroaniline (river)

General Statistics			
Number of Valid Data	60	Number of Detected Data	17
Number of Distinct Detected Data	17	Number of Non-Detect Data	43
		Percent Non-Detects	71.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0012	Minimum Detected	-6.725
Maximum Detected	0.16	Maximum Detected	-1.833
Mean of Detected	0.0147	Mean of Detected	-5.278
SD of Detected	0.0377	SD of Detected	1.193
Minimum Non-Detect	0.019	Minimum Non-Detect	-3.963
Maximum Non-Detect	0.02	Maximum Non-Detect	-3.912
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	59
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	98.33%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.359	Lilliefors Test Statistic	0.885
5% Lilliefors Critical Value	0.892	5% Lilliefors Critical Value	0.892
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0112	Mean	-4.814
SD	0.0198	SD	0.688
95% DL/2 (t) UCL	0.0154	95% H-Stat (DL/2) UCL	0.0178
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.396
		SD in Log Scale	1.029
		Mean in Original Scale	0.00893
		SD in Original Scale	0.0207
		95% Percentile Bootstrap UCL	0.0139
		95% BCA Bootstrap UCL	0.0169
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.522	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0282		
nu star	17.74		
A-D Test Statistic	1.959	Nonparametric Statistics	
5% A-D Critical Value	0.791	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.791	Mean	0.00819
5% K-S Critical Value	0.22	SD	0.0203
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.00286
		95% KM (t) UCL	0.013
Assuming Gamma Distribution		95% KM (z) UCL	0.0129
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0129
Minimum	0.0012	95% KM (bootstrap t) UCL	0.0201
Maximum	0.16	95% KM (BCA) UCL	0.0141
Mean	0.0144	95% KM (Percentile Bootstrap) UCL	0.0131
Median	0.0131	95% KM (Chebyshev) UCL	0.0207
SD	0.0203	97.5% KM (Chebyshev) UCL	0.0261
k star	1.337	99% KM (Chebyshev) UCL	0.0367
Theta star	0.0108		
Nu star	160.5	Potential UCLs to Use	
AppChi2	132.2	95% KM (BCA) UCL	0.0141
95% Gamma Approximate UCL	0.0175		
95% Adjusted Gamma UCL	0.0176		

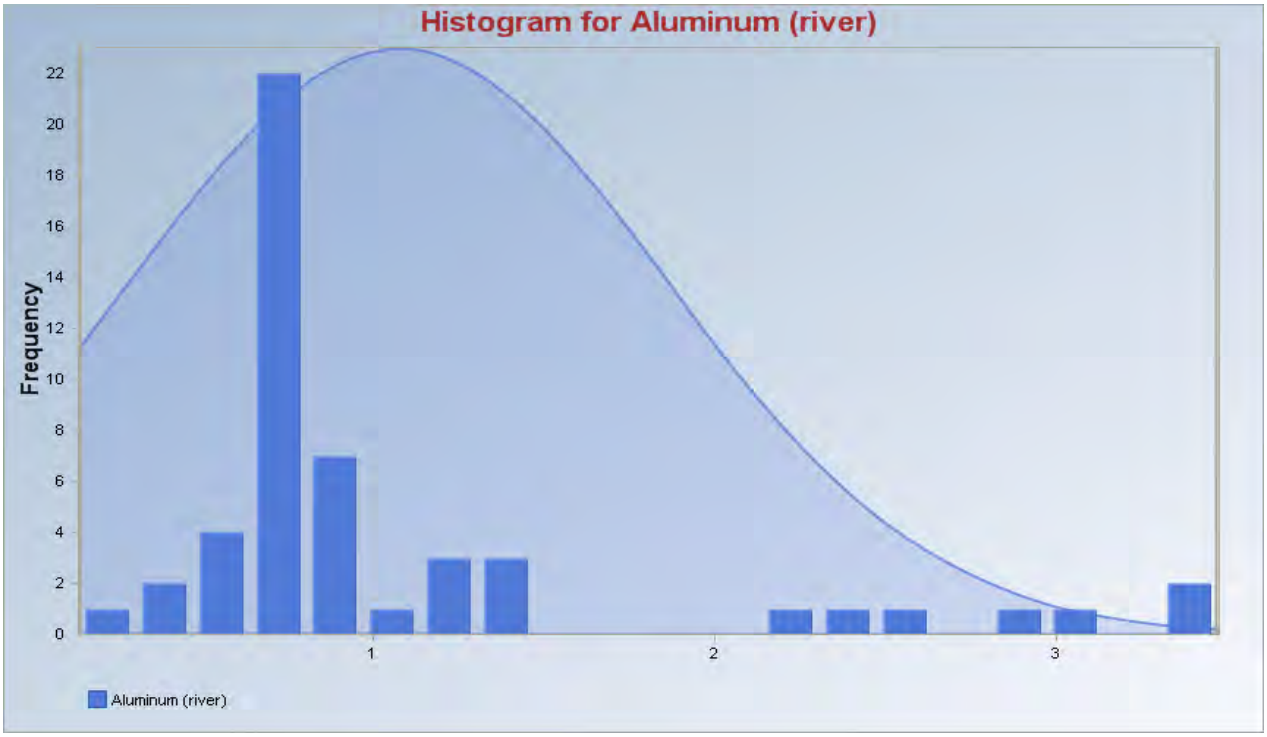
Note: DL/2 is not a recommended method.


Histogram for 4-Chloroaniline (river)
Frequency
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
4-Chloroaniline (river)

Aluminum (river)

General Statistics			
Number of Valid Data	50	Number of Detected Data	50
Number of Distinct Detected Data	39	Number of Non-Detect Data	0
Number of Missing Values	10	Percent Non-Detects	0.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.15	Minimum Detected	-1.897
Maximum Detected	3.8	Maximum Detected	1.335
Mean of Detected	1.175	Mean of Detected	-0.0259
SD of Detected	0.856	SD of Detected	0.592
Minimum Non-Detect	N/A	Minimum Non-Detect	N/A
Maximum Non-Detect	N/A	Maximum Non-Detect	N/A
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.694	Shapiro Wilk Test Statistic	0.875
5% Shapiro Wilk Critical Value	0.947	5% Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.175	Mean	-0.0259
SD	0.856	SD	0.592
95% DL/2 (t) UCL	1.378	95% H-Stat (DL/2) UCL	1.369
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.668	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.441		
nu star	266.8		
A-D Test Statistic	3.971	Nonparametric Statistics	
5% A-D Critical Value	0.758	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.758	Mean	1.175
5% K-S Critical Value	0.126	SD	0.848
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.121
		95% KM (t) UCL	1.378
Assuming Gamma Distribution		95% KM (z) UCL	1.374
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.378
Minimum	0.15	95% KM (bootstrap t) UCL	1.446
Maximum	3.8	95% KM (BCA) UCL	1.392
Mean	1.175	95% KM (Percentile Bootstrap) UCL	1.389
Median	0.83	95% KM (Chebyshev) UCL	1.703
SD	0.856	97.5% KM (Chebyshev) UCL	1.931
k star	2.668	99% KM (Chebyshev) UCL	2.38
Theta star	0.441		
Nu star	266.8	Potential UCLs to Use	
AppChi2	230	95% KM (Chebyshev) UCL	1.703
95% Gamma Approximate UCL	1.363		
95% Adjusted Gamma UCL	1.37		

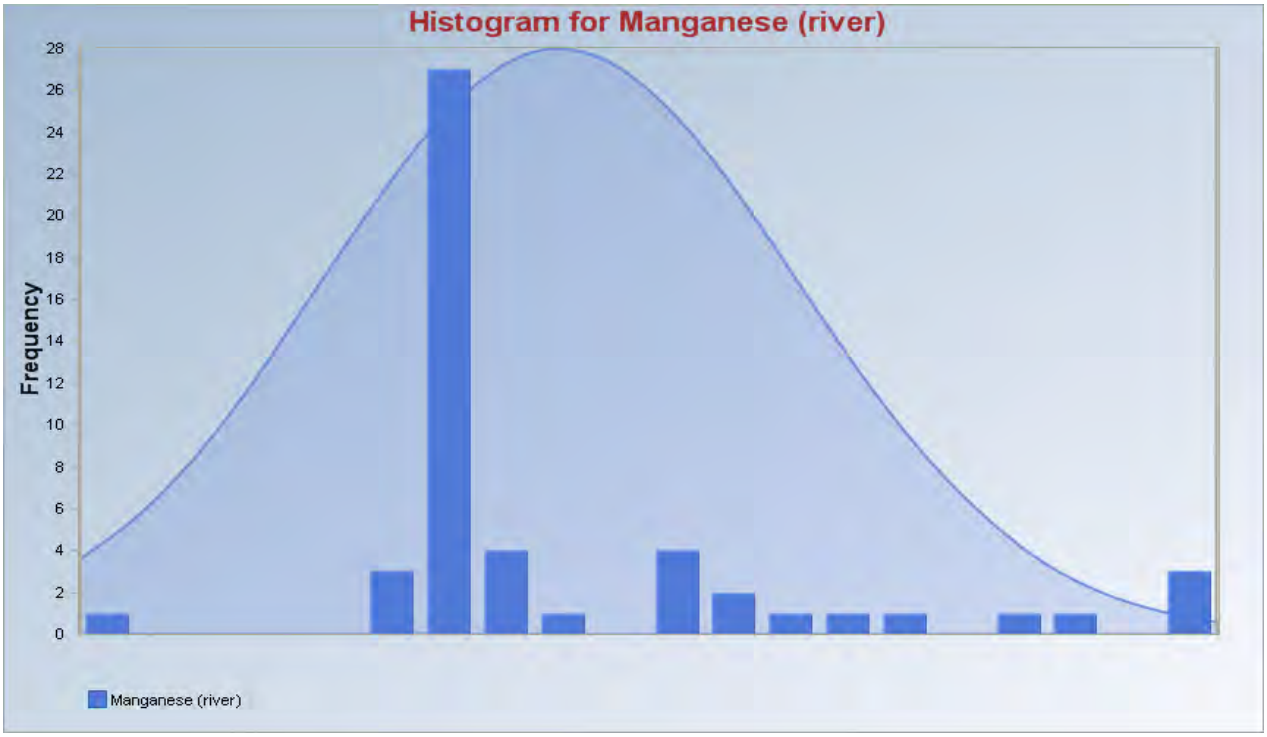
Note: DL/2 is not a recommended method.


Histogram for Aluminum (river)
Frequency
22
20
18
16
14
12
10
8
6
4
2
0
1
2
3
Aluminum (river)

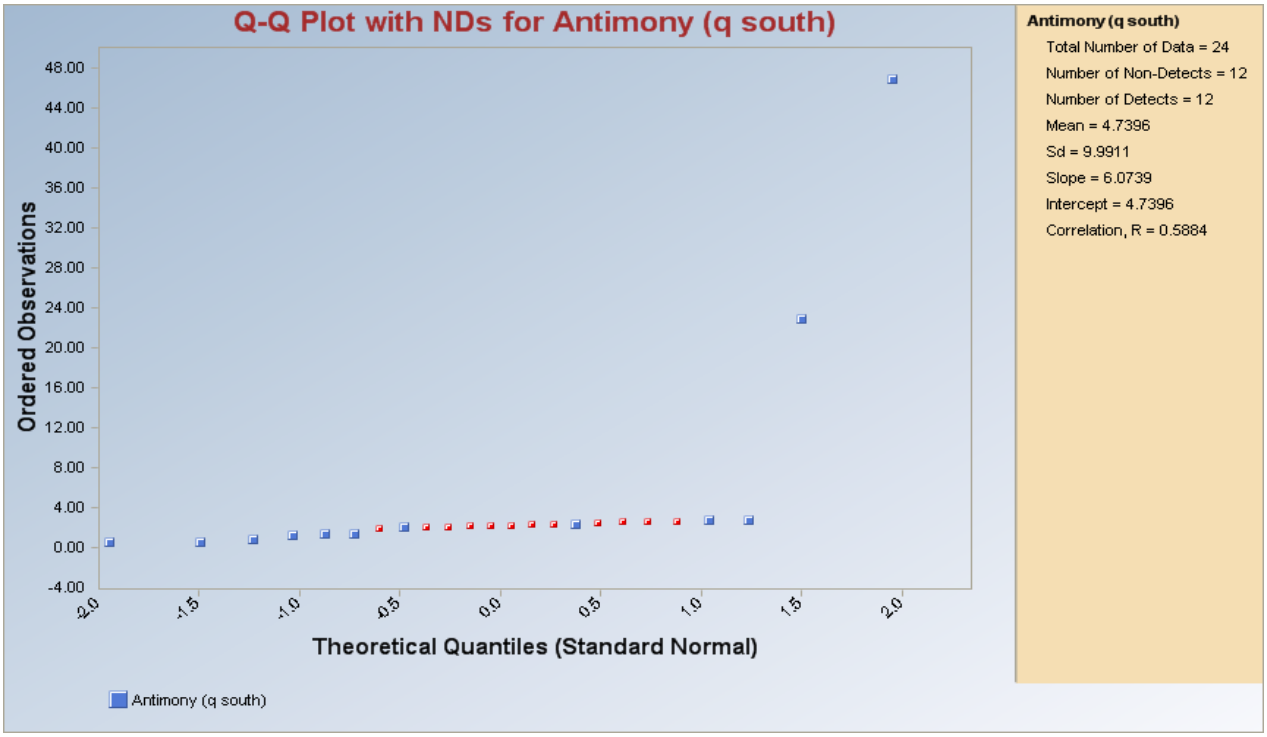
Manganese (river)

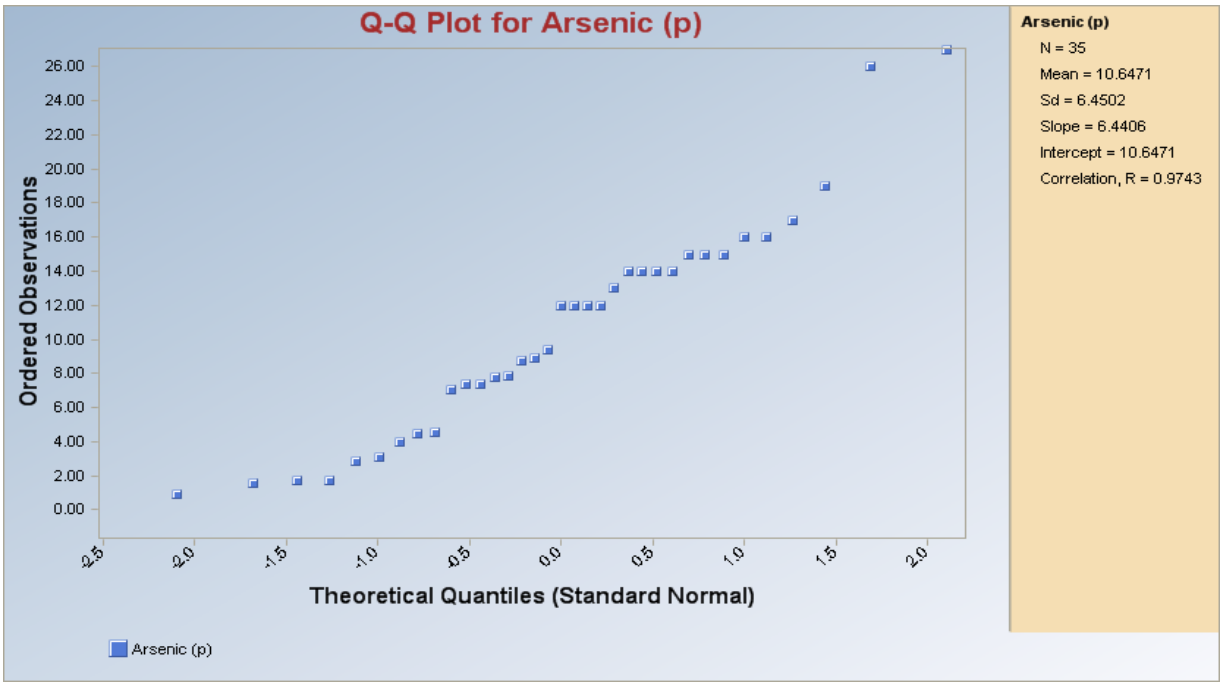
General Statistics			
Number of Valid Data	50	Number of Detected Data	49
Number of Distinct Detected Data	28	Number of Non-Detect Data	1
Number of Missing Values	10	Percent Non-Detects	2.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.077	Minimum Detected	-2.564
Maximum Detected	0.25	Maximum Detected	-1.386
Mean of Detected	0.113	Mean of Detected	-2.243
SD of Detected	0.0482	SD of Detected	0.346
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.695	Shapiro Wilk Test Statistic	0.759
5% Shapiro Wilk Critical Value	0.947	5% Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.111	Mean	-2.304
SD	0.0501	SD	0.551
95% DL/2 (t) UCL	0.123	95% H-Stat (DL/2) UCL	0.128
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.111	Mean in Log Scale	-2.259
SD	0.0502	SD in Log Scale	0.361
95% MLE (t) UCL	0.123	Mean in Original Scale	0.112
95% MLE (Tiku) UCL	0.123	SD in Original Scale	0.0486
		95% Percentile Bootstrap UCL	0.124
		95% BCA Bootstrap UCL	0.125
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	7.169	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0158		
nu star	702.6		
A-D Test Statistic	5.129	Nonparametric Statistics	
5% A-D Critical Value	0.751	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.751	Mean	0.113
5% K-S Critical Value	0.127	SD	0.0475
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.00678
		95% KM (t) UCL	0.124
Assuming Gamma Distribution		95% KM (z) UCL	0.124
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.124
Minimum	0.0149	95% KM (bootstrap t) UCL	0.126
Maximum	0.25	95% KM (BCA) UCL	0.125
Mean	0.111	95% KM (Percentile Bootstrap) UCL	0.124
Median	0.0885	95% KM (Chebyshev) UCL	0.142
SD	0.0497	97.5% KM (Chebyshev) UCL	0.155
k star	5.459	99% KM (Chebyshev) UCL	0.18
Theta star	0.0204		
Nu star	545.9	Potential UCLs to Use	
AppChi2	492.7	95% KM (Chebyshev) UCL	0.142
95% Gamma Approximate UCL	0.124		
95% Adjusted Gamma UCL	0.124		

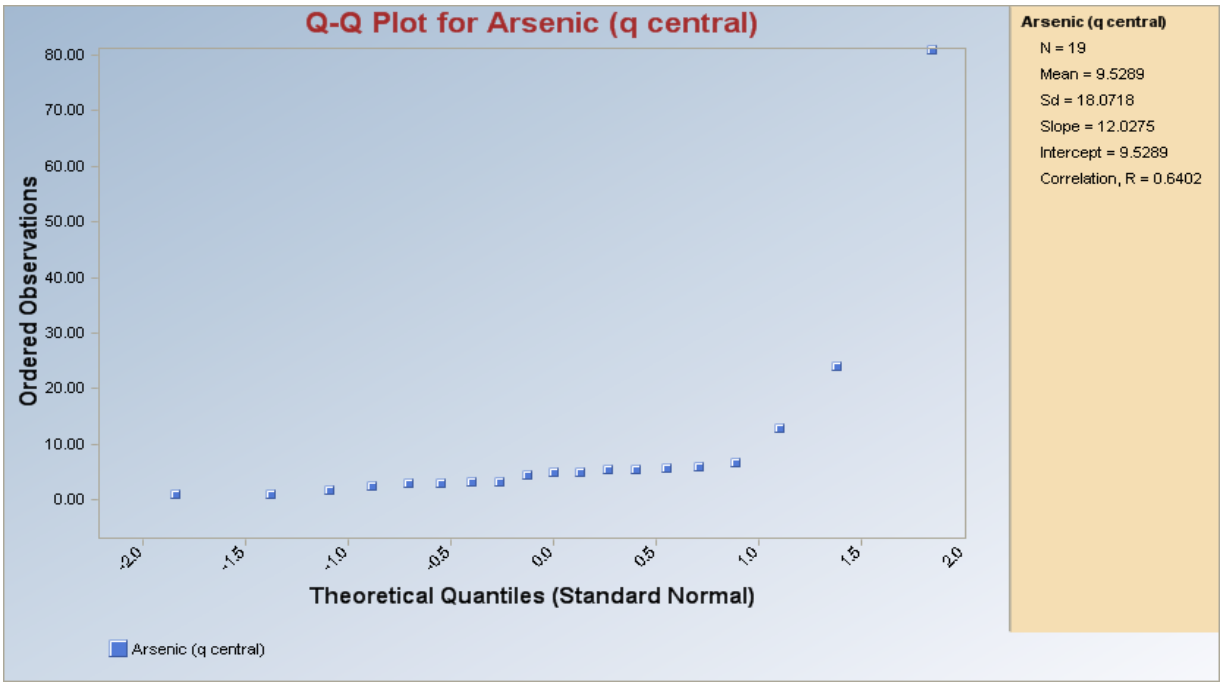
Note: DL/2 is not a recommended method.

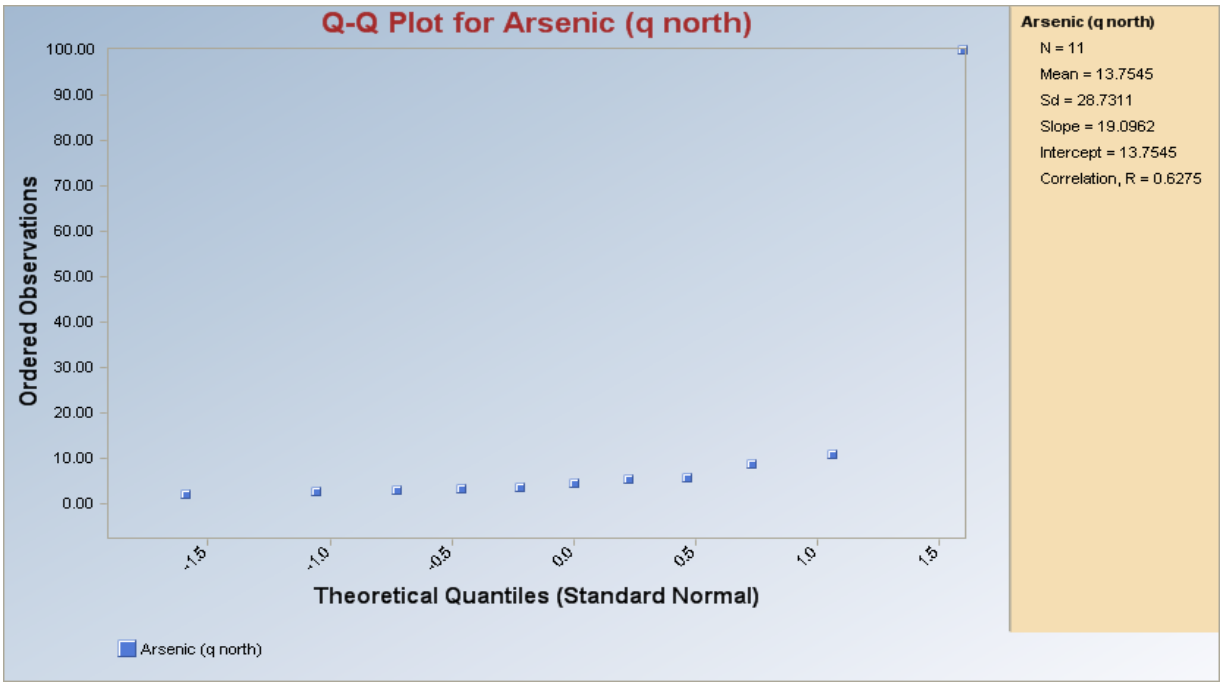

Histogram for Manganese (river)
Frequency
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Manganese (river)

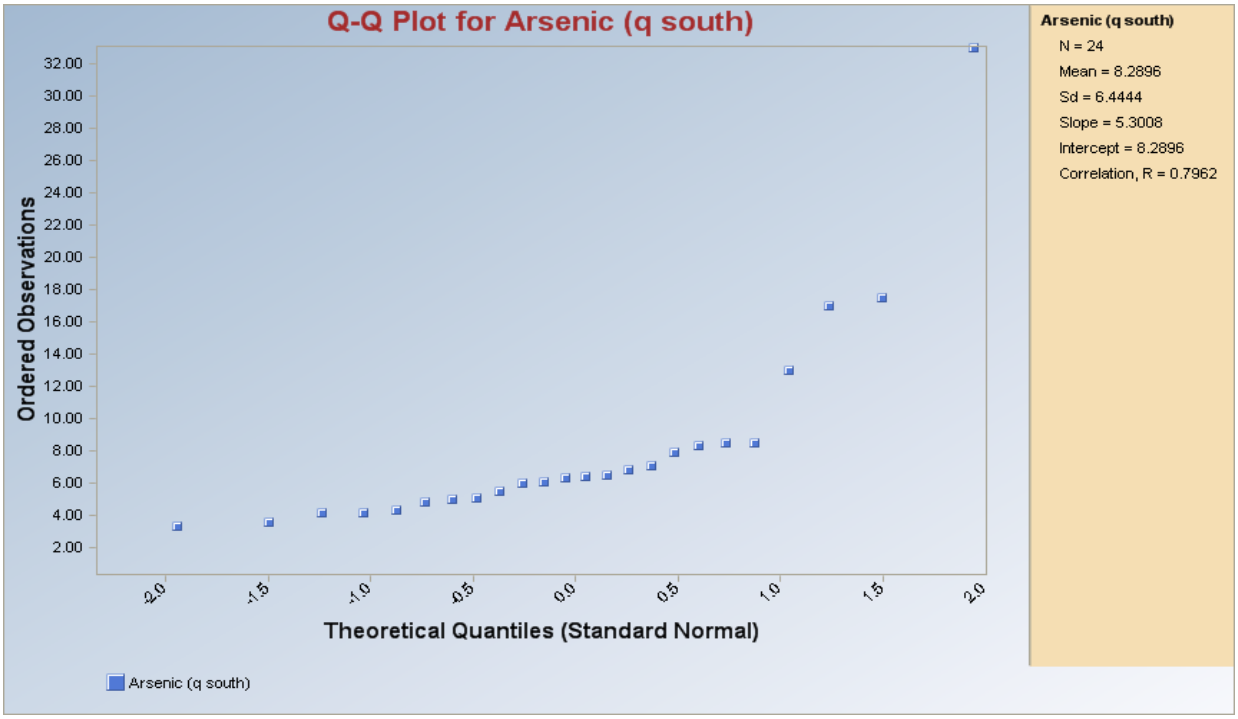
Q-Q Plots – Surface Soil

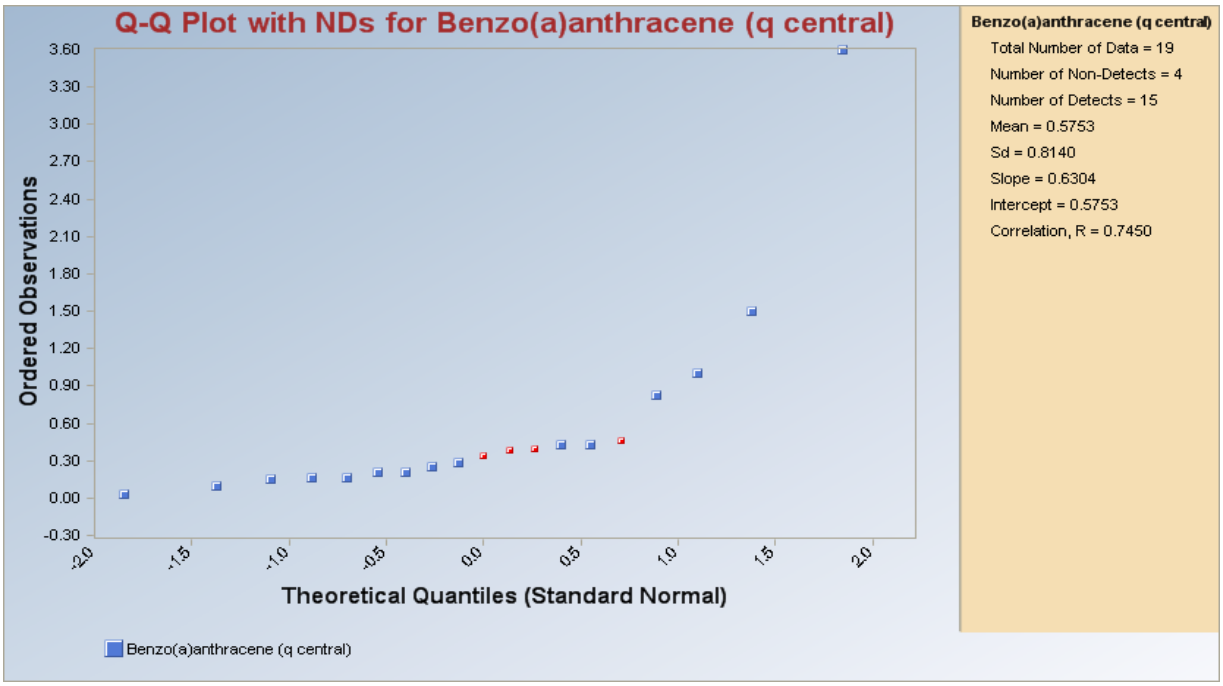

Q-Q Plot with NDs for Antimony (q south)
Ordered Observations
48.00
44.00
40.00
36.00
32.00
28.00
24.00
20.00
16.00
12.00
8.00
4.00
0.00
-4.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Antimony (q south)
Antimony (q south)
Total Number of Data = 24
Number of Non-Detects = 12
Number of Detects = 12
Mean = 4.7396
Sd = 9.9911
Slope = 6.0739
Intercept = 4.7396
Correlation, R = 0.5884

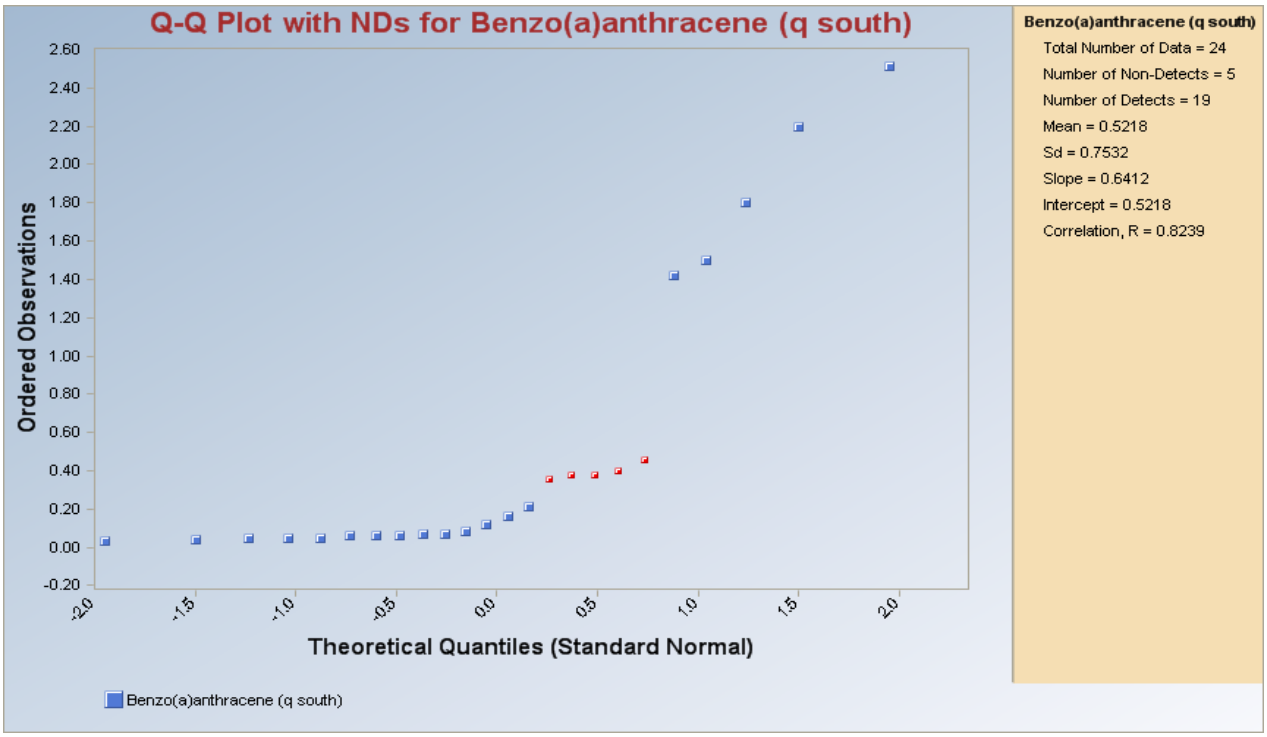

Q-Q Plot for Arsenic (p)
Ordered Observations
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Arsenic (p)
Arsenic (p)
N = 35
Mean = 10.6471
Sd = 6.4502
Slope = 6.4406
Intercept = 10.6471
Correlation, R = 0.9743

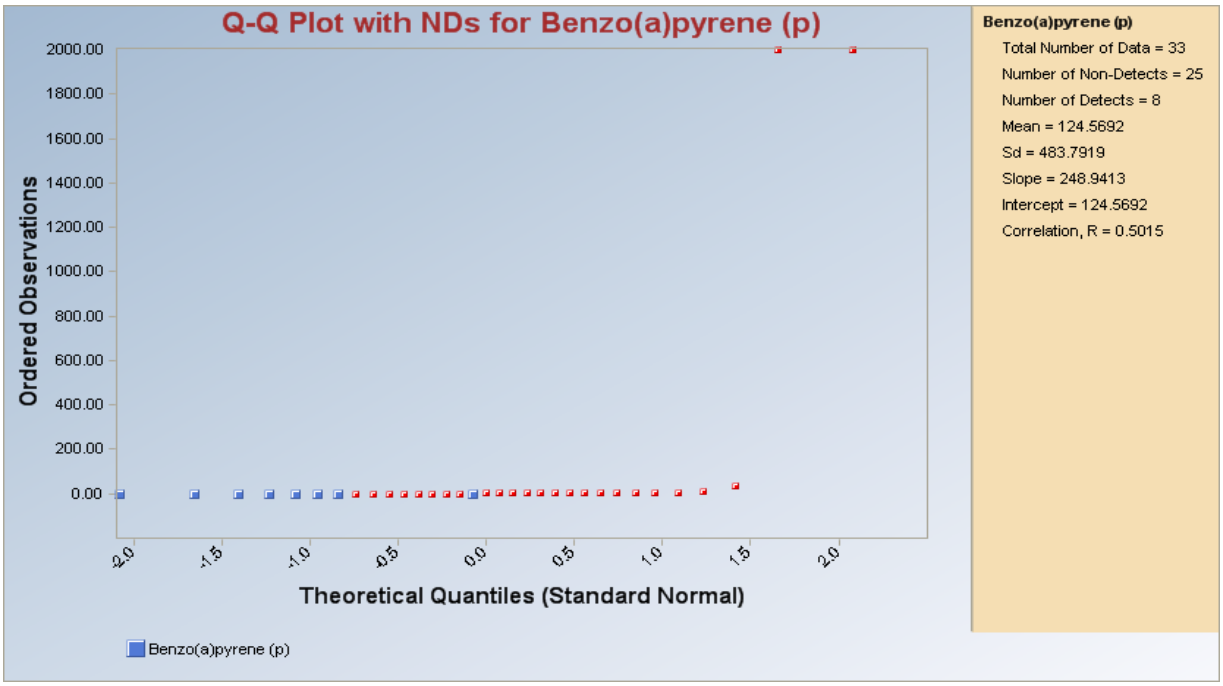

Q-Q Plot for Arsenic (q central)
Ordered Observations
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Arsenic (q central)
Arsenic (q central)
N = 19
Mean = 9.5289
Sd = 18.0718
Slope = 12.0275
Intercept = 9.5289
Correlation, R = 0.6402

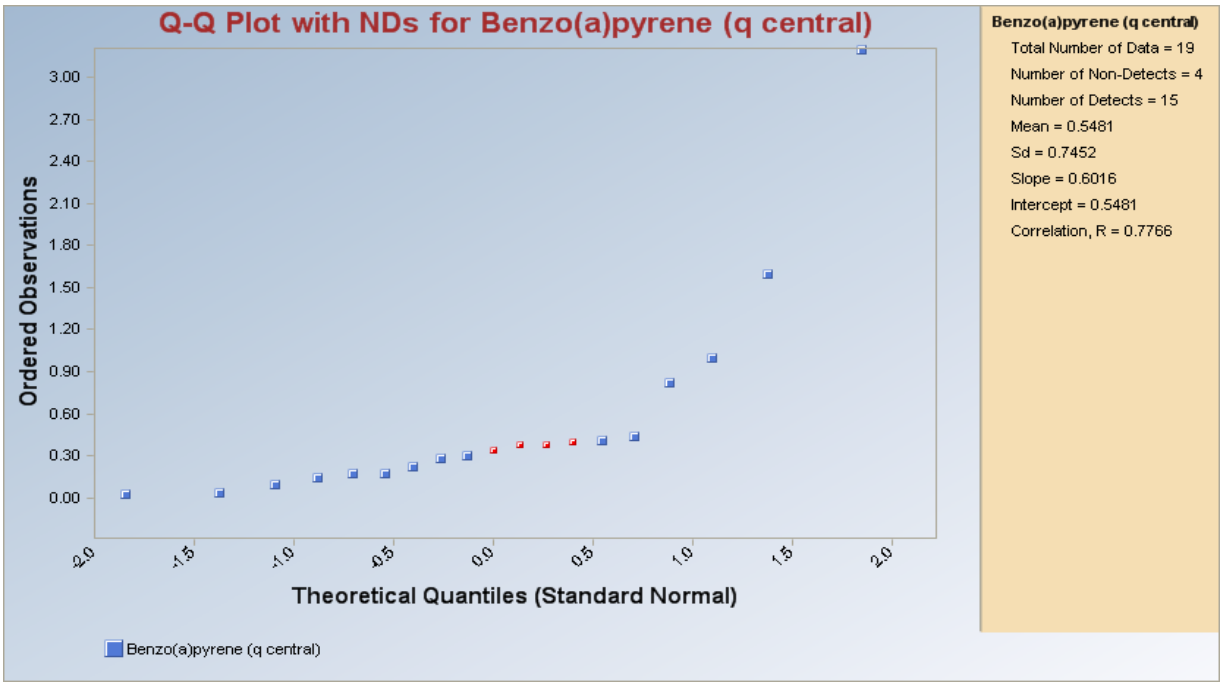

Q-Q Plot for Arsenic (q north)
Ordered Observations
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Arsenic (q north)
Arsenic (q north)
N = 11
Mean = 13.7545
Sd = 28.7311
Slope = 19.0962
Intercept = 13.7545
Correlation, R = 0.6275

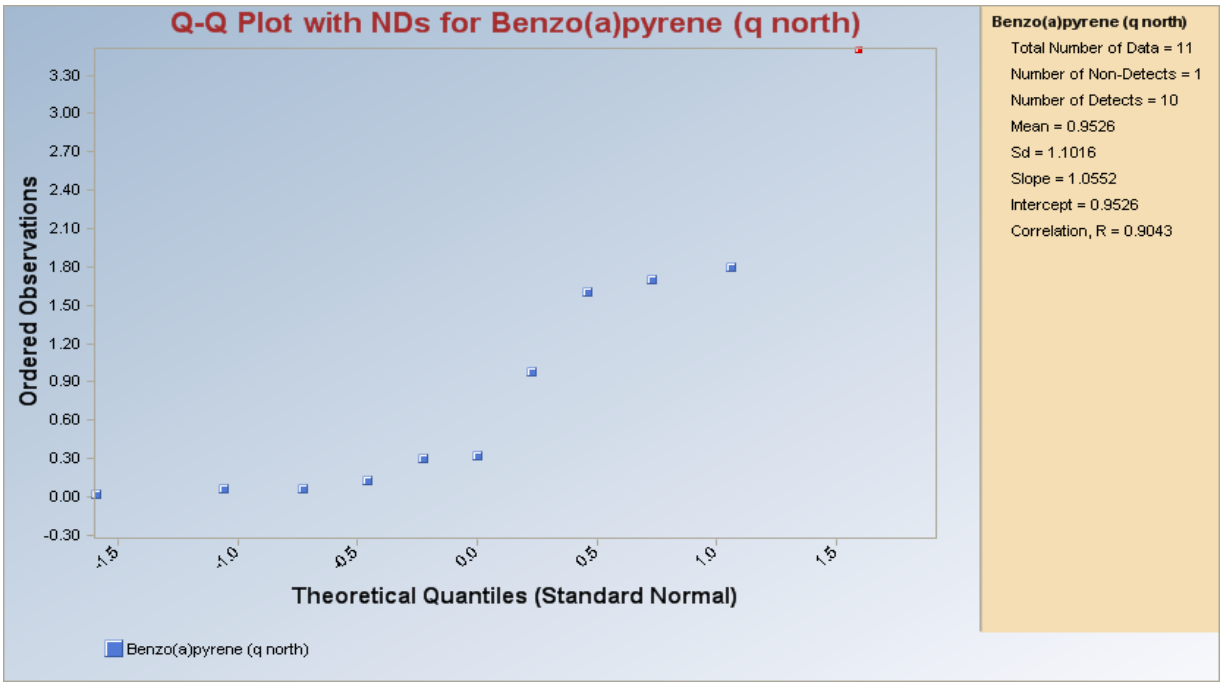

Q-Q Plot for Arsenic (q south)
Ordered Observations
32.00
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Arsenic (q south)
Arsenic (q south)
N = 24
Mean = 8.2896
Sd = 6.4444
Slope = 5.3008
Intercept = 8.2896
Correlation, R = 0.7962

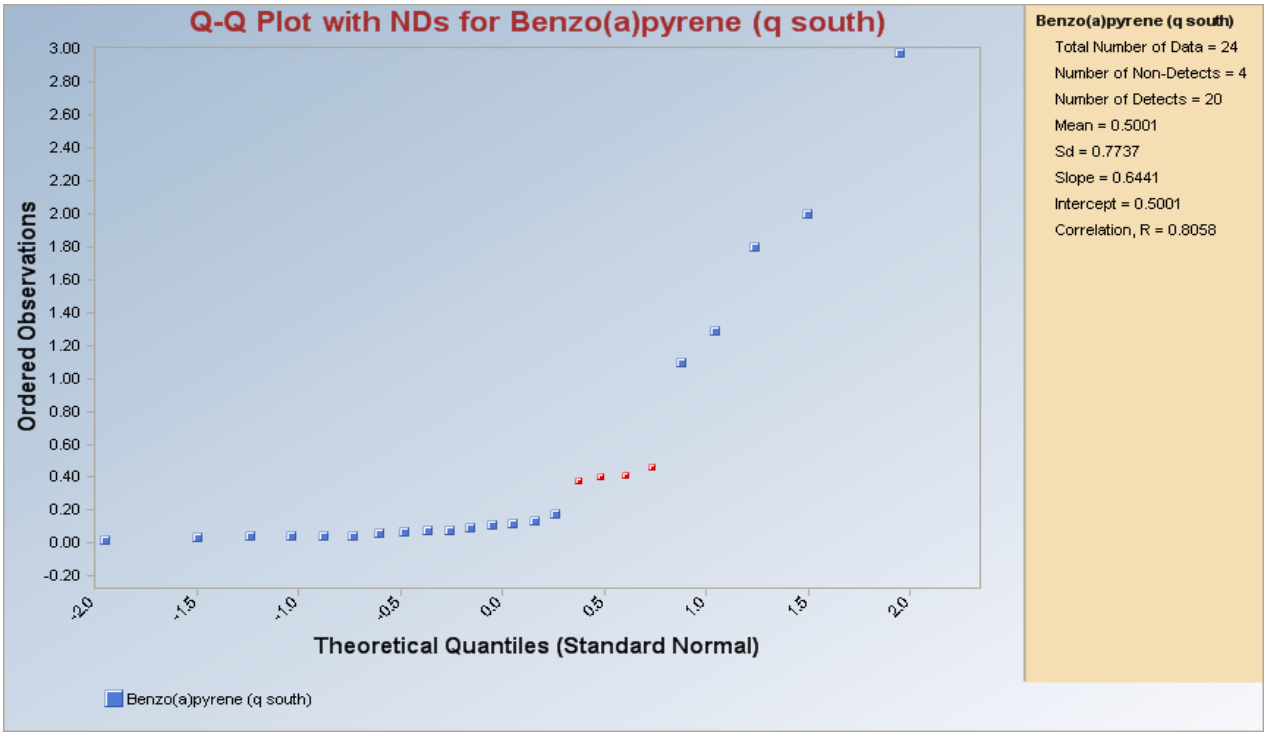

Q-Q Plot with NDs for Benzo(a)anthracene (q central)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(a)anthracene (q central)
Benzo(a)anthracene (q central)
Total Number of Data = 19
Number of Non-Detects = 4
Number of Detects = 15
Mean = 0.5753
Sd = 0.8140
Slope = 0.6304
Intercept = 0.5753
Correlation, R = 0.7450

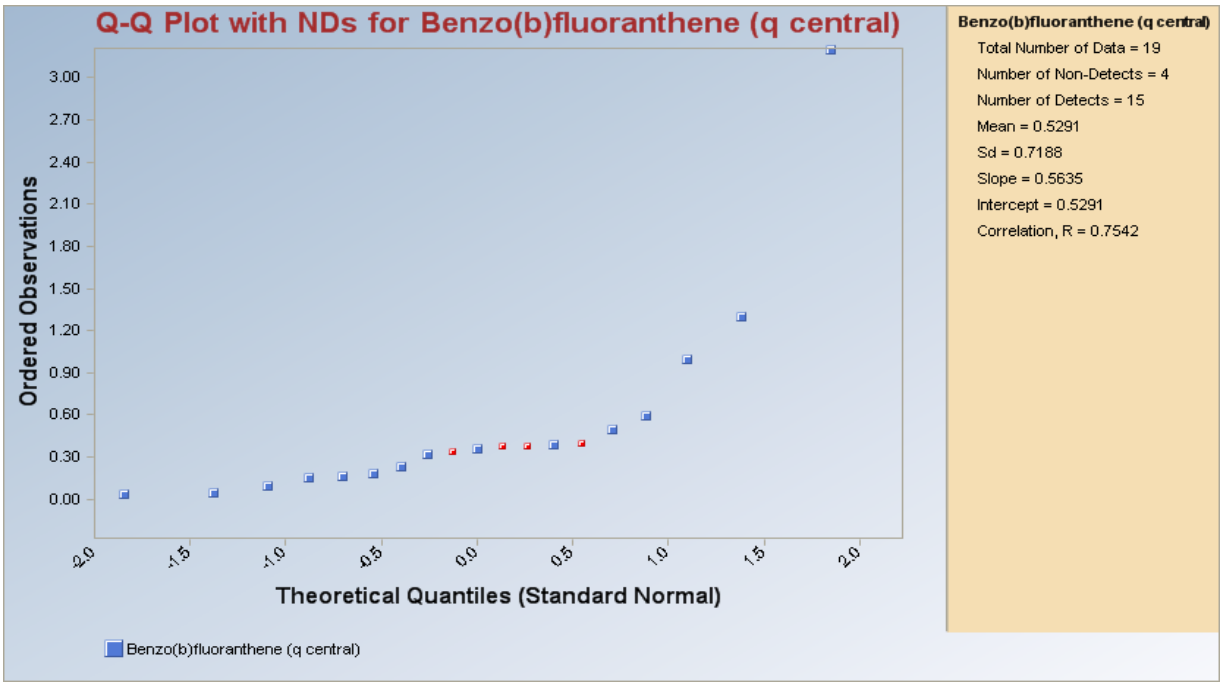

Q-Q Plot with NDs for Benzo(a)anthracene (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(a)anthracene (q south)
Benzo(a)anthracene (q south)
Total Number of Data = 24
Number of Non-Detects = 5
Number of Detects = 19
Mean = 0.5218
Sd = 0.7532
Slope = 0.6412
Intercept = 0.5218
Correlation, R = 0.8239

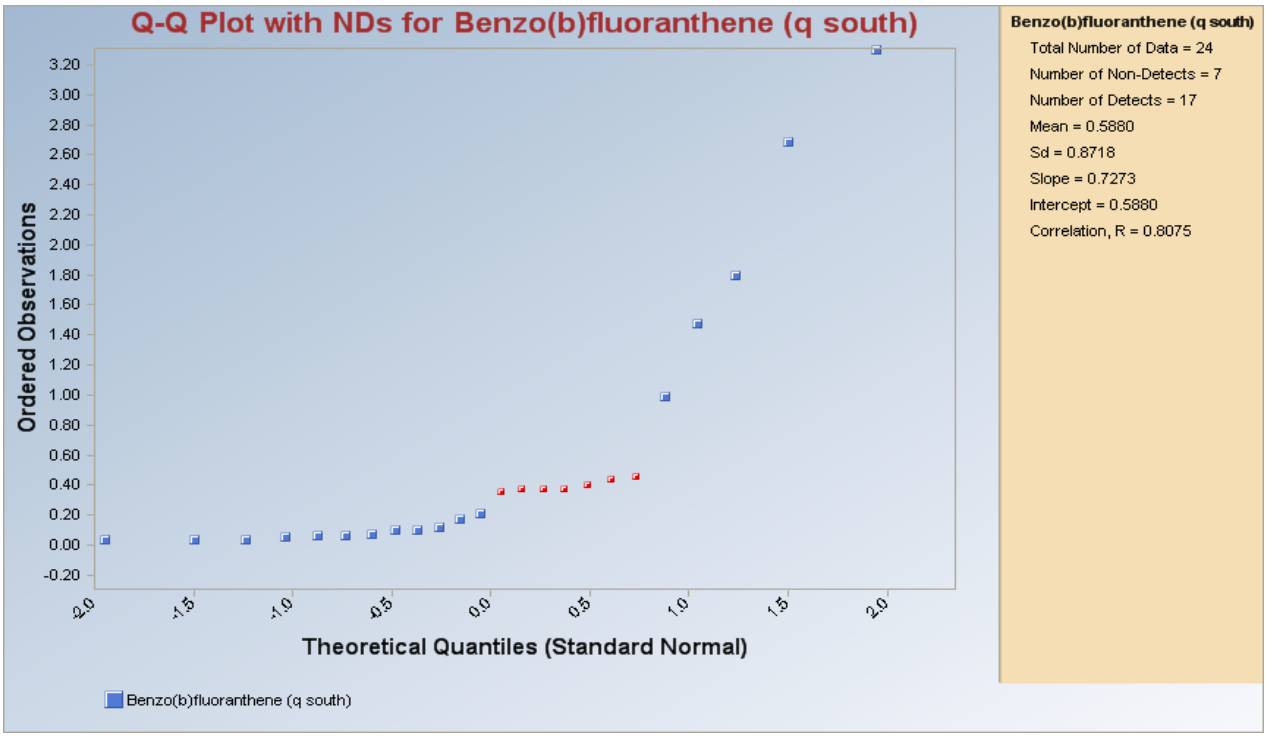

Q-Q Plot with NDs for Benzo(a)pyrene (p)
Ordered Observations
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Benzo(a)pyrene (p)
Benzo(a)pyrene (p)
Total Number of Data = 33
Number of Non-Detects = 25
Number of Detects = 8
Mean = 124.5692
Sd = 483.7919
Slope = 248.9413
Intercept = 124.5692
Correlation, R = 0.5015

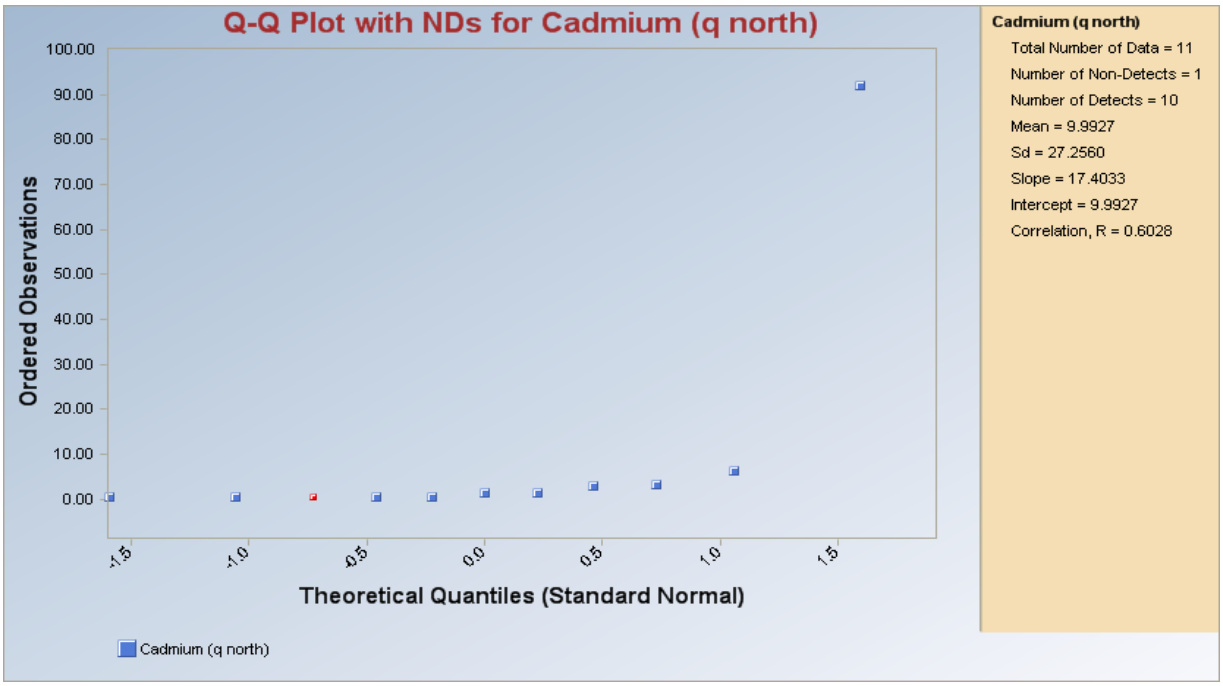

Q-Q Plot with NDs for Benzo(a)pyrene (q central)
Ordered Observations
3.00
2.70
2.40
2.10
1.80
1.50
1.20
0.90
0.60
0.30
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Benzo(a)pyrene (q central)
Benzo(a)pyrene (q central)
Total Number of Data = 19
Number of Non-Detects = 4
Number of Detects = 15
Mean = 0.5481
Sd = 0.7452
Slope = 0.6016
Intercept = 0.5481
Correlation, R = 0.7766

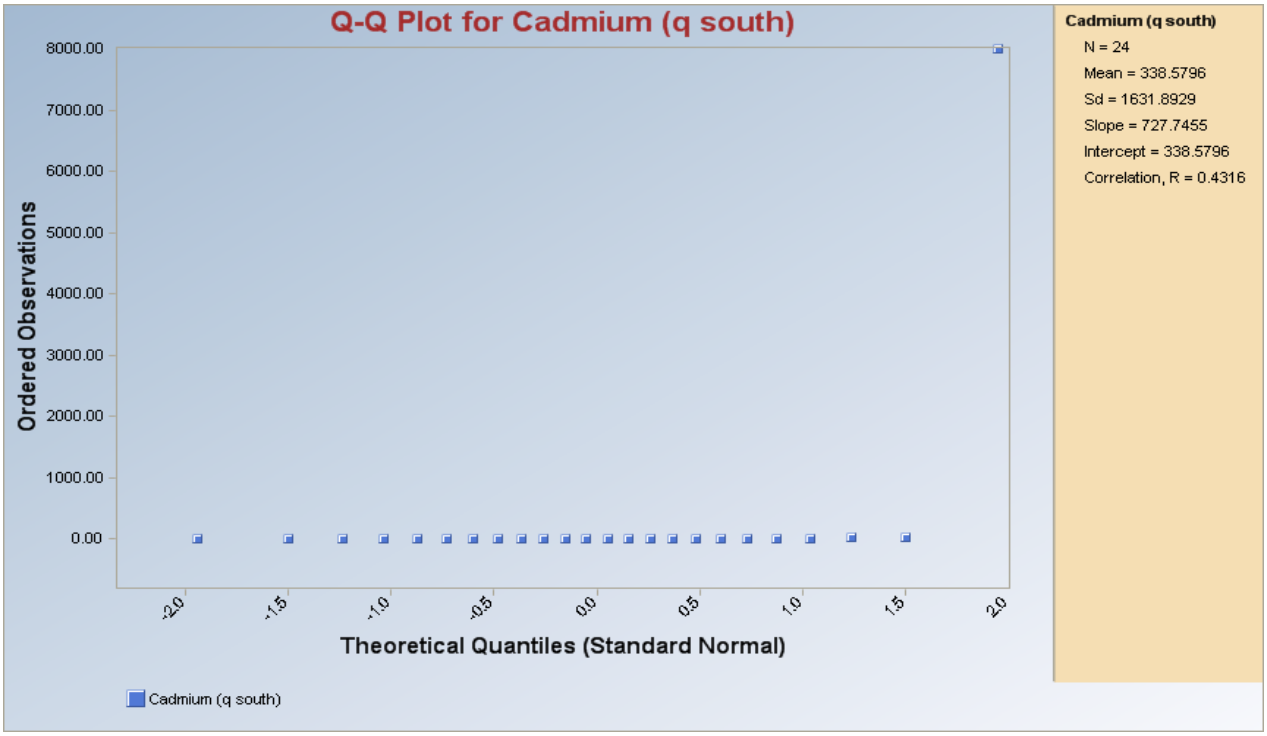

Q-Q Plot with NDs for Benzo(a)pyrene (q north)
Ordered Observations
3.30
3.00
2.70
2.40
2.10
1.80
1.50
1.20
0.90
0.60
0.30
0.00
-0.30
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Benzo(a)pyrene (q north)
Benzo(a)pyrene (q north)
Total Number of Data = 11
Number of Non-Detects = 1
Number of Detects = 10
Mean = 0.9526
Sd = 1.1016
Slope = 1.0552
Intercept = 0.9526
Correlation, R = 0.9043

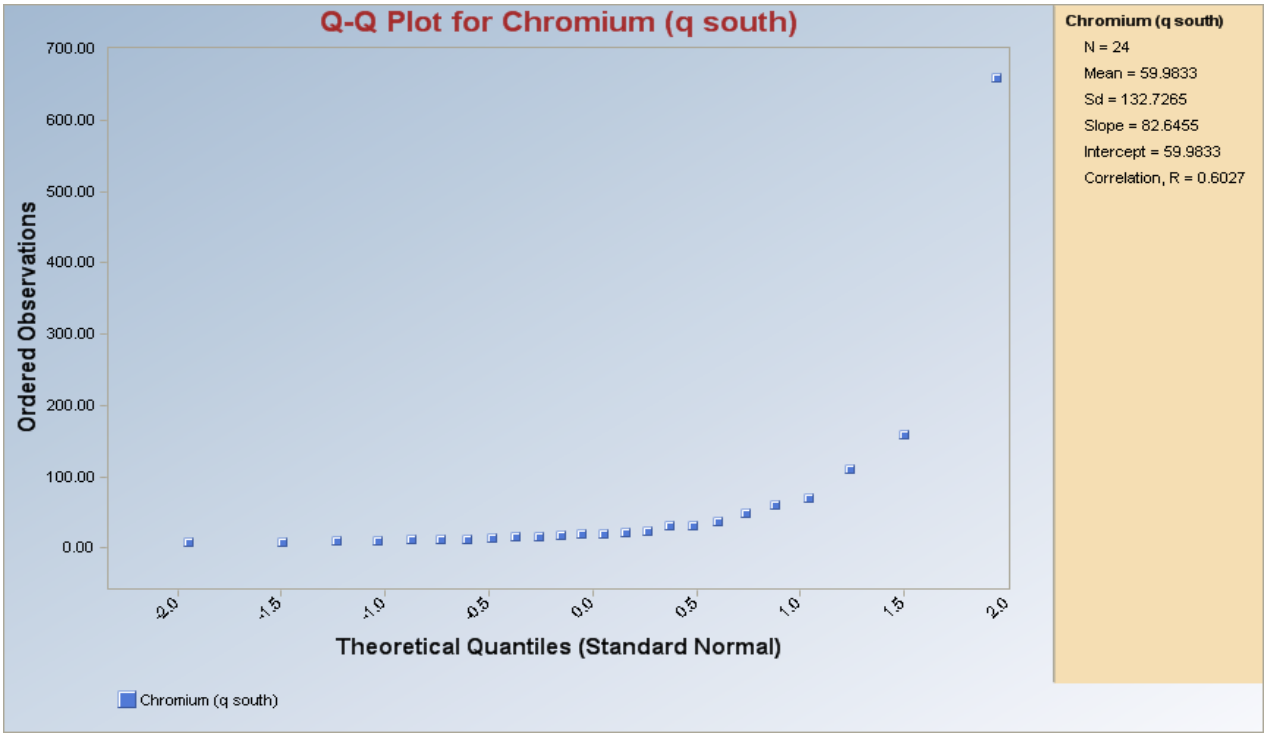

Q-Q Plot with NDs for Benzo(a)pyrene (q south)
Ordered Observations
3.00
2.80
2.60
2.40
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Benzo(a)pyrene (q south)
Benzo(a)pyrene (q south)
Total Number of Data = 24
Number of Non-Detects = 4
Number of Detects = 20
Mean = 0.5001
Sd = 0.7737
Slope = 0.6441
Intercept = 0.5001
Correlation, R = 0.8058

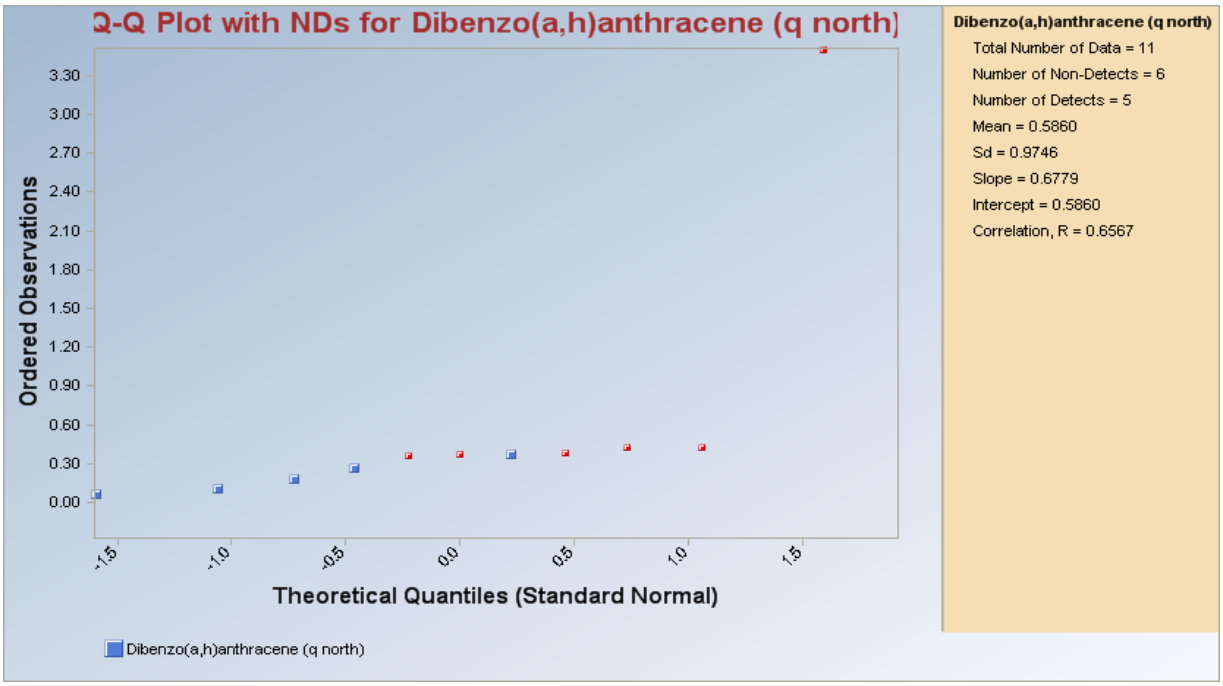

Q-Q Plot with NDs for Benzo(b)fluoranthene (q central)
Ordered Observations
3.00
2.70
2.40
2.10
1.80
1.50
1.20
0.90
0.60
0.30
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Benzo(b)fluoranthene (q central)
Benzo(b)fluoranthene (q central)
Total Number of Data = 19
Number of Non-Detects = 4
Number of Detects = 15
Mean = 0.5291
Sd = 0.7188
Slope = 0.5635
Intercept = 0.5291
Correlation, R = 0.7542

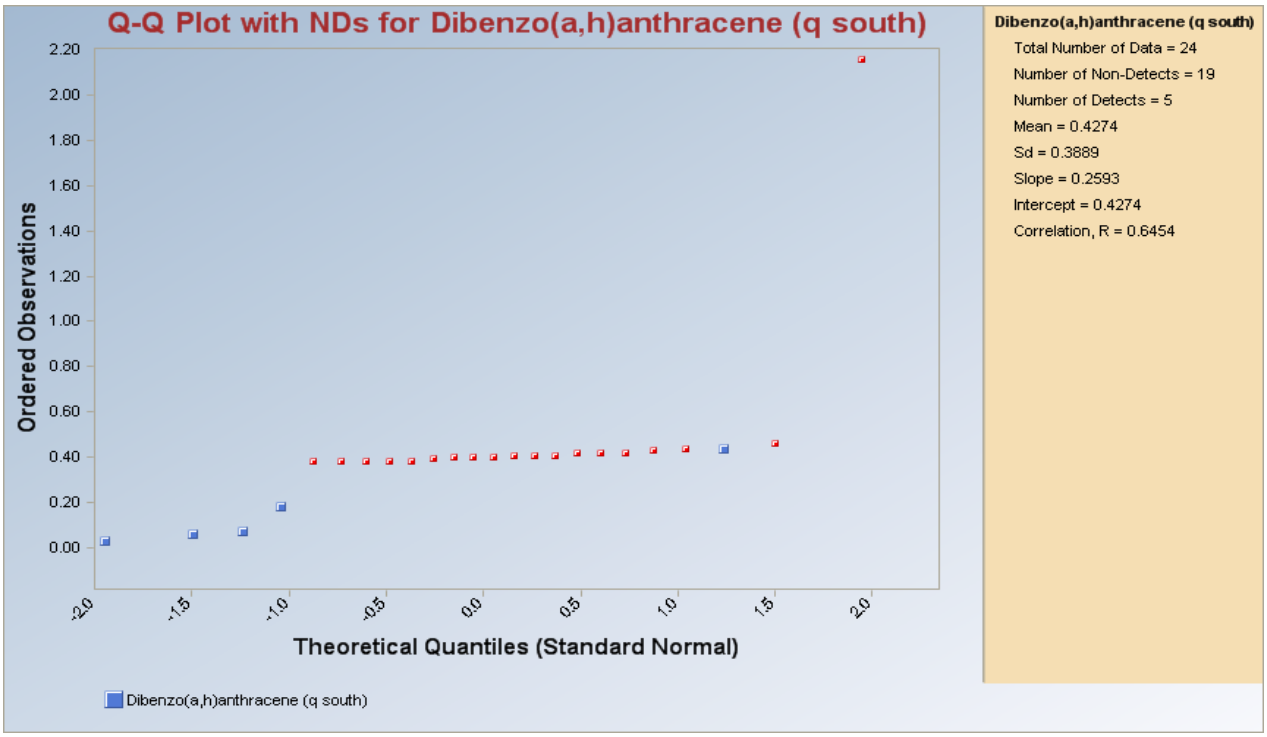

Q-Q Plot with NDs for Benzo(b)fluoranthene (q south)
Ordered Observations
3.20
3.00
2.80
2.60
2.40
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
-0.20
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Benzo(b)fluoranthene (q south)
Benzo(b)fluoranthene (q south)
Total Number of Data = 24
Number of Non-Detects = 7
Number of Detects = 17
Mean = 0.5880
Sd = 0.8718
Slope = 0.7273
Intercept = 0.5880
Correlation, R = 0.8075

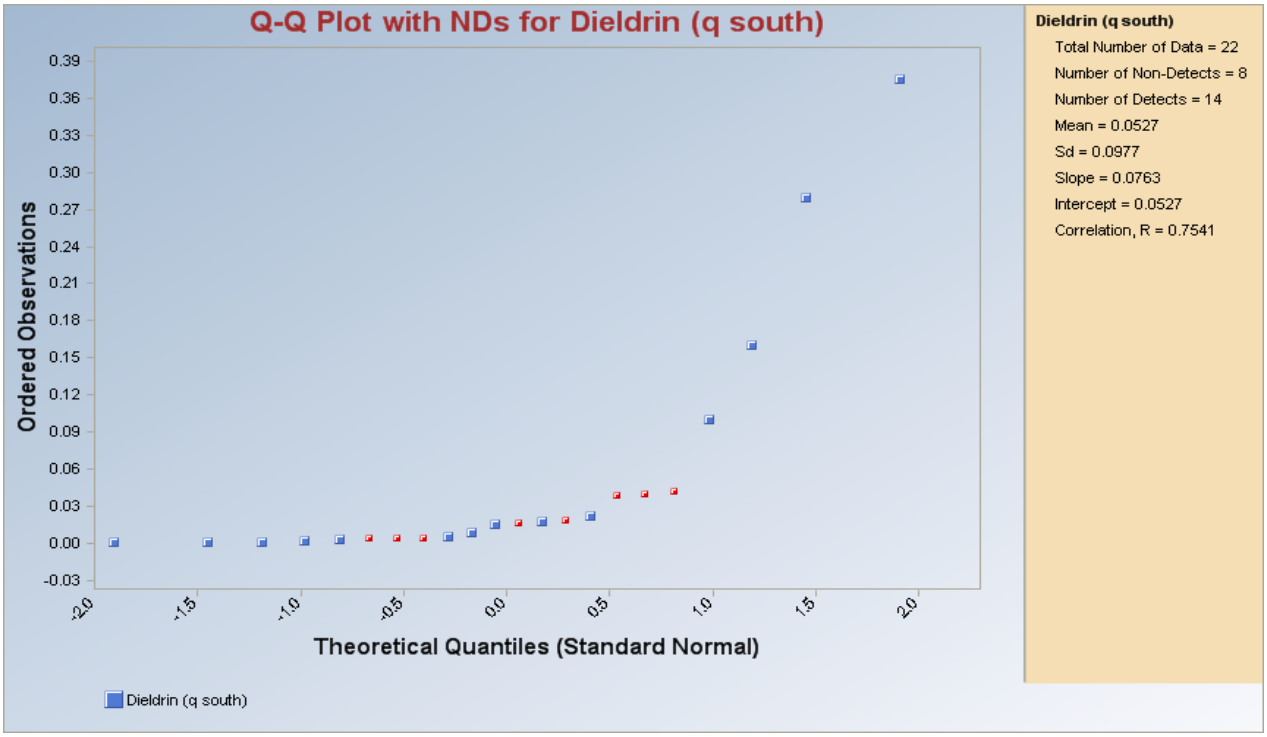

Q-Q Plot with NDs for Cadmium (q north)
Ordered Observations
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Cadmium (q north)
Cadmium (q north)
Total Number of Data = 11
Number of Non-Detects = 1
Number of Detects = 10
Mean = 9.9927
Sd = 27.2560
Slope = 17.4033
Intercept = 9.9927
Correlation, R = 0.6028

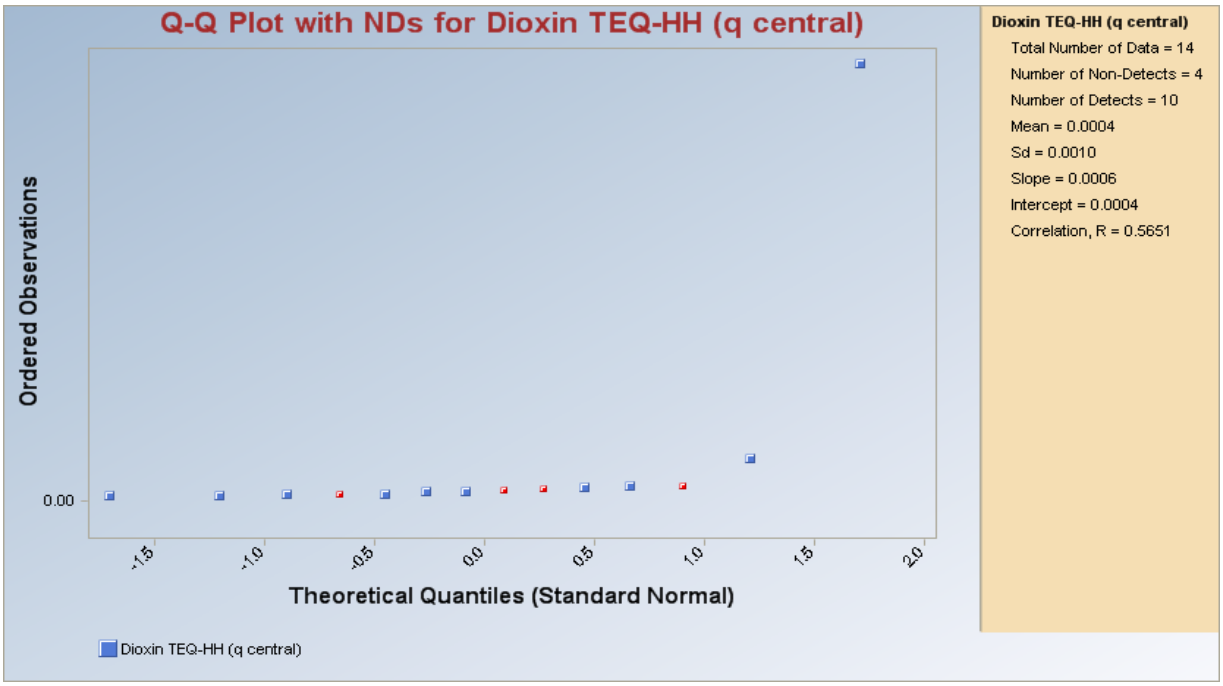

Q-Q Plot for Cadmium (q south)
Ordered Observations
8000.00
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Cadmium (q south)
Cadmium (q south)
N = 24
Mean = 338.5796
Sd = 1631.8929
Slope = 727.7455
Intercept = 338.5796
Correlation, R = 0.4316

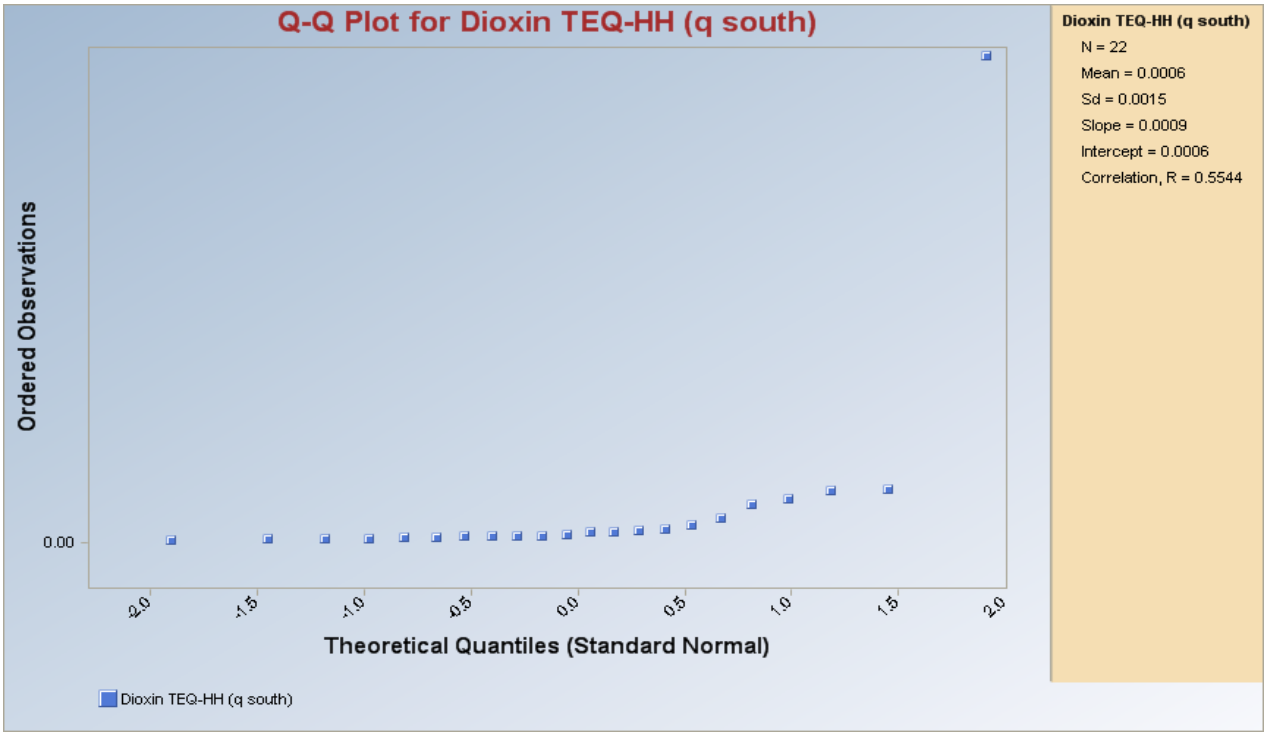

Q-Q Plot for Chromium (q south)
Ordered Observations
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Chromium (q south)
Chromium (q south)
N = 24
Mean = 59.9833
Sd = 132.7265
Slope = 82.6455
Intercept = 59.9833
Correlation, R = 0.6027

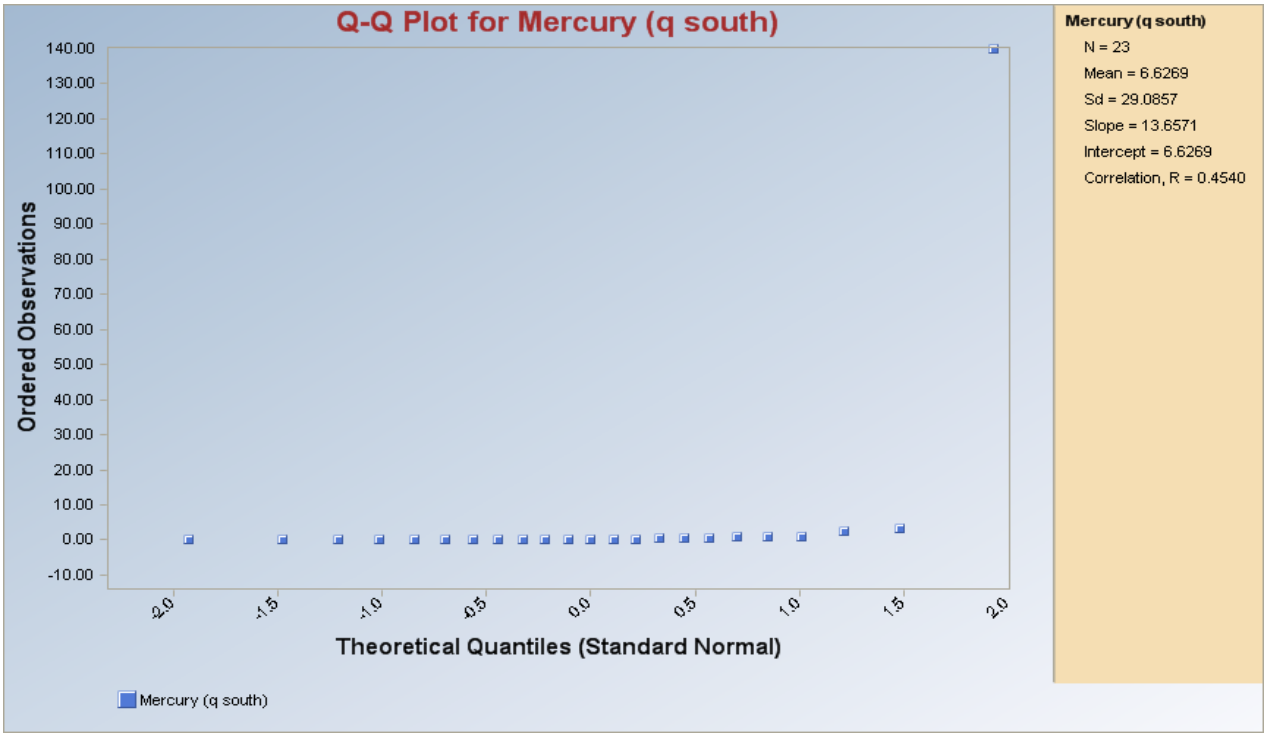

Q-Q Plot with NDs for Dibenzo(a,h)anthracene (q north)
Ordered Observations
3.30
3.00
2.70
2.40
2.10
1.80
1.50
1.20
0.90
0.60
0.30
0.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Dibenzo(a,h)anthracene (q north)
Dibenzo(a,h)anthracene (q north)
Total Number of Data = 11
Number of Non-Detects = 6
Number of Detects = 5
Mean = 0.5860
Sd = 0.9746
Slope = 0.6779
Intercept = 0.5860
Correlation, R = 0.6567

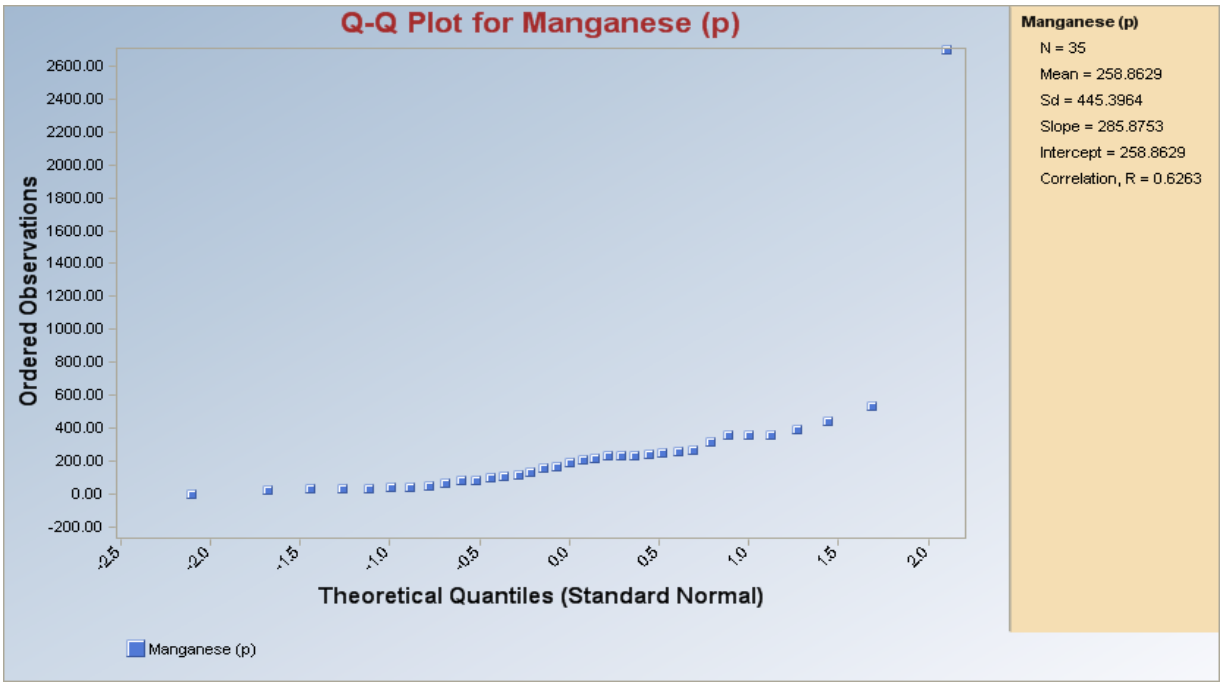

Q-Q Plot with NDs for Dibenzo(a,h)anthracene (q south)
Ordered Observations
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Dibenzo(a,h)anthracene (q south)
Dibenzo(a,h)anthracene (q south)
Total Number of Data = 24
Number of Non-Detects = 19
Number of Detects = 5
Mean = 0.4274
Sd = 0.3889
Slope = 0.2593
Intercept = 0.4274
Correlation, R = 0.6454

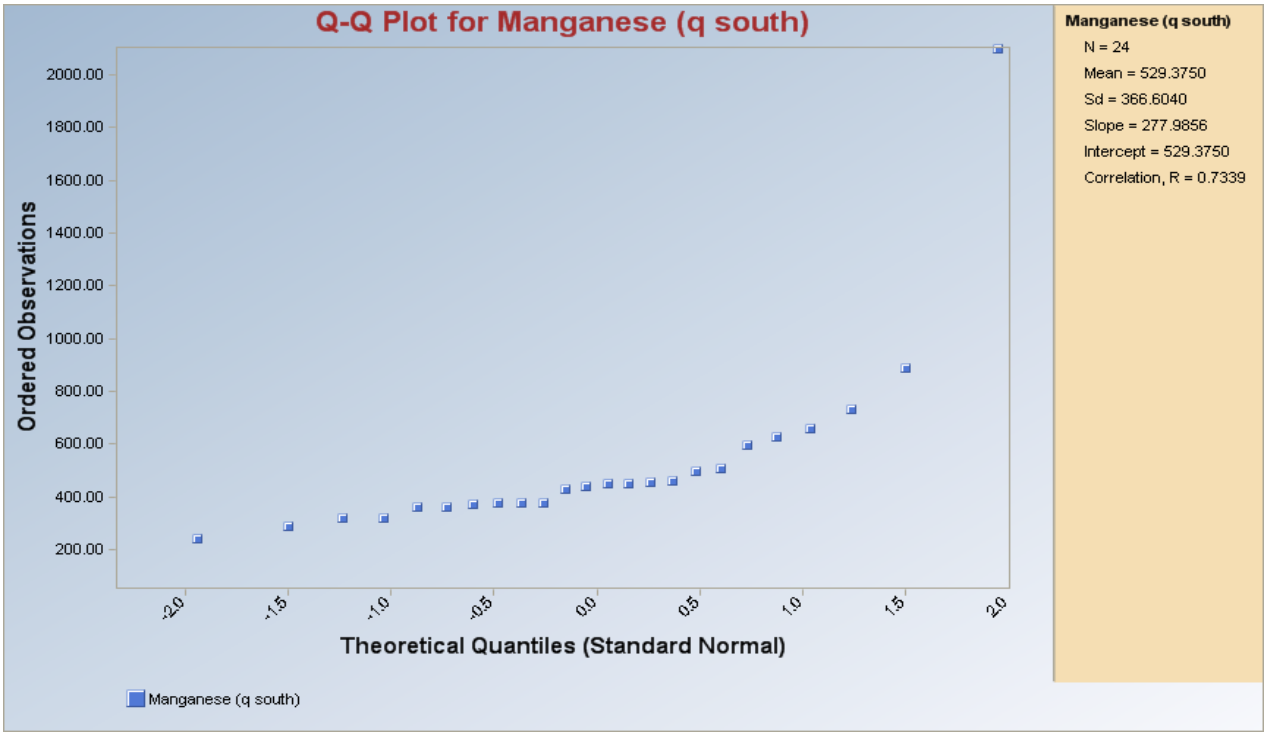

Q-Q Plot with NDs for Dieldrin (q south)
Ordered Observations
0.39
0.36
0.33
0.30
0.27
0.24
0.21
0.18
0.15
0.12
0.09
0.06
0.03
0.00
-0.03
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Dieldrin (q south)
Dieldrin (q south)
Total Number of Data = 22
Number of Non-Detects = 8
Number of Detects = 14
Mean = 0.0527
Sd = 0.0977
Slope = 0.0763
Intercept = 0.0527
Correlation, R = 0.7541

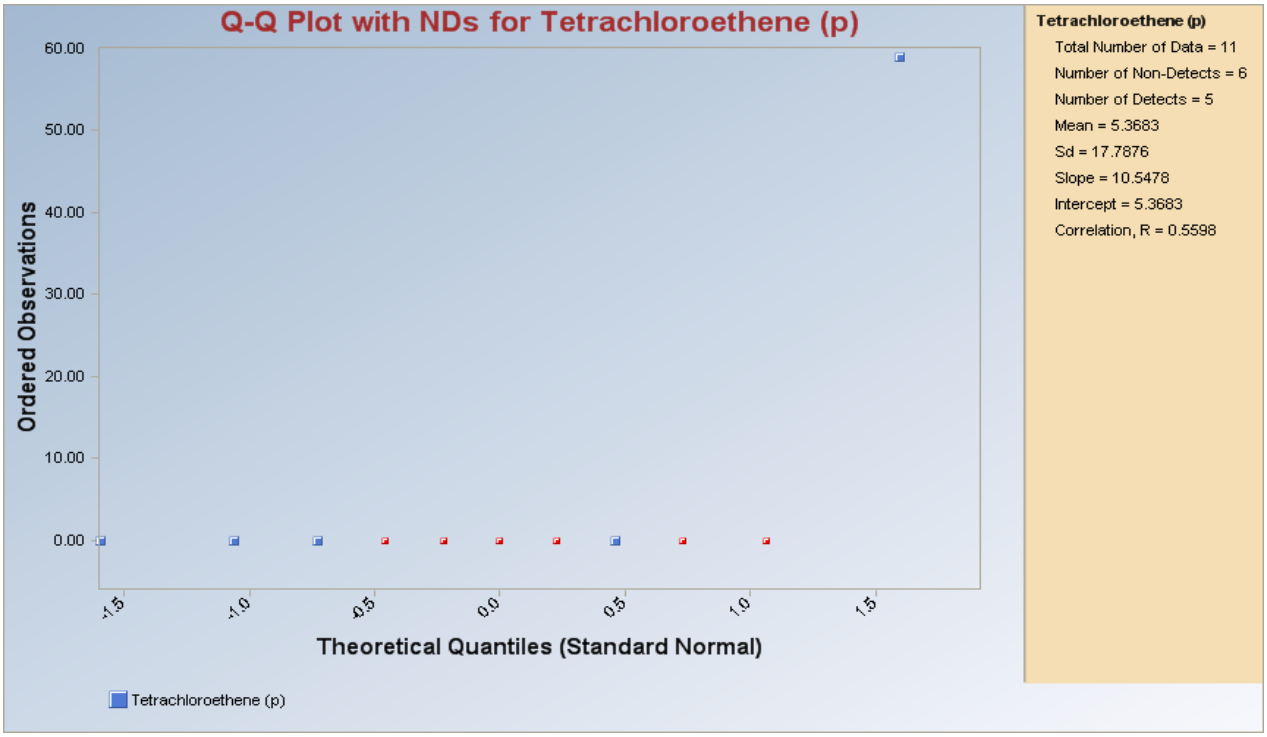

Q-Q Plot with NDs for Dioxin TEQ-HH (q central)
Ordered Observations
0.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Dioxin TEQ-HH (q central)
Dioxin TEQ-HH (q central)
Total Number of Data = 14
Number of Non-Detects = 4
Number of Detects = 10
Mean = 0.0004
Sd = 0.0010
Slope = 0.0006
Intercept = 0.0004
Correlation, R = 0.5651

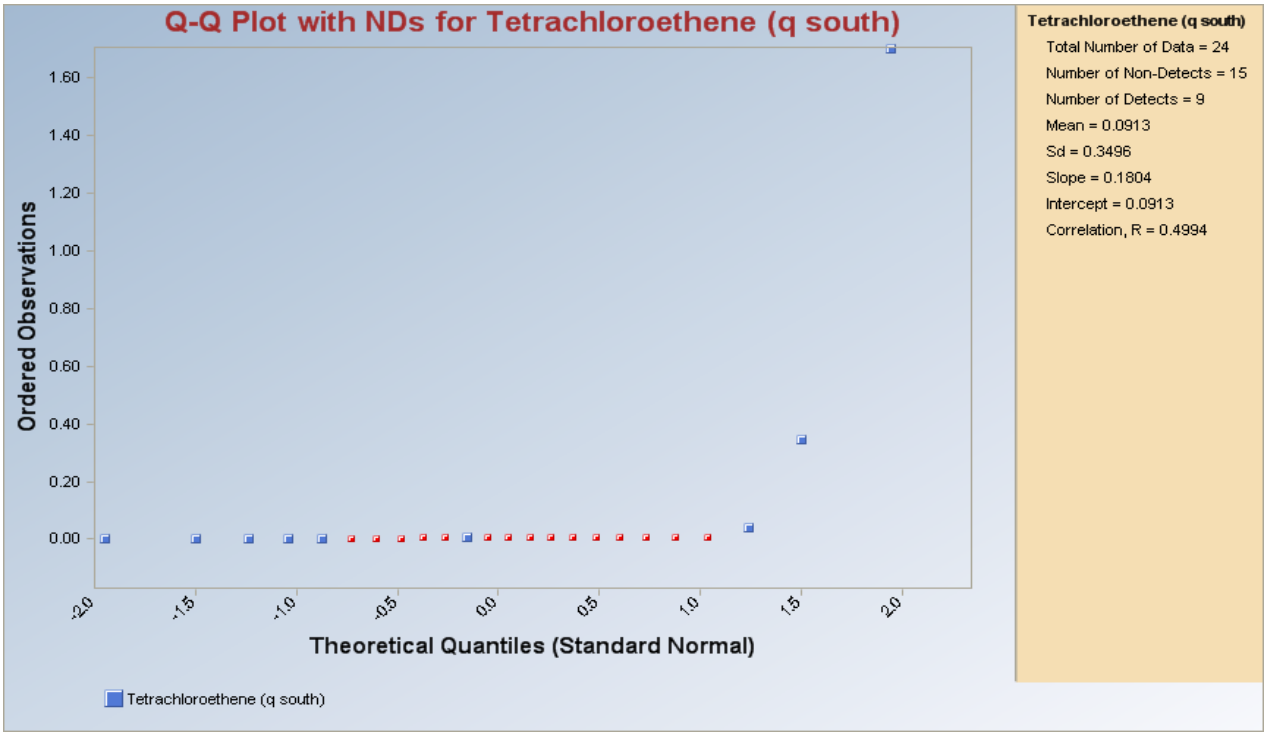

Q-Q Plot for Dioxin TEQ-HH (q south)
Ordered Observations
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Dioxin TEQ-HH (q south)
Dioxin TEQ-HH (q south)
N = 22
Mean = 0.0006
Sd = 0.0015
Slope = 0.0009
Intercept = 0.0006
Correlation, R = 0.5544

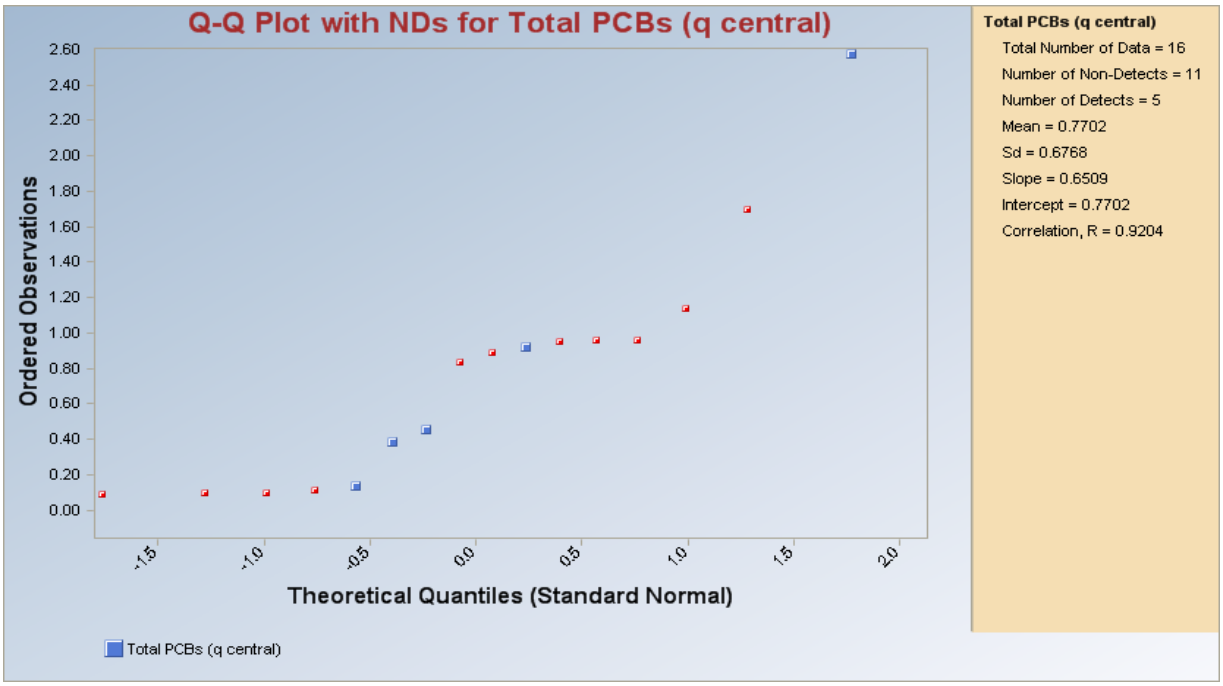

Q-Q Plot for Mercury (q south)
Ordered Observations
140.00
130.00
120.00
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Mercury (q south)
Mercury (q south)
N = 23
Mean = 6.6269
Sd = 29.0857
Slope = 13.6571
Intercept = 6.6269
Correlation, R = 0.4540

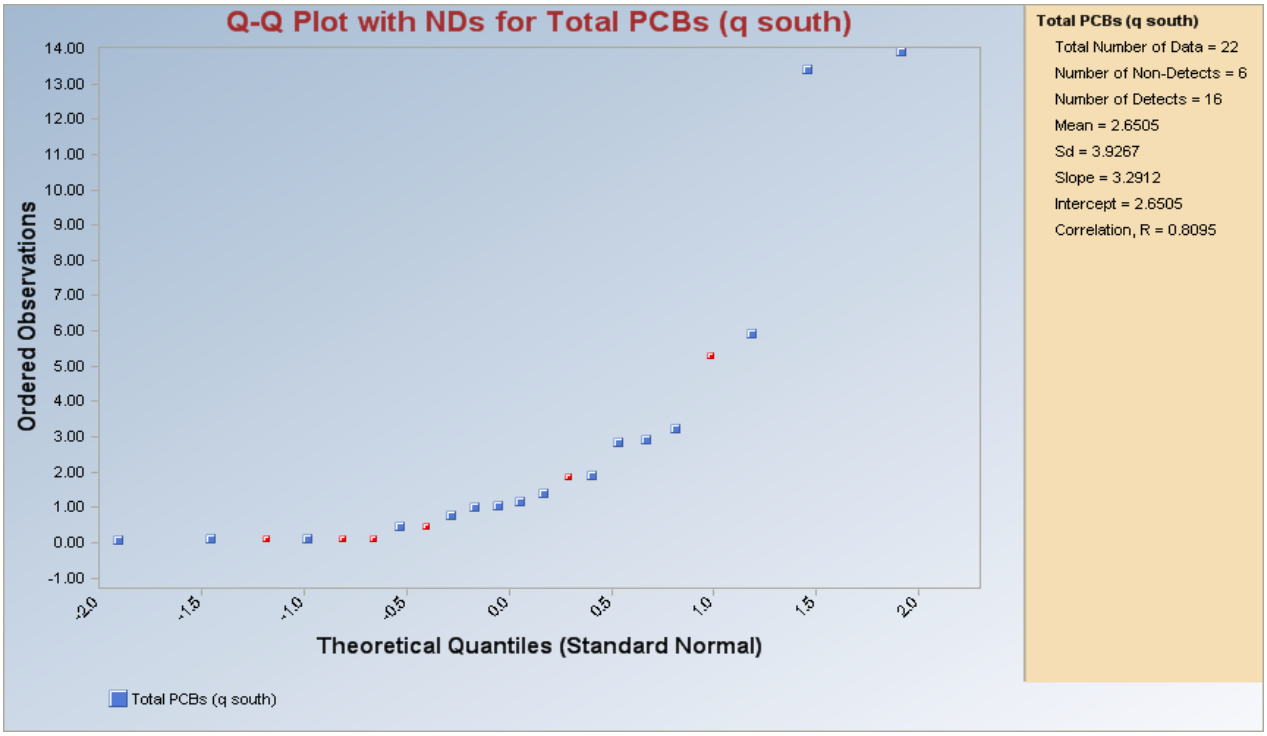

Q-Q Plot for Manganese (p)
Ordered Observations
2600.00
2400.00
2200.00
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Manganese (p)
Manganese (p)
N = 35
Mean = 258.8629
Sd = 445.3964
Slope = 285.8753
Intercept = 258.8629
Correlation, R = 0.6263

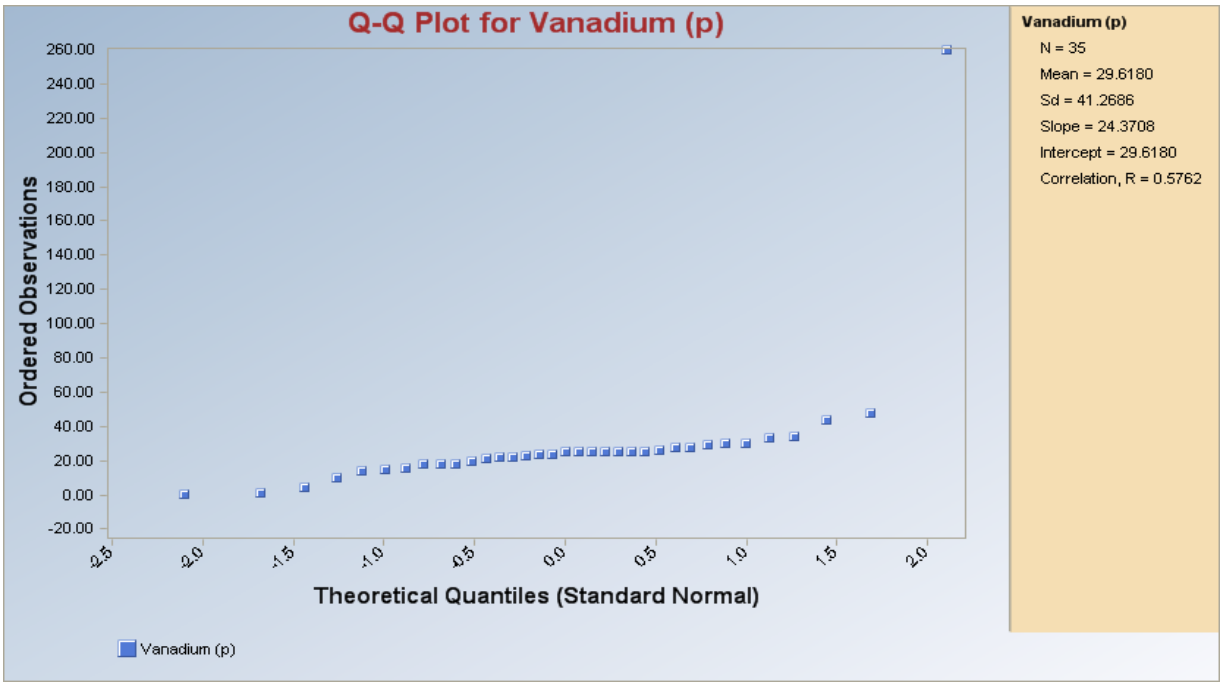

Q-Q Plot for Manganese (q south)
Ordered Observations
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Manganese (q south)
Manganese (q south)
N = 24
Mean = 529.3750
Sd = 366.6040
Slope = 277.9856
Intercept = 529.3750
Correlation, R = 0.7339


Q-Q Plot with NDs for Tetrachloroethene (p)
Ordered Observations
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Tetrachloroethene (p)
Tetrachloroethene (p)
Total Number of Data = 11
Number of Non-Detects = 6
Number of Detects = 5
Mean = 5.3683
Sd = 17.7876
Slope = 10.5478
Intercept = 5.3683
Correlation, R = 0.5598

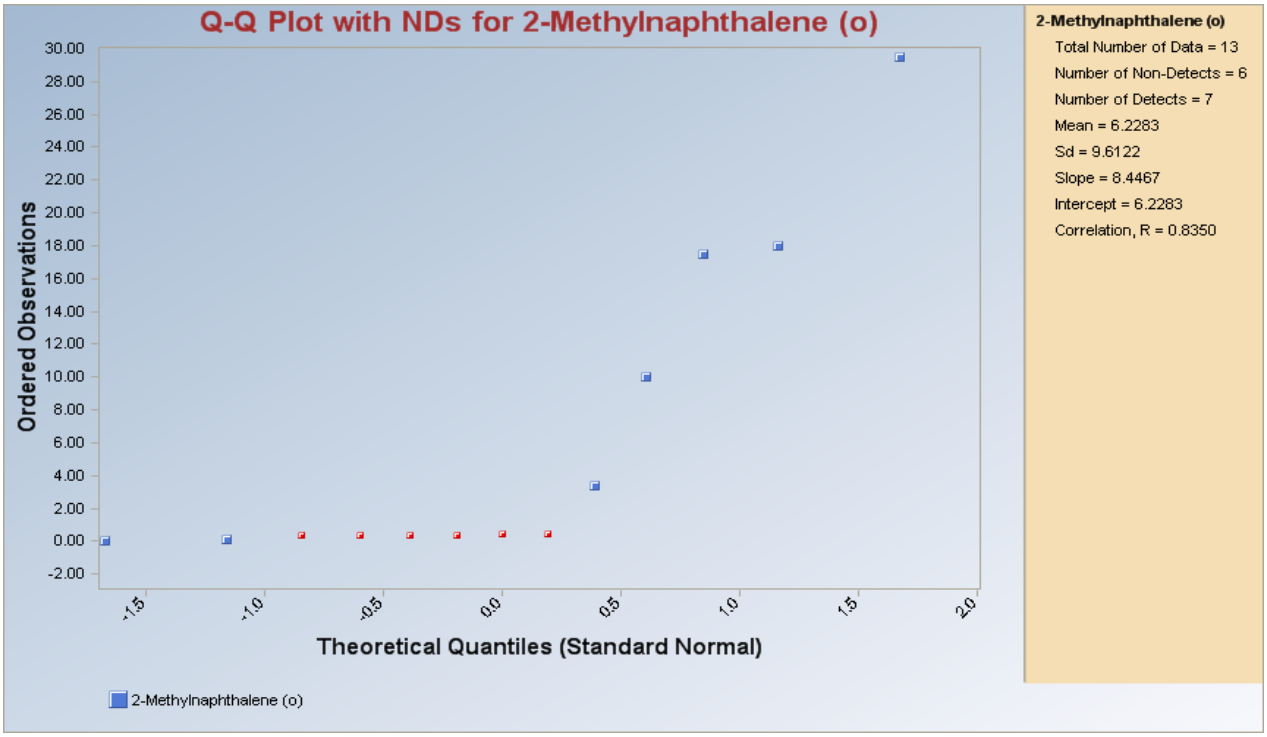

Q-Q Plot with NDs for Tetrachloroethene (q south)
Ordered Observations
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Tetrachloroethene (q south)
Tetrachloroethene (q south)
Total Number of Data = 24
Number of Non-Detects = 15
Number of Detects = 9
Mean = 0.0913
Sd = 0.3496
Slope = 0.1804
Intercept = 0.0913
Correlation, R = 0.4994

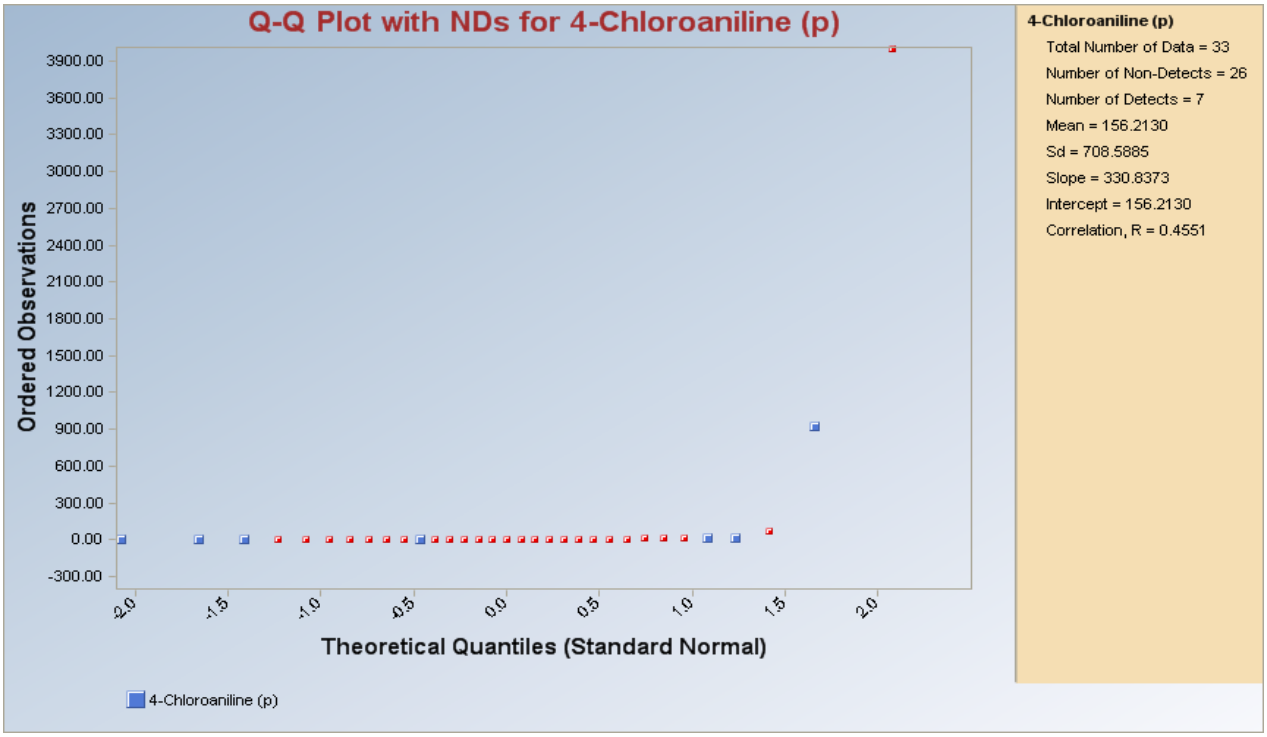

Q-Q Plot with NDs for Total PCBs (q central)
Ordered Observations
2.60
2.40
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Total PCBs (q central)
Total PCBs (q central)
Total Number of Data = 16
Number of Non-Detects = 11
Number of Detects = 5
Mean = 0.7702
Sd = 0.6768
Slope = 0.6509
Intercept = 0.7702
Correlation, R = 0.9204

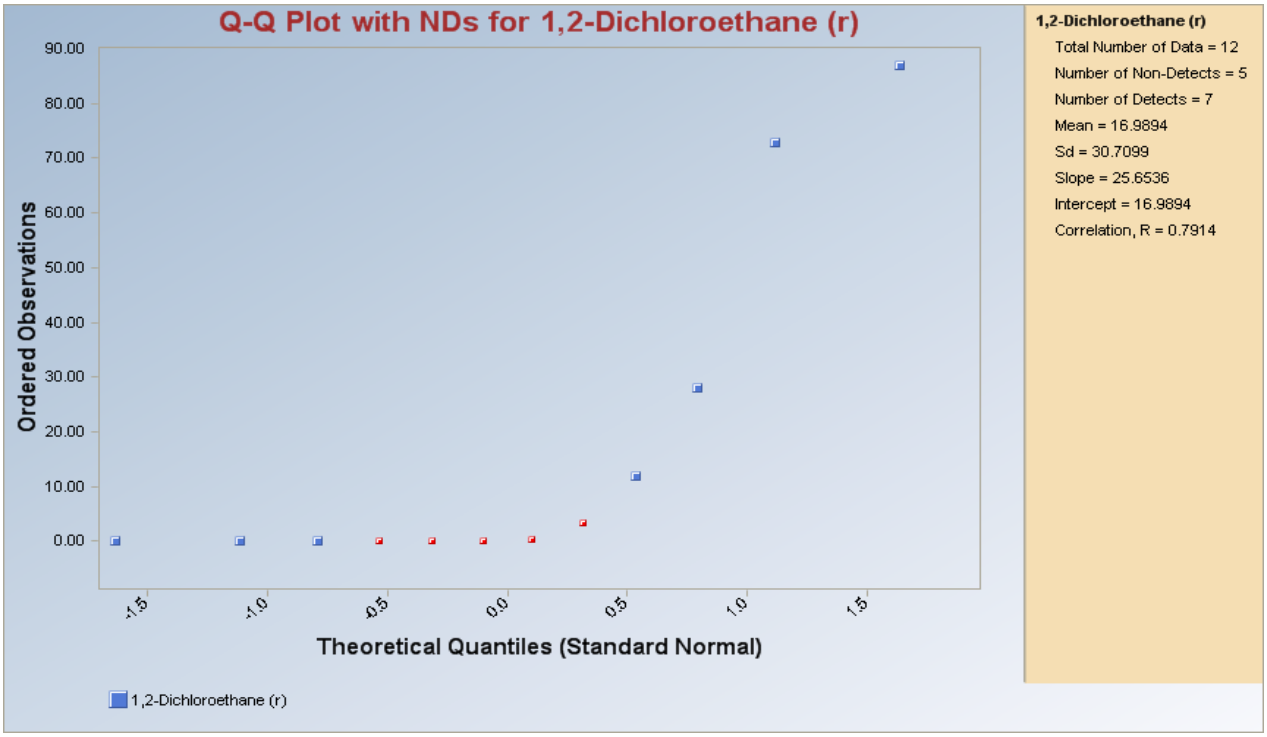

Q-Q Plot with NDs for Total PCBs (q south)
Ordered Observations
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Total PCBs (q south)
Total PCBs (q south)
Total Number of Data = 22
Number of Non-Detects = 6
Number of Detects = 16
Mean = 2.6505
Sd = 3.9267
Slope = 3.2912
Intercept = 2.6505
Correlation, R = 0.8095

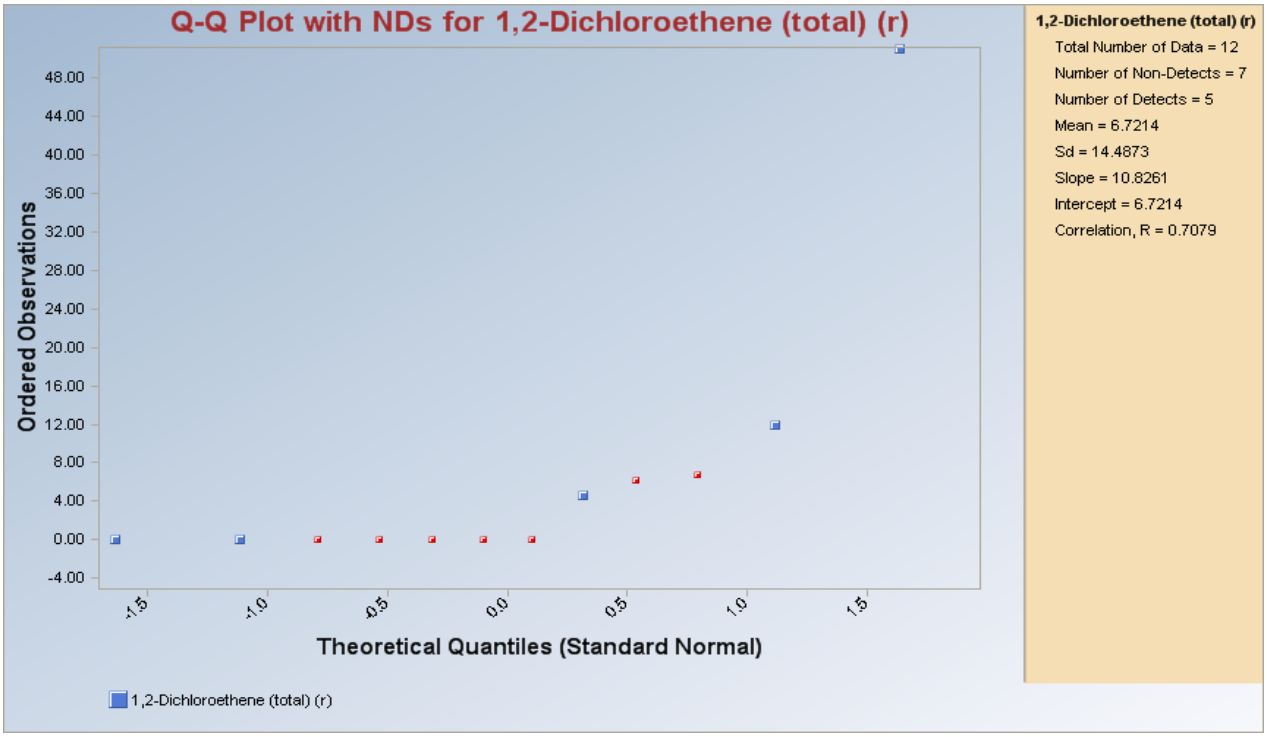

Q-Q Plot for Vanadium (p)
Ordered Observations
260.00
240.00
220.00
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Vanadium (p)
Vanadium (p)
N = 35
Mean = 29.6180
Sd = 41.2686
Slope = 24.3708
Intercept = 29.6180
Correlation, R = 0.5762

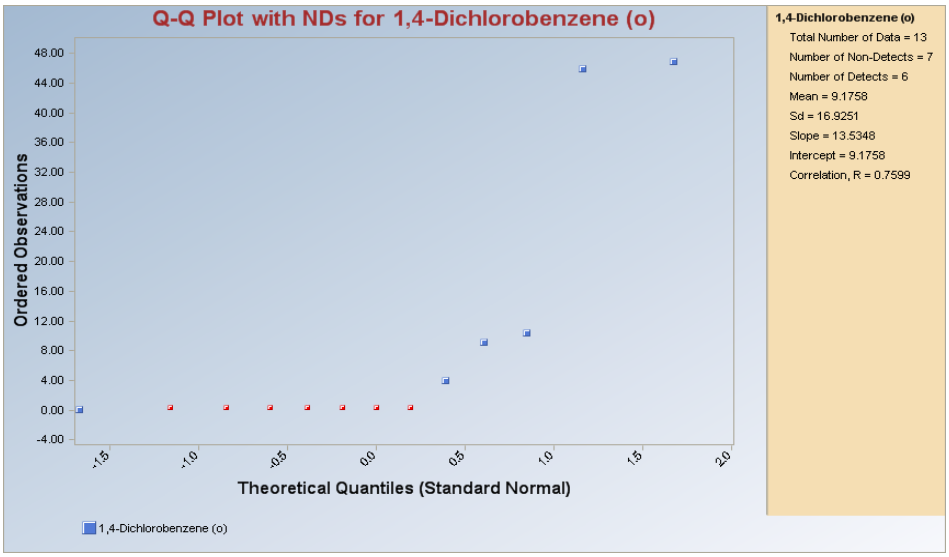
Q-Q Plots – Combined Soil

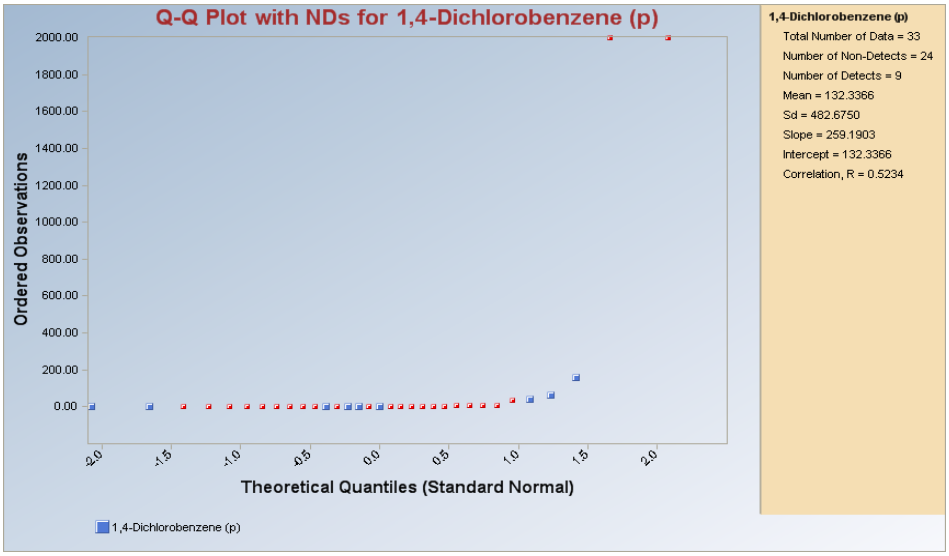

Q-Q Plot with NDs for 2-Methylnaphthalene (o)
Ordered Observations
30.00
28.00
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
-2.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
2-Methylnaphthalene (o)
2-Methylnaphthalene (o)
Total Number of Data = 13
Number of Non-Detects = 6
Number of Detects = 7
Mean = 6.2283
Sd = 9.6122
Slope = 8.4467
Intercept = 6.2283
Correlation, R = 0.8350

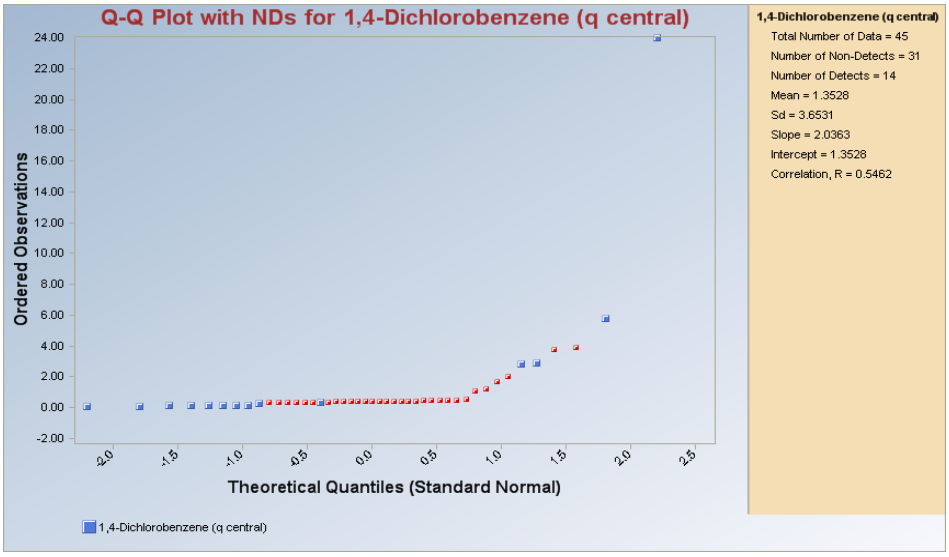

Q-Q Plot with NDs for 4-Chloroaniline (p)
Ordered Observations
3900.00
3600.00
3300.00
3000.00
2700.00
2400.00
2100.00
1800.00
1500.00
1200.00
900.00
600.00
300.00
0.00
-300.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
4-Chloroaniline (p)
4-Chloroaniline (p)
Total Number of Data = 33
Number of Non-Detects = 26
Number of Detects = 7
Mean = 156.2130
Sd = 708.5885
Slope = 330.8373
Intercept = 156.2130
Correlation, R = 0.4551

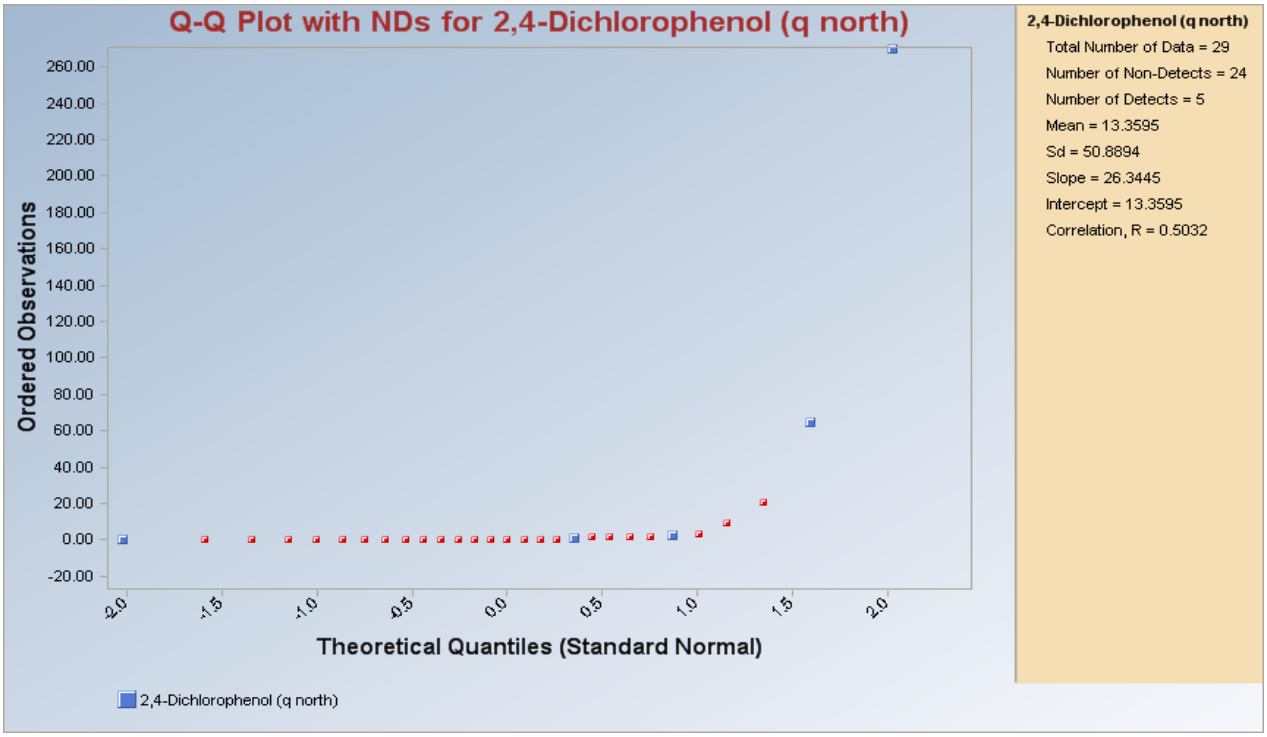

Q-Q Plot with NDs for 1,2-Dichloroethane (r)
Ordered Observations
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
1,2-Dichloroethane (r)
1,2-Dichloroethane (r)
Total Number of Data = 12
Number of Non-Detects = 5
Number of Detects = 7
Mean = 16.9894
Sd = 30.7099
Slope = 25.6536
Intercept = 16.9894
Correlation, R = 0.7914

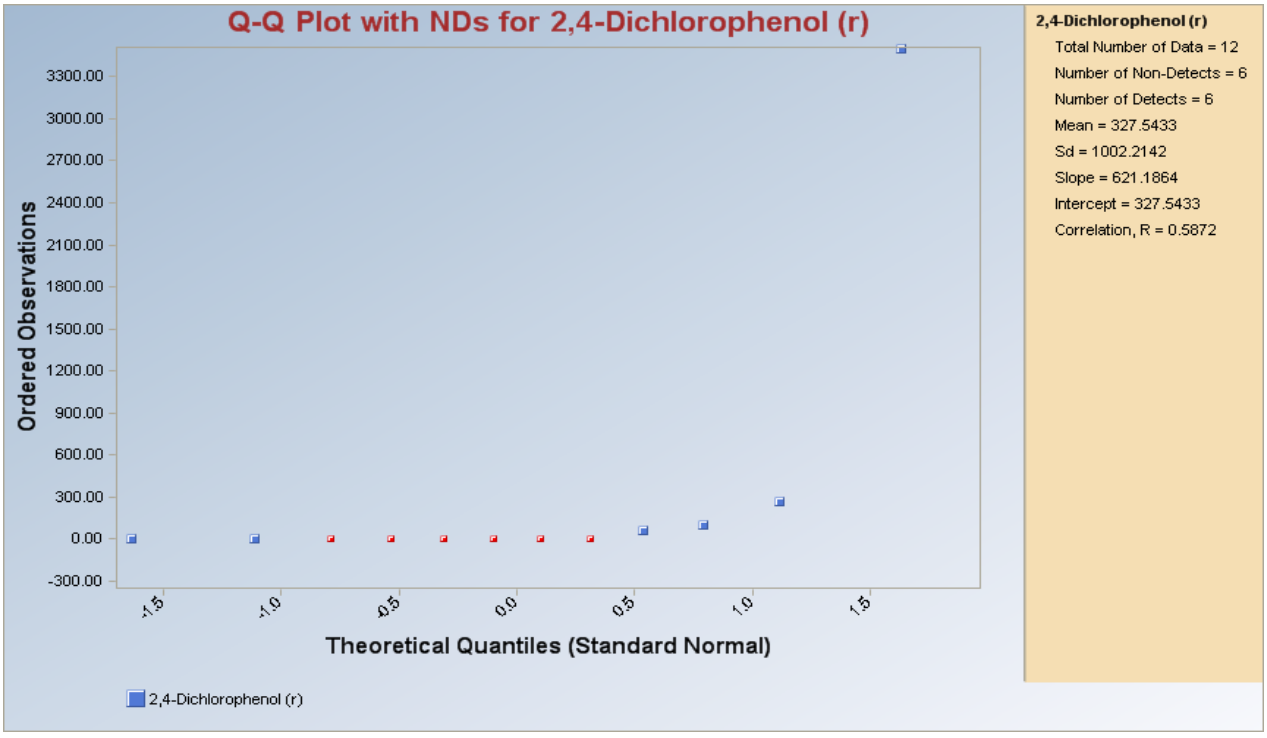

Q-Q Plot with NDs for 1,2-Dichloroethene (total) (r)
Ordered Observations
48.00
44.00
40.00
36.00
32.00
28.00
24.00
20.00
16.00
12.00
8.00
4.00
0.00
-4.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
1,2-Dichloroethene (total) (r)
1,2-Dichloroethene (total) (r)
Total Number of Data = 12
Number of Non-Detects = 7
Number of Detects = 5
Mean = 6.7214
Sd = 14.4873
Slope = 10.8261
Intercept = 6.7214
Correlation, R = 0.7079

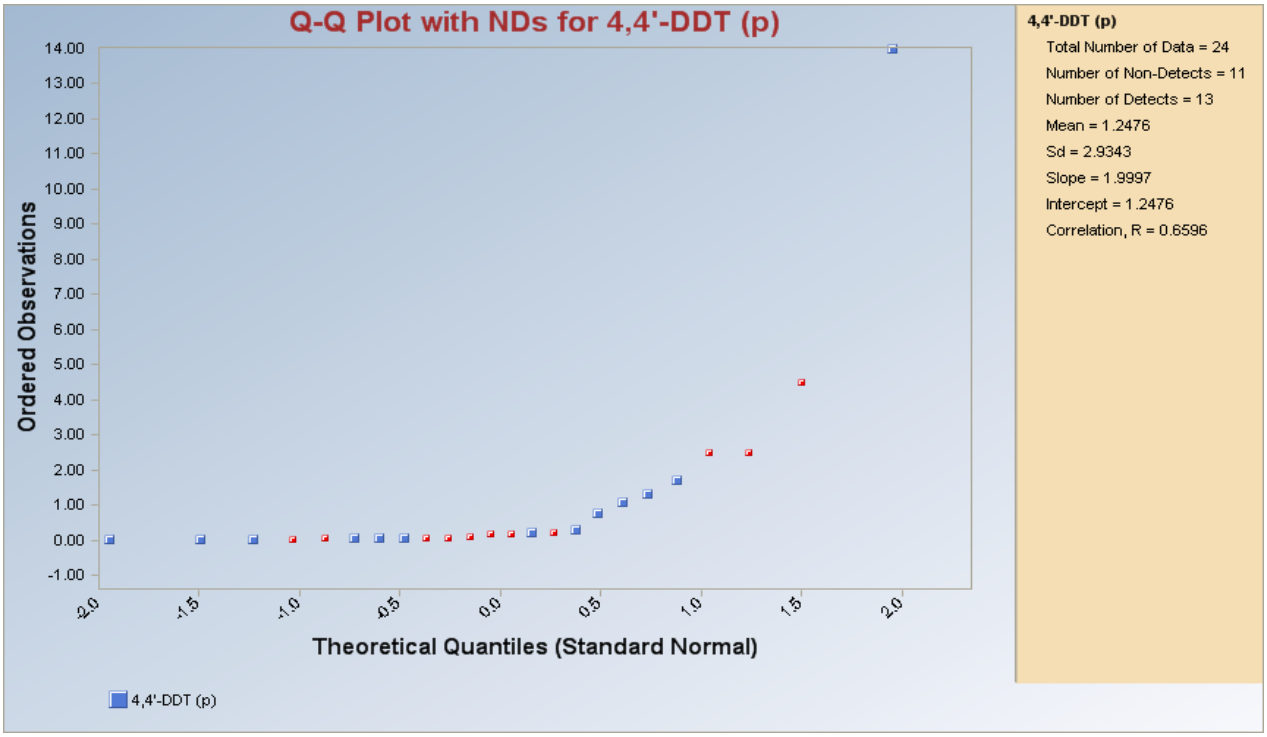

Q-Q Plot with NDs for 1,4-Dichlorobenzene (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
1,4-Dichlorobenzene (o)
1,4-Dichlorobenzene (o)
Total Number of Data = 13
Number of Non-Detects = 7
Number of Detects = 6
Mean = 9.1758
Sd = 16.9251
Slope = 13.5348
Intercept = 9.1758
Correlation, R = 0.7599

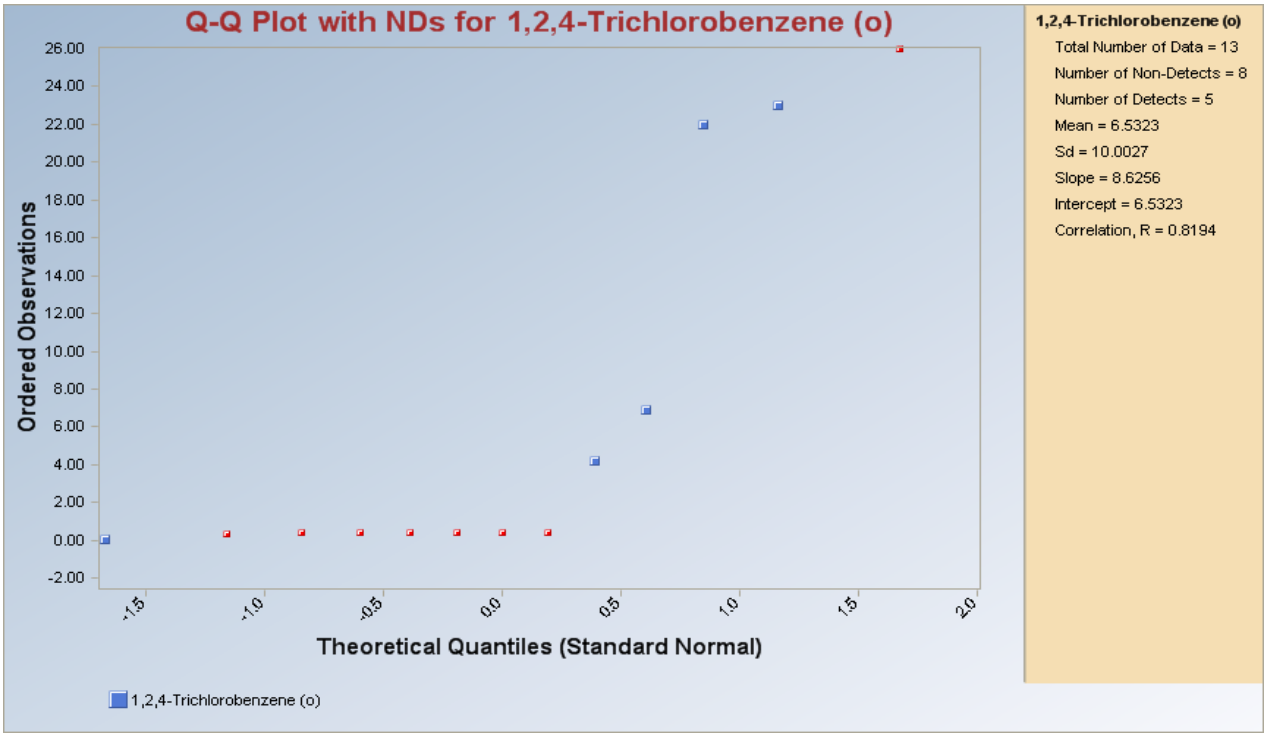

Q-Q Plot with NDs for 1,4-Dichlorobenzene (p)
Ordered Observations
Theoretical Quantiles (Standard Normal)
1,4-Dichlorobenzene (p)
1,4-Dichlorobenzene (p)
Total Number of Data = 33
Number of Non-Detects = 24
Number of Detects = 9
Mean = 132.3366
Sd = 482.6750
Slope = 259.1903
Intercept = 132.3366
Correlation, R = 0.5234

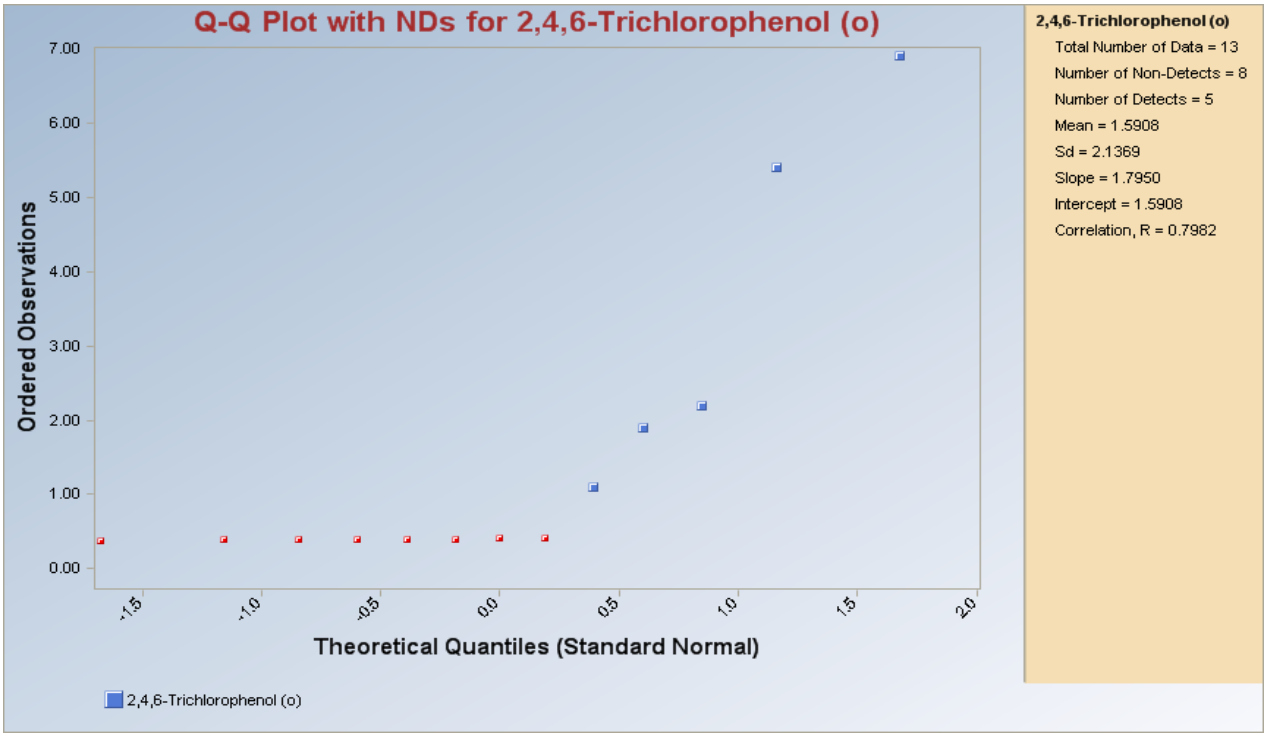

Q-Q Plot with NDs for 1,4-Dichlorobenzene (q central)
Ordered Observations
Theoretical Quantiles (Standard Normal)
1,4-Dichlorobenzene (q central)
1,4-Dichlorobenzene (q central)
Total Number of Data = 45
Number of Non-Detects = 31
Number of Detects = 14
Mean = 1.3528
Sd = 3.6531
Slope = 2.0363
Intercept = 1.3528
Correlation, R = 0.5462

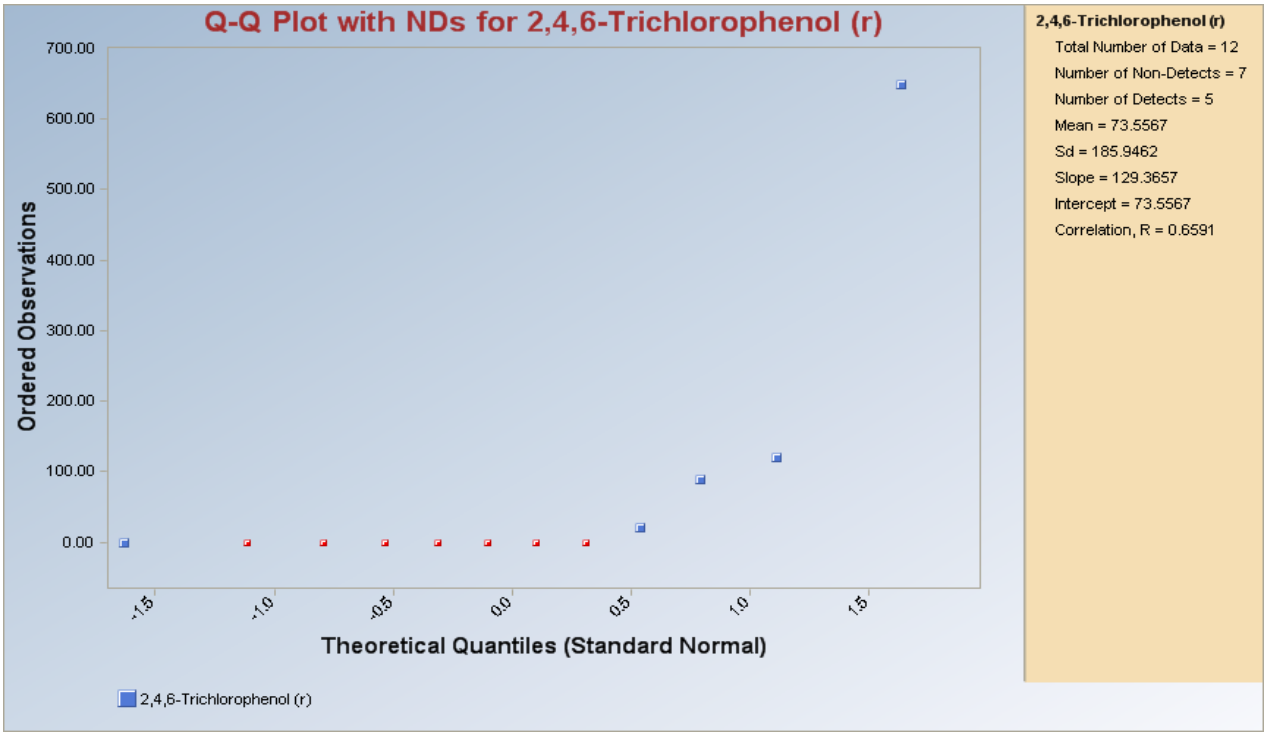

Q-Q Plot with NDs for 2,4-Dichlorophenol (q north)
Ordered Observations
260.00
240.00
220.00
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
2,4-Dichlorophenol (q north)
2,4-Dichlorophenol (q north)
Total Number of Data = 29
Number of Non-Detects = 24
Number of Detects = 5
Mean = 13.3595
Sd = 50.8894
Slope = 26.3445
Intercept = 13.3595
Correlation, R = 0.5032

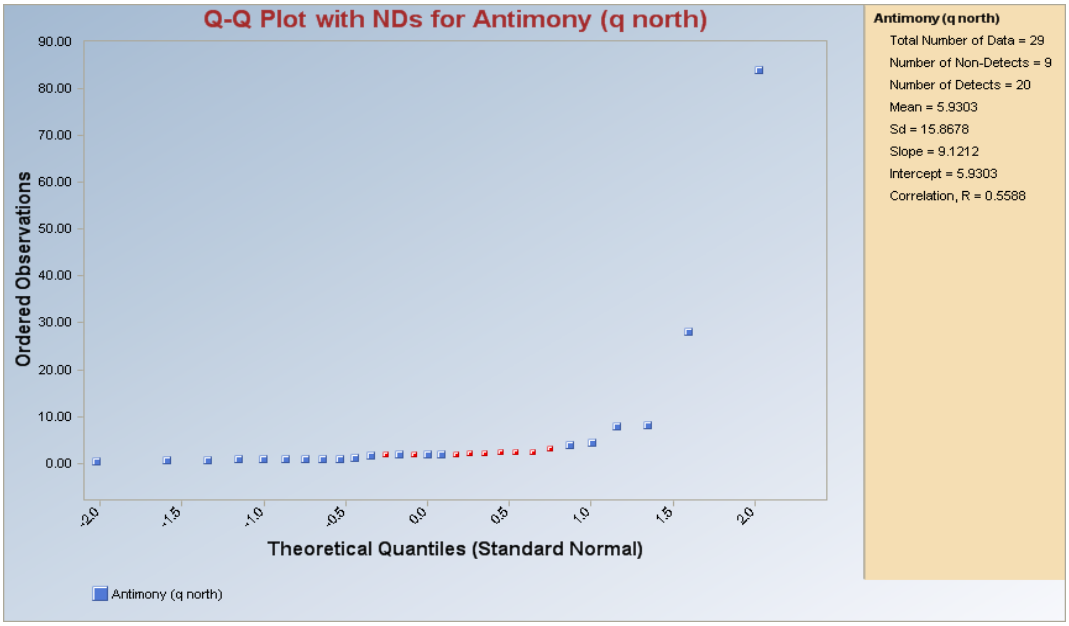

Q-Q Plot with NDs for 2,4-Dichlorophenol (r)
Ordered Observations
3300.00
3000.00
2700.00
2400.00
2100.00
1800.00
1500.00
1200.00
900.00
600.00
300.00
0.00
-300.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
2,4-Dichlorophenol (r)
2,4-Dichlorophenol (r)
Total Number of Data = 12
Number of Non-Detects = 6
Number of Detects = 6
Mean = 327.5433
Sd = 1002.2142
Slope = 621.1864
Intercept = 327.5433
Correlation, R = 0.5872

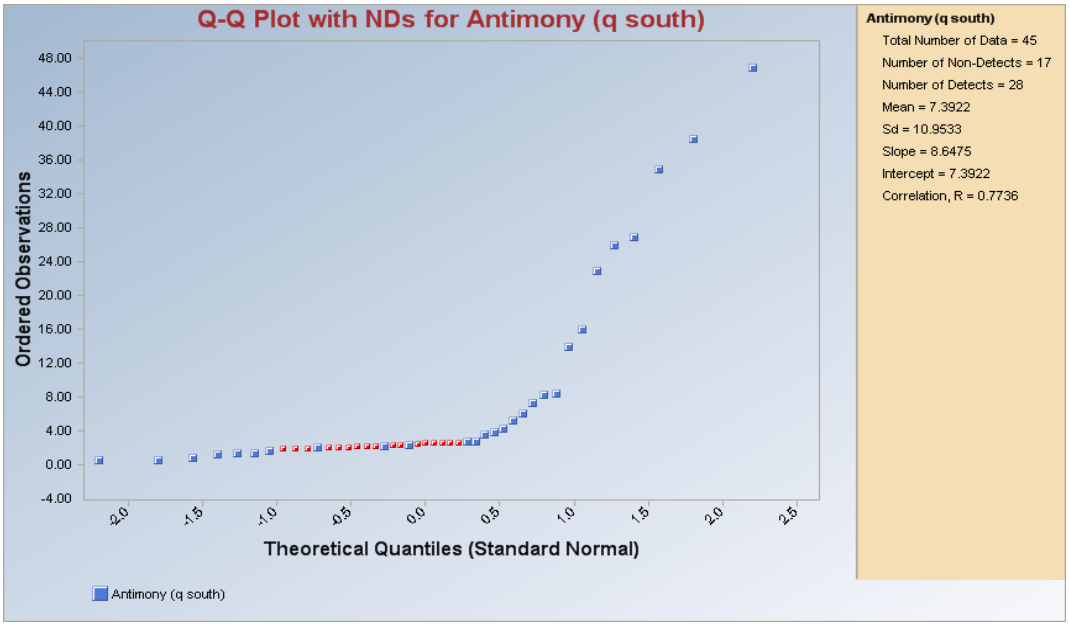

Q-Q Plot with NDs for 4,4'-DDT (p)
Ordered Observations
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
4,4'-DDT (p)
4,4'-DDT (p)
Total Number of Data = 24
Number of Non-Detects = 11
Number of Detects = 13
Mean = 1.2476
Sd = 2.9343
Slope = 1.9997
Intercept = 1.2476
Correlation, R = 0.6596

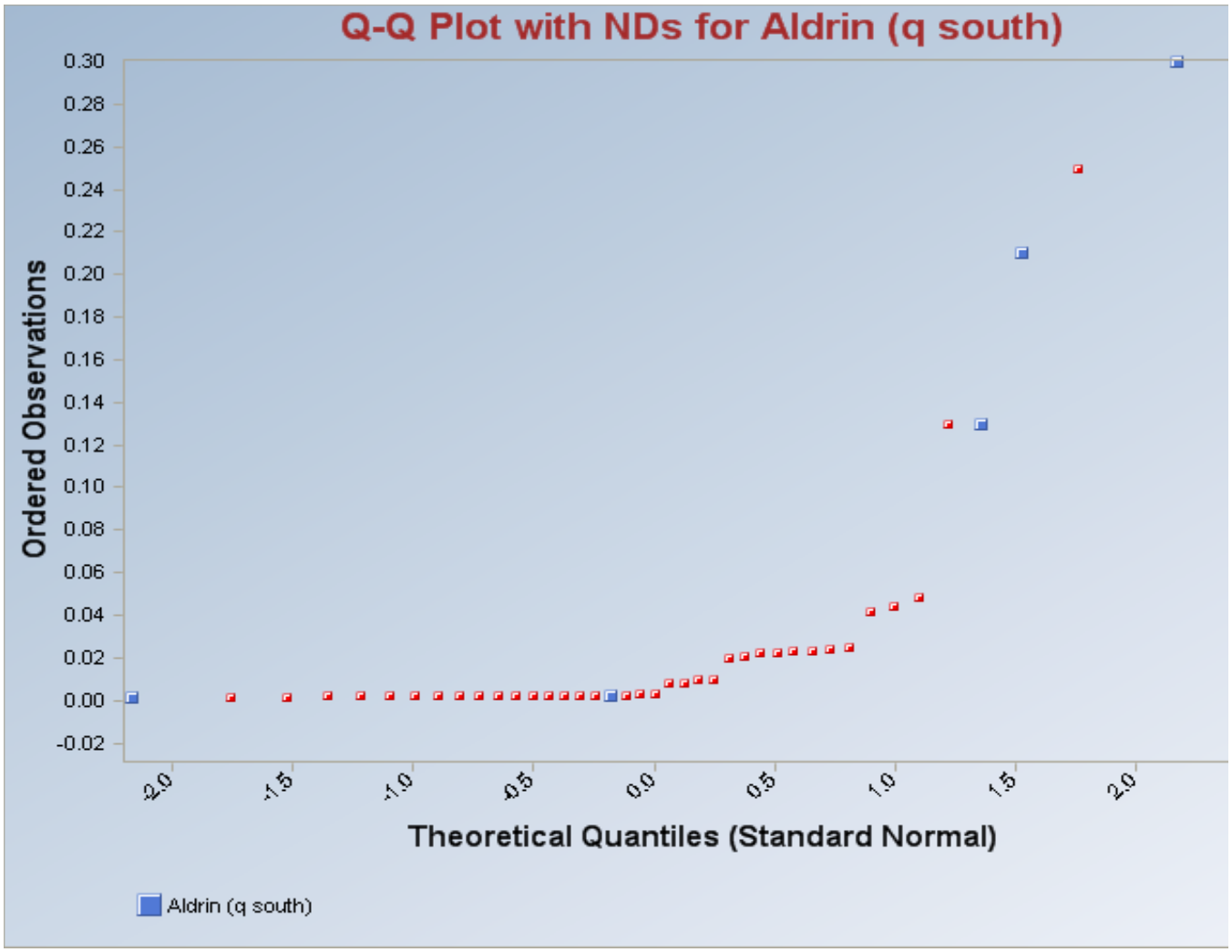

Q-Q Plot with NDs for 1,2,4-Trichlorobenzene (o)
Ordered Observations
26.00
24.00
22.00
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
-2.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
1,2,4-Trichlorobenzene (o)
1,2,4-Trichlorobenzene (o)
Total Number of Data = 13
Number of Non-Detects = 8
Number of Detects = 5
Mean = 6.5323
Sd = 10.0027
Slope = 8.6256
Intercept = 6.5323
Correlation, R = 0.8194

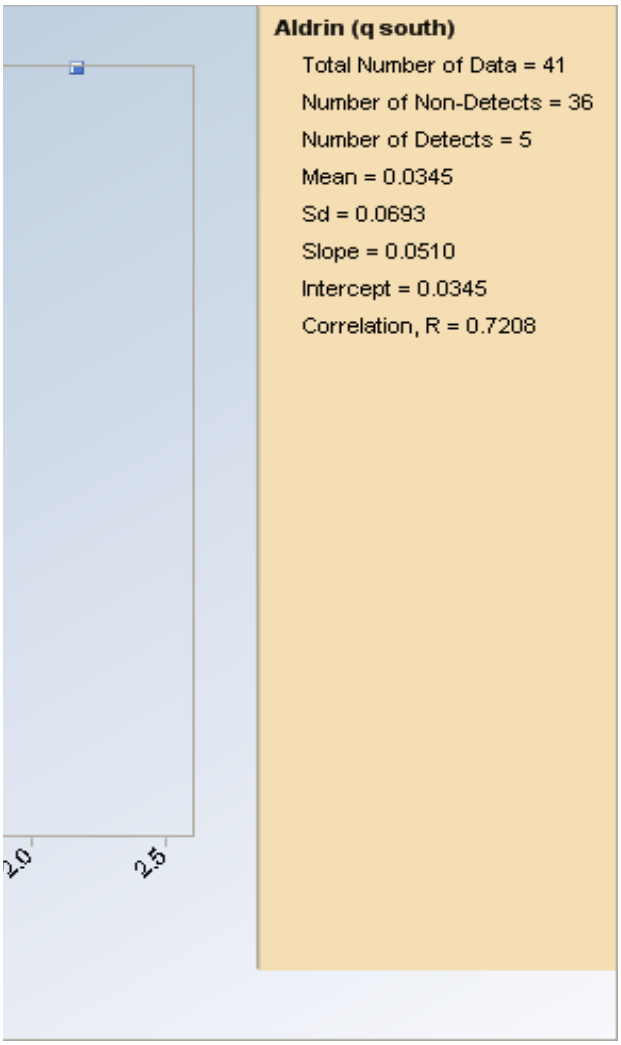

Q-Q Plot with NDs for 2,4,6-Trichlorophenol (o)
Ordered Observations
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
2,4,6-Trichlorophenol (o)
2,4,6-Trichlorophenol (o)
Total Number of Data = 13
Number of Non-Detects = 8
Number of Detects = 5
Mean = 1.5908
Sd = 2.1369
Slope = 1.7950
Intercept = 1.5908
Correlation, R = 0.7982

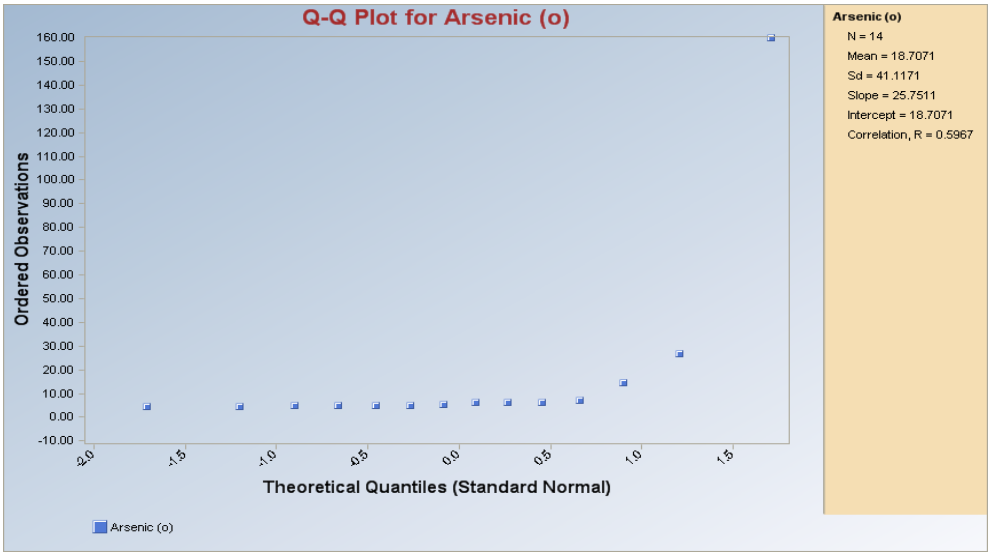

Q-Q Plot with NDs for 2,4,6-Trichlorophenol (r)
Ordered Observations
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
2,4,6-Trichlorophenol (r)
2,4,6-Trichlorophenol (r)
Total Number of Data = 12
Number of Non-Detects = 7
Number of Detects = 5
Mean = 73.5567
Sd = 185.9462
Slope = 129.3657
Intercept = 73.5567
Correlation, R = 0.6591

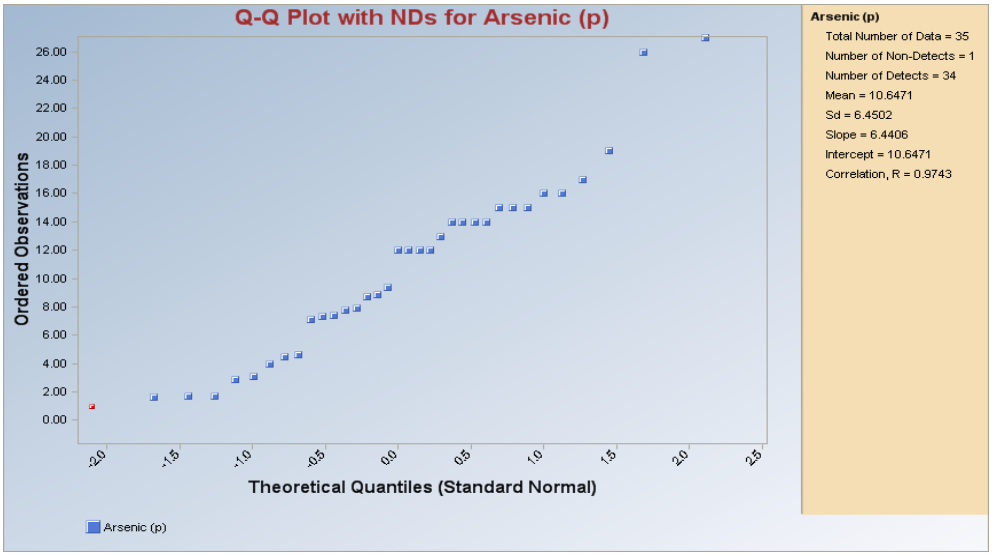

Q-Q Plot with NDs for Antimony (q north)
Ordered Observations
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Antimony (q north)
Antimony (q north)
Total Number of Data = 29
Number of Non-Detects = 9
Number of Detects = 20
Mean = 5.9303
Sd = 15.8678
Slope = 9.1212
Intercept = 5.9303
Correlation, R = 0.5588

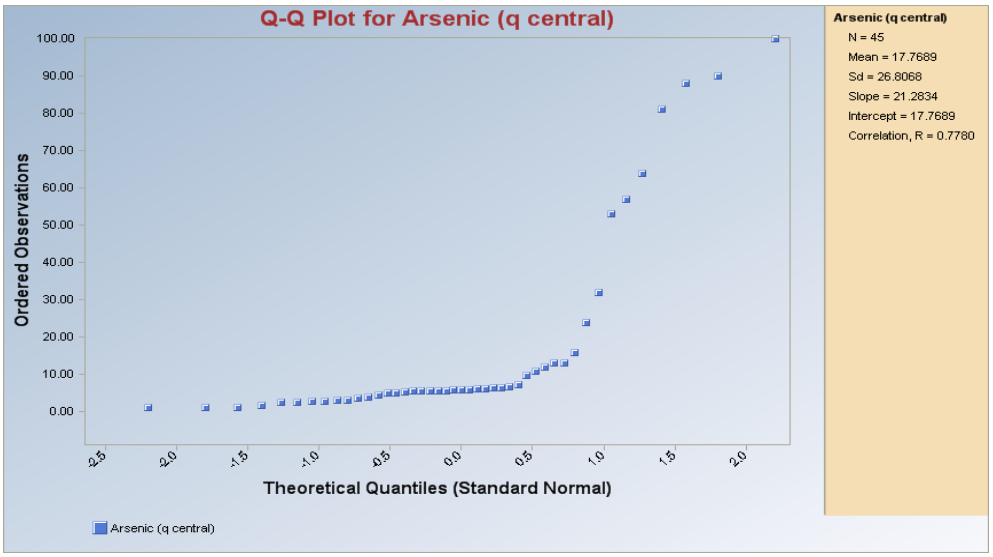

Q-Q Plot with NDs for Antimony (q south)
Ordered Observations
48.00
44.00
40.00
36.00
32.00
28.00
24.00
20.00
16.00
12.00
8.00
4.00
0.00
-4.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
Theoretical Quantiles (Standard Normal)
Antimony (q south)
Antimony (q south)
Total Number of Data = 45
Number of Non-Detects = 17
Number of Detects = 28
Mean = 7.3922
Sd = 10.9533
Slope = 8.6475
Intercept = 7.3922
Correlation, R = 0.7736


Q-Q Plot with NDs for Aldrin (q south)
Ordered Observations
0.30
0.28
0.26
0.24
0.22
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Aldrin (q south)

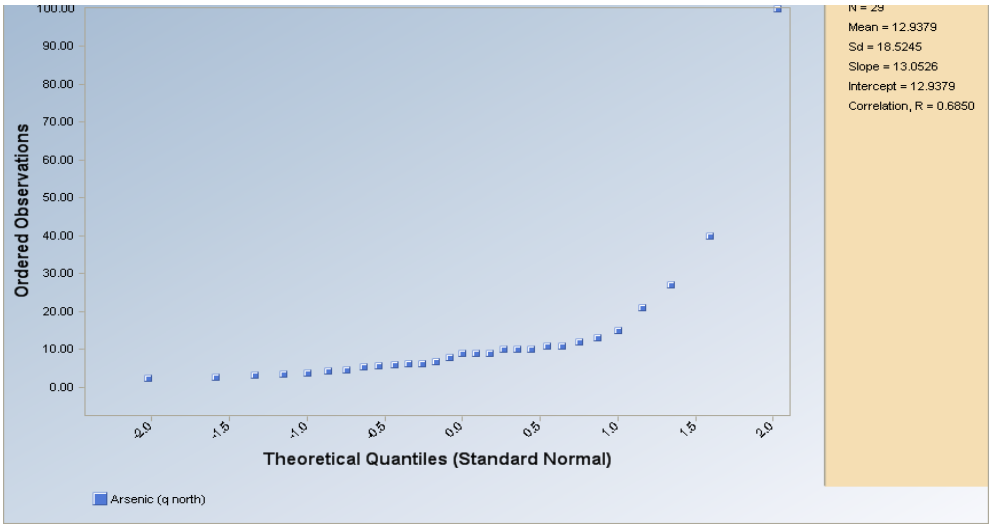

Aldrin (q south)
Total Number of Data = 41
Number of Non-Detects = 36
Number of Detects = 5
Mean = 0.0345
Sd = 0.0693
Slope = 0.0510
Intercept = 0.0345
Correlation, R = 0.7208
2.0
2.5

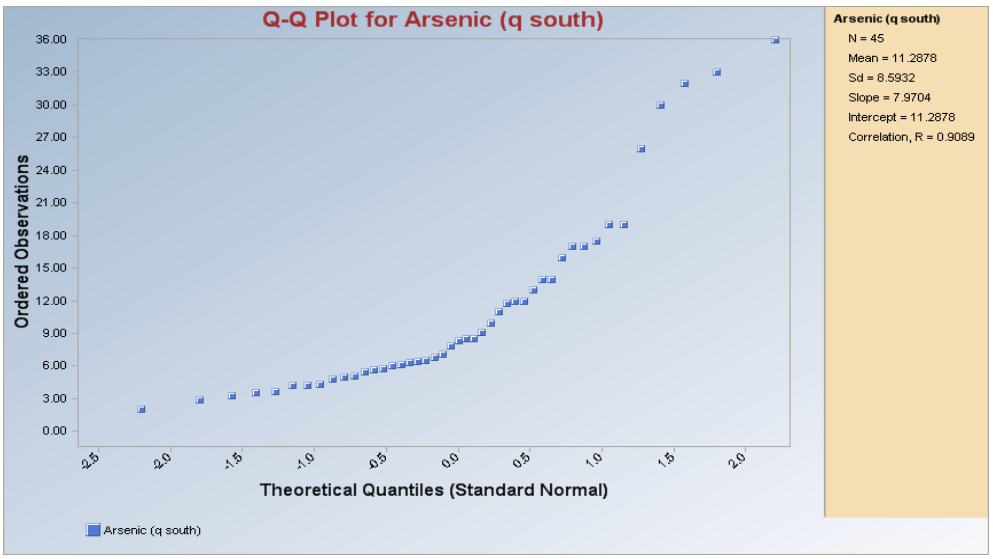

Q-Q Plot for Arsenic (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Arsenic (o)
Arsenic (o)
N = 14
Mean = 18.7071
Sd = 41.1171
Slope = 25.7511
Intercept = 18.7071
Correlation, R = 0.5967

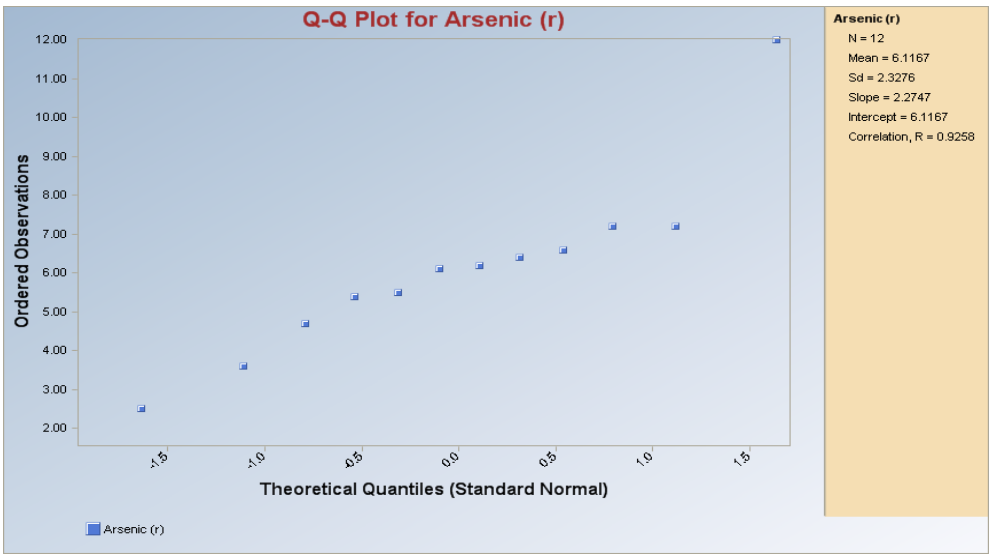

Q-Q Plot with NDs for Arsenic (p)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Arsenic (p)
Arsenic (p)
Total Number of Data = 35
Number of Non-Detects = 1
Number of Detects = 34
Mean = 10.6471
Sd = 6.4502
Slope = 6.4406
Intercept = 10.6471
Correlation, R = 0.9743

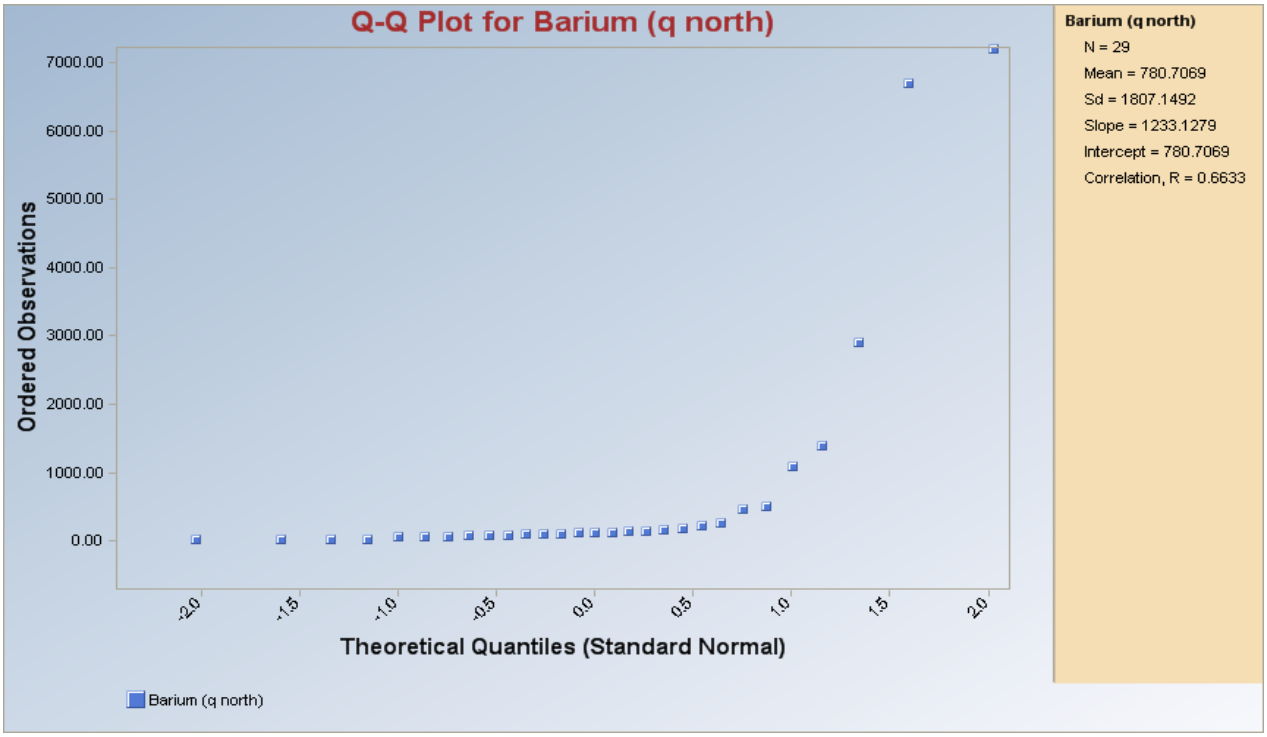

Q-Q Plot for Arsenic (q central)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Arsenic (q central)
Arsenic (q central)
N = 45
Mean = 17.7689
Sd = 26.8068
Slope = 21.2834
Intercept = 17.7689
Correlation, R = 0.7780

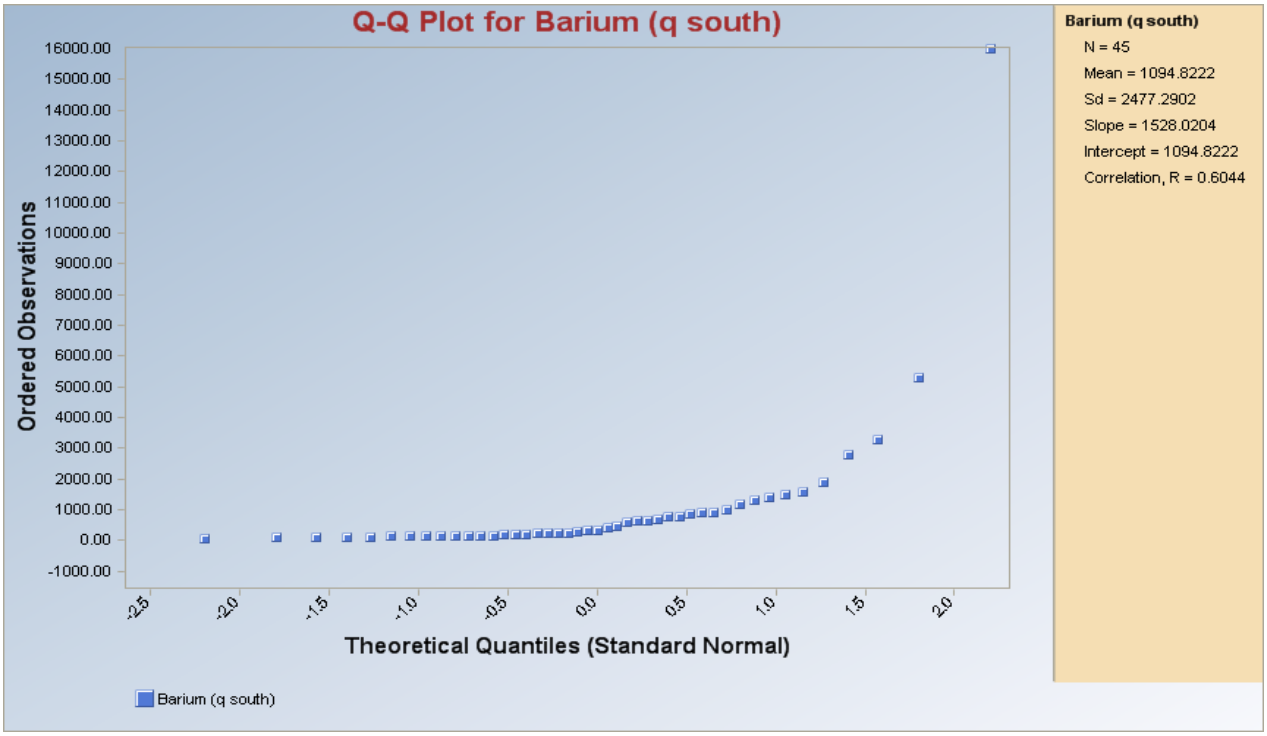
Q-Q Plot for Arsenic (q north)
Arsenic (q north)
N = 29

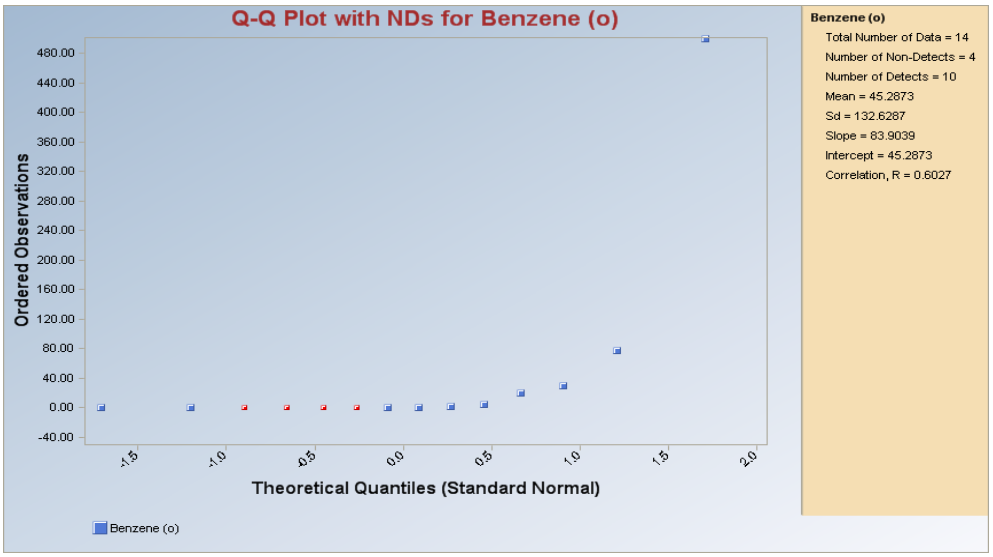

N = 29
Mean = 12.9379
Sd = 18.5245
Slope = 13.0526
Intercept = 12.9379
Correlation, R = 0.6850
Ordered Observations
Theoretical Quantiles (Standard Normal)
Arsenic (q north)

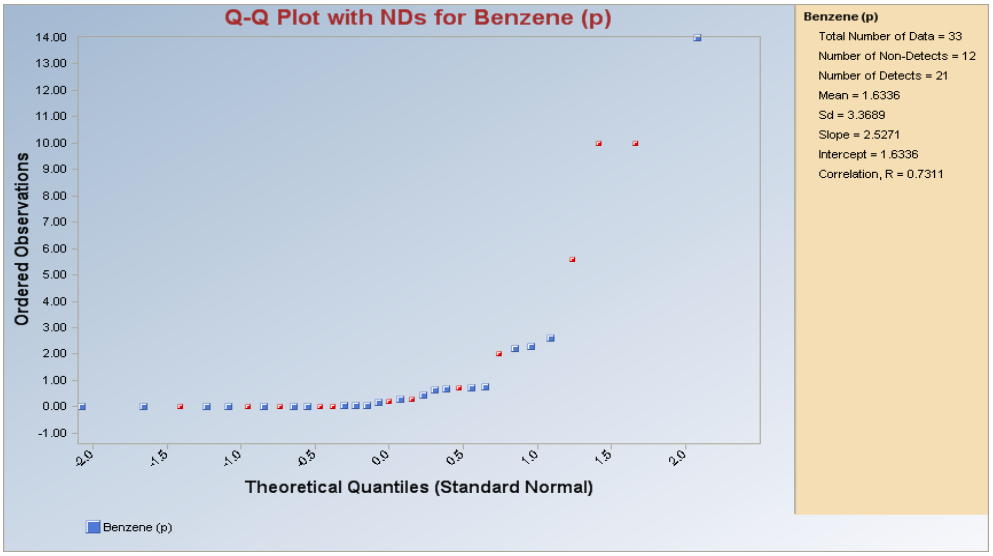

Q-Q Plot for Arsenic (q south)
Arsenic (q south)
N = 45
Mean = 11.2878
Sd = 8.5932
Slope = 7.9704
Intercept = 11.2878
Correlation, R = 0.9089
Ordered Observations
Theoretical Quantiles (Standard Normal)
Arsenic (q south)

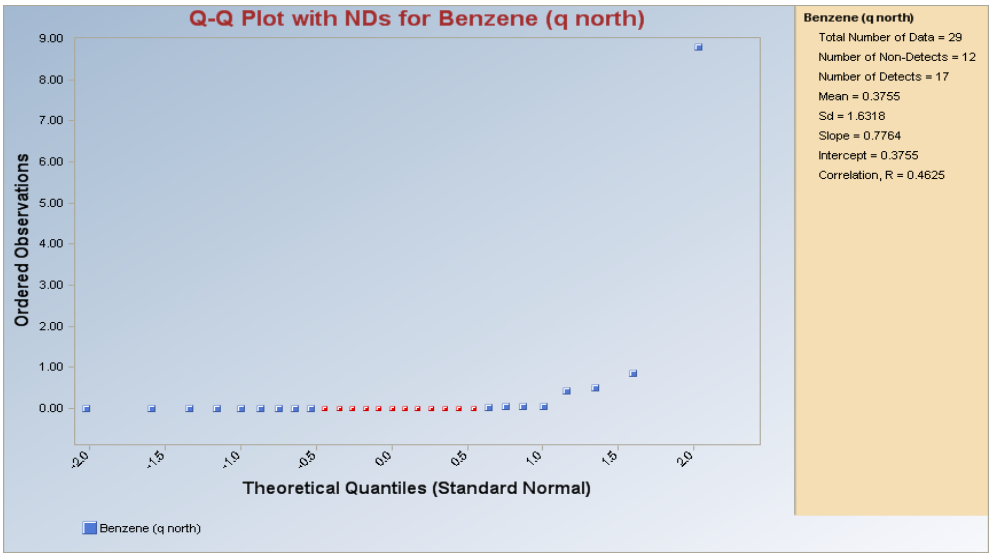

Q-Q Plot for Arsenic (r)
Arsenic (r)
N = 12
Mean = 6.1167
Sd = 2.3276
Slope = 2.2747
Intercept = 6.1167
Correlation, R = 0.9258
Ordered Observations
Theoretical Quantiles (Standard Normal)
Arsenic (r)


Q-Q Plot for Barium (q north)
Ordered Observations
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Barium (q north)
Barium (q north)
N = 29
Mean = 780.7069
Sd = 1807.1492
Slope = 1233.1279
Intercept = 780.7069
Correlation, R = 0.6633

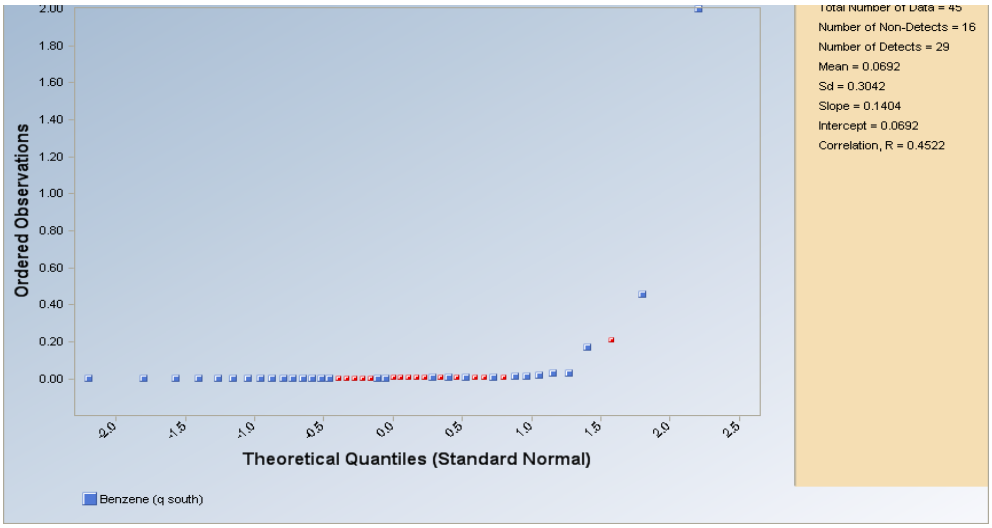

Q-Q Plot for Barium (q south)
Ordered Observations
16000.00
15000.00
14000.00
13000.00
12000.00
11000.00
10000.00
9000.00
8000.00
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
-1000.00
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Barium (q south)
Barium (q south)
N = 45
Mean = 1094.8222
Sd = 2477.2902
Slope = 1528.0204
Intercept = 1094.8222
Correlation, R = 0.6044

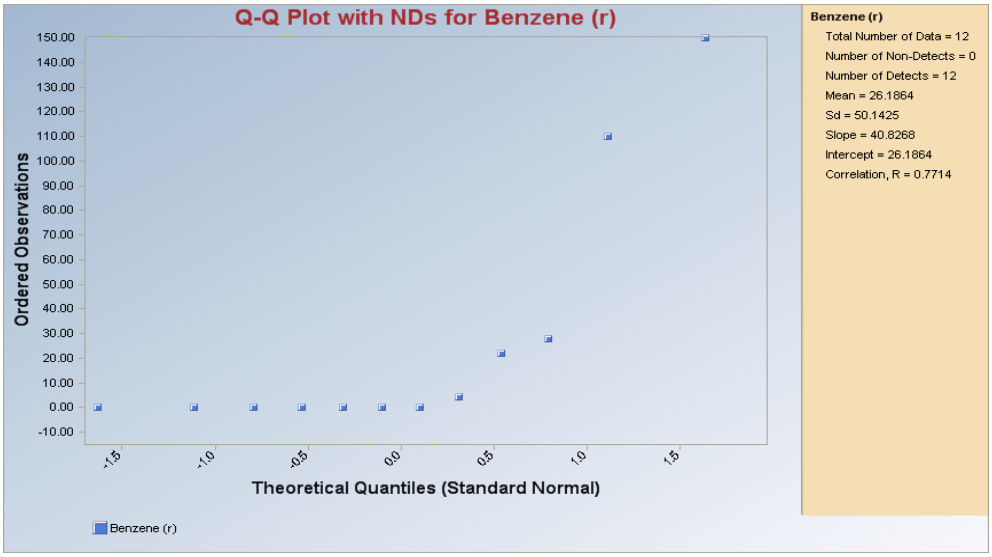

Q-Q Plot with NDs for Benzene (o)
Ordered Observations
480.00
440.00
400.00
360.00
320.00
280.00
240.00
200.00
160.00
120.00
80.00
40.00
0.00
-40.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Benzene (o)
Benzene (o)
Total Number of Data = 14
Number of Non-Detects = 4
Number of Detects = 10
Mean = 45.2873
Sd = 132.6287
Slope = 83.9039
Intercept = 45.2873
Correlation, R = 0.6027

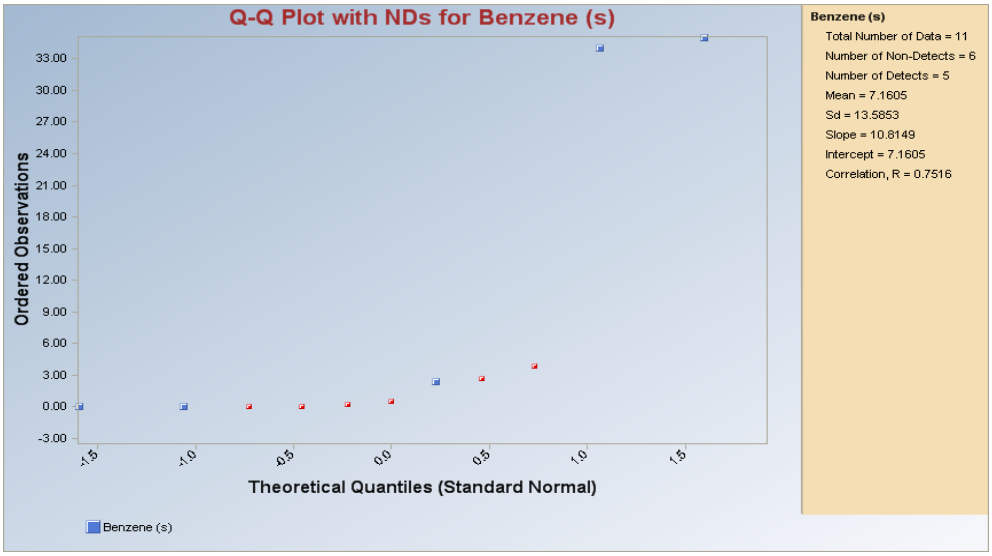

Q-Q Plot with NDs for Benzene (p)
Ordered Observations
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Benzene (p)
Benzene (p)
Total Number of Data = 33
Number of Non-Detects = 12
Number of Detects = 21
Mean = 1.6336
Sd = 3.3689
Slope = 2.5271
Intercept = 1.6336
Correlation, R = 0.7311

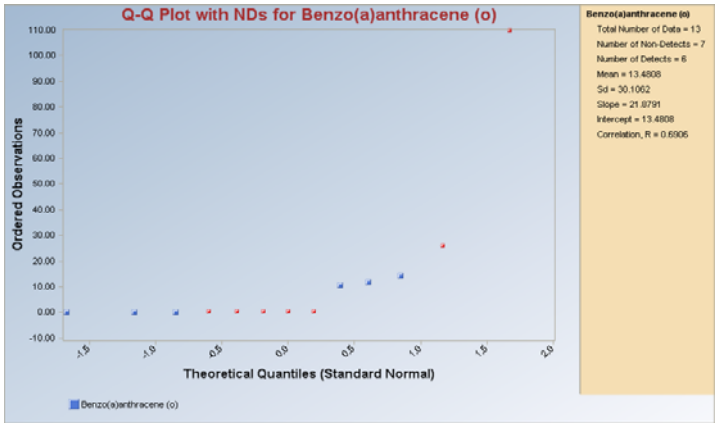

Q-Q Plot with NDs for Benzene (q north)
Ordered Observations
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Benzene (q north)
Benzene (q north)
Total Number of Data = 29
Number of Non-Detects = 12
Number of Detects = 17
Mean = 0.3755
Sd = 1.6318
Slope = 0.7764
Intercept = 0.3755
Correlation, R = 0.4625

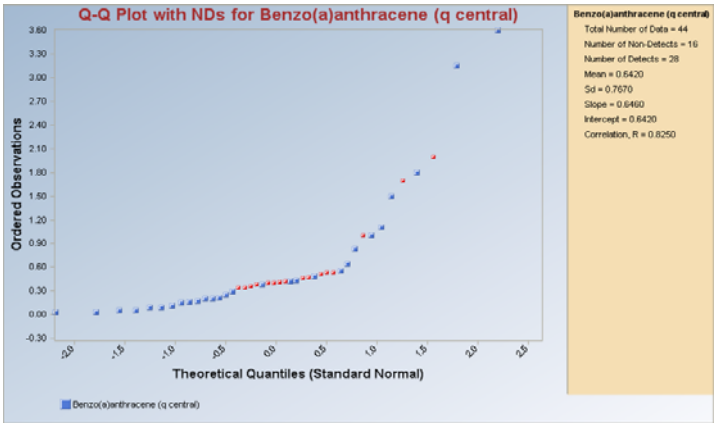
Q-Q Plot with NDs for Benzene (q south)
2.00
Benzene (q south)
Total Number of Data = 45

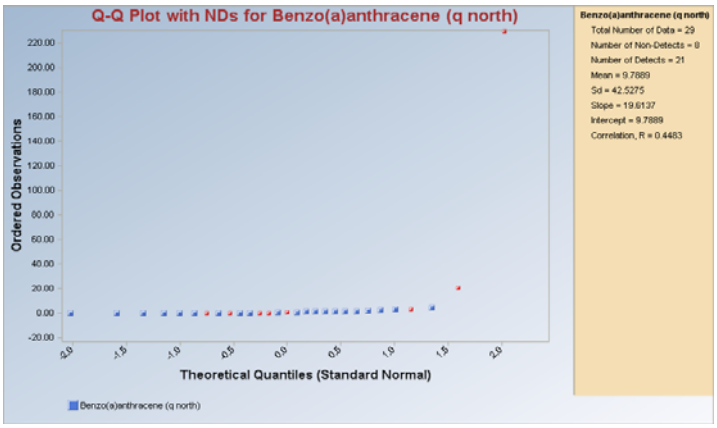

Total Number of Data = 45
Number of Non-Detects = 16
Number of Detects = 29
Mean = 0.0692
Sd = 0.3042
Slope = 0.1404
Intercept = 0.0692
Correlation, R = 0.4522
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzene (q south)

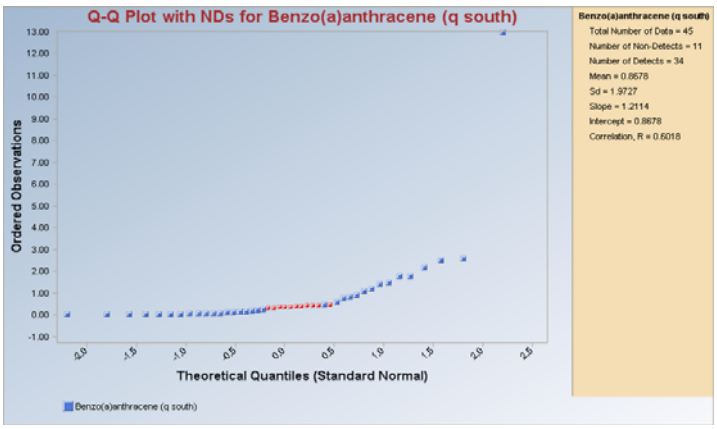

Q-Q Plot with NDs for Benzene (r)
Benzene (r)
Total Number of Data = 12
Number of Non-Detects = 0
Number of Detects = 12
Mean = 26.1864
Sd = 50.1425
Slope = 40.8268
Intercept = 26.1864
Correlation, R = 0.7714
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzene (r)

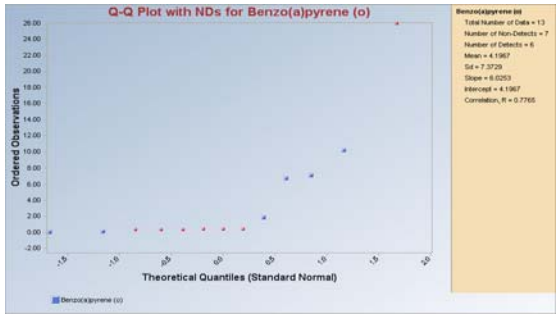

Q-Q Plot with NDs for Benzene (s)
Benzene (s)
Total Number of Data = 11
Number of Non-Detects = 6
Number of Detects = 5
Mean = 7.1605
Sd = 13.5853
Slope = 10.8149
Intercept = 7.1605
Correlation, R = 0.7516
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzene (s)

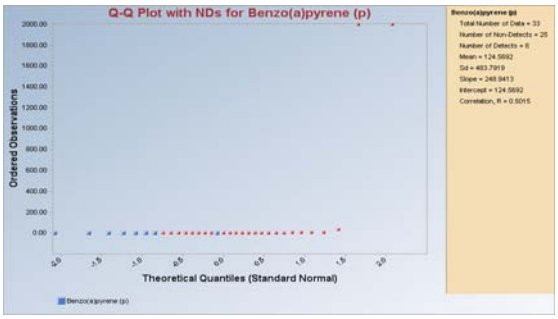

Q-Q Plot with NDs for Benzo(a)anthracene (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(a)anthracene (o)
Benzo(a)anthracene (o)
Total Number of Data = 13
Number of Non-Detects = 7
Number of Detects = 6
Mean = 13.4808
Sd = 30.1062
Slope = 21.8791
Intercept = 13.4808
Correlation, R = 0.6906

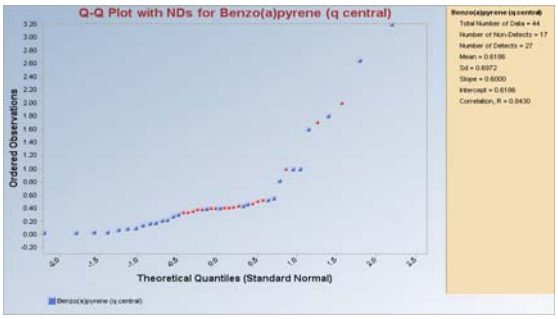

Q-Q Plot with NDs for Benzo(a)anthracene (q central)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(a)anthracene (q central)
Benzo(a)anthracene (q central)
Total Number of Data = 44
Number of Non-Detects = 16
Number of Detects = 28
Mean = 0.6420
Sd = 0.7670
Slope = 0.6460
Intercept = 0.6420
Correlation, R = 0.8250

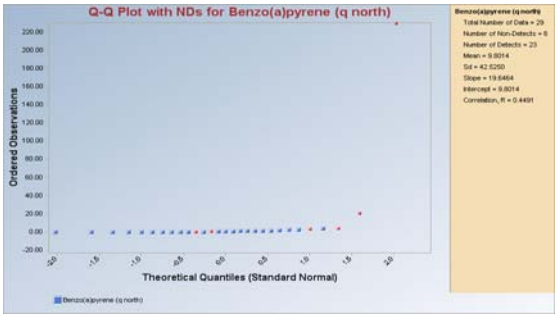

Q-Q Plot with NDs for Benzo(a)anthracene (q north)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(a)anthracene (q north)
Benzo(a)anthracene (q north)
Total Number of Data = 29
Number of Non-Detects = 8
Number of Detects = 21
Mean = 9.7889
Sd = 42.5275
Slope = 19.6137
Intercept = 9.7889
Correlation, R = 0.4483

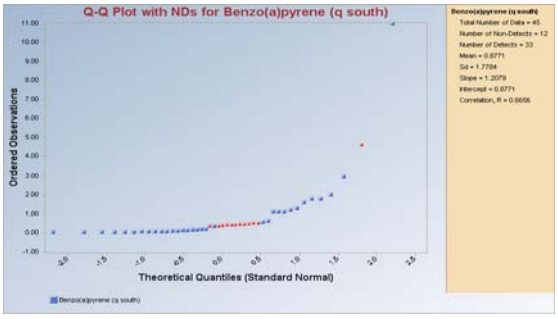

Q-Q Plot with NDs for Benzo(a)anthracene (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(a)anthracene (q south)
Benzo(a)anthracene (q south)
Total Number of Data = 45
Number of Non-Detects = 11
Number of Detects = 34
Mean = 0.8678
Sd = 1.9727
Slope = 1.2114
Intercept = 0.8678
Correlation, R = 0.6018

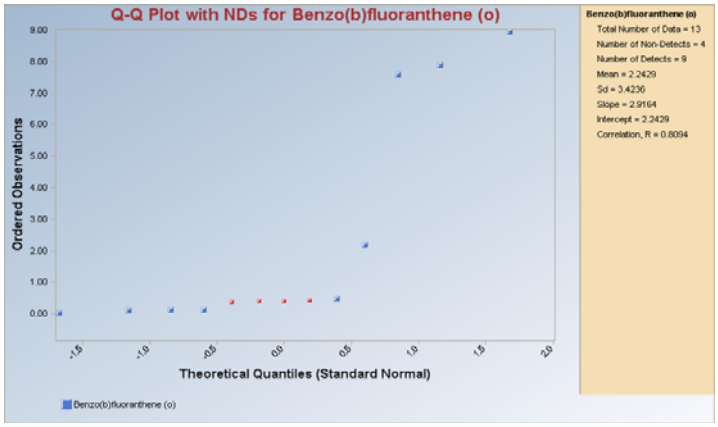

Q-Q Plot with NDs for Benzo(a)pyrene (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(a)pyrene (o)
Total Number of Data = 13
Number of Non-Detects = 7
Number of Detects = 6
Mean = 4.1967
Sd = 7.3729
Slope = 6.0253
Intercept = 4.1967
Correlation, R = 0.7765

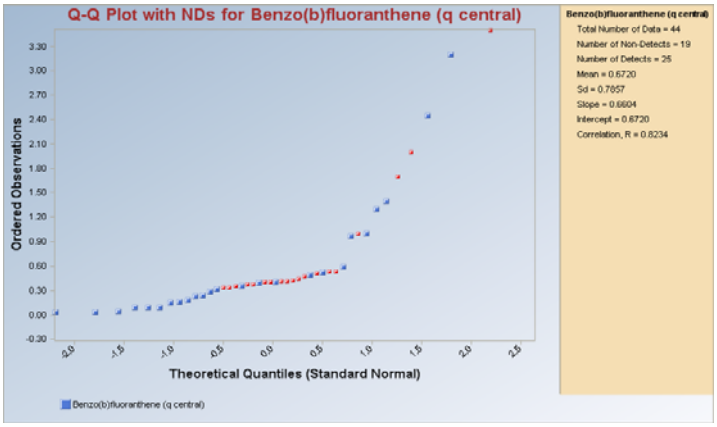

Q-Q Plot with NDs for Benzo(a)pyrene (p)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(a)pyrene (p)
Total Number of Data = 33
Number of Non-Detects = 25
Number of Detects = 8
Mean = 124.5692
Sd = 483.7919
Slope = 248.9413
Intercept = 124.5692
Correlation, R = 0.5015

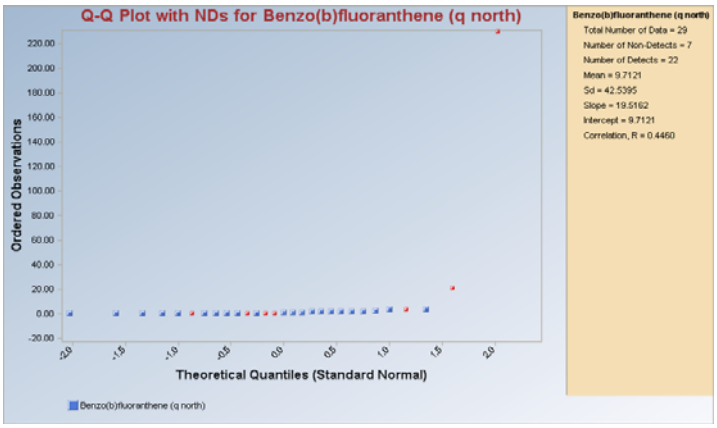

Q-Q Plot with NDs for Benzo(a)pyrene (q central)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(a)pyrene (q central)
Total Number of Data = 44
Number of Non-Detects = 17
Number of Detects = 27
Mean = 0.6186
Sd = 0.6972
Slope = 0.6000
Intercept = 0.6186
Correlation, R = 0.8430

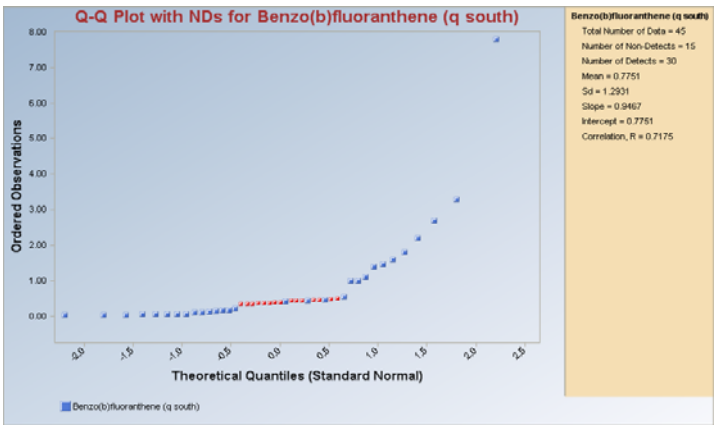

Q-Q Plot with NDs for Benzo(a)pyrene (q north)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(a)pyrene (q north)
Total Number of Data = 29
Number of Non-Detects = 6
Number of Detects = 23
Mean = 9.8014
Sd = 42.6250
Slope = 19.6464
Intercept = 9.8014
Correlation, R = 0.4491

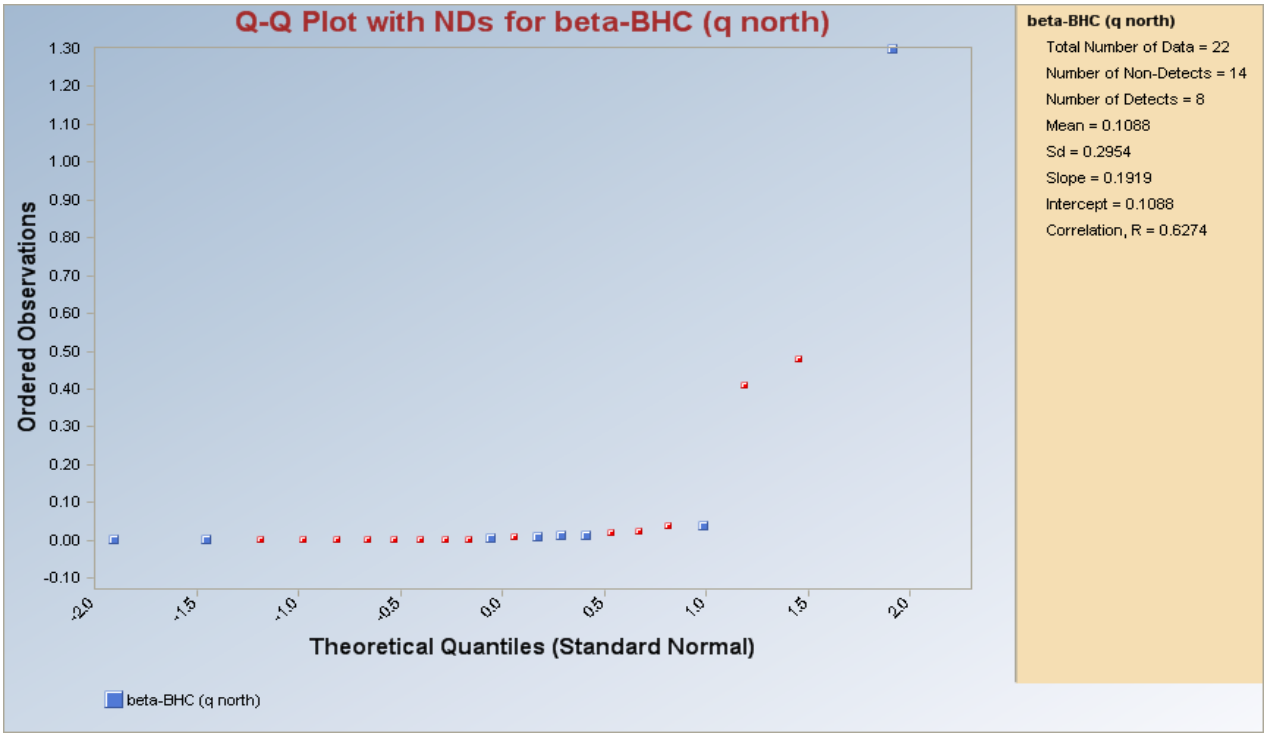

Q-Q Plot with NDs for Benzo(a)pyrene (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(a)pyrene (q south)
Total Number of Data = 45
Number of Non-Detects = 12
Number of Detects = 33
Mean = 0.8771
Sd = 1.7784
Slope = 1.2079
Intercept = 0.8771
Correlation, R = 0.6658

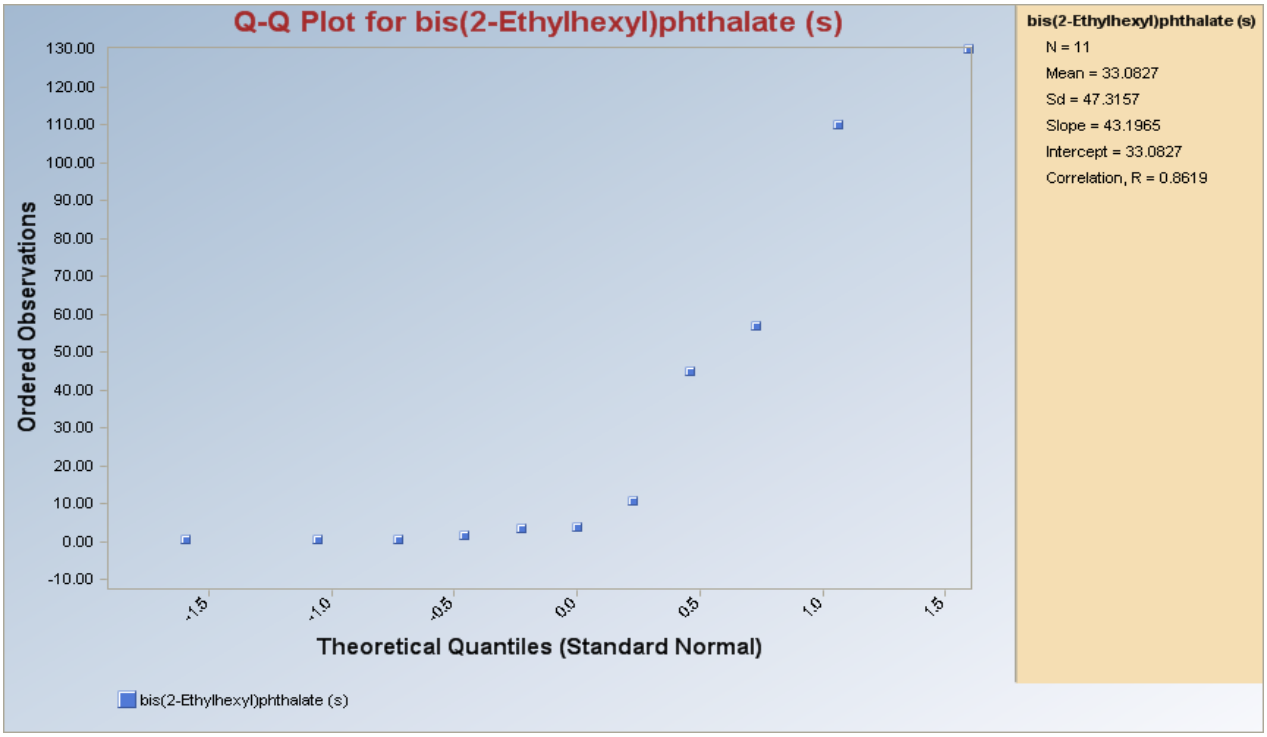

Q-Q Plot with NDs for Benzo(b)fluoranthene (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(b)fluoranthene (o)
Benzo(b)fluoranthene (o)
Total Number of Data = 13
Number of Non-Detects = 4
Number of Detects = 9
Mean = 2.2429
Sd = 3.4236
Slope = 2.9164
Intercept = 2.2429
Correlation, R = 0.8094

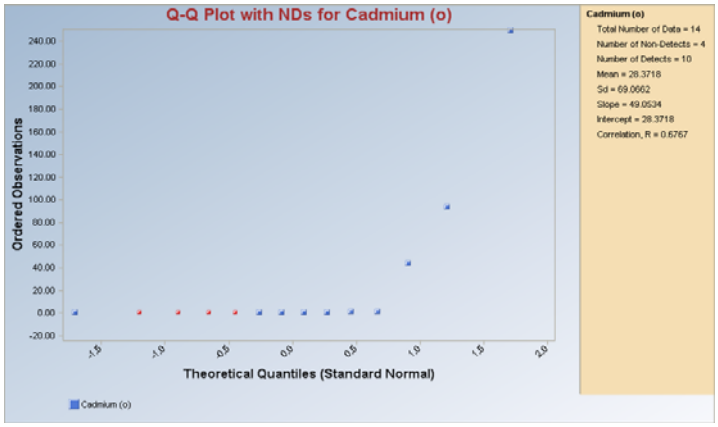

Q-Q Plot with NDs for Benzo(b)fluoranthene (q central)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(b)fluoranthene (q central)
Benzo(b)fluoranthene (q central)
Total Number of Data = 44
Number of Non-Detects = 19
Number of Detects = 25
Mean = 0.6720
Sd = 0.7857
Slope = 0.6604
Intercept = 0.6720
Correlation, R = 0.8234

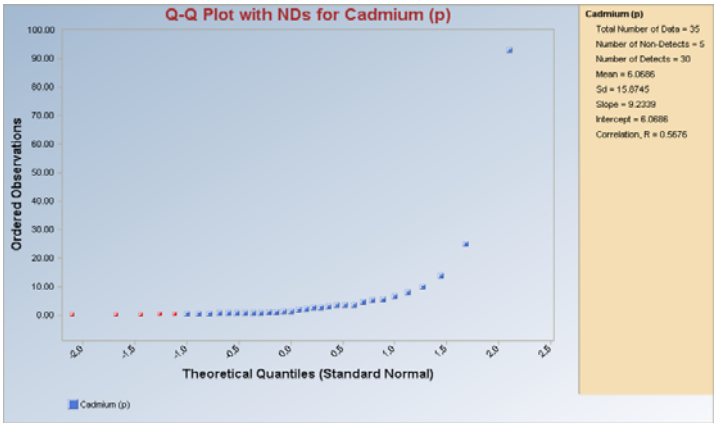

Q-Q Plot with NDs for Benzo(b)fluoranthene (q north)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(b)fluoranthene (q north)
Benzo(b)fluoranthene (q north)
Total Number of Data = 29
Number of Non-Detects = 7
Number of Detects = 22
Mean = 9.7121
Sd = 42.5395
Slope = 19.5162
Intercept = 9.7121
Correlation, R = 0.4460

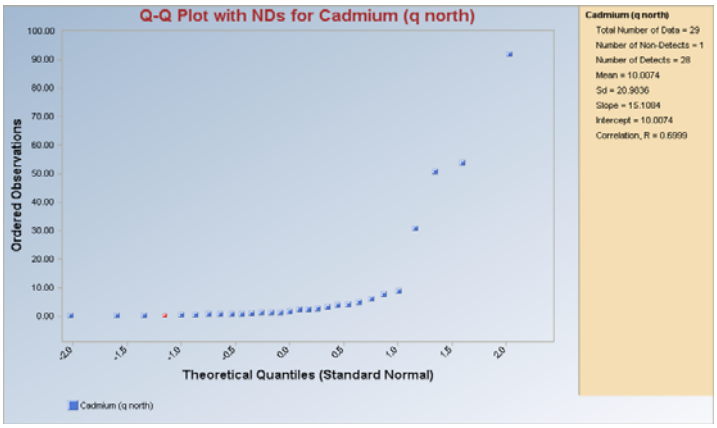

Q-Q Plot with NDs for Benzo(b)fluoranthene (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Benzo(b)fluoranthene (q south)
Benzo(b)fluoranthene (q south)
Total Number of Data = 45
Number of Non-Detects = 15
Number of Detects = 30
Mean = 0.7751
Sd = 1.2931
Slope = 0.9467
Intercept = 0.7751
Correlation, R = 0.7175

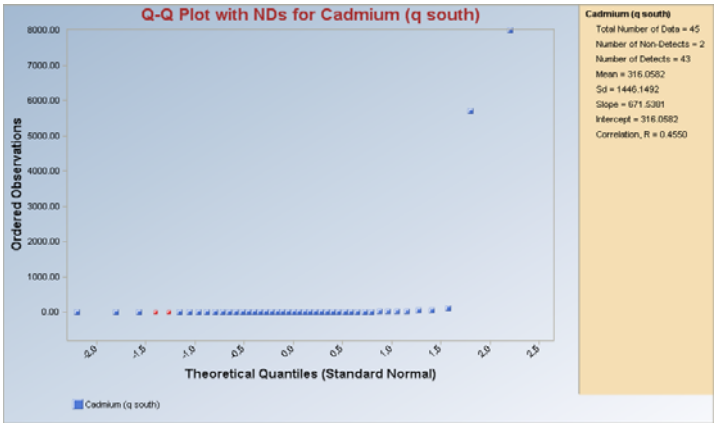

Q-Q Plot with NDs for beta-BHC (q north)
Ordered Observations
1.30
1.20
1.10
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
-0.10
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
beta-BHC (q north)
beta-BHC (q north)
Total Number of Data = 22
Number of Non-Detects = 14
Number of Detects = 8
Mean = 0.1088
Sd = 0.2954
Slope = 0.1919
Intercept = 0.1088
Correlation, R = 0.6274

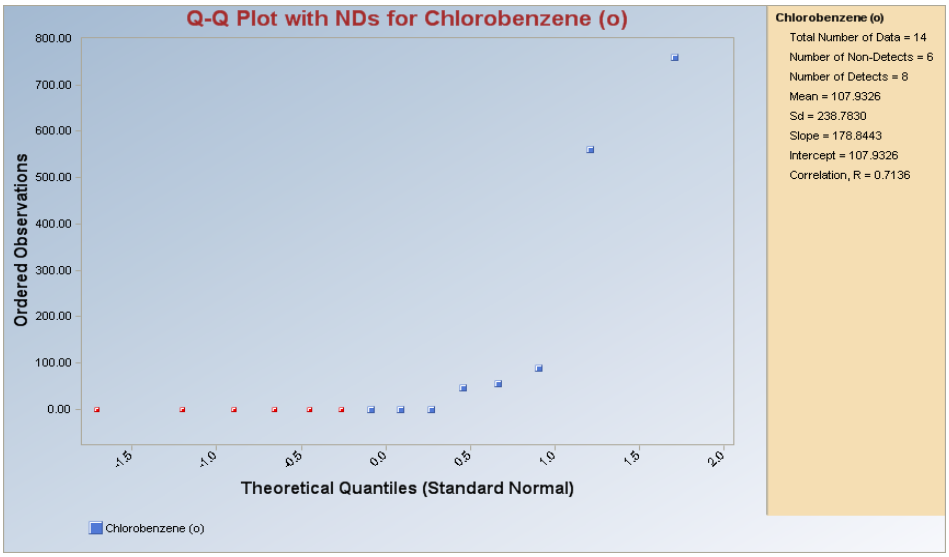

Q-Q Plot for bis(2-Ethylhexyl)phthalate (s)
Ordered Observations
130.00
120.00
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
bis(2-Ethylhexyl)phthalate (s)
bis(2-Ethylhexyl)phthalate (s)
N = 11
Mean = 33.0827
Sd = 47.3157
Slope = 43.1965
Intercept = 33.0827
Correlation, R = 0.8619

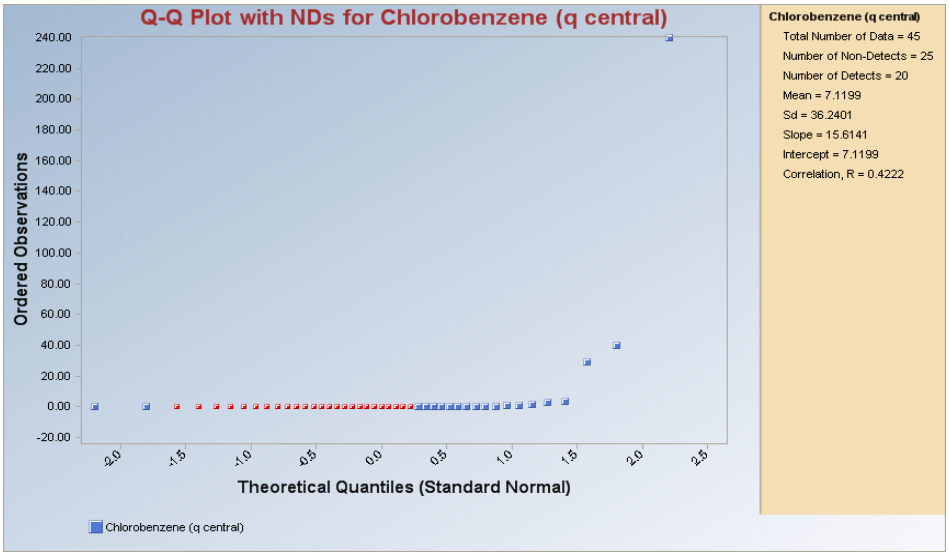

Q-Q Plot with NDs for Cadmium (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Cadmium (o)
Cadmium (o)
Total Number of Data = 14
Number of Non-Detects = 4
Number of Detects = 10
Mean = 28.3718
Sd = 69.0662
Slope = 49.0534
Intercept = 28.3718
Correlation, R = 0.6767

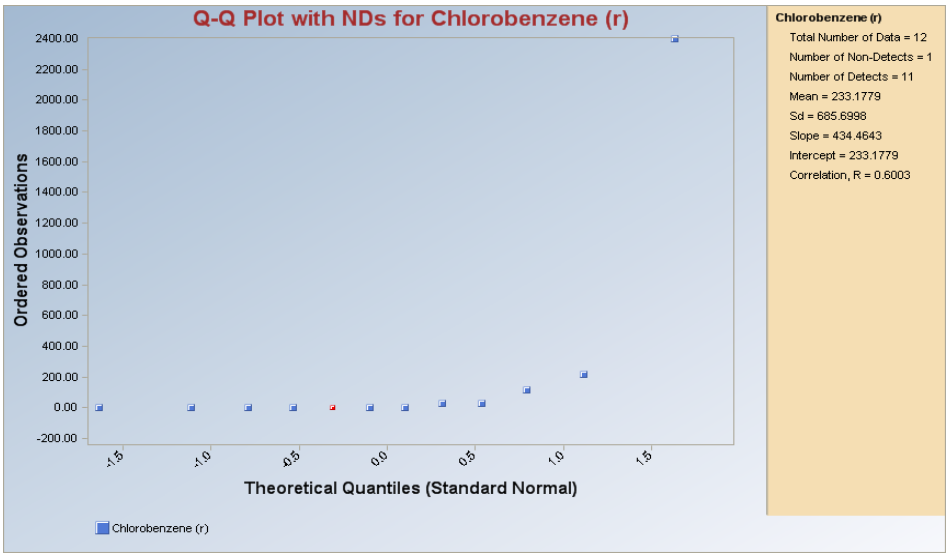

Q-Q Plot with NDs for Cadmium (p)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Cadmium (p)
Cadmium (p)
Total Number of Data = 35
Number of Non-Detects = 5
Number of Detects = 30
Mean = 6.0686
Sd = 15.8745
Slope = 9.2339
Intercept = 6.0686
Correlation, R = 0.5676

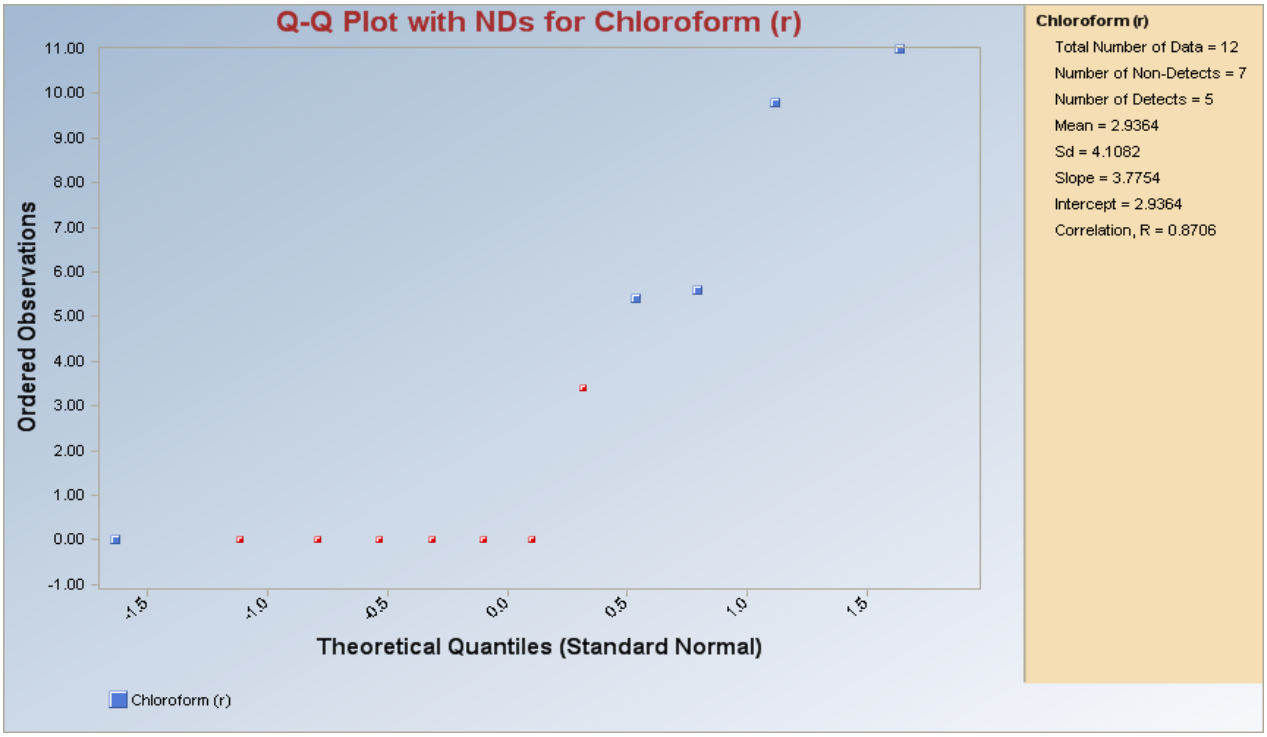

Q-Q Plot with NDs for Cadmium (q north)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Cadmium (q north)
Cadmium (q north)
Total Number of Data = 29
Number of Non-Detects = 1
Number of Detects = 28
Mean = 10.0074
Sd = 20.9636
Slope = 15.1084
Intercept = 10.0074
Correlation, R = 0.6999

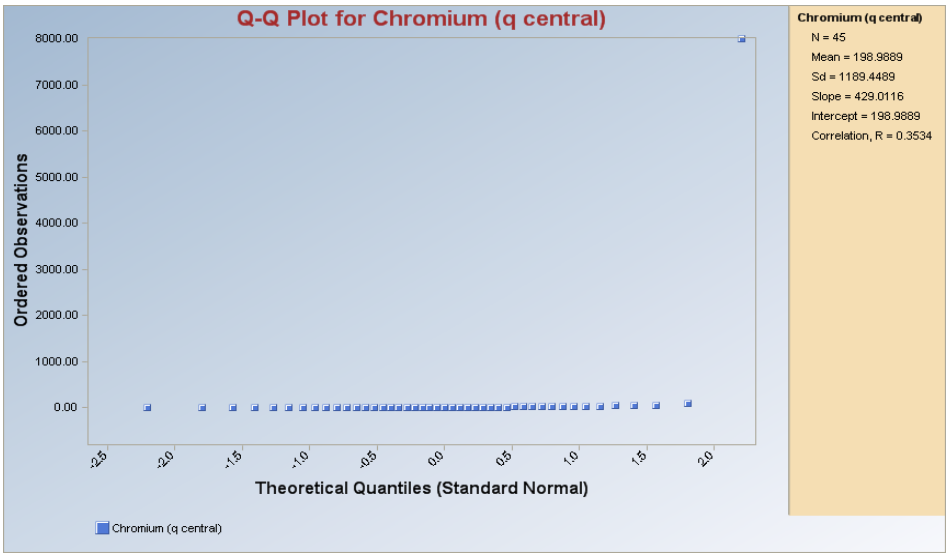

Q-Q Plot with NDs for Cadmium (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Cadmium (q south)
Cadmium (q south)
Total Number of Data = 45
Number of Non-Detects = 2
Number of Detects = 43
Mean = 316.0582
Sd = 1446.1492
Slope = 671.5381
Intercept = 316.0582
Correlation, R = 0.4550

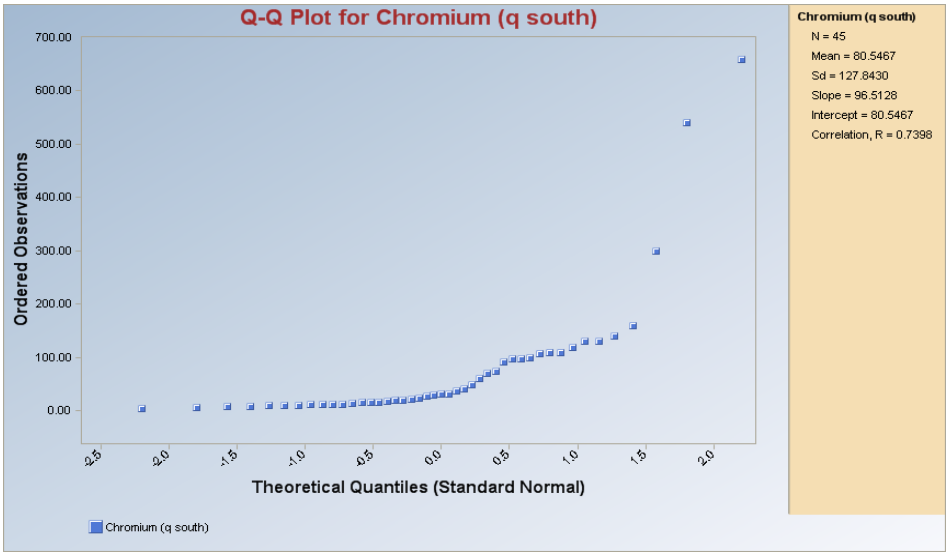

Q-Q Plot with NDs for Chlorobenzene (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Chlorobenzene (o)
Chlorobenzene (o)
Total Number of Data = 14
Number of Non-Detects = 6
Number of Detects = 8
Mean = 107.9326
Sd = 238.7830
Slope = 178.8443
Intercept = 107.9326
Correlation, R = 0.7136

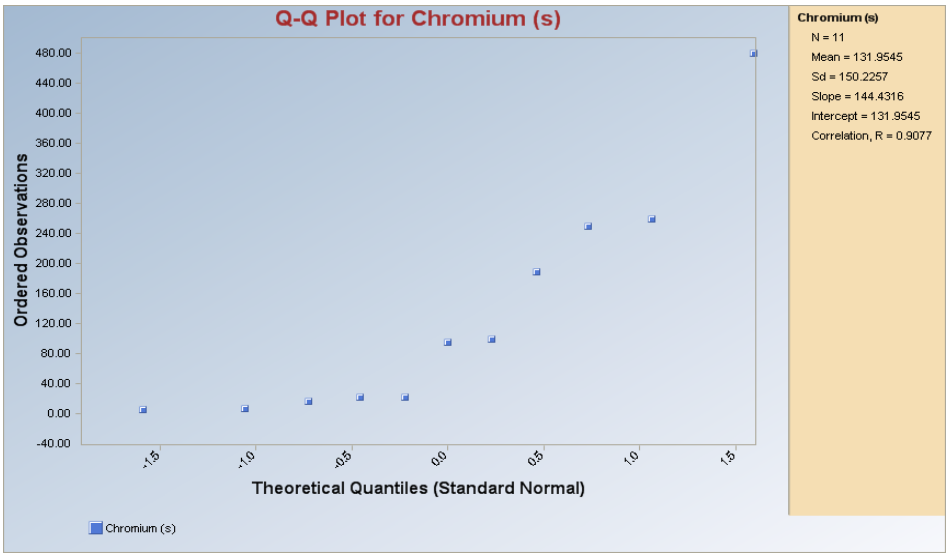

Q-Q Plot with NDs for Chlorobenzene (q central)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Chlorobenzene (q central)
Chlorobenzene (q central)
Total Number of Data = 45
Number of Non-Detects = 25
Number of Detects = 20
Mean = 7.1199
Sd = 36.2401
Slope = 15.6141
Intercept = 7.1199
Correlation, R = 0.4222

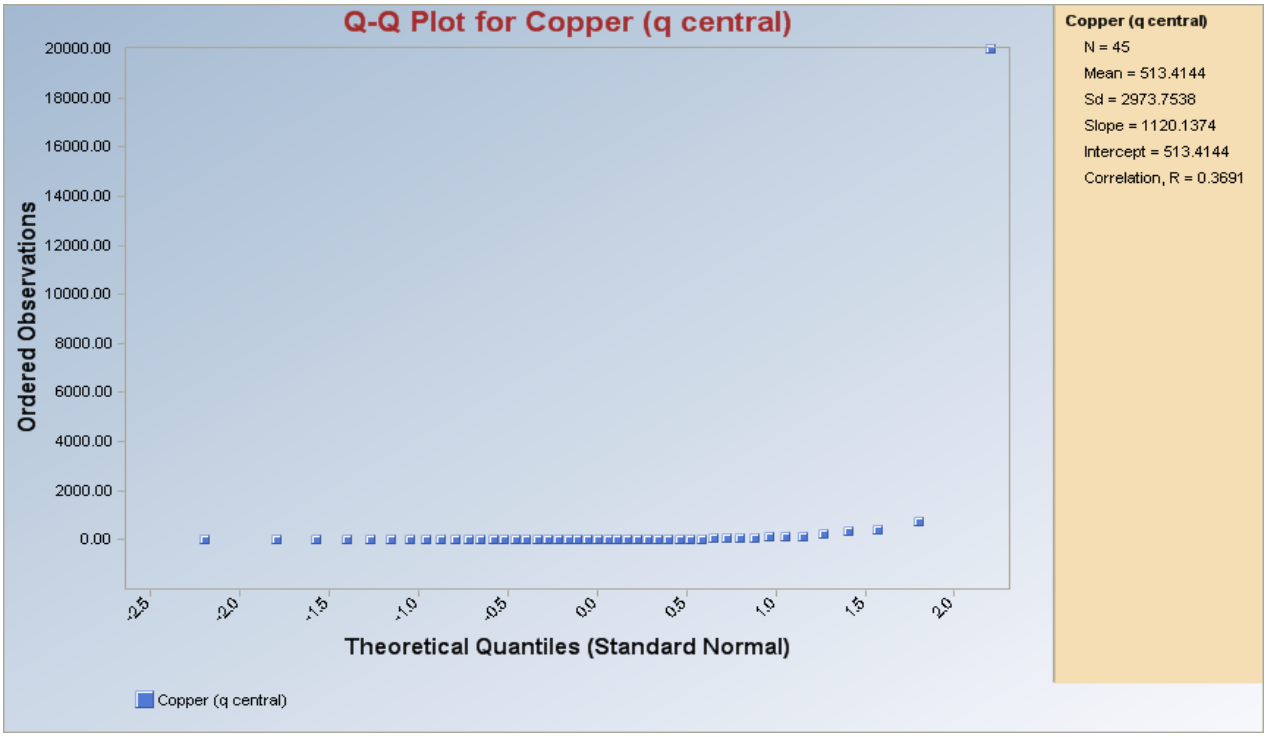

Q-Q Plot with NDs for Chlorobenzene (r)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Chlorobenzene (r)
Chlorobenzene (r)
Total Number of Data = 12
Number of Non-Detects = 1
Number of Detects = 11
Mean = 233.1779
Sd = 685.6998
Slope = 434.4643
Intercept = 233.1779
Correlation, R = 0.6003

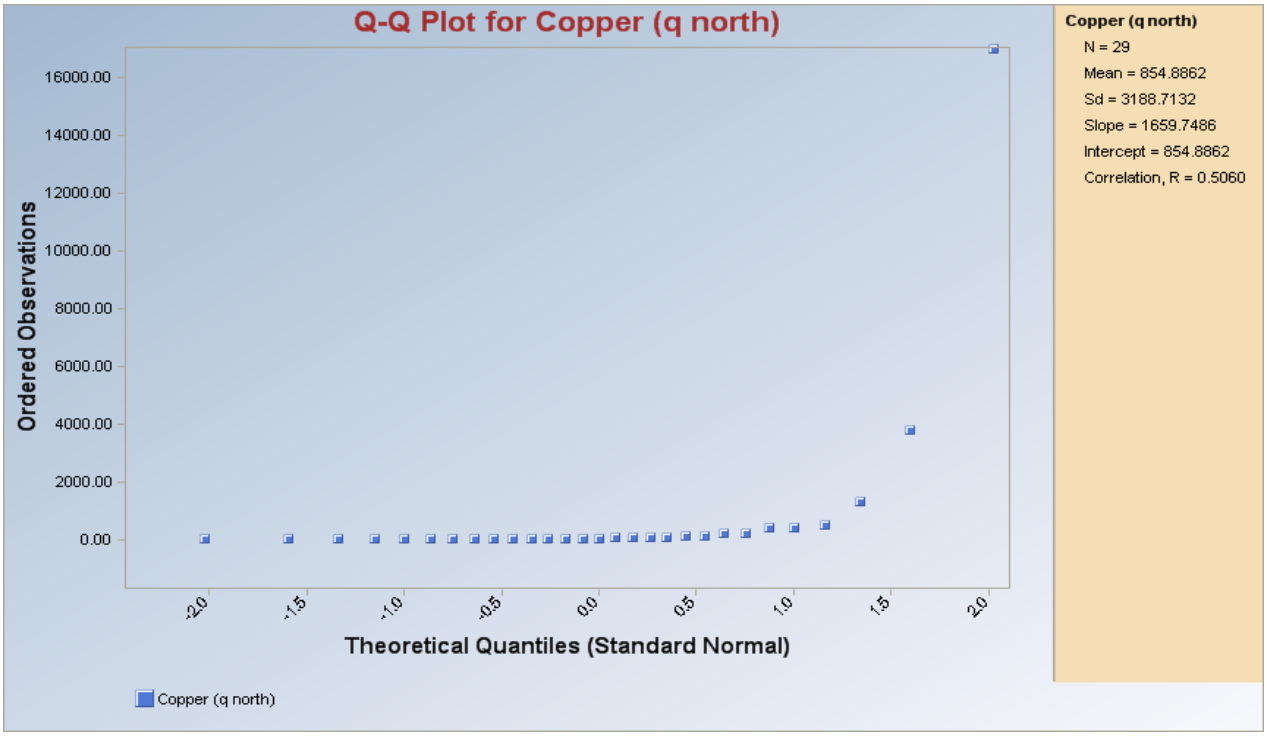

Q-Q Plot with NDs for Chloroform (r)
Ordered Observations
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Chloroform (r)
Chloroform (r)
Total Number of Data = 12
Number of Non-Detects = 7
Number of Detects = 5
Mean = 2.9364
Sd = 4.1082
Slope = 3.7754
Intercept = 2.9364
Correlation, R = 0.8706

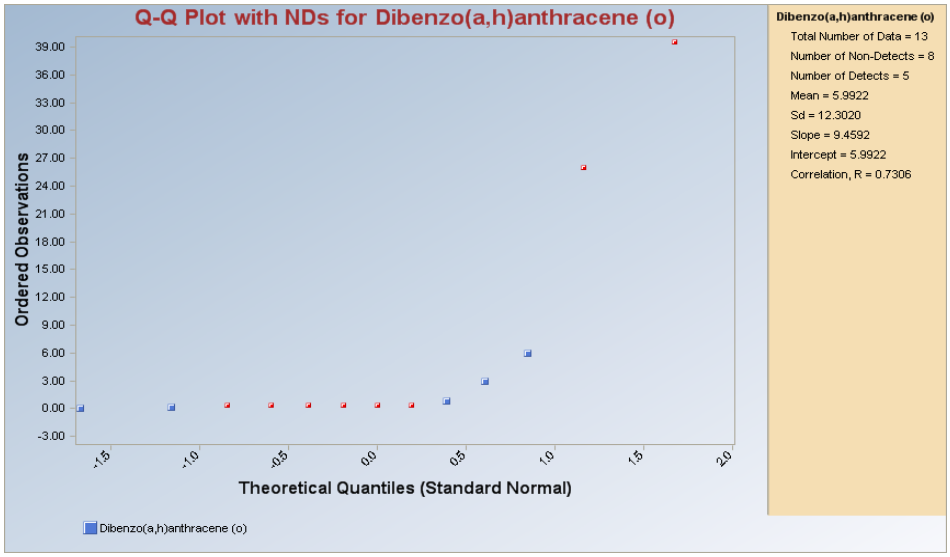

Q-Q Plot for Chromium (q central)
Ordered Observations
8000.00
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Chromium (q central)
Chromium (q central)
N = 45
Mean = 198.9889
Sd = 1189.4489
Slope = 429.0116
Intercept = 198.9889
Correlation, R = 0.3534

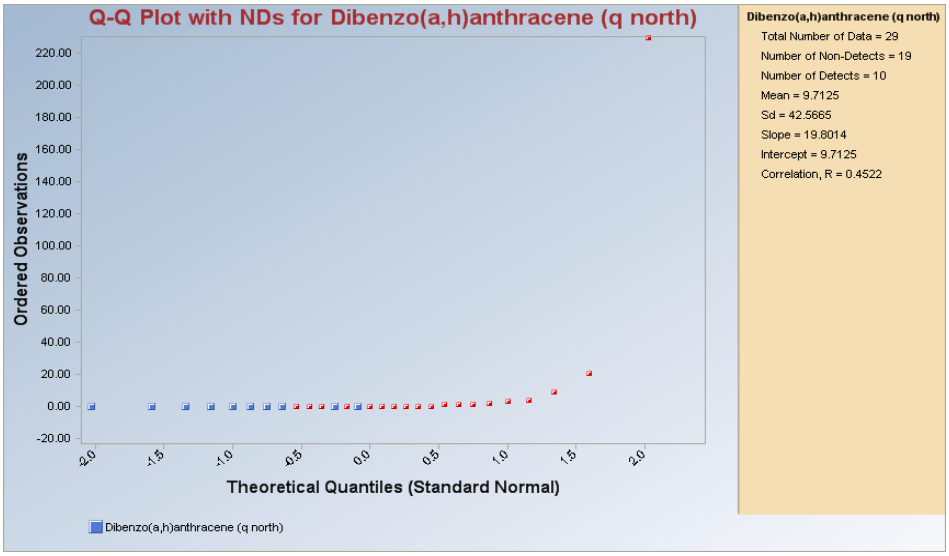

Q-Q Plot for Chromium (q south)
Ordered Observations
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Chromium (q south)
Chromium (q south)
N = 45
Mean = 80.5467
Sd = 127.8430
Slope = 96.5128
Intercept = 80.5467
Correlation, R = 0.7398

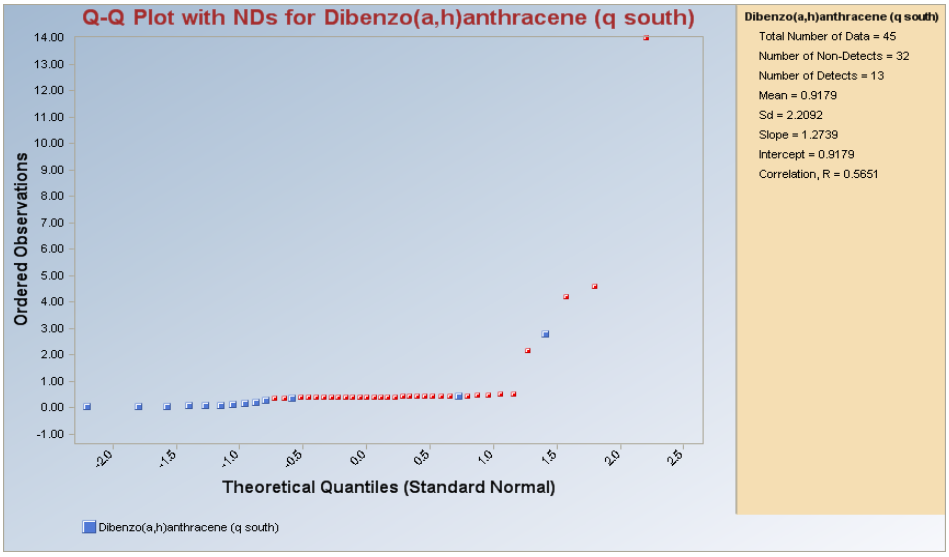

Q-Q Plot for Chromium (s)
Ordered Observations
480.00
440.00
400.00
360.00
320.00
280.00
240.00
200.00
160.00
120.00
80.00
40.00
0.00
-40.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Chromium (s)
Chromium (s)
N = 11
Mean = 131.9545
Sd = 150.2257
Slope = 144.4316
Intercept = 131.9545
Correlation, R = 0.9077

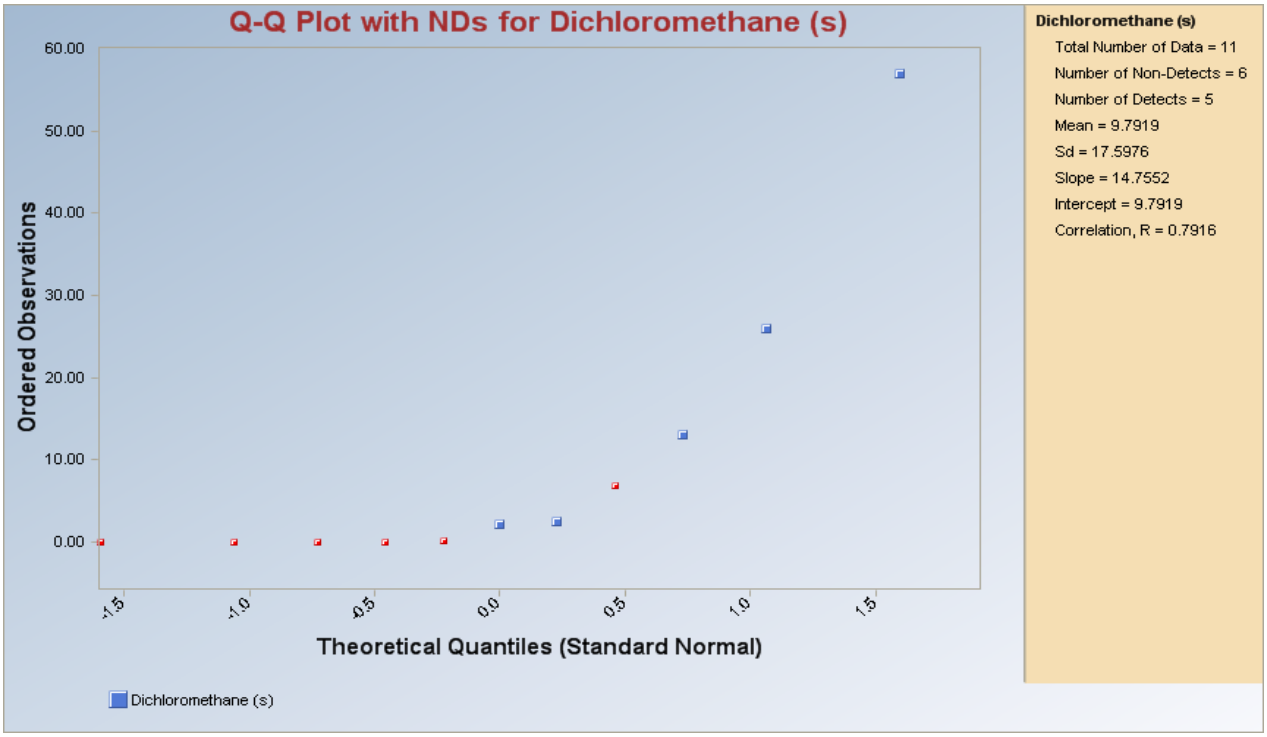

Q-Q Plot for Copper (q central)
Ordered Observations
20000.00
18000.00
16000.00
14000.00
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Copper (q central)
Copper (q central)
N = 45
Mean = 513.4144
Sd = 2973.7538
Slope = 1120.1374
Intercept = 513.4144
Correlation, R = 0.3691

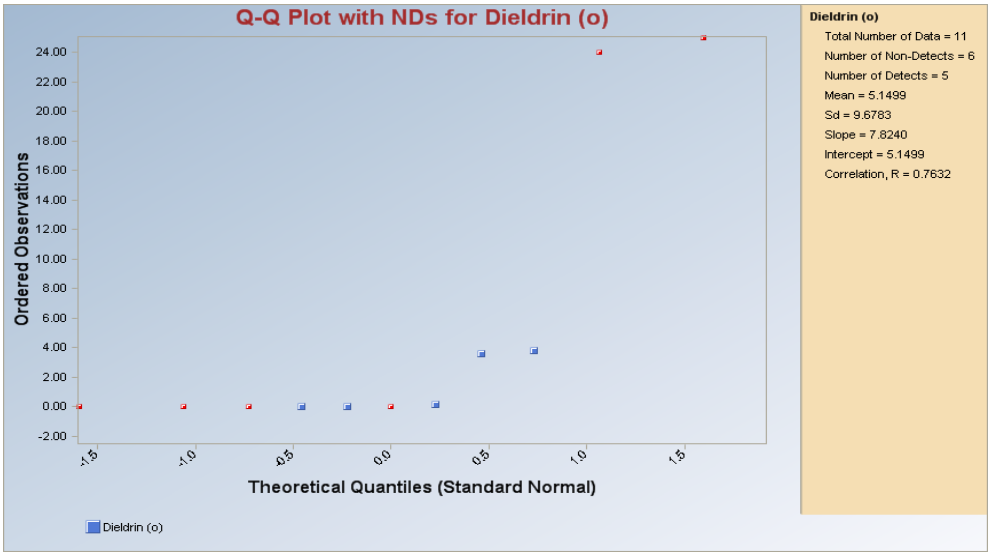

Q-Q Plot for Copper (q north)
Ordered Observations
16000.00
14000.00
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Copper (q north)
Copper (q north)
N = 29
Mean = 854.8862
Sd = 3188.7132
Slope = 1659.7486
Intercept = 854.8862
Correlation, R = 0.5060

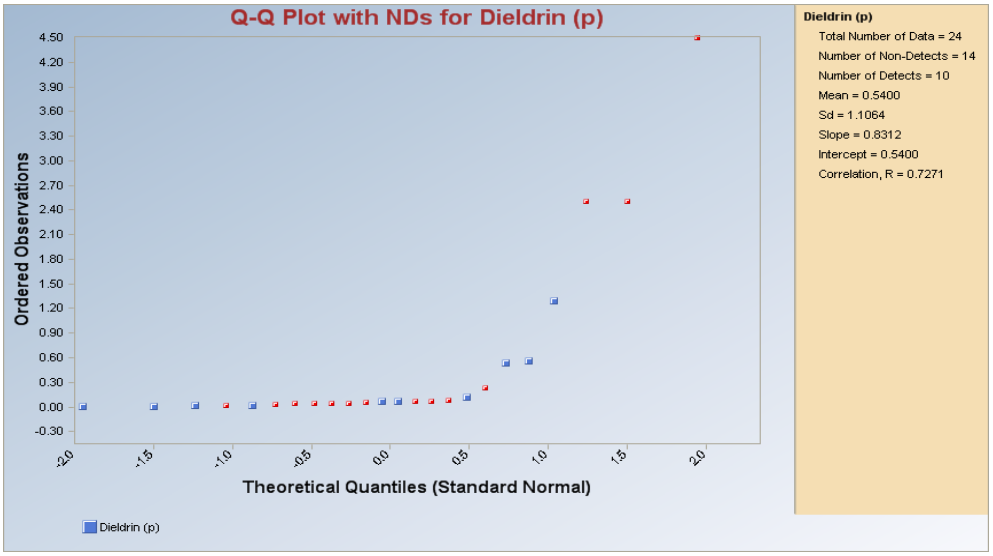

Q-Q Plot with NDs for Dibenzo(a,h)anthracene (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Dibenzo(a,h)anthracene (o)
Dibenzo(a,h)anthracene (o)
Total Number of Data = 13
Number of Non-Detects = 8
Number of Detects = 5
Mean = 5.9922
Sd = 12.3020
Slope = 9.4592
Intercept = 5.9922
Correlation, R = 0.7306

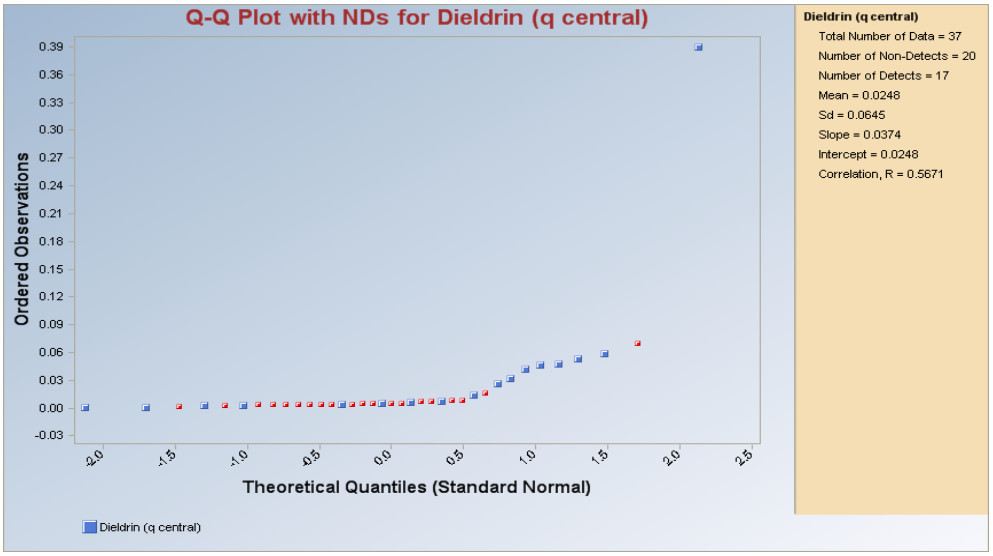

Q-Q Plot with NDs for Dibenzo(a,h)anthracene (q north)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Dibenzo(a,h)anthracene (q north)
Dibenzo(a,h)anthracene (q north)
Total Number of Data = 29
Number of Non-Detects = 19
Number of Detects = 10
Mean = 9.7125
Sd = 42.5665
Slope = 19.8014
Intercept = 9.7125
Correlation, R = 0.4522


Q-Q Plot with NDs for Dibenzo(a,h)anthracene (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Dibenzo(a,h)anthracene (q south)
Dibenzo(a,h)anthracene (q south)
Total Number of Data = 45
Number of Non-Detects = 32
Number of Detects = 13
Mean = 0.9179
Sd = 2.2092
Slope = 1.2739
Intercept = 0.9179
Correlation, R = 0.5651

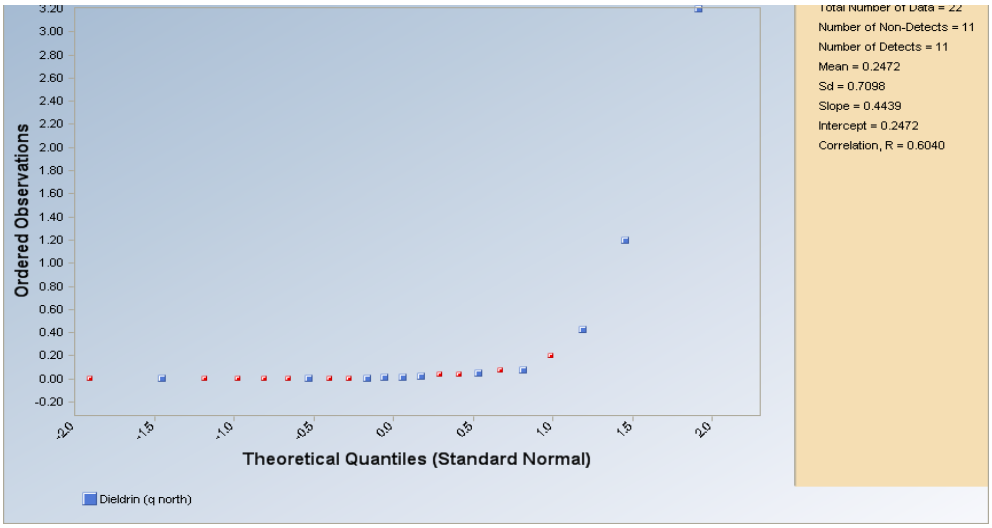

Q-Q Plot with NDs for Dichloromethane (s)
Ordered Observations
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Dichloromethane (s)
Dichloromethane (s)
Total Number of Data = 11
Number of Non-Detects = 6
Number of Detects = 5
Mean = 9.7919
Sd = 17.5976
Slope = 14.7552
Intercept = 9.7919
Correlation, R = 0.7916

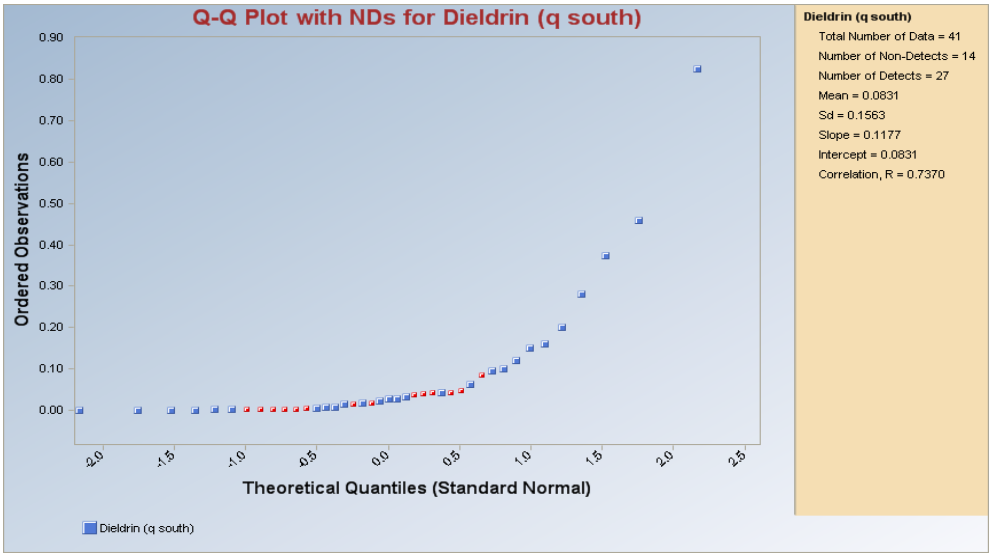

Q-Q Plot with NDs for Dieldrin (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Dieldrin (o)
Dieldrin (o)
Total Number of Data = 11
Number of Non-Detects = 6
Number of Detects = 5
Mean = 5.1499
Sd = 9.6783
Slope = 7.8240
Intercept = 5.1499
Correlation, R = 0.7632

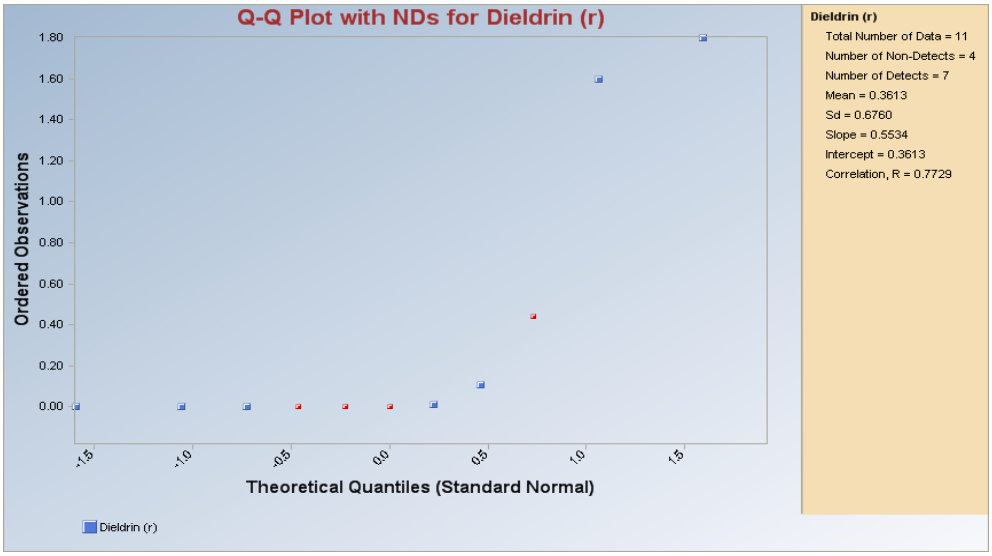

Q-Q Plot with NDs for Dieldrin (p)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Dieldrin (p)
Dieldrin (p)
Total Number of Data = 24
Number of Non-Detects = 14
Number of Detects = 10
Mean = 0.5400
Sd = 1.1064
Slope = 0.8312
Intercept = 0.5400
Correlation, R = 0.7271

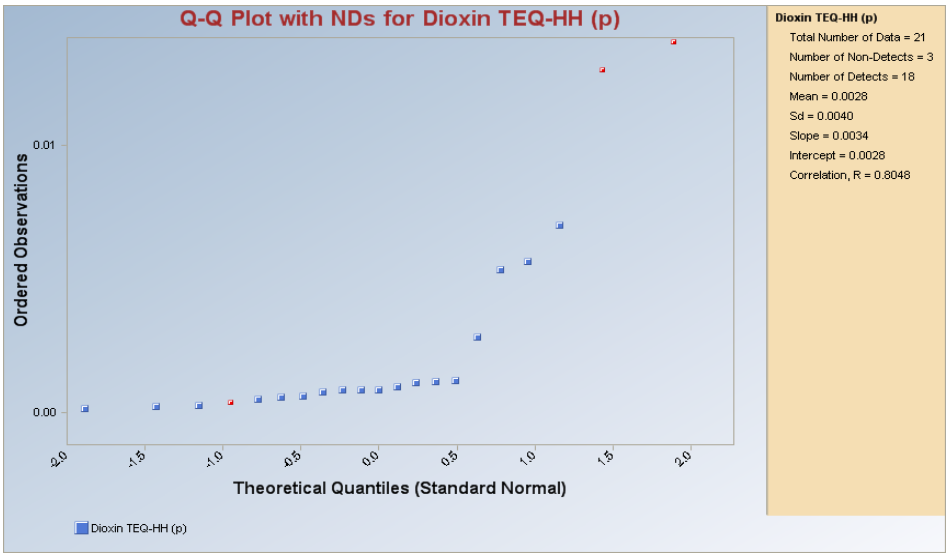

Q-Q Plot with NDs for Dieldrin (q central)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Dieldrin (q central)
Dieldrin (q central)
Total Number of Data = 37
Number of Non-Detects = 20
Number of Detects = 17
Mean = 0.0248
Sd = 0.0645
Slope = 0.0374
Intercept = 0.0248
Correlation, R = 0.5671

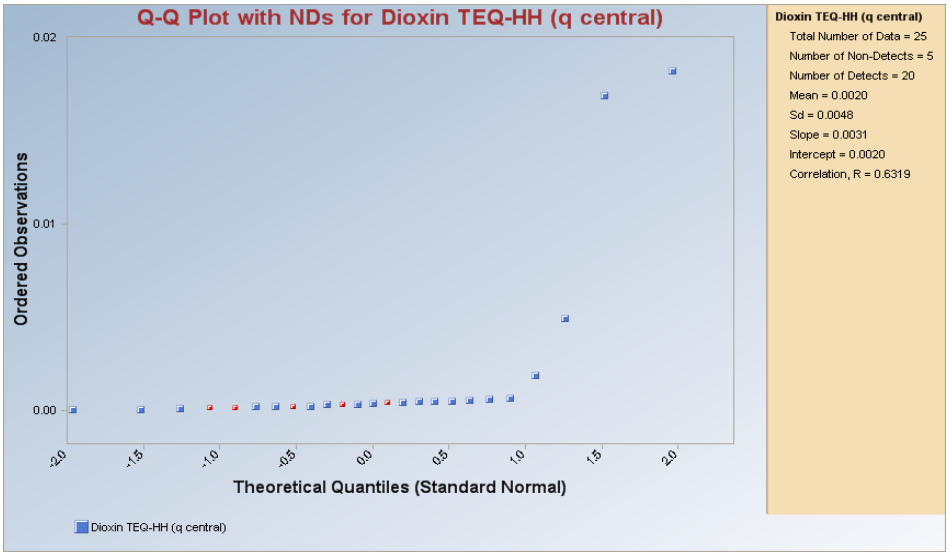
Q-Q Plot with NDs for Dieldrin (q north)
Dieldrin (q north)
Total Number of Data = 22

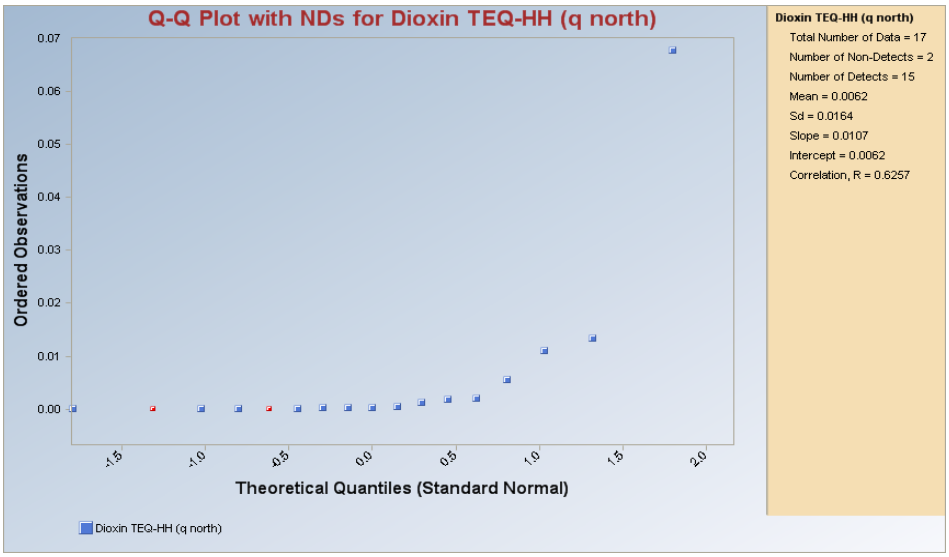

Total Number of Data = 22
Number of Non-Detects = 11
Number of Detects = 11
Mean = 0.2472
Sd = 0.7098
Slope = 0.4439
Intercept = 0.2472
Correlation, R = 0.6040
Ordered Observations
Theoretical Quantiles (Standard Normal)
Dieldrin (q north)

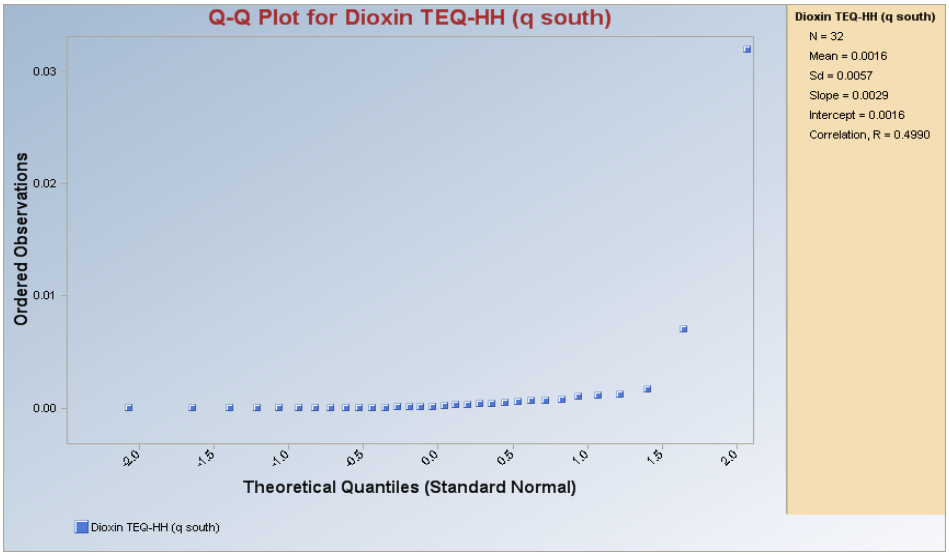

Q-Q Plot with NDs for Dieldrin (q south)
Dieldrin (q south)
Total Number of Data = 41
Number of Non-Detects = 14
Number of Detects = 27
Mean = 0.0831
Sd = 0.1563
Slope = 0.1177
Intercept = 0.0831
Correlation, R = 0.7370
Ordered Observations
Theoretical Quantiles (Standard Normal)
Dieldrin (q south)

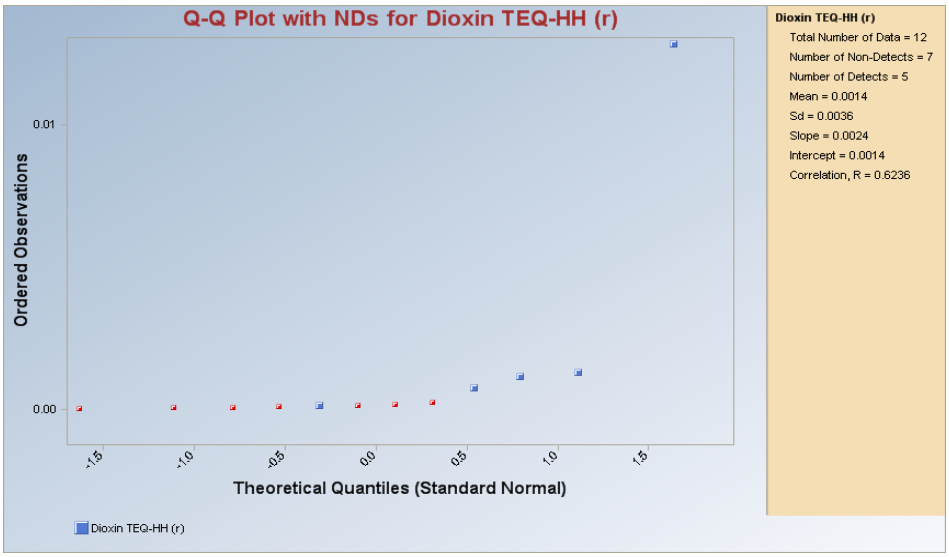

Q-Q Plot with NDs for Dieldrin (r)
Dieldrin (r)
Total Number of Data = 11
Number of Non-Detects = 4
Number of Detects = 7
Mean = 0.3613
Sd = 0.6760
Slope = 0.5534
Intercept = 0.3613
Correlation, R = 0.7729
Ordered Observations
Theoretical Quantiles (Standard Normal)
Dieldrin (r)

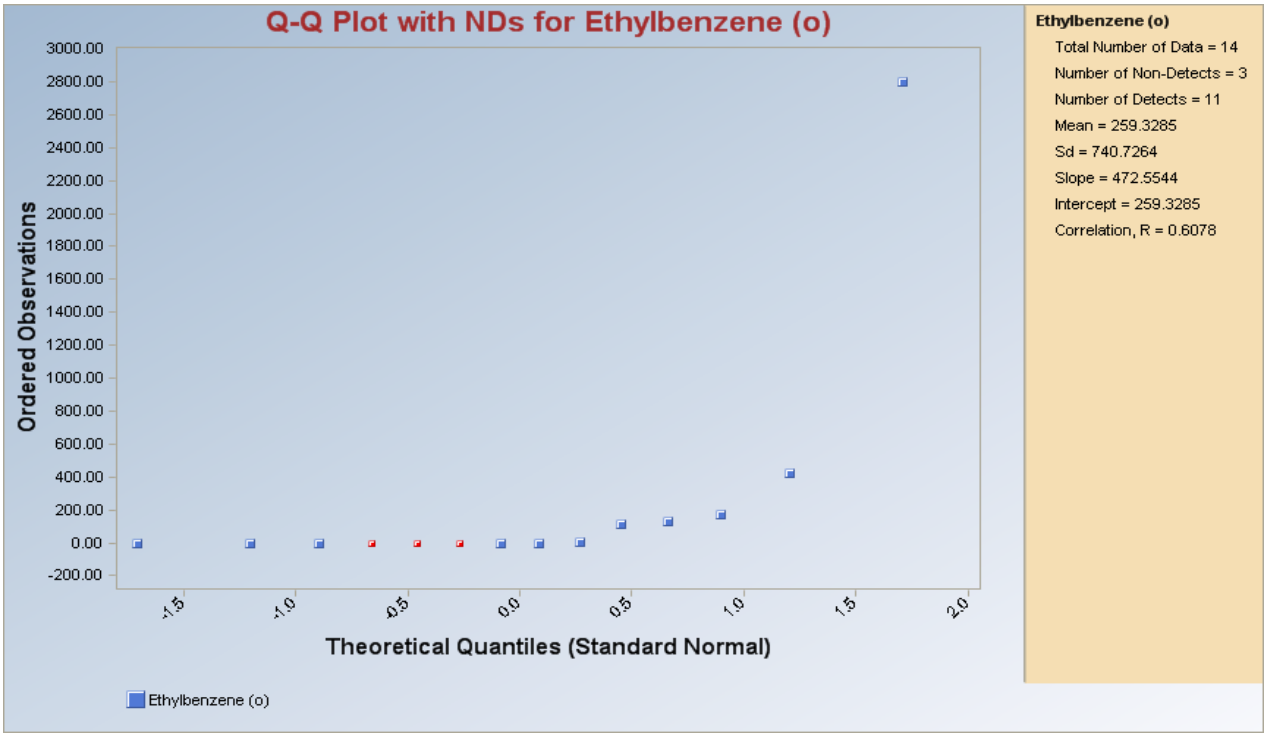

Q-Q Plot with NDs for Dioxin TEQ-HH (p)
Ordered Observations
0.01
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Dioxin TEQ-HH (p)
Dioxin TEQ-HH (p)
Total Number of Data = 21
Number of Non-Detects = 3
Number of Detects = 18
Mean = 0.0028
Sd = 0.0040
Slope = 0.0034
Intercept = 0.0028
Correlation, R = 0.8048

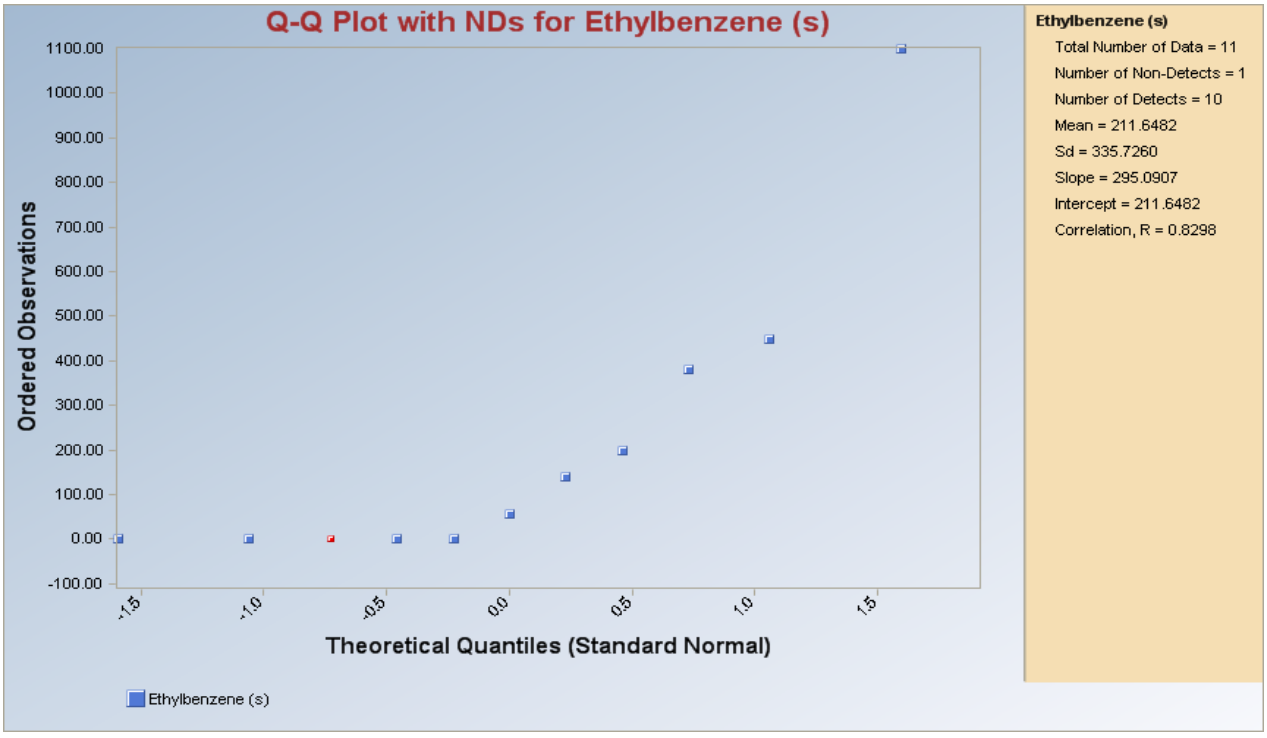

Q-Q Plot with NDs for Dioxin TEQ-HH (q central)
Ordered Observations
0.02
0.01
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Dioxin TEQ-HH (q central)
Dioxin TEQ-HH (q central)
Total Number of Data = 25
Number of Non-Detects = 5
Number of Detects = 20
Mean = 0.0020
Sd = 0.0048
Slope = 0.0031
Intercept = 0.0020
Correlation, R = 0.6319

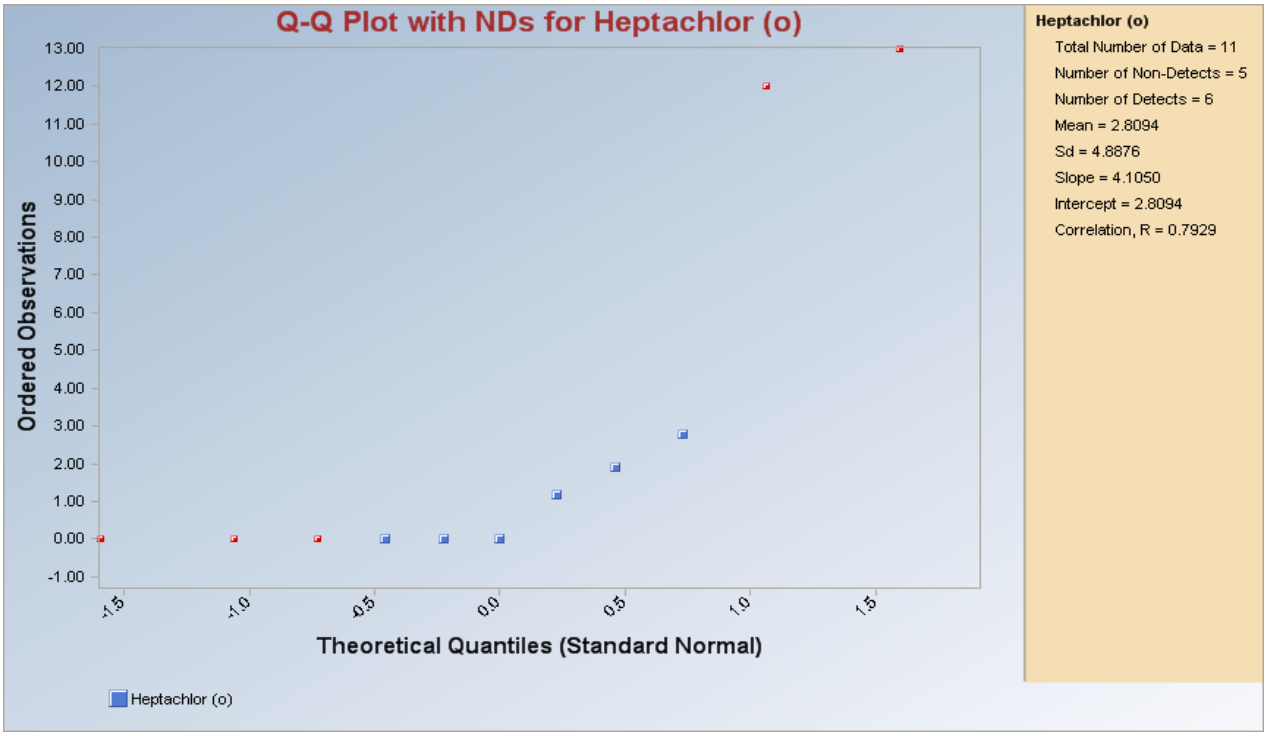

Q-Q Plot with NDs for Dioxin TEQ-HH (q north)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Dioxin TEQ-HH (q north)
Dioxin TEQ-HH (q north)
Total Number of Data = 17
Number of Non-Detects = 2
Number of Detects = 15
Mean = 0.0062
Sd = 0.0164
Slope = 0.0107
Intercept = 0.0062
Correlation, R = 0.6257

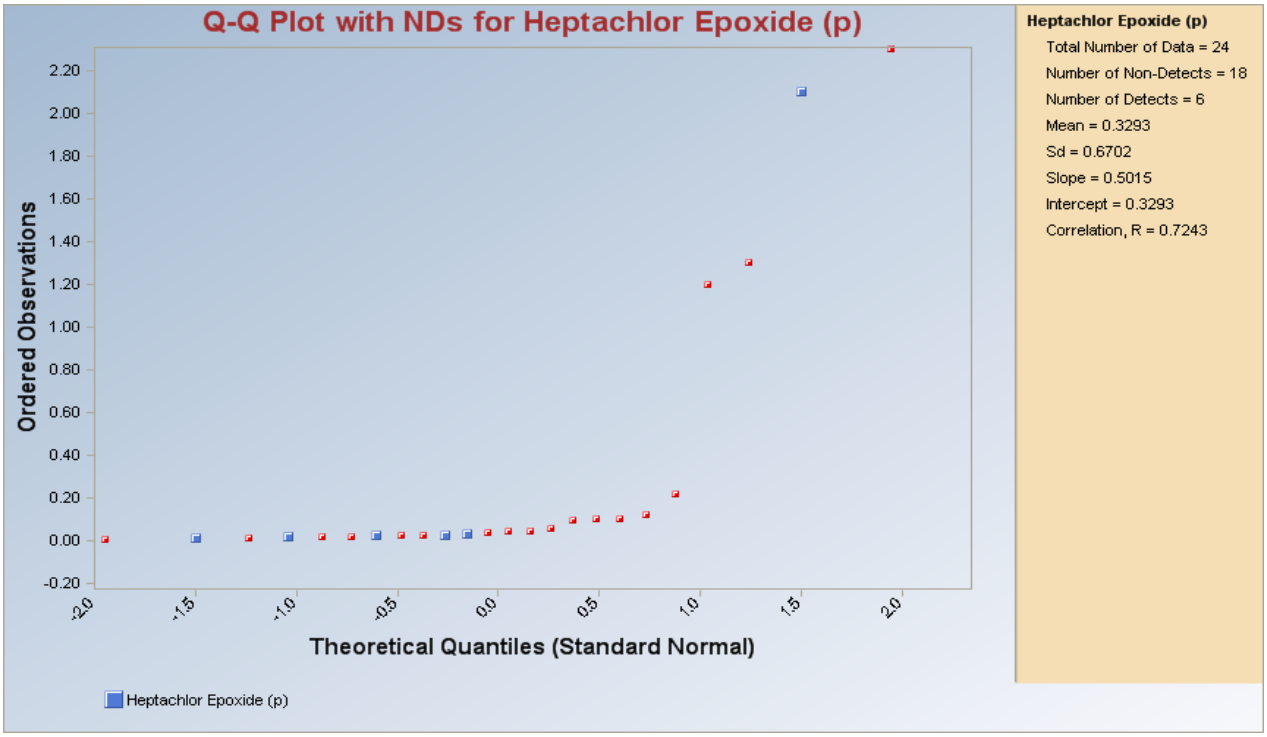

Q-Q Plot for Dioxin TEQ-HH (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Dioxin TEQ-HH (q south)
Dioxin TEQ-HH (q south)
N = 32
Mean = 0.0016
Sd = 0.0057
Slope = 0.0029
Intercept = 0.0016
Correlation, R = 0.4990

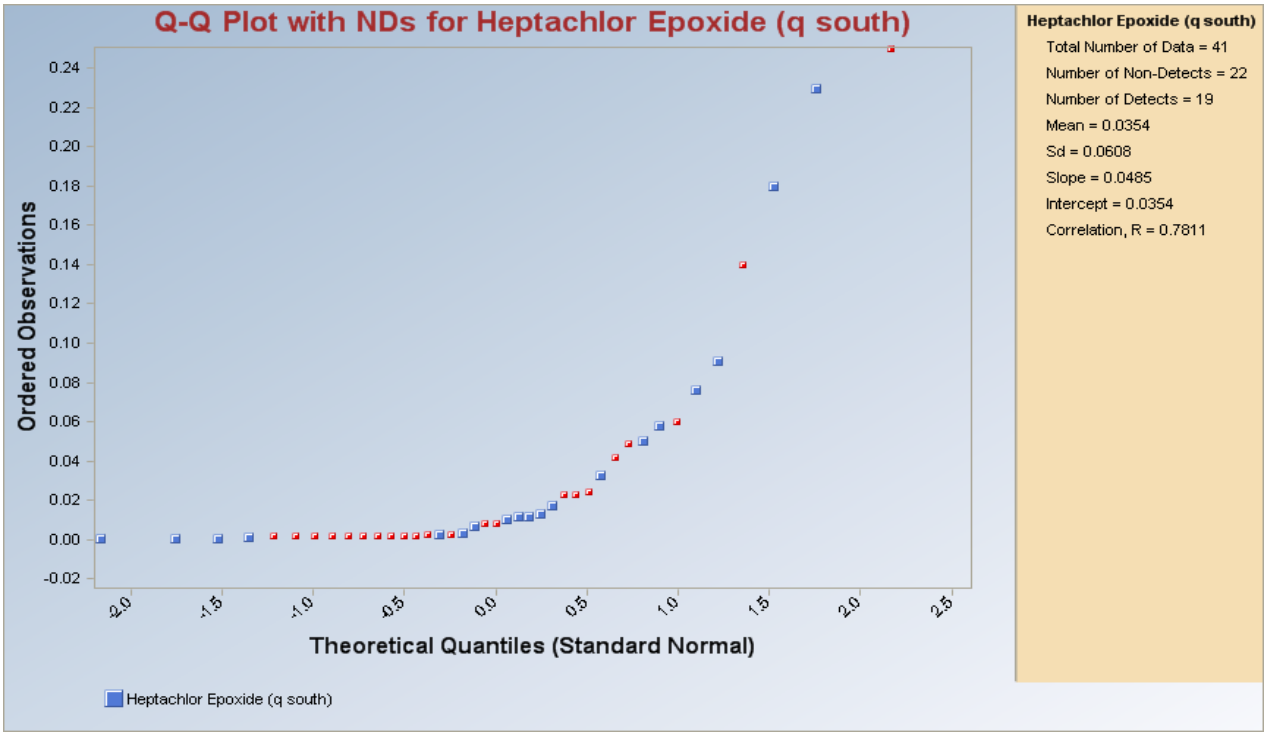

Q-Q Plot with NDs for Dioxin TEQ-HH (r)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Dioxin TEQ-HH (r)
Dioxin TEQ-HH (r)
Total Number of Data = 12
Number of Non-Detects = 7
Number of Detects = 5
Mean = 0.0014
Sd = 0.0036
Slope = 0.0024
Intercept = 0.0014
Correlation, R = 0.6236

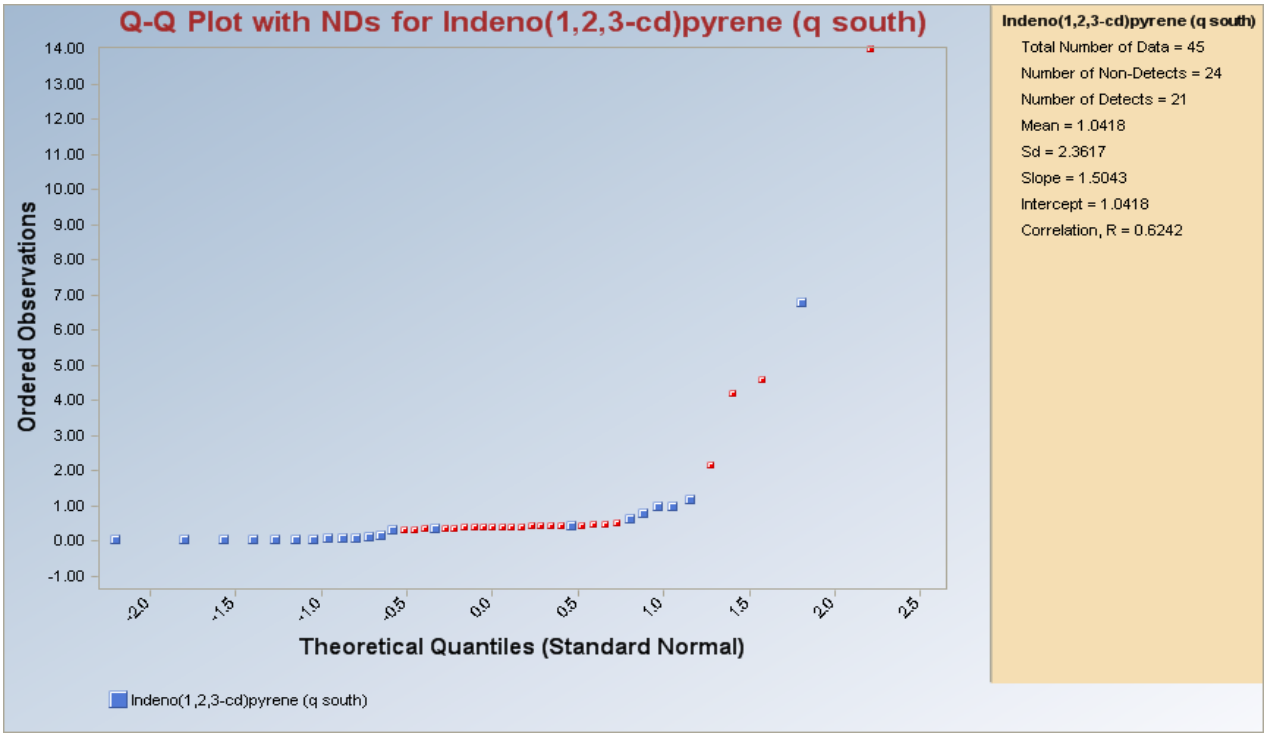

Q-Q Plot with NDs for Ethylbenzene (o)
Ordered Observations
3000.00
2800.00
2600.00
2400.00
2200.00
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Ethylbenzene (o)
Ethylbenzene (o)
Total Number of Data = 14
Number of Non-Detects = 3
Number of Detects = 11
Mean = 259.3285
Sd = 740.7264
Slope = 472.5544
Intercept = 259.3285
Correlation, R = 0.6078

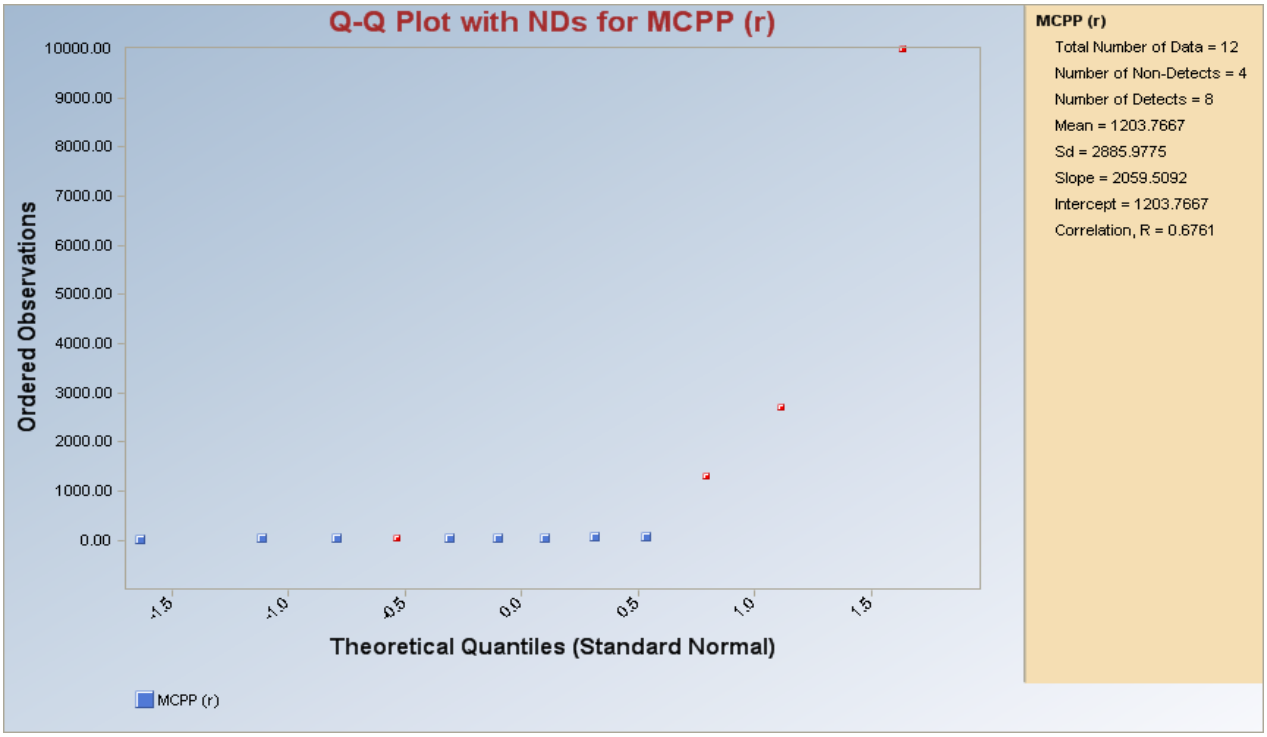

Q-Q Plot with NDs for Ethylbenzene (s)
Ordered Observations
1100.00
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-100.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Ethylbenzene (s)
Ethylbenzene (s)
Total Number of Data = 11
Number of Non-Detects = 1
Number of Detects = 10
Mean = 211.6482
Sd = 335.7260
Slope = 295.0907
Intercept = 211.6482
Correlation, R = 0.8298

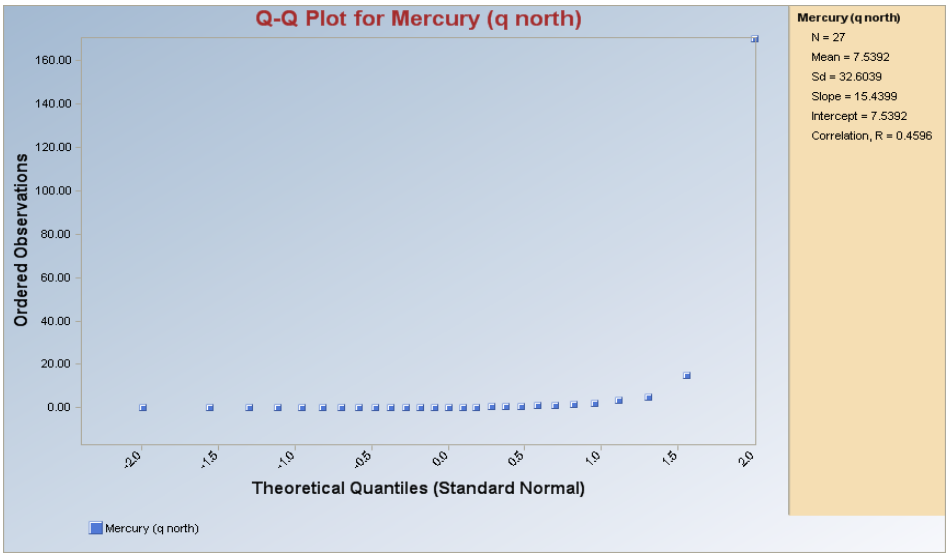

Q-Q Plot with NDs for Heptachlor (o)
Ordered Observations
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Heptachlor (o)
Heptachlor (o)
Total Number of Data = 11
Number of Non-Detects = 5
Number of Detects = 6
Mean = 2.8094
Sd = 4.8876
Slope = 4.1050
Intercept = 2.8094
Correlation, R = 0.7929

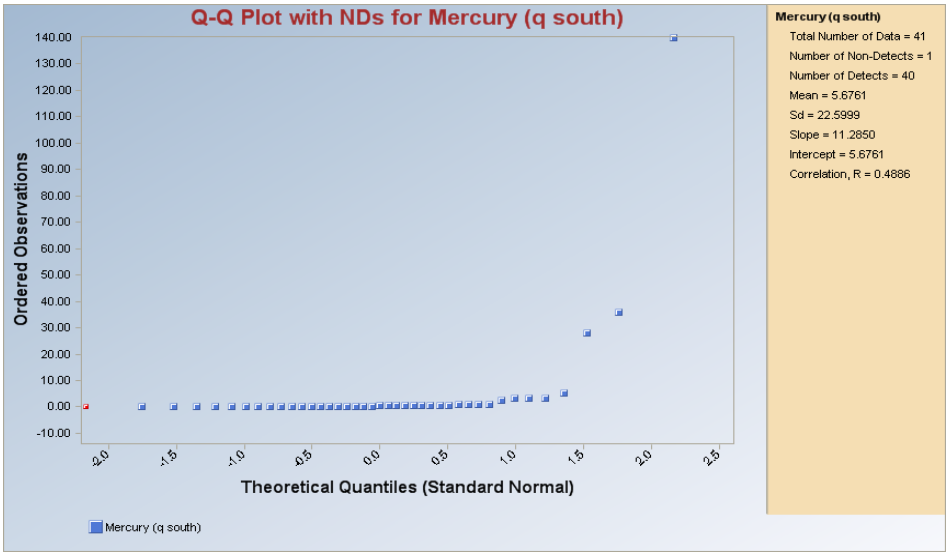

Q-Q Plot with NDs for Heptachlor Epoxide (p)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Heptachlor Epoxide (p)
Heptachlor Epoxide (p)
Total Number of Data = 24
Number of Non-Detects = 18
Number of Detects = 6
Mean = 0.3293
Sd = 0.6702
Slope = 0.5015
Intercept = 0.3293
Correlation, R = 0.7243

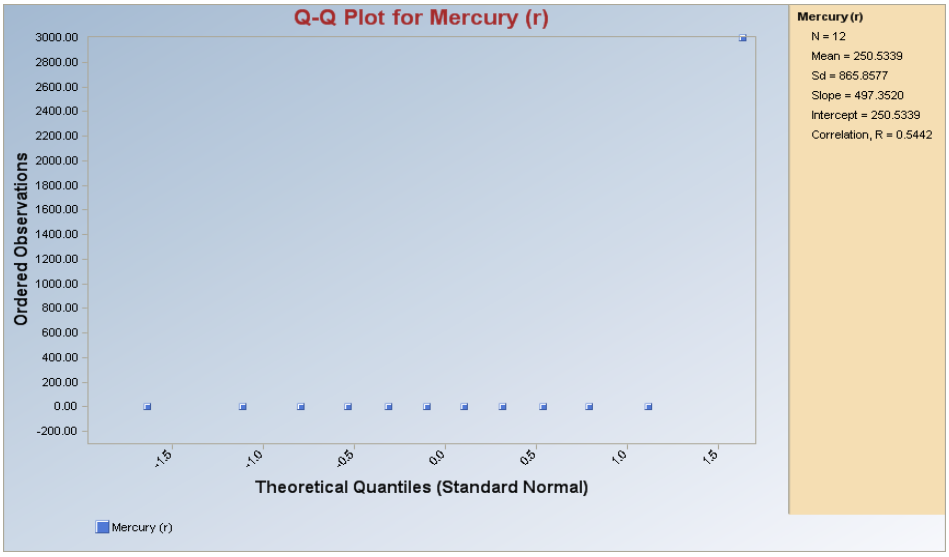

Q-Q Plot with NDs for Heptachlor Epoxide (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Heptachlor Epoxide (q south)
Heptachlor Epoxide (q south)
Total Number of Data = 41
Number of Non-Detects = 22
Number of Detects = 19
Mean = 0.0354
Sd = 0.0608
Slope = 0.0485
Intercept = 0.0354
Correlation, R = 0.7811

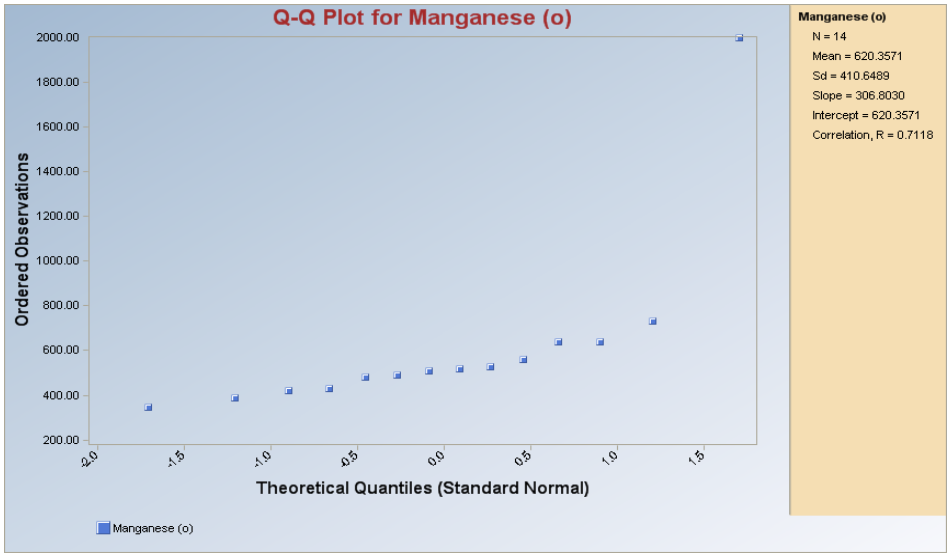

Q-Q Plot with NDs for Indeno(1,2,3-cd)pyrene (q south)
Ordered Observations
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
Theoretical Quantiles (Standard Normal)
Indeno(1,2,3-cd)pyrene (q south)
Indeno(1,2,3-cd)pyrene (q south)
Total Number of Data = 45
Number of Non-Detects = 24
Number of Detects = 21
Mean = 1.0418
Sd = 2.3617
Slope = 1.5043
Intercept = 1.0418
Correlation, R = 0.6242

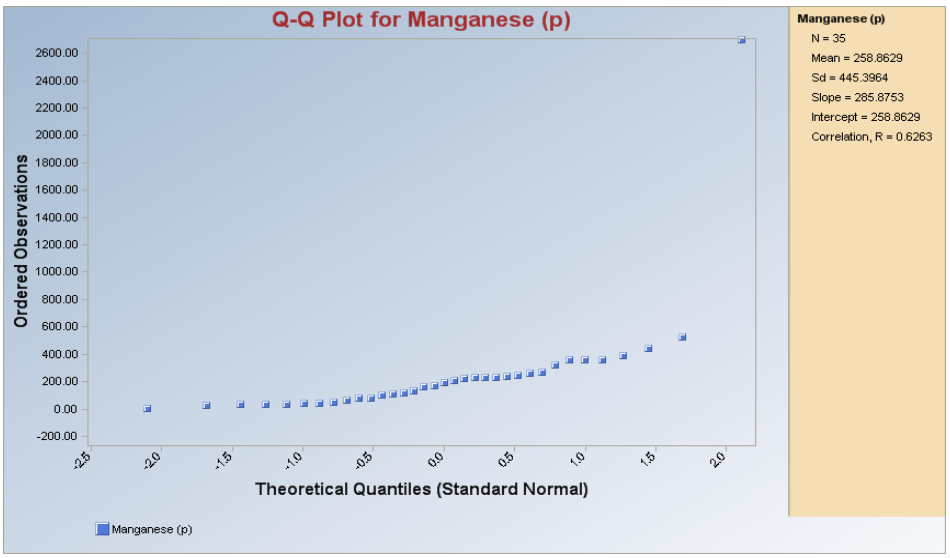

Q-Q Plot with NDs for MCPP (r)
Ordered Observations
10000.00
9000.00
8000.00
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
MCPP (r)
MCPP (r)
Total Number of Data = 12
Number of Non-Detects = 4
Number of Detects = 8
Mean = 1203.7667
Sd = 2885.9775
Slope = 2059.5092
Intercept = 1203.7667
Correlation, R = 0.6761

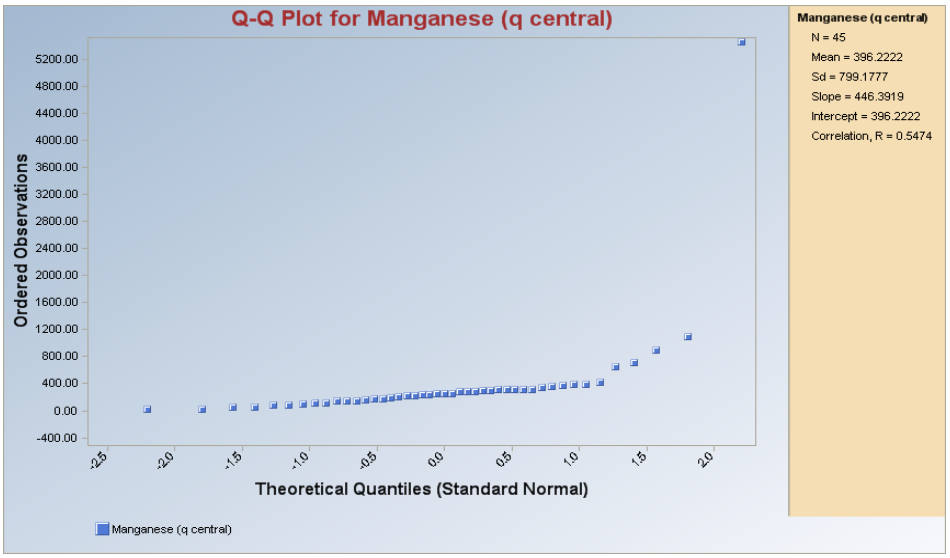

Q-Q Plot for Mercury (q north)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Mercury (q north)
Mercury (q north)
N = 27
Mean = 7.5392
Sd = 32.6039
Slope = 15.4399
Intercept = 7.5392
Correlation, R = 0.4596

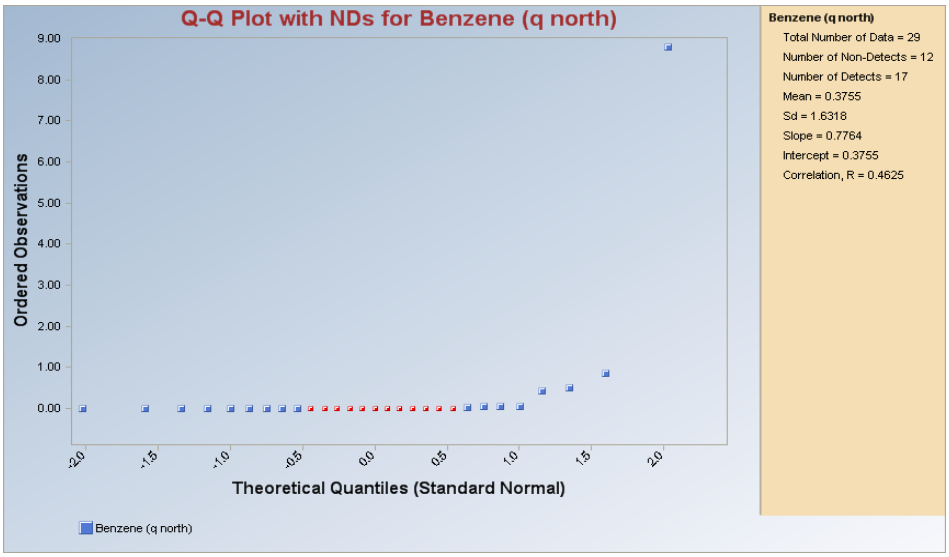

Q-Q Plot with NDs for Mercury (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Mercury (q south)
Mercury (q south)
Total Number of Data = 41
Number of Non-Detects = 1
Number of Detects = 40
Mean = 5.6761
Sd = 22.5999
Slope = 11.2850
Intercept = 5.6761
Correlation, R = 0.4886

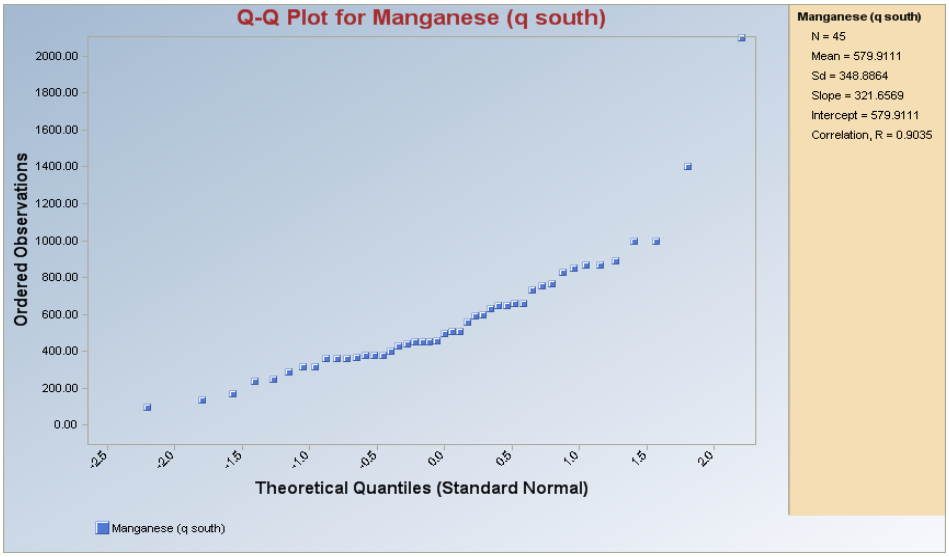

Q-Q Plot for Mercury (r)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Mercury (r)
Mercury (r)
N = 12
Mean = 250.5339
Sd = 865.8577
Slope = 497.3520
Intercept = 250.5339
Correlation, R = 0.5442

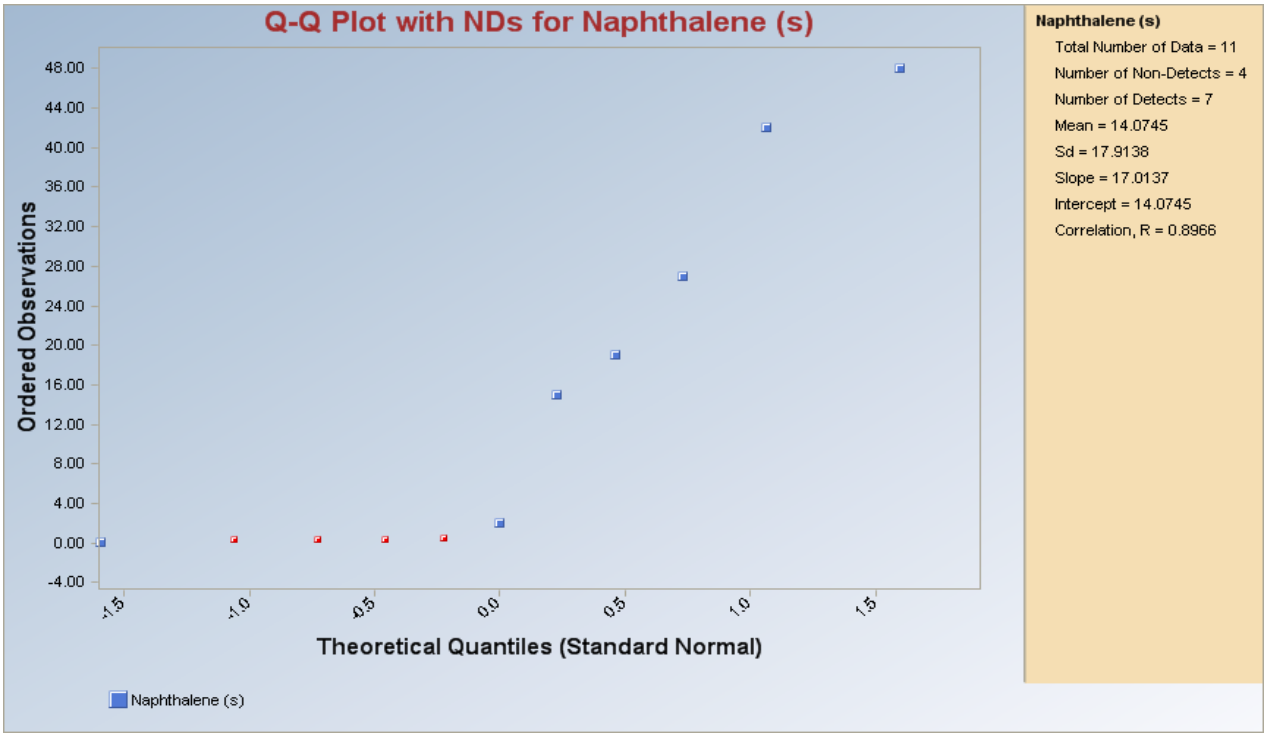

Q-Q Plot for Manganese (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Manganese (o)
Manganese (o)
N = 14
Mean = 620.3571
Sd = 410.6489
Slope = 306.8030
Intercept = 620.3571
Correlation, R = 0.7118

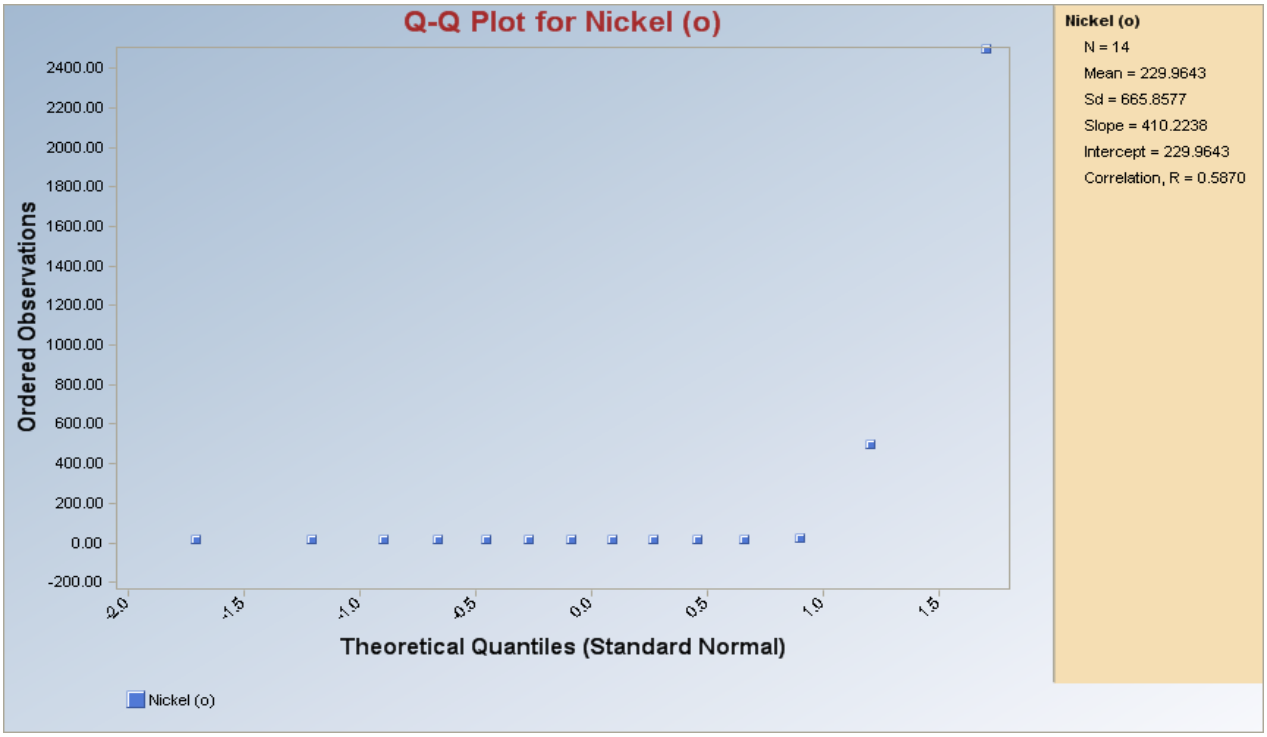

Q-Q Plot for Manganese (p)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Manganese (p)
Manganese (p)
N = 35
Mean = 258.8629
Sd = 445.3964
Slope = 285.8753
Intercept = 258.8629
Correlation, R = 0.6263

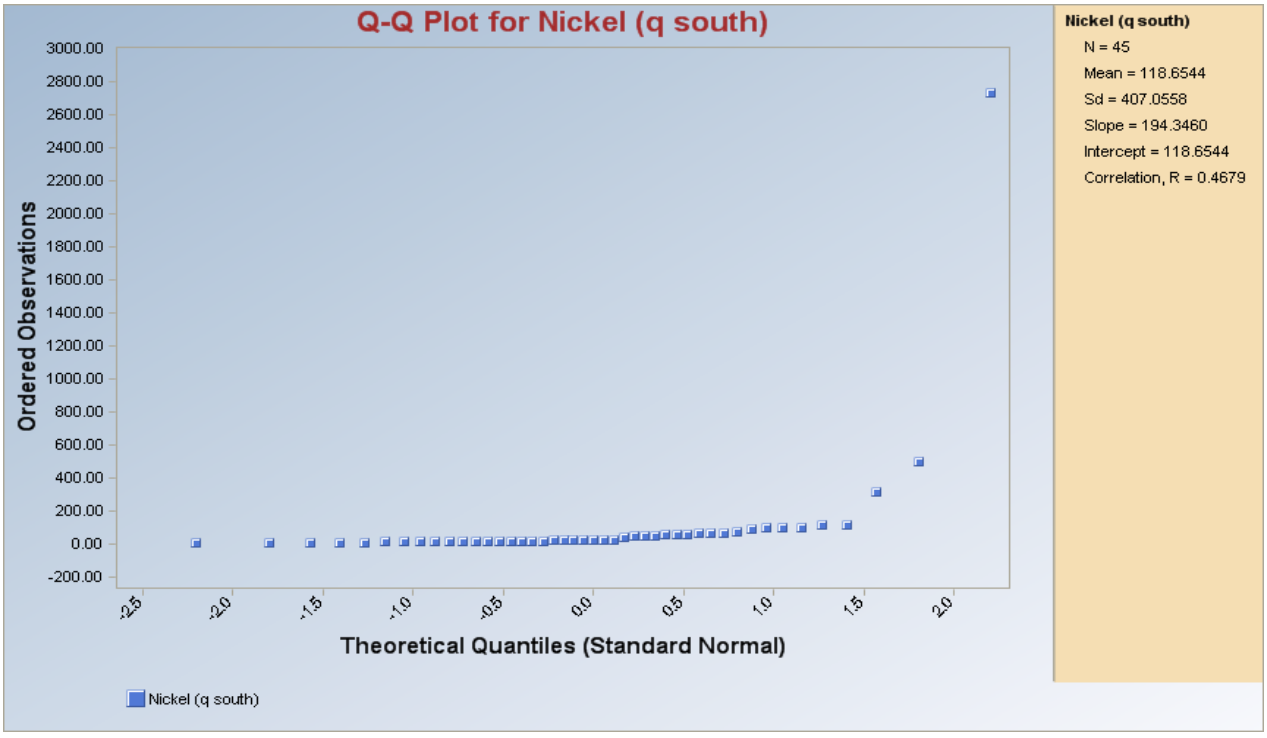

Q-Q Plot for Manganese (q central)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Manganese (q central)
Manganese (q central)
N = 45
Mean = 396.2222
Sd = 799.1777
Slope = 446.3919
Intercept = 396.2222
Correlation, R = 0.5474

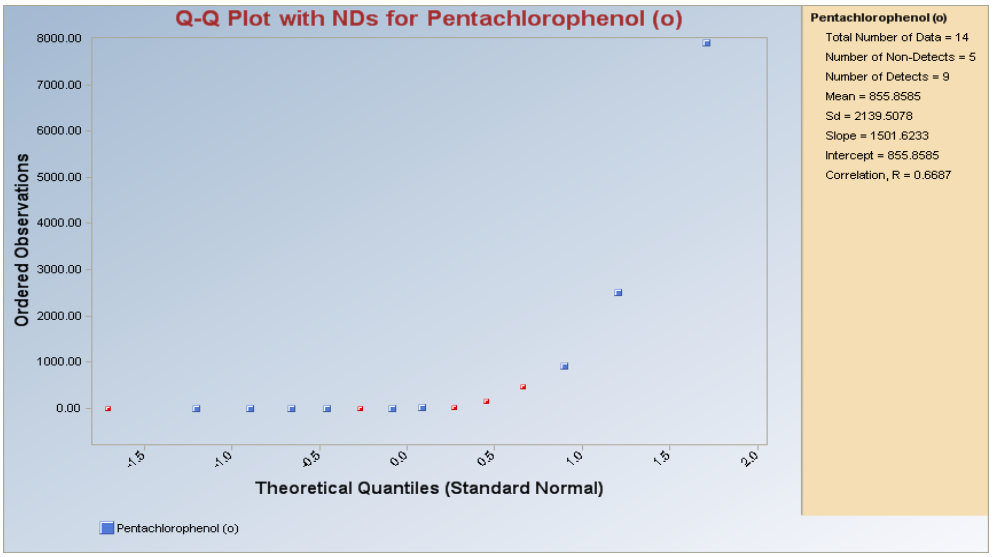

Q-Q Plot with NDs for Benzene (q north)
Ordered Observations
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Benzene (q north)
Benzene (q north)
Total Number of Data = 29
Number of Non-Detects = 12
Number of Detects = 17
Mean = 0.3755
Sd = 1.6318
Slope = 0.7764
Intercept = 0.3755
Correlation, R = 0.4625

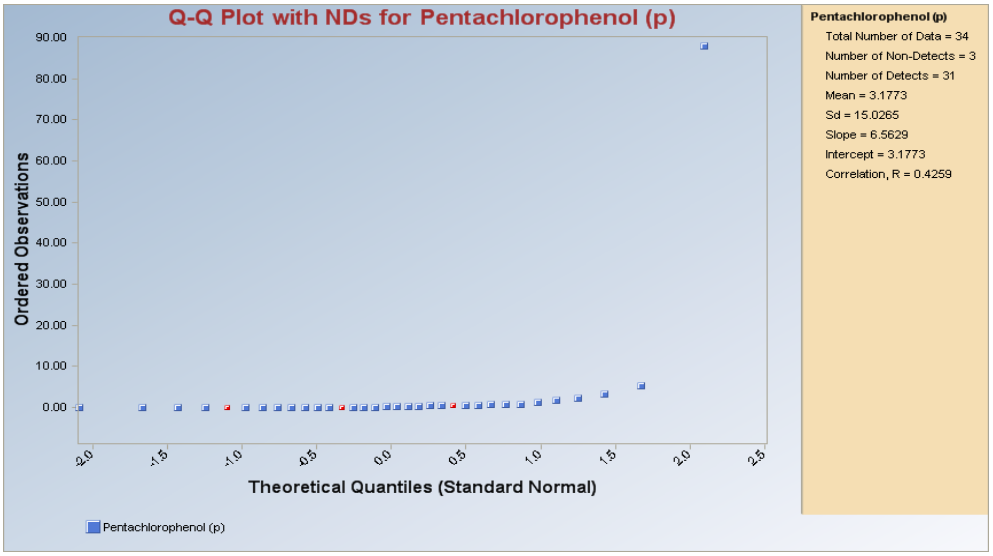

Q-Q Plot for Manganese (q south)
Ordered Observations
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Manganese (q south)
Manganese (q south)
N = 45
Mean = 579.9111
Sd = 348.8864
Slope = 321.6569
Intercept = 579.9111
Correlation, R = 0.9035

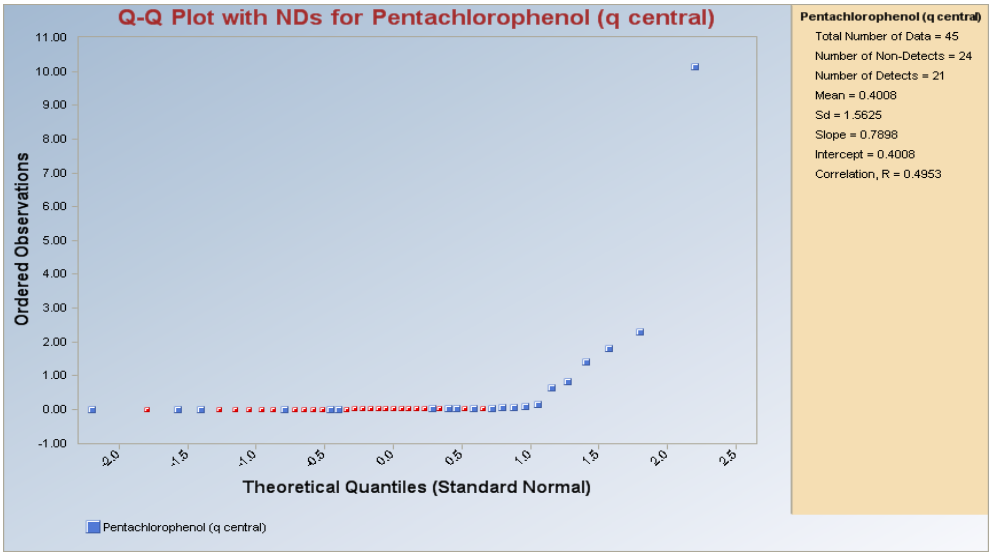

Q-Q Plot with NDs for Naphthalene (s)
Ordered Observations
48.00
44.00
40.00
36.00
32.00
28.00
24.00
20.00
16.00
12.00
8.00
4.00
0.00
-4.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Naphthalene (s)
Naphthalene (s)
Total Number of Data = 11
Number of Non-Detects = 4
Number of Detects = 7
Mean = 14.0745
Sd = 17.9138
Slope = 17.0137
Intercept = 14.0745
Correlation, R = 0.8966


Q-Q Plot for Nickel (o)
Ordered Observations
2400.00
2200.00
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Nickel (o)
Nickel (o)
N = 14
Mean = 229.9643
Sd = 665.8577
Slope = 410.2238
Intercept = 229.9643
Correlation, R = 0.5870

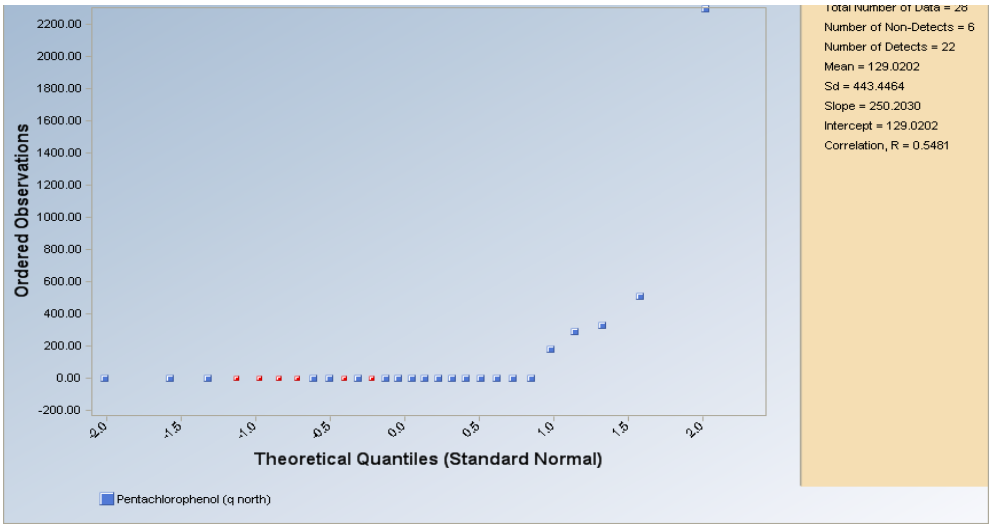

Q-Q Plot for Nickel (q south)
Ordered Observations
3000.00
2800.00
2600.00
2400.00
2200.00
2000.00
1800.00
1600.00
1400.00
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
-200.00
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Nickel (q south)
Nickel (q south)
N = 45
Mean = 118.6544
Sd = 407.0558
Slope = 194.3460
Intercept = 118.6544
Correlation, R = 0.4679

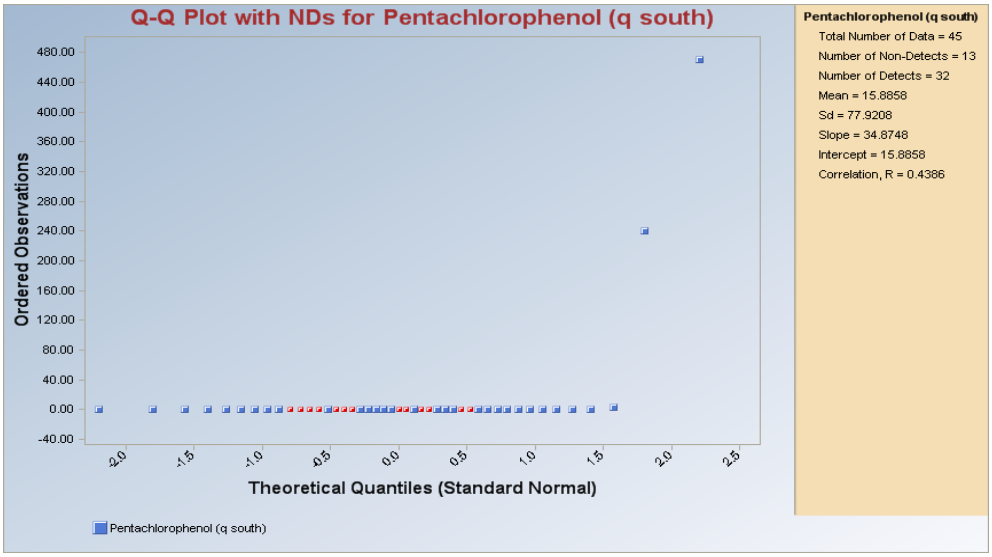

Q-Q Plot with NDs for Pentachlorophenol (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Pentachlorophenol (o)
Pentachlorophenol (o)
Total Number of Data = 14
Number of Non-Detects = 5
Number of Detects = 9
Mean = 855.8585
Sd = 2139.5078
Slope = 1501.6233
Intercept = 855.8585
Correlation, R = 0.6687

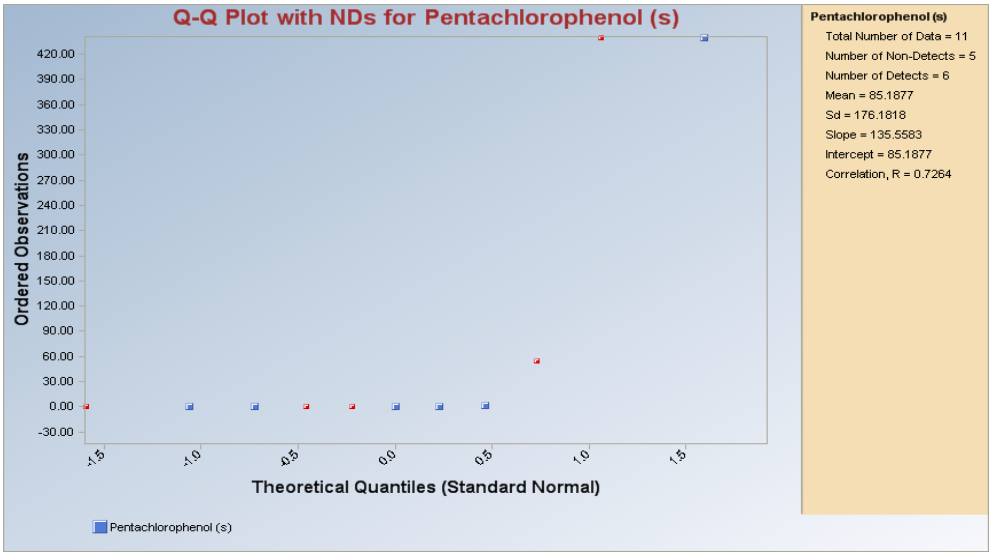

Q-Q Plot with NDs for Pentachlorophenol (p)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Pentachlorophenol (p)
Pentachlorophenol (p)
Total Number of Data = 34
Number of Non-Detects = 3
Number of Detects = 31
Mean = 3.1773
Sd = 15.0265
Slope = 6.5629
Intercept = 3.1773
Correlation, R = 0.4259

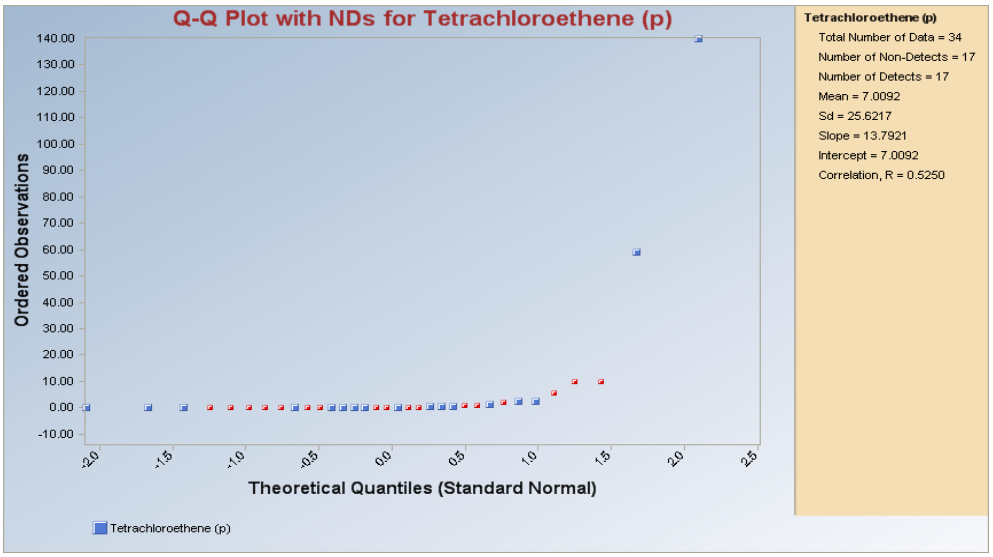

Q-Q Plot with NDs for Pentachlorophenol (q central)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Pentachlorophenol (q central)
Pentachlorophenol (q central)
Total Number of Data = 45
Number of Non-Detects = 24
Number of Detects = 21
Mean = 0.4008
Sd = 1.5625
Slope = 0.7898
Intercept = 0.4008
Correlation, R = 0.4953

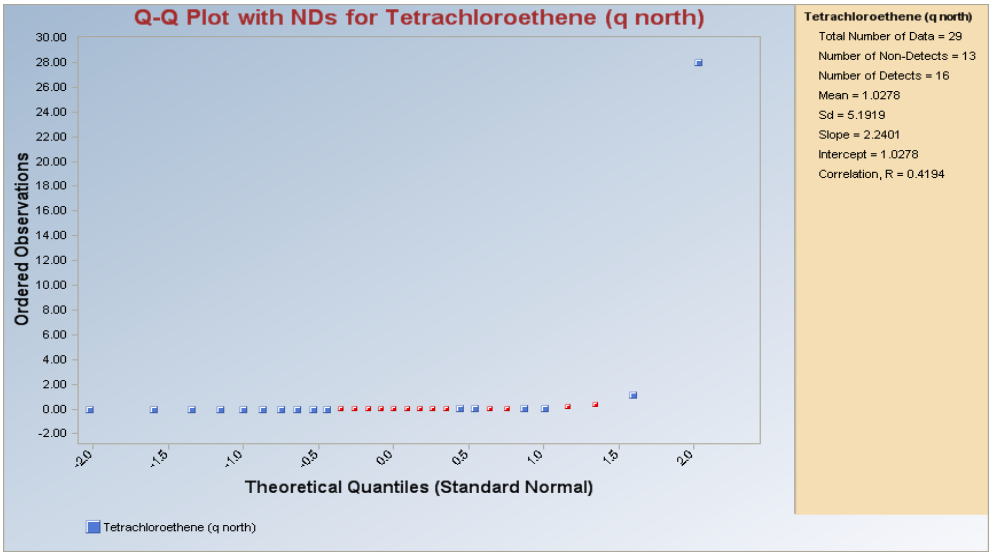
Q-Q Plot with NDs for Pentachlorophenol (q north)
Pentachlorophenol (q north)
Total Number of Data = 28

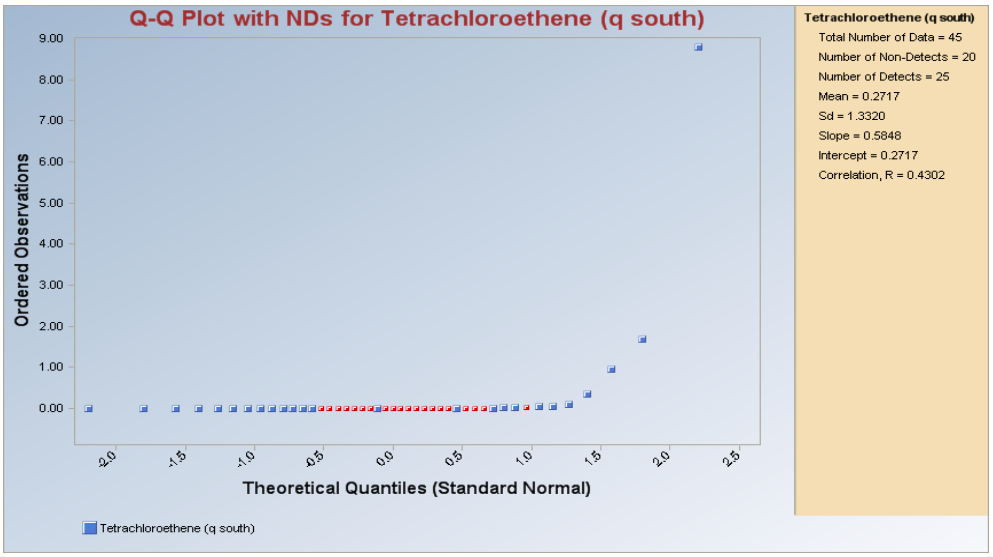

Total Number of Data = 28
Number of Non-Detects = 6
Number of Detects = 22
Mean = 129.0202
Sd = 443.4464
Slope = 250.2030
Intercept = 129.0202
Correlation, R = 0.5481
Ordered Observations
Theoretical Quantiles (Standard Normal)
Pentachlorophenol (q north)

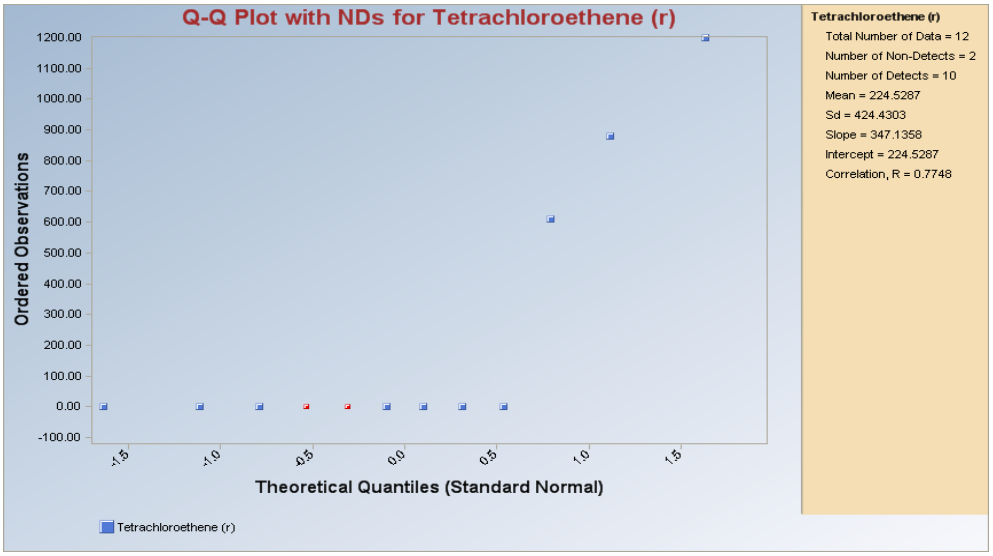

Q-Q Plot with NDs for Pentachlorophenol (q south)
Pentachlorophenol (q south)
Total Number of Data = 45
Number of Non-Detects = 13
Number of Detects = 32
Mean = 15.8858
Sd = 77.9208
Slope = 34.8748
Intercept = 15.8858
Correlation, R = 0.4386
Ordered Observations
Theoretical Quantiles (Standard Normal)
Pentachlorophenol (q south)

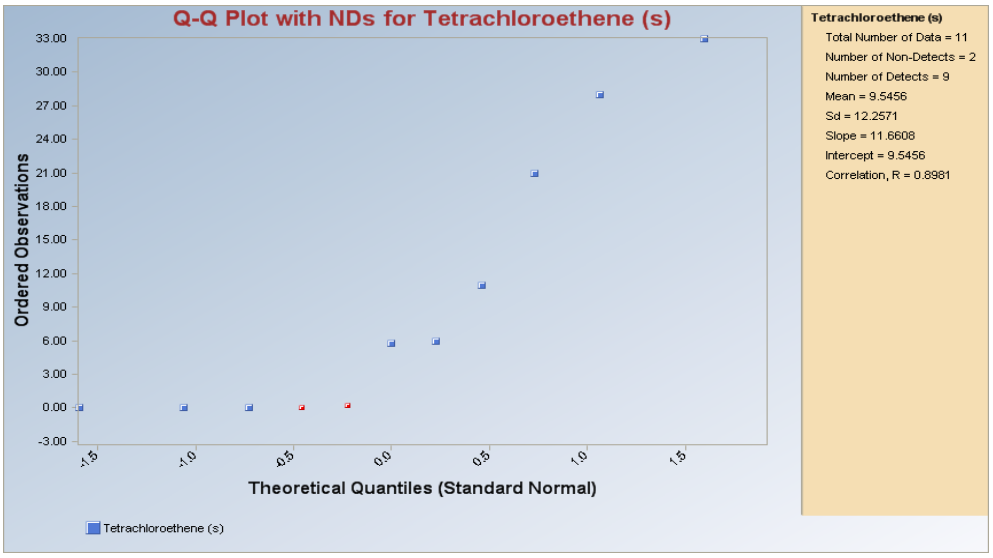

Q-Q Plot with NDs for Pentachlorophenol (s)
Pentachlorophenol (s)
Total Number of Data = 11
Number of Non-Detects = 5
Number of Detects = 6
Mean = 85.1877
Sd = 176.1818
Slope = 135.5583
Intercept = 85.1877
Correlation, R = 0.7264
Ordered Observations
Theoretical Quantiles (Standard Normal)
Pentachlorophenol (s)

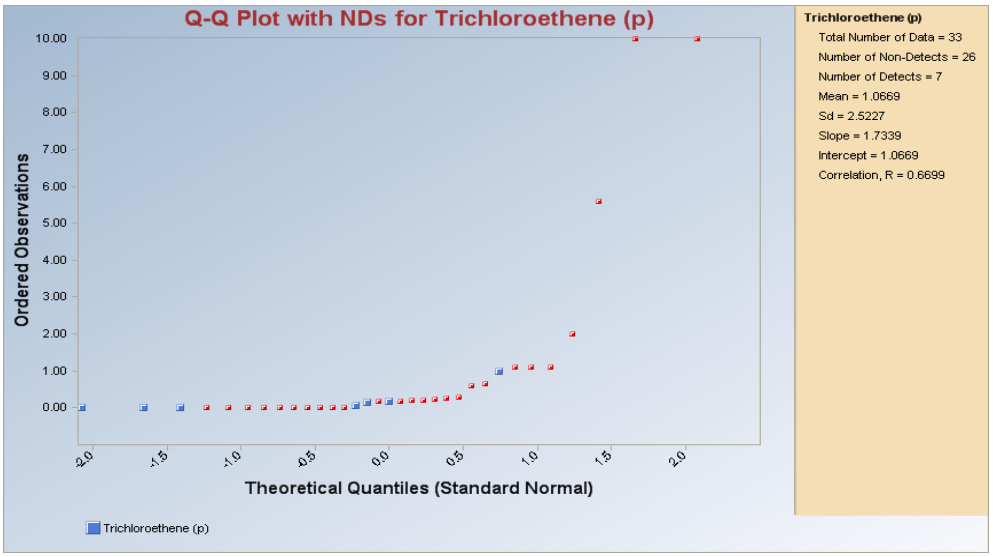

Q-Q Plot with NDs for Tetrachloroethene (p)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Tetrachloroethene (p)
Tetrachloroethene (p)
Total Number of Data = 34
Number of Non-Detects = 17
Number of Detects = 17
Mean = 7.0092
Sd = 25.6217
Slope = 13.7921
Intercept = 7.0092
Correlation, R = 0.5250

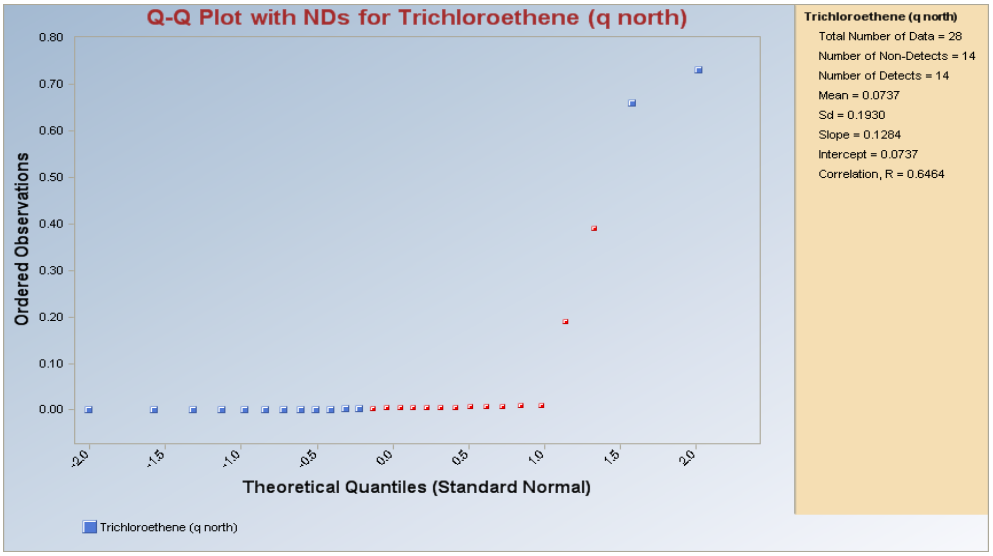

Q-Q Plot with NDs for Tetrachloroethene (q north)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Tetrachloroethene (q north)
Tetrachloroethene (q north)
Total Number of Data = 29
Number of Non-Detects = 13
Number of Detects = 16
Mean = 1.0278
Sd = 5.1919
Slope = 2.2401
Intercept = 1.0278
Correlation, R = 0.4194

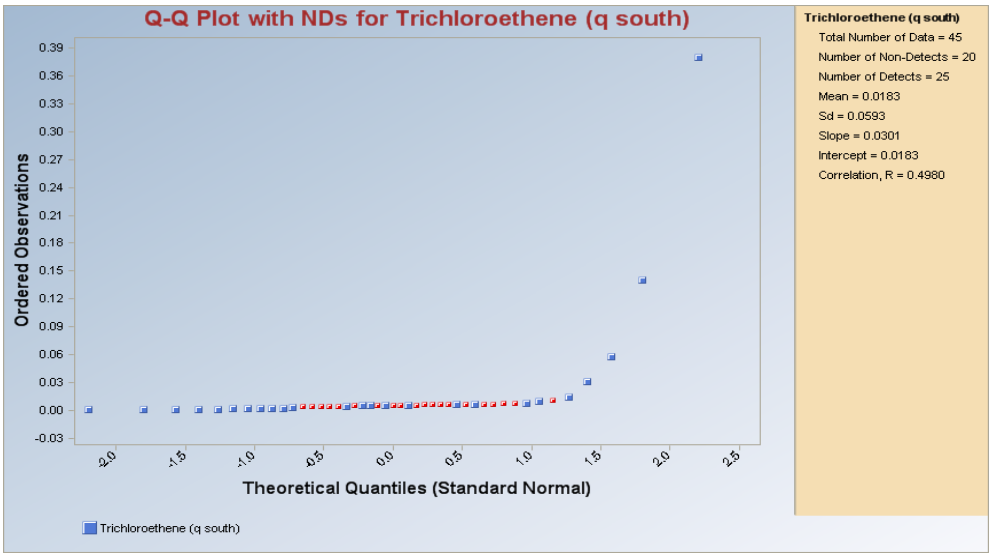

Q-Q Plot with NDs for Tetrachloroethene (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Tetrachloroethene (q south)
Tetrachloroethene (q south)
Total Number of Data = 45
Number of Non-Detects = 20
Number of Detects = 25
Mean = 0.2717
Sd = 1.3320
Slope = 0.5848
Intercept = 0.2717
Correlation, R = 0.4302

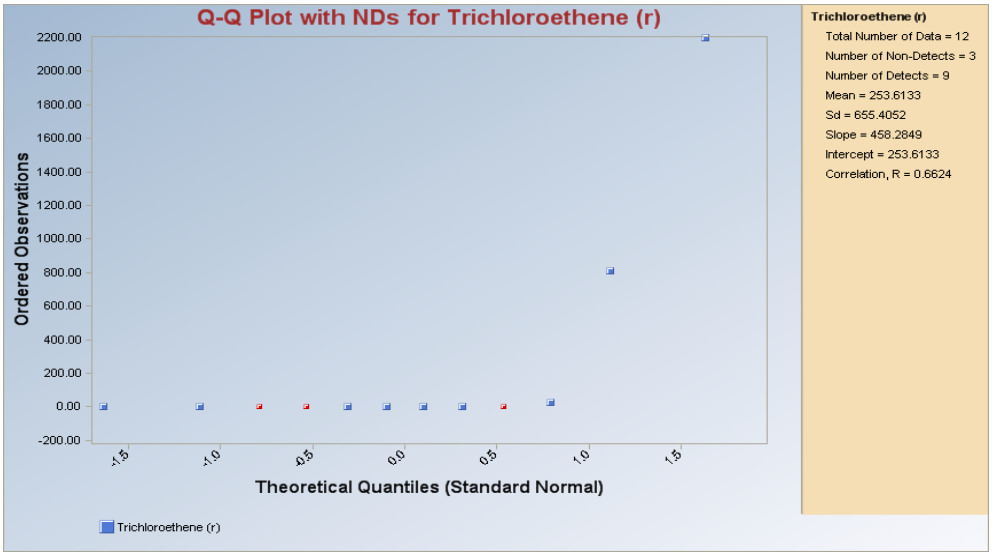

Q-Q Plot with NDs for Tetrachloroethene (r)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Tetrachloroethene (r)
Tetrachloroethene (r)
Total Number of Data = 12
Number of Non-Detects = 2
Number of Detects = 10
Mean = 224.5287
Sd = 424.4303
Slope = 347.1358
Intercept = 224.5287
Correlation, R = 0.7748

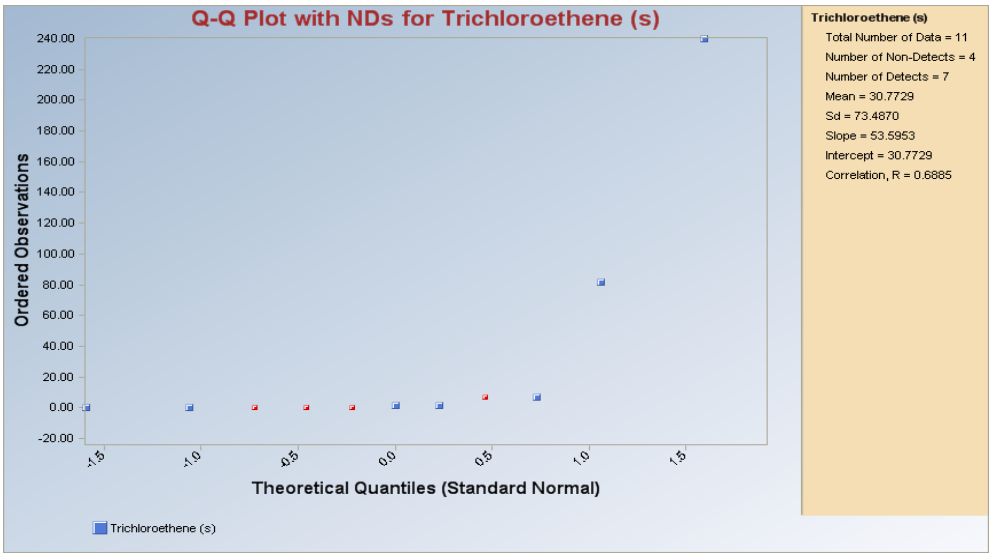

Q-Q Plot with NDs for Tetrachloroethene (s)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Tetrachloroethene (s)
Tetrachloroethene (s)
Total Number of Data = 11
Number of Non-Detects = 2
Number of Detects = 9
Mean = 9.5456
Sd = 12.2571
Slope = 11.6608
Intercept = 9.5456
Correlation, R = 0.8981

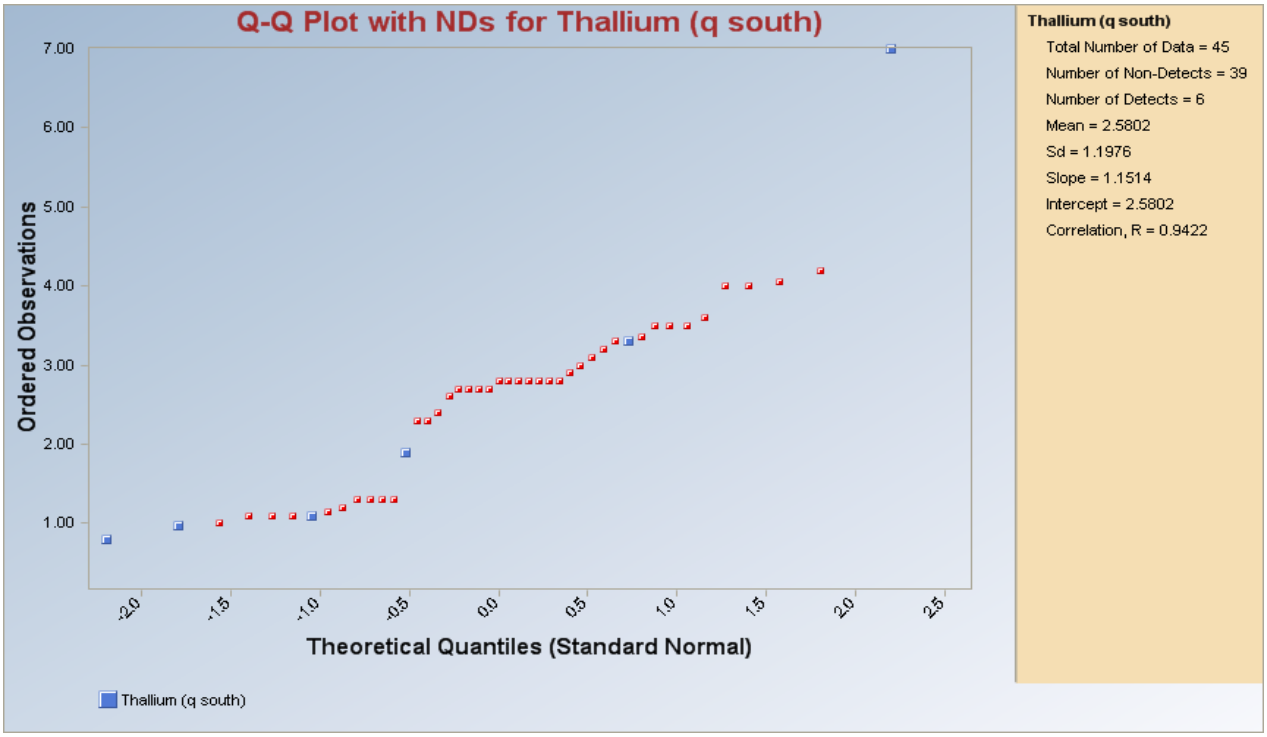

Q-Q Plot with NDs for Trichloroethene (p)
Ordered Observations
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Trichloroethene (p)
Trichloroethene (p)
Total Number of Data = 33
Number of Non-Detects = 26
Number of Detects = 7
Mean = 1.0669
Sd = 2.5227
Slope = 1.7339
Intercept = 1.0669
Correlation, R = 0.6699

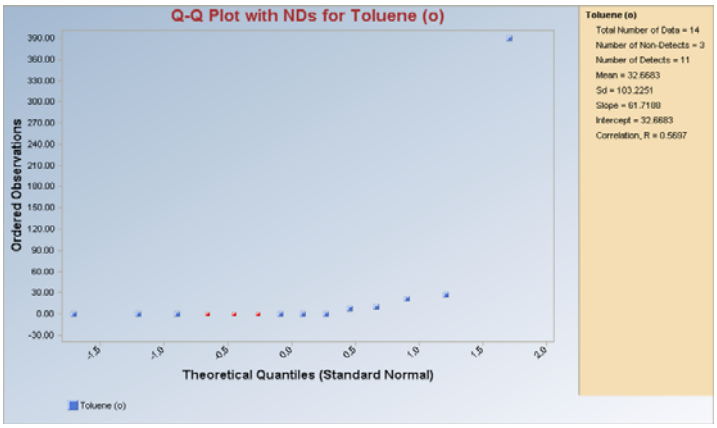

Q-Q Plot with NDs for Trichloroethene (q north)
Ordered Observations
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Trichloroethene (q north)
Trichloroethene (q north)
Total Number of Data = 28
Number of Non-Detects = 14
Number of Detects = 14
Mean = 0.0737
Sd = 0.1930
Slope = 0.1284
Intercept = 0.0737
Correlation, R = 0.6464

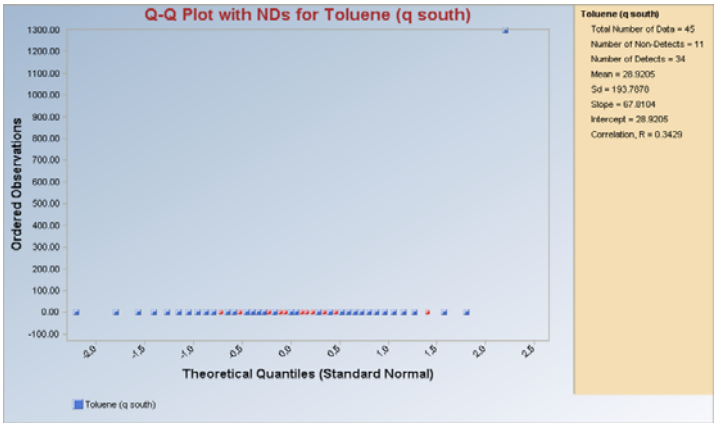

Q-Q Plot with NDs for Trichloroethene (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Trichloroethene (q south)
Trichloroethene (q south)
Total Number of Data = 45
Number of Non-Detects = 20
Number of Detects = 25
Mean = 0.0183
Sd = 0.0593
Slope = 0.0301
Intercept = 0.0183
Correlation, R = 0.4980

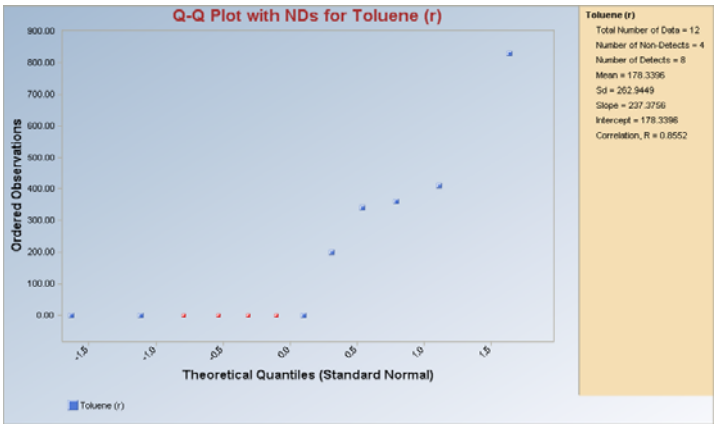

Q-Q Plot with NDs for Trichloroethene (r)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Trichloroethene (r)
Trichloroethene (r)
Total Number of Data = 12
Number of Non-Detects = 3
Number of Detects = 9
Mean = 253.6133
Sd = 655.4052
Slope = 458.2849
Intercept = 253.6133
Correlation, R = 0.6624

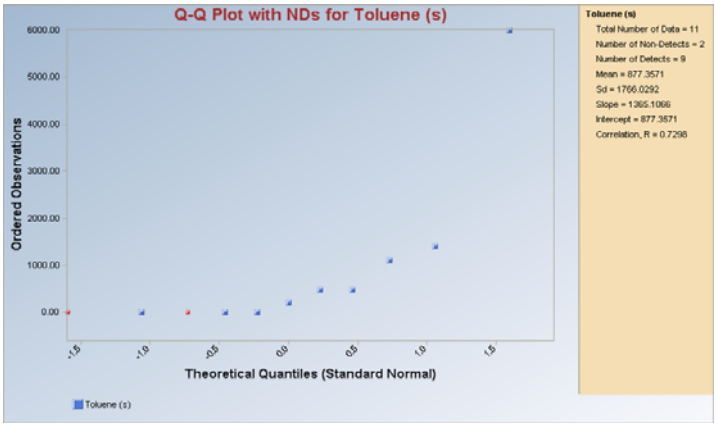

Q-Q Plot with NDs for Trichloroethene (s)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Trichloroethene (s)
Trichloroethene (s)
Total Number of Data = 11
Number of Non-Detects = 4
Number of Detects = 7
Mean = 30.7729
Sd = 73.4870
Slope = 53.5953
Intercept = 30.7729
Correlation, R = 0.6885

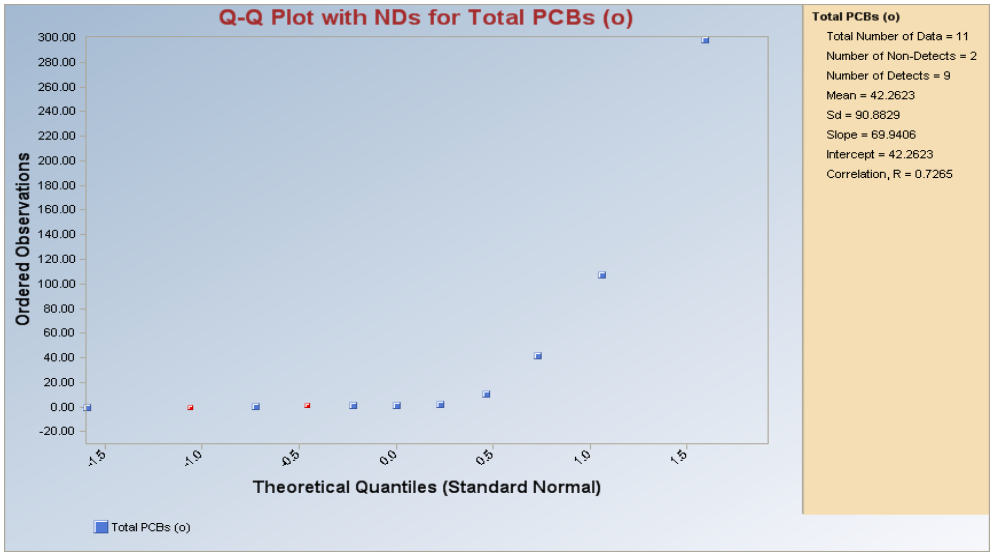

Q-Q Plot with NDs for Thallium (q south)
Ordered Observations
7.00
6.00
5.00
4.00
3.00
2.00
1.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
Theoretical Quantiles (Standard Normal)
Thallium (q south)
Thallium (q south)
Total Number of Data = 45
Number of Non-Detects = 39
Number of Detects = 6
Mean = 2.5802
Sd = 1.1976
Slope = 1.1514
Intercept = 2.5802
Correlation, R = 0.9422

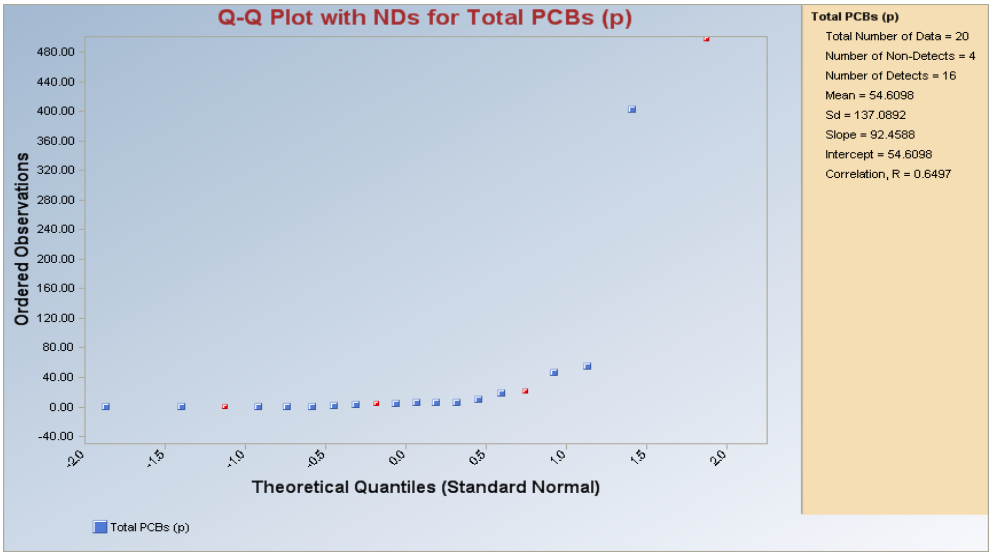

Q-Q Plot with NDs for Toluene (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Toluene (o)
Toluene (o)
Total Number of Data = 14
Number of Non-Detects = 3
Number of Detects = 11
Mean = 32.6683
Sd = 103.2251
Slope = 61.7189
Intercept = 32.6683
Correlation, R = 0.5697

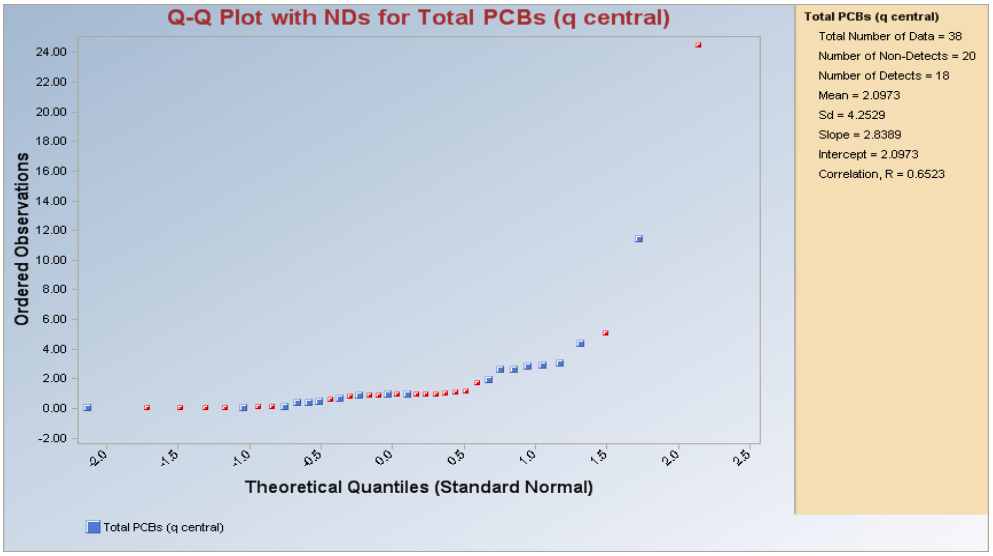

Q-Q Plot with NDs for Toluene (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Toluene (q south)
Toluene (q south)
Total Number of Data = 45
Number of Non-Detects = 11
Number of Detects = 34
Mean = 28.9205
Sd = 193.7676
Slope = 67.8104
Intercept = 28.9205
Correlation, R = 0.3429


Q-Q Plot with NDs for Toluene (r)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Toluene (r)
Toluene (r)
Total Number of Data = 12
Number of Non-Detects = 4
Number of Detects = 8
Mean = 178.3396
Sd = 262.9449
Slope = 237.3756
Intercept = 178.3396
Correlation, R = 0.8552

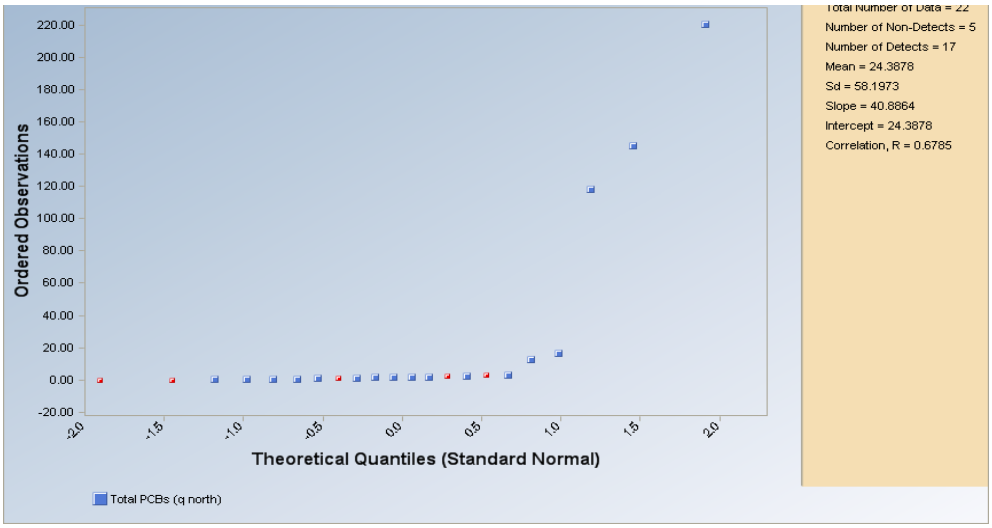

Q-Q Plot with NDs for Toluene (s)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Toluene (s)
Toluene (s)
Total Number of Data = 11
Number of Non-Detects = 2
Number of Detects = 9
Mean = 877.3571
Sd = 1766.0292
Slope = 1365.1066
Intercept = 877.3571
Correlation, R = 0.7298

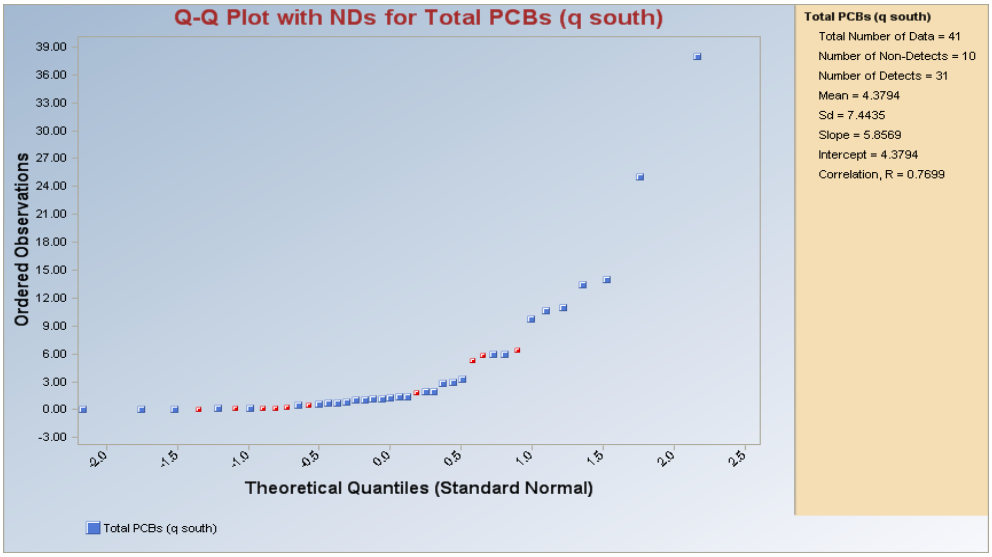

Q-Q Plot with NDs for Total PCBs (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Total PCBs (o)
Total PCBs (o)
Total Number of Data = 11
Number of Non-Detects = 2
Number of Detects = 9
Mean = 42.2623
Sd = 90.8829
Slope = 69.9406
Intercept = 42.2623
Correlation, R = 0.7265

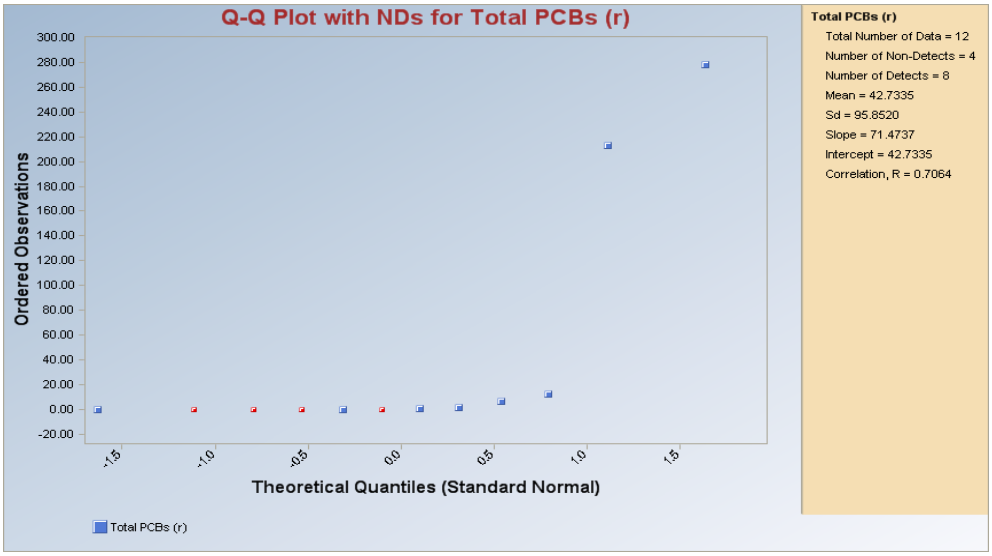

Q-Q Plot with NDs for Total PCBs (p)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Total PCBs (p)
Total PCBs (p)
Total Number of Data = 20
Number of Non-Detects = 4
Number of Detects = 16
Mean = 54.6098
Sd = 137.0892
Slope = 92.4588
Intercept = 54.6098
Correlation, R = 0.6497

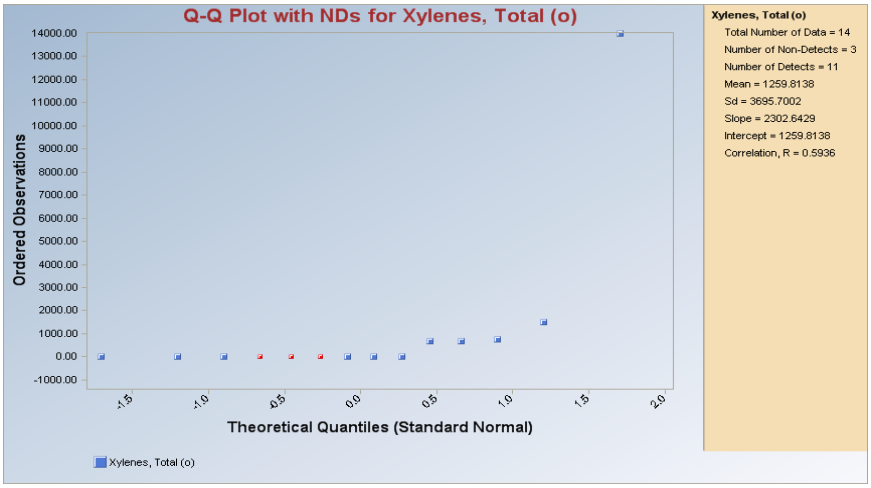

Q-Q Plot with NDs for Total PCBs (q central)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Total PCBs (q central)
Total PCBs (q central)
Total Number of Data = 38
Number of Non-Detects = 20
Number of Detects = 18
Mean = 2.0973
Sd = 4.2529
Slope = 2.8389
Intercept = 2.0973
Correlation, R = 0.6523

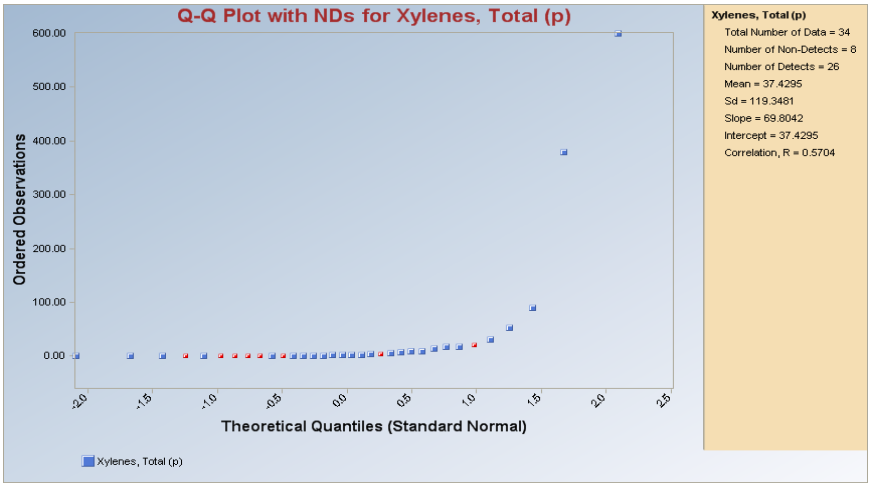
Q-Q Plot with NDs for Total PCBs (q north)
Total PCBs (q north)
Total Number of Data = 22

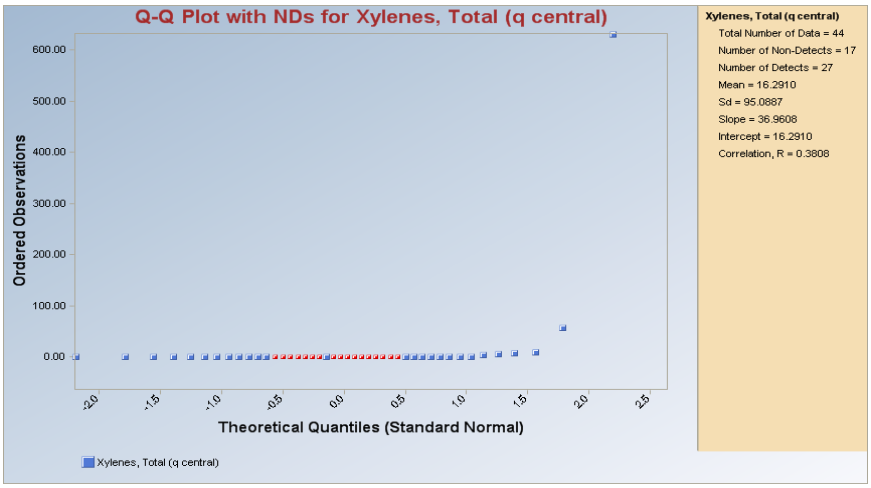

Total Number of Data = 22
Number of Non-Detects = 5
Number of Detects = 17
Mean = 24.3878
Sd = 58.1973
Slope = 40.8864
Intercept = 24.3878
Correlation, R = 0.6785
Ordered Observations
Theoretical Quantiles (Standard Normal)
Total PCBs (q north)

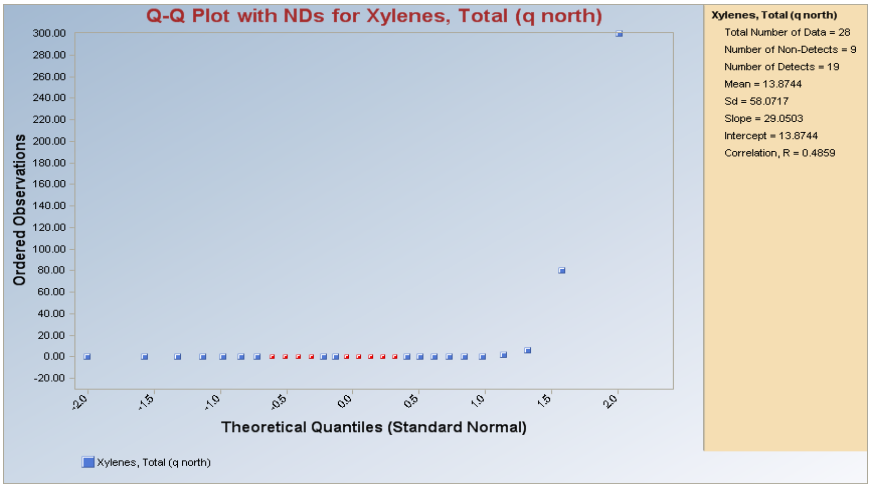

Q-Q Plot with NDs for Total PCBs (q south)
Total PCBs (q south)
Total Number of Data = 41
Number of Non-Detects = 10
Number of Detects = 31
Mean = 4.3794
Sd = 7.4435
Slope = 5.8569
Intercept = 4.3794
Correlation, R = 0.7699
Ordered Observations
Theoretical Quantiles (Standard Normal)
Total PCBs (q south)

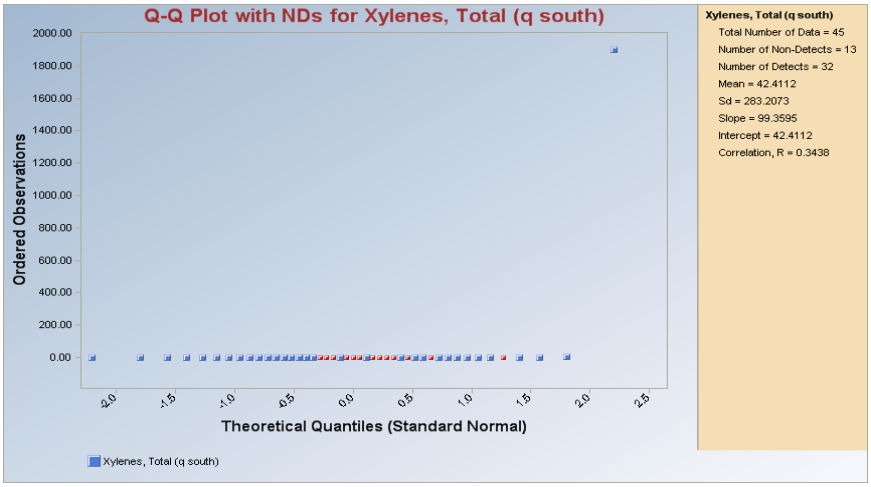

Q-Q Plot with NDs for Total PCBs (r)
Total PCBs (r)
Total Number of Data = 12
Number of Non-Detects = 4
Number of Detects = 8
Mean = 42.7335
Sd = 95.8520
Slope = 71.4737
Intercept = 42.7335
Correlation, R = 0.7064
Ordered Observations
Theoretical Quantiles (Standard Normal)
Total PCBs (r)

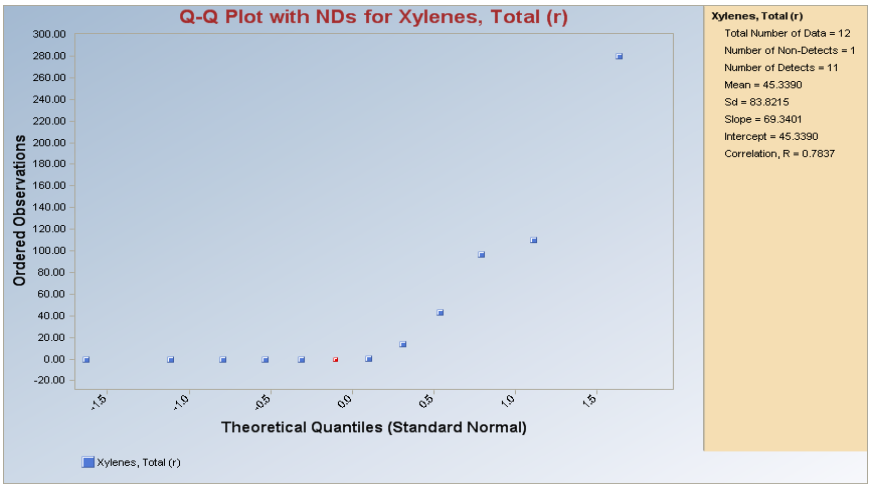

Q-Q Plot with NDs for Xylenes, Total (o)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Xylenes, Total (o)
Xylenes, Total (o)
Total Number of Data = 14
Number of Non-Detects = 3
Number of Detects = 11
Mean = 1259.8138
Sd = 3695.7002
Slope = 2302.6429
Intercept = 1259.8138
Correlation, R = 0.5936

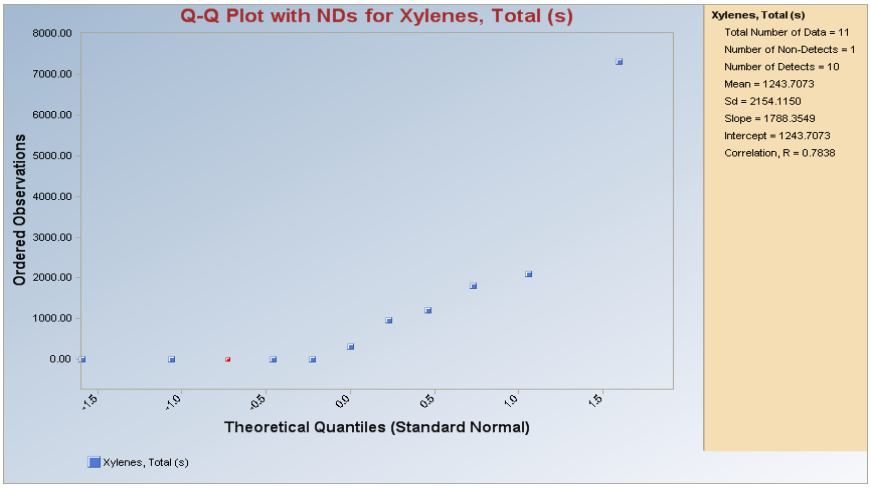

Q-Q Plot with NDs for Xylenes, Total (p)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Xylenes, Total (p)
Xylenes, Total (p)
Total Number of Data = 34
Number of Non-Detects = 8
Number of Detects = 26
Mean = 37.4295
Sd = 119.3481
Slope = 69.8042
Intercept = 37.4295
Correlation, R = 0.5704

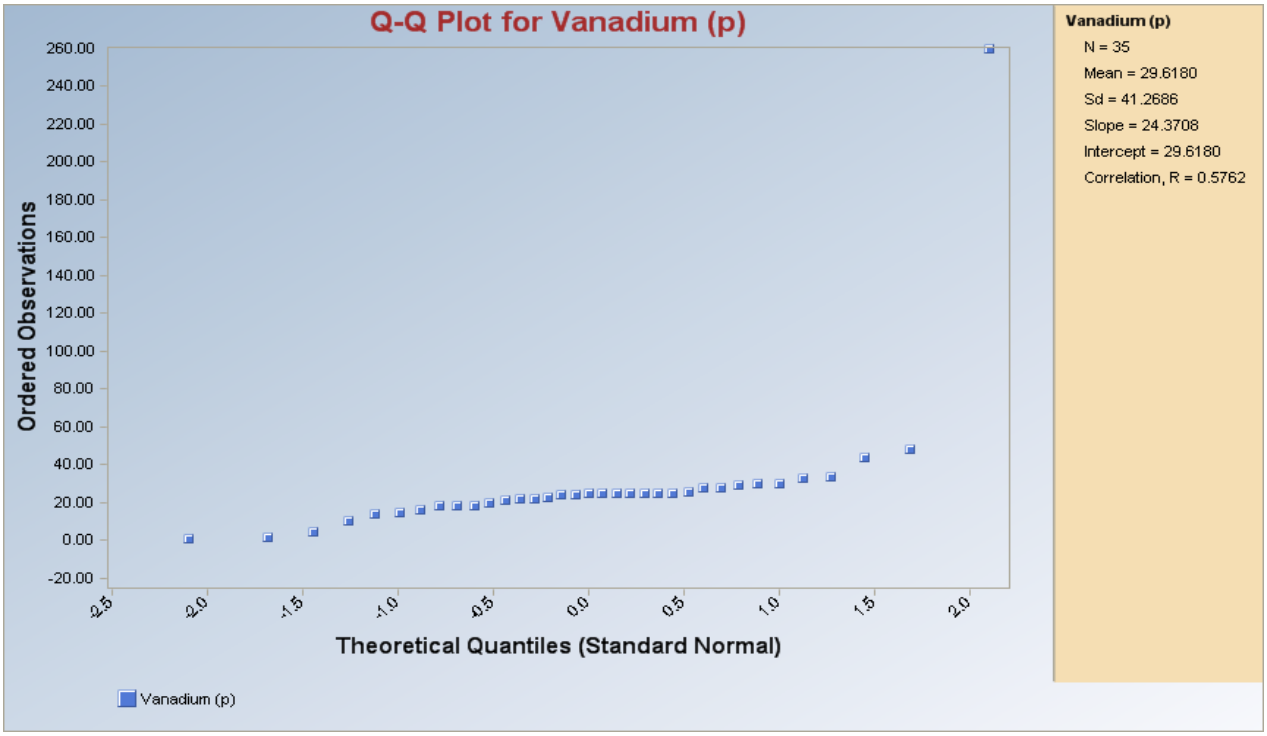

Q-Q Plot with NDs for Xylenes, Total (q central)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Xylenes, Total (q central)
Xylenes, Total (q central)
Total Number of Data = 44
Number of Non-Detects = 17
Number of Detects = 27
Mean = 16.2910
Sd = 95.0887
Slope = 36.9608
Intercept = 16.2910
Correlation, R = 0.3808

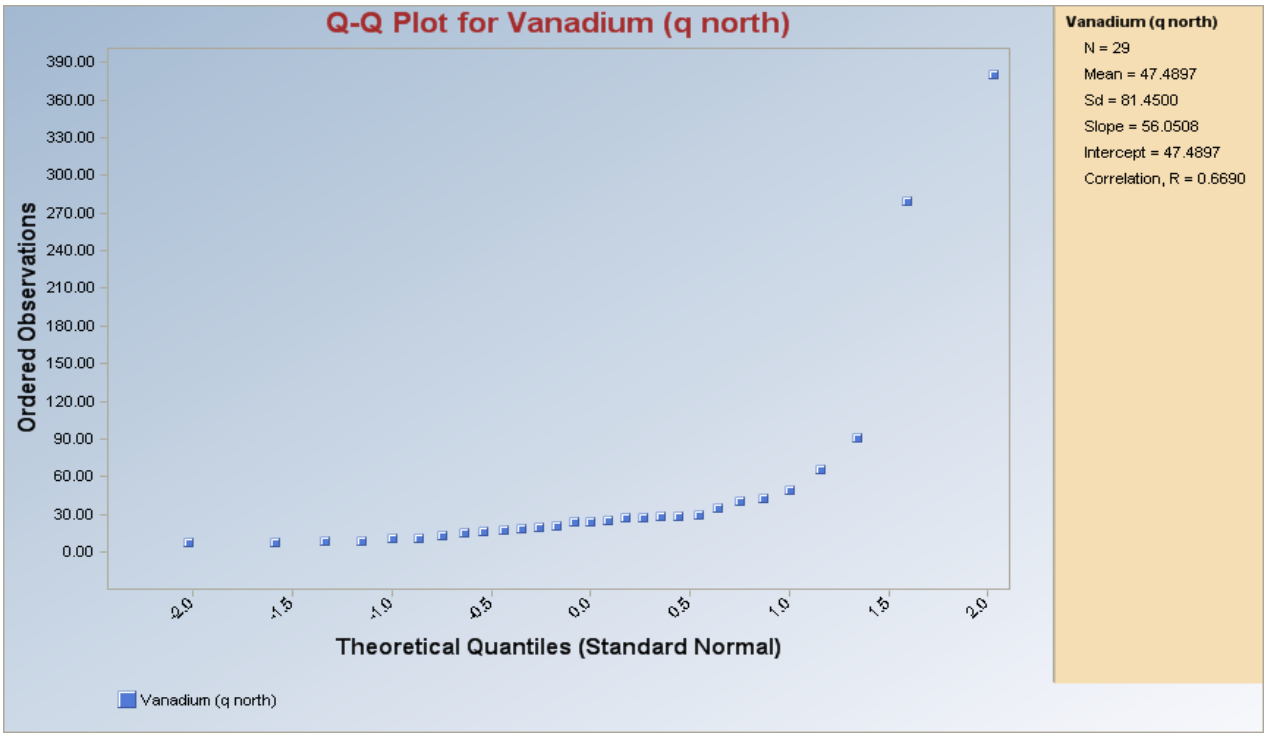

Q-Q Plot with NDs for Xylenes, Total (q north)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Xylenes, Total (q north)
Xylenes, Total (q north)
Total Number of Data = 28
Number of Non-Detects = 9
Number of Detects = 19
Mean = 13.8744
Sd = 58.0717
Slope = 29.0503
Intercept = 13.8744
Correlation, R = 0.4859


Q-Q Plot with NDs for Xylenes, Total (q south)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Xylenes, Total (q south)
Xylenes, Total (q south)
Total Number of Data = 45
Number of Non-Detects = 13
Number of Detects = 32
Mean = 42.4112
Sd = 283.2073
Slope = 99.3595
Intercept = 42.4112
Correlation, R = 0.3438

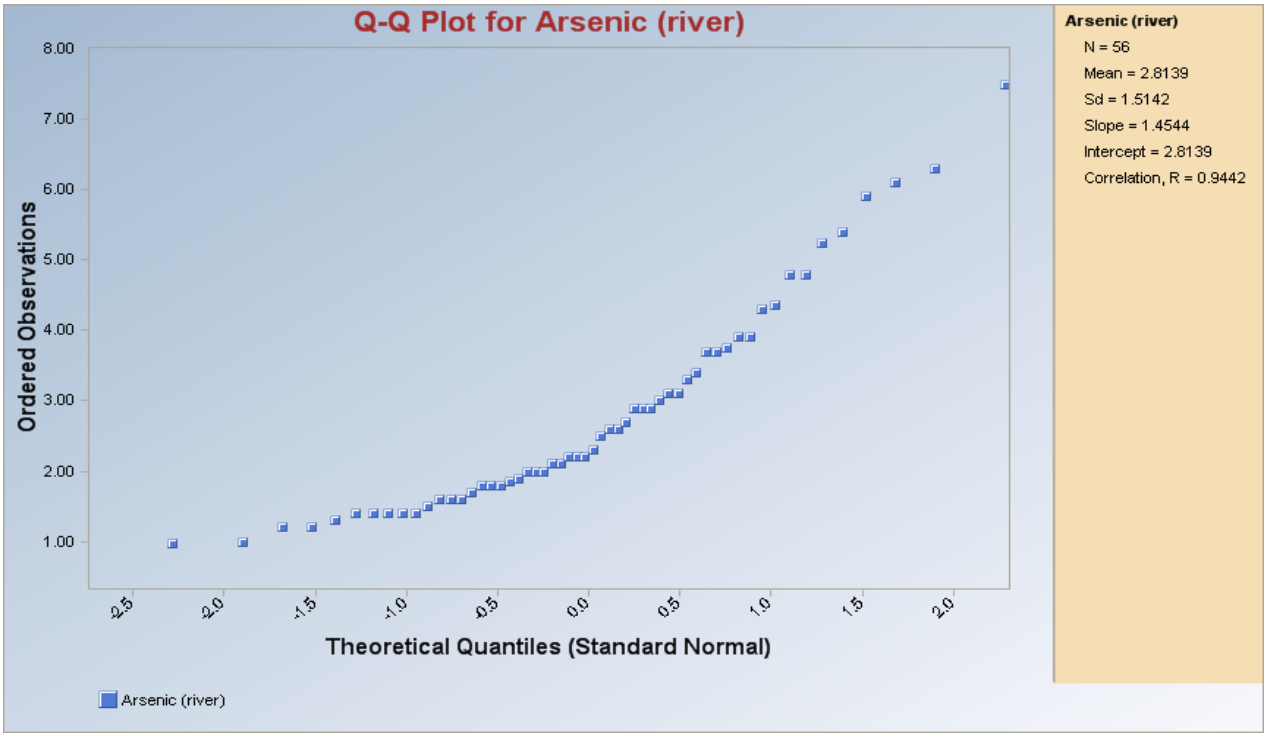

Q-Q Plot with NDs for Xylenes, Total (r)
Ordered Observations
Theoretical Quantiles (Standard Normal)
Xylenes, Total (r)
Xylenes, Total (r)
Total Number of Data = 12
Number of Non-Detects = 1
Number of Detects = 11
Mean = 45.3390
Sd = 83.8215
Slope = 69.3401
Intercept = 45.3390
Correlation, R = 0.7837


Q-Q Plot with NDs for Xylenes, Total (s)
Ordered Observations
8000.00
7000.00
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)
Xylenes, Total (s)
Xylenes, Total (s)
Total Number of Data = 11
Number of Non-Detects = 1
Number of Detects = 10
Mean = 1243.7073
Sd = 2154.1150
Slope = 1788.3549
Intercept = 1243.7073
Correlation, R = 0.7838

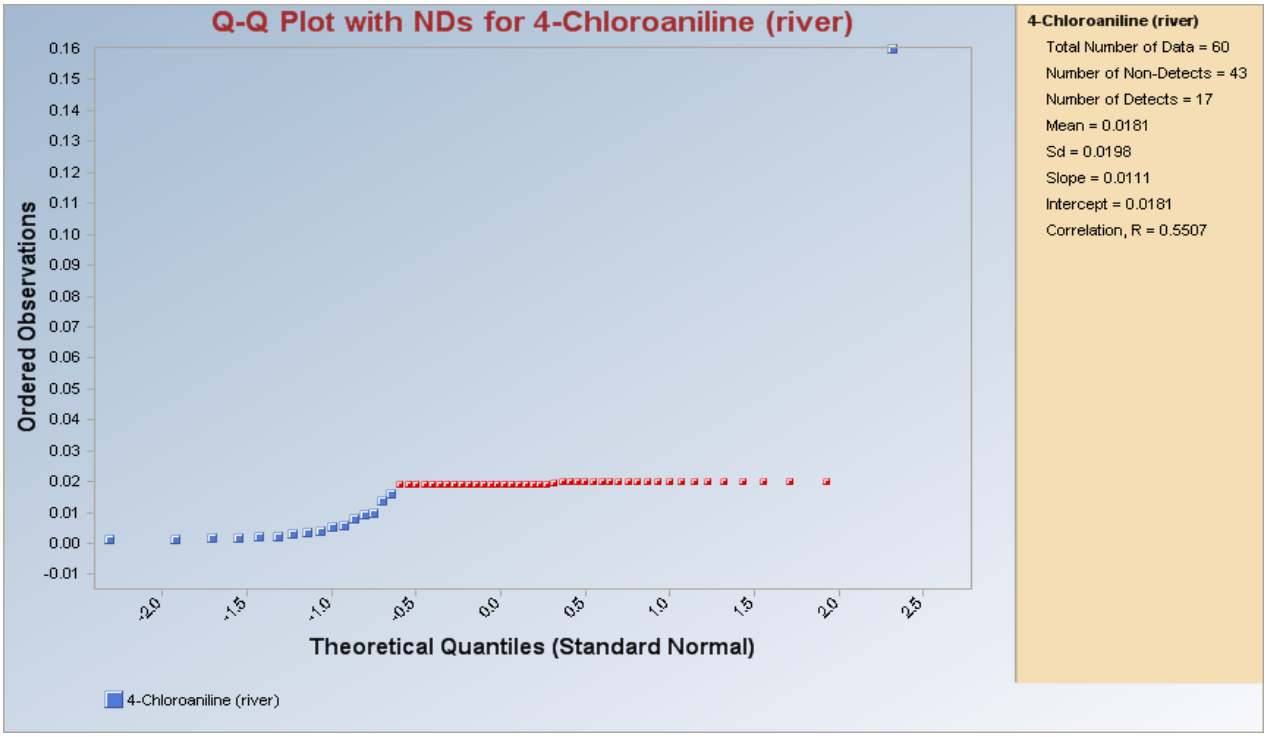

Q-Q Plot for Vanadium (p)
Ordered Observations
260.00
240.00
220.00
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Vanadium (p)
Vanadium (p)
N = 35
Mean = 29.6180
Sd = 41.2686
Slope = 24.3708
Intercept = 29.6180
Correlation, R = 0.5762

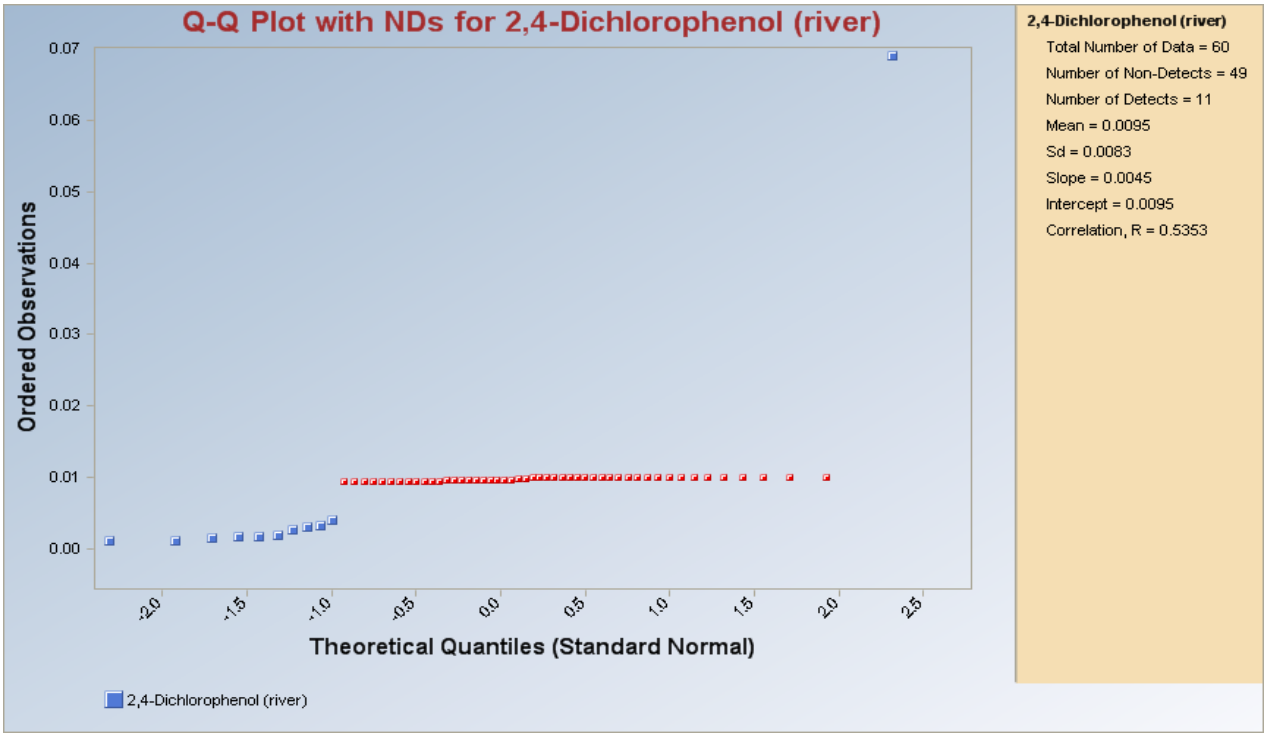

Q-Q Plot for Vanadium (q north)
Ordered Observations
390.00
360.00
330.00
300.00
270.00
240.00
210.00
180.00
150.00
120.00
90.00
60.00
30.00
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Vanadium (q north)
Vanadium (q north)
N = 29
Mean = 47.4897
Sd = 81.4500
Slope = 56.0508
Intercept = 47.4897
Correlation, R = 0.6690

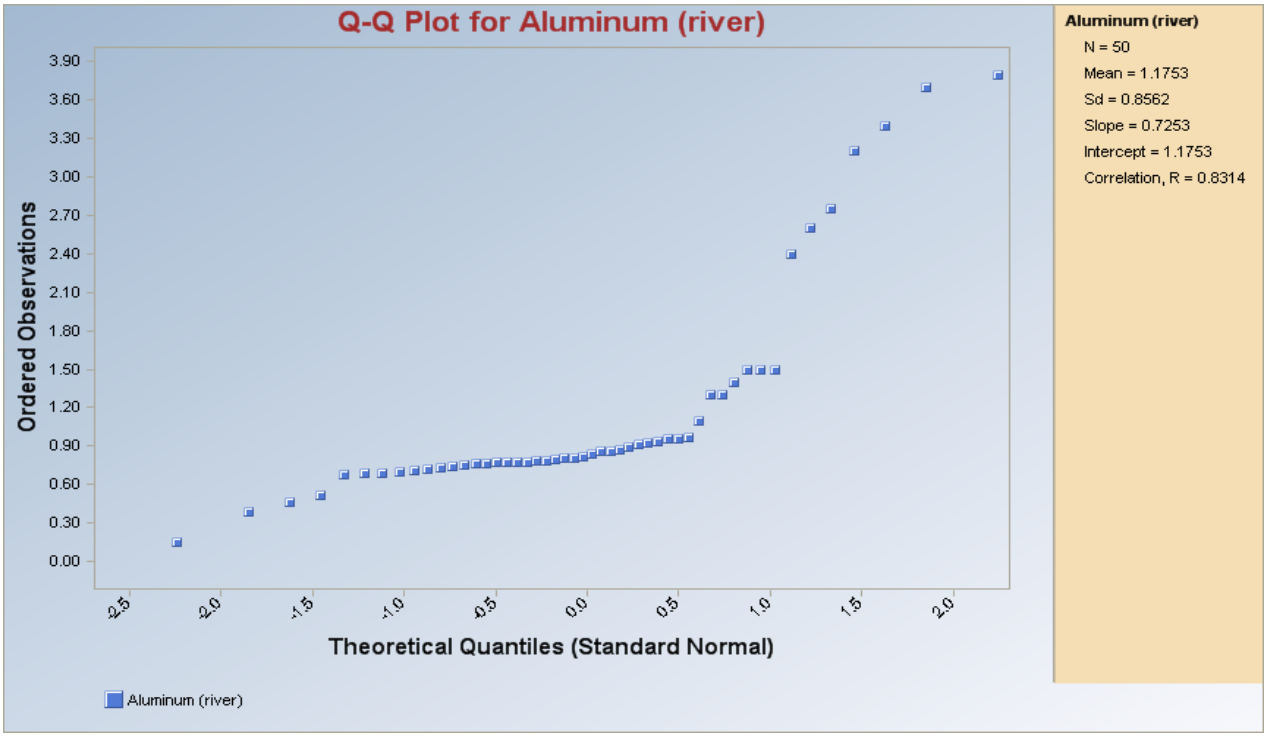
Q-Q Plots – Sediment

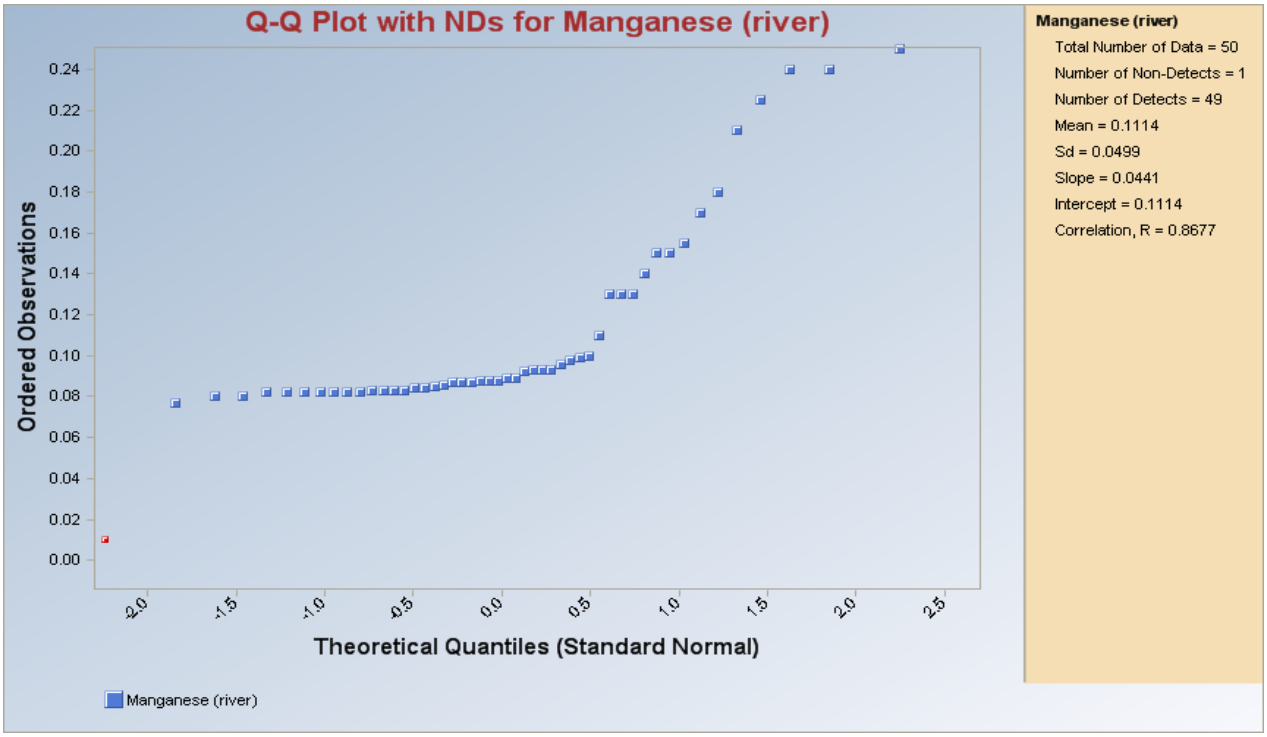

Q-Q Plot for Arsenic (river)
Ordered Observations
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Arsenic (river)
Arsenic (river)
N = 56
Mean = 2.8139
Sd = 1.5142
Slope = 1.4544
Intercept = 2.8139
Correlation, R = 0.9442

Q-Q Plots – Surface Water


Q-Q Plot with NDs for 4-Chloroaniline (river)
Ordered Observations
0.16
0.15
0.14
0.13
0.12
0.11
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
Theoretical Quantiles (Standard Normal)
4-Chloroaniline (river)
4-Chloroaniline (river)
Total Number of Data = 60
Number of Non-Detects = 43
Number of Detects = 17
Mean = 0.0181
Sd = 0.0198
Slope = 0.0111
Intercept = 0.0181
Correlation, R = 0.5507


Q-Q Plot with NDs for 2,4-Dichlorophenol (river)
Ordered Observations
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
Theoretical Quantiles (Standard Normal)
2,4-Dichlorophenol (river)
2,4-Dichlorophenol (river)
Total Number of Data = 60
Number of Non-Detects = 49
Number of Detects = 11
Mean = 0.0095
Sd = 0.0083
Slope = 0.0045
Intercept = 0.0095
Correlation, R = 0.5353


Q-Q Plot for Aluminum (river)
Ordered Observations
3.90
3.60
3.30
3.00
2.70
2.40
2.10
1.80
1.50
1.20
0.90
0.60
0.30
0.00
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Theoretical Quantiles (Standard Normal)
Aluminum (river)
Aluminum (river)
N = 50
Mean = 1.1753
Sd = 0.8562
Slope = 0.7253
Intercept = 1.1753
Correlation, R = 0.8314


Q-Q Plot with NDs for Manganese (river)
Ordered Observations
0.24
0.22
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
Theoretical Quantiles (Standard Normal)
Manganese (river)
Manganese (river)
Total Number of Data = 50
Number of Non-Detects = 1
Number of Detects = 49
Mean = 0.1114
Sd = 0.0499
Slope = 0.0441
Intercept = 0.1114
Correlation, R = 0.8677

Attachment C

Supporting Documentation for the Soil-to-Outdoor Air Modeling

Calculation of Exposure Point Concentrations (EPCs) for the Soil to Outdoor Air Pathway

Modeling was required to calculate Exposure Point Concentrations (EPCs) for the soil to outdoor air pathway. Both excavation (construction worker) and non-excavation (outdoor industrial worker and trespassing teenager) scenarios are discussed in this attachment. Volatile Organic Compounds (VOCs) have been defined as constituents with Henry's Law Constants greater than 10^{-5} atm-m^3/mol and a molecular weight greater than 200 g/mol (USEPA, 2004a). Calculations were completed using ENSR developed spreadsheets and were verified using the USEPA Soil Screening Level (SSL) calculator (http://rais.ornl.gov/epa/ssl1.shtml).

Outdoor air concentrations for the outdoor industrial worker and the trespassing teenager for non-VOCs were calculated using the Particulate Emission Factor (PEF) described below. Excavation dust air was evaluated using a dust concentration, as described below. Outdoor air concentrations of VOCs for both excavation (construction worker) and non-excavation (outdoor industrial worker and trespassing teenager) scenarios were calculated using the Volatilization Factor (VF) described below. Table C-1 presents the calculation of dispersion factors used in both the PEF and the VF models. Table C-1 lists the input parameters and the equation used to derive the dispersion factors.

Non-VOCs

The dust concentration in air used in the evaluation of outdoor air pathways for non-excavation scenarios is the inverse of the PEF derived in accordance with USEPA guidance (USEPA, 2002). Table C-2 presents the input parameters and the equation. Fraction of vegetative cover was estimated for each Site based on aerial photographs presented on Google Earth (2008), which can be downloaded for free from http://earth.google.com/download-earth.html. The mean annual wind speed at a height of 7 meters measured at the St. Louis International Airport between 1951 and 1980 (4.3 m/s) was used in the calculation (Ruffner, 1985). Table C-2 presents the PEF calculation for each Site. Surface soil EPCs were used as the source term for modeling the outdoor air concentration for non-intrusive activities.

The dust concentration in air used in the evaluation of excavation air pathway for the construction worker is 60 ug/m^3. This value is the recommended concentration of respirable particulate with a mean diameter of 10 microns or less (PM_{10}) for excavation activities (MADEP, 1995). Combined soil EPCs were used as the source term for modeling the dust concentration in excavation air:

Excavation air concentration (mg/m^3) =
Soil EPC (mg/kg soil) x Dust concentration (mg soil/m^3) x Unit correction factor (1 kg/10^6 mg)

VOCs

USEPA guidance (USEPA, 2002) was used to predict concentrations of COPCs in air due to volatilization from soils. Table C-3 presents soil and exposure parameters used in the calculations. While limited geotechnical soil parameter data are available (see Table 6-3 and Appendix N of the RI, URS, 2008), the data are not available for all Sites and the samples were collected from greater than 20 feet bgs. Therefore, default soil parameters for sand were used, due to the presence of fill in the area, as noted on the boring logs presented in Appendix B of the RI (URS, 2008). The soil parameters for sand were obtained from the User's Guide for the USEPA version of the Johnson and Ettinger Model (USEPA, 2004b). Table C-4

presents constituent-specific data for each VOC and the calculation of apparent diffusivity; the equation is presented on the table. VFs are calculated for each scenario in the following tables; the equation is listed on the tables:

- Table C-5: Outdoor Industrial Worker, RME scenario
- Table C-6: Outdoor Industrial Worker, MLE scenario
- Table C-7: Trespassing Teenager (RME/MLE scenario)
- Table C-8: Construction Worker (RME/MLE scenario)

Combined soil EPCs were used as the source term for modeling the VOC concentrations in outdoor air.

The PEFs and VFs presented above were used to derive EPCs for the outdoor air pathway. Tables C-9 to C-16 present the calculation of outdoor air concentrations based on the soil EPCs and the VFs and PEFs calculated above.

An example calculation of the PEF for Site O for dieldrin and the VF for the outdoor industrial worker RME scenario for benzene and chlorobenzene from the USEPA Soil SSL calculator (http://rais.ornl.gov/epa/ssl1.shtml) are provided at the end of this attachment to show that the calculations obtained from the spreadsheets match the concentrations obtained from the SSL calculator. It should be noted that in the ENSR developed spreadsheets, dispersion factors were calculated based on USEPA (2002) for the actual acreage of each Site; in the case of Site O, this is 28 acres. The SSL Calculator has dispersion factors built in for specific acreages. Therefore, 30 acres was selected, accounting for minor differences in the resulting PEF; the use of the dispersion factor from the website in the ENSR developed spreadsheets results in a PEF that matches the one derived from the website. For the VF, the SSL Calculator derives total porosity as one minus dry bulk density divided by soil particle density. In the ENSR spreadsheets, total porosity was entered directly as a default from USEPA (2004b). Therefore, the porosity equation was rearranged to solve for soil particle density based on the dry bulk density and total porosity values used in the ENSR spreadsheets as follows:

Particle density = dry bulk density ÷ 1-total porosity
= 1.66 ÷ 1-0.375
= 2.656 entered to website for particle density

In addition, it should be noted that chemical specific properties for all models were obtained from the Risk Risk Assessment Information System (RAIS, 2008), Toxicity and Chemical-Specific Factors Data Base (URL: [http://risk.lsd.ornl.gov/index.shtml). Chemical-specific properties were obtained from this database to provide consistency across the various models used to generate EPCs (i.e., soil and groundwater to outdoor air, groundwater to excavation trench air). In some cases, the properties used in the ENSR spreadsheets will vary from those used on the SSL calculator. An example is the soil-water partition coefficient (Koc) for benzene; the RAIS value is an estimated value of 166 L/kg while the SSL calculator presumably uses the value from the SSL guidance of 58.9 L/kg (USEPA, 2002, Exhibit C-1). The SSL website does not present the chemical properties used in the calculations. The difference in the dispersion factor chemical specific properties accounts for the minor difference between the ENSR VF and the website VF for benzene; when the SSL calculator dispersion factor and the Koc of 58.9 L/kg are entered for benzene, the ENSR

spreadsheets reproduce the SSL calculator VF. A VF for chlorobenzene from the SSL website is also included because the RAIS Koc is similar to the SSL Koc, resulting in similar VFs, varying slightly due to the dispersion factor.

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TABLE C-1
DEVELOPMENT OF DISPERSION FACTORS FOR THE SOIL TO OUTDOOR AIR PATHWAYS
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Site	A_c (a) (acres)	Dispersion Factors (g/m^2-s per kg/m^3)		
		Volatiles in Excavation Scenario Q/C_{sa} (b)	Volatiles in Non-Excavation Scenario Q/C_{vol} (c)	Particulates in Non-Excavation Scenario Q/C_{wind} (d)
O	28	7.17	51.19	51.19
O North	3	10.30	72.22	72.22
O South	4	9.80	68.91	68.91
P	32	7.02	50.22	50.22
Q Central	67	6.31	45.32	45.32
Q North	52	6.54	46.92	46.92
Q South	87	6.08	43.76	43.76
R	36	6.90	49.39	49.39
S	0.83	13.00	89.90	89.90
		Constants		
		A 2.4538	A 16.8653	A 16.8653
		B 17.566	B 18.7848	B 18.7848
		C 189.0426	C 215.0624	C 215.0624

Notes:
(a) Remedial Investigation Report, February 15, 2008 (URS, 2008). Acreage for Site O North, O South, and S were estimated based on the basemap.
(b) Calculated using constants listed in Equation 5-15 of USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Equation below:

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

(c) Calculated using equation above and constants listed in Exhibit D-3 for Chicago, Illinois, of USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites.
(d) Calculated using equation abvoe and constants listed in Exhibit D-2 for Chicago, Illinois, of USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites.

TABLE C-2
PARAMETERS USED IN THE DEVELOPMENT OF PARTICULATE EMISSION FACTORS FOR THE SOIL TO OUTDOOR AIR PATHWAYS
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Parameter	Definition	Units	Site									Notes
			O	O North	O South	P	Q Central	Q North	Q South	R	S	
Q/C_{wind}	Inverse of mean concentration at center of source	g/m^2-s per kg/m^3	51.19	72.22	68.91	50.22	45.32	46.92	43.76	49.39	89.90	(a)
V	Fraction of vegetative cover	unitless	0.9	0.9	0.25	0.75	0.1	0.25	0.9	0.85	0.25	(b) See table below
U_m	Mean annual windspeed	m/s	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	(d)
U_t	Equivalent threshold value of windspeed at 7 m	m/s	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	11.32	(c)
F(x)	Function dependent on U_m/U_t	unitless	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	(e)
PEF	**Particulate emission factor**	**m^3/kg**	**9.24E+09**	**1.30E+10**	**1.66E+09**	**3.62E+09**	**9.08E+08**	**1.13E+09**	**7.89E+09**	**5.94E+09**	**2.16E+09**	**(f)**

Notes:

(a) Calculated in Table C-1.

(b) Cover includes vegetation, buildings, clay covers, and pavement (but not gravel). Based on information presented in Remedial Investigation Report, February 15, 2008 (URS, 2008) and Google Earth, 2008. Free download available at: http://earth.google.com/download-earth.html.

(c) USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Default value (Equation 4-5).

(d) Value is based on a value of 4.3 m/s measured at St. Louis International Airport at a height of 7 m. (James A. Ruffner, 1985. Climate of the States: National Oceanic and Atmospheric Administration Narrative Summaries, Tables and Maps for Each State with Overview of State Climatologist Programs, Third Edition, Gale Research company, Detroit. Means for period 1951-1980).

(e) Calculated in accordance with Cowherd, 1985, per USEPA, 2002, for x >2, where x = 0.866 * (Ut/Um); $F(x) = 0.18(8x^3 + 12x)\exp(-x^2)$

(f) Calculated using Equation 4-5 from USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites:

$$PEF(m^3/kg) = \frac{Q/C_{w\,ind}(3600s/h)}{0.036(1-V)(U_m/U_t)^3 F(x)}$$

Site	Remedial Investigation Description (b)	Estimated Cover Fraction
O	Low permeable soil and vegetated with grass, brush, bushes, trees.	0.9
O North	Not described.	0.9
O South	Not described.	0.25
P	Covered (asphalt parking lot on 3 acres).	0.75
Q Central	Buildings, gravel cover	0.1
Q North	Buildings, roads, gravel cover	0.25
Q South	Vacant open land	0.9
R	Clay cover	0.85
S	Northern portion gravel, southern gravel	0.25

TABLE C-3
SOIL AND EXPOSURE PARAMETERS USED IN THE DEVELOPMENT OF VOLATILIZATION FACTORS FOR THE SOIL TO OUTDOOR AIR PATHWAYS
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Parameter	Symbol	Units	Value	
Air-filled soil porosity	Oa	Lair/Lsoil	0.322	(d)
Water-filled soil porosity	Ow	Lwater/Lsoil	0.053	(c)
Total soil porosity	n	Lpore/Lsoil	0.375	(c)
Dry soil bulk density	Pb	g/cm3	1.66	(c)
Organic carbon content	Foc	g/g	0.006	(a)
Exposure interval - On-Site Worker (RME)	T	seconds	7.88E+08	(b)
Exposure interval - On-Site Worker (MLE)	T	seconds	2.21E+08	(b)
Exposure interval - Trespassing Teenager (RME/MLE)	T	seconds	3.47E+08	(b)
Exposure interval - Construction Worker (RME/MLE)	T	seconds	3.15E+07	(b)
Dispersion Factor Correction for Construction Worker	Fd	unitless	1.85E-01	(a)

Notes:
MLE - Most Likely Exposure.
RME - Reasonable Maximum Exposure.
(a) USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites.
(b) Exposure duration for each receptor converted to seconds.
(c) USEPA. 2004. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings. February 22, 2004. Table 10, value for sand.
(d) Calculated: O_a = n - Ow.

TABLE C-4
CONSTITUENT PARAMETERS USED IN THE DEVELOPMENT OF VOLATILIZATION FACTORS FOR THE SOIL TO OUTDOOR AIR PATHWAYS
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS	Soil-Water Partition Coefficient (K_d) (L/kg)	Soil Organic Carbon-Water Partition Coefficient (K_{oc}) (L/kg)	Henry's Law Constant (H') (dimensionless)	Diffusivity in Air (D_i) (cm^2/s)	Diffusivity in Water (D_w) (cm^2/s)	Apparent Diffusivity (D_a) (b) (cm^2/s)
VOCs							
1,1,2-Trichloroethane	79-00-5	4.06E-01 (a)	6.77E+01 (c)	3.37E-02 (c)	7.80E-02 (c)	8.80E-06 (c)	5.79E-04
1,2-Dichloroethane	107-06-2	2.63E-01 (a)	4.38E+01 (c)	4.82E-02 (c)	1.04E-01 (c)	9.90E-06 (c)	1.62E-03
1,2-Dichloroethene (total)	540-59-0	2.63E-01 (a)	4.38E+01 (c,d)	1.67E-01 (c,d)	7.07E-02 (c,e)	1.19E-05 (c,e)	3.54E-03
Benzene	71-43-2	9.93E-01 (a)	1.66E+02 (c)	2.27E-01 (c)	8.80E-02 (c)	9.80E-06 (c)	1.83E-03
Chlorobenzene	108-90-7	1.61E+00 (a)	2.68E+02 (c)	1.27E-01 (c)	7.30E-02 (c)	8.70E-06 (c)	5.46E-04
Chloroform	67-66-3	2.10E-01 (a)	3.50E+01 (c)	1.50E-01 (c)	1.04E-01 (c)	1.00E-05 (c)	5.64E-03
Dichloromethane	75-09-2	1.42E-01 (a)	2.37E+01 (c)	1.33E-01 (c)	1.01E-01 (c)	1.17E-05 (c)	6.58E-03
Ethylbenzene	100-41-4	3.11E+00 (a)	5.18E+02 (c)	3.22E-01 (c)	7.50E-02 (c)	7.80E-06 (c)	7.40E-04
Hexane	110-54-3	8.94E-01 (a)	1.49E+02 (c)	7.36E+01 (c)	2.00E-01 (c)	7.77E-06 (c)	9.49E-02
Tetrachloroethene	127-18-4	6.41E-01 (a)	1.07E+02 (c)	7.24E-01 (c)	7.20E-02 (c)	8.20E-06 (c)	6.28E-03
Toluene	108-88-3	1.61E+00 (a)	2.68E+02 (c)	2.71E-01 (c)	8.70E-02 (c)	8.60E-06 (c)	1.37E-03
Trichloroethene	79-01-6	4.06E-01 (a)	6.77E+01 (c)	4.03E-01 (c)	7.90E-02 (c)	9.10E-06 (c)	6.04E-03
Xylenes, Total	1330-20-7	2.66E+00 (a)	4.43E+02 (c)	2.71E-01 (c)	7.14E-02 (c)	9.34E-06 (c)	6.91E-04
SVOCs							
1,2,4-Trichlorobenzene	120-82-1	4.31E+00 (a)	7.18E+02 (c)	5.81E-02 (c)	3.00E-02 (c)	8.23E-06 (c)	3.93E-05
1,2-Dichlorobenzene	95-50-1	2.66E+00 (a)	4.43E+02 (c)	7.85E-02 (c)	6.90E-02 (c)	7.90E-06 (c)	1.96E-04
1,4-Dichlorobenzene	106-46-7	2.60E+00 (a)	4.34E+02 (c)	9.85E-02 (c)	6.90E-02 (c)	7.90E-06 (c)	2.51E-04
2-Chlorophenol	95-57-8	2.66E+00 (a)	4.43E+02 (c)	4.58E-04 (c)	5.01E-02 (c)	9.46E-06 (c)	8.37E-07
2-Methylnaphthalene	91-57-6	1.79E+01 (a)	2.98E+03 (c)	2.12E-02 (c)	4.80E-02 (c)	7.84E-06 (c)	5.58E-06
bis(2-Chloroethyl)ether	111-44-4	8.97E-02 (a)	1.50E+01 (c)	6.95E-04 (c)	6.92E-02 (c)	7.53E-06 (c)	3.87E-05
Naphthalene	91-20-3	1.10E+01 (a)	1.84E+03 (c)	1.80E-02 (c)	5.90E-02 (c)	7.50E-06 (c)	9.42E-06
Nitrobenzene	98-95-3	1.14E+00 (a)	1.91E+02 (c)	9.81E-04 (c)	7.60E-02 (c)	8.60E-06 (c)	6.21E-06

Notes:
CAS - Chemical Abstracts Service.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
foc - fraction organic carbon.
(a) Kd = Koc*foc, where foc = 0.006, per USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites.
(b) Equation 4-8 from USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites:

$$Da = \frac{[(O_a^{10/3} D_i H' + O_w^{10/3} D_w)/n^2]}{P_b K_d + O_w + O_a H'}$$

Soil Parameters and references are listed in Table C-3:

O_a	Air-filled soil porosity	0.322	Lair/Lsoil
O_w	Water-filled soil porosity	0.053	Lwater/Lsoil
n	Total soil porosity	0.375	Lpore/Lsoil
P_b	Dry soil bulk density	1.66	g/cm^3

(c) Risk Assessment Information System (RAIS). Toxicity and Chemical-Specific Factors Data Base. URL: [http://risk.lsd.ornl.gov/index.shtml].
(d) Value for mixed isomers.
(e) Value is for trans-1,2-dichloroethene. No value available for mixed isomers.

TABLE C-5
DEVELOPMENT OF VOLATILIZATION FACTORS FOR THE ON-SITE WORKER (RME) FOR THE SOIL TO OUTDOOR AIR PATHWAY
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

		Volatilization Factors (a)								
Constituent	**Apparent Diffusivity (D_a) (c) (cm^2/s)**	**O (m^3/kg)**	**O North (m^3/kg)**	**O South (m^3/kg)**	**P (m^3/kg)**	**Q Central (m^3/kg)**	**Q North (m^3/kg)**	**Q South (m^3/kg)**	**R (m^3/kg)**	**S (m^3/kg)**
Acres		28	3	4	32	67	52	87	36	0.8
Q/C_{vol} Value (g/m^2-s per kg/m^3) (b):		51.19	72.22	68.91	50.22	45.32	46.92	43.76	49.39	89.90
VOCs										
1,1,2-Trichloroethane	5.79E-04	3.19E+03	4.50E+03	4.29E+03	3.13E+03	2.82E+03	2.92E+03	2.72E+03	3.07E+03	5.60E+03
1,2-Dichloroethane	1.62E-03	1.91E+03	2.69E+03	2.57E+03	1.87E+03	1.69E+03	1.75E+03	1.63E+03	1.84E+03	3.35E+03
1,2-Dichloroethene (total)	3.54E-03	1.29E+03	1.82E+03	1.74E+03	1.27E+03	1.14E+03	1.18E+03	1.10E+03	1.24E+03	2.26E+03
Benzene	1.83E-03	1.79E+03	2.53E+03	2.41E+03	1.76E+03	1.59E+03	1.64E+03	1.53E+03	1.73E+03	3.15E+03
Chlorobenzene	5.46E-04	3.28E+03	4.63E+03	4.42E+03	3.22E+03	2.91E+03	3.01E+03	2.81E+03	3.17E+03	5.77E+03
Chloroform	5.64E-03	1.02E+03	1.44E+03	1.38E+03	1.00E+03	9.05E+02	9.36E+02	8.73E+02	9.86E+02	1.79E+03
Dichloromethane	6.58E-03	9.46E+02	1.33E+03	1.27E+03	9.28E+02	8.37E+02	8.67E+02	8.08E+02	9.13E+02	1.66E+03
Ethylbenzene	7.40E-04	2.82E+03	3.98E+03	3.80E+03	2.77E+03	2.50E+03	2.59E+03	2.41E+03	2.72E+03	4.95E+03
Hexane	9.49E-02	2.49E+02	3.51E+02	3.35E+02	2.44E+02	2.20E+02	2.28E+02	2.13E+02	2.40E+02	4.37E+02
Tetrachloroethene	6.28E-03	9.68E+02	1.37E+03	1.30E+03	9.49E+02	8.57E+02	8.87E+02	8.27E+02	9.34E+02	1.70E+03
Toluene	1.37E-03	2.08E+03	2.93E+03	2.79E+03	2.04E+03	1.84E+03	1.90E+03	1.77E+03	2.00E+03	3.65E+03
Trichloroethene	6.04E-03	9.87E+02	1.39E+03	1.33E+03	9.68E+02	8.74E+02	9.04E+02	8.43E+02	9.52E+02	1.73E+03
Xylenes, Total	6.91E-04	2.92E+03	4.12E+03	3.93E+03	2.86E+03	2.58E+03	2.67E+03	2.49E+03	2.81E+03	5.12E+03
SVOCs										
1,2,4-Trichlorobenzene	3.93E-05	1.22E+04	1.73E+04	1.65E+04	1.20E+04	1.08E+04	1.12E+04	1.05E+04	1.18E+04	2.15E+04
1,2-Dichlorobenzene	1.96E-04	5.48E+03	7.73E+03	7.37E+03	5.37E+03	4.85E+03	5.02E+03	4.68E+03	5.28E+03	9.62E+03
1,4-Dichlorobenzene	2.51E-04	4.84E+03	6.83E+03	6.52E+03	4.75E+03	4.29E+03	4.44E+03	4.14E+03	4.67E+03	8.51E+03
2-Chlorophenol	8.37E-07	8.39E+04	1.18E+05	1.13E+05	8.23E+04	7.42E+04	7.69E+04	7.17E+04	8.09E+04	1.47E+05
2-Methylnaphthalene	5.58E-06	3.25E+04	4.58E+04	4.37E+04	3.19E+04	2.88E+04	2.98E+04	2.78E+04	3.13E+04	5.71E+04
bis(2-Chloroethyl)ether	3.87E-05	1.23E+04	1.74E+04	1.66E+04	1.21E+04	1.09E+04	1.13E+04	1.05E+04	1.19E+04	2.16E+04
Naphthalene	9.42E-06	2.50E+04	3.53E+04	3.37E+04	2.45E+04	2.21E+04	2.29E+04	2.14E+04	2.41E+04	4.39E+04
Nitrobenzene	6.21E-06	3.08E+04	4.34E+04	4.14E+04	3.02E+04	2.73E+04	2.82E+04	2.63E+04	2.97E+04	5.41E+04

Notes:
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Equation 4-8 from USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites:

$$VF\ (m^3/kg) = (Q/C)_{vol}\ x\ \frac{(3.14 D_a T)^{1/2}}{(2 P_b D_a)}\ x\ 10^{-4}\ (m^2/cm^2)$$

Soil/Exposure Parameters and references are listed in Table C-3:

P_b	Dry soil bulk density	1.66	g/cm^3
T	Exposure Time	7.88E+08	seconds

(b) Calculated in Table C-1.
(c) Da = Apparent Diffusivisty (cm2/s). Constituent-specific value calculated in Table C-4.

TABLE C-6
DEVELOPMENT OF VOLATILIZATION FACTORS FOR THE ON-SITE WORKER (MLE) FOR THE SOIL TO OUTDOOR AIR PATHWAY
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

		Volatilization Factors (a)								
Constituent	**Apparent Diffusivity (D_a) (c) (cm^2/s)**	**O (m^3/kg)**	**O North (m^3/kg)**	**O South (m^3/kg)**	**P (m^3/kg)**	**Q Central (m^3/kg)**	**Q North (m^3/kg)**	**Q South (m^3/kg)**	**R (m^3/kg)**	**S (m^3/kg)**
Acres		28	3	4	32	67	52	87	36	0.8
Dispersion Factor: Q/C_{vol} Value (g/m^2-s per kg/m^3) (b):		51.19	72.22	68.91	50.22	45.32	46.92	43.76	49.39	89.90
VOCs										
1,1,2-Trichloroethane	5.79E-04	1.69E+03	2.38E+03	2.27E+03	1.65E+03	1.49E+03	1.55E+03	1.44E+03	1.63E+03	2.96E+03
1,2-Dichloroethane	1.62E-03	1.01E+03	1.42E+03	1.36E+03	9.91E+02	8.94E+02	9.25E+02	8.63E+02	9.74E+02	1.77E+03
1,2-Dichloroethene (total)	3.54E-03	6.82E+02	9.63E+02	9.19E+02	6.69E+02	6.04E+02	6.25E+02	5.83E+02	6.58E+02	1.20E+03
Benzene	1.83E-03	9.48E+02	1.34E+03	1.28E+03	9.31E+02	8.40E+02	8.69E+02	8.11E+02	9.15E+02	1.67E+03
Chlorobenzene	5.46E-04	1.74E+03	2.45E+03	2.34E+03	1.70E+03	1.54E+03	1.59E+03	1.48E+03	1.68E+03	3.05E+03
Chloroform	5.64E-03	5.41E+02	7.63E+02	7.28E+02	5.30E+02	4.79E+02	4.96E+02	4.62E+02	5.22E+02	9.50E+02
Dichloromethane	6.58E-03	5.00E+02	7.06E+02	6.74E+02	4.91E+02	4.43E+02	4.59E+02	4.28E+02	4.83E+02	8.79E+02
Ethylbenzene	7.40E-04	1.49E+03	2.11E+03	2.01E+03	1.46E+03	1.32E+03	1.37E+03	1.28E+03	1.44E+03	2.62E+03
Hexane	9.49E-02	1.32E+02	1.86E+02	1.77E+02	1.29E+02	1.17E+02	1.21E+02	1.13E+02	1.27E+02	2.31E+02
Tetrachloroethene	6.28E-03	5.12E+02	7.22E+02	6.89E+02	5.02E+02	4.53E+02	4.69E+02	4.38E+02	4.94E+02	8.99E+02
Toluene	1.37E-03	1.10E+03	1.55E+03	1.48E+03	1.08E+03	9.73E+02	1.01E+03	9.39E+02	1.06E+03	1.93E+03
Trichloroethene	6.04E-03	5.22E+02	7.37E+02	7.03E+02	5.12E+02	4.62E+02	4.79E+02	4.46E+02	5.04E+02	9.17E+02
Xylenes, Total	6.91E-04	1.54E+03	2.18E+03	2.08E+03	1.51E+03	1.37E+03	1.41E+03	1.32E+03	1.49E+03	2.71E+03
SVOCs										
1,2,4-Trichlorobenzene	3.93E-05	6.48E+03	9.14E+03	8.72E+03	6.35E+03	5.73E+03	5.94E+03	5.54E+03	6.25E+03	1.14E+04
1,2-Dichlorobenzene	1.96E-04	2.90E+03	4.09E+03	3.90E+03	2.84E+03	2.57E+03	2.66E+03	2.48E+03	2.80E+03	5.09E+03
1,4-Dichlorobenzene	2.51E-04	2.56E+03	3.62E+03	3.45E+03	2.51E+03	2.27E+03	2.35E+03	2.19E+03	2.47E+03	4.50E+03
2-Chlorophenol	8.37E-07	4.44E+04	6.26E+04	5.97E+04	4.35E+04	3.93E+04	4.07E+04	3.79E+04	4.28E+04	7.79E+04
2-Methylnaphthalene	5.58E-06	1.72E+04	2.43E+04	2.31E+04	1.69E+04	1.52E+04	1.58E+04	1.47E+04	1.66E+04	3.02E+04
bis(2-Chloroethyl)ether	3.87E-05	6.52E+03	9.20E+03	8.78E+03	6.40E+03	5.77E+03	5.98E+03	5.58E+03	6.29E+03	1.15E+04
Naphthalene	9.42E-06	1.32E+04	1.87E+04	1.78E+04	1.30E+04	1.17E+04	1.21E+04	1.13E+04	1.28E+04	2.32E+04
Nitrobenzene	6.21E-06	1.63E+04	2.30E+04	2.19E+04	1.60E+04	1.44E+04	1.49E+04	1.39E+04	1.57E+04	2.86E+04

Notes:
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Equation 4-8 from USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites:

$$VF\ (m^3/kg) = (Q/C)_{vol}\ x\ \frac{(3.14 D_a T)^{1/2}}{(2 P_b D_a)}\ x\ 10^{-4}\ (m^2/cm^2)$$

Soil/Exposure Parameters and references are listed in Table C-3:

P_b	Dry soil bulk density	1.66	g/cm^3
T	Exposure Time	2.21E+08	seconds

(b) Calculated in Table C-1.
(c) Da = Apparent Diffusivisty (cm2/s). Constituent-specific value calculated in Table C-4.

TABLE C-7
DEVELOPMENT OF VOLATILIZATION FACTORS FOR THE TRESPASSING TEENAGER (RME/MLE) FOR THE SOIL TO OUTDOOR AIR PATHWAY
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

		Volatilization Factors (a)								
Constituent	**Apparent Diffusivity (D_a) (c) (cm^2/s)**	**O (m^3/kg)**	**O North (m^3/kg)**	**O South (m^3/kg)**	**P (m^3/kg)**	**Q Central (m^3/kg)**	**Q North (m^3/kg)**	**Q South (m^3/kg)**	**R (m^3/kg)**	**S (m^3/kg)**
Acres		28	3	4	32	67	52	87	36	0.8
Q/C_{vol} Value (g/m^2-s per kg/m^3) (b):		51.19	72.22	68.91	50.22	45.32	46.92	43.76	49.39	89.90
VOCs										
1,1,2-Trichloroethane	5.79E-04	2.11E+03	2.98E+03	2.85E+03	2.07E+03	1.87E+03	1.94E+03	1.81E+03	2.04E+03	3.71E+03
1,2-Dichloroethane	1.62E-03	1.27E+03	1.79E+03	1.70E+03	1.24E+03	1.12E+03	1.16E+03	1.08E+03	1.22E+03	2.22E+03
1,2-Dichloroethene (total)	3.54E-03	8.55E+02	1.21E+03	1.15E+03	8.39E+02	7.57E+02	7.84E+02	7.31E+02	8.25E+02	1.50E+03
Benzene	1.83E-03	1.19E+03	1.68E+03	1.60E+03	1.17E+03	1.05E+03	1.09E+03	1.02E+03	1.15E+03	2.09E+03
Chlorobenzene	5.46E-04	2.18E+03	3.07E+03	2.93E+03	2.14E+03	1.93E+03	2.00E+03	1.86E+03	2.10E+03	3.82E+03
Chloroform	5.64E-03	6.78E+02	9.56E+02	9.12E+02	6.65E+02	6.00E+02	6.21E+02	5.79E+02	6.54E+02	1.19E+03
Dichloromethane	6.58E-03	6.27E+02	8.85E+02	8.45E+02	6.16E+02	5.55E+02	5.75E+02	5.36E+02	6.05E+02	1.10E+03
Ethylbenzene	7.40E-04	1.87E+03	2.64E+03	2.52E+03	1.84E+03	1.66E+03	1.72E+03	1.60E+03	1.81E+03	3.29E+03
Hexane	9.49E-02	1.65E+02	2.33E+02	2.22E+02	1.62E+02	1.46E+02	1.51E+02	1.41E+02	1.59E+02	2.90E+02
Tetrachloroethene	6.28E-03	6.42E+02	9.06E+02	8.64E+02	6.30E+02	5.68E+02	5.88E+02	5.49E+02	6.19E+02	1.13E+03
Toluene	1.37E-03	1.38E+03	1.94E+03	1.85E+03	1.35E+03	1.22E+03	1.26E+03	1.18E+03	1.33E+03	2.42E+03
Trichloroethene	6.04E-03	6.55E+02	9.23E+02	8.81E+02	6.42E+02	5.79E+02	6.00E+02	5.59E+02	6.31E+02	1.15E+03
Xylenes, Total	6.91E-04	1.94E+03	2.73E+03	2.61E+03	1.90E+03	1.71E+03	1.77E+03	1.65E+03	1.87E+03	3.40E+03
SVOCs										
1,2,4-Trichlorobenzene	3.93E-05	8.12E+03	1.15E+04	1.09E+04	7.96E+03	7.19E+03	7.44E+03	6.94E+03	7.83E+03	1.43E+04
1,2-Dichlorobenzene	1.96E-04	3.63E+03	5.13E+03	4.89E+03	3.56E+03	3.22E+03	3.33E+03	3.11E+03	3.50E+03	6.38E+03
1,4-Dichlorobenzene	2.51E-04	3.21E+03	4.53E+03	4.32E+03	3.15E+03	2.84E+03	2.94E+03	2.75E+03	3.10E+03	5.64E+03
2-Chlorophenol	8.37E-07	5.56E+04	7.85E+04	7.49E+04	5.46E+04	4.92E+04	5.10E+04	4.75E+04	5.37E+04	9.77E+04
2-Methylnaphthalene	5.58E-06	2.16E+04	3.04E+04	2.90E+04	2.11E+04	1.91E+04	1.98E+04	1.84E+04	2.08E+04	3.79E+04
bis(2-Chloroethyl)ether	3.87E-05	8.18E+03	1.15E+04	1.10E+04	8.02E+03	7.24E+03	7.49E+03	6.99E+03	7.89E+03	1.44E+04
Naphthalene	9.42E-06	1.66E+04	2.34E+04	2.23E+04	1.63E+04	1.47E+04	1.52E+04	1.42E+04	1.60E+04	2.91E+04
Nitrobenzene	6.21E-06	2.04E+04	2.88E+04	2.75E+04	2.00E+04	1.81E+04	1.87E+04	1.75E+04	1.97E+04	3.59E+04

Notes:
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Equation 4-8 from USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites:

$$VF\ (m^3/kg) = (Q/C)_{vol}\ x\ \frac{(3.14 D_a T)^{1/2}}{(2 P_b D_a)}\ x\ 10^{-4}\ (m^2/cm^2)$$

Soil/Exposure Parameters and references are listed in Table C-3:

P_b	Dry soil bulk density	1.66	g/cm^3
T	Exposure Time	3.47E+08	seconds

(b) Calculated in Table C-1.
(c) Da = Apparent Diffusivisty (cm2/s). Constituent-specific value calculated in Table C-4.

TABLE C-8
DEVELOPMENT OF VOLATILIZATION FACTORS FOR THE CONSTRUCTION WORKER (RME/MLE) FOR THE SOIL TO EXCAVATION AIR PATHWAY
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

		Volatilization Factors (a)								
Constituent	**Apparent Diffusivity (D_a) (c) (cm^2/s)**	**O (m^3/kg)**	**O North (m^3/kg)**	**O South (m^3/kg)**	**P (m^3/kg)**	**Q Central (m^3/kg)**	**Q North (m^3/kg)**	**Q South (m^3/kg)**	**R (m^3/kg)**	**S (m^3/kg)**
Acres		28	3	4	32	67	52	87	36	0.8
Q/C_{sa} Value (g/m^2-s per kg/m^3) (b):		7.17	10.30	9.80	7.02	6.31	6.54	6.08	6.90	13.00
VOCs										
1,1,2-Trichloroethane	1.62E-03	4.82E+02	6.93E+02	6.60E+02	4.73E+02	4.25E+02	4.40E+02	4.09E+02	4.65E+02	8.75E+02
1,2-Dichloroethane	3.54E-03	2.89E+02	4.15E+02	3.95E+02	2.83E+02	2.54E+02	2.64E+02	2.45E+02	2.78E+02	5.24E+02
1,2-Dichloroethene (total)	1.83E-03	1.95E+02	2.81E+02	2.67E+02	1.91E+02	1.72E+02	1.78E+02	1.66E+02	1.88E+02	3.54E+02
Benzene	5.46E-04	2.71E+02	3.90E+02	3.71E+02	2.66E+02	2.39E+02	2.48E+02	2.30E+02	2.61E+02	4.92E+02
Chlorobenzene	5.64E-03	4.97E+02	7.14E+02	6.80E+02	4.87E+02	4.37E+02	4.54E+02	4.22E+02	4.79E+02	9.01E+02
Chloroform	6.58E-03	1.55E+02	2.22E+02	2.11E+02	1.52E+02	1.36E+02	1.41E+02	1.31E+02	1.49E+02	2.80E+02
Dichloromethane	7.40E-04	1.43E+02	2.06E+02	1.96E+02	1.40E+02	1.26E+02	1.31E+02	1.22E+02	1.38E+02	2.60E+02
Ethylbenzene	9.49E-02	4.27E+02	6.14E+02	5.84E+02	4.18E+02	3.76E+02	3.90E+02	3.62E+02	4.11E+02	7.74E+02
Hexane	6.28E-03	3.77E+01	5.42E+01	5.15E+01	3.69E+01	3.32E+01	3.44E+01	3.20E+01	3.63E+01	6.83E+01
Tetrachloroethene	1.37E-03	1.46E+02	2.11E+02	2.00E+02	1.44E+02	1.29E+02	1.34E+02	1.24E+02	1.41E+02	2.66E+02
Toluene	6.04E-03	3.14E+02	4.52E+02	4.30E+02	3.08E+02	2.77E+02	2.87E+02	2.67E+02	3.03E+02	5.70E+02
Trichloroethene	6.91E-04	1.49E+02	2.15E+02	2.04E+02	1.46E+02	1.31E+02	1.36E+02	1.27E+02	1.44E+02	2.71E+02
Xylenes, Total	0.00E+00	4.42E+02	6.35E+02	6.04E+02	4.33E+02	3.89E+02	4.03E+02	3.75E+02	4.25E+02	8.01E+02
SVOCs										
1,2,4-Trichlorobenzene	1.96E-04	1.85E+03	2.66E+03	2.53E+03	1.82E+03	1.63E+03	1.69E+03	1.57E+03	1.78E+03	3.36E+03
1,2-Dichlorobenzene	2.51E-04	8.29E+02	1.19E+03	1.13E+03	8.12E+02	7.30E+02	7.57E+02	7.03E+02	7.98E+02	1.50E+03
1,4-Dichlorobenzene	8.37E-07	7.33E+02	1.05E+03	1.00E+03	7.18E+02	6.45E+02	6.69E+02	6.22E+02	7.06E+02	1.33E+03
2-Chlorophenol	5.58E-06	1.27E+04	1.82E+04	1.74E+04	1.24E+04	1.12E+04	1.16E+04	1.08E+04	1.22E+04	2.30E+04
2-Methylnaphthalene	3.87E-05	4.92E+03	7.07E+03	6.72E+03	4.82E+03	4.33E+03	4.49E+03	4.17E+03	4.74E+03	8.92E+03
bis(2-Chloroethyl)ether	9.42E-06	1.87E+03	2.68E+03	2.55E+03	1.83E+03	1.64E+03	1.70E+03	1.58E+03	1.80E+03	3.38E+03
Naphthalene	6.21E-06	3.78E+03	5.44E+03	5.17E+03	3.71E+03	3.33E+03	3.45E+03	3.21E+03	3.64E+03	6.86E+03
Nitrobenzene	0.00E+00	4.66E+03	6.70E+03	6.37E+03	4.57E+03	4.10E+03	4.25E+03	3.95E+03	4.49E+03	8.45E+03

Notes:
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Equation 5-14 from USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites:

$$VF\ (m^3/kg) = (Q/C)_{sa}\ x\ \frac{(3.14 D_a T)^{1/2}}{(2 P_b D_a)}\ x\ 10^{-4}\ (m^2/cm^2)\ x\ \frac{1}{F_d}$$

Soil/Exposure Parameters and references are listed in Table C-3:

P_b	Dry soil bulk density	0.006	g/cm^3
T	Exposure Time	3.15E+07	seconds
Fd	Q/C Correction	0.185	unitless

(b) Calculated in Table C-1.
(c) Da = Apparent Diffusivisty (cm2/s). Constituent-specific value calculated in Table C-4.

TABLE C-9
OUTDOOR AIR CONCENTRATIONS -ON-SITE WORKER (RME) VOCs FROM COMBINED SOIL TO OUTDOOR AIR
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	O			O North			O South		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	3.19E+03	NCOPC	NCOPC	4.50E+03	NCOPC	NCOPC	4.29E+03	NCOPC
1,2-Dichloroethane	NCOPC	1.91E+03	NCOPC	NCOPC	2.69E+03	NCOPC	NCOPC	2.57E+03	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.29E+03	NCOPC	NCOPC	1.82E+03	NCOPC	NCOPC	1.74E+03	NCOPC
Benzene	2.02E+02	1.79E+03	1.13E-01	6.90E+01	2.53E+03	2.73E-02	NCOPC	2.41E+03	NCOPC
Chlorobenzene	2.32E+02	3.28E+03	7.06E-02	4.80E+02	4.63E+03	1.04E-01	NCOPC	4.42E+03	NCOPC
Chloroform	NCOPC	1.02E+03	NCOPC	NCOPC	1.44E+03	NCOPC	NCOPC	1.38E+03	NCOPC
Dichloromethane	NCOPC	9.46E+02	NCOPC	8.70E+01	1.33E+03	6.52E-02	NCOPC	1.27E+03	NCOPC
Ethylbenzene	1.13E+03	2.82E+03	4.01E-01	7.60E+02	3.98E+03	1.91E-01	NCOPC	3.80E+03	NCOPC
Hexane	NCOPC	2.49E+02	NCOPC	NCOPC	3.51E+02	NCOPC	NCOPC	3.35E+02	NCOPC
Tetrachloroethene	3.00E+00	9.68E+02	3.10E-03	6.80E+00	1.37E+03	4.98E-03	NCOPC	1.30E+03	NCOPC
Toluene	1.54E+02	2.08E+03	7.43E-02	NCOPC	2.93E+03	NCOPC	NCOPC	2.79E+03	NCOPC
Trichloroethene	NCOPC	9.87E+02	NCOPC	NCOPC	1.39E+03	NCOPC	NCOPC	1.33E+03	NCOPC
Xylenes, Total	5.61E+03	2.92E+03	1.92E+00	3.90E+03	4.12E+03	9.48E-01	NCOPC	3.93E+03	NCOPC
SVOCs									
1,2,4-Trichlorobenzene	1.20E+01	1.22E+04	9.80E-04	2.90E+02	1.73E+04	1.68E-02	NCOPC	1.65E+04	NCOPC
1,2-Dichlorobenzene	NCOPC	5.48E+03	NCOPC	5.20E+02	7.73E+03	6.73E-02	NCOPC	7.37E+03	NCOPC
1,4-Dichlorobenzene	1.79E+01	4.84E+03	3.69E-03	1.80E+02	6.83E+03	2.63E-02	NCOPC	6.52E+03	NCOPC
2-Chlorophenol	NCOPC	8.39E+04	NCOPC	NCOPC	1.18E+05	NCOPC	NCOPC	1.13E+05	NCOPC
2-Methylnaphthalene	1.19E+01	3.25E+04	3.65E-04	2.00E+02	4.58E+04	4.36E-03	NCOPC	4.37E+04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.23E+04	NCOPC	2.10E+00	1.74E+04	1.21E-04	NCOPC	1.66E+04	NCOPC
Naphthalene	NCOPC	2.50E+04	NCOPC	4.10E+01	3.53E+04	1.16E-03	NCOPC	3.37E+04	NCOPC
Nitrobenzene	NCOPC	3.08E+04	NCOPC	1.10E+01	4.34E+04	2.53E-04	NCOPC	4.14E+04	NCOPC

See notes on last page

TABLE C-9
OUTDOOR AIR CONCENTRATIONS
HUMAN HEALTH RISK ASSESSME
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	P			Q Central			Q North		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	3.13E+03	NCOPC	NCOPC	2.82E+03	NCOPC	NCOPC	2.92E+03	NCOPC
1,2-Dichloroethane	NCOPC	1.87E+03	NCOPC	NCOPC	1.69E+03	NCOPC	NCOPC	1.75E+03	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.27E+03	NCOPC	NCOPC	1.14E+03	NCOPC	NCOPC	1.18E+03	NCOPC
Benzene	1.67E+00	1.76E+03	9.51E-04	NCOPC	1.59E+03	NCOPC	3.43E+00	1.64E+03	2.09E-03
Chlorobenzene	NCOPC	3.22E+03	NCOPC	6.17E+01	2.91E+03	2.12E-02	NCOPC	3.01E+03	NCOPC
Chloroform	3.10E+00	1.00E+03	3.09E-03	NCOPC	9.05E+02	NCOPC	NCOPC	9.36E+02	NCOPC
Dichloromethane	NCOPC	9.28E+02	NCOPC	NCOPC	8.37E+02	NCOPC	NCOPC	8.67E+02	NCOPC
Ethylbenzene	NCOPC	2.77E+03	NCOPC	NCOPC	2.50E+03	NCOPC	NCOPC	2.59E+03	NCOPC
Hexane	8.00E+01	2.44E+02	3.27E-01	NCOPC	2.20E+02	NCOPC	NCOPC	2.28E+02	NCOPC
Tetrachloroethene	5.07E+01	9.49E+02	5.34E-02	NCOPC	8.57E+02	NCOPC	1.08E+01	8.87E+02	1.21E-02
Toluene	NCOPC	2.04E+03	NCOPC	NCOPC	1.84E+03	NCOPC	NCOPC	1.90E+03	NCOPC
Trichloroethene	1.32E-01	9.68E+02	1.36E-04	NCOPC	8.74E+02	NCOPC	4.00E-01	9.04E+02	4.42E-04
Xylenes, Total	1.27E+02	2.86E+03	4.42E-02	1.60E+02	2.58E+03	6.19E-02	1.24E+02	2.67E+03	4.64E-02
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	1.20E+04	NCOPC	NCOPC	1.08E+04	NCOPC	NCOPC	1.12E+04	NCOPC
1,2-Dichlorobenzene	NCOPC	5.37E+03	NCOPC	NCOPC	4.85E+03	NCOPC	NCOPC	5.02E+03	NCOPC
1,4-Dichlorobenzene	1.87E+01	4.75E+03	3.93E-03	3.37E+00	4.29E+03	7.87E-04	NCOPC	4.44E+03	NCOPC
2-Chlorophenol	NCOPC	8.23E+04	NCOPC	NCOPC	7.42E+04	NCOPC	NCOPC	7.69E+04	NCOPC
2-Methylnaphthalene	NCOPC	3.19E+04	NCOPC	NCOPC	2.88E+04	NCOPC	NCOPC	2.98E+04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.21E+04	NCOPC	NCOPC	1.09E+04	NCOPC	NCOPC	1.13E+04	NCOPC
Naphthalene	NCOPC	2.45E+04	NCOPC	NCOPC	2.21E+04	NCOPC	NCOPC	2.29E+04	NCOPC
Nitrobenzene	NCOPC	3.02E+04	NCOPC	NCOPC	2.73E+04	NCOPC	NCOPC	2.82E+04	NCOPC

See notes on last page

TABLE C-9
OUTDOOR AIR CONCENTRATIONS
HUMAN HEALTH RISK ASSESSME
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Q South			R			S		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	2.72E+03	NCOPC	9.50E+00	3.07E+03	3.09E-03	NCOPC	5.60E+03	NCOPC
1,2-Dichloroethane	NCOPC	1.63E+03	NCOPC	3.25E+01	1.84E+03	1.77E-02	NCOPC	3.35E+03	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.10E+03	NCOPC	1.39E+01	1.24E+03	1.12E-02	NCOPC	2.26E+03	NCOPC
Benzene	3.48E-01	1.53E+03	2.27E-04	1.17E+02	1.73E+03	6.74E-02	1.46E+01	3.15E+03	4.64E-03
Chlorobenzene	NCOPC	2.81E+03	NCOPC	1.10E+03	3.17E+03	3.47E-01	1.20E+03	5.77E+03	2.08E-01
Chloroform	NCOPC	8.73E+02	NCOPC	7.27E+00	9.86E+02	7.37E-03	NCOPC	1.79E+03	NCOPC
Dichloromethane	NCOPC	8.08E+02	NCOPC	NCOPC	9.13E+02	NCOPC	2.34E+01	1.66E+03	1.41E-02
Ethylbenzene	NCOPC	2.41E+03	NCOPC	NCOPC	2.72E+03	NCOPC	6.55E+02	4.95E+03	1.32E-01
Hexane	NCOPC	2.13E+02	NCOPC	NCOPC	2.40E+02	NCOPC	NCOPC	4.37E+02	NCOPC
Tetrachloroethene	2.26E+00	8.27E+02	2.74E-03	7.64E+02	9.34E+02	8.18E-01	1.63E+01	1.70E+03	9.60E-03
Toluene	3.17E+02	1.77E+03	1.79E-01	3.21E+02	2.00E+03	1.60E-01	3.23E+03	3.65E+03	8.85E-01
Trichloroethene	5.58E-02	8.43E+02	6.62E-05	1.09E+03	9.52E+02	1.15E+00	6.72E+01	1.73E+03	3.88E-02
Xylenes, Total	4.64E+02	2.49E+03	1.86E-01	1.51E+02	2.81E+03	5.38E-02	4.09E+03	5.12E+03	7.98E-01
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	1.05E+04	NCOPC	1.20E+02	1.18E+04	1.02E-02	3.60E+01	2.15E+04	1.67E-03
1,2-Dichlorobenzene	NCOPC	4.68E+03	NCOPC	NCOPC	5.28E+03	NCOPC	NCOPC	9.62E+03	NCOPC
1,4-Dichlorobenzene	NCOPC	4.14E+03	NCOPC	2.40E+01	4.67E+03	5.14E-03	2.00E+02	8.51E+03	2.35E-02
2-Chlorophenol	NCOPC	7.17E+04	NCOPC	3.90E+02	8.09E+04	4.82E-03	NCOPC	1.47E+05	NCOPC
2-Methylnaphthalene	NCOPC	2.78E+04	NCOPC	NCOPC	3.13E+04	NCOPC	NCOPC	5.71E+04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.05E+04	NCOPC	NCOPC	1.19E+04	NCOPC	NCOPC	2.16E+04	NCOPC
Naphthalene	NCOPC	2.14E+04	NCOPC	1.20E+02	2.41E+04	4.97E-03	2.59E+01	4.39E+04	5.90E-04
Nitrobenzene	NCOPC	2.63E+04	NCOPC	4.80E+01	2.97E+04	1.62E-03	NCOPC	5.41E+04	NCOPC

Notes:

NCOPC - Not a Constituent of Potential Concern in this area.

SVOCs - Semivolatile Organic Compounds.

VOCs - Volatile Organic Compounds; those with Henry's Law Constant greater than 10^5 atm-m^3/mol and a molecular weight greater than 200 g/mol.

(a) Exposure Point Concentration (EPC) selected in Table 3.2 and presented in Table 3.2RME.

(b) Volatilization Factor (VF) calculated in Table C-5.

(c) Outdoor air concentration = combined soil EPC/VF.

TABLE C-10
OUTDOOR AIR CONCENTRATIONS -ON-SITE WORKER (MLE) VOCs FROM COMBINED SOIL TO OUTDOOR AIR (a)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	O			O North			O South		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	1.69E+03	NCOPC	NCOPC	2.38E+03	NCOPC	NCOPC	2.27E+03	NCOPC
1,2-Dichloroethane	NCOPC	1.01E+03	NCOPC	NCOPC	1.42E+03	NCOPC	NCOPC	1.36E+03	NCOPC
1,2-Dichloroethene (total)	NCOPC	6.82E+02	NCOPC	NCOPC	9.63E+02	NCOPC	NCOPC	9.19E+02	NCOPC
Benzene	6.34E+01	9.48E+02	6.68E-02	2.03E+01	1.34E+03	1.52E-02	NCOPC	1.28E+03	NCOPC
Chlorobenzene	1.89E+02	1.74E+03	1.09E-01	1.71E+02	2.45E+03	6.97E-02	NCOPC	2.34E+03	NCOPC
Chloroform	NCOPC	5.41E+02	NCOPC	NCOPC	7.63E+02	NCOPC	NCOPC	7.28E+02	NCOPC
Dichloromethane	NCOPC	5.00E+02	NCOPC	2.87E+01	7.06E+02	4.06E-02	NCOPC	6.74E+02	NCOPC
Ethylbenzene	3.30E+02	1.49E+03	2.21E-01	2.42E+02	2.11E+03	1.15E-01	NCOPC	2.01E+03	NCOPC
Hexane	NCOPC	1.32E+02	NCOPC	NCOPC	1.86E+02	NCOPC	NCOPC	1.77E+02	NCOPC
Tetrachloroethene	1.80E+00	5.12E+02	3.52E-03	1.82E+00	7.22E+02	2.51E-03	NCOPC	6.89E+02	NCOPC
Toluene	4.16E+01	1.10E+03	3.78E-02	NCOPC	1.55E+03	NCOPC	NCOPC	1.48E+03	NCOPC
Trichloroethene	NCOPC	5.22E+02	NCOPC	NCOPC	7.37E+02	NCOPC	NCOPC	7.03E+02	NCOPC
Xylenes, Total	1.60E+03	1.54E+03	1.04E+00	1.29E+03	2.18E+03	5.91E-01	NCOPC	2.08E+03	NCOPC
SVOCs									
1,2,4-Trichlorobenzene	1.12E+01	6.48E+03	1.73E-03	8.58E+01	9.14E+03	9.39E-03	NCOPC	8.72E+03	NCOPC
1,2-Dichlorobenzene	NCOPC	2.90E+03	NCOPC	1.25E+02	4.09E+03	3.05E-02	NCOPC	3.90E+03	NCOPC
1,4-Dichlorobenzene	1.94E+01	2.56E+03	7.58E-03	6.23E+01	3.62E+03	1.72E-02	NCOPC	3.45E+03	NCOPC
2-Chlorophenol	NCOPC	4.44E+04	NCOPC	NCOPC	6.26E+04	NCOPC	NCOPC	5.97E+04	NCOPC
2-Methylnaphthalene	1.12E+01	1.72E+04	6.53E-04	5.29E+01	2.43E+04	2.18E-03	NCOPC	2.31E+04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	6.52E+03	NCOPC	2.10E+00	9.20E+03	2.28E-04	NCOPC	8.78E+03	NCOPC
Naphthalene	NCOPC	1.32E+04	NCOPC	1.20E+01	1.87E+04	6.43E-04	NCOPC	1.78E+04	NCOPC
Nitrobenzene	NCOPC	1.63E+04	NCOPC	1.10E+01	2.30E+04	4.79E-04	NCOPC	2.19E+04	NCOPC

See notes on last page

TABLE C-10
OUTDOOR AIR CONCENTRATIONS -ON-S
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	P			Q Central			Q North		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	1.65E+03	NCOPC	NCOPC	1.49E+03	NCOPC	NCOPC	1.55E+03	NCOPC
1,2-Dichloroethane	NCOPC	9.91E+02	NCOPC	NCOPC	8.94E+02	NCOPC	NCOPC	9.25E+02	NCOPC
1,2-Dichloroethene (total)	NCOPC	6.69E+02	NCOPC	NCOPC	6.04E+02	NCOPC	NCOPC	6.25E+02	NCOPC
Benzene	1.19E+00	9.31E+02	1.28E-03	NCOPC	8.40E+02	NCOPC	6.35E-01	8.69E+02	7.31E-04
Chlorobenzene	NCOPC	1.70E+03	NCOPC	1.60E+01	1.54E+03	1.04E-02	NCOPC	1.59E+03	NCOPC
Chloroform	1.17E+00	5.30E+02	2.21E-03	NCOPC	4.79E+02	NCOPC	NCOPC	4.96E+02	NCOPC
Dichloromethane	NCOPC	4.91E+02	NCOPC	NCOPC	4.43E+02	NCOPC	NCOPC	4.59E+02	NCOPC
Ethylbenzene	NCOPC	1.46E+03	NCOPC	NCOPC	1.32E+03	NCOPC	NCOPC	1.37E+03	NCOPC
Hexane	4.30E+01	1.29E+02	3.33E-01	NCOPC	1.17E+02	NCOPC	NCOPC	1.21E+02	NCOPC
Tetrachloroethene	1.22E+01	5.02E+02	2.43E-02	NCOPC	4.53E+02	NCOPC	1.82E+00	4.69E+02	3.88E-03
Toluene	NCOPC	1.08E+03	NCOPC	NCOPC	9.73E+02	NCOPC	NCOPC	1.01E+03	NCOPC
Trichloroethene	1.97E-01	5.12E+02	3.85E-04	NCOPC	4.62E+02	NCOPC	1.00E-01	4.79E+02	2.09E-04
Xylenes, Total	4.80E+01	1.51E+03	3.17E-02	2.65E+01	1.37E+03	1.94E-02	2.04E+01	1.41E+03	1.44E-02
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	6.35E+03	NCOPC	NCOPC	5.73E+03	NCOPC	NCOPC	5.94E+03	NCOPC
1,2-Dichlorobenzene	NCOPC	2.84E+03	NCOPC	NCOPC	2.57E+03	NCOPC	NCOPC	2.66E+03	NCOPC
1,4-Dichlorobenzene	2.99E+01	2.51E+03	1.19E-02	2.65E+00	2.27E+03	1.17E-03	NCOPC	2.35E+03	NCOPC
2-Chlorophenol	NCOPC	4.35E+04	NCOPC	NCOPC	3.93E+04	NCOPC	NCOPC	4.07E+04	NCOPC
2-Methylnaphthalene	NCOPC	1.69E+04	NCOPC	NCOPC	1.52E+04	NCOPC	NCOPC	1.58E+04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	6.40E+03	NCOPC	NCOPC	5.77E+03	NCOPC	NCOPC	5.98E+03	NCOPC
Naphthalene	NCOPC	1.30E+04	NCOPC	NCOPC	1.17E+04	NCOPC	NCOPC	1.21E+04	NCOPC
Nitrobenzene	NCOPC	1.60E+04	NCOPC	NCOPC	1.44E+04	NCOPC	NCOPC	1.49E+04	NCOPC

See notes on last page

TABLE C-10
OUTDOOR AIR CONCENTRATIONS -ON-S
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Q South			R			S		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	1.44E+03	NCOPC	9.50E+00	1.63E+03	5.84E-03	NCOPC	2.96E+03	NCOPC
1,2-Dichloroethane	NCOPC	8.63E+02	NCOPC	2.86E+01	9.74E+02	2.93E-02	NCOPC	1.77E+03	NCOPC
1,2-Dichloroethene (total)	NCOPC	5.83E+02	NCOPC	1.35E+01	6.58E+02	2.05E-02	NCOPC	1.20E+03	NCOPC
Benzene	9.68E-02	8.11E+02	1.19E-04	2.62E+01	9.15E+02	2.86E-02	1.43E+01	1.67E+03	8.57E-03
Chlorobenzene	NCOPC	1.48E+03	NCOPC	2.54E+02	1.68E+03	1.52E-01	3.98E+02	3.05E+03	1.30E-01
Chloroform	NCOPC	4.62E+02	NCOPC	6.36E+00	5.22E+02	1.22E-02	NCOPC	9.50E+02	NCOPC
Dichloromethane	NCOPC	4.28E+02	NCOPC	NCOPC	4.83E+02	NCOPC	2.01E+01	8.79E+02	2.29E-02
Ethylbenzene	NCOPC	1.28E+03	NCOPC	NCOPC	1.44E+03	NCOPC	2.33E+02	2.62E+03	8.88E-02
Hexane	NCOPC	1.13E+02	NCOPC	NCOPC	1.27E+02	NCOPC	NCOPC	2.31E+02	NCOPC
Tetrachloroethene	4.83E-01	4.38E+02	1.10E-03	2.69E+02	4.94E+02	5.45E-01	1.16E+01	8.99E+02	1.29E-02
Toluene	3.83E+01	9.39E+02	4.08E-02	2.68E+02	1.06E+03	2.52E-01	1.07E+03	1.93E+03	5.56E-01
Trichloroethene	2.80E-02	4.46E+02	6.28E-05	3.38E+02	5.04E+02	6.71E-01	4.74E+01	9.17E+02	5.16E-02
Xylenes, Total	5.96E+01	1.32E+03	4.52E-02	4.95E+01	1.49E+03	3.32E-02	1.37E+03	2.71E+03	5.05E-01
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	5.54E+03	NCOPC	4.70E+01	6.25E+03	7.53E-03	2.17E+01	1.14E+04	1.90E-03
1,2-Dichlorobenzene	NCOPC	2.48E+03	NCOPC	NCOPC	2.80E+03	NCOPC	NCOPC	5.09E+03	NCOPC
1,4-Dichlorobenzene	NCOPC	2.19E+03	NCOPC	8.73E+00	2.47E+03	3.53E-03	7.07E+01	4.50E+03	1.57E-02
2-Chlorophenol	NCOPC	3.79E+04	NCOPC	1.12E+02	4.28E+04	2.61E-03	NCOPC	7.79E+04	NCOPC
2-Methylnaphthalene	NCOPC	1.47E+04	NCOPC	NCOPC	1.66E+04	NCOPC	NCOPC	3.02E+04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	5.58E+03	NCOPC	NCOPC	6.29E+03	NCOPC	NCOPC	1.15E+04	NCOPC
Naphthalene	NCOPC	1.13E+04	NCOPC	3.47E+01	1.28E+04	2.72E-03	2.19E+01	2.32E+04	9.42E-04
Nitrobenzene	NCOPC	1.39E+04	NCOPC	2.54E+01	1.57E+04	1.61E-03	NCOPC	2.86E+04	NCOPC

Notes:

NCOPC - Not a Constituent of Potential Concern in this area.

SVOCs - Semivolatile Organic Compounds.

VOCs - Volatile Organic Compounds; those with Henry's Law Constant greater than 10^5 atm-m^3/mol and a molecular weight greater than 200 g/mol.

(a) Exposure Point Concentration (EPC) selected in Table 3.2 and presented in Table 3.2MLE.

(b) Volatilization Factor (VF) calculated in Table C-6.

(c) Outdoor air concentration = combined soil EPC/VF.

TABLE C-11
OUTDOOR AIR CONCENTRATIONS -TRESPASSING TEENAGER (RME) VOCs FROM COMBINED SOIL TO OUTDOOR AIR (a)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	O			O North			O South		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	2.11E+03	NCOPC	NCOPC	2.98E+03	NCOPC	NCOPC	2.85E+03	NCOPC
1,2-Dichloroethane	NCOPC	1.27E+03	NCOPC	NCOPC	1.79E+03	NCOPC	NCOPC	1.70E+03	NCOPC
1,2-Dichloroethene (total)	NCOPC	8.55E+02	NCOPC	NCOPC	1.21E+03	NCOPC	NCOPC	1.15E+03	NCOPC
Benzene	2.02E+02	1.19E+03	1.70E-01	6.90E+01	1.68E+03	4.11E-02	NCOPC	1.60E+03	NCOPC
Chlorobenzene	2.32E+02	2.18E+03	1.06E-01	4.80E+02	3.07E+03	1.56E-01	NCOPC	2.93E+03	NCOPC
Chloroform	NCOPC	6.78E+02	NCOPC	NCOPC	9.56E+02	NCOPC	NCOPC	9.12E+02	NCOPC
Dichloromethane	NCOPC	6.27E+02	NCOPC	8.70E+01	8.85E+02	9.83E-02	NCOPC	8.45E+02	NCOPC
Ethylbenzene	1.13E+03	1.87E+03	6.04E-01	7.60E+02	2.64E+03	2.88E-01	NCOPC	2.52E+03	NCOPC
Hexane	NCOPC	1.65E+02	NCOPC	NCOPC	2.33E+02	NCOPC	NCOPC	2.22E+02	NCOPC
Tetrachloroethene	3.00E+00	6.42E+02	4.67E-03	6.80E+00	9.06E+02	7.51E-03	NCOPC	8.64E+02	NCOPC
Toluene	1.54E+02	1.38E+03	1.12E-01	NCOPC	1.94E+03	NCOPC	NCOPC	1.85E+03	NCOPC
Trichloroethene	NCOPC	6.55E+02	NCOPC	NCOPC	9.23E+02	NCOPC	NCOPC	8.81E+02	NCOPC
Xylenes, Total	5.61E+03	1.94E+03	2.90E+00	3.90E+03	2.73E+03	1.43E+00	NCOPC	2.61E+03	NCOPC
SVOCs									
1,2,4-Trichlorobenzene	1.20E+01	8.12E+03	1.48E-03	2.90E+02	1.15E+04	2.53E-02	NCOPC	1.09E+04	NCOPC
1,2-Dichlorobenzene	NCOPC	3.63E+03	NCOPC	5.20E+02	5.13E+03	1.01E-01	NCOPC	4.89E+03	NCOPC
1,4-Dichlorobenzene	1.79E+01	3.21E+03	5.56E-03	1.80E+02	4.53E+03	3.97E-02	NCOPC	4.32E+03	NCOPC
2-Chlorophenol	NCOPC	5.56E+04	NCOPC	NCOPC	7.85E+04	NCOPC	NCOPC	7.49E+04	NCOPC
2-Methylnaphthalene	1.19E+01	2.16E+04	5.50E-04	2.00E+02	3.04E+04	6.58E-03	NCOPC	2.90E+04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	8.18E+03	NCOPC	2.10E+00	1.15E+04	1.82E-04	NCOPC	1.10E+04	NCOPC
Naphthalene	NCOPC	1.66E+04	NCOPC	4.10E+01	2.34E+04	1.75E-03	NCOPC	2.23E+04	NCOPC
Nitrobenzene	NCOPC	2.04E+04	NCOPC	1.10E+01	2.88E+04	3.82E-04	NCOPC	2.75E+04	NCOPC

See notes on last page

TABLE C-11
OUTDOOR AIR CONCENTRATIONS -TRE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	P			Q Central			Q North		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	2.07E+03	NCOPC	NCOPC	1.87E+03	NCOPC	NCOPC	1.94E+03	NCOPC
1,2-Dichloroethane	NCOPC	1.24E+03	NCOPC	NCOPC	1.12E+03	NCOPC	NCOPC	1.16E+03	NCOPC
1,2-Dichloroethene (total)	NCOPC	8.39E+02	NCOPC	NCOPC	7.57E+02	NCOPC	NCOPC	7.84E+02	NCOPC
Benzene	1.67E+00	1.17E+03	1.43E-03	NCOPC	1.05E+03	NCOPC	3.43E+00	1.09E+03	3.15E-03
Chlorobenzene	NCOPC	2.14E+03	NCOPC	6.17E+01	1.93E+03	3.20E-02	NCOPC	2.00E+03	NCOPC
Chloroform	3.10E+00	6.65E+02	4.66E-03	NCOPC	6.00E+02	NCOPC	NCOPC	6.21E+02	NCOPC
Dichloromethane	NCOPC	6.16E+02	NCOPC	NCOPC	5.55E+02	NCOPC	NCOPC	5.75E+02	NCOPC
Ethylbenzene	NCOPC	1.84E+03	NCOPC	NCOPC	1.66E+03	NCOPC	NCOPC	1.72E+03	NCOPC
Hexane	8.00E+01	1.62E+02	4.94E-01	NCOPC	1.46E+02	NCOPC	NCOPC	1.51E+02	NCOPC
Tetrachloroethene	5.07E+01	6.30E+02	8.05E-02	NCOPC	5.68E+02	NCOPC	1.08E+01	5.88E+02	1.83E-02
Toluene	NCOPC	1.35E+03	NCOPC	NCOPC	1.22E+03	NCOPC	NCOPC	1.26E+03	NCOPC
Trichloroethene	1.32E-01	6.42E+02	2.06E-04	NCOPC	5.79E+02	NCOPC	4.00E-01	6.00E+02	6.67E-04
Xylenes, Total	1.27E+02	1.90E+03	6.67E-02	1.60E+02	1.71E+03	9.34E-02	1.24E+02	1.77E+03	6.99E-02
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	7.96E+03	NCOPC	NCOPC	7.19E+03	NCOPC	NCOPC	7.44E+03	NCOPC
1,2-Dichlorobenzene	NCOPC	3.56E+03	NCOPC	NCOPC	3.22E+03	NCOPC	NCOPC	3.33E+03	NCOPC
1,4-Dichlorobenzene	1.87E+01	3.15E+03	5.93E-03	3.37E+00	2.84E+03	1.19E-03	NCOPC	2.94E+03	NCOPC
2-Chlorophenol	NCOPC	5.46E+04	NCOPC	NCOPC	4.92E+04	NCOPC	NCOPC	5.10E+04	NCOPC
2-Methylnaphthalene	NCOPC	2.11E+04	NCOPC	NCOPC	1.91E+04	NCOPC	NCOPC	1.98E+04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	8.02E+03	NCOPC	NCOPC	7.24E+03	NCOPC	NCOPC	7.49E+03	NCOPC
Naphthalene	NCOPC	1.63E+04	NCOPC	NCOPC	1.47E+04	NCOPC	NCOPC	1.52E+04	NCOPC
Nitrobenzene	NCOPC	2.00E+04	NCOPC	NCOPC	1.81E+04	NCOPC	NCOPC	1.87E+04	NCOPC

See notes on last page

TABLE C-11
OUTDOOR AIR CONCENTRATIONS -TRE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Q South			R			S		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	1.81E+03	NCOPC	9.50E+00	2.04E+03	4.66E-03	NCOPC	3.71E+03	NCOPC
1,2-Dichloroethane	NCOPC	1.08E+03	NCOPC	3.25E+01	1.22E+03	2.66E-02	NCOPC	2.22E+03	NCOPC
1,2-Dichloroethene (total)	NCOPC	7.31E+02	NCOPC	1.39E+01	8.25E+02	1.68E-02	NCOPC	1.50E+03	NCOPC
Benzene	3.48E-01	1.02E+03	3.42E-04	1.17E+02	1.15E+03	1.02E-01	1.46E+01	2.09E+03	7.00E-03
Chlorobenzene	NCOPC	1.86E+03	NCOPC	1.10E+03	2.10E+03	5.24E-01	1.20E+03	3.82E+03	3.14E-01
Chloroform	NCOPC	5.79E+02	NCOPC	7.27E+00	6.54E+02	1.11E-02	NCOPC	1.19E+03	NCOPC
Dichloromethane	NCOPC	5.36E+02	NCOPC	NCOPC	6.05E+02	NCOPC	2.34E+01	1.10E+03	2.12E-02
Ethylbenzene	NCOPC	1.60E+03	NCOPC	NCOPC	1.81E+03	NCOPC	6.55E+02	3.29E+03	1.99E-01
Hexane	NCOPC	1.41E+02	NCOPC	NCOPC	1.59E+02	NCOPC	NCOPC	2.90E+02	NCOPC
Tetrachloroethene	2.26E+00	5.49E+02	4.13E-03	7.64E+02	6.19E+02	1.23E+00	1.63E+01	1.13E+03	1.45E-02
Toluene	3.17E+02	1.18E+03	2.70E-01	3.21E+02	1.33E+03	2.41E-01	3.23E+03	2.42E+03	1.33E+00
Trichloroethene	5.58E-02	5.59E+02	9.97E-05	1.09E+03	6.31E+02	1.73E+00	6.72E+01	1.15E+03	5.85E-02
Xylenes, Total	4.64E+02	1.65E+03	2.81E-01	1.51E+02	1.87E+03	8.10E-02	4.09E+03	3.40E+03	1.20E+00
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	6.94E+03	NCOPC	1.20E+02	7.83E+03	1.53E-02	3.60E+01	1.43E+04	2.52E-03
1,2-Dichlorobenzene	NCOPC	3.11E+03	NCOPC	NCOPC	3.50E+03	NCOPC	NCOPC	6.38E+03	NCOPC
1,4-Dichlorobenzene	NCOPC	2.75E+03	NCOPC	2.40E+01	3.10E+03	7.74E-03	2.00E+02	5.64E+03	3.54E-02
2-Chlorophenol	NCOPC	4.75E+04	NCOPC	3.90E+02	5.37E+04	7.27E-03	NCOPC	9.77E+04	NCOPC
2-Methylnaphthalene	NCOPC	1.84E+04	NCOPC	NCOPC	2.08E+04	NCOPC	NCOPC	3.79E+04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	6.99E+03	NCOPC	NCOPC	7.89E+03	NCOPC	NCOPC	1.44E+04	NCOPC
Naphthalene	NCOPC	1.42E+04	NCOPC	1.20E+02	1.60E+04	7.50E-03	2.59E+01	2.91E+04	8.90E-04
Nitrobenzene	NCOPC	1.75E+04	NCOPC	4.80E+01	1.97E+04	2.44E-03	NCOPC	3.59E+04	NCOPC

Notes:

NCOPC - Not a Constituent of Potential Concern in this area.

SVOCs - Semivolatile Organic Compounds.

VOCs - Volatile Organic Compounds; those with Henry's Law Constant greater than 10^{-5} atm-m^3/mol and a molecular weight greater than 200 g/mol.

(a) Exposure Point Concentration (EPC) selected in Table 3.2 and presented in Table 3.2RME.

(b) Volatilization Factor (VF) calculated in Table C-7.

(c) Outdoor air concentration = combined soil EPC/VF.

TABLE C-12
OUTDOOR AIR CONCENTRATIONS -TRESPASSING TEENAGER (MLE) VOCs FROM COMBINED SOIL TO OUTDOOR AIR (a)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	O			O North			O South		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	2.11E+03	NCOPC	NCOPC	2.98E+03	NCOPC	NCOPC	2.85E+03	NCOPC
1,2-Dichloroethane	NCOPC	1.27E+03	NCOPC	NCOPC	1.79E+03	NCOPC	NCOPC	1.70E+03	NCOPC
1,2-Dichloroethene (total)	NCOPC	8.55E+02	NCOPC	NCOPC	1.21E+03	NCOPC	NCOPC	1.15E+03	NCOPC
Benzene	6.34E+01	1.19E+03	5.33E-02	2.03E+01	1.68E+03	1.21E-02	NCOPC	1.60E+03	NCOPC
Chlorobenzene	1.89E+02	2.18E+03	8.67E-02	1.71E+02	3.07E+03	5.56E-02	NCOPC	2.93E+03	NCOPC
Chloroform	NCOPC	6.78E+02	NCOPC	NCOPC	9.56E+02	NCOPC	NCOPC	9.12E+02	NCOPC
Dichloromethane	NCOPC	6.27E+02	NCOPC	2.87E+01	8.85E+02	3.24E-02	NCOPC	8.45E+02	NCOPC
Ethylbenzene	3.30E+02	1.87E+03	1.76E-01	2.42E+02	2.64E+03	9.15E-02	NCOPC	2.52E+03	NCOPC
Hexane	NCOPC	1.65E+02	NCOPC	NCOPC	2.33E+02	NCOPC	NCOPC	2.22E+02	NCOPC
Tetrachloroethene	1.80E+00	6.42E+02	2.80E-03	1.82E+00	9.06E+02	2.01E-03	NCOPC	8.64E+02	NCOPC
Toluene	4.16E+01	1.38E+03	3.02E-02	NCOPC	1.94E+03	NCOPC	NCOPC	1.85E+03	NCOPC
Trichloroethene	NCOPC	6.55E+02	NCOPC	NCOPC	9.23E+02	NCOPC	NCOPC	8.81E+02	NCOPC
Xylenes, Total	1.60E+03	1.94E+03	8.29E-01	1.29E+03	2.73E+03	4.72E-01	NCOPC	2.61E+03	NCOPC
SVOCs									
1,2,4-Trichlorobenzene	1.12E+01	8.12E+03	1.38E-03	8.58E+01	1.15E+04	7.49E-03	NCOPC	1.09E+04	NCOPC
1,2-Dichlorobenzene	NCOPC	3.63E+03	NCOPC	1.25E+02	5.13E+03	2.43E-02	NCOPC	4.89E+03	NCOPC
1,4-Dichlorobenzene	1.94E+01	3.21E+03	6.04E-03	6.23E+01	4.53E+03	1.37E-02	NCOPC	4.32E+03	NCOPC
2-Chlorophenol	NCOPC	5.56E+04	NCOPC	NCOPC	7.85E+04	NCOPC	NCOPC	7.49E+04	NCOPC
2-Methylnaphthalene	1.12E+01	2.16E+04	5.21E-04	5.29E+01	3.04E+04	1.74E-03	NCOPC	2.90E+04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	8.18E+03	NCOPC	2.10E+00	1.15E+04	1.82E-04	NCOPC	1.10E+04	NCOPC
Naphthalene	NCOPC	1.66E+04	NCOPC	1.20E+01	2.34E+04	5.13E-04	NCOPC	2.23E+04	NCOPC
Nitrobenzene	NCOPC	2.04E+04	NCOPC	1.10E+01	2.88E+04	3.82E-04	NCOPC	2.75E+04	NCOPC

See notes on last page

TABLE C-12
OUTDOOR AIR CONCENTRATIONS -TRE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	P			Q Central			Q North		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	2.07E+03	NCOPC	NCOPC	1.87E+03	NCOPC	NCOPC	1.94E+03	NCOPC
1,2-Dichloroethane	NCOPC	1.24E+03	NCOPC	NCOPC	1.12E+03	NCOPC	NCOPC	1.16E+03	NCOPC
1,2-Dichloroethene (total)	NCOPC	8.39E+02	NCOPC	NCOPC	7.57E+02	NCOPC	NCOPC	7.84E+02	NCOPC
Benzene	1.19E+00	1.17E+03	1.02E-03	NCOPC	1.05E+03	NCOPC	6.35E-01	1.09E+03	5.83E-04
Chlorobenzene	NCOPC	2.14E+03	NCOPC	1.60E+01	1.93E+03	8.31E-03	NCOPC	2.00E+03	NCOPC
Chloroform	1.17E+00	6.65E+02	1.76E-03	NCOPC	6.00E+02	NCOPC	NCOPC	6.21E+02	NCOPC
Dichloromethane	NCOPC	6.16E+02	NCOPC	NCOPC	5.55E+02	NCOPC	NCOPC	5.75E+02	NCOPC
Ethylbenzene	NCOPC	1.84E+03	NCOPC	NCOPC	1.66E+03	NCOPC	NCOPC	1.72E+03	NCOPC
Hexane	4.30E+01	1.62E+02	2.65E-01	NCOPC	1.46E+02	NCOPC	NCOPC	1.51E+02	NCOPC
Tetrachloroethene	1.22E+01	6.30E+02	1.94E-02	NCOPC	5.68E+02	NCOPC	1.82E+00	5.88E+02	3.10E-03
Toluene	NCOPC	1.35E+03	NCOPC	NCOPC	1.22E+03	NCOPC	NCOPC	1.26E+03	NCOPC
Trichloroethene	1.97E-01	6.42E+02	3.07E-04	NCOPC	5.79E+02	NCOPC	1.00E-01	6.00E+02	1.67E-04
Xylenes, Total	4.80E+01	1.90E+03	2.53E-02	2.65E+01	1.71E+03	1.55E-02	2.04E+01	1.77E+03	1.15E-02
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	7.96E+03	NCOPC	NCOPC	7.19E+03	NCOPC	NCOPC	7.44E+03	NCOPC
1,2-Dichlorobenzene	NCOPC	3.56E+03	NCOPC	NCOPC	3.22E+03	NCOPC	NCOPC	3.33E+03	NCOPC
1,4-Dichlorobenzene	2.99E+01	3.15E+03	9.49E-03	2.65E+00	2.84E+03	9.31E-04	NCOPC	2.94E+03	NCOPC
2-Chlorophenol	NCOPC	5.46E+04	NCOPC	NCOPC	4.92E+04	NCOPC	NCOPC	5.10E+04	NCOPC
2-Methylnaphthalene	NCOPC	2.11E+04	NCOPC	NCOPC	1.91E+04	NCOPC	NCOPC	1.98E+04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	8.02E+03	NCOPC	NCOPC	7.24E+03	NCOPC	NCOPC	7.49E+03	NCOPC
Naphthalene	NCOPC	1.63E+04	NCOPC	NCOPC	1.47E+04	NCOPC	NCOPC	1.52E+04	NCOPC
Nitrobenzene	NCOPC	2.00E+04	NCOPC	NCOPC	1.81E+04	NCOPC	NCOPC	1.87E+04	NCOPC

See notes on last page

TABLE C-12
OUTDOOR AIR CONCENTRATIONS -TRE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Q South			R			S		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	1.81E+03	NCOPC	9.50E+00	2.04E+03	4.66E-03	NCOPC	3.71E+03	NCOPC
1,2-Dichloroethane	NCOPC	1.08E+03	NCOPC	2.86E+01	1.22E+03	2.34E-02	NCOPC	2.22E+03	NCOPC
1,2-Dichloroethene (total)	NCOPC	7.31E+02	NCOPC	1.35E+01	8.25E+02	1.64E-02	NCOPC	1.50E+03	NCOPC
Benzene	9.68E-02	1.02E+03	9.53E-05	2.62E+01	1.15E+03	2.28E-02	1.43E+01	2.09E+03	6.84E-03
Chlorobenzene	NCOPC	1.86E+03	NCOPC	2.54E+02	2.10E+03	1.21E-01	3.98E+02	3.82E+03	1.04E-01
Chloroform	NCOPC	5.79E+02	NCOPC	6.36E+00	6.54E+02	9.73E-03	NCOPC	1.19E+03	NCOPC
Dichloromethane	NCOPC	5.36E+02	NCOPC	NCOPC	6.05E+02	NCOPC	2.01E+01	1.10E+03	1.83E-02
Ethylbenzene	NCOPC	1.60E+03	NCOPC	NCOPC	1.81E+03	NCOPC	2.33E+02	3.29E+03	7.08E-02
Hexane	NCOPC	1.41E+02	NCOPC	NCOPC	1.59E+02	NCOPC	NCOPC	2.90E+02	NCOPC
Tetrachloroethene	4.83E-01	5.49E+02	8.81E-04	2.69E+02	6.19E+02	4.35E-01	1.16E+01	1.13E+03	1.03E-02
Toluene	3.83E+01	1.18E+03	3.25E-02	2.68E+02	1.33E+03	2.01E-01	1.07E+03	2.42E+03	4.43E-01
Trichloroethene	2.80E-02	5.59E+02	5.01E-05	3.38E+02	6.31E+02	5.35E-01	4.74E+01	1.15E+03	4.12E-02
Xylenes, Total	5.96E+01	1.65E+03	3.60E-02	4.95E+01	1.87E+03	2.65E-02	1.37E+03	3.40E+03	4.03E-01
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	6.94E+03	NCOPC	4.70E+01	7.83E+03	6.00E-03	2.17E+01	1.43E+04	1.52E-03
1,2-Dichlorobenzene	NCOPC	3.11E+03	NCOPC	NCOPC	3.50E+03	NCOPC	NCOPC	6.38E+03	NCOPC
1,4-Dichlorobenzene	NCOPC	2.75E+03	NCOPC	8.73E+00	3.10E+03	2.82E-03	7.07E+01	5.64E+03	1.25E-02
2-Chlorophenol	NCOPC	4.75E+04	NCOPC	1.12E+02	5.37E+04	2.08E-03	NCOPC	9.77E+04	NCOPC
2-Methylnaphthalene	NCOPC	1.84E+04	NCOPC	NCOPC	2.08E+04	NCOPC	NCOPC	3.79E+04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	6.99E+03	NCOPC	NCOPC	7.89E+03	NCOPC	NCOPC	1.44E+04	NCOPC
Naphthalene	NCOPC	1.42E+04	NCOPC	3.47E+01	1.60E+04	2.17E-03	2.19E+01	2.91E+04	7.52E-04
Nitrobenzene	NCOPC	1.75E+04	NCOPC	2.54E+01	1.97E+04	1.29E-03	NCOPC	3.59E+04	NCOPC

Notes:

NCOPC - Not a Constituent of Potential Concern in this area.

SVOCs - Semivolatile Organic Compounds.

VOCs - Volatile Organic Compounds; those with Henry's Law Constant greater than 10^{-5} atm-m^3/mol and a molecular weight greater than 200 g/mol.

(a) Exposure Point Concentration (EPC) selected in Table 3.2 and presented in Table 3.2MLE.

(b) Volatilization Factor (VF) calculated in Table C-7.

(c) Outdoor air concentration = combined soil EPC/VF.

TABLE C-13
OUTDOOR AIR CONCENTRATIONS - CONSTRUCTION WORKER (RME) VOCs FOR THE SOIL TO EXCAVATION AIR PATHWAY
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	O			O North			O South		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Excavation Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Excavation Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Excavation Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	4.82E+02	NCOPC	NCOPC	6.93E+02	NCOPC	NCOPC	6.60E+02	NCOPC
1,2-Dichloroethane	NCOPC	2.89E+02	NCOPC	NCOPC	4.15E+02	NCOPC	NCOPC	3.95E+02	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.95E+02	NCOPC	NCOPC	2.81E+02	NCOPC	NCOPC	2.67E+02	NCOPC
Benzene	2.02E+02	2.71E+02	7.45E-01	6.90E+01	3.90E+02	1.77E-01	NCOPC	3.71E+02	NCOPC
Chlorobenzene	2.32E+02	4.97E+02	4.67E-01	4.80E+02	7.14E+02	6.72E-01	NCOPC	6.80E+02	NCOPC
Chloroform	NCOPC	1.55E+02	NCOPC	NCOPC	2.22E+02	NCOPC	NCOPC	2.11E+02	NCOPC
Dichloromethane	NCOPC	1.43E+02	NCOPC	8.70E+01	2.06E+02	4.23E-01	NCOPC	1.96E+02	NCOPC
Ethylbenzene	1.13E+03	4.27E+02	2.65E+00	7.60E+02	6.14E+02	1.24E+00	NCOPC	5.84E+02	NCOPC
Hexane	NCOPC	3.77E+01	NCOPC	NCOPC	5.42E+01	NCOPC	NCOPC	5.15E+01	NCOPC
Tetrachloroethene	3.00E+00	1.46E+02	2.05E-02	6.80E+00	2.11E+02	3.23E-02	NCOPC	2.00E+02	NCOPC
Toluene	1.54E+02	3.14E+02	4.91E-01	NCOPC	4.52E+02	NCOPC	NCOPC	4.30E+02	NCOPC
Trichloroethene	NCOPC	1.49E+02	NCOPC	NCOPC	2.15E+02	NCOPC	NCOPC	2.04E+02	NCOPC
Xylenes, Total	5.61E+03	4.42E+02	1.27E+01	3.90E+03	6.35E+02	6.15E+00	NCOPC	6.04E+02	NCOPC
SVOCs									
1,2,4-Trichlorobenzene	1.20E+01	1.85E+03	6.48E-03	2.90E+02	2.66E+03	1.09E-01	NCOPC	2.53E+03	NCOPC
1,2-Dichlorobenzene	NCOPC	8.29E+02	NCOPC	5.20E+02	1.19E+03	4.37E-01	NCOPC	1.13E+03	NCOPC
1,4-Dichlorobenzene	1.79E+01	7.33E+02	2.44E-02	1.80E+02	1.05E+03	1.71E-01	NCOPC	1.00E+03	NCOPC
2-Chlorophenol	NCOPC	1.27E+04	NCOPC	NCOPC	1.82E+04	NCOPC	NCOPC	1.74E+04	NCOPC
2-Methylnaphthalene	1.19E+01	4.92E+03	2.41E-03	2.00E+02	7.07E+03	2.83E-02	NCOPC	6.72E+03	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.87E+03	NCOPC	2.10E+00	2.68E+03	7.83E-04	NCOPC	2.55E+03	NCOPC
Naphthalene	NCOPC	3.78E+03	NCOPC	4.10E+01	5.44E+03	7.54E-03	NCOPC	5.17E+03	NCOPC
Nitrobenzene	NCOPC	4.66E+03	NCOPC	1.10E+01	6.70E+03	1.64E-03	NCOPC	6.37E+03	NCOPC

See notes on last page

TABLE C-13
OUTDOOR AIR CONCENTRATIONS - CO
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	P			Q Central			Q North		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Excavation Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Excavation Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Excavation Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	4.73E+02	NCOPC	NCOPC	4.25E+02	NCOPC	NCOPC	4.40E+02	NCOPC
1,2-Dichloroethane	NCOPC	2.83E+02	NCOPC	NCOPC	2.54E+02	NCOPC	NCOPC	2.64E+02	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.91E+02	NCOPC	NCOPC	1.72E+02	NCOPC	NCOPC	1.78E+02	NCOPC
Benzene	1.67E+00	2.66E+02	6.29E-03	NCOPC	2.39E+02	NCOPC	3.43E+00	2.48E+02	1.38E-02
Chlorobenzene	NCOPC	4.87E+02	NCOPC	6.17E+01	4.37E+02	1.41E-01	NCOPC	4.54E+02	NCOPC
Chloroform	3.10E+00	1.52E+02	2.05E-02	NCOPC	1.36E+02	NCOPC	NCOPC	1.41E+02	NCOPC
Dichloromethane	NCOPC	1.40E+02	NCOPC	NCOPC	1.26E+02	NCOPC	NCOPC	1.31E+02	NCOPC
Ethylbenzene	NCOPC	4.18E+02	NCOPC	NCOPC	3.76E+02	NCOPC	NCOPC	3.90E+02	NCOPC
Hexane	8.00E+01	3.69E+01	2.17E+00	NCOPC	3.32E+01	NCOPC	NCOPC	3.44E+01	NCOPC
Tetrachloroethene	5.07E+01	1.44E+02	3.53E-01	NCOPC	1.29E+02	NCOPC	1.08E+01	1.34E+02	8.04E-02
Toluene	NCOPC	3.08E+02	NCOPC	NCOPC	2.77E+02	NCOPC	NCOPC	2.87E+02	NCOPC
Trichloroethene	1.32E-01	1.46E+02	9.02E-04	NCOPC	1.31E+02	NCOPC	4.00E-01	1.36E+02	2.93E-03
Xylenes, Total	1.27E+02	4.33E+02	2.93E-01	1.60E+02	3.89E+02	4.12E-01	1.24E+02	4.03E+02	3.08E-01
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	1.82E+03	NCOPC	NCOPC	1.63E+03	NCOPC	NCOPC	1.69E+03	NCOPC
1,2-Dichlorobenzene	NCOPC	8.12E+02	NCOPC	NCOPC	7.30E+02	NCOPC	NCOPC	7.57E+02	NCOPC
1,4-Dichlorobenzene	1.87E+01	7.18E+02	2.60E-02	3.37E+00	6.45E+02	5.23E-03	NCOPC	6.69E+02	NCOPC
2-Chlorophenol	NCOPC	1.24E+04	NCOPC	NCOPC	1.12E+04	NCOPC	NCOPC	1.16E+04	NCOPC
2-Methylnaphthalene	NCOPC	4.82E+03	NCOPC	NCOPC	4.33E+03	NCOPC	NCOPC	4.49E+03	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.83E+03	NCOPC	NCOPC	1.64E+03	NCOPC	NCOPC	1.70E+03	NCOPC
Naphthalene	NCOPC	3.71E+03	NCOPC	NCOPC	3.33E+03	NCOPC	NCOPC	3.45E+03	NCOPC
Nitrobenzene	NCOPC	4.57E+03	NCOPC	NCOPC	4.10E+03	NCOPC	NCOPC	4.25E+03	NCOPC

See notes on last page

TABLE C-13
OUTDOOR AIR CONCENTRATIONS - CO
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Q South			R			S		
Constituent	Combined Soil EPC (a) (mg/kg)	Volatilization Factor (b) (m^3/kg)	Concentration in Excavation Air (c) (mg/m^3)	Combined Soil EPC (a) (mg/kg)	Volatilization Factor (b) (m^3/kg)	Concentration in Excavation Air (c) (mg/m^3)	Combined Soil EPC (a) (mg/kg)	Volatilization Factor (b) (m^3/kg)	Concentration in Excavation Air (c) (mg/m^3)
VOCs									
1,1,2-Trichloroethane	NCOPC	4.09E+02	NCOPC	9.50E+00	4.65E+02	2.05E-02	NCOPC	8.75E+02	NCOPC
1,2-Dichloroethane	NCOPC	2.45E+02	NCOPC	3.25E+01	2.78E+02	1.17E-01	NCOPC	5.24E+02	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.66E+02	NCOPC	1.39E+01	1.88E+02	7.39E-02	NCOPC	3.54E+02	NCOPC
Benzene	3.48E-01	2.30E+02	1.51E-03	1.17E+02	2.61E+02	4.46E-01	1.46E+01	4.92E+02	2.97E-02
Chlorobenzene	NCOPC	4.22E+02	NCOPC	1.10E+03	4.79E+02	2.30E+00	1.20E+03	9.01E+02	1.33E+00
Chloroform	NCOPC	1.31E+02	NCOPC	7.27E+00	1.49E+02	4.88E-02	NCOPC	2.80E+02	NCOPC
Dichloromethane	NCOPC	1.22E+02	NCOPC	NCOPC	1.38E+02	NCOPC	2.34E+01	2.60E+02	9.01E-02
Ethylbenzene	NCOPC	3.62E+02	NCOPC	NCOPC	4.11E+02	NCOPC	6.55E+02	7.74E+02	8.46E-01
Hexane	NCOPC	3.20E+01	NCOPC	NCOPC	3.63E+01	NCOPC	NCOPC	6.83E+01	NCOPC
Tetrachloroethene	2.26E+00	1.24E+02	1.82E-02	7.64E+02	1.41E+02	5.41E+00	1.63E+01	2.66E+02	6.14E-02
Toluene	3.17E+02	2.67E+02	1.19E+00	3.21E+02	3.03E+02	1.06E+00	3.23E+03	5.70E+02	5.66E+00
Trichloroethene	5.58E-02	1.27E+02	4.40E-04	1.09E+03	1.44E+02	7.59E+00	6.72E+01	2.71E+02	2.48E-01
Xylenes, Total	4.64E+02	3.75E+02	1.24E+00	1.51E+02	4.25E+02	3.56E-01	4.09E+03	8.01E+02	5.11E+00
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	1.57E+03	NCOPC	1.20E+02	1.78E+03	6.73E-02	3.60E+01	3.36E+03	1.07E-02
1,2-Dichlorobenzene	NCOPC	7.03E+02	NCOPC	NCOPC	7.98E+02	NCOPC	NCOPC	1.50E+03	NCOPC
1,4-Dichlorobenzene	NCOPC	6.22E+02	NCOPC	2.40E+01	7.06E+02	3.40E-02	2.00E+02	1.33E+03	1.50E-01
2-Chlorophenol	NCOPC	1.08E+04	NCOPC	3.90E+02	1.22E+04	3.19E-02	NCOPC	2.30E+04	NCOPC
2-Methylnaphthalene	NCOPC	4.17E+03	NCOPC	NCOPC	4.74E+03	NCOPC	NCOPC	8.92E+03	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.58E+03	NCOPC	NCOPC	1.80E+03	NCOPC	NCOPC	3.38E+03	NCOPC
Naphthalene	NCOPC	3.21E+03	NCOPC	1.20E+02	3.64E+03	3.29E-02	2.59E+01	6.86E+03	3.78E-03
Nitrobenzene	NCOPC	3.95E+03	NCOPC	4.80E+01	4.49E+03	1.07E-02	NCOPC	8.45E+03	NCOPC

Notes:

NCOPC - Not a Constituent of Potential Concern in this area.

SVOCs - Semivolatile Organic Compounds.

VOCs - Volatile Organic Compounds; those with Henry's Law Constant greater than 10^{-5} atm-m^3/mol and a molecular weight greater than 200 g/mol.

(a) Exposure Point Concentration (EPC) selected in Table 3.2 and presented in Table 3.2RME.

(b) Volatilization Factor (VF) calculated in Table C-8.

(c) Excavation air concentration = combined soil EPC/VF.

TABLE C-14
OUTDOOR AIR CONCENTRATIONS - CONSTRUCTION WORKER (RME) VOCs FOR THE SOIL TO EXCAVATION AIR PATHWAY
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	O			O North			O South		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Excavation Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Excavation Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Excavation Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	4.82E+02	NCOPC	NCOPC	6.93E+02	NCOPC	NCOPC	6.60E+02	NCOPC
1,2-Dichloroethane	NCOPC	2.89E+02	NCOPC	NCOPC	4.15E+02	NCOPC	NCOPC	3.95E+02	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.95E+02	NCOPC	NCOPC	2.81E+02	NCOPC	NCOPC	2.67E+02	NCOPC
Benzene	6.34E+01	2.71E+02	2.34E-01	2.03E+01	3.90E+02	5.22E-02	NCOPC	3.71E+02	NCOPC
Chlorobenzene	1.89E+02	4.97E+02	3.80E-01	1.71E+02	7.14E+02	2.39E-01	NCOPC	6.80E+02	NCOPC
Chloroform	NCOPC	1.55E+02	NCOPC	NCOPC	2.22E+02	NCOPC	NCOPC	2.11E+02	NCOPC
Dichloromethane	NCOPC	1.43E+02	NCOPC	2.87E+01	2.06E+02	1.39E-01	NCOPC	1.96E+02	NCOPC
Ethylbenzene	3.30E+02	4.27E+02	7.73E-01	2.42E+02	6.14E+02	3.94E-01	NCOPC	5.84E+02	NCOPC
Hexane	NCOPC	3.77E+01	NCOPC	NCOPC	5.42E+01	NCOPC	NCOPC	5.15E+01	NCOPC
Tetrachloroethene	1.80E+00	1.46E+02	1.23E-02	1.82E+00	2.11E+02	8.63E-03	NCOPC	2.00E+02	NCOPC
Toluene	4.16E+01	3.14E+02	1.32E-01	NCOPC	4.52E+02	NCOPC	NCOPC	4.30E+02	NCOPC
Trichloroethene	NCOPC	1.49E+02	NCOPC	NCOPC	2.15E+02	NCOPC	NCOPC	2.04E+02	NCOPC
Xylenes, Total	1.60E+03	4.42E+02	3.63E+00	1.29E+03	6.35E+02	2.03E+00	NCOPC	6.04E+02	NCOPC
SVOCs									
1,2,4-Trichlorobenzene	1.12E+01	1.85E+03	6.06E-03	8.58E+01	2.66E+03	3.22E-02	NCOPC	2.53E+03	NCOPC
1,2-Dichlorobenzene	NCOPC	8.29E+02	NCOPC	1.25E+02	1.19E+03	1.05E-01	NCOPC	1.13E+03	NCOPC
1,4-Dichlorobenzene	1.94E+01	7.33E+02	2.65E-02	6.23E+01	1.05E+03	5.91E-02	NCOPC	1.00E+03	NCOPC
2-Chlorophenol	NCOPC	1.27E+04	NCOPC	NCOPC	1.82E+04	NCOPC	NCOPC	1.74E+04	NCOPC
2-Methylnaphthalene	1.12E+01	4.92E+03	2.28E-03	5.29E+01	7.07E+03	7.48E-03	NCOPC	6.72E+03	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.87E+03	NCOPC	2.10E+00	2.68E+03	7.83E-04	NCOPC	2.55E+03	NCOPC
Naphthalene	NCOPC	3.78E+03	NCOPC	1.20E+01	5.44E+03	2.21E-03	NCOPC	5.17E+03	NCOPC
Nitrobenzene	NCOPC	4.66E+03	NCOPC	1.10E+01	6.70E+03	1.64E-03	NCOPC	6.37E+03	NCOPC

See notes on last page

TABLE C-14
OUTDOOR AIR CONCENTRATIONS - CO
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	P			Q Central			Q North		
Constituent	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Excavation Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Excavation Air (c) (mg/m^3)**	**Combined Soil EPC (a) (mg/kg)**	**Volatilization Factor (b) (m^3/kg)**	**Concentration in Excavation Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	4.73E+02	NCOPC	NCOPC	4.25E+02	NCOPC	NCOPC	4.40E+02	NCOPC
1,2-Dichloroethane	NCOPC	2.83E+02	NCOPC	NCOPC	2.54E+02	NCOPC	NCOPC	2.64E+02	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.91E+02	NCOPC	NCOPC	1.72E+02	NCOPC	NCOPC	1.78E+02	NCOPC
Benzene	1.19E+00	2.66E+02	4.49E-03	NCOPC	2.39E+02	NCOPC	6.35E-01	2.48E+02	2.57E-03
Chlorobenzene	NCOPC	4.87E+02	NCOPC	1.60E+01	4.37E+02	3.66E-02	NCOPC	4.54E+02	NCOPC
Chloroform	1.17E+00	1.52E+02	7.72E-03	NCOPC	1.36E+02	NCOPC	NCOPC	1.41E+02	NCOPC
Dichloromethane	NCOPC	1.40E+02	NCOPC	NCOPC	1.26E+02	NCOPC	NCOPC	1.31E+02	NCOPC
Ethylbenzene	NCOPC	4.18E+02	NCOPC	NCOPC	3.76E+02	NCOPC	NCOPC	3.90E+02	NCOPC
Hexane	4.30E+01	3.69E+01	1.16E+00	NCOPC	3.32E+01	NCOPC	NCOPC	3.44E+01	NCOPC
Tetrachloroethene	1.22E+01	1.44E+02	8.50E-02	NCOPC	1.29E+02	NCOPC	1.82E+00	1.34E+02	1.36E-02
Toluene	NCOPC	3.08E+02	NCOPC	NCOPC	2.77E+02	NCOPC	NCOPC	2.87E+02	NCOPC
Trichloroethene	1.97E-01	1.46E+02	1.35E-03	NCOPC	1.31E+02	NCOPC	1.00E-01	1.36E+02	7.35E-04
Xylenes, Total	4.80E+01	4.33E+02	1.11E-01	2.65E+01	3.89E+02	6.83E-02	2.04E+01	4.03E+02	5.07E-02
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	1.82E+03	NCOPC	NCOPC	1.63E+03	NCOPC	NCOPC	1.69E+03	NCOPC
1,2-Dichlorobenzene	NCOPC	8.12E+02	NCOPC	NCOPC	7.30E+02	NCOPC	NCOPC	7.57E+02	NCOPC
1,4-Dichlorobenzene	2.99E+01	7.18E+02	4.16E-02	2.65E+00	6.45E+02	4.10E-03	NCOPC	6.69E+02	NCOPC
2-Chlorophenol	NCOPC	1.24E+04	NCOPC	NCOPC	1.12E+04	NCOPC	NCOPC	1.16E+04	NCOPC
2-Methylnaphthalene	NCOPC	4.82E+03	NCOPC	NCOPC	4.33E+03	NCOPC	NCOPC	4.49E+03	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.83E+03	NCOPC	NCOPC	1.64E+03	NCOPC	NCOPC	1.70E+03	NCOPC
Naphthalene	NCOPC	3.71E+03	NCOPC	NCOPC	3.33E+03	NCOPC	NCOPC	3.45E+03	NCOPC
Nitrobenzene	NCOPC	4.57E+03	NCOPC	NCOPC	4.10E+03	NCOPC	NCOPC	4.25E+03	NCOPC

See notes on last page

TABLE C-14
OUTDOOR AIR CONCENTRATIONS - CO
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Q South			R			S		
Constituent	Combined Soil EPC (a) (mg/kg)	Volatilization Factor (b) (m^3/kg)	Concentration in Excavation Air (c) (mg/m^3)	Combined Soil EPC (a) (mg/kg)	Volatilization Factor (b) (m^3/kg)	Concentration in Excavation Air (c) (mg/m^3)	Combined Soil EPC (a) (mg/kg)	Volatilization Factor (b) (m^3/kg)	Concentration in Excavation Air (c) (mg/m^3)
VOCs									
1,1,2-Trichloroethane	NCOPC	4.09E+02	NCOPC	9.50E+00	4.65E+02	2.05E-02	NCOPC	8.75E+02	NCOPC
1,2-Dichloroethane	NCOPC	2.45E+02	NCOPC	2.86E+01	2.78E+02	1.03E-01	NCOPC	5.24E+02	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.66E+02	NCOPC	1.35E+01	1.88E+02	7.19E-02	NCOPC	3.54E+02	NCOPC
Benzene	9.68E-02	2.30E+02	4.21E-04	2.62E+01	2.61E+02	1.00E-01	1.43E+01	4.92E+02	2.90E-02
Chlorobenzene	NCOPC	4.22E+02	NCOPC	2.54E+02	4.79E+02	5.32E-01	3.98E+02	9.01E+02	4.41E-01
Chloroform	NCOPC	1.31E+02	NCOPC	6.36E+00	1.49E+02	4.27E-02	NCOPC	2.80E+02	NCOPC
Dichloromethane	NCOPC	1.22E+02	NCOPC	NCOPC	1.38E+02	NCOPC	2.01E+01	2.60E+02	7.76E-02
Ethylbenzene	NCOPC	3.62E+02	NCOPC	NCOPC	4.11E+02	NCOPC	2.33E+02	7.74E+02	3.01E-01
Hexane	NCOPC	3.20E+01	NCOPC	NCOPC	3.63E+01	NCOPC	NCOPC	6.83E+01	NCOPC
Tetrachloroethene	4.83E-01	1.24E+02	3.89E-03	2.69E+02	1.41E+02	1.91E+00	1.16E+01	2.66E+02	4.38E-02
Toluene	3.83E+01	2.67E+02	1.43E-01	2.68E+02	3.03E+02	8.84E-01	1.07E+03	5.70E+02	1.88E+00
Trichloroethene	2.80E-02	1.27E+02	2.21E-04	3.38E+02	1.44E+02	2.35E+00	4.74E+01	2.71E+02	1.75E-01
Xylenes, Total	5.96E+01	3.75E+02	1.59E-01	4.95E+01	4.25E+02	1.16E-01	1.37E+03	8.01E+02	1.71E+00
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	1.57E+03	NCOPC	4.70E+01	1.78E+03	2.64E-02	2.17E+01	3.36E+03	6.44E-03
1,2-Dichlorobenzene	NCOPC	7.03E+02	NCOPC	NCOPC	7.98E+02	NCOPC	NCOPC	1.50E+03	NCOPC
1,4-Dichlorobenzene	NCOPC	6.22E+02	NCOPC	8.73E+00	7.06E+02	1.24E-02	7.07E+01	1.33E+03	5.32E-02
2-Chlorophenol	NCOPC	1.08E+04	NCOPC	1.12E+02	1.22E+04	9.13E-03	NCOPC	2.30E+04	NCOPC
2-Methylnaphthalene	NCOPC	4.17E+03	NCOPC	NCOPC	4.74E+03	NCOPC	NCOPC	8.92E+03	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.58E+03	NCOPC	NCOPC	1.80E+03	NCOPC	NCOPC	3.38E+03	NCOPC
Naphthalene	NCOPC	3.21E+03	NCOPC	3.47E+01	3.64E+03	9.53E-03	2.19E+01	6.86E+03	3.19E-03
Nitrobenzene	NCOPC	3.95E+03	NCOPC	2.54E+01	4.49E+03	5.65E-03	NCOPC	8.45E+03	NCOPC

Notes:

NCOPC - Not a Constituent of Potential Concern in this area.

SVOCs - Semivolatile Organic Compounds.

VOCs - Volatile Organic Compounds; those with Henry's Law Constant greater than 10^{-5} atm-m^3/mol and a molecular weight greater than 200 g/mol.

(a) Exposure Point Concentration (EPC) selected in Table 3.2 and presented in Table 3.2MLE.

(b) Volatilization Factor (VF) calculated in Table C-8.

(c) Excavation air concentration = combined soil EPC/VF.

TABLE C-15
OUTDOOR AIR CONCENTRATIONS -ON-SITE WORKER AND TRESPASSING TEENAGER (RME & MLE) NVOCs FROM SURFACE SOIL TO OUTDOOR AIR
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	O			O North			P			Q Central		
Constituent	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
SVOCs												
1,2,4-Trichlorobenzene	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
2,4,6-Trichlorophenol	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Benzo(a)anthracene	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	1.37E+00	9.08E+08	1.51E-09
Benzo(a)pyrene	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	3.69E-01	3.62E+09	1.02E-10	1.27E+00	9.08E+08	1.40E-09
Benzo(b)fluoranthene	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	1.23E+00	9.08E+08	1.35E-09
Dibenzo(a,h)anthracene	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Pesticides												
4,4'-DDT	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
beta-BHC	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
delta-BHC	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Dieldrin	1.80E-01	9.24E+09	1.95E-11	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
gamma-BHC (Lindane)	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Heptachlor	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Herbicides												
Pentachlorophenol	9.30E+00	9.24E+09	1.01E-09	4.80E+02	1.30E+10	3.68E-08	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
PCBs												
PCBs, Total	1.08E+01	9.24E+09	1.17E-09	7.09E+02	1.30E+10	5.44E-08	7.02E+00	3.62E+09	1.94E-09	9.25E-01	9.08E+08	1.02E-09
Dioxin												
Dioxin TEQ-HH	6.77E-03	9.24E+09	7.33E-13	5.15E-02	1.30E+10	3.95E-12	NCOPC	3.62E+09	NCOPC	2.09E-03	9.08E+08	2.30E-12
Metals												
Antimony	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Arsenic	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	1.50E+01	3.62E+09	4.14E-09	5.75E+01	9.08E+08	6.33E-08
Cadmium	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Chromium	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Manganese	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	1.03E+03	3.62E+09	2.83E-07	NCOPC	9.08E+08	NCOPC
Mercury	NCOPC	9.24E+09	NCOPC	1.80E+02	1.30E+10	1.38E-08	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Vanadium	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	1.40E+02	3.62E+09	3.86E-08	NCOPC	9.08E+08	NCOPC

See notes on last page.

TABLE C-15
OUTDOOR AIR CONCENTRA
HUMAN HEALTH RISK ASSE
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Q North			Q South			S		
Constituent	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	3.60E+01	2.16E+09	1.66E-08
2,4,6-Trichlorophenol	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	8.20E+00	2.16E+09	3.79E-09
Benzo(a)anthracene	NCOPC	1.13E+09	NCOPC	2.04E+00	7.89E+09	2.59E-10	8.00E+00	2.16E+09	3.70E-09
Benzo(a)pyrene	1.73E+00	1.13E+09	1.53E-09	2.06E+00	7.89E+09	2.61E-10	5.40E+00	2.16E+09	2.50E-09
Benzo(b)fluoranthene	NCOPC	1.13E+09	NCOPC	2.35E+00	7.89E+09	2.98E-10	6.60E+00	2.16E+09	3.05E-09
Dibenzo(a,h)anthracene	2.71E-01	1.13E+09	2.40E-10	1.72E-01	7.89E+09	2.18E-11	1.80E+00	2.16E+09	8.32E-10
Pesticides									
4,4'-DDT	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	1.60E+01	2.16E+09	7.40E-09
beta-BHC	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	2.60E+01	2.16E+09	1.20E-08
delta-BHC	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	7.40E-01	2.16E+09	3.42E-10
Dieldrin	NCOPC	1.13E+09	NCOPC	8.34E-02	7.89E+09	1.06E-11	NCOPC	2.16E+09	NCOPC
gamma-BHC (Lindane)	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	7.50E+00	2.16E+09	3.47E-09
Heptachlor	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	1.50E+00	2.16E+09	6.94E-10
Herbicides									
Pentachlorophenol	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	4.40E+02	2.16E+09	2.03E-07
PCBs									
PCBs, Total	2.43E+00	1.13E+09	2.15E-09	6.07E+00	7.89E+09	7.69E-10	1.01E+03	2.16E+09	4.66E-07
Dioxin									
Dioxin TEQ-HH	1.25E-03	1.13E+09	1.11E-12	3.70E-03	7.89E+09	4.69E-13	NCOPC	2.16E+09	NCOPC
Metals									
Antimony	NCOPC	1.13E+09	NCOPC	8.01E+00	7.89E+09	1.01E-09	NCOPC	2.16E+09	NCOPC
Arsenic	1.00E+02	1.13E+09	8.86E-08	1.40E+01	7.89E+09	1.78E-09	NCOPC	2.16E+09	NCOPC
Cadmium	9.22E+01	1.13E+09	8.17E-08	3.65E+03	7.89E+09	4.63E-07	NCOPC	2.16E+09	NCOPC
Chromium	NCOPC	1.13E+09	NCOPC	3.30E+02	7.89E+09	4.18E-08	NCOPC	2.16E+09	NCOPC
Manganese	NCOPC	1.13E+09	NCOPC	6.67E+02	7.89E+09	8.45E-08	NCOPC	2.16E+09	NCOPC
Mercury	NCOPC	1.13E+09	NCOPC	6.70E+01	7.89E+09	8.48E-09	NCOPC	2.16E+09	NCOPC
Vanadium	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	NCOPC	2.16E+09	NCOPC

Notes:

NCOPC - Not a Constituent of Potential Concern in this area.

NVOC - Non Volatile Organic Compound; those with Henry's Law Constant less than 10^{-5} atm-m^3/mol or a molecular weight greater than 200 g/mol.

SVOCs - Semivolatile Organic Compounds.

PCB - Polychlorinated Biphenyl.

(a) Exposure Point Concentration (EPC) selected in Table 3.1 and presented in Table 3.1RME.

(b) Particulate Emission Factor (PEF) calculated in Table C-2.

(c) Outdoor air concentration = surface soil EPC/VF.

TABLE C-16
OUTDOOR AIR CONCENTRATIONS -ON-SITE WORKER AND TRESPASSING TEENAGER (RME & MLE) NVOCs FROM SURFACE SOIL TO OUTDOOR AIR
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	O			O North			P			Q Central		
Constituent	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
SVOCs												
1,2,4-Trichlorobenzene	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
2,4,6-Trichlorophenol	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Benzo(a)anthracene	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	6.23E-01	9.08E+08	6.86E-10
Benzo(a)pyrene	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	2.60E-01	3.62E+09	7.18E-11	5.94E-01	9.08E+08	6.54E-10
Benzo(b)fluoranthene	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	5.70E-01	9.08E+08	6.28E-10
Dibenzo(a,h)anthracene	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Pesticides												
4,4'-DDT	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
beta-BHC	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
delta-BHC	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Dieldrin	1.80E-01	9.24E+09	1.95E-11	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
gamma-BHC (Lindane)	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Heptachlor	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Herbicides												
Pentachlorophenol	2.30E+00	9.24E+09	2.49E-10	1.24E+02	1.30E+10	9.51E-09	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
PCBs												
PCBs, Total	5.41E+00	9.24E+09	5.86E-10	7.09E+02	1.30E+10	5.44E-08	2.38E+00	3.62E+09	6.56E-10	8.98E-01	9.08E+08	9.89E-10
Dioxin												
Dioxin TEQ-HH	3.42E-03	9.24E+09	3.70E-13	5.15E-02	1.30E+10	3.95E-12	NCOPC	3.62E+09	NCOPC	4.94E-04	9.08E+08	5.44E-13
Metals												
Antimony	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Arsenic	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	1.13E+01	3.62E+09	3.12E-09	9.53E+00	9.08E+08	1.05E-08
Cadmium	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Chromium	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Manganese	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	4.50E+02	3.62E+09	1.24E-07	NCOPC	9.08E+08	NCOPC
Mercury	NCOPC	9.24E+09	NCOPC	6.10E+01	1.30E+10	4.68E-09	NCOPC	3.62E+09	NCOPC	NCOPC	9.08E+08	NCOPC
Vanadium	NCOPC	9.24E+09	NCOPC	NCOPC	1.30E+10	NCOPC	4.65E+01	3.62E+09	1.28E-08	NCOPC	9.08E+08	NCOPC

See notes on last page.

TABLE C-16
OUTDOOR AIR CONCENTRATIONS -ON-S
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Q North			Q South			S		
Constituent	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**	**Surface Soil EPC (a) (mg/kg)**	**Particulate Emission Factor (b) (m^3/kg)**	**Concentration in Outdoor Air (c) (mg/m^3)**
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	3.60E+01	2.16E+09	1.66E-08
2,4,6-Trichlorophenol	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	8.20E+00	2.16E+09	3.79E-09
Benzo(a)anthracene	NCOPC	1.13E+09	NCOPC	5.55E-01	7.89E+09	7.03E-11	4.05E+00	2.16E+09	1.87E-09
Benzo(a)pyrene	6.98E-01	1.13E+09	6.18E-10	5.18E-01	7.89E+09	6.56E-11	2.77E+00	2.16E+09	1.28E-09
Benzo(b)fluoranthene	NCOPC	1.13E+09	NCOPC	6.65E-01	7.89E+09	8.43E-11	3.42E+00	2.16E+09	1.58E-09
Dibenzo(a,h)anthracene	1.97E-01	1.13E+09	1.75E-10	1.58E-01	7.89E+09	2.00E-11	1.80E+00	2.16E+09	8.32E-10
Pesticides									
4,4'-DDT	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	8.01E+00	2.16E+09	3.70E-09
beta-BHC	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	1.30E+01	2.16E+09	6.01E-09
delta-BHC	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	7.40E-01	2.16E+09	3.42E-10
Dieldrin	NCOPC	1.13E+09	NCOPC	7.08E-02	7.89E+09	8.96E-12	NCOPC	2.16E+09	NCOPC
gamma-BHC (Lindane)	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	7.50E+00	2.16E+09	3.47E-09
Heptachlor	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	1.50E+00	2.16E+09	6.94E-10
Herbicides									
Pentachlorophenol	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	1.47E+02	2.16E+09	6.78E-08
PCBs									
PCBs, Total	8.99E-01	1.13E+09	7.96E-10	3.15E+00	7.89E+09	3.99E-10	5.04E+02	2.16E+09	2.33E-07
Dioxin									
Dioxin TEQ-HH	3.37E-04	1.13E+09	2.99E-13	5.55E-04	7.89E+09	7.03E-14	NCOPC	2.16E+09	NCOPC
Metals									
Antimony	NCOPC	1.13E+09	NCOPC	7.16E+00	7.89E+09	9.07E-10	NCOPC	2.16E+09	NCOPC
Arsenic	1.38E+01	1.13E+09	1.22E-08	8.29E+00	7.89E+09	1.05E-09	NCOPC	2.16E+09	NCOPC
Cadmium	1.09E+01	1.13E+09	9.69E-09	3.39E+02	7.89E+09	4.29E-08	NCOPC	2.16E+09	NCOPC
Chromium	NCOPC	1.13E+09	NCOPC	6.00E+01	7.89E+09	7.60E-09	NCOPC	2.16E+09	NCOPC
Manganese	NCOPC	1.13E+09	NCOPC	5.29E+02	7.89E+09	6.71E-08	NCOPC	2.16E+09	NCOPC
Mercury	NCOPC	1.13E+09	NCOPC	6.63E+00	7.89E+09	8.39E-10	NCOPC	2.16E+09	NCOPC
Vanadium	NCOPC	1.13E+09	NCOPC	NCOPC	7.89E+09	NCOPC	NCOPC	2.16E+09	NCOPC

Notes:

NCOPC - Not a Constituent of Potential Concern in this area.

NVOC - Non Volatile Organic Compound; those with Henry's Law Constant less than 10^5 atm-m^3/mol or a molecular weight greater than 200 g/mol.

SVOCs - Semivolatile Organic Compounds.

PCB - Polychlorinated Biphenyl.

(a) Exposure Point Concentration (EPC) selected in Table 3.1 and presented in Table 3.1MLE.

(b) Particulate Emission Factor (PEF) calculated in Table C-2.

(c) Outdoor air concentration = surface soil EPC/VF.

Waste and Cleanup Risk Assessment

http://rais.ornl.gov/cgi-bin/epa/ssl2.cgi
Last updated on Wednesday, March 26th, 2008.

Soil Screening Guidance for Chemicals

Equation Values for Inhalation of Fugitive Dust

Particulate Emission Factor Parameter	Value	Noncarcinogenic Parameter	Value	Carcinogenic Parameter	Value
Surface Area (acres)	30.0	Target Hazard Quotient (unitless)	1	Target Risk (unitless)	1.0E-6
City (climate zone)	Chicago(VII)	Exposure Duration (yr)	30	Exposure Duration (yr)	30
Q/C (g/m^2-s per kg/m^3)	53.75474	Exposure Frequency (day/yr)	350	Exposure Frequency (day/yr)	350
Fraction of vegetative cover (unitless)	.9			Average Lifetime (yr)	70
Mean annual windspeed (m/s)	4.3				
Equivalent threshold value of windspeed at 7m (m/s)	11.32				
Function dependent on U_m/U_t (unitless)	.101				

Soil Screening Levels for Inhalation of Fugitive Dust (mg/kg)

Analyte	Cas Number	Inhalation RfC	Inhalation Unit Risk	Particulate Emission Factor	Noncarcinogenic	Carcinogenic
Dieldrin	60571		4.6E-03 [a]	9.71E+09		5.14E+03

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Waste and Cleanup Risk Assessment

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Soil Screening Guidance for Chemicals

Equation Values for Inhalation of Volatiles

Volatilization Factor Parameter	Value	Soil Saturation Concentration Parameter	Value	Noncarcinogenic Parameter	Value	Carcinogenic Parameter	Valu
Surface Area (acres)	30.0			Target Hazard Quotient (unitless)	1	Target Risk (unitless)	1.0E-(
City (climate zone)	Chicago(VII)			Exposure Duration (yr)	30	Exposure Duration (yr)	30
Q/C (g/m^2-s per kg/m^3)	53.75474			Exposure Frequency (day/yr)	350	Exposure Frequency (day/yr)	350
Fraction organic carbon (unitless)	0.006	Fraction organic carbon (unitless)	0.006			Average Lifetime (yr)	70
Dry soil bulk density (g/cm^3)	1.66	Dry soil bulk density (g/cm^3)	1.66				
Soil particle density (g/cm^3)	2.656	Soil particle density (g/cm^3)	2.656				
Water-filled soil porosity (L_{water}/L_{soil})	0.053	Water-filled soil porosity (L_{water}/L_{soil})	0.053				
Exposure interval (s)	7.88e8						

Soil Screening Levels for Inhalation of Volatiles (mg/kg)

Analyte	Cas Number	Inhalation RfC	Inhalation Unit Risk	Volatilization Factor	Soil Saturation Concentration	Noncarcinogenic	Carcinogenic
Benzene	71432	3.0E-02 [a]	7.8E-06 [a]	1.2E+03	7.5E+02	3.7E+01	3.7E-01
Chlorobenzene	108907	2.0E-02 [b,c]		2.9E+03	6.5E+02	6.0E+01	

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Attachment D

Supporting Documentation for the Groundwater-to-Outdoor Air Modeling

Calculation of Exposure Point Concentrations (EPCs) for the Groundwater to Outdoor Air Pathway

Outdoor air concentrations resulting from migration of volatile constituents of potential concern (COPC) from underlying groundwater to outdoor air were predicted based on the method recommended by the American Society for Testing and Materials in ASTM E 2081 *Standard Provisional Guide for Risk-Based Corrective Action* (ASTM, 2000). Calculations were completed using ENSR developed spreadsheets and were verified using the *RBCA Tool Kit for Chemical Releases* software, Version 1.3a, designed by Groundwater Services, Inc. (2001) to implement the calculations recommended in ASTM E 2081. The output from the software for benzene in well AA-CLAY-2 are attached to the end of this attachment to show that the spreadsheet calculations match the software calculations. The goal of the approach recommended in ASTM E 2081 is to estimate potential impacts of volatile constituents migrating from groundwater to the outdoor air breathing zone. Volatile Organic Compounds (VOCs) have been defined as constituents with Henry's Law Constants greater than 10^{-5} atm-m^3/mol and a molecular weight greater than 200 g/mol (USEPA, 2004a).

The approach recommended in ASTM E 2081 for predicting migration of COPC vapors from groundwater and to outdoor air is a simple one in which the relationships between dissolved groundwater concentrations and outdoor air are represented by a chemical-specific volatilization factor, and is dependent upon the following assumptions:

- The concentration of dissolved constituents in groundwater remains constant over time (i.e., serves as an infinite source of volatile constituents).

- The soil vapor concentrations of volatile constituents reach immediate equilibrium with the dissolved concentration of these same constituents in groundwater.

- There is no loss of constituent (through biodegradation, or other loss mechanism) as the volatile constituent migrates, via diffusion, to the ground surface.

- Air dispersion of volatile constituents within the breathing zone is predicted through the use of a box model resulting in steady, well mixed atmospheric dispersion of volatile constituents as they rise into the breathing zone, as presented below (ASTM, 2000):

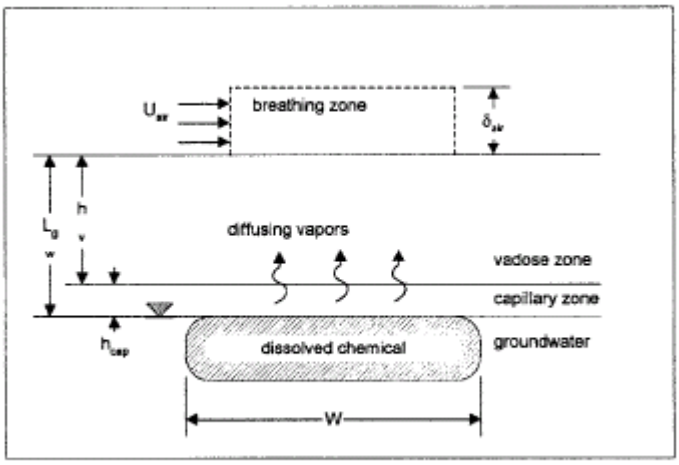

FIG. X3.1 Volatilization from Ground Water to Ambient Air

Equations for the implementation of ASTM E 2081 are presented on the attached tables.

Table D-1 presents the constituent-specific properties used in the calculations, obtained from the Risk Assessment Information System (RAIS, 2008), Toxicity and Chemical-Specific Factors Data Base (URL: [http://risk.lsd.ornl.gov/index.shtml). Table D-2 presents the soil and hydrogeology properties used in the calculations, as described below:

- While limited geotechnical soil parameter data are available (see Table 6-3 and Appendix N of the RI, URS, 2008), the data are not available for all Sites and the samples were collected from greater than 20 feet bgs. Therefore, default soil parameters for sand were used, due to the presence of fill in the area, as noted on the boring logs presented in Appendix B of the RI (URS, 2008). The soil parameters for sand were obtained from the User's Guide for the USEPA version of the Johnson and Ettinger Model (USEPA, 2004b).

- Depth to groundwater represents the average of depth to groundwater measurements based on data presented in Table 4-5 of the Remedial Investigation (URS, 2008). For alluvial aquifer locations (AA) depth to water is assumed to be 5 feet above the first sample. Therefore, 5 feet was subtracted from the sample depth.

- The thickness of the vadose zone was calculated as the depth to groundwater minus the thickness of the capillary fringe. The capillary fringe was assumed to be 17 cm, the default thickness for sand (USEPA, 2004b).

- As shown on Table D-2, the mean annual wind speed at a height of 7 meters measured at the St. Louis International Airport between 1951 and 1980 (Ruffner, 1985) was scaled to the wind speed at 2 meters using a standard equation (USEPA, 2000). The scaled wind speed used in the model is 356 cm/second. The model requires the use of wind speed at breathing height (about 6 feet, or 2 meters).

- Width source zone (i.e., groundwater plume) was estimated as the distance from each well to the Mississippi River, where the plume ends.

Diffusion coefficients are calculated in the following tables:

- Table D-3: Effective Diffusion Coefficient through Capillary Fringe

- Table D-4: Effective Diffusion Coefficient in Soil Based on Vapor-Phase Concentration

- Table D-5: Effective Diffusion Coefficient between Groundwater and Soil Surface

Volatilization factors for groundwater to outdoor air are calculated in Table D-6. Table D-7 presents the calculation of outdoor air EPCs for the RME scenario and Table D-8 presents the calculation of outdoor air EPCs for the MLE scenario.

References

ASTM, 2000. Standard Guide for Risk Based Corrective Action. ASTM Designation: E 2081-00 (Reapproved 2004). American Society for Testing and Material.

GSI, 2001. RBCA Tool Kit for Chemical Releases Software. Version 1.3a. Groundwater Services, Inc. Houston, Texas.

RAIS. 2008. Risk Assessment Information System. Toxicity and Chemical-Specific Factors Data Base. URL: [http://risk.lsd.ornl.gov/index.shtml].

Ruffner, James A.1985. Climate of the States: National Oceanic and Atmospheric Administration Narrative Summaries, Tables and Maps for Each State with Overview of State Climatologist Programs, Third Edition, Gale Research Company. Detroit. Means for period 1951-1980.

URS Corporation. 2008. Remedial Investigation Report. Sauget Area 2, Sauget Illinois. February 2008.

USEPA. 2000. Meteorological Monitoring Guidance for Regulatory Modeling Applications. United States Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, NC 27711. February 2000 EPA-454/R-99-005).

USEPA. 2004a. Preliminary Remediation Goals (PRGs). Waste Programs, U.S. Environmental Protection Agency, Region 9. San Francisco, California. October 1, 2004. [URL: www.epa.gov/region09/waste/sfund/prg/index.html]

USEPA. 2004b. User's Guide Evaluating Subsurface Vapor Intrusion into Buildings. Office of Emergency and Remedial Response. Toxics Integration Branch. U.S. Environmental Protection Agency, Washington, D.C. March 14, 2003.

Constituent	D_{air} (cm^2/s)	D_{wat} (cm^2/s)	H (unitless)
VOCs			
1,1,1-Trichloroethane	7.80E-02	8.80E-06	7.03E-01
1,1,2-Trichloroethane	7.80E-02	8.80E-06	3.37E-02
1,1-Dichloroethane	7.42E-02	1.05E-05	2.30E-01
1,1-Dichloroethylene	9.00E-02	1.04E-05	1.07E+00
1,2-Dichloroethane	1.04E-01	9.90E-06	4.82E-02
1,2-Dichloroethene (total)	7.07E-02	1.19E-05	1.67E-01
1,2-Dichloropropane	7.82E-02	8.73E-06	1.15E-01
2-Butanone	8.08E-02	9.80E-06	2.33E-03
4-Methyl-2-pentanone	7.50E-02	7.80E-06	5.64E-03
Acetone	1.24E-01	1.14E-05	1.62E-03
Benzene	8.80E-02	9.80E-06	2.27E-01
Chlorobenzene	7.30E-02	8.70E-06	1.27E-01
Chloroethane	2.71E-01	1.15E-05	4.54E-01
Chloroform	1.04E-01	1.00E-05	1.50E-01
Chloromethane	1.26E-01	6.50E-06	3.61E-01
Dichloromethane	1.01E-01	1.17E-05	1.33E-01
Ethylbenzene	7.50E-02	7.80E-06	3.22E-01
Tetrachloroethene	7.20E-02	8.20E-06	7.24E-01
Toluene	8.70E-02	8.60E-06	2.71E-01
Trichloroethene	7.90E-02	9.10E-06	4.03E-01
Vinyl chloride	1.06E-01	1.23E-06	1.14E+00
Xylenes, Total	7.14E-02	9.34E-06	2.71E-01
SVOCs			
1,2,4-Trichlorobenzene	3.00E-02	8.23E-06	5.81E-02
1,2-Dichlorobenzene	6.90E-02	7.90E-06	7.85E-02
1,4-Dichlorobenzene	6.90E-02	7.90E-06	9.85E-02
2-Chlorophenol	5.01E-02	9.46E-06	4.58E-04
2-Methylnaphthalene	4.80E-02	7.84E-06	2.12E-02
bis(2-Chloroethyl)ether	6.92E-02	7.53E-06	6.95E-04
Naphthalene	5.90E-02	7.50E-06	1.80E-02
Nitrobenzene	7.60E-02	8.60E-06	9.81E-04

Notes:
SVOCs - Semivolatile Organic Compounds.
VOC - Volatile Organic Compound; those with Henry's Law Constant greater than 10^{-5} atm-m^3/mol and a molecular weight greater than 200 g/mol.
(a) Chemical properties obtained from Risk Assessment Information System (RAIS). Toxicity and Chemical-Specific Factors Data Base. URL: <http://risk.lsd.ornl.gov/index.shtml>.

Parameter	Definition	Units	O - AA-CLAY-2-22	O - GM-19A	O - SA2-MW-4-S	O - SA-O-3	O - Leach O-1	Q Central - SA-Q-6	Q North - SA-Q-1	Q North - Leach Q-1	Q South - AA-Q-6-24	R - AA-R-1-28	R - B-22A	R - B-24A	R - B-25A	R - B-28A	R - Leach R-1	S - SA-S-1	Source
	Soil Type	none	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Site-specific. Boring logs for SA-O-3, SA-Q-6, SA-Q-8, SA-Q-1, SA-S-1, LEACH-O-1, LEACH-Q-1, LEACH-R-1. Boring logs not available for the remaining wells. However, the area is predominantly fill and sand is a conservative estimate based on fill.
h_{cap}	Thickness of capillary fringe	cm	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	USEPA, 2004, Table 10
h_v	Thickness of vadose zone (L_{GW} - h_{cap})	cm	501	413	362	490	423	554	623	241	562	684	464	336	607	529	492	442	Calculated
L_{GW}	Depth to groundwater (h_{cap} + h_v)	ft	17	14	12	17	14	19	21	8	19	23	16	12	20	18	17	15	Average depth to groundwater measurement based on data presented in Table 4-5 of the Remedial Investigation (URS, 2008). For alluvial aquifer locations (AA) depth to water is assumed to be 5 feet above the first sample. Therefore, 5 feet was subtracted from the sample depth.
L_{GW}	Depth to groundwater (h_{cap} + h_v)	cm	518	430	379	507	440	571	640	258	579	701	481	353	624	546	509	459	
U_{air}	Ambient air velocity in mixing zone	cm/s	356	356	356	356	356	356	356	356	356	356	356	356	356	356	356	356	(a)
W	Width of source-zone area	cm	54,329	58,323	49,783	59,206	77,644	11,276	21,726	28,028	40,352	4,661	11,243	8,925	25,774	7,433	14,218	49,160	Measured distance from well to Mississippi River
δ_{air}	Ambient air mixing zone height	cm	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	(6 feet)
θ_{acap}	Volumetric air content in capillary fringe soils (θ_T - θ_{wcap})	cm^3-air/cm^3-soil	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	Calculated
θ_{as}	Volumetric air content in vadose zone soils (θ_T - θ_{ws})	cm^3-air/cm^3-soil	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	0.322	Calculated
θ_T	Total soil porosity	cm^3/cm^3-soil	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	USEPA, 2004, Table 10
θ_{wcap}	Volumetric water content in capillary fringe soils	cm^3-H_20/cm^3-soil	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	0.253	USEPA, 2004, Table 10
θ_{ws}	Volumetric water content in vadose zone soils	cm^3-H_2O/cm^3-soi	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	USEPA, 2004, Table 10
ρ_S	Soil bulk density	g-soil/cm^3-soil	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	USEPA, 2004, Table 4

Notes:
ASTM, 2000. Standard Guide for Risk Based Corrective Action. ASTM Designation: E 2081-00 (Reapproved 2004). American Society for Testing and Material
USEPA. 2004. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings. February 22, 2004.
(a) Value is based on a value of 4.3 m/s measured at St. Louis International Airport at a height of 7 m. (James A. Ruffner, 1985. Climate of the States: National Oceanic and Atmospheric Administration Narrative Summaries, Tables and Maps for Each State with Overview of State Climatologist Programs, Third Edition, Gale Research company, Detroit.
Means for period 1951-1980.) Using the standard conversion equation, (Wind Speed at 2 m) = (Wind Speed at 7 m) * (2/7)^P, where P = 0.15. (USEPA. 2000. Meteorological Monitoring Guidance for Regulatory Modeling Applications. United States Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, NC 27711. February 2000 EPA-454/R-99-005).

TABLE D-3
EFFECTIVE DIFFUSION COEFFICIENT THROUGH CAPILLARY FRINGE ($Deff_{cap}$)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

$$Deffcap\ [cm2/s] = [Dair\ x\ (qacap3.33/qT2)] + [(Dwat/H)\ x\ (qwcap3.33/qT2)]$$ (ASTM, 2000)

Constituent	D_{air} (cm^2/s)	θ_{acap} (cm^3-air / cm^3-soil)	θ_T (cm^3 / cm^3-soil)	D_{wat} (cm^2/s)	H (unitless)	θ_{wcap} (cm^3-H2O / cm^3-soil)	$Deff_{cap}$ (cm^2/s)
VOCs							
1,1,1-Trichloroethane	7.80E-02	1.22E-01	3.75E-01	8.80E-06	7.03E-01	2.53E-01	**5.04E-04**
1,1,2-Trichloroethane	7.80E-02	1.22E-01	3.75E-01	8.80E-06	3.37E-02	2.53E-01	**5.22E-04**
1,1-Dichloroethane	7.42E-02	1.22E-01	3.75E-01	1.05E-05	2.30E-01	2.53E-01	**4.82E-04**
1,1-Dichloroethylene	9.00E-02	1.22E-01	3.75E-01	1.04E-05	1.07E+00	2.53E-01	**5.81E-04**
1,2-Dichloroethane	1.04E-01	1.22E-01	3.75E-01	9.90E-06	4.82E-02	2.53E-01	**6.86E-04**
1,2-Dichloroethene (total)	7.07E-02	1.22E-01	3.75E-01	1.19E-05	1.67E-01	2.53E-01	**4.61E-04**
1,2-Dichloropropane	7.82E-02	1.22E-01	3.75E-01	8.73E-06	1.15E-01	2.53E-01	**5.10E-04**
2-Butanone	8.08E-02	1.22E-01	3.75E-01	9.80E-06	2.33E-03	2.53E-01	**8.29E-04**
4-Methyl-2-pentanone	7.50E-02	1.22E-01	3.75E-01	7.80E-06	5.64E-03	2.53E-01	**5.85E-04**
Acetone	1.24E-01	1.22E-01	3.75E-01	1.14E-05	1.62E-03	2.53E-01	**1.31E-03**
Benzene	8.80E-02	1.22E-01	3.75E-01	9.80E-06	2.27E-01	2.53E-01	**5.71E-04**
Chlorobenzene	7.30E-02	1.22E-01	3.75E-01	8.70E-06	1.27E-01	2.53E-01	**4.76E-04**
Chloroethane	2.71E-01	1.22E-01	3.75E-01	1.15E-05	4.54E-01	2.53E-01	**1.75E-03**
Chloroform	1.04E-01	1.22E-01	3.75E-01	1.00E-05	1.50E-01	2.53E-01	**6.76E-04**
Chloromethane	1.26E-01	1.22E-01	3.75E-01	6.50E-06	3.61E-01	2.53E-01	**8.14E-04**
Dichloromethane	1.01E-01	1.22E-01	3.75E-01	1.17E-05	1.33E-01	2.53E-01	**6.58E-04**
Ethylbenzene	7.50E-02	1.22E-01	3.75E-01	7.80E-06	3.22E-01	2.53E-01	**4.85E-04**
Tetrachloroethene	7.20E-02	1.22E-01	3.75E-01	8.20E-06	7.24E-01	2.53E-01	**4.65E-04**
Toluene	8.70E-02	1.22E-01	3.75E-01	8.60E-06	2.71E-01	2.53E-01	**5.63E-04**
Trichloroethene	7.90E-02	1.22E-01	3.75E-01	9.10E-06	4.03E-01	2.53E-01	**5.11E-04**
Vinyl chloride	1.06E-01	1.22E-01	3.75E-01	1.23E-06	1.14E+00	2.53E-01	**6.84E-04**
Xylenes, Total	7.14E-02	1.22E-01	3.75E-01	9.34E-06	2.71E-01	2.53E-01	**4.63E-04**
SVOCs							
1,2,4-Trichlorobenzene	3.00E-02	1.22E-01	3.75E-01	8.23E-06	5.81E-02	2.53E-01	**2.04E-04**
1,2-Dichlorobenzene	6.90E-02	1.22E-01	3.75E-01	7.90E-06	7.85E-02	2.53E-01	**4.52E-04**
1,4-Dichlorobenzene	6.90E-02	1.22E-01	3.75E-01	7.90E-06	9.85E-02	2.53E-01	**4.51E-04**
2-Chlorophenol	5.01E-02	1.22E-01	3.75E-01	9.46E-06	4.58E-04	2.53E-01	**1.83E-03**
2-Methylnaphthalene	4.80E-02	1.22E-01	3.75E-01	7.84E-06	2.12E-02	2.53E-01	**3.37E-04**
bis(2-Chloroethyl)ether	6.92E-02	1.22E-01	3.75E-01	7.53E-06	6.95E-04	2.53E-01	**1.24E-03**
Naphthalene	5.90E-02	1.22E-01	3.75E-01	7.50E-06	1.80E-02	2.53E-01	**4.11E-04**
Nitrobenzene	7.60E-02	1.22E-01	3.75E-01	8.60E-06	9.81E-04	2.53E-01	**1.13E-03**

Notes:
SVOCs - Semivolatile Organic Compounds.
VOC - Volatile Organic Compound; those with Henry's Law Constant greater than 10^{-5} atm-m^3/mol and a molecular weight greater than 200 g/mol.
Input parameters listed on Tables D-1 and D-2.

TABLE D-4
EFFECTIVE DIFFUSION COEFFICIENT IN SOIL BASED VAPOR-PHASE CONCENTRATION ($Deff_S$)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

$$DeffS\ [cm2/s] = [Dair\ x\ (qas3.33/qT2)] + [(Dwat/H)\ x\ (qws3.33/qT2)]$$ ASTM, 2000

Constituent	D_{air} (cm^2/s)	θ_{as} (cm^3-air/ cm^3-soil)	θ_T (cm^3 / cm^3-soil)	D_{wat} (cm^2/s)	H (unitless)	θ_{ws} (cm^3-H_2O/ cm^3-soil)	$Deff_S$ (cm^2/s)
VOCs							
1,1,1-Trichloroethane	7.80E-02	3.22E-01	3.75E-01	8.80E-06	7.03E-01	5.30E-02	**1.27E-02**
1,1,2-Trichloroethane	7.80E-02	3.22E-01	3.75E-01	8.80E-06	3.37E-02	5.30E-02	**1.27E-02**
1,1-Dichloroethane	7.42E-02	3.22E-01	3.75E-01	1.05E-05	2.30E-01	5.30E-02	**1.21E-02**
1,1-Dichloroethylene	9.00E-02	3.22E-01	3.75E-01	1.04E-05	1.07E+00	5.30E-02	**1.47E-02**
1,2-Dichloroethane	1.04E-01	3.22E-01	3.75E-01	9.90E-06	4.82E-02	5.30E-02	**1.70E-02**
1,2-Dichloroethene (total)	7.07E-02	3.22E-01	3.75E-01	1.19E-05	1.67E-01	5.30E-02	**1.15E-02**
1,2-Dichloropropane	7.82E-02	3.22E-01	3.75E-01	8.73E-06	1.15E-01	5.30E-02	**1.28E-02**
2-Butanone	8.08E-02	3.22E-01	3.75E-01	9.80E-06	2.33E-03	5.30E-02	**1.32E-02**
4-Methyl-2-pentanone	7.50E-02	3.22E-01	3.75E-01	7.80E-06	5.64E-03	5.30E-02	**1.23E-02**
Acetone	1.24E-01	3.22E-01	3.75E-01	1.14E-05	1.62E-03	5.30E-02	**2.03E-02**
Benzene	8.80E-02	3.22E-01	3.75E-01	9.80E-06	2.27E-01	5.30E-02	**1.44E-02**
Chlorobenzene	7.30E-02	3.22E-01	3.75E-01	8.70E-06	1.27E-01	5.30E-02	**1.19E-02**
Chloroethane	2.71E-01	3.22E-01	3.75E-01	1.15E-05	4.54E-01	5.30E-02	**4.43E-02**
Chloroform	1.04E-01	3.22E-01	3.75E-01	1.00E-05	1.50E-01	5.30E-02	**1.70E-02**
Chloromethane	1.26E-01	3.22E-01	3.75E-01	6.50E-06	3.61E-01	5.30E-02	**2.06E-02**
Dichloromethane	1.01E-01	3.22E-01	3.75E-01	1.17E-05	1.33E-01	5.30E-02	**1.65E-02**
Ethylbenzene	7.50E-02	3.22E-01	3.75E-01	7.80E-06	3.22E-01	5.30E-02	**1.23E-02**
Tetrachloroethene	7.20E-02	3.22E-01	3.75E-01	8.20E-06	7.24E-01	5.30E-02	**1.18E-02**
Toluene	8.70E-02	3.22E-01	3.75E-01	8.60E-06	2.71E-01	5.30E-02	**1.42E-02**
Trichloroethene	7.90E-02	3.22E-01	3.75E-01	9.10E-06	4.03E-01	5.30E-02	**1.29E-02**
Vinyl chloride	1.06E-01	3.22E-01	3.75E-01	1.23E-06	1.14E+00	5.30E-02	**1.73E-02**
Xylenes, Total	7.14E-02	3.22E-01	3.75E-01	9.34E-06	2.71E-01	5.30E-02	**1.17E-02**
SVOCs							
1,2,4-Trichlorobenzene	3.00E-02	3.22E-01	3.75E-01	8.23E-06	5.81E-02	5.30E-02	**4.90E-03**
1,2-Dichlorobenzene	6.90E-02	3.22E-01	3.75E-01	7.90E-06	7.85E-02	5.30E-02	**1.13E-02**
1,4-Dichlorobenzene	6.90E-02	3.22E-01	3.75E-01	7.90E-06	9.85E-02	5.30E-02	**1.13E-02**
2-Chlorophenol	5.01E-02	3.22E-01	3.75E-01	9.46E-06	4.58E-04	5.30E-02	**8.19E-03**
2-Methylnaphthalene	4.80E-02	3.22E-01	3.75E-01	7.84E-06	2.12E-02	5.30E-02	**7.84E-03**
bis(2-Chloroethyl)ether	6.92E-02	3.22E-01	3.75E-01	7.53E-06	6.95E-04	5.30E-02	**1.13E-02**
Naphthalene	5.90E-02	3.22E-01	3.75E-01	7.50E-06	1.80E-02	5.30E-02	**9.64E-03**
Nitrobenzene	7.60E-02	3.22E-01	3.75E-01	8.60E-06	9.81E-04	5.30E-02	**1.24E-02**

Notes:
SVOCs - Semivolatile Organic Compounds.
VOC - Volatile Organic Compound; those with Henry's Law Constant greater than 10^{-5} atm-m^3/mol and a molecular weight greater than 200 g/mol.
Input parameters listed on Tables D-1 and D-2.

TABLE D-5
EFFECTIVE DIFFUSION COEFFICIENT BETWEEN GROUNDWATER AND SOIL SURFACE ($Deff_{WS}$)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

$$Deff_{ws}\ [cm^2/s] = (h_{cap} + h_v)\ x\ [(h_{cap}/Deff_{cap}) + (h_v/Deff_S)]^{-1}$$

Constituent	O - AA-CLAY-2-22					O - GM-19A					O - SA2-MW-4-S				
	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]
VOCs															
1,1,1-Trichloroethane	17	501.16	5.04E-04	1.27E-02	**7.09E-03**	17	412.77	5.04E-04	1.27E-02	**6.50E-03**	17	362.17	5.04E-04	1.27E-02	**6.10E-03**
1,1,2-Trichloroethane	17	501.16	5.22E-04	1.27E-02	**7.21E-03**	17	412.77	5.22E-04	1.27E-02	**6.62E-03**	17	362.17	5.22E-04	1.27E-02	**6.22E-03**
1,1-Dichloroethane	17	501.16	4.82E-04	1.21E-02	**6.76E-03**	17	412.77	4.82E-04	1.21E-02	**6.20E-03**	17	362.17	4.82E-04	1.21E-02	**5.82E-03**
1,1-Dichloroethylene	17	501.16	5.81E-04	1.47E-02	**8.18E-03**	17	412.77	5.81E-04	1.47E-02	**7.50E-03**	17	362.17	5.81E-04	1.47E-02	**7.04E-03**
1,2-Dichloroethane	17	501.16	6.86E-04	1.70E-02	**9.54E-03**	17	412.77	6.86E-04	1.70E-02	**8.76E-03**	17	362.17	6.86E-04	1.70E-02	**8.22E-03**
1,2-Dichloroethene (total)	17	501.16	4.61E-04	1.15E-02	**6.46E-03**	17	412.77	4.61E-04	1.15E-02	**5.92E-03**	17	362.17	4.61E-04	1.15E-02	**5.56E-03**
1,2-Dichloropropane	17	501.16	5.10E-04	1.28E-02	**7.14E-03**	17	412.77	5.10E-04	1.28E-02	**6.55E-03**	17	362.17	5.10E-04	1.28E-02	**6.15E-03**
2-Butanone	17	501.16	8.29E-04	1.32E-02	**8.86E-03**	17	412.77	8.29E-04	1.32E-02	**8.30E-03**	17	362.17	8.29E-04	1.32E-02	**7.91E-03**
4-Methyl-2-pentanone	17	501.16	5.85E-04	1.23E-02	**7.41E-03**	17	412.77	5.85E-04	1.23E-02	**6.85E-03**	17	362.17	5.85E-04	1.23E-02	**6.47E-03**
Acetone	17	501.16	1.31E-03	2.03E-02	**1.38E-02**	17	412.77	1.31E-03	2.03E-02	**1.29E-02**	17	362.17	1.31E-03	2.03E-02	**1.23E-02**
Benzene	17	501.16	5.71E-04	1.44E-02	**8.01E-03**	17	412.77	5.71E-04	1.44E-02	**7.35E-03**	17	362.17	5.71E-04	1.44E-02	**6.90E-03**
Chlorobenzene	17	501.16	4.76E-04	1.19E-02	**6.66E-03**	17	412.77	4.76E-04	1.19E-02	**6.11E-03**	17	362.17	4.76E-04	1.19E-02	**5.74E-03**
Chloroethane	17	501.16	1.75E-03	4.43E-02	**2.46E-02**	17	412.77	1.75E-03	4.43E-02	**2.26E-02**	17	362.17	1.75E-03	4.43E-02	**2.12E-02**
Chloroform	17	501.16	6.76E-04	1.70E-02	**9.48E-03**	17	412.77	6.76E-04	1.70E-02	**8.69E-03**	17	362.17	6.76E-04	1.70E-02	**8.16E-03**
Chloromethane	17	501.16	8.14E-04	2.06E-02	**1.15E-02**	17	412.77	8.14E-04	2.06E-02	**1.05E-02**	17	362.17	8.14E-04	2.06E-02	**9.85E-03**
Dichloromethane	17	501.16	6.58E-04	1.65E-02	**9.22E-03**	17	412.77	6.58E-04	1.65E-02	**8.45E-03**	17	362.17	6.58E-04	1.65E-02	**7.93E-03**
Ethylbenzene	17	501.16	4.85E-04	1.23E-02	**6.82E-03**	17	412.77	4.85E-04	1.23E-02	**6.25E-03**	17	362.17	4.85E-04	1.23E-02	**5.87E-03**
Tetrachloroethene	17	501.16	4.65E-04	1.18E-02	**6.55E-03**	17	412.77	4.65E-04	1.18E-02	**6.00E-03**	17	362.17	4.65E-04	1.18E-02	**5.63E-03**
Toluene	17	501.16	5.63E-04	1.42E-02	**7.92E-03**	17	412.77	5.63E-04	1.42E-02	**7.26E-03**	17	362.17	5.63E-04	1.42E-02	**6.81E-03**
Trichloroethene	17	501.16	5.11E-04	1.29E-02	**7.19E-03**	17	412.77	5.11E-04	1.29E-02	**6.59E-03**	17	362.17	5.11E-04	1.29E-02	**6.18E-03**
Vinyl chloride	17	501.16	6.84E-04	1.73E-02	**9.63E-03**	17	412.77	6.84E-04	1.73E-02	**8.82E-03**	17	362.17	6.84E-04	1.73E-02	**8.28E-03**
Xylenes, Total	17	501.16	4.63E-04	1.17E-02	**6.50E-03**	17	412.77	4.63E-04	1.17E-02	**5.96E-03**	17	362.17	4.63E-04	1.17E-02	**5.59E-03**
SVOCs															
1,2,4-Trichlorobenzene	17	501.16	2.04E-04	4.90E-03	**2.79E-03**	17	412.77	2.04E-04	4.90E-03	**2.56E-03**	17	362.17	2.04E-04	4.90E-03	**2.41E-03**
1,2-Dichlorobenzene	17	501.16	4.52E-04	1.13E-02	**6.32E-03**	17	412.77	4.52E-04	1.13E-02	**5.79E-03**	17	362.17	4.52E-04	1.13E-02	**5.44E-03**
1,4-Dichlorobenzene	17	501.16	4.51E-04	1.13E-02	**6.31E-03**	17	412.77	4.51E-04	1.13E-02	**5.78E-03**	17	362.17	4.51E-04	1.13E-02	**5.43E-03**
2-Chlorophenol	17	501.16	1.83E-03	8.19E-03	**7.36E-03**	17	412.77	1.83E-03	8.19E-03	**7.20E-03**	17	362.17	1.83E-03	8.19E-03	**7.09E-03**
2-Methylnaphthalene	17	501.16	3.37E-04	7.84E-03	**4.53E-03**	17	412.77	3.37E-04	7.84E-03	**4.17E-03**	17	362.17	3.37E-04	7.84E-03	**3.92E-03**
bis(2-Chloroethyl)ether	17	501.16	1.24E-03	1.13E-02	**8.93E-03**	17	412.77	1.24E-03	1.13E-02	**8.56E-03**	17	362.17	1.24E-03	1.13E-02	**8.29E-03**
Naphthalene	17	501.16	4.11E-04	9.64E-03	**5.55E-03**	17	412.77	4.11E-04	9.64E-03	**5.10E-03**	17	362.17	4.11E-04	9.64E-03	**4.80E-03**
Nitrobenzene	17	501.16	1.13E-03	1.24E-02	**9.36E-03**	17	412.77	1.13E-03	1.24E-02	**8.90E-03**	17	362.17	1.13E-03	1.24E-02	**8.58E-03**

See notes on last page.

$$Deff_{ws}\ [cm^2/s] = (h_{cap} + h_v)\ x\ [(h_{cap}/Deff_{cap}) + (h_v/Deff_S)]^{-1}$$

Constituent	O - SA-O-3					O - Leach O-1					Q Central - SA-Q-6				
	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]
VOCs															
1,1,1-Trichloroethane	17	490.49	5.04E-04	1.27E-02	**7.03E-03**	17	423.17	5.04E-04	1.27E-02	**6.57E-03**	17	554.20	5.04E-04	1.27E-02	**7.40E-03**
1,1,2-Trichloroethane	17	490.49	5.22E-04	1.27E-02	**7.14E-03**	17	423.17	5.22E-04	1.27E-02	**6.69E-03**	17	412.77	5.22E-04	1.27E-02	**6.62E-03**
1,1-Dichloroethane	17	490.49	4.82E-04	1.21E-02	**6.70E-03**	17	423.17	4.82E-04	1.21E-02	**6.27E-03**	17	412.77	4.82E-04	1.21E-02	**6.20E-03**
1,1-Dichloroethylene	17	490.49	5.81E-04	1.47E-02	**8.10E-03**	17	423.17	5.81E-04	1.47E-02	**7.58E-03**	17	412.77	5.81E-04	1.47E-02	**7.50E-03**
1,2-Dichloroethane	17	490.49	6.86E-04	1.70E-02	**9.46E-03**	17	423.17	6.86E-04	1.70E-02	**8.86E-03**	17	412.77	6.86E-04	1.70E-02	**8.76E-03**
1,2-Dichloroethene (total)	17	490.49	4.61E-04	1.15E-02	**6.40E-03**	17	423.17	4.61E-04	1.15E-02	**5.99E-03**	17	412.77	4.61E-04	1.15E-02	**5.92E-03**
1,2-Dichloropropane	17	490.49	5.10E-04	1.28E-02	**7.07E-03**	17	423.17	5.10E-04	1.28E-02	**6.62E-03**	17	412.77	5.10E-04	1.28E-02	**6.55E-03**
2-Butanone	17	490.49	8.29E-04	1.32E-02	**8.80E-03**	17	423.17	8.29E-04	1.32E-02	**8.37E-03**	17	412.77	8.29E-04	1.32E-02	**8.30E-03**
4-Methyl-2-pentanone	17	490.49	5.85E-04	1.23E-02	**7.34E-03**	17	423.17	5.85E-04	1.23E-02	**6.92E-03**	17	412.77	5.85E-04	1.23E-02	**6.85E-03**
Acetone	17	490.49	1.31E-03	2.03E-02	**1.37E-02**	17	423.17	1.31E-03	2.03E-02	**1.30E-02**	17	412.77	1.31E-03	2.03E-02	**1.29E-02**
Benzene	17	490.49	5.71E-04	1.44E-02	**7.94E-03**	17	423.17	5.71E-04	1.44E-02	**7.43E-03**	17	412.77	5.71E-04	1.44E-02	**7.35E-03**
Chlorobenzene	17	490.49	4.76E-04	1.19E-02	**6.60E-03**	17	423.17	4.76E-04	1.19E-02	**6.18E-03**	17	412.77	4.76E-04	1.19E-02	**6.11E-03**
Chloroethane	17	490.49	1.75E-03	4.43E-02	**2.44E-02**	17	423.17	1.75E-03	4.43E-02	**2.28E-02**	17	412.77	1.75E-03	4.43E-02	**2.26E-02**
Chloroform	17	490.49	6.76E-04	1.70E-02	**9.39E-03**	17	423.17	6.76E-04	1.70E-02	**8.79E-03**	17	412.77	6.76E-04	1.70E-02	**8.69E-03**
Chloromethane	17	490.49	8.14E-04	2.06E-02	**1.13E-02**	17	423.17	8.14E-04	2.06E-02	**1.06E-02**	17	412.77	8.14E-04	2.06E-02	**1.05E-02**
Dichloromethane	17	490.49	6.58E-04	1.65E-02	**9.13E-03**	17	423.17	6.58E-04	1.65E-02	**8.55E-03**	17	412.77	6.58E-04	1.65E-02	**8.45E-03**
Ethylbenzene	17	490.49	4.85E-04	1.23E-02	**6.76E-03**	17	423.17	4.85E-04	1.23E-02	**6.33E-03**	17	412.77	4.85E-04	1.23E-02	**6.25E-03**
Tetrachloroethene	17	490.49	4.65E-04	1.18E-02	**6.49E-03**	17	423.17	4.65E-04	1.18E-02	**6.07E-03**	17	412.77	4.65E-04	1.18E-02	**6.00E-03**
Toluene	17	490.49	5.63E-04	1.42E-02	**7.85E-03**	17	423.17	5.63E-04	1.42E-02	**7.34E-03**	17	412.77	5.63E-04	1.42E-02	**7.26E-03**
Trichloroethene	17	490.49	5.11E-04	1.29E-02	**7.12E-03**	17	423.17	5.11E-04	1.29E-02	**6.66E-03**	17	412.77	5.11E-04	1.29E-02	**6.59E-03**
Vinyl chloride	17	490.49	6.84E-04	1.73E-02	**9.54E-03**	17	423.17	6.84E-04	1.73E-02	**8.93E-03**	17	412.77	6.84E-04	1.73E-02	**8.82E-03**
Xylenes, Total	17	490.49	4.63E-04	1.17E-02	**6.44E-03**	17	423.17	4.63E-04	1.17E-02	**6.03E-03**	17	412.77	4.63E-04	1.17E-02	**5.96E-03**
SVOCs															
1,2,4-Trichlorobenzene	17	490.49	2.04E-04	4.90E-03	**2.77E-03**	17	423.17	2.04E-04	4.90E-03	**2.59E-03**	17	412.77	2.04E-04	4.90E-03	**2.56E-03**
1,2-Dichlorobenzene	17	490.49	4.52E-04	1.13E-02	**6.26E-03**	17	423.17	4.52E-04	1.13E-02	**5.86E-03**	17	412.77	4.52E-04	1.13E-02	**5.79E-03**
1,4-Dichlorobenzene	17	490.49	4.51E-04	1.13E-02	**6.25E-03**	17	423.17	4.51E-04	1.13E-02	**5.85E-03**	17	412.77	4.51E-04	1.13E-02	**5.78E-03**
2-Chlorophenol	17	490.49	1.83E-03	8.19E-03	**7.34E-03**	17	423.17	1.83E-03	8.19E-03	**7.22E-03**	17	412.77	1.83E-03	8.19E-03	**7.20E-03**
2-Methylnaphthalene	17	490.49	3.37E-04	7.84E-03	**4.49E-03**	17	423.17	3.37E-04	7.84E-03	**4.21E-03**	17	412.77	3.37E-04	7.84E-03	**4.17E-03**
bis(2-Chloroethyl)ether	17	490.49	1.24E-03	1.13E-02	**8.89E-03**	17	423.17	1.24E-03	1.13E-02	**8.61E-03**	17	412.77	1.24E-03	1.13E-02	**8.56E-03**
Naphthalene	17	490.49	4.11E-04	9.64E-03	**5.50E-03**	17	423.17	4.11E-04	9.64E-03	**5.16E-03**	17	412.77	4.11E-04	9.64E-03	**5.10E-03**
Nitrobenzene	17	490.49	1.13E-03	1.24E-02	**9.31E-03**	17	423.17	1.13E-03	1.24E-02	**8.96E-03**	17	412.77	1.13E-03	1.24E-02	**8.90E-03**

See notes on last page.

TABLE D-5
EFFECTIVE DIFFUSION COEFFICIENT BETWEEN GROUNDWATER AND SOIL SURFACE ($Deff_{WS}$)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

$$Deff_{ws}\ [cm^2/s] = (h_{cap} + h_v)\ x\ [(h_{cap}/Deff_{cap}) + (h_v/Deff_S)]^{-1}$$

Constituent	Q North - SA-Q-1					Q North - Leach Q-1				
	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]
VOCs										
1,1,1-Trichloroethane	17	623.08	5.04E-04	1.27E-02	**7.75E-03**	17	240.86	5.04E-04	1.27E-02	**4.90E-03**
1,1,2-Trichloroethane	17	623.08	5.22E-04	1.27E-02	**7.86E-03**	17	240.86	5.22E-04	1.27E-02	**5.01E-03**
1,1-Dichloroethane	17	623.08	4.82E-04	1.21E-02	**7.38E-03**	17	240.86	4.82E-04	1.21E-02	**4.68E-03**
1,1-Dichloroethylene	17	623.08	5.81E-04	1.47E-02	**8.94E-03**	17	240.86	5.81E-04	1.47E-02	**5.65E-03**
1,2-Dichloroethane	17	623.08	6.86E-04	1.70E-02	**1.04E-02**	17	240.86	6.86E-04	1.70E-02	**6.62E-03**
1,2-Dichloroethene (total)	17	623.08	4.61E-04	1.15E-02	**7.05E-03**	17	240.86	4.61E-04	1.15E-02	**4.47E-03**
1,2-Dichloropropane	17	623.08	5.10E-04	1.28E-02	**7.79E-03**	17	240.86	5.10E-04	1.28E-02	**4.94E-03**
2-Butanone	17	623.08	8.29E-04	1.32E-02	**9.45E-03**	17	240.86	8.29E-04	1.32E-02	**6.65E-03**
4-Methyl-2-pentanone	17	623.08	5.85E-04	1.23E-02	**8.01E-03**	17	240.86	5.85E-04	1.23E-02	**5.29E-03**
Acetone	17	623.08	1.31E-03	2.03E-02	**1.47E-02**	17	240.86	1.31E-03	2.03E-02	**1.04E-02**
Benzene	17	623.08	5.71E-04	1.44E-02	**8.75E-03**	17	240.86	5.71E-04	1.44E-02	**5.54E-03**
Chlorobenzene	17	623.08	4.76E-04	1.19E-02	**7.28E-03**	17	240.86	4.76E-04	1.19E-02	**4.61E-03**
Chloroethane	17	623.08	1.75E-03	4.43E-02	**2.69E-02**	17	240.86	1.75E-03	4.43E-02	**1.70E-02**
Chloroform	17	623.08	6.76E-04	1.70E-02	**1.04E-02**	17	240.86	6.76E-04	1.70E-02	**6.55E-03**
Chloromethane	17	623.08	8.14E-04	2.06E-02	**1.25E-02**	17	240.86	8.14E-04	2.06E-02	**7.91E-03**
Dichloromethane	17	623.08	6.58E-04	1.65E-02	**1.01E-02**	17	240.86	6.58E-04	1.65E-02	**6.38E-03**
Ethylbenzene	17	623.08	4.85E-04	1.23E-02	**7.45E-03**	17	240.86	4.85E-04	1.23E-02	**4.72E-03**
Tetrachloroethene	17	623.08	4.65E-04	1.18E-02	**7.15E-03**	17	240.86	4.65E-04	1.18E-02	**4.52E-03**
Toluene	17	623.08	5.63E-04	1.42E-02	**8.65E-03**	17	240.86	5.63E-04	1.42E-02	**5.47E-03**
Trichloroethene	17	623.08	5.11E-04	1.29E-02	**7.85E-03**	17	240.86	5.11E-04	1.29E-02	**4.97E-03**
Vinyl chloride	17	623.08	6.84E-04	1.73E-02	**1.05E-02**	17	240.86	6.84E-04	1.73E-02	**6.65E-03**
Xylenes, Total	17	623.08	4.63E-04	1.17E-02	**7.10E-03**	17	240.86	4.63E-04	1.17E-02	**4.49E-03**
SVOCs										
1,2,4-Trichlorobenzene	17	623.08	2.04E-04	4.90E-03	**3.04E-03**	17	240.86	2.04E-04	4.90E-03	**1.95E-03**
1,2-Dichlorobenzene	17	623.08	4.52E-04	1.13E-02	**6.89E-03**	17	240.86	4.52E-04	1.13E-02	**4.37E-03**
1,4-Dichlorobenzene	17	623.08	4.51E-04	1.13E-02	**6.88E-03**	17	240.86	4.51E-04	1.13E-02	**4.36E-03**
2-Chlorophenol	17	623.08	1.83E-03	8.19E-03	**7.50E-03**	17	240.86	1.83E-03	8.19E-03	**6.67E-03**
2-Methylnaphthalene	17	623.08	3.37E-04	7.84E-03	**4.92E-03**	17	240.86	3.37E-04	7.84E-03	**3.17E-03**
bis(2-Chloroethyl)ether	17	623.08	1.24E-03	1.13E-02	**9.30E-03**	17	240.86	1.24E-03	1.13E-02	**7.36E-03**
Naphthalene	17	623.08	4.11E-04	9.64E-03	**6.04E-03**	17	240.86	4.11E-04	9.64E-03	**3.89E-03**
Nitrobenzene	17	623.08	1.13E-03	1.24E-02	**9.82E-03**	17	240.86	1.13E-03	1.24E-02	**7.49E-03**

See notes on last page.

$$Deff_{ws}\ [cm^2/s] = (h_{cap} + h_v)\ x\ [(h_{cap}/Deff_{cap}) + (h_v/Deff_S)]^{-1}$$

Constituent	Q South - AA-Q-6-24					R - AA-R-1-28					R - B-22A				
	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]
VOCs															
1,1,1-Trichloroethane	17	562.12	5.04E-04	1.27E-02	**7.44E-03**	17	684.04	5.04E-04	1.27E-02	**8.02E-03**	17	464.08	5.04E-04	1.27E-02	**6.86E-03**
1,1,2-Trichloroethane	17	562.12	5.22E-04	1.27E-02	**7.55E-03**	17	684.04	5.22E-04	1.27E-02	**8.13E-03**	17	464.08	5.22E-04	1.27E-02	**6.97E-03**
1,1-Dichloroethane	17	562.12	4.82E-04	1.21E-02	**7.09E-03**	17	684.04	4.82E-04	1.21E-02	**7.64E-03**	17	464.08	4.82E-04	1.21E-02	**6.54E-03**
1,1-Dichloroethylene	17	562.12	5.81E-04	1.47E-02	**8.58E-03**	17	684.04	5.81E-04	1.47E-02	**9.25E-03**	17	464.08	5.81E-04	1.47E-02	**7.91E-03**
1,2-Dichloroethane	17	562.12	6.86E-04	1.70E-02	**1.00E-02**	17	684.04	6.86E-04	1.70E-02	**1.08E-02**	17	464.08	6.86E-04	1.70E-02	**9.23E-03**
1,2-Dichloroethene (total)	17	562.12	4.61E-04	1.15E-02	**6.77E-03**	17	684.04	4.61E-04	1.15E-02	**7.30E-03**	17	464.08	4.61E-04	1.15E-02	**6.24E-03**
1,2-Dichloropropane	17	562.12	5.10E-04	1.28E-02	**7.49E-03**	17	684.04	5.10E-04	1.28E-02	**8.07E-03**	17	464.08	5.10E-04	1.28E-02	**6.90E-03**
2-Butanone	17	562.12	8.29E-04	1.32E-02	**9.18E-03**	17	684.04	8.29E-04	1.32E-02	**9.69E-03**	17	464.08	8.29E-04	1.32E-02	**8.64E-03**
4-Methyl-2-pentanone	17	562.12	5.85E-04	1.23E-02	**7.73E-03**	17	684.04	5.85E-04	1.23E-02	**8.26E-03**	17	464.08	5.85E-04	1.23E-02	**7.19E-03**
Acetone	17	562.12	1.31E-03	2.03E-02	**1.42E-02**	17	684.04	1.31E-03	2.03E-02	**1.50E-02**	17	464.08	1.31E-03	2.03E-02	**1.34E-02**
Benzene	17	562.12	5.71E-04	1.44E-02	**8.41E-03**	17	684.04	5.71E-04	1.44E-02	**9.06E-03**	17	464.08	5.71E-04	1.44E-02	**7.75E-03**
Chlorobenzene	17	562.12	4.76E-04	1.19E-02	**6.99E-03**	17	684.04	4.76E-04	1.19E-02	**7.53E-03**	17	464.08	4.76E-04	1.19E-02	**6.44E-03**
Chloroethane	17	562.12	1.75E-03	4.43E-02	**2.58E-02**	17	684.04	1.75E-03	4.43E-02	**2.79E-02**	17	464.08	1.75E-03	4.43E-02	**2.38E-02**
Chloroform	17	562.12	6.76E-04	1.70E-02	**9.94E-03**	17	684.04	6.76E-04	1.70E-02	**1.07E-02**	17	464.08	6.76E-04	1.70E-02	**9.17E-03**
Chloromethane	17	562.12	8.14E-04	2.06E-02	**1.20E-02**	17	684.04	8.14E-04	2.06E-02	**1.30E-02**	17	464.08	8.14E-04	2.06E-02	**1.11E-02**
Dichloromethane	17	562.12	6.58E-04	1.65E-02	**9.67E-03**	17	684.04	6.58E-04	1.65E-02	**1.04E-02**	17	464.08	6.58E-04	1.65E-02	**8.91E-03**
Ethylbenzene	17	562.12	4.85E-04	1.23E-02	**7.16E-03**	17	684.04	4.85E-04	1.23E-02	**7.72E-03**	17	464.08	4.85E-04	1.23E-02	**6.60E-03**
Tetrachloroethene	17	562.12	4.65E-04	1.18E-02	**6.87E-03**	17	684.04	4.65E-04	1.18E-02	**7.40E-03**	17	464.08	4.65E-04	1.18E-02	**6.33E-03**
Toluene	17	562.12	5.63E-04	1.42E-02	**8.31E-03**	17	684.04	5.63E-04	1.42E-02	**8.95E-03**	17	464.08	5.63E-04	1.42E-02	**7.66E-03**
Trichloroethene	17	562.12	5.11E-04	1.29E-02	**7.54E-03**	17	684.04	5.11E-04	1.29E-02	**8.13E-03**	17	464.08	5.11E-04	1.29E-02	**6.95E-03**
Vinyl chloride	17	562.12	6.84E-04	1.73E-02	**1.01E-02**	17	684.04	6.84E-04	1.73E-02	**1.09E-02**	17	464.08	6.84E-04	1.73E-02	**9.31E-03**
Xylenes, Total	17	562.12	4.63E-04	1.17E-02	**6.82E-03**	17	684.04	4.63E-04	1.17E-02	**7.35E-03**	17	464.08	4.63E-04	1.17E-02	**6.29E-03**
SVOCs															
1,2,4-Trichlorobenzene	17	562.12	2.04E-04	4.90E-03	**2.92E-03**	17	684.04	2.04E-04	4.90E-03	**3.14E-03**	17	464.08	2.04E-04	4.90E-03	**2.70E-03**
1,2-Dichlorobenzene	17	562.12	4.52E-04	1.13E-02	**6.62E-03**	17	684.04	4.52E-04	1.13E-02	**7.13E-03**	17	464.08	4.52E-04	1.13E-02	**6.11E-03**
1,4-Dichlorobenzene	17	562.12	4.51E-04	1.13E-02	**6.61E-03**	17	684.04	4.51E-04	1.13E-02	**7.12E-03**	17	464.08	4.51E-04	1.13E-02	**6.10E-03**
2-Chlorophenol	17	562.12	1.83E-03	8.19E-03	**7.44E-03**	17	684.04	1.83E-03	8.19E-03	**7.56E-03**	17	464.08	1.83E-03	8.19E-03	**7.30E-03**
2-Methylnaphthalene	17	562.12	3.37E-04	7.84E-03	**4.74E-03**	17	684.04	3.37E-04	7.84E-03	**5.09E-03**	17	464.08	3.37E-04	7.84E-03	**4.39E-03**
bis(2-Chloroethyl)ether	17	562.12	1.24E-03	1.13E-02	**9.13E-03**	17	684.04	1.24E-03	1.13E-02	**9.45E-03**	17	464.08	1.24E-03	1.13E-02	**8.78E-03**
Naphthalene	17	562.12	4.11E-04	9.64E-03	**5.81E-03**	17	684.04	4.11E-04	9.64E-03	**6.24E-03**	17	464.08	4.11E-04	9.64E-03	**5.37E-03**
Nitrobenzene	17	562.12	1.13E-03	1.24E-02	**9.61E-03**	17	684.04	1.13E-03	1.24E-02	**1.00E-02**	17	464.08	1.13E-03	1.24E-02	**9.18E-03**

See notes on last page.

$$Deff_{ws}\ [cm^2/s] = (h_{cap} + h_v)\ x\ [(h_{cap}/Deff_{cap}) + (h_v/Deff_S)]^{-1}$$

Constituent	R - B-24A					R - B-25A					R - B-28A				
	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]
VOCs															
1,1,1-Trichloroethane	17	335.55	5.04E-04	1.27E-02	**5.87E-03**	17	606.62	5.04E-04	1.27E-02	**7.67E-03**	17	529.10	5.04E-04	1.27E-02	**7.26E-03**
1,1,2-Trichloroethane	17	335.55	5.22E-04	1.27E-02	**5.99E-03**	17	606.62	5.22E-04	1.27E-02	**7.78E-03**	17	529.10	5.22E-04	1.27E-02	**7.37E-03**
1,1-Dichloroethane	17	335.55	4.82E-04	1.21E-02	**5.60E-03**	17	606.62	4.82E-04	1.21E-02	**7.31E-03**	17	529.10	4.82E-04	1.21E-02	**6.92E-03**
1,1-Dichloroethylene	17	335.55	5.81E-04	1.47E-02	**6.77E-03**	17	606.62	5.81E-04	1.47E-02	**8.84E-03**	17	529.10	5.81E-04	1.47E-02	**8.37E-03**
1,2-Dichloroethane	17	335.55	6.86E-04	1.70E-02	**7.91E-03**	17	606.62	6.86E-04	1.70E-02	**1.03E-02**	17	529.10	6.86E-04	1.70E-02	**9.76E-03**
1,2-Dichloroethene (total)	17	335.55	4.61E-04	1.15E-02	**5.35E-03**	17	606.62	4.61E-04	1.15E-02	**6.98E-03**	17	529.10	4.61E-04	1.15E-02	**6.61E-03**
1,2-Dichloropropane	17	335.55	5.10E-04	1.28E-02	**5.91E-03**	17	606.62	5.10E-04	1.28E-02	**7.72E-03**	17	529.10	5.10E-04	1.28E-02	**7.30E-03**
2-Butanone	17	335.55	8.29E-04	1.32E-02	**7.68E-03**	17	606.62	8.29E-04	1.32E-02	**9.38E-03**	17	529.10	8.29E-04	1.32E-02	**9.01E-03**
4-Methyl-2-pentanone	17	335.55	5.85E-04	1.23E-02	**6.24E-03**	17	606.62	5.85E-04	1.23E-02	**7.94E-03**	17	529.10	5.85E-04	1.23E-02	**7.56E-03**
Acetone	17	335.55	1.31E-03	2.03E-02	**1.20E-02**	17	606.62	1.31E-03	2.03E-02	**1.45E-02**	17	529.10	1.31E-03	2.03E-02	**1.40E-02**
Benzene	17	335.55	5.71E-04	1.44E-02	**6.64E-03**	17	606.62	5.71E-04	1.44E-02	**8.66E-03**	17	529.10	5.71E-04	1.44E-02	**8.20E-03**
Chlorobenzene	17	335.55	4.76E-04	1.19E-02	**5.52E-03**	17	606.62	4.76E-04	1.19E-02	**7.20E-03**	17	529.10	4.76E-04	1.19E-02	**6.82E-03**
Chloroethane	17	335.55	1.75E-03	4.43E-02	**2.04E-02**	17	606.62	1.75E-03	4.43E-02	**2.66E-02**	17	529.10	1.75E-03	4.43E-02	**2.52E-02**
Chloroform	17	335.55	6.76E-04	1.70E-02	**7.85E-03**	17	606.62	6.76E-04	1.70E-02	**1.02E-02**	17	529.10	6.76E-04	1.70E-02	**9.70E-03**
Chloromethane	17	335.55	8.14E-04	2.06E-02	**9.48E-03**	17	606.62	8.14E-04	2.06E-02	**1.24E-02**	17	529.10	8.14E-04	2.06E-02	**1.17E-02**
Dichloromethane	17	335.55	6.58E-04	1.65E-02	**7.63E-03**	17	606.62	6.58E-04	1.65E-02	**9.96E-03**	17	529.10	6.58E-04	1.65E-02	**9.43E-03**
Ethylbenzene	17	335.55	4.85E-04	1.23E-02	**5.65E-03**	17	606.62	4.85E-04	1.23E-02	**7.38E-03**	17	529.10	4.85E-04	1.23E-02	**6.98E-03**
Tetrachloroethene	17	335.55	4.65E-04	1.18E-02	**5.42E-03**	17	606.62	4.65E-04	1.18E-02	**7.08E-03**	17	529.10	4.65E-04	1.18E-02	**6.70E-03**
Toluene	17	335.55	5.63E-04	1.42E-02	**6.55E-03**	17	606.62	5.63E-04	1.42E-02	**8.56E-03**	17	529.10	5.63E-04	1.42E-02	**8.10E-03**
Trichloroethene	17	335.55	5.11E-04	1.29E-02	**5.95E-03**	17	606.62	5.11E-04	1.29E-02	**7.77E-03**	17	529.10	5.11E-04	1.29E-02	**7.35E-03**
Vinyl chloride	17	335.55	6.84E-04	1.73E-02	**7.97E-03**	17	606.62	6.84E-04	1.73E-02	**1.04E-02**	17	529.10	6.84E-04	1.73E-02	**9.85E-03**
Xylenes, Total	17	335.55	4.63E-04	1.17E-02	**5.38E-03**	17	606.62	4.63E-04	1.17E-02	**7.03E-03**	17	529.10	4.63E-04	1.17E-02	**6.65E-03**
SVOCs															
1,2,4-Trichlorobenzene	17	335.55	2.04E-04	4.90E-03	**2.32E-03**	17	606.62	2.04E-04	4.90E-03	**3.01E-03**	17	529.10	2.04E-04	4.90E-03	**2.85E-03**
1,2-Dichlorobenzene	17	335.55	4.52E-04	1.13E-02	**5.23E-03**	17	606.62	4.52E-04	1.13E-02	**6.82E-03**	17	529.10	4.52E-04	1.13E-02	**6.46E-03**
1,4-Dichlorobenzene	17	335.55	4.51E-04	1.13E-02	**5.22E-03**	17	606.62	4.51E-04	1.13E-02	**6.81E-03**	17	529.10	4.51E-04	1.13E-02	**6.45E-03**
2-Chlorophenol	17	335.55	1.83E-03	8.19E-03	**7.02E-03**	17	606.62	1.83E-03	8.19E-03	**7.48E-03**	17	529.10	1.83E-03	8.19E-03	**7.39E-03**
2-Methylnaphthalene	17	335.55	3.37E-04	7.84E-03	**3.78E-03**	17	606.62	3.37E-04	7.84E-03	**4.88E-03**	17	529.10	3.37E-04	7.84E-03	**4.63E-03**
bis(2-Chloroethyl)ether	17	335.55	1.24E-03	1.13E-02	**8.12E-03**	17	606.62	1.24E-03	1.13E-02	**9.26E-03**	17	529.10	1.24E-03	1.13E-02	**9.02E-03**
Naphthalene	17	335.55	4.11E-04	9.64E-03	**4.63E-03**	17	606.62	4.11E-04	9.64E-03	**5.98E-03**	17	529.10	4.11E-04	9.64E-03	**5.67E-03**
Nitrobenzene	17	335.55	1.13E-03	1.24E-02	**8.38E-03**	17	606.62	1.13E-03	1.24E-02	**9.76E-03**	17	529.10	1.13E-03	1.24E-02	**9.48E-03**

See notes on last page.

TABLE D-5
EFFECTIVE DIFFUSION COEFFICIENT BETWEEN GROUNDWATER AND SOIL SURFACE ($Deff_{WS}$)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

$$Deff_{ws}\ [cm^2/s] = (h_{cap} + h_v)\ x\ [(h_{cap}/Deff_{cap}) + (h_v/Deff_S)]^{-1}$$

Constituent	R - Leach R-1					S - SA-S-1				
	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]	h_{cap} (cm)	h_v (cm)	$Deff_{cap}$ (cm^2/s)	$Deff_S$ (cm^2/s)	$Deff_{ws}$ [cm^2/s]
VOCs										
1,1,1-Trichloroethane	17	491.53	5.04E-04	1.27E-02	**7.03E-03**	17	441.52	5.04E-04	1.27E-02	**6.70E-03**
1,1,2-Trichloroethane	17	491.53	5.22E-04	1.27E-02	**7.15E-03**	17	441.52	5.22E-04	1.27E-02	**6.82E-03**
1,1-Dichloroethane	17	491.53	4.82E-04	1.21E-02	**6.71E-03**	17	441.52	4.82E-04	1.21E-02	**6.39E-03**
1,1-Dichloroethylene	17	491.53	5.81E-04	1.47E-02	**8.11E-03**	17	441.52	5.81E-04	1.47E-02	**7.73E-03**
1,2-Dichloroethane	17	491.53	6.86E-04	1.70E-02	**9.47E-03**	17	441.52	6.86E-04	1.70E-02	**9.03E-03**
1,2-Dichloroethene (total)	17	491.53	4.61E-04	1.15E-02	**6.40E-03**	17	441.52	4.61E-04	1.15E-02	**6.11E-03**
1,2-Dichloropropane	17	491.53	5.10E-04	1.28E-02	**7.08E-03**	17	441.52	5.10E-04	1.28E-02	**6.75E-03**
2-Butanone	17	491.53	8.29E-04	1.32E-02	**8.81E-03**	17	441.52	8.29E-04	1.32E-02	**8.50E-03**
4-Methyl-2-pentanone	17	491.53	5.85E-04	1.23E-02	**7.35E-03**	17	441.52	5.85E-04	1.23E-02	**7.04E-03**
Acetone	17	491.53	1.31E-03	2.03E-02	**1.37E-02**	17	441.52	1.31E-03	2.03E-02	**1.32E-02**
Benzene	17	491.53	5.71E-04	1.44E-02	**7.95E-03**	17	441.52	5.71E-04	1.44E-02	**7.58E-03**
Chlorobenzene	17	491.53	4.76E-04	1.19E-02	**6.61E-03**	17	441.52	4.76E-04	1.19E-02	**6.30E-03**
Chloroethane	17	491.53	1.75E-03	4.43E-02	**2.44E-02**	17	441.52	1.75E-03	4.43E-02	**2.33E-02**
Chloroform	17	491.53	6.76E-04	1.70E-02	**9.40E-03**	17	441.52	6.76E-04	1.70E-02	**8.96E-03**
Chloromethane	17	491.53	8.14E-04	2.06E-02	**1.14E-02**	17	441.52	8.14E-04	2.06E-02	**1.08E-02**
Dichloromethane	17	491.53	6.58E-04	1.65E-02	**9.14E-03**	17	441.52	6.58E-04	1.65E-02	**8.72E-03**
Ethylbenzene	17	491.53	4.85E-04	1.23E-02	**6.77E-03**	17	441.52	4.85E-04	1.23E-02	**6.45E-03**
Tetrachloroethene	17	491.53	4.65E-04	1.18E-02	**6.49E-03**	17	441.52	4.65E-04	1.18E-02	**6.19E-03**
Toluene	17	491.53	5.63E-04	1.42E-02	**7.85E-03**	17	441.52	5.63E-04	1.42E-02	**7.49E-03**
Trichloroethene	17	491.53	5.11E-04	1.29E-02	**7.13E-03**	17	441.52	5.11E-04	1.29E-02	**6.80E-03**
Vinyl chloride	17	491.53	6.84E-04	1.73E-02	**9.55E-03**	17	441.52	6.84E-04	1.73E-02	**9.10E-03**
Xylenes, Total	17	491.53	4.63E-04	1.17E-02	**6.45E-03**	17	441.52	4.63E-04	1.17E-02	**6.15E-03**
SVOCs										
1,2,4-Trichlorobenzene	17	491.53	2.04E-04	4.90E-03	**2.77E-03**	17	441.52	2.04E-04	4.90E-03	**2.64E-03**
1,2-Dichlorobenzene	17	491.53	4.52E-04	1.13E-02	**6.26E-03**	17	441.52	4.52E-04	1.13E-02	**5.97E-03**
1,4-Dichlorobenzene	17	491.53	4.51E-04	1.13E-02	**6.25E-03**	17	441.52	4.51E-04	1.13E-02	**5.96E-03**
2-Chlorophenol	17	491.53	1.83E-03	8.19E-03	**7.34E-03**	17	441.52	1.83E-03	8.19E-03	**7.26E-03**
2-Methylnaphthalene	17	491.53	3.37E-04	7.84E-03	**4.49E-03**	17	441.52	3.37E-04	7.84E-03	**4.29E-03**
bis(2-Chloroethyl)ether	17	491.53	1.24E-03	1.13E-02	**8.89E-03**	17	441.52	1.24E-03	1.13E-02	**8.69E-03**
Naphthalene	17	491.53	4.11E-04	9.64E-03	**5.51E-03**	17	441.52	4.11E-04	9.64E-03	**5.26E-03**
Nitrobenzene	17	491.53	1.13E-03	1.24E-02	**9.31E-03**	17	441.52	1.13E-03	1.24E-02	**9.07E-03**

Notes:
SVOCs - Semivolatile Organic Compounds.
VOC - Volatile Organic Compound; those with Henry's Law Constant greater than 10^{-5} atm-m^3/mol and a molecular weight greater than 200 g/mol.
Inputs listed on Tables D-1 and D-2.
Equations from ASTM, 2000.
DeffCap calculated in Table D-3.
DeffS calculated in Table D-4.

$$VF_{wamb}\ [(mg/m^3\ air)/(mg/L\ H_2O)] = H/\{1 + [(U_{air} \times \delta_{air} \times L_{GW})/(W \times Deff_{ws})\} \times 10^3\ L/m^3$$

Constituent	O - AA-CLAY-2-22							O - GM-19A						
	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/($mg/L\ H_2O$)	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/($mg/L\ H_2O$)
VOCs														
1,1,1-Trichloroethane	7.03E-01	356	200	518.16	54329.076	7.09E-03	**7.34E-03**	7.03E-01	356	200	429.77	58322.87	6.50E-03	**8.71E-03**
1,1,2-Trichloroethane	3.37E-02	356	200	518.16	54329.076	7.21E-03	**3.58E-04**	3.37E-02	356	200	429.77	58322.87	6.62E-03	**4.25E-04**
1,1-Dichloroethane	2.30E-01	356	200	518.16	54329.076	6.76E-03	**2.29E-03**	2.30E-01	356	200	429.77	58322.87	6.20E-03	**2.72E-03**
1,1-Dichloroethylene	1.07E+00	356	200	518.16	54329.076	8.18E-03	**1.29E-02**	1.07E+00	356	200	429.77	58322.87	7.50E-03	**1.53E-02**
1,2-Dichloroethane	4.82E-02	356	200	518.16	54329.076	9.54E-03	**6.77E-04**	4.82E-02	356	200	429.77	58322.87	8.76E-03	**8.04E-04**
1,2-Dichloroethene (total)	1.67E-01	356	200	518.16	54329.076	6.46E-03	**1.59E-03**	1.67E-01	356	200	429.77	58322.87	5.92E-03	**1.88E-03**
1,2-Dichloropropane	1.15E-01	356	200	518.16	54329.076	7.14E-03	**1.21E-03**	1.15E-01	356	200	429.77	58322.87	6.55E-03	**1.43E-03**
2-Butanone	2.33E-03	356	200	518.16	54329.076	8.86E-03	**3.04E-05**	2.33E-03	356	200	429.77	58322.87	8.30E-03	**3.69E-05**
4-Methyl-2-pentanone	5.64E-03	356	200	518.16	54329.076	7.41E-03	**6.15E-05**	5.64E-03	356	200	429.77	58322.87	6.85E-03	**7.36E-05**
Acetone	1.62E-03	356	200	518.16	54329.076	1.38E-02	**3.28E-05**	1.62E-03	356	200	429.77	58322.87	1.29E-02	**3.98E-05**
Benzene	2.27E-01	356	200	518.16	54329.076	8.01E-03	**2.68E-03**	2.27E-01	356	200	429.77	58322.87	7.35E-03	**3.18E-03**
Chlorobenzene	1.27E-01	356	200	518.16	54329.076	6.66E-03	**1.25E-03**	1.27E-01	356	200	429.77	58322.87	6.11E-03	**1.48E-03**
Chloroethane	4.54E-01	356	200	518.16	54329.076	2.46E-02	**1.65E-02**	4.54E-01	356	200	429.77	58322.87	2.26E-02	**1.95E-02**
Chloroform	1.50E-01	356	200	518.16	54329.076	9.48E-03	**2.09E-03**	1.50E-01	356	200	429.77	58322.87	8.69E-03	**2.48E-03**
Chloromethane	3.61E-01	356	200	518.16	54329.076	1.15E-02	**6.09E-03**	3.61E-01	356	200	429.77	58322.87	1.05E-02	**7.22E-03**
Dichloromethane	1.33E-01	356	200	518.16	54329.076	9.22E-03	**1.81E-03**	1.33E-01	356	200	429.77	58322.87	8.45E-03	**2.14E-03**
Ethylbenzene	3.22E-01	356	200	518.16	54329.076	6.82E-03	**3.24E-03**	3.22E-01	356	200	429.77	58322.87	6.25E-03	**3.84E-03**
Tetrachloroethene	7.24E-01	356	200	518.16	54329.076	6.55E-03	**6.98E-03**	7.24E-01	356	200	429.77	58322.87	6.00E-03	**8.28E-03**
Toluene	2.71E-01	356	200	518.16	54329.076	7.92E-03	**3.16E-03**	2.71E-01	356	200	429.77	58322.87	7.26E-03	**3.75E-03**
Trichloroethene	4.03E-01	356	200	518.16	54329.076	7.19E-03	**4.27E-03**	4.03E-01	356	200	429.77	58322.87	6.59E-03	**5.06E-03**
Vinyl chloride	1.14E+00	356	200	518.16	54329.076	9.63E-03	**1.62E-02**	1.14E+00	356	200	429.77	58322.87	8.82E-03	**1.92E-02**
Xylenes, Total	2.71E-01	356	200	518.16	54329.076	6.50E-03	**2.59E-03**	2.71E-01	356	200	429.77	58322.87	5.96E-03	**3.08E-03**
SVOCs														
1,2,4-Trichlorobenzene	5.81E-02	356	200	518.16	54329.076	2.79E-03	**2.39E-04**	5.81E-02	356	200	429.77	58322.87	2.56E-03	**2.84E-04**
1,2-Dichlorobenzene	7.85E-02	356	200	518.16	54329.076	6.32E-03	**7.30E-04**	7.85E-02	356	200	429.77	58322.87	5.79E-03	**8.67E-04**
1,4-Dichlorobenzene	9.85E-02	356	200	518.16	54329.076	6.31E-03	**9.15E-04**	9.85E-02	356	200	429.77	58322.87	5.78E-03	**1.09E-03**
2-Chlorophenol	4.58E-04	356	200	518.16	54329.076	7.36E-03	**4.96E-06**	4.58E-04	356	200	429.77	58322.87	7.20E-03	**6.29E-06**
2-Methylnaphthalene	2.12E-02	356	200	518.16	54329.076	4.53E-03	**1.41E-04**	2.12E-02	356	200	429.77	58322.87	4.17E-03	**1.68E-04**
bis(2-Chloroethyl)ether	6.95E-04	356	200	518.16	54329.076	8.93E-03	**9.14E-06**	6.95E-04	356	200	429.77	58322.87	8.56E-03	**1.13E-05**
Naphthalene	1.80E-02	356	200	518.16	54329.076	5.55E-03	**1.47E-04**	1.80E-02	356	200	429.77	58322.87	5.10E-03	**1.75E-04**
Nitrobenzene	9.81E-04	356	200	518.16	54329.076	9.36E-03	**1.35E-05**	9.81E-04	356	200	429.77	58322.87	8.90E-03	**1.66E-05**

See notes on last page.

$$VF_{wamb}\ [(mg/m^3\ air)/(mg/L\ H_2O)] = H/\{1 + [(U_{air} \times \delta_{air} \times L_{GW})/(W \times Deff_{ws})\} \times 10^3\ L/m^3$$

Constituent	O - SA2-MW-4-S							O - SA-O-3						
	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/(mg/L H_2O)	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/(mg/L H_2O)
VOCs														
1,1,1-Trichloroethane	7.03E-01	356	200	379.17	49783.289	6.10E-03	**7.91E-03**	7.03E-01	356	200	507.49	59206.486	7.03E-03	**8.09E-03**
1,1,2-Trichloroethane	3.37E-02	356	200	379.17	49783.289	6.22E-03	**3.86E-04**	3.37E-02	356	200	507.49	59206.486	7.14E-03	**3.94E-04**
1,1-Dichloroethane	2.30E-01	356	200	379.17	49783.289	5.82E-03	**2.47E-03**	2.30E-01	356	200	507.49	59206.486	6.70E-03	**2.52E-03**
1,1-Dichloroethylene	1.07E+00	356	200	379.17	49783.289	7.04E-03	**1.39E-02**	1.07E+00	356	200	507.49	59206.486	8.10E-03	**1.42E-02**
1,2-Dichloroethane	4.82E-02	356	200	379.17	49783.289	8.22E-03	**7.31E-04**	4.82E-02	356	200	507.49	59206.486	9.46E-03	**7.47E-04**
1,2-Dichloroethene (total)	1.67E-01	356	200	379.17	49783.289	5.56E-03	**1.71E-03**	1.67E-01	356	200	507.49	59206.486	6.40E-03	**1.75E-03**
1,2-Dichloropropane	1.15E-01	356	200	379.17	49783.289	6.15E-03	**1.30E-03**	1.15E-01	356	200	507.49	59206.486	7.07E-03	**1.33E-03**
2-Butanone	2.33E-03	356	200	379.17	49783.289	7.91E-03	**3.40E-05**	2.33E-03	356	200	507.49	59206.486	8.80E-03	**3.36E-05**
4-Methyl-2-pentanone	5.64E-03	356	200	379.17	49783.289	6.47E-03	**6.73E-05**	5.64E-03	356	200	507.49	59206.486	7.34E-03	**6.79E-05**
Acetone	1.62E-03	356	200	379.17	49783.289	1.23E-02	**3.68E-05**	1.62E-03	356	200	507.49	59206.486	1.37E-02	**3.63E-05**
Benzene	2.27E-01	356	200	379.17	49783.289	6.90E-03	**2.89E-03**	2.27E-01	356	200	507.49	59206.486	7.94E-03	**2.95E-03**
Chlorobenzene	1.27E-01	356	200	379.17	49783.289	5.74E-03	**1.34E-03**	1.27E-01	356	200	507.49	59206.486	6.60E-03	**1.37E-03**
Chloroethane	4.54E-01	356	200	379.17	49783.289	2.12E-02	**1.77E-02**	4.54E-01	356	200	507.49	59206.486	2.44E-02	**1.82E-02**
Chloroform	1.50E-01	356	200	379.17	49783.289	8.16E-03	**2.26E-03**	1.50E-01	356	200	507.49	59206.486	9.39E-03	**2.31E-03**
Chloromethane	3.61E-01	356	200	379.17	49783.289	9.85E-03	**6.56E-03**	3.61E-01	356	200	507.49	59206.486	1.13E-02	**6.71E-03**
Dichloromethane	1.33E-01	356	200	379.17	49783.289	7.93E-03	**1.95E-03**	1.33E-01	356	200	507.49	59206.486	9.13E-03	**1.99E-03**
Ethylbenzene	3.22E-01	356	200	379.17	49783.289	5.87E-03	**3.49E-03**	3.22E-01	356	200	507.49	59206.486	6.76E-03	**3.57E-03**
Tetrachloroethene	7.24E-01	356	200	379.17	49783.289	5.63E-03	**7.52E-03**	7.24E-01	356	200	507.49	59206.486	6.49E-03	**7.69E-03**
Toluene	2.71E-01	356	200	379.17	49783.289	6.81E-03	**3.40E-03**	2.71E-01	356	200	507.49	59206.486	7.85E-03	**3.48E-03**
Trichloroethene	4.03E-01	356	200	379.17	49783.289	6.18E-03	**4.59E-03**	4.03E-01	356	200	507.49	59206.486	7.12E-03	**4.70E-03**
Vinyl chloride	1.14E+00	356	200	379.17	49783.289	8.28E-03	**1.74E-02**	1.14E+00	356	200	507.49	59206.486	9.54E-03	**1.78E-02**
Xylenes, Total	2.71E-01	356	200	379.17	49783.289	5.59E-03	**2.80E-03**	2.71E-01	356	200	507.49	59206.486	6.44E-03	**2.86E-03**
SVOCs														
1,2,4-Trichlorobenzene	5.81E-02	356	200	379.17	49783.289	2.41E-03	**2.58E-04**	5.81E-02	356	200	507.49	59206.486	2.77E-03	**2.63E-04**
1,2-Dichlorobenzene	7.85E-02	356	200	379.17	49783.289	5.44E-03	**7.87E-04**	7.85E-02	356	200	507.49	59206.486	6.26E-03	**8.05E-04**
1,4-Dichlorobenzene	9.85E-02	356	200	379.17	49783.289	5.43E-03	**9.86E-04**	9.85E-02	356	200	507.49	59206.486	6.25E-03	**1.01E-03**
2-Chlorophenol	4.58E-04	356	200	379.17	49783.289	7.09E-03	**5.99E-06**	4.58E-04	356	200	507.49	59206.486	7.34E-03	**5.51E-06**
2-Methylnaphthalene	2.12E-02	356	200	379.17	49783.289	3.92E-03	**1.53E-04**	2.12E-02	356	200	507.49	59206.486	4.49E-03	**1.56E-04**
bis(2-Chloroethyl)ether	6.95E-04	356	200	379.17	49783.289	8.29E-03	**1.06E-05**	6.95E-04	356	200	507.49	59206.486	8.89E-03	**1.01E-05**
Naphthalene	1.80E-02	356	200	379.17	49783.289	4.80E-03	**1.59E-04**	1.80E-02	356	200	507.49	59206.486	5.50E-03	**1.62E-04**
Nitrobenzene	9.81E-04	356	200	379.17	49783.289	8.58E-03	**1.55E-05**	9.81E-04	356	200	507.49	59206.486	9.31E-03	**1.50E-05**

See notes on last page.

$$VF_{wamb}\ [(mg/m^3\ air)/(mg/L\ H_2O)] = H/\{1 + [(U_{air} \times \delta_{air} \times L_{GW})/(W \times Deff_{ws})\} \times 10^3\ L/m^3$$

Constituent	O - Leach O-1							Q Central - SA-Q-6						
	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/($mg/L\ H_2O$)	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/($mg/L\ H_2O$)
VOCs														
1,1,1-Trichloroethane	7.03E-01	356	200	440.17	77643.838	6.57E-03	**1.15E-02**	7.03E-01	356	200	571.20	11275.771	7.40E-03	**1.44E-03**
1,1,2-Trichloroethane	3.37E-02	356	200	440.17	77643.838	6.69E-03	**5.59E-04**	3.37E-02	356	200	571.20	11275.771	6.62E-03	**6.18E-05**
1,1-Dichloroethane	2.30E-01	356	200	440.17	77643.838	6.27E-03	**3.57E-03**	2.30E-01	356	200	571.20	11275.771	6.20E-03	**3.95E-04**
1,1-Dichloroethylene	1.07E+00	356	200	440.17	77643.838	7.58E-03	**2.01E-02**	1.07E+00	356	200	571.20	11275.771	7.50E-03	**2.22E-03**
1,2-Dichloroethane	4.82E-02	356	200	440.17	77643.838	8.86E-03	**1.06E-03**	4.82E-02	356	200	571.20	11275.771	8.76E-03	**1.17E-04**
1,2-Dichloroethene (total)	1.67E-01	356	200	440.17	77643.838	5.99E-03	**2.48E-03**	1.67E-01	356	200	571.20	11275.771	5.92E-03	**2.74E-04**
1,2-Dichloropropane	1.15E-01	356	200	440.17	77643.838	6.62E-03	**1.89E-03**	1.15E-01	356	200	571.20	11275.771	6.55E-03	**2.09E-04**
2-Butanone	2.33E-03	356	200	440.17	77643.838	8.37E-03	**4.83E-05**	2.33E-03	356	200	571.20	11275.771	8.30E-03	**5.36E-06**
4-Methyl-2-pentanone	5.64E-03	356	200	440.17	77643.838	6.92E-03	**9.67E-05**	5.64E-03	356	200	571.20	11275.771	6.85E-03	**1.07E-05**
Acetone	1.62E-03	356	200	440.17	77643.838	1.30E-02	**5.22E-05**	1.62E-03	356	200	571.20	11275.771	1.29E-02	**5.80E-06**
Benzene	2.27E-01	356	200	440.17	77643.838	7.43E-03	**4.18E-03**	2.27E-01	356	200	571.20	11275.771	7.35E-03	**4.62E-04**
Chlorobenzene	1.27E-01	356	200	440.17	77643.838	6.18E-03	**1.94E-03**	1.27E-01	356	200	571.20	11275.771	6.11E-03	**2.15E-04**
Chloroethane	4.54E-01	356	200	440.17	77643.838	2.28E-02	**2.57E-02**	4.54E-01	356	200	571.20	11275.771	2.26E-02	**2.84E-03**
Chloroform	1.50E-01	356	200	440.17	77643.838	8.79E-03	**3.27E-03**	1.50E-01	356	200	571.20	11275.771	8.69E-03	**3.61E-04**
Chloromethane	3.61E-01	356	200	440.17	77643.838	1.06E-02	**9.50E-03**	3.61E-01	356	200	571.20	11275.771	1.05E-02	**1.05E-03**
Dichloromethane	1.33E-01	356	200	440.17	77643.838	8.55E-03	**2.82E-03**	1.33E-01	356	200	571.20	11275.771	8.45E-03	**3.12E-04**
Ethylbenzene	3.22E-01	356	200	440.17	77643.838	6.33E-03	**5.05E-03**	3.22E-01	356	200	571.20	11275.771	6.25E-03	**5.58E-04**
Tetrachloroethene	7.24E-01	356	200	440.17	77643.838	6.07E-03	**1.09E-02**	7.24E-01	356	200	571.20	11275.771	6.00E-03	**1.20E-03**
Toluene	2.71E-01	356	200	440.17	77643.838	7.34E-03	**4.93E-03**	2.71E-01	356	200	571.20	11275.771	7.26E-03	**5.45E-04**
Trichloroethene	4.03E-01	356	200	440.17	77643.838	6.66E-03	**6.65E-03**	4.03E-01	356	200	571.20	11275.771	6.59E-03	**7.36E-04**
Vinyl chloride	1.14E+00	356	200	440.17	77643.838	8.93E-03	**2.52E-02**	1.14E+00	356	200	571.20	11275.771	8.82E-03	**2.79E-03**
Xylenes, Total	2.71E-01	356	200	440.17	77643.838	6.03E-03	**4.05E-03**	2.71E-01	356	200	571.20	11275.771	5.96E-03	**4.48E-04**
SVOCs														
1,2,4-Trichlorobenzene	5.81E-02	356	200	440.17	77643.838	2.59E-03	**3.73E-04**	5.81E-02	356	200	571.20	11275.771	2.56E-03	**4.13E-05**
1,2-Dichlorobenzene	7.85E-02	356	200	440.17	77643.838	5.86E-03	**1.14E-03**	7.85E-02	356	200	571.20	11275.771	5.79E-03	**1.26E-04**
1,4-Dichlorobenzene	9.85E-02	356	200	440.17	77643.838	5.85E-03	**1.43E-03**	9.85E-02	356	200	571.20	11275.771	5.78E-03	**1.58E-04**
2-Chlorophenol	4.58E-04	356	200	440.17	77643.838	7.22E-03	**8.20E-06**	4.58E-04	356	200	571.20	11275.771	7.20E-03	**9.15E-07**
2-Methylnaphthalene	2.12E-02	356	200	440.17	77643.838	4.21E-03	**2.21E-04**	2.12E-02	356	200	571.20	11275.771	4.17E-03	**2.45E-05**
bis(2-Chloroethyl)ether	6.95E-04	356	200	440.17	77643.838	8.61E-03	**1.48E-05**	6.95E-04	356	200	571.20	11275.771	8.56E-03	**1.65E-06**
Naphthalene	1.80E-02	356	200	440.17	77643.838	5.16E-03	**2.30E-04**	1.80E-02	356	200	571.20	11275.771	5.10E-03	**2.55E-05**
Nitrobenzene	9.81E-04	356	200	440.17	77643.838	8.96E-03	**2.18E-05**	9.81E-04	356	200	571.20	11275.771	8.90E-03	**2.42E-06**

See notes on last page.

TABLE D-6
VOLATILIZATION FACTOR: GROUNDWATER TO AMBIENT AIR (VF_{WAMB})
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

$$[(mg/m^3\ air)/(mg/L\ H_2O)] = H/\{1 + [(U_{air} \times \delta_{air} \times L_{GW})/(W \times Deff_{ws})\} \times 1($$

Constituent	Q North - SA-Q-1						
	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/ ($mg/L\ H_2O$)
VOCs							
1,1,1-Trichloroethane	7.03E-01	356	200	640.08	21726.144	7.75E-03	**2.60E-03**
1,1,2-Trichloroethane	3.37E-02	356	200	640.08	21726.144	7.86E-03	**1.26E-04**
1,1-Dichloroethane	2.30E-01	356	200	640.08	21726.144	7.38E-03	**8.10E-04**
1,1-Dichloroethylene	1.07E+00	356	200	640.08	21726.144	8.94E-03	**4.56E-03**
1,2-Dichloroethane	4.82E-02	356	200	640.08	21726.144	1.04E-02	**2.39E-04**
1,2-Dichloroethene (total)	1.67E-01	356	200	640.08	21726.144	7.05E-03	**5.61E-04**
1,2-Dichloropropane	1.15E-01	356	200	640.08	21726.144	7.79E-03	**4.27E-04**
2-Butanone	2.33E-03	356	200	640.08	21726.144	9.45E-03	**1.05E-05**
4-Methyl-2-pentanone	5.64E-03	356	200	640.08	21726.144	8.01E-03	**2.15E-05**
Acetone	1.62E-03	356	200	640.08	21726.144	1.47E-02	**1.13E-05**
Benzene	2.27E-01	356	200	640.08	21726.144	8.75E-03	**9.47E-04**
Chlorobenzene	1.27E-01	356	200	640.08	21726.144	7.28E-03	**4.40E-04**
Chloroethane	4.54E-01	356	200	640.08	21726.144	2.69E-02	**5.82E-03**
Chloroform	1.50E-01	356	200	640.08	21726.144	1.04E-02	**7.40E-04**
Chloromethane	3.61E-01	356	200	640.08	21726.144	1.25E-02	**2.15E-03**
Dichloromethane	1.33E-01	356	200	640.08	21726.144	1.01E-02	**6.38E-04**
Ethylbenzene	3.22E-01	356	200	640.08	21726.144	7.45E-03	**1.14E-03**
Tetrachloroethene	7.24E-01	356	200	640.08	21726.144	7.15E-03	**2.47E-03**
Toluene	2.71E-01	356	200	640.08	21726.144	8.65E-03	**1.12E-03**
Trichloroethene	4.03E-01	356	200	640.08	21726.144	7.85E-03	**1.51E-03**
Vinyl chloride	1.14E+00	356	200	640.08	21726.144	1.05E-02	**5.72E-03**
Xylenes, Total	2.71E-01	356	200	640.08	21726.144	7.10E-03	**9.17E-04**
SVOCs							
1,2,4-Trichlorobenzene	5.81E-02	356	200	640.08	21726.144	3.04E-03	**8.42E-05**
1,2-Dichlorobenzene	7.85E-02	356	200	640.08	21726.144	6.89E-03	**2.58E-04**
1,4-Dichlorobenzene	9.85E-02	356	200	640.08	21726.144	6.88E-03	**3.23E-04**
2-Chlorophenol	4.58E-04	356	200	640.08	21726.144	7.50E-03	**1.64E-06**
2-Methylnaphthalene	2.12E-02	356	200	640.08	21726.144	4.92E-03	**4.98E-05**
bis(2-Chloroethyl)ether	6.95E-04	356	200	640.08	21726.144	9.30E-03	**3.08E-06**
Naphthalene	1.80E-02	356	200	640.08	21726.144	6.04E-03	**5.18E-05**
Nitrobenzene	9.81E-04	356	200	640.08	21726.144	9.82E-03	**4.59E-06**

See notes on last page.

$$VF_{wamb}\ [(mg/m^3\ air)/(mg/L\ H_2O)] = H/\{1 + [(U_{air} \times \delta_{air} \times L_{GW})/(W \times Deff_{ws})\} \times 10^3\ L/m^3$$

Constituent	Q North - Leach Q-1							Q South - AA-Q-6-24						
	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/($mg/L\ H_2O$)	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/($mg/L\ H_2O$)
VOCs														
1,1,1-Trichloroethane	7.03E-01	356	200	257.86	28027.884	4.90E-03	**5.26E-03**	7.03E-01	356	200	579.12	40351.862	7.44E-03	**5.12E-03**
1,1,2-Trichloroethane	3.37E-02	356	200	257.86	28027.884	5.01E-03	**3.58E-04**	3.37E-02	356	200	579.12	40351.862	7.55E-03	**3.58E-04**
1,1-Dichloroethane	2.30E-01	356	200	257.86	28027.884	4.68E-03	**2.29E-03**	2.30E-01	356	200	579.12	40351.862	7.09E-03	**2.29E-03**
1,1-Dichloroethylene	1.07E+00	356	200	257.86	28027.884	5.65E-03	**1.29E-02**	1.07E+00	356	200	579.12	40351.862	8.58E-03	**1.29E-02**
1,2-Dichloroethane	4.82E-02	356	200	257.86	28027.884	6.62E-03	**6.77E-04**	4.82E-02	356	200	579.12	40351.862	1.00E-02	**6.77E-04**
1,2-Dichloroethene (total)	1.67E-01	356	200	257.86	28027.884	4.47E-03	**1.59E-03**	1.67E-01	356	200	579.12	40351.862	6.77E-03	**1.59E-03**
1,2-Dichloropropane	1.15E-01	356	200	257.86	28027.884	4.94E-03	**1.21E-03**	1.15E-01	356	200	579.12	40351.862	7.49E-03	**1.21E-03**
2-Butanone	2.33E-03	356	200	257.86	28027.884	6.65E-03	**3.04E-05**	2.33E-03	356	200	579.12	40351.862	9.18E-03	**3.04E-05**
4-Methyl-2-pentanone	5.64E-03	356	200	257.86	28027.884	5.29E-03	**6.15E-05**	5.64E-03	356	200	579.12	40351.862	7.73E-03	**6.15E-05**
Acetone	1.62E-03	356	200	257.86	28027.884	1.04E-02	**3.28E-05**	1.62E-03	356	200	579.12	40351.862	1.42E-02	**3.28E-05**
Benzene	2.27E-01	356	200	257.86	28027.884	5.54E-03	**2.68E-03**	2.27E-01	356	200	579.12	40351.862	8.41E-03	**2.68E-03**
Chlorobenzene	1.27E-01	356	200	257.86	28027.884	4.61E-03	**1.25E-03**	1.27E-01	356	200	579.12	40351.862	6.99E-03	**1.25E-03**
Chloroethane	4.54E-01	356	200	257.86	28027.884	1.70E-02	**1.65E-02**	4.54E-01	356	200	579.12	40351.862	2.58E-02	**1.65E-02**
Chloroform	1.50E-01	356	200	257.86	28027.884	6.55E-03	**2.09E-03**	1.50E-01	356	200	579.12	40351.862	9.94E-03	**2.09E-03**
Chloromethane	3.61E-01	356	200	257.86	28027.884	7.91E-03	**6.09E-03**	3.61E-01	356	200	579.12	40351.862	1.20E-02	**6.09E-03**
Dichloromethane	1.33E-01	356	200	257.86	28027.884	6.38E-03	**1.81E-03**	1.33E-01	356	200	579.12	40351.862	9.67E-03	**1.81E-03**
Ethylbenzene	3.22E-01	356	200	257.86	28027.884	4.72E-03	**3.24E-03**	3.22E-01	356	200	579.12	40351.862	7.16E-03	**3.24E-03**
Tetrachloroethene	7.24E-01	356	200	257.86	28027.884	4.52E-03	**6.98E-03**	7.24E-01	356	200	579.12	40351.862	6.87E-03	**6.98E-03**
Toluene	2.71E-01	356	200	257.86	28027.884	5.47E-03	**3.16E-03**	2.71E-01	356	200	579.12	40351.862	8.31E-03	**3.16E-03**
Trichloroethene	4.03E-01	356	200	257.86	28027.884	4.97E-03	**4.27E-03**	4.03E-01	356	200	579.12	40351.862	7.54E-03	**4.27E-03**
Vinyl chloride	1.14E+00	356	200	257.86	28027.884	6.65E-03	**1.62E-02**	1.14E+00	356	200	579.12	40351.862	1.01E-02	**1.62E-02**
Xylenes, Total	2.71E-01	356	200	257.86	28027.884	4.49E-03	**2.59E-03**	2.71E-01	356	200	579.12	40351.862	6.82E-03	**2.59E-03**
SVOCs														
1,2,4-Trichlorobenzene	5.81E-02	356	200	257.86	28027.884	1.95E-03	**2.39E-04**	5.81E-02	356	200	579.12	40351.862	2.92E-03	**2.39E-04**
1,2-Dichlorobenzene	7.85E-02	356	200	257.86	28027.884	4.37E-03	**7.30E-04**	7.85E-02	356	200	579.12	40351.862	6.62E-03	**7.30E-04**
1,4-Dichlorobenzene	9.85E-02	356	200	257.86	28027.884	4.36E-03	**9.15E-04**	9.85E-02	356	200	579.12	40351.862	6.61E-03	**9.15E-04**
2-Chlorophenol	4.58E-04	356	200	257.86	28027.884	6.67E-03	**4.96E-06**	4.58E-04	356	200	579.12	40351.862	7.44E-03	**4.96E-06**
2-Methylnaphthalene	2.12E-02	356	200	257.86	28027.884	3.17E-03	**1.41E-04**	2.12E-02	356	200	579.12	40351.862	4.74E-03	**1.41E-04**
bis(2-Chloroethyl)ether	6.95E-04	356	200	257.86	28027.884	7.36E-03	**9.14E-06**	6.95E-04	356	200	579.12	40351.862	9.13E-03	**9.14E-06**
Naphthalene	1.80E-02	356	200	257.86	28027.884	3.89E-03	**1.47E-04**	1.80E-02	356	200	579.12	40351.862	5.81E-03	**1.47E-04**
Nitrobenzene	9.81E-04	356	200	257.86	28027.884	7.49E-03	**1.35E-05**	9.81E-04	356	200	579.12	40351.862	9.61E-03	**1.35E-05**

See notes on last page.

$$VF_{wamb}\ [(mg/m^3\ air)/(mg/L\ H_2O)] = H/\{1 + [(U_{air} \times \delta_{air} \times L_{GW})/(W \times Deff_{ws})\} \times 10^3\ L/m^3$$

Constituent	R - AA-R-1-28							R - B-22A						
	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/($mg/L\ H_2O$)	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/($mg/L\ H_2O$)
VOCs														
1,1,1-Trichloroethane	7.03E-01	356	200	701.04	4660.6968	8.02E-03	**5.26E-04**	7.03E-01	356	200	481.08	11243.158	6.86E-03	**1.58E-03**
1,1,2-Trichloroethane	3.37E-02	356	200	701.04	4660.6968	8.13E-03	**2.56E-05**	3.37E-02	356	200	481.08	11243.158	6.97E-03	**7.71E-05**
1,1-Dichloroethane	2.30E-01	356	200	701.04	4660.6968	7.64E-03	**1.64E-04**	2.30E-01	356	200	481.08	11243.158	6.54E-03	**4.94E-04**
1,1-Dichloroethylene	1.07E+00	356	200	701.04	4660.6968	9.25E-03	**9.24E-04**	1.07E+00	356	200	481.08	11243.158	7.91E-03	**2.78E-03**
1,2-Dichloroethane	4.82E-02	356	200	701.04	4660.6968	1.08E-02	**4.85E-05**	4.82E-02	356	200	481.08	11243.158	9.23E-03	**1.46E-04**
1,2-Dichloroethene (total)	1.67E-01	356	200	701.04	4660.6968	7.30E-03	**1.14E-04**	1.67E-01	356	200	481.08	11243.158	6.24E-03	**3.42E-04**
1,2-Dichloropropane	1.15E-01	356	200	701.04	4660.6968	8.07E-03	**8.66E-05**	1.15E-01	356	200	481.08	11243.158	6.90E-03	**2.61E-04**
2-Butanone	2.33E-03	356	200	701.04	4660.6968	9.69E-03	**2.11E-06**	2.33E-03	356	200	481.08	11243.158	8.64E-03	**6.61E-06**
4-Methyl-2-pentanone	5.64E-03	356	200	701.04	4660.6968	8.26E-03	**4.35E-06**	5.64E-03	356	200	481.08	11243.158	7.19E-03	**1.33E-05**
Acetone	1.62E-03	356	200	701.04	4660.6968	1.50E-02	**2.27E-06**	1.62E-03	356	200	481.08	11243.158	1.34E-02	**7.14E-06**
Benzene	2.27E-01	356	200	701.04	4660.6968	9.06E-03	**1.92E-04**	2.27E-01	356	200	481.08	11243.158	7.75E-03	**5.77E-04**
Chlorobenzene	1.27E-01	356	200	701.04	4660.6968	7.53E-03	**8.93E-05**	1.27E-01	356	200	481.08	11243.158	6.44E-03	**2.69E-04**
Chloroethane	4.54E-01	356	200	701.04	4660.6968	2.79E-02	**1.18E-03**	4.54E-01	356	200	481.08	11243.158	2.38E-02	**3.55E-03**
Chloroform	1.50E-01	356	200	701.04	4660.6968	1.07E-02	**1.50E-04**	1.50E-01	356	200	481.08	11243.158	9.17E-03	**4.51E-04**
Chloromethane	3.61E-01	356	200	701.04	4660.6968	1.30E-02	**4.37E-04**	3.61E-01	356	200	481.08	11243.158	1.11E-02	**1.31E-03**
Dichloromethane	1.33E-01	356	200	701.04	4660.6968	1.04E-02	**1.29E-04**	1.33E-01	356	200	481.08	11243.158	8.91E-03	**3.89E-04**
Ethylbenzene	3.22E-01	356	200	701.04	4660.6968	7.72E-03	**2.32E-04**	3.22E-01	356	200	481.08	11243.158	6.60E-03	**6.97E-04**
Tetrachloroethene	7.24E-01	356	200	701.04	4660.6968	7.40E-03	**5.00E-04**	7.24E-01	356	200	481.08	11243.158	6.33E-03	**1.50E-03**
Toluene	2.71E-01	356	200	701.04	4660.6968	8.95E-03	**2.27E-04**	2.71E-01	356	200	481.08	11243.158	7.66E-03	**6.81E-04**
Trichloroethene	4.03E-01	356	200	701.04	4660.6968	8.13E-03	**3.06E-04**	4.03E-01	356	200	481.08	11243.158	6.95E-03	**9.19E-04**
Vinyl chloride	1.14E+00	356	200	701.04	4660.6968	1.09E-02	**1.16E-03**	1.14E+00	356	200	481.08	11243.158	9.31E-03	**3.48E-03**
Xylenes, Total	2.71E-01	356	200	701.04	4660.6968	7.35E-03	**1.86E-04**	2.71E-01	356	200	481.08	11243.158	6.29E-03	**5.59E-04**
SVOCs														
1,2,4-Trichlorobenzene	5.81E-02	356	200	701.04	4660.6968	3.14E-03	**1.71E-05**	5.81E-02	356	200	481.08	11243.158	2.70E-03	**5.15E-05**
1,2-Dichlorobenzene	7.85E-02	356	200	701.04	4660.6968	7.13E-03	**5.23E-05**	7.85E-02	356	200	481.08	11243.158	6.11E-03	**1.57E-04**
1,4-Dichlorobenzene	9.85E-02	356	200	701.04	4660.6968	7.12E-03	**6.55E-05**	9.85E-02	356	200	481.08	11243.158	6.10E-03	**1.97E-04**
2-Chlorophenol	4.58E-04	356	200	701.04	4660.6968	7.56E-03	**3.23E-07**	4.58E-04	356	200	481.08	11243.158	7.30E-03	**1.10E-06**
2-Methylnaphthalene	2.12E-02	356	200	701.04	4660.6968	5.09E-03	**1.01E-05**	2.12E-02	356	200	481.08	11243.158	4.39E-03	**3.05E-05**
bis(2-Chloroethyl)ether	6.95E-04	356	200	701.04	4660.6968	9.45E-03	**6.13E-07**	6.95E-04	356	200	481.08	11243.158	8.78E-03	**2.00E-06**
Naphthalene	1.80E-02	356	200	701.04	4660.6968	6.24E-03	**1.05E-05**	1.80E-02	356	200	481.08	11243.158	5.37E-03	**3.18E-05**
Nitrobenzene	9.81E-04	356	200	701.04	4660.6968	1.00E-02	**9.16E-07**	9.81E-04	356	200	481.08	11243.158	9.18E-03	**2.96E-06**

See notes on last page.

$$VF_{wamb}\ [(mg/m^3\ air)/(mg/L\ H_2O)] = H/\{1 + [(U_{air} \times \delta_{air} \times L_{GW})/(W \times Deff_{ws})\} \times 10^3\ L/m^3$$

Constituent	R - B-24A							R - B-25A						
	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/($mg/L\ H_2O$)	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/($mg/L\ H_2O$)
VOCs														
1,1,1-Trichloroethane	7.03E-01	356	200	352.55	8925.1536	5.87E-03	**1.47E-03**	7.03E-01	356	200	623.62	25774.193	7.67E-03	**3.13E-03**
1,1,2-Trichloroethane	3.37E-02	356	200	352.55	8925.1536	5.99E-03	**7.17E-05**	3.37E-02	356	200	623.62	25774.193	7.78E-03	**1.52E-04**
1,1-Dichloroethane	2.30E-01	356	200	352.55	8925.1536	5.60E-03	**4.58E-04**	2.30E-01	356	200	623.62	25774.193	7.31E-03	**9.76E-04**
1,1-Dichloroethylene	1.07E+00	356	200	352.55	8925.1536	6.77E-03	**2.58E-03**	1.07E+00	356	200	623.62	25774.193	8.84E-03	**5.49E-03**
1,2-Dichloroethane	4.82E-02	356	200	352.55	8925.1536	7.91E-03	**1.36E-04**	4.82E-02	356	200	623.62	25774.193	1.03E-02	**2.88E-04**
1,2-Dichloroethene (total)	1.67E-01	356	200	352.55	8925.1536	5.35E-03	**3.18E-04**	1.67E-01	356	200	623.62	25774.193	6.98E-03	**6.76E-04**
1,2-Dichloropropane	1.15E-01	356	200	352.55	8925.1536	5.91E-03	**2.42E-04**	1.15E-01	356	200	623.62	25774.193	7.72E-03	**5.15E-04**
2-Butanone	2.33E-03	356	200	352.55	8925.1536	7.68E-03	**6.36E-06**	2.33E-03	356	200	623.62	25774.193	9.38E-03	**1.27E-05**
4-Methyl-2-pentanone	5.64E-03	356	200	352.55	8925.1536	6.24E-03	**1.25E-05**	5.64E-03	356	200	623.62	25774.193	7.94E-03	**2.60E-05**
Acetone	1.62E-03	356	200	352.55	8925.1536	1.20E-02	**6.88E-06**	1.62E-03	356	200	623.62	25774.193	1.45E-02	**1.37E-05**
Benzene	2.27E-01	356	200	352.55	8925.1536	6.64E-03	**5.36E-04**	2.27E-01	356	200	623.62	25774.193	8.66E-03	**1.14E-03**
Chlorobenzene	1.27E-01	356	200	352.55	8925.1536	5.52E-03	**2.49E-04**	1.27E-01	356	200	623.62	25774.193	7.20E-03	**5.31E-04**
Chloroethane	4.54E-01	356	200	352.55	8925.1536	2.04E-02	**3.29E-03**	4.54E-01	356	200	623.62	25774.193	2.66E-02	**7.02E-03**
Chloroform	1.50E-01	356	200	352.55	8925.1536	7.85E-03	**4.19E-04**	1.50E-01	356	200	623.62	25774.193	1.02E-02	**8.92E-04**
Chloromethane	3.61E-01	356	200	352.55	8925.1536	9.48E-03	**1.22E-03**	3.61E-01	356	200	623.62	25774.193	1.24E-02	**2.59E-03**
Dichloromethane	1.33E-01	356	200	352.55	8925.1536	7.63E-03	**3.61E-04**	1.33E-01	356	200	623.62	25774.193	9.96E-03	**7.69E-04**
Ethylbenzene	3.22E-01	356	200	352.55	8925.1536	5.65E-03	**6.47E-04**	3.22E-01	356	200	623.62	25774.193	7.38E-03	**1.38E-03**
Tetrachloroethene	7.24E-01	356	200	352.55	8925.1536	5.42E-03	**1.39E-03**	7.24E-01	356	200	623.62	25774.193	7.08E-03	**2.97E-03**
Toluene	2.71E-01	356	200	352.55	8925.1536	6.55E-03	**6.32E-04**	2.71E-01	356	200	623.62	25774.193	8.56E-03	**1.35E-03**
Trichloroethene	4.03E-01	356	200	352.55	8925.1536	5.95E-03	**8.52E-04**	4.03E-01	356	200	623.62	25774.193	7.77E-03	**1.82E-03**
Vinyl chloride	1.14E+00	356	200	352.55	8925.1536	7.97E-03	**3.23E-03**	1.14E+00	356	200	623.62	25774.193	1.04E-02	**6.89E-03**
Xylenes, Total	2.71E-01	356	200	352.55	8925.1536	5.38E-03	**5.19E-04**	2.71E-01	356	200	623.62	25774.193	7.03E-03	**1.11E-03**
SVOCs														
1,2,4-Trichlorobenzene	5.81E-02	356	200	352.55	8925.1536	2.32E-03	**4.80E-05**	5.81E-02	356	200	623.62	25774.193	3.01E-03	**1.02E-04**
1,2-Dichlorobenzene	7.85E-02	356	200	352.55	8925.1536	5.23E-03	**1.46E-04**	7.85E-02	356	200	623.62	25774.193	6.82E-03	**3.11E-04**
1,4-Dichlorobenzene	9.85E-02	356	200	352.55	8925.1536	5.22E-03	**1.83E-04**	9.85E-02	356	200	623.62	25774.193	6.81E-03	**3.90E-04**
2-Chlorophenol	4.58E-04	356	200	352.55	8925.1536	7.02E-03	**1.14E-06**	4.58E-04	356	200	623.62	25774.193	7.48E-03	**1.99E-06**
2-Methylnaphthalene	2.12E-02	356	200	352.55	8925.1536	3.78E-03	**2.85E-05**	2.12E-02	356	200	623.62	25774.193	4.88E-03	**6.00E-05**
bis(2-Chloroethyl)ether	6.95E-04	356	200	352.55	8925.1536	8.12E-03	**2.01E-06**	6.95E-04	356	200	623.62	25774.193	9.26E-03	**3.73E-06**
Naphthalene	1.80E-02	356	200	352.55	8925.1536	4.63E-03	**2.96E-05**	1.80E-02	356	200	623.62	25774.193	5.98E-03	**6.25E-05**
Nitrobenzene	9.81E-04	356	200	352.55	8925.1536	8.38E-03	**2.92E-06**	9.81E-04	356	200	623.62	25774.193	9.76E-03	**5.56E-06**

See notes on last page.

$$VF_{wamb}\ [(mg/m^3\ air)/(mg/L\ H_2O)] = H/\{1 + [(U_{air} \times \delta_{air} \times L_{GW})/(W \times Deff_{ws})\} \times 10^3\ L/m^3$$

Constituent	R - B-28A							R - Leach R-1						
	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/($mg/L\ H_2O$)	H (unitless)	U_{air} (cm/s)	δ_{air} (cm)	L_{GW} (cm)	W (cm)	$Deff_{ws}$ (cm^2/s)	VFwamb (mg/m^3 air)/($mg/L\ H_2O$)
VOCs														
1,1,1-Trichloroethane	7.03E-01	356	200	546.10	7433.1576	7.26E-03	**9.75E-04**	7.03E-01	356	200	508.53	14218.006	7.03E-03	**1.94E-03**
1,1,2-Trichloroethane	3.37E-02	356	200	546.10	7433.1576	7.37E-03	**4.75E-05**	3.37E-02	356	200	508.53	14218.006	7.15E-03	**9.46E-05**
1,1-Dichloroethane	2.30E-01	356	200	546.10	7433.1576	6.92E-03	**3.04E-04**	2.30E-01	356	200	508.53	14218.006	6.71E-03	**6.06E-04**
1,1-Dichloroethylene	1.07E+00	356	200	546.10	7433.1576	8.37E-03	**1.71E-03**	1.07E+00	356	200	508.53	14218.006	8.11E-03	**3.41E-03**
1,2-Dichloroethane	4.82E-02	356	200	546.10	7433.1576	9.76E-03	**9.00E-05**	4.82E-02	356	200	508.53	14218.006	9.47E-03	**1.79E-04**
1,2-Dichloroethene (total)	1.67E-01	356	200	546.10	7433.1576	6.61E-03	**2.11E-04**	1.67E-01	356	200	508.53	14218.006	6.40E-03	**4.20E-04**
1,2-Dichloropropane	1.15E-01	356	200	546.10	7433.1576	7.30E-03	**1.61E-04**	1.15E-01	356	200	508.53	14218.006	7.08E-03	**3.20E-04**
2-Butanone	2.33E-03	356	200	546.10	7433.1576	9.01E-03	**4.01E-06**	2.33E-03	356	200	508.53	14218.006	8.81E-03	**8.06E-06**
4-Methyl-2-pentanone	5.64E-03	356	200	546.10	7433.1576	7.56E-03	**8.15E-06**	5.64E-03	356	200	508.53	14218.006	7.35E-03	**1.63E-05**
Acetone	1.62E-03	356	200	546.10	7433.1576	1.40E-02	**4.33E-06**	1.62E-03	356	200	508.53	14218.006	1.37E-02	**8.70E-06**
Benzene	2.27E-01	356	200	546.10	7433.1576	8.20E-03	**3.56E-04**	2.27E-01	356	200	508.53	14218.006	7.95E-03	**7.08E-04**
Chlorobenzene	1.27E-01	356	200	546.10	7433.1576	6.82E-03	**1.66E-04**	1.27E-01	356	200	508.53	14218.006	6.61E-03	**3.30E-04**
Chloroethane	4.54E-01	356	200	546.10	7433.1576	2.52E-02	**2.19E-03**	4.54E-01	356	200	508.53	14218.006	2.44E-02	**4.35E-03**
Chloroform	1.50E-01	356	200	546.10	7433.1576	9.70E-03	**2.78E-04**	1.50E-01	356	200	508.53	14218.006	9.40E-03	**5.54E-04**
Chloromethane	3.61E-01	356	200	546.10	7433.1576	1.17E-02	**8.09E-04**	3.61E-01	356	200	508.53	14218.006	1.14E-02	**1.61E-03**
Dichloromethane	1.33E-01	356	200	546.10	7433.1576	9.43E-03	**2.40E-04**	1.33E-01	356	200	508.53	14218.006	9.14E-03	**4.77E-04**
Ethylbenzene	3.22E-01	356	200	546.10	7433.1576	6.98E-03	**4.30E-04**	3.22E-01	356	200	508.53	14218.006	6.77E-03	**8.56E-04**
Tetrachloroethene	7.24E-01	356	200	546.10	7433.1576	6.70E-03	**9.27E-04**	7.24E-01	356	200	508.53	14218.006	6.49E-03	**1.85E-03**
Toluene	2.71E-01	356	200	546.10	7433.1576	8.10E-03	**4.20E-04**	2.71E-01	356	200	508.53	14218.006	7.85E-03	**8.36E-04**
Trichloroethene	4.03E-01	356	200	546.10	7433.1576	7.35E-03	**5.67E-04**	4.03E-01	356	200	508.53	14218.006	7.13E-03	**1.13E-03**
Vinyl chloride	1.14E+00	356	200	546.10	7433.1576	9.85E-03	**2.15E-03**	1.14E+00	356	200	508.53	14218.006	9.55E-03	**4.27E-03**
Xylenes, Total	2.71E-01	356	200	546.10	7433.1576	6.65E-03	**3.45E-04**	2.71E-01	356	200	508.53	14218.006	6.45E-03	**6.86E-04**
SVOCs														
1,2,4-Trichlorobenzene	5.81E-02	356	200	546.10	7433.1576	2.85E-03	**3.17E-05**	5.81E-02	356	200	508.53	14218.006	2.77E-03	**6.32E-05**
1,2-Dichlorobenzene	7.85E-02	356	200	546.10	7433.1576	6.46E-03	**9.70E-05**	7.85E-02	356	200	508.53	14218.006	6.26E-03	**1.93E-04**
1,4-Dichlorobenzene	9.85E-02	356	200	546.10	7433.1576	6.45E-03	**1.21E-04**	9.85E-02	356	200	508.53	14218.006	6.25E-03	**2.42E-04**
2-Chlorophenol	4.58E-04	356	200	546.10	7433.1576	7.39E-03	**6.47E-07**	4.58E-04	356	200	508.53	14218.006	7.34E-03	**1.32E-06**
2-Methylnaphthalene	2.12E-02	356	200	546.10	7433.1576	4.63E-03	**1.88E-05**	2.12E-02	356	200	508.53	14218.006	4.49E-03	**3.74E-05**
bis(2-Chloroethyl)ether	6.95E-04	356	200	546.10	7433.1576	9.02E-03	**1.20E-06**	6.95E-04	356	200	508.53	14218.006	8.89E-03	**2.43E-06**
Naphthalene	1.80E-02	356	200	546.10	7433.1576	5.67E-03	**1.95E-05**	1.80E-02	356	200	508.53	14218.006	5.51E-03	**3.89E-05**
Nitrobenzene	9.81E-04	356	200	546.10	7433.1576	9.48E-03	**1.78E-06**	9.81E-04	356	200	508.53	14218.006	9.31E-03	**3.59E-06**

See notes on last page.

TABLE D-6
VOLATILIZATION FACTOR: GROUNDWATER TO AMBIENT AIR (VF_{WAMB})
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

VFwamb [(mg/m3 air)/(mg/L H2O)]= H/ {1 +[(Uair x dair x LGW)/(W x Deffws)} x 103 L/m3

Constituent	S - SA-S-1						
	H (unitless)	**U_{air}** (cm/s)	**δ_{air}** (cm)	**L_{GW}** (cm)	**W** (cm)	**Deff $_{ws}$** (cm^2/s)	**VFwamb** (mg/m^3 air)/ (mg/L H_2O)
VOCs							
1,1,1-Trichloroethane	7.03E-01	356	200	458.5208	49159.668	6.70E-03	**7.10E-03**
1,1,2-Trichloroethane	3.37E-02	356	200	458.5208	49159.668	6.82E-03	**3.46E-04**
1,1-Dichloroethane	2.30E-01	356	200	458.5208	49159.668	6.39E-03	**2.21E-03**
1,1-Dichloroethylene	1.07E+00	356	200	458.5208	49159.668	7.73E-03	**1.25E-02**
1,2-Dichloroethane	4.82E-02	356	200	458.5208	49159.668	9.03E-03	**6.55E-04**
1,2-Dichloroethene (total)	1.67E-01	356	200	458.5208	49159.668	6.11E-03	**1.54E-03**
1,2-Dichloropropane	1.15E-01	356	200	458.5208	49159.668	6.75E-03	**1.17E-03**
2-Butanone	2.33E-03	356	200	458.5208	49159.668	8.50E-03	**2.98E-05**
4-Methyl-2-pentanone	5.64E-03	356	200	458.5208	49159.668	7.04E-03	**5.98E-05**
Acetone	1.62E-03	356	200	458.5208	49159.668	1.32E-02	**3.22E-05**
Benzene	2.27E-01	356	200	458.5208	49159.668	7.58E-03	**2.59E-03**
Chlorobenzene	1.27E-01	356	200	458.5208	49159.668	6.30E-03	**1.21E-03**
Chloroethane	4.54E-01	356	200	458.5208	49159.668	2.33E-02	**1.59E-02**
Chloroform	1.50E-01	356	200	458.5208	49159.668	8.96E-03	**2.02E-03**
Chloromethane	3.61E-01	356	200	458.5208	49159.668	1.08E-02	**5.89E-03**
Dichloromethane	1.33E-01	356	200	458.5208	49159.668	8.72E-03	**1.75E-03**
Ethylbenzene	3.22E-01	356	200	458.5208	49159.668	6.45E-03	**3.13E-03**
Tetrachloroethene	7.24E-01	356	200	458.5208	49159.668	6.19E-03	**6.75E-03**
Toluene	2.71E-01	356	200	458.5208	49159.668	7.49E-03	**3.06E-03**
Trichloroethene	4.03E-01	356	200	458.5208	49159.668	6.80E-03	**4.12E-03**
Vinyl chloride	1.14E+00	356	200	458.5208	49159.668	9.10E-03	**1.56E-02**
Xylenes, Total	2.71E-01	356	200	458.5208	49159.668	6.15E-03	**2.51E-03**
SVOCs							
1,2,4-Trichlorobenzene	5.81E-02	356	200	458.5208	49159.668	2.64E-03	**2.31E-04**
1,2-Dichlorobenzene	7.85E-02	356	200	458.5208	49159.668	5.97E-03	**7.06E-04**
1,4-Dichlorobenzene	9.85E-02	356	200	458.5208	49159.668	5.96E-03	**8.85E-04**
2-Chlorophenol	4.58E-04	356	200	458.5208	49159.668	7.26E-03	**5.01E-06**
2-Methylnaphthalene	2.12E-02	356	200	458.5208	49159.668	4.29E-03	**1.37E-04**
bis(2-Chloroethyl)ether	6.95E-04	356	200	458.5208	49159.668	8.69E-03	**9.09E-06**
Naphthalene	1.80E-02	356	200	458.5208	49159.668	5.26E-03	**1.43E-04**
Nitrobenzene	9.81E-04	356	200	458.5208	49159.668	9.07E-03	**1.34E-05**

Notes:
SVOCs - Semivolatile Organic Compounds.
VOC - Volatile Organic Compound; those with Henry's Law Constant greater than 10^{-5} atm-m^3/mol and a molecular weight greater than 200 g/mol.
Inputs listed on Tables D-1 and D-2.
Equations from ASTM, 2000.
$Deff_{ws}$ calculated in Table D-5.

TABLE D-7
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	O - AA-CLAY-2-22			O - GM-19A		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	2.30E+01	7.34E-03	1.69E-01	NCOPC	8.71E-03	NCOPC
1,1,2-Trichloroethane	6.70E-01	3.58E-04	2.40E-04	NCOPC	4.25E-04	NCOPC
1,1-Dichloroethane	1.20E+01	2.29E-03	2.75E-02	NCOPC	2.72E-03	NCOPC
1,1-Dichloroethylene	2.10E+00	1.29E-02	2.71E-02	NCOPC	1.53E-02	NCOPC
1,2-Dichloroethane	NCOPC	6.77E-04	NCOPC	NCOPC	8.04E-04	NCOPC
1,2-Dichloroethene (total)	4.00E+01	1.59E-03	6.35E-02	NCOPC	1.88E-03	NCOPC
1,2-Dichloropropane	NCOPC	1.21E-03	NCOPC	NCOPC	1.43E-03	NCOPC
2-Butanone	NCOPC	3.04E-05	NCOPC	NCOPC	3.69E-05	NCOPC
4-Methyl-2-pentanone	NCOPC	6.15E-05	NCOPC	NCOPC	7.36E-05	NCOPC
Acetone	NCOPC	3.28E-05	NCOPC	NCOPC	3.98E-05	NCOPC
Benzene	6.30E+01	2.68E-03	1.69E-01	6.35E-03	3.18E-03	2.02E-05
Chlorobenzene	4.80E+00	1.25E-03	5.98E-03	NCOPC	1.48E-03	NCOPC
Chloroethane	NCOPC	1.65E-02	NCOPC	NCOPC	1.95E-02	NCOPC
Chloroform	6.10E-01	2.09E-03	1.28E-03	NCOPC	2.48E-03	NCOPC
Chloromethane	NCOPC	6.09E-03	NCOPC	NCOPC	7.22E-03	NCOPC
Dichloromethane	2.70E-01	1.81E-03	4.87E-04	NCOPC	2.14E-03	NCOPC
Ethylbenzene	1.60E+00	3.24E-03	5.18E-03	NCOPC	3.84E-03	NCOPC
Tetrachloroethene	NCOPC	6.98E-03	NCOPC	1.10E-01	8.28E-03	9.11E-04
Toluene	3.40E+01	3.16E-03	1.07E-01	NCOPC	3.75E-03	NCOPC
Trichloroethene	6.90E-01	4.27E-03	2.94E-03	5.30E-02	5.06E-03	2.68E-04
Vinyl chloride	5.10E-01	1.62E-02	8.24E-03	NCOPC	1.92E-02	NCOPC
Xylenes, Total	NCOPC	2.59E-03	NCOPC	NCOPC	3.08E-03	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	2.39E-04	NCOPC	NCOPC	2.84E-04	NCOPC
1,2-Dichlorobenzene	1.90E+00	7.30E-04	1.39E-03	NCOPC	8.67E-04	NCOPC
1,4-Dichlorobenzene	1.60E+00	9.15E-04	1.46E-03	NCOPC	1.09E-03	NCOPC
2-Chlorophenol	NCOPC	4.96E-06	NCOPC	NCOPC	6.29E-06	NCOPC
2-Methylnaphthalene	7.30E-02	1.41E-04	1.03E-05	NCOPC	1.68E-04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	9.14E-06	NCOPC	NCOPC	1.13E-05	NCOPC
Naphthalene	NCOPC	1.47E-04	NCOPC	NCOPC	1.75E-04	NCOPC
Nitrobenzene	NCOPC	1.35E-05	NCOPC	NCOPC	1.66E-05	NCOPC

See notes on last page.

TABLE D-7
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	O - LEACH-0-1			O - SA2-MW-4-S		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	7.91E-03	NCOPC	NCOPC	8.09E-03	NCOPC
1,1,2-Trichloroethane	NCOPC	3.86E-04	NCOPC	NCOPC	3.94E-04	NCOPC
1,1-Dichloroethane	NCOPC	2.47E-03	NCOPC	NCOPC	2.52E-03	NCOPC
1,1-Dichloroethylene	NCOPC	1.39E-02	NCOPC	NCOPC	1.42E-02	NCOPC
1,2-Dichloroethane	NCOPC	7.31E-04	NCOPC	NCOPC	7.47E-04	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.71E-03	NCOPC	NCOPC	1.75E-03	NCOPC
1,2-Dichloropropane	NCOPC	1.30E-03	NCOPC	NCOPC	1.33E-03	NCOPC
2-Butanone	NCOPC	3.40E-05	NCOPC	NCOPC	3.36E-05	NCOPC
4-Methyl-2-pentanone	NCOPC	6.73E-05	NCOPC	NCOPC	6.79E-05	NCOPC
Acetone	NCOPC	3.68E-05	NCOPC	NCOPC	3.63E-05	NCOPC
Benzene	9.20E-01	2.89E-03	2.66E-03	4.40E+00	2.95E-03	1.30E-02
Chlorobenzene	1.70E+00	1.34E-03	2.28E-03	1.10E+01	1.37E-03	1.51E-02
Chloroethane	NCOPC	1.77E-02	NCOPC	6.50E-01	1.82E-02	1.18E-02
Chloroform	NCOPC	2.26E-03	NCOPC	NCOPC	2.31E-03	NCOPC
Chloromethane	NCOPC	6.56E-03	NCOPC	NCOPC	6.71E-03	NCOPC
Dichloromethane	NCOPC	1.95E-03	NCOPC	NCOPC	1.99E-03	NCOPC
Ethylbenzene	NCOPC	3.49E-03	NCOPC	NCOPC	3.57E-03	NCOPC
Tetrachloroethene	NCOPC	7.52E-03	NCOPC	NCOPC	7.69E-03	NCOPC
Toluene	NCOPC	3.40E-03	NCOPC	NCOPC	3.48E-03	NCOPC
Trichloroethene	NCOPC	4.59E-03	NCOPC	NCOPC	4.70E-03	NCOPC
Vinyl chloride	NCOPC	1.74E-02	NCOPC	NCOPC	1.78E-02	NCOPC
Xylenes, Total	NCOPC	2.80E-03	NCOPC	NCOPC	2.86E-03	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	2.58E-04	NCOPC	NCOPC	2.63E-04	NCOPC
1,2-Dichlorobenzene	NCOPC	7.87E-04	NCOPC	NCOPC	8.05E-04	NCOPC
1,4-Dichlorobenzene	NCOPC	9.86E-04	NCOPC	NCOPC	1.01E-03	NCOPC
2-Chlorophenol	3.30E-01	5.99E-06	1.98E-06	5.50E-02	5.51E-06	3.03E-07
2-Methylnaphthalene	NCOPC	1.53E-04	NCOPC	NCOPC	1.56E-04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.06E-05	NCOPC	NCOPC	1.01E-05	NCOPC
Naphthalene	5.70E-01	1.59E-04	9.09E-05	NCOPC	1.62E-04	NCOPC
Nitrobenzene	8.00E-02	1.55E-05	1.24E-06	NCOPC	1.50E-05	NCOPC

See notes on last page.

TABLE D-7
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	O - SA-O-3			Q Central - SA-Q-6		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	1.15E-02	NCOPC	NCOPC	1.44E-03	NCOPC
1,1,2-Trichloroethane	NCOPC	5.59E-04	NCOPC	NCOPC	6.18E-05	NCOPC
1,1-Dichloroethane	NCOPC	3.57E-03	NCOPC	NCOPC	3.95E-04	NCOPC
1,1-Dichloroethylene	NCOPC	2.01E-02	NCOPC	NCOPC	2.22E-03	NCOPC
1,2-Dichloroethane	NCOPC	1.06E-03	NCOPC	NCOPC	1.17E-04	NCOPC
1,2-Dichloroethene (total)	NCOPC	2.48E-03	NCOPC	NCOPC	2.74E-04	NCOPC
1,2-Dichloropropane	NCOPC	1.89E-03	NCOPC	NCOPC	2.09E-04	NCOPC
2-Butanone	NCOPC	4.83E-05	NCOPC	NCOPC	5.36E-06	NCOPC
4-Methyl-2-pentanone	NCOPC	9.67E-05	NCOPC	NCOPC	1.07E-05	NCOPC
Acetone	NCOPC	5.22E-05	NCOPC	NCOPC	5.80E-06	NCOPC
Benzene	7.35E-03	4.18E-03	3.07E-05	2.20E-01	4.62E-04	1.02E-04
Chlorobenzene	NCOPC	1.94E-03	NCOPC	2.80E-01	2.15E-04	6.02E-05
Chloroethane	NCOPC	2.57E-02	NCOPC	NCOPC	2.84E-03	NCOPC
Chloroform	NCOPC	3.27E-03	NCOPC	NCOPC	3.61E-04	NCOPC
Chloromethane	NCOPC	9.50E-03	NCOPC	NCOPC	1.05E-03	NCOPC
Dichloromethane	NCOPC	2.82E-03	NCOPC	NCOPC	3.12E-04	NCOPC
Ethylbenzene	NCOPC	5.05E-03	NCOPC	NCOPC	5.58E-04	NCOPC
Tetrachloroethene	2.35E-02	1.09E-02	2.56E-04	NCOPC	1.20E-03	NCOPC
Toluene	NCOPC	4.93E-03	NCOPC	NCOPC	5.45E-04	NCOPC
Trichloroethene	2.20E-02	6.65E-03	1.46E-04	NCOPC	7.36E-04	NCOPC
Vinyl chloride	NCOPC	2.52E-02	NCOPC	NCOPC	2.79E-03	NCOPC
Xylenes, Total	NCOPC	4.05E-03	NCOPC	NCOPC	4.48E-04	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	3.73E-04	NCOPC	NCOPC	4.13E-05	NCOPC
1,2-Dichlorobenzene	NCOPC	1.14E-03	NCOPC	NCOPC	1.26E-04	NCOPC
1,4-Dichlorobenzene	NCOPC	1.43E-03	NCOPC	NCOPC	1.58E-04	NCOPC
2-Chlorophenol	NCOPC	8.20E-06	NCOPC	NCOPC	9.15E-07	NCOPC
2-Methylnaphthalene	NCOPC	2.21E-04	NCOPC	NCOPC	2.45E-05	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.48E-05	NCOPC	NCOPC	1.65E-06	NCOPC
Naphthalene	NCOPC	2.30E-04	NCOPC	NCOPC	2.55E-05	NCOPC
Nitrobenzene	NCOPC	2.18E-05	NCOPC	NCOPC	2.42E-06	NCOPC

See notes on last page.

TABLE D-7
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Q North - LEACH-Q-1			Q North - SA-Q-1		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	5.26E-03	NCOPC	NCOPC	5.12E-03	NCOPC
1,1,2-Trichloroethane	NCOPC	3.58E-04	NCOPC	NCOPC	3.58E-04	NCOPC
1,1-Dichloroethane	NCOPC	2.29E-03	NCOPC	NCOPC	2.29E-03	NCOPC
1,1-Dichloroethylene	NCOPC	1.29E-02	NCOPC	NCOPC	1.29E-02	NCOPC
1,2-Dichloroethane	2.30E+00	6.77E-04	1.56E-03	NCOPC	6.77E-04	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.59E-03	NCOPC	NCOPC	1.59E-03	NCOPC
1,2-Dichloropropane	NCOPC	1.21E-03	NCOPC	NCOPC	1.21E-03	NCOPC
2-Butanone	NCOPC	3.04E-05	NCOPC	NCOPC	3.04E-05	NCOPC
4-Methyl-2-pentanone	NCOPC	6.15E-05	NCOPC	NCOPC	6.15E-05	NCOPC
Acetone	NCOPC	3.28E-05	NCOPC	NCOPC	3.28E-05	NCOPC
Benzene	5.10E-01	2.68E-03	1.37E-03	1.00E+00	2.68E-03	2.68E-03
Chlorobenzene	1.80E+00	1.25E-03	2.24E-03	1.20E+00	1.25E-03	1.50E-03
Chloroethane	NCOPC	1.65E-02	NCOPC	3.50E-02	1.65E-02	5.76E-04
Chloroform	NCOPC	2.09E-03	NCOPC	NCOPC	2.09E-03	NCOPC
Chloromethane	NCOPC	6.09E-03	NCOPC	NCOPC	6.09E-03	NCOPC
Dichloromethane	5.50E-02	1.81E-03	9.93E-05	NCOPC	1.81E-03	NCOPC
Ethylbenzene	NCOPC	3.24E-03	NCOPC	NCOPC	3.24E-03	NCOPC
Tetrachloroethene	1.40E-01	6.98E-03	9.77E-04	NCOPC	6.98E-03	NCOPC
Toluene	1.20E+00	3.16E-03	3.79E-03	NCOPC	3.16E-03	NCOPC
Trichloroethene	3.00E-02	4.27E-03	1.28E-04	NCOPC	4.27E-03	NCOPC
Vinyl chloride	5.60E-03	1.62E-02	9.05E-05	NCOPC	1.62E-02	NCOPC
Xylenes, Total	NCOPC	2.59E-03	NCOPC	NCOPC	2.59E-03	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	2.39E-04	NCOPC	NCOPC	2.39E-04	NCOPC
1,2-Dichlorobenzene	NCOPC	7.30E-04	NCOPC	NCOPC	7.30E-04	NCOPC
1,4-Dichlorobenzene	8.15E-02	9.15E-04	7.45E-05	NCOPC	9.15E-04	NCOPC
2-Chlorophenol	1.30E+01	4.96E-06	6.45E-05	NCOPC	4.96E-06	NCOPC
2-Methylnaphthalene	NCOPC	1.41E-04	NCOPC	NCOPC	1.41E-04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	9.14E-06	NCOPC	NCOPC	9.14E-06	NCOPC
Naphthalene	1.90E+00	1.47E-04	2.80E-04	NCOPC	1.47E-04	NCOPC
Nitrobenzene	1.70E+00	1.35E-05	2.30E-05	NCOPC	1.35E-05	NCOPC

See notes on last page.

TABLE D-7
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Q South - AA-Q-6-24			R - AA-R-1-28		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	5.26E-04	NCOPC	NCOPC	1.58E-03	NCOPC
1,1,2-Trichloroethane	NCOPC	2.56E-05	NCOPC	NCOPC	7.71E-05	NCOPC
1,1-Dichloroethane	NCOPC	1.64E-04	NCOPC	NCOPC	4.94E-04	NCOPC
1,1-Dichloroethylene	NCOPC	9.24E-04	NCOPC	NCOPC	2.78E-03	NCOPC
1,2-Dichloroethane	NCOPC	4.85E-05	NCOPC	NCOPC	1.46E-04	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.14E-04	NCOPC	NCOPC	3.42E-04	NCOPC
1,2-Dichloropropane	NCOPC	8.66E-05	NCOPC	NCOPC	2.61E-04	NCOPC
2-Butanone	NCOPC	2.11E-06	NCOPC	NCOPC	6.61E-06	NCOPC
4-Methyl-2-pentanone	NCOPC	4.35E-06	NCOPC	NCOPC	1.33E-05	NCOPC
Acetone	NCOPC	2.27E-06	NCOPC	NCOPC	7.14E-06	NCOPC
Benzene	4.75E-01	1.92E-04	9.12E-05	5.10E-01	5.77E-04	2.95E-04
Chlorobenzene	NCOPC	8.93E-05	NCOPC	2.00E+00	2.69E-04	5.37E-04
Chloroethane	NCOPC	1.18E-03	NCOPC	NCOPC	3.55E-03	NCOPC
Chloroform	NCOPC	1.50E-04	NCOPC	NCOPC	4.51E-04	NCOPC
Chloromethane	NCOPC	4.37E-04	NCOPC	NCOPC	1.31E-03	NCOPC
Dichloromethane	NCOPC	1.29E-04	NCOPC	NCOPC	3.89E-04	NCOPC
Ethylbenzene	NCOPC	2.32E-04	NCOPC	NCOPC	6.97E-04	NCOPC
Tetrachloroethene	NCOPC	5.00E-04	NCOPC	NCOPC	1.50E-03	NCOPC
Toluene	NCOPC	2.27E-04	NCOPC	NCOPC	6.81E-04	NCOPC
Trichloroethene	NCOPC	3.06E-04	NCOPC	NCOPC	9.19E-04	NCOPC
Vinyl chloride	NCOPC	1.16E-03	NCOPC	NCOPC	3.48E-03	NCOPC
Xylenes, Total	NCOPC	1.86E-04	NCOPC	NCOPC	5.59E-04	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	1.71E-05	NCOPC	NCOPC	5.15E-05	NCOPC
1,2-Dichlorobenzene	NCOPC	5.23E-05	NCOPC	NCOPC	1.57E-04	NCOPC
1,4-Dichlorobenzene	NCOPC	6.55E-05	NCOPC	NCOPC	1.97E-04	NCOPC
2-Chlorophenol	NCOPC	3.23E-07	NCOPC	NCOPC	1.10E-06	NCOPC
2-Methylnaphthalene	4.55E-01	1.01E-05	4.58E-06	NCOPC	3.05E-05	NCOPC
bis(2-Chloroethyl)ether	NCOPC	6.13E-07	NCOPC	3.60E-01	2.00E-06	7.21E-07
Naphthalene	NCOPC	1.05E-05	NCOPC	NCOPC	3.18E-05	NCOPC
Nitrobenzene	NCOPC	9.16E-07	NCOPC	NCOPC	2.96E-06	NCOPC

See notes on last page.

TABLE D-7
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	R - B-22A			R - B-24A		
Constituent	**Shallow/Mid Groundwater & Lecahate EPC (a)** (mg/L)	**Volatilization Factor (b)** VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	**Outdoor Air Concentration (c)** (mg/m^3)	**Shallow/Mid Groundwater & Lecahate EPC (a)** (mg/L)	**Volatilization Factor (b)** VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	**Outdoor Air Concentration (c)** (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	1.47E-03	NCOPC	NCOPC	3.13E-03	NCOPC
1,1,2-Trichloroethane	NCOPC	7.17E-05	NCOPC	NCOPC	1.52E-04	NCOPC
1,1-Dichloroethane	NCOPC	4.58E-04	NCOPC	NCOPC	9.76E-04	NCOPC
1,1-Dichloroethylene	NCOPC	2.58E-03	NCOPC	NCOPC	5.49E-03	NCOPC
1,2-Dichloroethane	NCOPC	1.36E-04	NCOPC	2.20E-01	2.88E-04	6.34E-05
1,2-Dichloroethene (total)	NCOPC	3.18E-04	NCOPC	NCOPC	6.76E-04	NCOPC
1,2-Dichloropropane	NCOPC	2.42E-04	NCOPC	NCOPC	5.15E-04	NCOPC
2-Butanone	NCOPC	6.36E-06	NCOPC	NCOPC	1.27E-05	NCOPC
4-Methyl-2-pentanone	NCOPC	1.25E-05	NCOPC	NCOPC	2.60E-05	NCOPC
Acetone	NCOPC	6.88E-06	NCOPC	2.20E+01	1.37E-05	3.01E-04
Benzene	7.80E-02	5.36E-04	4.18E-05	8.30E-01	1.14E-03	9.47E-04
Chlorobenzene	1.70E+00	2.49E-04	4.24E-04	1.00E+00	5.31E-04	5.31E-04
Chloroethane	NCOPC	3.29E-03	NCOPC	NCOPC	7.02E-03	NCOPC
Chloroform	NCOPC	4.19E-04	NCOPC	NCOPC	8.92E-04	NCOPC
Chloromethane	NCOPC	1.22E-03	NCOPC	NCOPC	2.59E-03	NCOPC
Dichloromethane	NCOPC	3.61E-04	NCOPC	1.40E-01	7.69E-04	1.08E-04
Ethylbenzene	NCOPC	6.47E-04	NCOPC	NCOPC	1.38E-03	NCOPC
Tetrachloroethene	NCOPC	1.39E-03	NCOPC	NCOPC	2.97E-03	NCOPC
Toluene	NCOPC	6.32E-04	NCOPC	NCOPC	1.35E-03	NCOPC
Trichloroethene	NCOPC	8.52E-04	NCOPC	NCOPC	1.82E-03	NCOPC
Vinyl chloride	NCOPC	3.23E-03	NCOPC	NCOPC	6.89E-03	NCOPC
Xylenes, Total	NCOPC	5.19E-04	NCOPC	NCOPC	1.11E-03	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	4.80E-05	NCOPC	NCOPC	1.02E-04	NCOPC
1,2-Dichlorobenzene	NCOPC	1.46E-04	NCOPC	NCOPC	3.11E-04	NCOPC
1,4-Dichlorobenzene	3.00E-01	1.83E-04	5.49E-05	NCOPC	3.90E-04	NCOPC
2-Chlorophenol	8.00E-02	1.14E-06	9.14E-08	1.40E+02	1.99E-06	2.79E-04
2-Methylnaphthalene	NCOPC	2.85E-05	NCOPC	NCOPC	6.00E-05	NCOPC
bis(2-Chloroethyl)ether	NCOPC	2.01E-06	NCOPC	NCOPC	3.73E-06	NCOPC
Naphthalene	NCOPC	2.96E-05	NCOPC	NCOPC	6.25E-05	NCOPC
Nitrobenzene	NCOPC	2.92E-06	NCOPC	1.30E+00	5.56E-06	7.23E-06

See notes on last page.

TABLE D-7
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	R - B-25A			R - B-28A		
Constituent	**Shallow/Mid Groundwater & Lecahate EPC (a)** (mg/L)	**Volatilization Factor (b)** VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	**Outdoor Air Concentration (c)** (mg/m^3)	**Shallow/Mid Groundwater & Lecahate EPC (a)** (mg/L)	**Volatilization Factor (b)** VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	**Outdoor Air Concentration (c)** (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	9.75E-04	NCOPC	NCOPC	1.94E-03	NCOPC
1,1,2-Trichloroethane	NCOPC	4.75E-05	NCOPC	NCOPC	9.46E-05	NCOPC
1,1-Dichloroethane	NCOPC	3.04E-04	NCOPC	NCOPC	6.06E-04	NCOPC
1,1-Dichloroethylene	NCOPC	1.71E-03	NCOPC	NCOPC	3.41E-03	NCOPC
1,2-Dichloroethane	9.10E+00	9.00E-05	8.19E-04	NCOPC	1.79E-04	NCOPC
1,2-Dichloroethene (total)	NCOPC	2.11E-04	NCOPC	NCOPC	4.20E-04	NCOPC
1,2-Dichloropropane	NCOPC	1.61E-04	NCOPC	NCOPC	3.20E-04	NCOPC
2-Butanone	NCOPC	4.01E-06	NCOPC	NCOPC	8.06E-06	NCOPC
4-Methyl-2-pentanone	NCOPC	8.15E-06	NCOPC	NCOPC	1.63E-05	NCOPC
Acetone	NCOPC	4.33E-06	NCOPC	NCOPC	8.70E-06	NCOPC
Benzene	NCOPC	3.56E-04	NCOPC	1.40E-01	7.08E-04	9.92E-05
Chlorobenzene	3.50E+00	1.66E-04	5.79E-04	3.40E-01	3.30E-04	1.12E-04
Chloroethane	1.60E-01	2.19E-03	3.50E-04	NCOPC	4.35E-03	NCOPC
Chloroform	NCOPC	2.78E-04	NCOPC	NCOPC	5.54E-04	NCOPC
Chloromethane	NCOPC	8.09E-04	NCOPC	NCOPC	1.61E-03	NCOPC
Dichloromethane	NCOPC	2.40E-04	NCOPC	NCOPC	4.77E-04	NCOPC
Ethylbenzene	NCOPC	4.30E-04	NCOPC	NCOPC	8.56E-04	NCOPC
Tetrachloroethene	NCOPC	9.27E-04	NCOPC	NCOPC	1.85E-03	NCOPC
Toluene	NCOPC	4.20E-04	NCOPC	NCOPC	8.36E-04	NCOPC
Trichloroethene	NCOPC	5.67E-04	NCOPC	NCOPC	1.13E-03	NCOPC
Vinyl chloride	NCOPC	2.15E-03	NCOPC	NCOPC	4.27E-03	NCOPC
Xylenes, Total	NCOPC	3.45E-04	NCOPC	NCOPC	6.86E-04	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	3.17E-05	NCOPC	NCOPC	6.32E-05	NCOPC
1,2-Dichlorobenzene	NCOPC	9.70E-05	NCOPC	NCOPC	1.93E-04	NCOPC
1,4-Dichlorobenzene	NCOPC	1.21E-04	NCOPC	NCOPC	2.42E-04	NCOPC
2-Chlorophenol	5.00E+01	6.47E-07	3.24E-05	NCOPC	1.32E-06	NCOPC
2-Methylnaphthalene	NCOPC	1.88E-05	NCOPC	NCOPC	3.74E-05	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.20E-06	NCOPC	NCOPC	2.43E-06	NCOPC
Naphthalene	NCOPC	1.95E-05	NCOPC	NCOPC	3.89E-05	NCOPC
Nitrobenzene	3.20E+00	1.78E-06	5.69E-06	NCOPC	3.59E-06	NCOPC

See notes on last page.

TABLE D-7
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (RME)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	R - LEACH-R-1			S - SA-S-1		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	7.10E-03	NCOPC	NCOPC	7.10E-03	NCOPC
1,1,2-Trichloroethane	1.20E-01	3.46E-04	4.15E-05	NCOPC	3.46E-04	NCOPC
1,1-Dichloroethane	NCOPC	2.21E-03	NCOPC	NCOPC	2.21E-03	NCOPC
1,1-Dichloroethylene	3.10E-01	1.25E-02	3.86E-03	NCOPC	1.25E-02	NCOPC
1,2-Dichloroethane	1.97E+03	6.55E-04	1.29E+00	NCOPC	6.55E-04	NCOPC
1,2-Dichloroethene (total)	1.20E+03	1.54E-03	1.84E+00	NCOPC	1.54E-03	NCOPC
1,2-Dichloropropane	1.00E-02	1.17E-03	1.17E-05	NCOPC	1.17E-03	NCOPC
2-Butanone	1.20E+01	2.98E-05	3.58E-04	NCOPC	2.98E-05	NCOPC
4-Methyl-2-pentanone	2.10E+00	5.98E-05	1.26E-04	NCOPC	5.98E-05	NCOPC
Acetone	8.00E+01	3.22E-05	2.58E-03	NCOPC	3.22E-05	NCOPC
Benzene	1.47E+03	2.59E-03	3.80E+00	7.35E-03	2.59E-03	1.90E-05
Chlorobenzene	1.03E+03	1.21E-03	1.25E+00	NCOPC	1.21E-03	NCOPC
Chloroethane	NCOPC	1.59E-02	NCOPC	7.35E-03	1.59E-02	1.17E-04
Chloroform	3.07E+02	2.02E-03	6.21E-01	NCOPC	2.02E-03	NCOPC
Chloromethane	1.51E+02	5.89E-03	8.91E-01	NCOPC	5.89E-03	NCOPC
Dichloromethane	2.50E+00	1.75E-03	4.36E-03	NCOPC	1.75E-03	NCOPC
Ethylbenzene	3.67E+02	3.13E-03	1.15E+00	NCOPC	3.13E-03	NCOPC
Tetrachloroethene	6.87E+04	6.75E-03	4.63E+02	NCOPC	6.75E-03	NCOPC
Toluene	1.73E+04	3.06E-03	5.30E+01	NCOPC	3.06E-03	NCOPC
Trichloroethene	7.97E+04	4.12E-03	3.29E+02	NCOPC	4.12E-03	NCOPC
Vinyl chloride	1.50E-01	1.56E-02	2.34E-03	NCOPC	1.56E-02	NCOPC
Xylenes, Total	1.07E+03	2.51E-03	2.68E+00	NCOPC	2.51E-03	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	2.77E+01	2.31E-04	6.40E-03	NCOPC	2.31E-04	NCOPC
1,2-Dichlorobenzene	2.33E+01	7.06E-04	1.65E-02	NCOPC	7.06E-04	NCOPC
1,4-Dichlorobenzene	3.77E+01	8.85E-04	3.33E-02	NCOPC	8.85E-04	NCOPC
2-Chlorophenol	1.09E+02	5.01E-06	5.47E-04	NCOPC	5.01E-06	NCOPC
2-Methylnaphthalene	1.62E+01	1.37E-04	2.22E-03	NCOPC	1.37E-04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	9.09E-06	NCOPC	NCOPC	9.09E-06	NCOPC
Naphthalene	5.60E+00	1.43E-04	7.98E-04	NCOPC	1.43E-04	NCOPC
Nitrobenzene	NCOPC	1.34E-05	NCOPC	NCOPC	1.34E-05	NCOPC

Notes:
NCOPC - Not a Constituent of Potential Concern in this area.
VOC - Volatile Organic Compound; those with Henry's Law Constant greater than 10-5 atm-m3/mol and a molecular weight greater than 200 g/mol.
RME - Reasonable Maximum Exposure.
(a) Exposure Point Concentration (EPC) selected in Table 3.7 and presented in Table 3.7 RME.
(b) Volatilization Factor (VF) calculated in Table D-6
(c) Outdoor air concentration =EPC*VF.

TABLE D-8
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	O - AA-CLAY-2-22			O - GM-19A		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	2.30E+01	7.34E-03	1.69E-01	NCOPC	8.71E-03	NCOPC
1,1,2-Trichloroethane	6.70E-01	3.58E-04	2.40E-04	NCOPC	4.25E-04	NCOPC
1,1-Dichloroethane	1.20E+01	2.29E-03	2.75E-02	NCOPC	2.72E-03	NCOPC
1,1-Dichloroethylene	2.10E+00	1.29E-02	2.71E-02	NCOPC	1.53E-02	NCOPC
1,2-Dichloroethane	NCOPC	6.77E-04	NCOPC	NCOPC	8.04E-04	NCOPC
1,2-Dichloroethene (total)	4.00E+01	1.59E-03	6.35E-02	NCOPC	1.88E-03	NCOPC
1,2-Dichloropropane	NCOPC	1.21E-03	NCOPC	NCOPC	1.43E-03	NCOPC
2-Butanone	NCOPC	3.04E-05	NCOPC	NCOPC	3.69E-05	NCOPC
4-Methyl-2-pentanone	NCOPC	6.15E-05	NCOPC	NCOPC	7.36E-05	NCOPC
Acetone	NCOPC	3.28E-05	NCOPC	NCOPC	3.98E-05	NCOPC
Benzene	6.30E+01	2.68E-03	1.69E-01	6.35E-03	3.18E-03	2.02E-05
Chlorobenzene	4.80E+00	1.25E-03	5.98E-03	NCOPC	1.48E-03	NCOPC
Chloroethane	NCOPC	1.65E-02	NCOPC	NCOPC	1.95E-02	NCOPC
Chloroform	6.10E-01	2.09E-03	1.28E-03	NCOPC	2.48E-03	NCOPC
Chloromethane	NCOPC	6.09E-03	NCOPC	NCOPC	7.22E-03	NCOPC
Dichloromethane	2.70E-01	1.81E-03	4.87E-04	NCOPC	2.14E-03	NCOPC
Ethylbenzene	1.60E+00	3.24E-03	5.18E-03	NCOPC	3.84E-03	NCOPC
Tetrachloroethene	NCOPC	6.98E-03	NCOPC	1.10E-01	8.28E-03	9.11E-04
Toluene	3.40E+01	3.16E-03	1.07E-01	NCOPC	3.75E-03	NCOPC
Trichloroethene	6.90E-01	4.27E-03	2.94E-03	5.30E-02	5.06E-03	2.68E-04
Vinyl chloride	5.10E-01	1.62E-02	8.24E-03	NCOPC	1.92E-02	NCOPC
Xylenes, Total	NCOPC	2.59E-03	NCOPC	NCOPC	3.08E-03	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	2.39E-04	NCOPC	NCOPC	2.84E-04	NCOPC
1,2-Dichlorobenzene	1.90E+00	7.30E-04	1.39E-03	NCOPC	8.67E-04	NCOPC
1,4-Dichlorobenzene	1.60E+00	9.15E-04	1.46E-03	NCOPC	1.09E-03	NCOPC
2-Chlorophenol	NCOPC	4.96E-06	NCOPC	NCOPC	6.29E-06	NCOPC
2-Methylnaphthalene	7.30E-02	1.41E-04	1.03E-05	NCOPC	1.68E-04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	9.14E-06	NCOPC	NCOPC	1.13E-05	NCOPC
Naphthalene	NCOPC	1.47E-04	NCOPC	NCOPC	1.75E-04	NCOPC
Nitrobenzene	NCOPC	1.35E-05	NCOPC	NCOPC	1.66E-05	NCOPC

See notes on last page.

TABLE D-8
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	O - LEACH-0-1			O - SA2-MW-4-S		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	7.91E-03	NCOPC	NCOPC	8.09E-03	NCOPC
1,1,2-Trichloroethane	NCOPC	3.86E-04	NCOPC	NCOPC	3.94E-04	NCOPC
1,1-Dichloroethane	NCOPC	2.47E-03	NCOPC	NCOPC	2.52E-03	NCOPC
1,1-Dichloroethylene	NCOPC	1.39E-02	NCOPC	NCOPC	1.42E-02	NCOPC
1,2-Dichloroethane	NCOPC	7.31E-04	NCOPC	NCOPC	7.47E-04	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.71E-03	NCOPC	NCOPC	1.75E-03	NCOPC
1,2-Dichloropropane	NCOPC	1.30E-03	NCOPC	NCOPC	1.33E-03	NCOPC
2-Butanone	NCOPC	3.40E-05	NCOPC	NCOPC	3.36E-05	NCOPC
4-Methyl-2-pentanone	NCOPC	6.73E-05	NCOPC	NCOPC	6.79E-05	NCOPC
Acetone	NCOPC	3.68E-05	NCOPC	NCOPC	3.63E-05	NCOPC
Benzene	9.20E-01	2.89E-03	2.66E-03	4.40E+00	2.95E-03	1.30E-02
Chlorobenzene	1.70E+00	1.34E-03	2.28E-03	1.10E+01	1.37E-03	1.51E-02
Chloroethane	NCOPC	1.77E-02	NCOPC	6.50E-01	1.82E-02	1.18E-02
Chloroform	NCOPC	2.26E-03	NCOPC	NCOPC	2.31E-03	NCOPC
Chloromethane	NCOPC	6.56E-03	NCOPC	NCOPC	6.71E-03	NCOPC
Dichloromethane	NCOPC	1.95E-03	NCOPC	NCOPC	1.99E-03	NCOPC
Ethylbenzene	NCOPC	3.49E-03	NCOPC	NCOPC	3.57E-03	NCOPC
Tetrachloroethene	NCOPC	7.52E-03	NCOPC	NCOPC	7.69E-03	NCOPC
Toluene	NCOPC	3.40E-03	NCOPC	NCOPC	3.48E-03	NCOPC
Trichloroethene	NCOPC	4.59E-03	NCOPC	NCOPC	4.70E-03	NCOPC
Vinyl chloride	NCOPC	1.74E-02	NCOPC	NCOPC	1.78E-02	NCOPC
Xylenes, Total	NCOPC	2.80E-03	NCOPC	NCOPC	2.86E-03	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	2.58E-04	NCOPC	NCOPC	2.63E-04	NCOPC
1,2-Dichlorobenzene	NCOPC	7.87E-04	NCOPC	NCOPC	8.05E-04	NCOPC
1,4-Dichlorobenzene	NCOPC	9.86E-04	NCOPC	NCOPC	1.01E-03	NCOPC
2-Chlorophenol	3.30E-01	5.99E-06	1.98E-06	5.50E-02	5.51E-06	3.03E-07
2-Methylnaphthalene	NCOPC	1.53E-04	NCOPC	NCOPC	1.56E-04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.06E-05	NCOPC	NCOPC	1.01E-05	NCOPC
Naphthalene	5.70E-01	1.59E-04	9.09E-05	NCOPC	1.62E-04	NCOPC
Nitrobenzene	8.00E-02	1.55E-05	1.24E-06	NCOPC	1.50E-05	NCOPC

See notes on last page.

TABLE D-8
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	O - SA-O-3			Q Central - SA-Q-6		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	1.15E-02	NCOPC	NCOPC	1.44E-03	NCOPC
1,1,2-Trichloroethane	NCOPC	5.59E-04	NCOPC	NCOPC	6.18E-05	NCOPC
1,1-Dichloroethane	NCOPC	3.57E-03	NCOPC	NCOPC	3.95E-04	NCOPC
1,1-Dichloroethylene	NCOPC	2.01E-02	NCOPC	NCOPC	2.22E-03	NCOPC
1,2-Dichloroethane	NCOPC	1.06E-03	NCOPC	NCOPC	1.17E-04	NCOPC
1,2-Dichloroethene (total)	NCOPC	2.48E-03	NCOPC	NCOPC	2.74E-04	NCOPC
1,2-Dichloropropane	NCOPC	1.89E-03	NCOPC	NCOPC	2.09E-04	NCOPC
2-Butanone	NCOPC	4.83E-05	NCOPC	NCOPC	5.36E-06	NCOPC
4-Methyl-2-pentanone	NCOPC	9.67E-05	NCOPC	NCOPC	1.07E-05	NCOPC
Acetone	NCOPC	5.22E-05	NCOPC	NCOPC	5.80E-06	NCOPC
Benzene	7.35E-03	4.18E-03	3.07E-05	2.20E-01	4.62E-04	1.02E-04
Chlorobenzene	NCOPC	1.94E-03	NCOPC	2.80E-01	2.15E-04	6.02E-05
Chloroethane	NCOPC	2.57E-02	NCOPC	NCOPC	2.84E-03	NCOPC
Chloroform	NCOPC	3.27E-03	NCOPC	NCOPC	3.61E-04	NCOPC
Chloromethane	NCOPC	9.50E-03	NCOPC	NCOPC	1.05E-03	NCOPC
Dichloromethane	NCOPC	2.82E-03	NCOPC	NCOPC	3.12E-04	NCOPC
Ethylbenzene	NCOPC	5.05E-03	NCOPC	NCOPC	5.58E-04	NCOPC
Tetrachloroethene	2.35E-02	1.09E-02	2.56E-04	NCOPC	1.20E-03	NCOPC
Toluene	NCOPC	4.93E-03	NCOPC	NCOPC	5.45E-04	NCOPC
Trichloroethene	2.20E-02	6.65E-03	1.46E-04	NCOPC	7.36E-04	NCOPC
Vinyl chloride	NCOPC	2.52E-02	NCOPC	NCOPC	2.79E-03	NCOPC
Xylenes, Total	NCOPC	4.05E-03	NCOPC	NCOPC	4.48E-04	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	3.73E-04	NCOPC	NCOPC	4.13E-05	NCOPC
1,2-Dichlorobenzene	NCOPC	1.14E-03	NCOPC	NCOPC	1.26E-04	NCOPC
1,4-Dichlorobenzene	NCOPC	1.43E-03	NCOPC	NCOPC	1.58E-04	NCOPC
2-Chlorophenol	NCOPC	8.20E-06	NCOPC	NCOPC	9.15E-07	NCOPC
2-Methylnaphthalene	NCOPC	2.21E-04	NCOPC	NCOPC	2.45E-05	NCOPC
bis(2-Chloroethyl)ether	NCOPC	1.48E-05	NCOPC	NCOPC	1.65E-06	NCOPC
Naphthalene	NCOPC	2.30E-04	NCOPC	NCOPC	2.55E-05	NCOPC
Nitrobenzene	NCOPC	2.18E-05	NCOPC	NCOPC	2.42E-06	NCOPC

See notes on last page.

TABLE D-8
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Q Central - SA-Q-8			Q North - LEACH-Q-1		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	2.60E-03	NCOPC	NCOPC	5.26E-03	NCOPC
1,1,2-Trichloroethane	NCOPC	1.26E-04	NCOPC	NCOPC	3.58E-04	NCOPC
1,1-Dichloroethane	NCOPC	8.10E-04	NCOPC	NCOPC	2.29E-03	NCOPC
1,1-Dichloroethylene	NCOPC	4.56E-03	NCOPC	NCOPC	1.29E-02	NCOPC
1,2-Dichloroethane	1.95E+00	2.39E-04	4.67E-04	NCOPC	6.77E-04	NCOPC
1,2-Dichloroethene (total)	NCOPC	5.61E-04	NCOPC	NCOPC	1.59E-03	NCOPC
1,2-Dichloropropane	NCOPC	4.27E-04	NCOPC	NCOPC	1.21E-03	NCOPC
2-Butanone	NCOPC	1.05E-05	NCOPC	NCOPC	3.04E-05	NCOPC
4-Methyl-2-pentanone	NCOPC	2.15E-05	NCOPC	NCOPC	6.15E-05	NCOPC
Acetone	NCOPC	1.13E-05	NCOPC	NCOPC	3.28E-05	NCOPC
Benzene	4.39E-01	9.47E-04	4.16E-04	1.00E+00	2.68E-03	2.68E-03
Chlorobenzene	1.39E+00	4.40E-04	6.12E-04	1.20E+00	1.25E-03	1.50E-03
Chloroethane	NCOPC	5.82E-03	NCOPC	3.50E-02	1.65E-02	5.76E-04
Chloroform	NCOPC	7.40E-04	NCOPC	NCOPC	2.09E-03	NCOPC
Chloromethane	NCOPC	2.15E-03	NCOPC	NCOPC	6.09E-03	NCOPC
Dichloromethane	4.63E-02	6.38E-04	2.95E-05	NCOPC	1.81E-03	NCOPC
Ethylbenzene	NCOPC	1.14E-03	NCOPC	NCOPC	3.24E-03	NCOPC
Tetrachloroethene	1.07E-01	2.47E-03	2.65E-04	NCOPC	6.98E-03	NCOPC
Toluene	1.07E+00	1.12E-03	1.20E-03	NCOPC	3.16E-03	NCOPC
Trichloroethene	2.18E-02	1.51E-03	3.29E-05	NCOPC	4.27E-03	NCOPC
Vinyl chloride	4.85E-03	5.72E-03	2.77E-05	NCOPC	1.62E-02	NCOPC
Xylenes, Total	NCOPC	9.17E-04	NCOPC	NCOPC	2.59E-03	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	8.42E-05	NCOPC	NCOPC	2.39E-04	NCOPC
1,2-Dichlorobenzene	NCOPC	2.58E-04	NCOPC	NCOPC	7.30E-04	NCOPC
1,4-Dichlorobenzene	8.15E-02	3.23E-04	2.63E-05	NCOPC	9.15E-04	NCOPC
2-Chlorophenol	8.96E+00	1.64E-06	1.47E-05	NCOPC	4.96E-06	NCOPC
2-Methylnaphthalene	NCOPC	4.98E-05	NCOPC	NCOPC	1.41E-04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	3.08E-06	NCOPC	NCOPC	9.14E-06	NCOPC
Naphthalene	1.47E+00	5.18E-05	7.60E-05	NCOPC	1.47E-04	NCOPC
Nitrobenzene	1.42E+00	4.59E-06	6.53E-06	NCOPC	1.35E-05	NCOPC

See notes on last page.

TABLE D-8
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Q North - SA-Q-1			Q South - AA-Q-6-24		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	5.12E-03	NCOPC	NCOPC	5.26E-04	NCOPC
1,1,2-Trichloroethane	NCOPC	3.58E-04	NCOPC	NCOPC	2.56E-05	NCOPC
1,1-Dichloroethane	NCOPC	2.29E-03	NCOPC	NCOPC	1.64E-04	NCOPC
1,1-Dichloroethylene	NCOPC	1.29E-02	NCOPC	NCOPC	9.24E-04	NCOPC
1,2-Dichloroethane	NCOPC	6.77E-04	NCOPC	NCOPC	4.85E-05	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.59E-03	NCOPC	NCOPC	1.14E-04	NCOPC
1,2-Dichloropropane	NCOPC	1.21E-03	NCOPC	NCOPC	8.66E-05	NCOPC
2-Butanone	NCOPC	3.04E-05	NCOPC	NCOPC	2.11E-06	NCOPC
4-Methyl-2-pentanone	NCOPC	6.15E-05	NCOPC	NCOPC	4.35E-06	NCOPC
Acetone	NCOPC	3.28E-05	NCOPC	NCOPC	2.27E-06	NCOPC
Benzene	4.75E-01	2.68E-03	1.27E-03	5.10E-01	1.92E-04	9.79E-05
Chlorobenzene	NCOPC	1.25E-03	NCOPC	2.00E+00	8.93E-05	1.79E-04
Chloroethane	NCOPC	1.65E-02	NCOPC	NCOPC	1.18E-03	NCOPC
Chloroform	NCOPC	2.09E-03	NCOPC	NCOPC	1.50E-04	NCOPC
Chloromethane	NCOPC	6.09E-03	NCOPC	NCOPC	4.37E-04	NCOPC
Dichloromethane	NCOPC	1.81E-03	NCOPC	NCOPC	1.29E-04	NCOPC
Ethylbenzene	NCOPC	3.24E-03	NCOPC	NCOPC	2.32E-04	NCOPC
Tetrachloroethene	NCOPC	6.98E-03	NCOPC	NCOPC	5.00E-04	NCOPC
Toluene	NCOPC	3.16E-03	NCOPC	NCOPC	2.27E-04	NCOPC
Trichloroethene	NCOPC	4.27E-03	NCOPC	NCOPC	3.06E-04	NCOPC
Vinyl chloride	NCOPC	1.62E-02	NCOPC	NCOPC	1.16E-03	NCOPC
Xylenes, Total	NCOPC	2.59E-03	NCOPC	NCOPC	1.86E-04	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	2.39E-04	NCOPC	NCOPC	1.71E-05	NCOPC
1,2-Dichlorobenzene	NCOPC	7.30E-04	NCOPC	NCOPC	5.23E-05	NCOPC
1,4-Dichlorobenzene	NCOPC	9.15E-04	NCOPC	NCOPC	6.55E-05	NCOPC
2-Chlorophenol	NCOPC	4.96E-06	NCOPC	NCOPC	3.23E-07	NCOPC
2-Methylnaphthalene	4.55E-01	1.41E-04	6.43E-05	NCOPC	1.01E-05	NCOPC
bis(2-Chloroethyl)ether	NCOPC	9.14E-06	NCOPC	3.60E-01	6.13E-07	2.21E-07
Naphthalene	NCOPC	1.47E-04	NCOPC	NCOPC	1.05E-05	NCOPC
Nitrobenzene	NCOPC	1.35E-05	NCOPC	NCOPC	9.16E-07	NCOPC

See notes on last page.

TABLE D-8
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	R - AA-R-1-28			R - B-22A		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	1.58E-03	NCOPC	NCOPC	1.47E-03	NCOPC
1,1,2-Trichloroethane	NCOPC	7.71E-05	NCOPC	NCOPC	7.17E-05	NCOPC
1,1-Dichloroethane	NCOPC	4.94E-04	NCOPC	NCOPC	4.58E-04	NCOPC
1,1-Dichloroethylene	NCOPC	2.78E-03	NCOPC	NCOPC	2.58E-03	NCOPC
1,2-Dichloroethane	NCOPC	1.46E-04	NCOPC	2.20E-01	1.36E-04	2.98E-05
1,2-Dichloroethene (total)	NCOPC	3.42E-04	NCOPC	NCOPC	3.18E-04	NCOPC
1,2-Dichloropropane	NCOPC	2.61E-04	NCOPC	NCOPC	2.42E-04	NCOPC
2-Butanone	NCOPC	6.61E-06	NCOPC	NCOPC	6.36E-06	NCOPC
4-Methyl-2-pentanone	NCOPC	1.33E-05	NCOPC	NCOPC	1.25E-05	NCOPC
Acetone	NCOPC	7.14E-06	NCOPC	2.20E+01	6.88E-06	1.51E-04
Benzene	7.80E-02	5.77E-04	4.50E-05	8.30E-01	5.36E-04	4.45E-04
Chlorobenzene	1.70E+00	2.69E-04	4.57E-04	1.00E+00	2.49E-04	2.49E-04
Chloroethane	NCOPC	3.55E-03	NCOPC	NCOPC	3.29E-03	NCOPC
Chloroform	NCOPC	4.51E-04	NCOPC	NCOPC	4.19E-04	NCOPC
Chloromethane	NCOPC	1.31E-03	NCOPC	NCOPC	1.22E-03	NCOPC
Dichloromethane	NCOPC	3.89E-04	NCOPC	1.40E-01	3.61E-04	5.05E-05
Ethylbenzene	NCOPC	6.97E-04	NCOPC	NCOPC	6.47E-04	NCOPC
Tetrachloroethene	NCOPC	1.50E-03	NCOPC	NCOPC	1.39E-03	NCOPC
Toluene	NCOPC	6.81E-04	NCOPC	NCOPC	6.32E-04	NCOPC
Trichloroethene	NCOPC	9.19E-04	NCOPC	NCOPC	8.52E-04	NCOPC
Vinyl chloride	NCOPC	3.48E-03	NCOPC	NCOPC	3.23E-03	NCOPC
Xylenes, Total	NCOPC	5.59E-04	NCOPC	NCOPC	5.19E-04	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	5.15E-05	NCOPC	NCOPC	4.80E-05	NCOPC
1,2-Dichlorobenzene	NCOPC	1.57E-04	NCOPC	NCOPC	1.46E-04	NCOPC
1,4-Dichlorobenzene	3.00E-01	1.97E-04	5.92E-05	NCOPC	1.83E-04	NCOPC
2-Chlorophenol	8.00E-02	1.10E-06	8.78E-08	1.40E+02	1.14E-06	1.60E-04
2-Methylnaphthalene	NCOPC	3.05E-05	NCOPC	NCOPC	2.85E-05	NCOPC
bis(2-Chloroethyl)ether	NCOPC	2.00E-06	NCOPC	NCOPC	2.01E-06	NCOPC
Naphthalene	NCOPC	3.18E-05	NCOPC	NCOPC	2.96E-05	NCOPC
Nitrobenzene	NCOPC	2.96E-06	NCOPC	1.30E+00	2.92E-06	3.80E-06

See notes on last page.

TABLE D-8
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	R - B-25A			R - B-28A		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	3.13E-03	NCOPC	NCOPC	9.75E-04	NCOPC
1,1,2-Trichloroethane	NCOPC	1.52E-04	NCOPC	NCOPC	4.75E-05	NCOPC
1,1-Dichloroethane	NCOPC	9.76E-04	NCOPC	NCOPC	3.04E-04	NCOPC
1,1-Dichloroethylene	NCOPC	5.49E-03	NCOPC	NCOPC	1.71E-03	NCOPC
1,2-Dichloroethane	9.10E+00	2.88E-04	2.62E-03	NCOPC	9.00E-05	NCOPC
1,2-Dichloroethene (total)	NCOPC	6.76E-04	NCOPC	NCOPC	2.11E-04	NCOPC
1,2-Dichloropropane	NCOPC	5.15E-04	NCOPC	NCOPC	1.61E-04	NCOPC
2-Butanone	NCOPC	1.27E-05	NCOPC	NCOPC	4.01E-06	NCOPC
4-Methyl-2-pentanone	NCOPC	2.60E-05	NCOPC	NCOPC	8.15E-06	NCOPC
Acetone	NCOPC	1.37E-05	NCOPC	NCOPC	4.33E-06	NCOPC
Benzene	NCOPC	1.14E-03	NCOPC	1.40E-01	3.56E-04	4.98E-05
Chlorobenzene	3.50E+00	5.31E-04	1.86E-03	3.40E-01	1.66E-04	5.63E-05
Chloroethane	1.60E-01	7.02E-03	1.12E-03	NCOPC	2.19E-03	NCOPC
Chloroform	NCOPC	8.92E-04	NCOPC	NCOPC	2.78E-04	NCOPC
Chloromethane	NCOPC	2.59E-03	NCOPC	NCOPC	8.09E-04	NCOPC
Dichloromethane	NCOPC	7.69E-04	NCOPC	NCOPC	2.40E-04	NCOPC
Ethylbenzene	NCOPC	1.38E-03	NCOPC	NCOPC	4.30E-04	NCOPC
Tetrachloroethene	NCOPC	2.97E-03	NCOPC	NCOPC	9.27E-04	NCOPC
Toluene	NCOPC	1.35E-03	NCOPC	NCOPC	4.20E-04	NCOPC
Trichloroethene	NCOPC	1.82E-03	NCOPC	NCOPC	5.67E-04	NCOPC
Vinyl chloride	NCOPC	6.89E-03	NCOPC	NCOPC	2.15E-03	NCOPC
Xylenes, Total	NCOPC	1.11E-03	NCOPC	NCOPC	3.45E-04	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	NCOPC	1.02E-04	NCOPC	NCOPC	3.17E-05	NCOPC
1,2-Dichlorobenzene	NCOPC	3.11E-04	NCOPC	NCOPC	9.70E-05	NCOPC
1,4-Dichlorobenzene	NCOPC	3.90E-04	NCOPC	NCOPC	1.21E-04	NCOPC
2-Chlorophenol	5.00E+01	1.99E-06	9.95E-05	NCOPC	6.47E-07	NCOPC
2-Methylnaphthalene	NCOPC	6.00E-05	NCOPC	NCOPC	1.88E-05	NCOPC
bis(2-Chloroethyl)ether	NCOPC	3.73E-06	NCOPC	NCOPC	1.20E-06	NCOPC
Naphthalene	NCOPC	6.25E-05	NCOPC	NCOPC	1.95E-05	NCOPC
Nitrobenzene	3.20E+00	5.56E-06	1.78E-05	NCOPC	1.78E-06	NCOPC

See notes on last page.

TABLE D-8
GROUNDWATER-OUTDOOR AIR CONCENTRATION CALCULATION FOR ON-SITE WORKER AND TRESPASSING TEENAGER (MLE)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	R - LEACH-R-1			S - SA-S-1		
	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)	Shallow/Mid Groundwater & Lecahate EPC (a) (mg/L)	Volatilization Factor (b) VF_{wamb} [(mg/m^3-air)/(mg/L H_2O)]	Outdoor Air Concentration (c) (mg/m^3)
VOCs						
1,1,1-Trichloroethane	NCOPC	1.94E-03	NCOPC	NCOPC	7.10E-03	NCOPC
1,1,2-Trichloroethane	1.20E-01	9.46E-05	1.14E-05	NCOPC	3.46E-04	NCOPC
1,1-Dichloroethane	NCOPC	6.06E-04	NCOPC	NCOPC	2.21E-03	NCOPC
1,1-Dichloroethylene	2.45E-01	3.41E-03	8.35E-04	NCOPC	1.25E-02	NCOPC
1,2-Dichloroethane	5.31E+02	1.79E-04	9.52E-02	NCOPC	6.55E-04	NCOPC
1,2-Dichloroethene (total)	3.12E+02	4.20E-04	1.31E-01	NCOPC	1.54E-03	NCOPC
1,2-Dichloropropane	1.00E-02	3.20E-04	3.20E-06	NCOPC	1.17E-03	NCOPC
2-Butanone	9.72E+00	8.06E-06	7.83E-05	NCOPC	2.98E-05	NCOPC
4-Methyl-2-pentanone	2.10E+00	1.63E-05	3.42E-05	NCOPC	5.98E-05	NCOPC
Acetone	5.10E+01	8.70E-06	4.44E-04	NCOPC	3.22E-05	NCOPC
Benzene	3.72E+02	7.08E-04	2.63E-01	7.35E-03	2.59E-03	1.90E-05
Chlorobenzene	2.59E+02	3.30E-04	8.54E-02	NCOPC	1.21E-03	NCOPC
Chloroethane	NCOPC	4.35E-03	NCOPC	7.35E-03	1.59E-02	1.17E-04
Chloroform	7.85E+01	5.54E-04	4.34E-02	NCOPC	2.02E-03	NCOPC
Chloromethane	1.51E+02	1.61E-03	2.44E-01	NCOPC	5.89E-03	NCOPC
Dichloromethane	2.28E+00	4.77E-04	1.09E-03	NCOPC	1.75E-03	NCOPC
Ethylbenzene	1.83E+02	8.56E-04	1.57E-01	NCOPC	3.13E-03	NCOPC
Tetrachloroethene	1.72E+04	1.85E-03	3.17E+01	NCOPC	6.75E-03	NCOPC
Toluene	4.35E+03	8.36E-04	3.63E+00	NCOPC	3.06E-03	NCOPC
Trichloroethene	2.00E+04	1.13E-03	2.26E+01	NCOPC	4.12E-03	NCOPC
Vinyl chloride	1.50E-01	4.27E-03	6.41E-04	NCOPC	1.56E-02	NCOPC
Xylenes, Total	3.56E+02	6.86E-04	2.45E-01	NCOPC	2.51E-03	NCOPC
SVOCs						
1,2,4-Trichlorobenzene	2.77E+01	6.32E-05	1.75E-03	NCOPC	2.31E-04	NCOPC
1,2-Dichlorobenzene	1.30E+01	1.93E-04	2.51E-03	NCOPC	7.06E-04	NCOPC
1,4-Dichlorobenzene	2.26E+01	2.42E-04	5.47E-03	NCOPC	8.85E-04	NCOPC
2-Chlorophenol	3.86E+01	1.32E-06	5.09E-05	NCOPC	5.01E-06	NCOPC
2-Methylnaphthalene	8.53E+00	3.74E-05	3.19E-04	NCOPC	1.37E-04	NCOPC
bis(2-Chloroethyl)ether	NCOPC	2.43E-06	NCOPC	NCOPC	9.09E-06	NCOPC
Naphthalene	5.60E+00	3.89E-05	2.18E-04	NCOPC	1.43E-04	NCOPC
Nitrobenzene	NCOPC	3.59E-06	NCOPC	NCOPC	1.34E-05	NCOPC

Notes:
NCOPC - Not a Constituent of Potential Concern in this area.
VOC - Volatile Organic Compound; those with Henry's Law Constant greater than 10-5 atm-m3/mol and a molecular weight greater than 200 g/mol.
MLE - Most Likely Exposure.
(a) Exposure Point Concentration (EPC) selected in Table 3.7 and presented in Table 3.7MLE
(b) Volatilization Factor (VF) calculated in Table D-6
(c) Outdoor air concentration =EPC*VF.

RBCA SITE ASSESSMENT

Input Parameter Summary

Site Name: Sauget Area 2 - gw to outdoor air
Site Location: Sauget, Illinois (well O-AA-CLAY-2-22)

Completed By: ENSR
Date Completed: 7-Apr-08

Job ID: 06105-024

Exposure Parameters		Residential			Commercial/Industrial	
		Adult	(1-6yrs)	(1-16 yrs)	Chronic	Construc.
AT_c	Averaging time for carcinogens (yr)	70				
AT_n	Averaging time for non-carcinogens (yr)	30			25	1
BW	Body weight (kg)	70	15	35	70	
ED	Exposure duration (yr)	30	6	16	25	1
τ	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure frequency (days/yr)	350			250	180
EF_D	Exposure frequency for dermal exposure	350			250	
IR_w	Ingestion rate of water (L/day)	2			1	
IR_s	Ingestion rate of soil (mg/day)	100	200		50	100
SA	Skin surface area (dermal) (cm^2)	5800		2023	5800	5800
M	Soil to skin adherence factor	1				
ET_{swim}	Swimming exposure time (hr/event)	3				
EV_{swim}	Swimming event frequency (events/yr)	12	12	12		
IR_{swim}	Water ingestion while swimming (L/hr)	0.05	0.5			
SA_{swim}	Skin surface area for swimming (cm^2)	23000		8100		
IR_{fish}	Ingestion rate of fish (kg/yr)	0.025				
FI_{fish}	Contaminated fish fraction (unitless)	1				

Complete Exposure Pathways and Receptors	On-site	Off-site 1	Off-site 2
Groundwater:			
Groundwater Ingestion	None	None	None
Soil Leaching to Groundwater Ingestion	None	None	None
Applicable Surface Water Exposure Routes:			
Swimming			NA
Fish Consumption			NA
Aquatic Life Protection			NA
Soil:			
Direct Ingestion and Dermal Contact	None		
Outdoor Air:			
Particulates from Surface Soils	None	None	None
Volatilization from Soils	None	None	None
Volatilization from Groundwater	Residential	None	None
Indoor Air:			
Volatilization from Subsurface Soils	None	NA	NA
Volatilization from Groundwater	None	NA	NA

Receptor Distance from Source Media	On-site	Off-site 1	Off-site 2	(Units)
Groundwater receptor	NA	NA	NA	(cm)
Soil leaching to groundwater receptor	NA	NA	NA	(cm)
Outdoor air inhalation receptor	0	NA	NA	(cm)

Target Health Risk Values		Individual	Cumulative
TR_{ab}	Target Risk (class A&B carcinogens)	1.0E-6	1.0E-5
TR_c	Target Risk (class C carcinogens)	1.0E-5	
THQ	Target Hazard Quotient (non-carcinogenic risk)	1.0E+0	1.0E+0

Modeling Options	
RBCA tier	Tier 2
Outdoor air volatilization model	Surface & subsurface models
Indoor air volatilization model	NA
Soil leaching model	NA
Use soil attenuation model (SAM) for leachate?	NA
Air dilution factor	NA
Groundwater dilution-attenuation factor	NA

NOTE: NA = Not applicable

Surface Parameters		General	Construction	(Units)
A	Source zone area	2.0E+7	NA	(cm^2)
W	Length of source-zone area parallel to wind	4.5E+3	NA	(cm)
W_{gw}	Length of source-zone area parallel to GW flow	NA		(cm)
U_{air}	Ambient air velocity in mixing zone	3.6E+2		(cm/s)
δ_{air}	Air mixing zone height	2.0E+2		(cm)
P_a	Areal particulate emission rate	NA		(g/cm^2/s)
L_{ss}	Thickness of affected surface soils	NA		(cm)

Surface Soil Column Parameters		Value			(Units)
h_{cap}	Capillary zone thickness	1.7E+1			(cm)
h_v	Vadose zone thickness	5.0E+2			(cm)
ρ_s	Soil bulk density	1.7E+0			(g/cm^3)
f_{oc}	Fraction organic carbon	1.0E-2			(-)
θ_T	Soil total porosity	3.8E-1			(-)
K_{vs}	Vertical hydraulic conductivity	8.6E+2			(cm/d)
k_v	Vapor permeability	1.0E-8			(cm^2)
L_{gw}	Depth to groundwater	5.2E+2			(cm)
L_s	Depth to top of affected soils	NA			(cm)
L_{base}	Depth to base of affected soils	NA			(cm)
L_{subs}	Thickness of affected soils	NA			(cm)
pH	Soil/groundwater pH	6.8E+0			(-)
		capillary	vadose	foundation	
θ_w	Volumetric water content	0.253	0.053	0.12	(-)
θ_a	Volumetric air content	0.122	0.322	0.26	(-)

Building Parameters		Residential	Commercial	(Units)
L_b	Building volume/area ratio	NA	NA	(cm)
A_b	Foundation area	NA	NA	(cm^2)
X_{crk}	Foundation perimeter	NA	NA	(cm)
ER	Building air exchange rate	NA	NA	(1/s)
L_{crk}	Foundation thickness	NA	NA	(cm)
Z_{crk}	Depth to bottom of foundation slab	NA	NA	(cm)
η	Foundation crack fraction	NA	NA	(-)
dP	Indoor/outdoor differential pressure	NA	NA	(g/cm/s^2)
Q_s	Convective air flow through slab	NA	NA	(cm^3/s)

Groundwater Parameters		Value	(Units)
δ_{gw}	Groundwater mixing zone depth	NA	(cm)
I_f	Net groundwater infiltration rate	NA	(cm/yr)
U_{gw}	Groundwater Darcy velocity	NA	(cm/d)
V_{gw}	Groundwater seepage velocity	NA	(cm/d)
K_s	Saturated hydraulic conductivity	NA	(cm/d)
i	Groundwater gradient	NA	(-)
S_w	Width of groundwater source zone	NA	(cm)
S_d	Depth of groundwater source zone	NA	(cm)
θ_{eff}	Effective porosity in water-bearing unit	NA	(-)
f_{oc-sat}	Fraction organic carbon in water-bearing unit	NA	(-)
pH_{sat}	Groundwater pH	NA	(-)
	Biodegradation considered?	NA	

Transport Parameters		Off-site 1	Off-site 2	Off-site 1	Off-site 2	(Units)
Lateral Groundwater Transport		Groundwater Ingestion		Soil Leaching to GW		
α_x	Longitudinal dispersivity	NA	NA	NA	NA	(cm)
α_y	Transverse dispersivity	NA	NA	NA	NA	(cm)
α_z	Vertical dispersivity	NA	NA	NA	NA	(cm)
Lateral Outdoor Air Transport		Soil to Outdoor Air Inhal.		GW to Outdoor Air Inhal.		
σ_y	Transverse dispersion coefficient	NA	NA	NA	NA	(cm)
σ_z	Vertical dispersion coefficient	NA	NA	NA	NA	(cm)
ADF	Air dispersion factor	NA	NA	NA	NA	(-)

Surface Water Parameters		Off-site 2	(Units)
Q_{sw}	Surface water flowrate	NA	(cm^3/s)
W_{pl}	Width of GW plume at SW discharge	NA	(cm)
δ_{pl}	Thickness of GW plume at SW discharge	NA	(cm)
DF_{sw}	Groundwater-to-surface water dilution factor	NA	(-)

CHEMICAL DATA FOR SELECTED COCs

Physical Property Data

Constituent	CAS Number	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(L/kg)	partition	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3) mol	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
Benzene	71-43-2	A	78.1	PS	8.80E-02	PS	9.80E-06	PS	1.77	Koc	PS	5.55E-03	2.29E-01	PS	9.52E+01	PS	1.75E+03	PS	-	-	-

Site Name: Sauget Area 2 - gw to outdoor air

Site Location: Sauget, Illinois (well O-AA-CLAY-2-22)

Completed By: ENSR

Date Completed: 21-Mar-08

Job ID: 06105-024

CHEMICAL DATA FOR SELECTED COCs

Toxicity Data

	Reference Dose (mg/kg/day)				Reference Conc. (mg/m3)		Slope Factors 1/(mg/kg/day)				Unit Risk Factor 1/(µg/m3)			
			(mg/kg/day)					1/(mg/kg/day)						
Constituent	Oral RfD_oral	ref	Dermal RfD_dermal	ref	Inhalation RfC_inhal	ref	Oral SF_oral	ref	Dermal SF_dermal	ref	Inhalation URF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
Benzene	3.00E-03	R	-	-	5.95E-03	R	2.90E-02	PS	2.99E-02	TX	8.29E-06	PS	A	TRUE

Site Name: Sauget Area 2 - gw

Site Location: Sauget, Illinois

Miscellaneous Chemical Data

Constituent	Maximum Contaminant Level MCL (mg/L)	ref	Time-Weighted Average Workplace Criteria TWA (mg/m3)	ref	Aquatic Life Prot. Criteria AQL (mg/L)	ref	Biocon-centration Factor (L-wat/kg-fish)
Benzene	5.00E-03	52 FR 25690	3.25E+00	PS	-	-	12.6

Site Name: Sauget Area 2 - gw

Site Location: Sauget, Illinois

CHEMICAL DATA FOR SELECTED COCs

Miscellaneous Chemical Data

Constituent	Dermal Relative Absorp. Factor (unitless)	Water Dermal Permeability Data: Dermal Permeability Coeff. (cm/hr)	Lag time for Dermal Exposure (hr)	Critical Exposure Time (hr)	Relative Contr of Derm Perm Coeff (unitless)	Water/Skin Derm Adsorp Factor (cm/event)	ref	Detection Limits: Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days): Saturated	Unsaturated	ref
Benzene	0.5	0.021	0.26	0.63	0.013	7.3E-2	D	0.002	S	0.005	S	720	720	H

Site Name: Sauget Area 2 - gw

Site Location: Sauget, Illinois

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
Constituents of Concern	Groundwater Conc. (mg/L)	On-site (0 cm) Residential	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None	On-site (0 cm) Residential	Off-site 1 (0 cm) None	Off-site 2 (0 cm) None
Benzene	6.3E+1	3.7E+2			1.7E-1		

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Sauget Area 2 - gw to outdoor air
Site Location: Sauget, Illinois (well O-AA-CLAY-2-22)
Completed By: ENSR

Date Completed: 7-Apr-08
Job ID: 06105-024

Attachment E

Supporting Documentation for the Excavation Trench Modeling

Calculation of Exposure Point Concentrations (EPCs) for the Groundwater to Excavation Trench Pathway

Excavation trench air concentrations of a COPC resulting from volatilization from groundwater and leachate infiltrating an excavation trench can be predicted by the use of the method recommended by USEPA (1994) for predicting volatilization from standing water.

Air Concentration

In this model, the air concentration of a COPC is estimated at the downwind boundary of the water. For the purposes of calculating this concentration, a rectangular box with the base corresponding to the water surface is considered. The height of the box, H_b, is the height to which the chemical emissions from the water surface are uniformly mixed with the air. W_b is the width of the box perpendicular to the airflow. If U is the wind speed along the length of the trench, then, by conservation of mass, the air concentration, C_a, of chemical within the box is given by:

$$C_a = \frac{Q}{H_b W_b U} \quad (1)$$

The diffusion height, H_b, above the water surface is approximately equal to 5% of the length of the trench, i.e., parallel to the wind flow (Jackson, 1976). If the length of the trench is expressed as the surface area of the water on the bottom of the trench divided by the trench width, the equation for the air concentration becomes:

$$C_a = \frac{Q}{0.05\,AU} \quad (2)$$

where:

Q = chemical emission rate (g/s)

A = water surface area (m^2)

U = wind speed along the trench (m/s)

The chemical emission rate, Q, can be expressed as follows:

$$Q = KAC_L \quad (3)$$

where:

Q = chemical emission rate (g/s)

K = overall mass transfer coefficient (m/s)

A = water surface area (m^2)

C_L = chemical concentration in water (g/m^3)

With the substitution of equation (3) into equation (2), the equation for air concentration simplifies to:

$$C_a = \frac{KC_L}{0.05\,U} \qquad (4)$$

Note that A, the water surface area, cancels out of the equation. For the purpose of calculating the concentration in air from a given concentration in water, it is convenient to use this equation to define an **attenuation factor**, α, defined as the ratio of the airborne concentration of the COPC above the water to the COPC concentration in the water. If the air and water COPC concentrations are in the same units, α is dimensionless. If, as is common practice, the concentration in water is expressed in mass units per liter (L) and the air concentration is expressed as mass units per cubic meter (m^3), then the attenuation factor can be expressed as:

$$\alpha\ (L/m^3) = \frac{20000K}{U} \qquad (5)$$

In applying the attenuation factor, the computation of the COPC air concentration requires the COPC concentration in water, wind speed and mass transfer coefficient.

Mass Transfer Coefficient

Volatilization is considered the primary pathway of mass transfer from the liquid to the vapor phase. It occurs when molecules of a dissolved substance escape to the gas phase due to a concentration gradient. The mass transfer coefficient is defined by USEPA (1994) as follows:

$$K = \left[\frac{1}{k_l^o \left(\frac{D_l^c}{D_l^o} \right)^m} + \frac{RT}{(10^6) H\ k_g^w \left(\frac{D_g^c}{D_g^w} \right)^n} \right]^{-1} \qquad (6)$$

Where:

k_l^o = mass transfer coefficient of oxygen in water, cm/s;

D_l = diffusivity of the chemical (c) or oxygen (o) in water, cm^2/s;

m = liquid turbulence exponent, 0.5 to 1, dimensionless;

R = ideal gas constant, atm cm^3/ (mol.K);

T = temperature, K;

H = Henry's law constant, atm m^3/mol;

k_w^g = mass transfer coefficient for water vapor in air, cm/s;

D_g = diffusivity of the chemical (c) or water (w) in air, cm^2/s;

n = gas turbulence exponent, 0.5 to 1.0, dimensionless

The elements of this equation can be described by:

$$K = \left[\frac{1}{K_L} + \frac{1}{K_G K_{eq}} \right]^{-1} \quad (7)$$

where,

K_L = Liquid phase mass transfer coefficient, cm/s;

K_G = Gas phase mass transfer coefficient, cm/s;

K_{eq} = Equilibrium mass transfer coefficient, unit less;

K_L, K_G and K_{eq} may be expressed as follows:

$$K_{eq} = \frac{H}{RT} \quad (8)$$

$$K_L = k_l^o \left(\frac{D_l^c}{D_l^o} \right)^m \quad (9)$$

$$K_G = k_g^w \left(\frac{D_g^c}{D_g^o} \right)^n \quad (10)$$

Equation 6 requires values of diffusion coefficients and Henry's law constants which were obtained from the Risk Assessment Information System (RAIS, 2008) database [URL: http://risk.lsd.ornl.gov/index.shtml] for each organic compound and the values of the parameters used in equation 6 are provided below.

Values of Constants for use in Equation 6 (Source: USEPA (1994), Table 2-1):

Constant	Value for Lakes
k_l^o (cm/s)	0.0005
m	1.0
T (K)	293
RT (cm^3.atm/mol)	24042.4
k_w^g (cm/s)	0.58
n	0.7

Model Applications and Results

Table E-1 provides model inputs and the intermediate steps in the process of modeling the attenuation factor. A surface wind speed of 3.2 m/s was applied. The wind speed was scaled from the average wind speed measured at 7 meters at the St. Louis International Airport of 4.3 m/s (Ruffner, 1985) to 1 meter using the following equation (USEPA, 2000):

Wind Speed @1 meter = Wind Speed @7m * $(1/7)^P$, where P = 0.15

Table E-2 presents the calculation of the excavation air concentration for each well based on the groundwater exposure point concentration (EPC) for shallow groundwater/leachate and the attenuation factors calculated in Table E-1.

References

Jackson, N.A. 1976. The Propagation of Modified Flow Downstream of a Change in Roughness. Quarterly Journal of the Royal Meteorological Society. 102:924.

RAIS. 2008. Risk Assessment Information System. Toxicity and Chemical-Specific Factors Data Base. URL: [http://risk.lsd.ornl.gov/index.shtml].

Ruffner, James, 1985. Climate of the States: National Oceanic and Atmospheric Administration Narrative Summaries, Tables and Maps for Each State with Overview of State Climatologist Programs, Third Edition, Gale Research company, Detroit. Means for period 1951-1980.

USEPA 1994. Air Emissions Models for Waste and Wastewater. EPA-453/R-94-080A. November 1994.

USEPA. 2000. Meteorological Monitoring Guidance for Regulatory Modeling Applications. United States Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, NC 27711. February 2000 EPA-454/R-99-005.

TABLE E-1
DEVELOPMENT OF ATTENUATION FACTORS FOR THE GROUNDWATER TO EXCAVATION TRENCH AIR PATHWAY
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Assumption: Losses from a trench occur in a manner similar to volatilization losses from a lake; using equation 2-4 from the "Air Emissions Models for the Waste and Wastewater"; EPA, Nov. 1994. The overall mass transfer coefficient, K is calculated as follows:

Equation (1):	$K = [1/(k_l^o * (D_l^c/D_l^o)^m) + (RT/(10^6 * H * K_g^w * (D_g^c/D_g^w)^n))]^{-1}$ **(1) (a)**
	$K = (B+C)^{-1}$; **Where**
	$B = 1/(k_l^o * (D_l^c/D_l^o)^m)$ **and**
	$C = (RT/(10^6 * H * K_g^w * (D_g^c/D_g^w)^n))$

Input Parameters	
Wind speed (m/s) (d)	3.21

(b) Table 1: Values of Constants for Use in Equation (1)

Parameter	Value for Lakes	Units	
K_l^o	5.00E-04	cm/s	mass transfer coefficient of oxygen in water
R	8.21E+01	cm^3*atm/(mol*K)	ideal gas constant
T	2.93E+02	K	Temperature
RT	2.40E+04	cm^3*atm/mol	R times T
K_g^w	5.80E-01	cm/s	mass transfer coefficient for water vapor in air
n	7.00E-01	N/A	gas turbulence exponent
D_l^o	2.20E-05	cm^2/s	diffusivity of oxygen in air
D_g^w	2.14E-01	cm^2/s	diffusivity of oxygen in water
m	1.00E+00	N/A	liquid turbulence exponent

Constituent	Molecular Weight (c) (g/mol)	Henry's Law Constant (c,e) ($atm*m^3/mole$)	Diffusivity In Air (c) (cm^2/s)	Diffusivity In Water (c) (cm^2/s)	$B = 1/(k_l^o * (D_l^c/D_l^o)^m)$	$C = RT/10^6*H*K_g^w*(D_g^c/D_g^w)^n$	$K = (B+C)^{-1}$ (cm/s)	K (m/s)	Groundwater to air attenuation factor (L/m^3)
VOCs									
1,1,1-Trichloroethane	133.41	1.65E-02	7.80E-02	8.80E-06	**5.00E+03**	**5.08E+00**	**2.00E-04**	**2.00E-06**	**1.24E-02**
1,1,2-Trichloroethane	133.41	7.93E-04	7.80E-02	8.80E-06	**5.00E+03**	**1.06E+02**	**1.96E-04**	**1.96E-06**	**1.22E-02**
1,1-Dichloroethane	98.96	5.41E-03	7.42E-02	1.05E-05	**4.19E+03**	**1.61E+01**	**2.38E-04**	**2.38E-06**	**1.48E-02**
1,1-Dichloroethylene	96.94	2.52E-02	9.00E-02	1.04E-05	**4.23E+03**	**3.02E+00**	**2.36E-04**	**2.36E-06**	**1.47E-02**
1,2-Dichloroethane	98.96	1.13E-03	1.04E-01	9.90E-06	**4.44E+03**	**6.06E+01**	**2.22E-04**	**2.22E-06**	**1.38E-02**
1,2-Dichloroethene (total)	96.94	3.93E-03	7.07E-02	1.19E-05	**3.70E+03**	**2.29E+01**	**2.69E-04**	**2.69E-06**	**1.67E-02**
1,2-Dichloropropane	112.99	2.71E-03	7.82E-02	8.73E-06	**5.04E+03**	**3.10E+01**	**1.97E-04**	**1.97E-06**	**1.23E-02**
2-Butanone	72.11	5.48E-05	8.08E-02	9.80E-06	**4.49E+03**	**1.49E+03**	**1.67E-04**	**1.67E-06**	**1.04E-02**
4-Methyl-2-pentanone	100.16	1.33E-04	7.50E-02	7.80E-06	**5.64E+03**	**6.51E+02**	**1.59E-04**	**1.59E-06**	**9.90E-03**
Acetone	58.08	3.81E-05	1.24E-01	1.14E-05	**3.86E+03**	**1.59E+03**	**1.83E-04**	**1.83E-06**	**1.14E-02**
Benzene	78.11	5.34E-03	8.80E-02	9.80E-06	**4.49E+03**	**1.45E+01**	**2.22E-04**	**2.22E-06**	**1.38E-02**
Chlorobenzene	112.56	2.99E-03	7.30E-02	8.70E-06	**5.06E+03**	**2.94E+01**	**1.97E-04**	**1.97E-06**	**1.22E-02**
Chloroethane	64.52	1.07E-02	2.71E-01	1.15E-05	**3.83E+03**	**3.29E+00**	**2.61E-04**	**2.61E-06**	**1.63E-02**
Chloroform	119.38	3.53E-03	1.04E-01	1.00E-05	**4.40E+03**	**1.95E+01**	**2.26E-04**	**2.26E-06**	**1.41E-02**
Chloromethane	50.49	8.50E-03	1.26E-01	6.50E-06	**6.77E+03**	**7.07E+00**	**1.48E-04**	**1.48E-06**	**9.19E-03**
Dichloromethane	84.93	3.13E-03	1.01E-01	1.17E-05	**3.76E+03**	**2.24E+01**	**2.64E-04**	**2.64E-06**	**1.65E-02**
Ethylbenzene	106.17	7.58E-03	7.50E-02	7.80E-06	**5.64E+03**	**1.14E+01**	**1.77E-04**	**1.77E-06**	**1.10E-02**
Tetrachloroethene	165.83	1.70E-02	7.20E-02	8.20E-06	**5.37E+03**	**5.22E+00**	**1.86E-04**	**1.86E-06**	**1.16E-02**
Toluene	92.14	6.38E-03	8.70E-02	8.60E-06	**5.12E+03**	**1.22E+01**	**1.95E-04**	**1.95E-06**	**1.21E-02**
Trichloroethene	131.39	9.48E-03	7.90E-02	9.10E-06	**4.84E+03**	**8.78E+00**	**2.06E-04**	**2.06E-06**	**1.29E-02**
Vinyl chloride	62.5	2.68E-02	1.06E-01	1.23E-06	**3.58E+04**	**2.53E+00**	**2.80E-05**	**2.80E-07**	**1.74E-03**
Xylenes, Total	106.17	6.38E-03	7.14E-02	9.34E-06	**4.71E+03**	**1.40E+01**	**2.12E-04**	**2.12E-06**	**1.32E-02**

TABLE E-1
DEVELOPMENT OF ATTENUATION FACTORS FOR THE GROUNDWATER TO EXCAVATION TRENCH AIR PATHWAY
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Assumption: Losses from a trench occur in a manner similar to volatilization losses from a lake; using equation 2-4 from the "Air Emissions Models for the Waste and Wastewater"; EPA, Nov. 1994. The overall mass transfer coefficient, K is calculated as follows:

Equation (1):	$K = [1/(k_l^o * (D_l^c/D_l^o)^m) + (RT/(10^6*H*K_g^w*(D_g^c/D_g^w)^n))]^{-1}$	**(1) (a)**
	$K = (B+C)^{-1}$; **Where**	
	$B = 1/(k_l^o * (D_l^c/D_l^o)^m)$ **and**	
	$C = (RT/(10^6*H*K_g^w*(D_g^c/D_g^w)^n))$	

Input Parameters	
Wind speed (m/s) (d)	3.21

(b) Table 1: Values of Constants for Use in Equation (1)

Parameter	Value for Lakes	Units	
K_l^o	5.00E-04	cm/s	mass transfer coefficient of oxygen in water
R	8.21E+01	cm^3*atm/(mol*K)	ideal gas constant
T	2.93E+02	K	Temperature
RT	2.40E+04	cm^3*atm/mol	R times T
K^w_g	5.80E-01	cm/s	mass transfer coefficient for water vapor in air
n	7.00E-01	N/A	gas turbulence exponent
D_l^o	2.20E-05	cm^2/s	diffusivity of oxygen in air
D_g^w	2.14E-01	cm^2/s	diffusivity of oxygen in water
m	1.00E+00	N/A	liquid turbulence exponent

Constituent	Molecular Weight (c) (g/mol)	Henry's Law Constant (c,e) ($atm*m^3$/mole)	Diffusivity In Air (c) (cm^2/s)	Diffusivity In Water (c) (cm^2/s)	$B = 1/(k_l^o * (D_l^c/D_l^o)^m$	$C = RT/10^6*H*K_g^w*(D_g^c/D_g^w)^n$	$K = (B+C)^{-1}$ (cm/s)	K (m/s)	Groundwater to air attenuation factor (L/m^3)
SVOCs									
1,2,4-Trichlorobenzene	181.45	1.37E-03	3.00E-02	8.23E-06	**5.35E+03**	**1.20E+02**	**1.83E-04**	**1.83E-06**	**1.14E-02**
1,2-Dichlorobenzene	147	1.85E-03	6.90E-02	7.90E-06	**5.57E+03**	**4.96E+01**	**1.78E-04**	**1.78E-06**	**1.11E-02**
1,4-Dichlorobenzene	147	2.32E-03	6.90E-02	7.90E-06	**5.57E+03**	**3.95E+01**	**1.78E-04**	**1.78E-06**	**1.11E-02**
2-Chlorophenol	128.56	1.08E-05	5.01E-02	9.46E-06	**4.65E+03**	**1.06E+04**	**6.55E-05**	**6.55E-07**	**4.08E-03**
2-Methylnaphthalene	142.2	4.99E-04	4.80E-02	7.84E-06	**5.61E+03**	**2.37E+02**	**1.71E-04**	**1.71E-06**	**1.07E-02**
bis(2-Chloroethyl)ether	143.01	1.64E-05	6.92E-02	7.53E-06	**5.84E+03**	**5.59E+03**	**8.75E-05**	**8.75E-07**	**5.45E-03**
Naphthalene	128.18	4.24E-04	5.90E-02	7.50E-06	**5.87E+03**	**2.41E+02**	**1.64E-04**	**1.64E-06**	**1.02E-02**
Nitrobenzene	123.11	2.31E-05	7.60E-02	8.60E-06	**5.12E+03**	**3.71E+03**	**1.13E-04**	**1.13E-06**	**7.06E-03**

Notes:
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) Equation 2-4 of of section 2-2 of the "Air Emissions Models for Waste and Wastewater", 1994; EPA-453/R-94-080A.
(b) From Table 2-1 of of Section 2-2 of the "Air Emissions Models for Waste and Wastewater", 1994; EPA-453/R-94-080A; For Lakes.
(c) Risk Assessment Information System (RAIS). Toxicity and Chemical-Specific Factors Data Base. URL: [http://risk.lsd.ornl.gov/index.shtml].
(d) Value is based on a value of 4.3 m/s measured at St. Louis International Airport at a height of 7 m. (James A. Ruffner, 1985. Climate of the States: National Oceanic and Atmospheric Administration Narrative Summaries, Tables and Maps for Each State with Overview of State Climatologist Programs, Third Edition, Gale Research company, Detroit. Means for period 1951-1980.) Using the standard conversion equation, (Wind Speed at 1 m) = (Wind Speed at 7 m) * (1/7)^P, where P = 0.15. (USEPA. 2000. Meteorological Monitoring Guidance for Regulatory Modeling Applications. United States Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, NC 27711. February 2000 EPA-454/R-99-005).
(e) Converted from the unitless Henry's Law constant by the equation below, at 14 °C (287°K), where R = Universal Gas Constant, 0.082 (L-atm/ mol-°K):
Henry's Law Constant ($atm-m^3$/mole) = Unitless Henry's Law Constant * R (L-atm/ mol-°K) * 287°K * 1 $x10^{-3}$

TABLE E-2
EXCAVATION AIR CONCENTRATIONS -CONSTRUCTION WORKER (RME) VOCs FROM GROUNDWATER TO EXCAVATION TRENCH AIR
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	O - AA-O-1-16			O - GM-19A			O - LEACH-0-1		
Constituent	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	1.22E-02	NCOPC	NCOPC	1.22E-02	NCOPC	NCOPC	1.22E-02	NCOPC
1,1-Dichloroethylene	NCOPC	1.47E-02	NCOPC	NCOPC	1.47E-02	NCOPC	NCOPC	1.47E-02	NCOPC
1,2-Dichloroethane	NCOPC	1.38E-02	NCOPC	NCOPC	1.38E-02	NCOPC	NCOPC	1.38E-02	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.67E-02	NCOPC	NCOPC	1.67E-02	NCOPC	NCOPC	1.67E-02	NCOPC
1,2-Dichloropropane	NCOPC	1.23E-02	NCOPC	NCOPC	1.23E-02	NCOPC	NCOPC	1.23E-02	NCOPC
2-Butanone	NCOPC	1.04E-02	NCOPC	NCOPC	1.04E-02	NCOPC	NCOPC	1.04E-02	NCOPC
4-Methyl-2-pentanone	NCOPC	9.90E-03	NCOPC	NCOPC	9.90E-03	NCOPC	NCOPC	9.90E-03	NCOPC
Acetone	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC
Benzene	NCOPC	1.38E-02	NCOPC	6.35E-03	1.38E-02	8.78E-05	9.20E-01	1.38E-02	1.27E-02
Chlorobenzene	NCOPC	1.22E-02	NCOPC	NCOPC	1.22E-02	NCOPC	1.70E+00	1.22E-02	2.08E-02
Chloroethane	NCOPC	1.63E-02	NCOPC	NCOPC	1.63E-02	NCOPC	NCOPC	1.63E-02	NCOPC
Chloroform	NCOPC	1.41E-02	NCOPC	NCOPC	1.41E-02	NCOPC	NCOPC	1.41E-02	NCOPC
Chloromethane	NCOPC	9.19E-03	NCOPC	NCOPC	9.19E-03	NCOPC	NCOPC	9.19E-03	NCOPC
Dichloromethane	NCOPC	1.65E-02	NCOPC	NCOPC	1.65E-02	NCOPC	NCOPC	1.65E-02	NCOPC
Ethylbenzene	NCOPC	1.10E-02	NCOPC	NCOPC	1.10E-02	NCOPC	NCOPC	1.10E-02	NCOPC
Tetrachloroethene	NCOPC	1.16E-02	NCOPC	1.10E-01	1.16E-02	1.28E-03	NCOPC	1.16E-02	NCOPC
Toluene	NCOPC	1.21E-02	NCOPC	NCOPC	1.21E-02	NCOPC	NCOPC	1.21E-02	NCOPC
Trichloroethene	NCOPC	1.29E-02	NCOPC	5.30E-02	1.29E-02	6.82E-04	NCOPC	1.29E-02	NCOPC
Vinyl chloride	NCOPC	1.74E-03	NCOPC	NCOPC	1.74E-03	NCOPC	NCOPC	1.74E-03	NCOPC
Xylenes, Total	NCOPC	1.32E-02	NCOPC	NCOPC	1.32E-02	NCOPC	NCOPC	1.32E-02	NCOPC
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC
1,2-Dichlorobenzene	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC
1,4-Dichlorobenzene	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC
2-Chlorophenol	NCOPC	4.08E-03	NCOPC	NCOPC	4.08E-03	NCOPC	3.30E-01	4.08E-03	1.35E-03
2-Methylnaphthalene	NCOPC	1.07E-02	NCOPC	NCOPC	1.07E-02	NCOPC	NCOPC	1.07E-02	NCOPC
Naphthalene	NCOPC	1.02E-02	NCOPC	NCOPC	1.02E-02	NCOPC	5.70E-01	1.02E-02	5.81E-03
Nitrobenzene	NCOPC	7.06E-03	NCOPC	NCOPC	7.06E-03	NCOPC	8.00E-02	7.06E-03	5.65E-04

See notes on last page.

TABLE E-2
EXCAVATION AIR CONCENTRA
HUMAN HEALTH RISK ASSESSM
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	O - SA2-MW-4-S			Q Central - SA-Q-5			Q North - LEACH-Q-1		
Constituent	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	1.22E-02	NCOPC	NCOPC	1.22E-02	NCOPC	NCOPC	1.22E-02	NCOPC
1,1-Dichloroethylene	NCOPC	1.47E-02	NCOPC	NCOPC	1.47E-02	NCOPC	NCOPC	1.47E-02	NCOPC
1,2-Dichloroethane	NCOPC	1.38E-02	NCOPC	NCOPC	1.38E-02	NCOPC	2.30E+00	1.38E-02	3.18E-02
1,2-Dichloroethene (total)	NCOPC	1.67E-02	NCOPC	NCOPC	1.67E-02	NCOPC	NCOPC	1.67E-02	NCOPC
1,2-Dichloropropane	NCOPC	1.23E-02	NCOPC	NCOPC	1.23E-02	NCOPC	NCOPC	1.23E-02	NCOPC
2-Butanone	NCOPC	1.04E-02	NCOPC	NCOPC	1.04E-02	NCOPC	NCOPC	1.04E-02	NCOPC
4-Methyl-2-pentanone	NCOPC	9.90E-03	NCOPC	NCOPC	9.90E-03	NCOPC	NCOPC	9.90E-03	NCOPC
Acetone	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC
Benzene	4.40E+00	1.38E-02	6.09E-02	NCOPC	1.38E-02	NCOPC	5.10E-01	1.38E-02	7.05E-03
Chlorobenzene	1.10E+01	1.22E-02	1.35E-01	NCOPC	1.22E-02	NCOPC	1.80E+00	1.22E-02	2.20E-02
Chloroethane	6.50E-01	1.63E-02	1.06E-02	NCOPC	1.63E-02	NCOPC	NCOPC	1.63E-02	NCOPC
Chloroform	NCOPC	1.41E-02	NCOPC	NCOPC	1.41E-02	NCOPC	NCOPC	1.41E-02	NCOPC
Chloromethane	NCOPC	9.19E-03	NCOPC	NCOPC	9.19E-03	NCOPC	NCOPC	9.19E-03	NCOPC
Dichloromethane	NCOPC	1.65E-02	NCOPC	NCOPC	1.65E-02	NCOPC	5.50E-02	1.65E-02	9.06E-04
Ethylbenzene	NCOPC	1.10E-02	NCOPC	NCOPC	1.10E-02	NCOPC	NCOPC	1.10E-02	NCOPC
Tetrachloroethene	NCOPC	1.16E-02	NCOPC	NCOPC	1.16E-02	NCOPC	1.40E-01	1.16E-02	1.62E-03
Toluene	NCOPC	1.21E-02	NCOPC	NCOPC	1.21E-02	NCOPC	1.20E+00	1.21E-02	1.46E-02
Trichloroethene	NCOPC	1.29E-02	NCOPC	NCOPC	1.29E-02	NCOPC	3.00E-02	1.29E-02	3.86E-04
Vinyl chloride	NCOPC	1.74E-03	NCOPC	NCOPC	1.74E-03	NCOPC	5.60E-03	1.74E-03	9.75E-06
Xylenes, Total	NCOPC	1.32E-02	NCOPC	NCOPC	1.32E-02	NCOPC	NCOPC	1.32E-02	NCOPC
SVOCs							0.00E+00		
1,2,4-Trichlorobenzene	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC
1,2-Dichlorobenzene	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC
1,4-Dichlorobenzene	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC	8.15E-02	1.11E-02	9.05E-04
2-Chlorophenol	5.50E-02	4.08E-03	2.24E-04	NCOPC	4.08E-03	NCOPC	1.30E+01	4.08E-03	5.30E-02
2-Methylnaphthalene	NCOPC	1.07E-02	NCOPC	NCOPC	1.07E-02	NCOPC	NCOPC	1.07E-02	NCOPC
Naphthalene	NCOPC	1.02E-02	NCOPC	NCOPC	1.02E-02	NCOPC	1.90E+00	1.02E-02	1.94E-02
Nitrobenzene	NCOPC	7.06E-03	NCOPC	NCOPC	7.06E-03	NCOPC	1.70E+00	7.06E-03	1.20E-02

See notes on last page.

TABLE E-2
EXCAVATION AIR CONCENTRA
HUMAN HEALTH RISK ASSESSM
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Q South - AA-Q-10-18			R - B-24A			R - LEACH-R-1		
Constituent	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	1.22E-02	NCOPC	NCOPC	1.22E-02	NCOPC	1.20E-01	1.22E-02	1.46E-03
1,1-Dichloroethylene	NCOPC	1.47E-02	NCOPC	NCOPC	1.47E-02	NCOPC	3.10E-01	1.47E-02	4.56E-03
1,2-Dichloroethane	NCOPC	1.38E-02	NCOPC	2.20E-01	1.38E-02	3.04E-03	1.97E+03	1.38E-02	2.72E+01
1,2-Dichloroethene (total)	NCOPC	1.67E-02	NCOPC	NCOPC	1.67E-02	NCOPC	1.20E+03	1.67E-02	2.01E+01
1,2-Dichloropropane	NCOPC	1.23E-02	NCOPC	NCOPC	1.23E-02	NCOPC	1.00E-02	1.23E-02	1.23E-04
2-Butanone	NCOPC	1.04E-02	NCOPC	NCOPC	1.04E-02	NCOPC	1.20E+01	1.04E-02	1.25E-01
4-Methyl-2-pentanone	NCOPC	9.90E-03	NCOPC	NCOPC	9.90E-03	NCOPC	2.10E+00	9.90E-03	2.08E-02
Acetone	NCOPC	1.14E-02	NCOPC	2.20E+01	1.14E-02	2.51E-01	8.00E+01	1.14E-02	9.14E-01
Benzene	NCOPC	1.38E-02	NCOPC	8.30E-01	1.38E-02	1.15E-02	1.47E+03	1.38E-02	2.03E+01
Chlorobenzene	NCOPC	1.22E-02	NCOPC	1.00E+00	1.22E-02	1.22E-02	1.03E+03	1.22E-02	1.27E+01
Chloroethane	NCOPC	1.63E-02	NCOPC	NCOPC	1.63E-02	NCOPC	NCOPC	1.63E-02	NCOPC
Chloroform	NCOPC	1.41E-02	NCOPC	NCOPC	1.41E-02	NCOPC	3.07E+02	1.41E-02	4.32E+00
Chloromethane	NCOPC	9.19E-03	NCOPC	NCOPC	9.19E-03	NCOPC	1.51E+02	9.19E-03	1.39E+00
Dichloromethane	NCOPC	1.65E-02	NCOPC	1.40E-01	1.65E-02	2.31E-03	2.50E+00	1.65E-02	4.12E-02
Ethylbenzene	NCOPC	1.10E-02	NCOPC	NCOPC	1.10E-02	NCOPC	3.67E+02	1.10E-02	4.04E+00
Tetrachloroethene	NCOPC	1.16E-02	NCOPC	NCOPC	1.16E-02	NCOPC	6.87E+04	1.16E-02	7.97E+02
Toluene	NCOPC	1.21E-02	NCOPC	NCOPC	1.21E-02	NCOPC	1.73E+04	1.21E-02	2.11E+02
Trichloroethene	NCOPC	1.29E-02	NCOPC	NCOPC	1.29E-02	NCOPC	7.97E+04	1.29E-02	1.02E+03
Vinyl chloride	NCOPC	1.74E-03	NCOPC	NCOPC	1.74E-03	NCOPC	1.50E-01	1.74E-03	2.61E-04
Xylenes, Total	NCOPC	1.32E-02	NCOPC	NCOPC	1.32E-02	NCOPC	1.07E+03	1.32E-02	1.41E+01
SVOCs	0.00E+00								
1,2,4-Trichlorobenzene	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC	2.77E+01	1.14E-02	3.15E-01
1,2-Dichlorobenzene	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC	2.33E+01	1.11E-02	2.59E-01
1,4-Dichlorobenzene	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC	3.77E+01	1.11E-02	4.18E-01
2-Chlorophenol	NCOPC	4.08E-03	NCOPC	1.40E+02	4.08E-03	5.71E-01	1.09E+02	4.08E-03	4.46E-01
2-Methylnaphthalene	NCOPC	1.07E-02	NCOPC	NCOPC	1.07E-02	NCOPC	1.62E+01	1.07E-02	1.73E-01
Naphthalene	NCOPC	1.02E-02	NCOPC	NCOPC	1.02E-02	NCOPC	5.60E+00	1.02E-02	5.71E-02
Nitrobenzene	NCOPC	7.06E-03	NCOPC	1.30E+00	7.06E-03	9.18E-03	NCOPC	7.06E-03	NCOPC

See notes on last page.

TABLE E-2
EXCAVATION AIR CONCENTRA
HUMAN HEALTH RISK ASSESSM
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	S - SA-S-2		
Constituent	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**
VOCs			
1,1,2-Trichloroethane	NCOPC	1.22E-02	NCOPC
1,1-Dichloroethylene	NCOPC	1.47E-02	NCOPC
1,2-Dichloroethane	NCOPC	1.38E-02	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.67E-02	NCOPC
1,2-Dichloropropane	NCOPC	1.23E-02	NCOPC
2-Butanone	NCOPC	1.04E-02	NCOPC
4-Methyl-2-pentanone	NCOPC	9.90E-03	NCOPC
Acetone	NCOPC	1.14E-02	NCOPC
Benzene	NCOPC	1.38E-02	NCOPC
Chlorobenzene	NCOPC	1.22E-02	NCOPC
Chloroethane	NCOPC	1.63E-02	NCOPC
Chloroform	NCOPC	1.41E-02	NCOPC
Chloromethane	NCOPC	9.19E-03	NCOPC
Dichloromethane	NCOPC	1.65E-02	NCOPC
Ethylbenzene	NCOPC	1.10E-02	NCOPC
Tetrachloroethene	NCOPC	1.16E-02	NCOPC
Toluene	NCOPC	1.21E-02	NCOPC
Trichloroethene	NCOPC	1.29E-02	NCOPC
Vinyl chloride	NCOPC	1.74E-03	NCOPC
Xylenes, Total	NCOPC	1.32E-02	NCOPC
SVOCs			
1,2,4-Trichlorobenzene	NCOPC	1.14E-02	NCOPC
1,2-Dichlorobenzene	NCOPC	1.11E-02	NCOPC
1,4-Dichlorobenzene	NCOPC	1.11E-02	NCOPC
2-Chlorophenol	NCOPC	4.08E-03	NCOPC
2-Methylnaphthalene	NCOPC	1.07E-02	NCOPC
Naphthalene	NCOPC	1.02E-02	NCOPC
Nitrobenzene	NCOPC	7.06E-03	NCOPC

Notes:

NCOPC - Not a Constituent of Potential Concern in this area.

SVOCs - Semivolatile Organic Compounds.

VOC - Volatile Organic Compound; those with Henry's Law Constant greater than 10^{-5} $atm\text{-}m^3/mol$ and a molecular weight greater than 200 g/mol.

(a) Exposure Point Concentration (EPC) selected in Table 3.7 and presented in Table 3.7RME

(b) Attenuation Factor calculated in Table E-1.

(c) Trench air concentration =EPC*Attenuation Factor.

TABLE E-3
EXCAVATION AIR CONCENTRATIONS -CONSTRUCTION WORKER (MLE) VOCs FROM GROUNDWATER TO EXCAVATION TRENCH AIR
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	O - AA-O-1-16			O - GM-19A			O - LEACH-0-1		
Constituent	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	1.22E-02	NCOPC	NCOPC	1.22E-02	NCOPC	NCOPC	1.22E-02	NCOPC
1,1-Dichloroethylene	NCOPC	1.47E-02	NCOPC	NCOPC	1.47E-02	NCOPC	NCOPC	1.47E-02	NCOPC
1,2-Dichloroethane	NCOPC	1.38E-02	NCOPC	NCOPC	1.38E-02	NCOPC	NCOPC	1.38E-02	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.67E-02	NCOPC	NCOPC	1.67E-02	NCOPC	NCOPC	1.67E-02	NCOPC
1,2-Dichloropropane	NCOPC	1.23E-02	NCOPC	NCOPC	1.23E-02	NCOPC	NCOPC	1.23E-02	NCOPC
2-Butanone	NCOPC	1.04E-02	NCOPC	NCOPC	1.04E-02	NCOPC	NCOPC	1.04E-02	NCOPC
4-Methyl-2-pentanone	NCOPC	9.90E-03	NCOPC	NCOPC	9.90E-03	NCOPC	NCOPC	9.90E-03	NCOPC
Acetone	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC
Benzene	NCOPC	1.38E-02	NCOPC	6.35E-03	1.38E-02	8.78E-05	9.20E-01	1.38E-02	1.27E-02
Chlorobenzene	NCOPC	1.22E-02	NCOPC	NCOPC	1.22E-02	NCOPC	1.70E+00	1.22E-02	2.08E-02
Chloroethane	NCOPC	1.63E-02	NCOPC	NCOPC	1.63E-02	NCOPC	NCOPC	1.63E-02	NCOPC
Chloroform	NCOPC	1.41E-02	NCOPC	NCOPC	1.41E-02	NCOPC	NCOPC	1.41E-02	NCOPC
Chloromethane	NCOPC	9.19E-03	NCOPC	NCOPC	9.19E-03	NCOPC	NCOPC	9.19E-03	NCOPC
Dichloromethane	NCOPC	1.65E-02	NCOPC	NCOPC	1.65E-02	NCOPC	NCOPC	1.65E-02	NCOPC
Ethylbenzene	NCOPC	1.10E-02	NCOPC	NCOPC	1.10E-02	NCOPC	NCOPC	1.10E-02	NCOPC
Tetrachloroethene	NCOPC	1.16E-02	NCOPC	1.10E-01	1.16E-02	1.28E-03	NCOPC	1.16E-02	NCOPC
Toluene	NCOPC	1.21E-02	NCOPC	NCOPC	1.21E-02	NCOPC	NCOPC	1.21E-02	NCOPC
Trichloroethene	NCOPC	1.29E-02	NCOPC	5.30E-02	1.29E-02	6.82E-04	NCOPC	1.29E-02	NCOPC
Vinyl chloride	NCOPC	1.74E-03	NCOPC	NCOPC	1.74E-03	NCOPC	NCOPC	1.74E-03	NCOPC
Xylenes, Total	NCOPC	1.32E-02	NCOPC	NCOPC	1.32E-02	NCOPC	NCOPC	1.32E-02	NCOPC
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC
1,2-Dichlorobenzene	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC
1,4-Dichlorobenzene	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC
2-Chlorophenol	NCOPC	4.08E-03	NCOPC	NCOPC	4.08E-03	NCOPC	3.30E-01	4.08E-03	1.35E-03
2-Methylnaphthalene	NCOPC	1.07E-02	NCOPC	NCOPC	1.07E-02	NCOPC	NCOPC	1.07E-02	NCOPC
Naphthalene	NCOPC	1.02E-02	NCOPC	NCOPC	1.02E-02	NCOPC	5.70E-01	1.02E-02	5.81E-03
Nitrobenzene	NCOPC	7.06E-03	NCOPC	NCOPC	7.06E-03	NCOPC	8.00E-02	7.06E-03	5.65E-04

See notes on last page.

TABLE E-3
EXCAVATION AIR CONCENTRA
HUMAN HEALTH RISK ASSESSM
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	O - SA2-MW-4-S			Q Central - SA-Q-5			Q North - LEACH-Q-1		
Constituent	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	1.22E-02	NCOPC	NCOPC	1.22E-02	NCOPC	NCOPC	1.22E-02	NCOPC
1,1-Dichloroethylene	NCOPC	1.47E-02	NCOPC	NCOPC	1.47E-02	NCOPC	NCOPC	1.47E-02	NCOPC
1,2-Dichloroethane	NCOPC	1.38E-02	NCOPC	NCOPC	1.38E-02	NCOPC	1.95E+00	1.38E-02	2.70E-02
1,2-Dichloroethene (total)	NCOPC	1.67E-02	NCOPC	NCOPC	1.67E-02	NCOPC	NCOPC	1.67E-02	NCOPC
1,2-Dichloropropane	NCOPC	1.23E-02	NCOPC	NCOPC	1.23E-02	NCOPC	NCOPC	1.23E-02	NCOPC
2-Butanone	NCOPC	1.04E-02	NCOPC	NCOPC	1.04E-02	NCOPC	NCOPC	1.04E-02	NCOPC
4-Methyl-2-pentanone	NCOPC	9.90E-03	NCOPC	NCOPC	9.90E-03	NCOPC	NCOPC	9.90E-03	NCOPC
Acetone	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC
Benzene	4.40E+00	1.38E-02	6.09E-02	NCOPC	1.38E-02	NCOPC	4.39E-01	1.38E-02	6.07E-03
Chlorobenzene	1.10E+01	1.22E-02	1.35E-01	NCOPC	1.22E-02	NCOPC	1.39E+00	1.22E-02	1.70E-02
Chloroethane	6.50E-01	1.63E-02	1.06E-02	NCOPC	1.63E-02	NCOPC	NCOPC	1.63E-02	NCOPC
Chloroform	NCOPC	1.41E-02	NCOPC	NCOPC	1.41E-02	NCOPC	NCOPC	1.41E-02	NCOPC
Chloromethane	NCOPC	9.19E-03	NCOPC	NCOPC	9.19E-03	NCOPC	NCOPC	9.19E-03	NCOPC
Dichloromethane	NCOPC	1.65E-02	NCOPC	NCOPC	1.65E-02	NCOPC	4.63E-02	1.65E-02	7.63E-04
Ethylbenzene	NCOPC	1.10E-02	NCOPC	NCOPC	1.10E-02	NCOPC	NCOPC	1.10E-02	NCOPC
Tetrachloroethene	NCOPC	1.16E-02	NCOPC	NCOPC	1.16E-02	NCOPC	1.07E-01	1.16E-02	1.24E-03
Toluene	NCOPC	1.21E-02	NCOPC	NCOPC	1.21E-02	NCOPC	1.07E+00	1.21E-02	1.30E-02
Trichloroethene	NCOPC	1.29E-02	NCOPC	NCOPC	1.29E-02	NCOPC	2.18E-02	1.29E-02	2.80E-04
Vinyl chloride	NCOPC	1.74E-03	NCOPC	NCOPC	1.74E-03	NCOPC	4.85E-03	1.74E-03	8.45E-06
Xylenes, Total	NCOPC	1.32E-02	NCOPC	NCOPC	1.32E-02	NCOPC	NCOPC	1.32E-02	NCOPC
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC
1,2-Dichlorobenzene	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC
1,4-Dichlorobenzene	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC	8.15E-02	1.11E-02	9.05E-04
2-Chlorophenol	5.50E-02	4.08E-03	2.24E-04	NCOPC	4.08E-03	NCOPC	8.96E+00	4.08E-03	3.65E-02
2-Methylnaphthalene	NCOPC	1.07E-02	NCOPC	NCOPC	1.07E-02	NCOPC	NCOPC	1.07E-02	NCOPC
Naphthalene	NCOPC	1.02E-02	NCOPC	NCOPC	1.02E-02	NCOPC	1.47E+00	1.02E-02	1.50E-02
Nitrobenzene	NCOPC	7.06E-03	NCOPC	NCOPC	7.06E-03	NCOPC	1.42E+00	7.06E-03	1.00E-02

See notes on last page.

TABLE E-3
EXCAVATION AIR CONCENTRA
HUMAN HEALTH RISK ASSESSM
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Q South - AA-Q-10-18			R - B-24A			R - LEACH-R-1		
Constituent	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**
VOCs									
1,1,2-Trichloroethane	NCOPC	1.22E-02	NCOPC	NCOPC	1.22E-02	NCOPC	1.20E-01	1.22E-02	1.46E-03
1,1-Dichloroethylene	NCOPC	1.47E-02	NCOPC	NCOPC	1.47E-02	NCOPC	2.45E-01	1.47E-02	3.61E-03
1,2-Dichloroethane	NCOPC	1.38E-02	NCOPC	2.20E-01	1.38E-02	3.04E-03	5.31E+02	1.38E-02	7.35E+00
1,2-Dichloroethene (total)	NCOPC	1.67E-02	NCOPC	NCOPC	1.67E-02	NCOPC	3.12E+02	1.67E-02	5.22E+00
1,2-Dichloropropane	NCOPC	1.23E-02	NCOPC	NCOPC	1.23E-02	NCOPC	1.00E-02	1.23E-02	1.23E-04
2-Butanone	NCOPC	1.04E-02	NCOPC	NCOPC	1.04E-02	NCOPC	9.72E+00	1.04E-02	1.01E-01
4-Methyl-2-pentanone	NCOPC	9.90E-03	NCOPC	NCOPC	9.90E-03	NCOPC	2.10E+00	9.90E-03	2.08E-02
Acetone	NCOPC	1.14E-02	NCOPC	2.20E+01	1.14E-02	2.51E-01	5.10E+01	1.14E-02	5.83E-01
Benzene	NCOPC	1.38E-02	NCOPC	8.30E-01	1.38E-02	1.15E-02	3.72E+02	1.38E-02	5.14E+00
Chlorobenzene	NCOPC	1.22E-02	NCOPC	1.00E+00	1.22E-02	1.22E-02	2.59E+02	1.22E-02	3.18E+00
Chloroethane	NCOPC	1.63E-02	NCOPC	NCOPC	1.63E-02	NCOPC	NCOPC	1.63E-02	NCOPC
Chloroform	NCOPC	1.41E-02	NCOPC	NCOPC	1.41E-02	NCOPC	7.85E+01	1.41E-02	1.11E+00
Chloromethane	NCOPC	9.19E-03	NCOPC	NCOPC	9.19E-03	NCOPC	1.51E+02	9.19E-03	1.39E+00
Dichloromethane	NCOPC	1.65E-02	NCOPC	1.40E-01	1.65E-02	2.31E-03	2.28E+00	1.65E-02	3.76E-02
Ethylbenzene	NCOPC	1.10E-02	NCOPC	NCOPC	1.10E-02	NCOPC	1.83E+02	1.10E-02	2.02E+00
Tetrachloroethene	NCOPC	1.16E-02	NCOPC	NCOPC	1.16E-02	NCOPC	1.72E+04	1.16E-02	1.99E+02
Toluene	NCOPC	1.21E-02	NCOPC	NCOPC	1.21E-02	NCOPC	4.35E+03	1.21E-02	5.28E+01
Trichloroethene	NCOPC	1.29E-02	NCOPC	NCOPC	1.29E-02	NCOPC	2.00E+04	1.29E-02	2.58E+02
Vinyl chloride	NCOPC	1.74E-03	NCOPC	NCOPC	1.74E-03	NCOPC	1.50E-01	1.74E-03	2.61E-04
Xylenes, Total	NCOPC	1.32E-02	NCOPC	NCOPC	1.32E-02	NCOPC	3.56E+02	1.32E-02	4.70E+00
SVOCs									
1,2,4-Trichlorobenzene	NCOPC	1.14E-02	NCOPC	NCOPC	1.14E-02	NCOPC	2.77E+01	1.14E-02	3.15E-01
1,2-Dichlorobenzene	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC	1.30E+01	1.11E-02	1.44E-01
1,4-Dichlorobenzene	NCOPC	1.11E-02	NCOPC	NCOPC	1.11E-02	NCOPC	2.26E+01	1.11E-02	2.51E-01
2-Chlorophenol	NCOPC	4.08E-03	NCOPC	1.40E+02	4.08E-03	5.71E-01	3.86E+01	4.08E-03	1.57E-01
2-Methylnaphthalene	NCOPC	1.07E-02	NCOPC	NCOPC	1.07E-02	NCOPC	8.53E+00	1.07E-02	9.08E-02
Naphthalene	NCOPC	1.02E-02	NCOPC	NCOPC	1.02E-02	NCOPC	5.60E+00	1.02E-02	5.71E-02
Nitrobenzene	NCOPC	7.06E-03	NCOPC	1.30E+00	7.06E-03	9.18E-03	NCOPC	7.06E-03	NCOPC

See notes on last page.

TABLE E-3
EXCAVATION AIR CONCENTRA
HUMAN HEALTH RISK ASSESSM
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	S - SA-S-2		
Constituent	**Shallow Groundwater & Lecahate EPC (a) (mg/L)**	**Groundwater to Air Attenuation Factor (b) (L/m^3)**	**Concentration in Trench Air (c) (mg/m^3)**
VOCs			
1,1,2-Trichloroethane	NCOPC	1.22E-02	NCOPC
1,1-Dichloroethylene	NCOPC	1.47E-02	NCOPC
1,2-Dichloroethane	NCOPC	1.38E-02	NCOPC
1,2-Dichloroethene (total)	NCOPC	1.67E-02	NCOPC
1,2-Dichloropropane	NCOPC	1.23E-02	NCOPC
2-Butanone	NCOPC	1.04E-02	NCOPC
4-Methyl-2-pentanone	NCOPC	9.90E-03	NCOPC
Acetone	NCOPC	1.14E-02	NCOPC
Benzene	NCOPC	1.38E-02	NCOPC
Chlorobenzene	NCOPC	1.22E-02	NCOPC
Chloroethane	NCOPC	1.63E-02	NCOPC
Chloroform	NCOPC	1.41E-02	NCOPC
Chloromethane	NCOPC	9.19E-03	NCOPC
Dichloromethane	NCOPC	1.65E-02	NCOPC
Ethylbenzene	NCOPC	1.10E-02	NCOPC
Tetrachloroethene	NCOPC	1.16E-02	NCOPC
Toluene	NCOPC	1.21E-02	NCOPC
Trichloroethene	NCOPC	1.29E-02	NCOPC
Vinyl chloride	NCOPC	1.74E-03	NCOPC
Xylenes, Total	NCOPC	1.32E-02	NCOPC
SVOCs			
1,2,4-Trichlorobenzene	NCOPC	1.14E-02	NCOPC
1,2-Dichlorobenzene	NCOPC	1.11E-02	NCOPC
1,4-Dichlorobenzene	NCOPC	1.11E-02	NCOPC
2-Chlorophenol	NCOPC	4.08E-03	NCOPC
2-Methylnaphthalene	NCOPC	1.07E-02	NCOPC
Naphthalene	NCOPC	1.02E-02	NCOPC
Nitrobenzene	NCOPC	7.06E-03	NCOPC

Notes:

NCOPC - Not a Constituent of Potential Concern in this area.

SVOCs - Semivolatile Organic Compounds.

VOC - Volatile Organic Compound; those with Henry's Law Constant greater than 10^{-5} $atm\text{-}m^3/mol$ and a molecular weight greater than 200 g/mol.

(a) Exposure Point Concentration (EPC) selected in Table 3.7 and presented in Table 3.7MLE

(b) Attenuation Factor calculated in Table E-1.

(c) Trench air concentration =EPC*Attenuation Factor.

Attachment F

Dioxin Toxicity Equivalency Factors

TABLE F-1
TEFs FOR DIOXIN AND FURAN CONGENERS
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	CAS NO.	TEF (a)
Dioxins		
2,3,7,8-TetraCDD	1746-01-6	1
1,2,3,7,8-PentaCDD	40321-76-4	1
1,2,3,4,7,8-HexaCDD	39227-28-6	0.1
1,2,3,6,7,8-HexaCDD	57653-85-7	0.1
1,2,3,7,8,9-HexaCDD	19408-74-3	0.1
1,2,3,4,6,7,8-HeptaCDD	35822-39-4	0.01
OctaCDD	3268-87-9	0.0003
2,3,7,8-PentaCDDs	NA	NA
2,3,7,8-HexaCDDs	NA	NA
2,3,7,8-HeptaCDDs	NA	NA
Furans		
2,3,7,8-TetraCDF	51207-31-9	0.1
1,2,3,7,8-PentaCDF	57117-41-6	0.03
2,3,4,7,8-PentaCDF	57117-31-4	0.3
1,2,3,4,7,8-HexaCDF	70648-26-9	0.1
1,2,3,6,7,8-HexaCDF	57117-44-9	0.1
1,2,3,7,8,9-HexaCDF	72918-21-9	0.1
2,3,4,6,7,8-HexaCDF	60851-34-5	0.1
1,2,3,4,6,7,8-HeptaCDF	67562-39-4	0.01
1,2,3,4,7,8,9-HeptaCDF	55673-89-7	0.01
OctaCDF	39001-02-0	0.0003
2,3,7,8-HexaCDFs	NA	NA
2,3,7,8-HeptaCDFs	NA	NA

Notes:
CAS - Chemical Abstracts Service.
CDD- Chlorodibenzodioxin.
CDF - Chlorodibenzofuran.
TEF - Toxicity Equivalency Factor.
(a) The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241 (Van den Berg, et al., 2006).

Attachment G

Absorption Fractions

- Table G-1: Oral and Dermal Absorption Fractions
- Text: Derivation of Oral Absorption Fractions

ARSENIC

Absorption in the Dose-Response Study

Both oral toxicity values for arsenic are based on epidemiological studies that characterized health effects in a large population of Taiwanese who consumed drinking water containing arsenic. The exact form of the ingested arsenic is unknown. For the purposes of the development of the AAFs, it has been assumed that the arsenic was a soluble inorganic arsenic salt (such as arsenic trioxide, As2O3, a smelting by-product). Several studies investigating the absorption of arsenic have been performed in humans and various animal species. Human studies are sufficiently extensive to strongly suggest that close to 100% of soluble inorganic arsenic in water is absorbed from the gastrointestinal tract. These human studies are reviewed in detail here.

One direct indication of absorption of an orally administered dose of a chemical is its urinary excretion. Several studies show that urinary excretion can account for the majority of an orally administered dose of arsenic. Buchet et al. (1981a) administered aqueous sodium arsenite (NaAsO2) as a single dose to three human volunteers. An average of 45% of the dose was excreted in the urine in four days. In a second study (Buchet et al., 1981b), four individuals given 125, 250, 500, or 1000 μg As/day orally for five days excreted 54, 73, 74, and 64% of the dose in urine, respectively, over 14 days. The average urinary excretion of arsenic for the four subjects was 66% of the administered dose. Crecelius (1977) reports that approximately 50% and 80% of orally administered aqueous arsenic was excreted in urine within 61 hours by a single individual in two experiments. The results of these studies represent the minimum amount of arsenic absorbed since the balance of the dose was not accounted for.

Data for human fecal excretion of arsenic do exist. Pomroy et al. (1980) gave 6 male subjects radiolabelled arsenic acid ($[^{74}As]H_3AsO_4$) in gelatin capsules followed by a glass of water. The presence of arsenic in the body, urine, and feces was measured using a whole body radiation counter. The authors report that for the six subjects the average total excretion over 7 days was 6.1$\pm$2.8% in feces. It is not possible to determine how much of this arsenic was first absorbed and then excreted. The total recovery of arsenic (urine plus feces) was 68.4$\pm$4.0% of the single oral dose. The remaining arsenic was reported to be present in the body tissues; virtually the entire dose could be accounted for. This suggests a minimum absorption of 94% (100% - 6%) of orally ingested arsenic.

A study by Bettley and O'Shea (1975) also reports excretion of arsenic in both urine and feces. Three subjects were exposed to 8.52 mg As (as 1.25 ml of Liq. Arsenicalis B.P.) in three portions 8 hours apart on one day. They found that at most 3.5% of the dose was excreted in feces over ten days. This suggests a minimum absorption of 96%. Urinary excretion averaged 52$\pm$4% of the exposure dose over 10 days (n=3). The remaining half of the dose was unaccounted for, although small amounts of arsenic were found in blood and hair.

In the Coulson study (Coulson et al., 1935), results from two humans each ingesting two forms of arsenic are reported. Less than 5% of an oral dose was excreted in feces whether the arsenic was taken as arsenic trioxide (As_2O_3) or as natural arsenic present in shrimp. The remainder of the dose, more than 95%, was recovered in urine in three experiments where total recoveries ranged from 74 to 115%. Based on the fecal excretion data from this study, it can be estimated that at least 95% of the ingested arsenic was absorbed. The fecal excretion data are consistent with those of Pomroy et al. (1980) and Bettley and O'Shea (1975).

Fecal excretion data from oral studies provide a minimum estimate of absorption, because it cannot be determined how much of the dose was first absorbed and then excreted into the feces. However, a study in humans injected intravenously with arsenic suggests that absorbed arsenic may be excreted, presumably from bile, into the feces. Mealy et al. (1959) administered radiolabelled arsenic by intravenous injection. Between 57% and 90% of the injected dose was recovered in urine in 10 days. Fecal excretion accounted for 1.3% of the dose after seventeen days in one individual. A second subject excreted 0.2% of the intravenous dose into the feces in one week. Both results indicate some excretion of arsenic into the feces. Virtually all of the remaining dose was recovered in the urine. Biliary excretion of arsenic has been demonstrated in rats, rabbits, and dogs (Klaassen, 1974; Gregus and Klaassen, 1986). This indicates that a portion of the arsenic found in feces in studies using oral dosing may have been first absorbed and then excreted.

The urinary excretion data from the oral studies discussed above provide minimum estimates of arsenic absorption ranging from 45% to 95%. The fecal excretion data suggest that, at a minimum, 95-96% of an orally administered dose of arsenic is absorbed. The study of intravenously administered arsenic suggest that biliary excretion can occur. Therefore, it can conservatively be concluded from the above studies that virtually 100% of an orally administered dose of soluble inorganic arsenic can be absorbed in humans.

Oral-Soil Absorption Fraction (AAF)

The oral-soil AAF for arsenic is defined as: (absorption of arsenic in humans from ingested soil) / (absorption of arsenic in humans in the epidemiological study from ingested water).

An oral-soil AAF of 0.3 is recommended for arsenic in soil and dust in cases where site-specific information is not available. The 0.3 value is based on the high end of relative bioavailability estimates for arsenic ingested in soil and dust by *Cynomolgus* monkeys (Freeman et al., 1995).

The study was conducted to determine arsenic absorption from soil and house dust impacted by smelter activities near Anaconda, Montana. The Cynomolgus monkeys each received sequential treatments of iv sodium arsenate and three oral treatments: soil arsenic in capsules, house dust arsenic in capsules, and sodium arsenate solution administered by gavage. Absolute bioavailability values for arsenic administered in soil, dust, and solution were calculated based on (1) total urinary arsenic excretion and (2) blood arsenic levels, each normalized based on intravenous data. The bioavailability of arsenic in soil and dust relative to soluble arsenic in solution ranged from 10% to 30%, depending or whether urinary or blood values were used. Results from this study were used by USEPA to derive the oral-soil AAF of 0.183 and oral-dust AAF of 0.258 used in the risk assessment at the Anaconda Superfund site (Walker and Griffin, 1998).

Other Relevant Studies

Other studies of various forms of arsenic support the conclusion that arsenic in soil is poorly absorbed. At the Murray Smelter Superfund site in Utah, a site-specific relative bioavailability adjustment value for arsenic in soil of 0.26 was derived based on an immature swine study comparing absorption of arsenic in soil from the site to absorption of soluble sodium arsenate (Weis et al., 1996; USEPA,1997). In a similar swine study performed at the Ruston/North Tacoma Superfund site in Washington, the site-specific relative bioavailability adjustment value for arsenic in slag dust was 0.42 (USEPA, 1996). Groen et al. (1994) fed ore-containing soil or administered soluble arsenic iv, sequentially to beagle dogs. When compared to iv

administration, bioavailability of arsenic from ore-containing soil was approximately 8%. In rabbits, the absorption of arsenic (primarily as Cu_3AsS_4) in soil from a site in Anaconda, Montana was only 24%, while the absorption of a soluble form arsenic from water was 50% (Freeman et al., 1993). Rats fed soil containing mine waste absorbed only one tenth times as much arsenic as rats dosed with soluble arsenic (Yanez et al., 1993). Arsenic selenide, a highly insoluble form, was administered to humans as a fine powder and no increase in urinary arsenic was observed (Mappes, 1977). Thus, absorption in this study was probably low or negligible.

Derivation of the AAF (Oral-Soil) for Arsenic

An oral-soil AAF of 0.3 is recommended for arsenic in soil and dust in cases where site-specific information is not available. The 0.3 value is based on the high end of relative bioavailability estimates for arsenic ingested in soil and dust by *Cynomolgus* monkeys (Freeman et al., 1995). This study was selected to derive the oral-soil AAF for arsenic because, of the animals models studied thus far, the monkey is more physiologically and anatomically similar to humans than are rats, rabbits, swine, or dogs.

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CHROMIUM VI

The oral-dose response value for chromium VI is a chronic RfD based on a drinking water study in rats. The RfD is based on administered dose units. In order to derive AAFs for chromium, it is important to understand the degree to which it is excreted in the feces. Therefore, this topic is addressed first, followed by the estimation of absorption in the chromium VI dose-response study, and finally the derivation of the AAFs.

Fecal Excretion of Chromium

As discussed in the introduction, most absorption studies rely on quantitation of a compound in urine and/or feces for absorption determinations. For orally administered compounds, presence of the compound in the feces could merely indicate transit of the compound through the GI tract, or could indicate absorption of the compound with subsequent excretion into the feces. The best method for the determination of fecal excretion is quantitation of the compound in urine and feces after administration of an IV or IP dose. From the data, the ratio of the compound present in the feces to the compound present in the urine can be determined. This ratio can then be used with urinary excretion data from oral absorption studies to estimate the amount of fecal excretion. The sum of urinary and fecal excretion is a estimate of absorption.

Several studies demonstrate that fecal excretion of absorbed chromium is a significant pathway of elimination for chromium VI. As the results of these studies are integral to the determination of chromium absorption, these studies are reviewed below. A summary of the results are presented below:

Excretion Patterns of IV Administered Chromium VI

Study	Route	Species	Dose (mg Cr/kg)	Time (days)	% Dose in Urine	% Dose in Feces	% F/U
Sayto (1980)	IV	rat	0.02	4 25	45% 50%	22% 25%	50%
Visek (1953)	IV	rat	0.05 to 0.3	4	35%	17%	49%
Cikrt & Benko (1979)	IV	rat	0.05	1	20.8%	7.3%+ 3.5% (in bile)	52%
Manzo (1983)	IV	rat	0.11	1	3.27%	3.24%	99%
Bryson, Goodson (1983)	IP	mouse	2.2	7	45%	25%	56%

1. Sayato et al. (1980) administered radioactive sodium chromate by intravenous injection to male Wistar rats. At both 4 and 25 days post-injection, fecal excretion was 50% of urinary excretion.

2. Visek et al. (1953) administered intravenous injections of radioactive sodium chromate to rats of the Rockland and Carworth strains and measured the metal in urine and feces. At four days, fecal excretion was 49% of urinary excretion.

3. Cikrt and Bencko (1979) administered radioactive sodium chromate to female Wistar rats after a 24 hour fast by intravenous injection. After 24 hours, fecal chromium was 52% of urinary chromium.

4. Manzo et al. (1983) dosed five male COBS albino rats with radiolabelled chromic chloride by intravenous injection. At 24 hours, fecal excretion was 99% of urinary excretion.

5. Bryson and Goodall (1983) administered chromic chloride to CxO mice by IP injection. Urine and feces were analyzed by a diphenylcarbazone spectrophotometric method. At four days, 45% of the dose was recovered in the urine, and 25% of the dose was in the feces. Thus, fecal excretion was 56% of urinary excretion.

The measured values of fecal excretion as a percentage of urinary excretion from these studies vary from 49% to 99%. Not all of these studies are appropriate for the derivation of an average value. Several issues must be considered. First, it is not necessary to include the mouse data from the Bryson and Goodall (1983) study here, because the study upon which the RfD for chromium III is based was performed in rats, and the remaining studies do use rats as the experimental animal.

Second, the duration of the experiments must be considered. One study presents the time course of elimination of chromium VI in both urine and feces (Sayato et al., 1980). The results of this study shows that after a single dose, both urinary and fecal excretion begin to plateau after 4 days. Therefore, only studies that have a duration of at least 96 hours should be included in this fecal elimination analysis. This means that the results of Cikrt and Bencko (1979) and Manzo et al. (1983) will be excluded from analysis as these studies lasted only 24 hours.

This evaluation leaves the first two studies mentioned above and as listed in Table 5-1. Thus, the results of Sayato (1980) and Visek (1953) on the ratio of fecal to urinary excretion, 50% and 49%, respectively, can be used to calculate a mean value of 49.5%. This value for estimating fecal excretion is appropriate to use with cumulative urinary excretion data from 4 days post dosing onward because it was shown by Sayato (1980) that urinary excretion generally begins to plateau at 4 days.

From the time courses of elimination (Sayato et al., 1980), the relationship between urinary excretion at 24 hours and at 96 hours can also be determined. Urinary excretion at 24 hr as a percent of urinary excretion at 96 hours is 68%. This value will be used to evaluate oral absorption data that only report results up to 24 hours post-dosing. Use of this value assumes that nearly all the administered dose will be excreted at 96 hours.

Therefore, in the absence of fecal excretion data for a study of oral absorption of chromium VI, it will be assumed that some of the chromium present in the feces is metal that was absorbed from the gastrointestinal tract and has been eliminated into the gastrointestinal tract either by biliary excretion,

or some other mechanism. The fecal elimination will be estimated by assuming that an amount equivalent to 49.5% of the amount eliminated in the urine is also eliminated in the feces. In addition, it will be assumed that urinary elimination at 24 hours post-dosing represents 68% of the total urinary output of chromium VI. This approach assumes that the degree of urinary or fecal elimination is independent of the route of administration, and moreover, that fecal elimination occurs in humans as is does in rats.

Estimation of Absorption in the Dose-Response Study

Donaldson and Barreras (1966) administered radioactive sodium chromate in water to six fasting female albino rats. Urine and feces were collected for seven days. On average, 98.5% of the chromium was recovered. On average, 0.8% was found in the urine and 97.7% was found in the feces. Individual subject data were not presented. The absorbed amount excreted in the feces is estimated as (0.495) x (0.008) x 100 = 0.4%. The total amount absorbed is thus estimated as (0.8%) + (0.4%) = 1.3%.

MacKenzie et al. (1959) gave radioactive sodium chromate solutions to nonfasting Sprague-Dawley rats. Urine, feces, and tissues were collected for 1, 7, or 14 days for different experimental groups. Data from the one day group were excluded, because of the slow clearance of chromium from tissues. Over 20% of the dose was still in the tissues. Data from the other two groups was used below. On average, 97.8% of the dose was recovered in the 7 day group, and 99.3% was recovered in the 14 day group.

Urinary Fecal	Fecal Absorbed	Urinary + Fecal Absorbed	Urinary Fecal
2.30%	95.30%	1.10%	3.40%
2.80%	94.70%	1.40%	4.20%

Sayato et al. (1980) gave radioactive sodium chromate to four male Wistar rats and collected urine and feces for ten days. On average, 99.6% of the chromium was recovered. Of the dose, 0.6% was found in the urine, and 99% was found in the feces. The absorbed amount in the feces is estimated as (0.495) x (0.006) x 100 = 0.3%. The total amount absorbed is thus estimated as (0.6%) + (0.3%) = (0.9%).

The average absorption value from the rodent data is calculated from the mean values from Donaldson and Barreras (1966) and Sayato et al. (1980) and the two values from MacKenzie et al. (1959) as 2.5%. The values range from 0.9% to 4.2%.

Oral-Soil AAF

The Oral-Soil AAF for chromium VI is defined as: (absorption of chromium VI in humans from soil) / (absorption of chromium VI in rodents from drinking water).

No studies were found in which chromium VI was added to soil in the laboratory under controlled conditions and fed to animals. One laboratory (Witmer and Park, 1989; Witmer et al. 1991) orally administered chromium containing soil to rats. The chromium in the soil was approximately 30-35% hexavalent chromium. Because of the complicated experimental design, it is not possible to develop a reliable estimate of absorption from this study.

Estimates of oral absorption can be made form the data of MacKenzie et al. (1959) and Ogawa (1976) in which absorption in fasted and unfasted animals are compared.

An estimate of the oral-soil AAF is made from the data of MacKenzie et al. (1959). In this experiment the seven day excreta are compared between fasting and nonfasting female albino rats. MacKenzie et al. (1959) gave radioactive sodium chromate solutions to the rats. Urine, feces, and tissues were collected for 1, 7, or 14 days for different experimental groups. Data from the one day group were excluded, because of the slow clearance of chromium from tissues. Over 20% of the dose was still in the tissues. Data from the other two groups was used below. As done elsewhere, the amount of chromium in the feces that was absorbed and then excreted was estimate by multiplying the urinary amount by 0.495.

Not Fasting:

Urinary	Fecal Absorbed	Urinary + Fecal Absorbed
2.3%	1.1%	3.4%
2.8%	1.4%	4.2%
	Average: 3.8%	

Fasting:

Urinary	Fecal Absorbed	Urinary + Fecal Absorbed
5.3%	2.6%	7.9%
5.7%	2.8%	8.5%
	Average: 8.2%	

The ratio between the nonfasting rats and the fasting rats yields an estimate of the degree to which the presence of food in the gastrointestinal tract inhibits the absorption of chromium VI in rats. It is assumed that the absorption of chromium VI in soils would be inhibited to the same degree compared to drinking water. Thus, an estimate for the oral-soil AAF is (3.8%) / (8.2%) = 0.46.

In a separate experiment Ogawa (1976) fed rats chromium VI with or without fasting. Absorption was reported to be 1.4% in nonfasting animals and 11% in fasting animals. This study has been cited in U.S. EPA (1984) and ATSDR (1990). A second estimate of the oral-soil AAF can be made from this study: (1.4%) / (11%) = 0.13.

The oral-soil AAF to be used in human health risk assessment is the average of the two estimates made above: (0.46 + 0.13) / 2 = 0.3.

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POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

The majority of the information presented below was derived from a paper entitled Absorption Adjustment Factor (AAF) Distributions for Polycyclic Aromatic Hydrocarbons (PAHs) (Magee et al., 1996).

These AAFs are appropriate for use with the following dose-response values for PAH:

- The oral cancer slope factor (CSF) for benzo(a)pyrene (BAP) of 7.3 $(mg/kg\text{-}day)^{-1}$ and the adjusted CSF for the remaining potentially carcinogenic PAH (cPAH) using the following relative potency factors (USEPA, 1993):

PAH	Relative Potency Factor
Benzo(a)pyrene	1
Benzo(a)anthracene	0.1
Benzo(b)fluoranthene	0.1
Benzo(k)fluoranthene	0.01
Chrysene	0.001
Dibenzo(a,h)anthracene	1
Indeno(1,2,3-cd)pyrene	0.1

- The oral reference doses (RfDs) for the noncarcinogenic PAHs (ncPAHs): acenaphthene (0.06 mg/kg-day), anthracene (0.3 mg/kg-day), fluoranthene (0.04 mg/kg-day), fluorene (0.04 mg/kg-day), naphthalene (0.02 mg/kg-day) and pyrene (0.03 mg/kg-day).

Absorption in the Dose-Response Studies

In the studies used to develop the CSF for BAP, BAP was administered in the diet. Corn oil gavage was used to administer doses in the RfD studies. The Magee et al. (1996) paper summarizes studies on the gastrointestinal absorption of PAHs, and develops a point estimate for gastrointestinal absorption in the dose-response studies of 92%, which is the average of 13 data points from six studies.

Oral-Soil AAF

cPAHs. An oral-soil AAF of 0.29 is used for cPAHs. This value is based on a review of six available studies of PAHs performed in vivo, as summarized in Magee et al. (1996). Three studies that evaluated gastrointestinal (oral) absorption of PAHs from a soil matrix (Goon et al., 1991; Rozett at al., 1996; and Weyand et al., 1996) were deemed appropriate for use for developing an oral-soil AAF. The Rozett et al. (1996) study evaluated the bioavailability of pyrene from aged soil from manufactured gas

plant residue (coal tar). The oral AAFs based on this study range from 0.07 to 0.76, with an average of 0.26. Weyand et al. (1996) also evaluated the oral bioavailability of pyrene from manufactured gas plant residue. The oral AAFs based on this study range from 0.11 to 0.36, with an average of 0.23. The last study, Goon et al. (1991) evaluated the bioavailability of BAP adsorbed to "aged" soil (clay-based and sand-based soils). These aged soils were treated with BAP and allowed to age 1 to 30 days, and 6 months to 1 year. The oral AAF for clay-based soil is 0.37 and that for sand-based soils is 0.57. A probabilistic (Monte Carlo) analysis, using 12 estimates of the AAF from all three studies, results in a 50th percentile oral-soil AAF of 0.27, with an upper 90th percentile value of 0.57. The Magee et al. (1996) paper recommends the use of a point-estimate oral-soil AAF of 0.29, which is the arithmetic mean of the point estimates used to develop the distribution.

ncPAHs. Magee et al. (1996) states that the oral absorption of cPAH and ncPAH is similar, therefore, it is appropriate to use the value derived above, 0.29, for the risk evaluation for ncPAHs.

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POLYCHLORINATED BIPHENYLS (PCBs)

The CSFs for PCBs range from 0.04 to 2.0 $(mg/kg\text{-}day)^{-1}$ and are based on the results from five chronic dietary studies in rats (Brunner et al., 1996; Kimbrough et al., 1975; NCI, 1978; Schaeffer et al., 1984; and Norback and Weltman, 1985). .

The current oral RfDs for Aroclor 1016 and Aroclor 1254 are 7.0E-5 mg/kg-day and 2.0E-5 mg/kg-day, respectively. The Aroclor 1016 value is based on critical effects observed in a reproductive bioassay in monkeys that were fed Aroclor 1016 in their diet (Barsottti and van Miller, 1984; Levin et al., 1988; Schantz et al., 1989, 1991). The Aroclor 1254 value is based on monkey clinical and immunologic studies in which the animals were fed gelatin capsules containing Aroclor 1254 in a glycerol: corn oil vehicle (Arnold et al., 1993,b; Tryphonas et al., 1989, 1991a,b).

Absorption in the Dose-Response Study

Because all of the studies are based on dietary exposures, the AAFs developed below apply to both carcinogenic and non-carcinogenic effects of PCBs. In all of the dose-response studies, various Aroclors were administered in the diet. However, no information on the efficiency of gastrointestinal absorption in those studies was presented. The studies summarized below have been used in the development of AAFs for PCBs. The specific absorption values used in the calculation of the average absorption value are indicated by underlining below.

1. Allen et al. (1975) gave single oral doses of 2,5,2',5'-tetrachlorobiphenyl (18 mg/kg bw) to four adult rhesus monkeys by gastric intubation. PCBs were given in 2.5 ml of corn oil on an empty stomach. Unmetabolized PCBs were analyzed in the feces by gas chromatography (GC). Minimum gastrointestinal absorption was found to be 88%. PCBs found in the feces over specified post-dosing times were presumed to be unabsorbed material. Because PCB metabolites are known to be eliminated in the bile, the possibility exists that some of the PCBs present in the feces were absorbed and then eliminated. As such, only minimum absorption efficiencies can be determined from this and similar studies.

2. Allen et al. (1974) gave single oral doses of PCBs (Aroclor 1248) (1.5 or 3.0 g/kg bw) to two adult rhesus monkeys by gastric intubation. The vehicle was not specified but is presumed to be corn oil. Dosing was done on an empty stomach. Unmetabolized PCBs were analyzed for in feces by GC. Recovery was reported to be high. Minimum gastrointestinal absorption was reported to be 94%.

3. Albro and Fishbein (1972) gave single oral doses of 20 different PCB congeners (5-100 mg/kg bw) and the unabsorbed marker compound, squalene, to CD rats. The mixture was given by stomach tube to unfasted animals who were allowed food and water ad libitum. No vehicle was specified. Although this was not a diet study, per se, it is possible that dietary components were present in the stomach at the same time as were the test compounds. Minimum gastrointestinal absorption was reported to be 90% for all congeners.

4. Tanabe et al. (1981) gave repeated oral doses of Kanechlors (300, 400, 500, 600) (c.30 mg/kg bw/day x 5 days) to Wistar rats. The dose was given in corn oil. Commercial diet was given ad

libitum. No information on the animals' stomach contents was reported. Parent compounds were analyzed in the feces by GC/MS (mass spectrometry). Minimal gastrointestinal absorption was reported to be 85% for total PCB. Cl_5 to Cl_7 congeners had 75-90% absorption.

5. Berlin et al. (1975) gave a single oral dose of 2,4,5,2',5'-pentachlorobiphenyl (7 mg/kg bw) to three CBA mice. The PCBs were given as an aqueous emulsion. No information on the animal's stomach contents was given. Minimal gastrointestinal absorption was reported to be 93%.

6. Van Miller et al. (1975) gave single oral doses (50 mg) of tritiated 2,2',5,5'-tetrachlorobiphenyl to three male Sprague-Dawley rats. The PCB was given by gavage in corn oil. Animals were given food and water ad libitum for 14 days. Urine, feces, and various tissues were analyzed. Over 86% of the radioactivity was present in the excreta as metabolites at 14 days. Thus, minimum gastrointestinal absorption was 86%.

7. Fries et al. (1989) gave four groups of four male Sprague-Dawley rats radiolabeled 2,2',5,5'-tetrachlorobiphenyl in diet or in corn oil (by gavage) or 2,2',4,5,5'-pentachlorobiphenyl in diet or in corn oil (by gavage). The animals given the PCBs by gavage were fed unspiked diet ad libitum. PCBs were administered daily for five days. Rats were then fed unspiked diet for 10 days. Urine and feces were collected. At 15 days, animals were sacrificed, and samples of fat and liver tissue were taken for analysis. The dose of PCBs given was not reported. The amount absorbed was defined as the amount that did not appear in the feces as parent compound. The average absorption of the two congeners when given in a dietary matrix was 89% [(91% + 86%) / 2]. The average absorption of the two congeners when given by corn oil gavage was 88% [(95% + 81%) / 2].

The above seven studies, which involve both rodents and primates and various PCB mixtures and purified congeners, all show that PCBs are very effectively absorbed from the gastrointestinal tract. In the one study (Fries, et al., 1989) in which PCBs were administered by diet, the absorption was shown to be 89%. The other six studies involved the administration of PCBs in various vehicles by gavage. These studies are also relevant to the estimation of the absorption seen in the dose-response studies, because Fries et al. (1989) showed in their rat study that there was no difference in absorption between diet and corn oil gavage. Accordingly, the results from all seven studies were averaged to yield an estimate of 89% for the absorption in the dose-response study.

Oral-Soil AAF

Fries et al. (1989) gave four groups of four male Sprague-Dawley rats radiolabeled 2,2',5,5'-tetrachlorobiphenyl in diet or in soil or 2,2',4,5,5'-pentachlorobiphenyl in diet or soil. ^{14}C-PCB soil was added to a standard rat diet in meal form at the rate of 5%. In the control experiment, ^{14}C-PCB in acetone was added to the feed. The PCB-soil was a Galestown sandy loam with a pH of 6.7 and which contained 67% sand, 22% silt, 11% clay, and 5% organic matter. Soils had been spilled with PCBs 8 years earlier and were stored at -5°C. At the time of the experiment, fractions passing through a 125 μm sieve were spiked with ^{14}C-PCB for quantitation.

PCBs were administered daily for five days. Rats were then fed unspiked diet for 10 days. Urine and feces were collected. At 15 days, animals were sacrificed, and samples of fat and liver tissue were taken for analysis. The dose of PCB was not reported. The amount absorbed was defined as the amount that did

not appear in the feces as parent compound.

The ratio of the amount of PCB absorbed when present as a soil matrix to that absorbed when present as a component of diet is a direct estimate of the oral-soil AAF. From this experiment, AAF estimates are available for two PCB congeners. The oral-soil AAF for the tetrachlorobiphenyl is (80%)/(91%)=0.88, while the estimate for the pentachlorobiphenyl congener is (67%)/(86%)=0.78. These two estimates are averaged [(0.88+0.78)/2] to give an estimate of the AAF (oral-soil) for PCB mixtures of 0.83.

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DIOXIN TEQ-HH

The oral CSF for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) of 1.5E+05 $(mg/kg\text{-}day)^{-1}$ is based on a dietary study in rats (Kociba et al., 1978). The diet was prepared by mixing (30 minutes) an acetone solution of TCDD with laboratory chow. The acetone was evaporated yielding a TCDD/diet mixture. TCDD concentration was 0.02 - 2 ppb (0.001 - 0.1 μg/kg-day). No absorption information is given in the Kociba et al. (1978) study.

Absorption in the Dose-Response Study

USEPA has summarized selected information on gastrointestinal absorption of 2,3,7,8-TCDD and related compounds in laboratory animals after a single oral exposure by gavage (USEPA, 2000). Doses ranged between 0.5 and 5000 ug/kg. This range is above the dose range used in the Kociba et al. (1978) study. The administered dose absorbed ranged from 2-90%. The single human study presented estimated 87% absorption from a 0.001 ug/kg 2,3,7,8-TCDD dose administered in corn oil. The average absorption estimated from the six reported studies of chlorinated dibenzodioxins (CDDs) administered at doses less than or equal to 50 ug/kg is 62%. USEPA (2000) notes that "gastrointestinal absorption of TCDD and related compounds is variable, incomplete, and congener– and vehicle-specific."

In a study by Fries and Marrow (1975), however, rats were given TCDD in their diet continuously for 42 days. The total observation period of the experiment was 70 days. Diets were prepared in a similar manner to that used by Kociba et al. (1978). Laboratory chow was mixed with a benzene solution of TCDD and the benzene was evaporated. Two dose levels were used, 7 ppb and 20 ppb, slightly above the dose level used in the Kociba et al. (1978) study. Absorption was reported to be 50-60%.

As the Fries and Marrow (1975) study directly measured absorption from the diet, and the study upon which the CSF for TCDD is based is a dietary study, the Fries and Marrow (1975) data will be used in the AAF determination. For the purposes of AAF derivation, 55% was used as the absorption efficiency in the dose-response study. This absorption estimate is consistent with the estimates of absorption for the single oral gavage studies.

AAF (Oral-Soil)

Data for the bioavailability of TCDD from soil have been summarized by the USEPA (2000). Studies indicate that intestinal absorption of TCDD from soil is approximately half that reported for TCDD administered in corn oil to guinea pigs and rats (McConnel, et al., 1984 and Lucier, et al., 1986; as reported in USEPA 2000). Estimates of bioavailability of TCDD in site soils (i.e., not laboratory prepared soils) range from 0.5% to 43%. Assuming that absorption of TCDD from the diet (as prepared by Kociba et al., 1978) is similar to that from corn oil (i.e., 55% of TCDD in diet or corn oil would be absorbed following oral exposure) it can be inferred that approximately 27.5 % of TCDD in soil may be absorbed following oral exposure. As this absorption estimate more directly compares absorption of TCDD from soil to dietary exposures, it is used here for AAF derivation. Therefore, in this risk assessment, the AAF (oral-soil) is (27.5%)/(55%) = 0.5.

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TABLE G-1
ABSORPTION FRACTIONS FOR SOIL AND SEDIMENT
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Absorption Fractions			
Constituent	**Oral**		**Dermal**	
VOCs				
1,1,2-Trichloroethane	1	(a)	0	(b)
1,2-Dichloroethane	1	(a)	0	(b)
1,2-Dichloroethene (total)	1	(a)	0	(b)
Acrolein	1	(a)	0	(b)
Benzene	1	(a)	0	(b)
Chlorobenzene	1	(a)	0	(b)
Chloroform	1	(a)	0	(b)
Dichloromethane	1	(a)	0	(b)
Ethylbenzene	1	(a)	0	(b)
Hexane	1	(a)	0	(b)
Tetrachloroethene	1	(a)	0	(b)
Toluene	1	(a)	0	(b)
Trichloroethene	1	(a)	0	(b)
Xylenes, Total	1	(a)	0	(b)
SVOCs				
1,2,4-Trichlorobenzene	1	(a)	0.1	(b)
1,2-Dichlorobenzene	1	(a)	0.1	(b)
1,4-Dichlorobenzene	1	(a)	0.1	(b)
2,4,6-Trichlorophenol	1	(a)	0.1	(b)
2,4-Dichlorophenol	1	(a)	0.1	(b)
2-Chlorophenol	1	(a)	0.1	(b)
2-Methylnaphthalene	0.29	(c)	0.13	(b)
4-Chloroaniline	1	(a)	0.1	(b)
4-Nitroaniline	1	(a)	0.1	(b)
Benzo(a)anthracene	0.29	(c)	0.13	(b)
Benzo(a)pyrene	0.29	(c)	0.13	(b)
Benzo(b)fluoranthene	0.29	(c)	0.13	(b)
bis(2-Chloroethyl)ether	1	(a)	0.1	(b)
bis(2-Ethylhexyl)phthalate	1	(a)	0.1	(b)
Dibenzo(a,h)anthracene	0.29	(c)	0.13	(b)
Hexachlorobenzene	1	(a)	0.1	(b)
Indeno(1,2,3-cd)pyrene	0.29	(c)	0.13	(b)
Naphthalene	0.29	(c)	0.13	(b)
Nitrobenzene	1	(a)	0.1	(b)
Pesticides				
4,4'-DDD	1	(a)	0.03	(b,d)
4,4'-DDE	1	(a)	0.03	(b,d)
4,4'-DDT	1	(a)	0.03	(b)
Aldrin	1	(a)	0.1	(b)
alpha-BHC	1	(a)	0.1	(d)
beta-BHC	1	(a)	0.1	(b)
delta-BHC	1	(a)	0.1	(b)
Dieldrin	1	(a)	0.1	(b)
gamma-BHC (Lindane)	1	(a)	0.04	(b)
Heptachlor	1	(a)	0.1	(b)
Heptachlor Epoxide	1	(a)	0.1	(b)
Herbicides				
MCPP	1	(a)	0.1	(b)
Pentachlorophenol	1	(a)	0.1	(b)

TABLE G-1
ABSORPTION FRACTIONS FOR SOIL AND SEDIMENT
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Absorption Fractions			
	Oral		Dermal	
PCBs				
PCBs, Total	0.83	(c)	0.14	(b)
Dioxin				
Dioxin TEQ-HH	0.5	(c)	0.03	(b)
Metals				
Antimony	1	(a)	0.001	(e)
Arsenic	0.3	(c)	0.03	(b)
Barium	1	(a)	0.001	(e)
Cadmium	1	(a)	0.001	(e)
Chromium	0.3	(c)	0.001	(e)
Copper	1	(a)	0.001	(e)
Manganese	1	(a)	0.001	(e)
Mercury	1	(a)	0.001	(e)
Nickel	1	(a)	0.001	(e)
Thallium	1	(a)	0.001	(e)
Vanadium	1	(a)	0.001	(e)

Notes:
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health.
TEFs are presented in Table F-1.
PCBs - Polychlorinated Biphenyls.
SVOCs - Semivolatile Organic Compounds.
USEPA - United States Environmental Protection Agency.
VOCs - Volatile Organic Compounds.
(a) Default value of 1 assumed.
(b) USEPA, 2004. Risk Assessment Guidance for Superfund. Vol. 1, Part E. July, 2004. Exhibit 3-4.
(c) Derivation provided in Attachment G.
(d) Value for DDT.
(e) USEPA, 2004 does not provide a default values for inorganics. Therefore, the default value of 0.1% from USEPA Region 4 has been used. (USEPA, 2000).

Attachment H

Constants and Variables used in the Calculation of Dermal Dose

- Table H-1: Constants and Variables used in the Calculation of Dermal Dose
- Table H-2: Constants and Variables used in the Calculation of Dermal Dose – Calculated Values

TABLE H-1
CONSTANTS AND VARIABLES USED IN THE CALCULATION OF DERMAL DOSE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Constant (cm/hr)		B (dimensionless)		Lag Time (t) (hr)		Time to Steady State (t*) (hr)		Fraction Absorbed (dimensionless)	
VOCs										
1,1,2-Trichloroethane	6.44E-03	(a)	2.86E-02	(a)	5.96E-01	(a)	1.43E+00	(a)	1.00E+00	(a)
1,1-Dichloroethylene	1.17E-02	(a)	4.41E-02	(a)	3.72E-01	(a)	8.93E-01	(a)	1.00E+00	(a)
1,2-Dichloroethane	4.20E-03	(a)	1.61E-02	(a)	3.82E-01	(a)	9.18E-01	(a)	1.00E+00	(a)
1,2-Dichloroethene (total)	7.71E-03	(a)	2.92E-02	(a)	3.72E-01	(a)	8.93E-01	(a)	1.00E+00	(a)
1,2-Dichloropropane	7.76E-03	(a)	3.17E-02	(a)	4.58E-01	(a)	1.10E+00	(a)	1.00E+00	(a)
2-Butanone	9.63E-04	(a)	3.14E-03	(a)	2.70E-01	(a)	6.47E-01	(a)	1.00E+00	(a)
4-Methyl-2-pentanone	2.66E-03	(a)	1.02E-02	(a)	3.87E-01	(a)	9.30E-01	(a)	1.00E+00	(a)
Acetone	5.20E-04	(b)	1.53E-03	(b)	2.22E-01	(b)	5.34E-01	(b)	1.00E+00	(c)
Benzene	1.49E-02	(a)	5.05E-02	(a)	2.92E-01	(a)	7.00E-01	(a)	1.00E+00	(a)
Chlorobenzene	2.82E-02	(a)	1.15E-01	(a)	4.56E-01	(a)	1.09E+00	(a)	1.00E+00	(a)
Chloroethane	6.07E-03	(a)	1.88E-02	(a)	2.45E-01	(a)	5.88E-01	(a)	1.00E+00	(a)
Chloroform	6.83E-03	(a)	2.87E-02	(a)	4.98E-01	(a)	1.19E+00	(a)	1.00E+00	(a)
Chloromethane	3.28E-03	(a)	8.97E-03	(a)	2.04E-01	(a)	4.90E-01	(a)	1.00E+00	(a)
Dichloromethane	3.54E-03	(a)	1.26E-02	(a)	3.19E-01	(a)	7.65E-01	(a)	1.00E+00	(a)
Ethylbenzene	4.93E-02	(a)	1.95E-01	(a)	4.20E-01	(a)	1.01E+00	(a)	1.00E+00	(a)
Tetrachloroethene	3.34E-02	(a)	1.66E-01	(a)	9.06E-01	(a)	2.18E+00	(a)	1.00E+00	(a)
Toluene	3.11E-02	(a)	1.15E-01	(a)	3.50E-01	(a)	8.39E-01	(a)	1.00E+00	(a)
Trichloroethene	1.16E-02	(a)	5.13E-02	(a)	5.81E-01	(a)	1.39E+00	(a)	1.00E+00	(a)
Vinyl chloride	5.60E-03	(a)	1.70E-02	(a)	2.39E-01	(a)	5.73E-01	(a)	1.00E+00	(a)
Xylenes, Total	5.32E-02	(a)	2.11E-01	(a)	4.20E-01	(a)	1.01E+00	(a)	1.00E+00	(a)
SVOCs										
1,2,4-Trichlorobenzene	6.63E-02	(a)	3.43E-01	(a)	1.11E+00	(a)	2.66E+00	(a)	1.00E+00	(a)
1,2-Dichlorobenzene	4.13E-02	(a)	1.93E-01	(a)	7.11E-01	(a)	1.71E+00	(a)	1.00E+00	(a)
1,4-Dichlorobenzene	4.20E-02	(a)	1.96E-01	(a)	7.11E-01	(a)	1.71E+00	(a)	1.00E+00	(a)
1,4-Dioxane	3.32E-04	(a)	1.20E-03	(a)	3.32E-01	(a)	7.97E-01	(a)	1.00E+00	(a)
2,4,5-Trichlorophenol	3.54E-02	(b)	1.92E-01	(b)	1.34E+00	(b)	3.22E+00	(b)	1.00E+00	(c)
2,4,6-Trichlorophenol	3.46E-02	(a)	1.87E-01	(a)	1.36E+00	(a)	3.27E+00	(a)	1.00E+00	(a)
2,4-Dichlorophenol	2.06E-02	(a)	1.01E-01	(a)	8.74E-01	(a)	2.10E+00	(a)	1.00E+00	(a)
2,4-Dimethylphenol	1.09E-02	(a)	4.64E-02	(a)	5.16E-01	(a)	1.24E+00	(a)	1.00E+00	(a)
2-Chlorophenol	7.99E-03	(a)	3.48E-02	(a)	5.60E-01	(a)	1.34E+00	(a)	1.00E+00	(a)
2-Methylnaphthalene	8.94E-02	(b)	4.10E-01	(b)	6.58E-01	(b)	1.58E+00	(b)	1.00E+00	(c)
2-Methylphenol	7.66E-03	(a)	3.06E-02	(a)	4.30E-01	(a)	1.03E+00	(a)	1.00E+00	(a)
2-Nitroaniline	4.44E-03	(b)	2.01E-02	(b)	6.24E-01	(b)	1.50E+00	(b)	1.00E+00	(c)
3&4Methylphenol	7.66E-03	(a)	3.06E-02	(a)	4.30E-01	(a)	1.03E+00	(a)	1.00E+00	(a)
3,3'-Dichlorobenzidine	1.28E-02	(a)	7.83E-02	(a)	2.80E+00	(a)	6.72E+00	(a)	1.00E+00	(a)
4-Chloroaniline	4.94E-03	(b)	2.14E-02	(b)	5.45E-01	(b)	1.31E+00	(b)	1.00E+00	(c)
4-Chlorophenol	1.15E-02	(a)	5.03E-02	(a)	5.60E-01	(a)	1.34E+00	(a)	1.00E+00	(a)
4-Nitroaniline	2.21E-03	(b)	9.98E-03	(b)	6.24E-01	(b)	1.50E+00	(b)	1.00E+00	(c)
4-Nitrophenol	4.83E-03	(a)	2.19E-02	(a)	6.42E-01	(a)	1.54E+00	(a)	1.00E+00	(a)

TABLE H-1
CONSTANTS AND VARIABLES USED IN THE CALCULATION OF DERMAL DOSE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Constant (cm/hr)		B (dimensionless)		Lag Time (t) (hr)		Time to Steady State (t*) (hr)		Fraction Absorbed (dimensionless)	
Benzo(a)pyrene	7.01E-01	(a)	4.27E+00	(a)	2.69E+00	(a)	1.17E+01	(a)	1.00E+00	(a)
Benzo(b)fluoranthene	7.02E-01	(a)	4.29E+00	(a)	2.77E+00	(a)	1.20E+01	(a)	1.00E+00	(a)
Benzo(g,h,i)perylene	1.07E+00	(b)	6.82E+00	(b)	3.71E+00	(b)	1.65E+01	(b)	1.00E+00	(c)
Benzo(k)fluoranthene	6.60E-01	(b)	4.03E+00	(b)	2.72E+00	(b)	1.18E+01	(b)	1.00E+00	(c)
Benzyl Butyl Phthalate	3.74E-02	(b)	2.54E-01	(b)	5.90E+00	(b)	1.42E+01	(b)	1.00E+00	(c)
bis(2-Ethylhexyl)phthalate	2.49E-02	(a)	1.90E-01	(a)	1.66E+01	(a)	3.99E+01	(a)	8.00E-01	(a)
Chrysene	4.74E-01	(a)	2.75E+00	(a)	2.03E+00	(a)	8.53E+00	(a)	1.00E+00	(a)
Dibenzo(a,h)anthracene	1.51E+00	(a)	9.68E+00	(a)	3.88E+00	(a)	1.76E+01	(a)	6.00E-01	(a)
Diethyl Phthalate	3.90E-03	(a)	2.23E-02	(a)	1.87E+00	(a)	4.50E+00	(a)	1.00E+00	(a)
Di-n-butylphthalate	2.40E-02	(a)	1.54E-01	(a)	3.86E+00	(a)	9.27E+00	(a)	9.00E-01	(a)
Di-n-octylphthalate	2.28E+00	(b)	1.74E+01	(b)	1.62E+01	(b)	7.45E+01	(b)	1.00E+00	(c)
Dinoseb	1.60E-02	(b)	9.54E-02	(b)	2.33E+00	(b)	5.59E+00	(b)	1.00E+00	(c)
Indeno(1,2,3-cd)pyrene	1.04E+00	(a)	6.65E+00	(a)	3.78E+00	(a)	1.68E+01	(a)	6.00E-01	(a)
Naphthalene	4.66E-02	(a)	2.03E-01	(a)	5.58E-01	(a)	1.34E+00	(a)	1.00E+00	(a)
Nitrobenzene	5.39E-03	(b)	2.30E-02	(b)	5.14E-01	(b)	1.23E+00	(b)	1.00E+00	(c)
N-Nitrosodiphenylamine	1.45E-02	(a)	7.88E-02	(a)	1.38E+00	(a)	3.31E+00	(a)	1.00E+00	(a)
Phenol	4.34E-03	(a)	1.62E-02	(a)	3.59E-01	(a)	8.61E-01	(a)	1.00E+00	(a)
Pesticides										
4,4'-DDT	2.69E-01	(a)	1.95E+00	(a)	1.04E+01	(a)	4.25E+01	(a)	7.00E-01	(a)
beta-BHC	2.01E-02	(b)	1.32E-01	(b)	4.47E+00	(b)	1.07E+01	(b)	1.00E+00	(c)
Dieldrin	1.22E-02	(a)	9.18E-02	(a)	1.46E+01	(a)	3.51E+01	(a)	8.00E-01	(a)
Endrin Ketone	1.51E-03	(b)	1.13E-02	(b)	1.43E+01	(b)	3.43E+01	(b)	1.00E+00	(c)
gamma-BHC (Lindane)	1.08E-02	(a)	7.10E-02	(a)	4.57E+00	(a)	1.10E+01	(a)	9.00E-01	(a)
Heptachlor	8.64E-03	(a)	6.43E-02	(a)	1.33E+01	(a)	3.19E+01	(a)	8.00E-01	(a)
Heptachlor Epoxide	2.03E-02	(b)	1.54E-01	(b)	1.59E+01	(b)	3.82E+01	(b)	1.00E+00	(c)
Herbicides										
2,4,5-T	8.99E-03	(b)	5.53E-02	(b)	2.84E+00	(b)	6.80E+00	(b)	1.00E+00	(c)
2,4,5-TP (Silvex)	1.58E-02	(b)	9.98E-02	(b)	3.40E+00	(b)	8.15E+00	(b)	1.00E+00	(c)
2,4-D	6.56E-03	(b)	3.75E-02	(b)	1.82E+00	(b)	4.36E+00	(b)	1.00E+00	(c)
2,4-DB	1.36E-02	(b)	8.28E-02	(b)	2.61E+00	(b)	6.27E+00	(b)	1.00E+00	(c)
Dicamba	2.63E-03	(b)	1.51E-02	(b)	1.82E+00	(b)	4.36E+00	(b)	1.00E+00	(c)
Dichlorprop	1.40E-02	(b)	8.28E-02	(b)	2.18E+00	(b)	5.23E+00	(b)	1.00E+00	(c)
MCPA	1.67E-02	(b)	9.07E-02	(b)	1.40E+00	(b)	3.35E+00	(b)	1.00E+00	(c)
MCPP	1.16E-02	(b)	6.53E-02	(b)	1.67E+00	(b)	4.02E+00	(b)	1.00E+00	(c)
Pentachlorophenol	3.93E-01	(a)	2.47E+00	(a)	3.33E+00	(a)	1.38E+01	(a)	9.00E-01	(a)
PCBs										
PCBs, Total	4.32E-01	(a,e)	3.15E+00	(a,e)	1.13E+01	(a,e)	4.79E+01	(a,e)	5.00E-01	(a,e)
Dioxin										
Dioxin TEQ-HH	8.07E-01	(a)	5.57E+00	(a)	6.82E+00	(a)	3.01E+01	(a)	5.00E-01	(a)

TABLE H-1
CONSTANTS AND VARIABLES USED IN THE CALCULATION OF DERMAL DOSE
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

Constituent	Constant (cm/hr)		B (dimensionless)	Lag Time (t) (hr)	Time to Steady State (t*) (hr)	Fraction Absorbed (dimensionless)
Metals						
Aluminum	1.00E-03	(f)	--	--	--	--
Antimony	1.00E-03	(f)	--	--	--	--
Arsenic	1.00E-03	(f)	--	--	--	--
Barium	1.00E-03	(f)	--	--	--	--
Beryllium	1.00E-03	(f)	--	--	--	--
Cadmium	1.00E-03	(f)	--	--	--	--
Chromium	2.00E-03	(f,g)	--	--	--	--
Cobalt	4.00E-04	(g)	--	--	--	--
Copper	1.00E-03	(f)	--	--	--	--
Manganese	1.00E-03	(f)	--	--	--	--
Mercury	1.00E-03	(f)	--	--	--	--
Nickel	1.00E-03	(f)	--	--	--	--
Selenium	1.00E-03	(f)	--	--	--	--
Thallium	1.00E-03	(f)	--	--	--	--
Vanadium	1.00E-03	(f)	--	--	--	--
Zinc	1.00E-03	(f)	--	--	--	--

Notes:
-- Parameter not applicable to inorganics.
Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health. TEFs are presented in Table F-1.
PCBs - Polychlorinated Biphenyls.
SVOCs - Semivolatile Organic Compounds.
VOCs - Volatile Organic Compounds.
(a) U.S. EPA, 2004. Risk Assessment Guidance for Superfund. Volume 1, Part E, Supplemental Guidance for Dermal Risk Assessment. Exhibit B-3 (Organics). Note that values were obtained from the spreadsheet provided with the guidance, therefore, rounding differs from that presented in Exhibit B-3.
(b) Calculated in Table H-2
(d) Assumed to be 1.
(e) Value for PCB Hexachlorobiphenyl.
(f) U.S. EPA, 2004. Risk Assessment Guidance for Superfund. Volume 1, Part E, Supplemental Guidance for Dermal Risk Assessment. Exhibit 3-1. (Inorganics)
(g) Value for chromium hexavalent.

TABLE H-2
CONSTANTS AND VARIABLES USED IN THE CALCULATION OF DERMAL DOSE - CALCULATED VALUES
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

	Compound Data		Calculations							
Constituent	Molecular Weight (g/mol)	Log Kow	Log PC (a)	PC (cm/hr) (a)	B (b) (--)	D_{sc} (c) (cm2/hr)	Lag Time (t) (Tau) (d) (hr)	b (e)	c (e)	Time to Steady State (t*) (e) (hr)
VOCs										
Acetone	58.08 (f)	-0.24 (f)	-3.283648	5.20E-04	1.53E-03	7.49E-07	2.22E-01	3.04E-01	3.34E-01	5.34E-01
SVOCs										
2-Methylnaphthalene	142.2 (f)	3.86 (f)	-1.04872	8.94E-02	4.10E-01	2.53E-07	6.58E-01	6.19E-01	6.46E-01	1.58E+00
2-Nitroaniline	138.13 (f)	1.85 (f)	-2.352528	4.44E-03	2.01E-02	2.67E-07	6.24E-01	3.16E-01	3.47E-01	1.50E+00
2,4,5-Trichlorophenol	197.45 (f)	3.72 (f)	-1.45052	3.54E-02	1.92E-01	1.24E-07	1.34E+00	4.33E-01	4.71E-01	3.22E+00
4-Chloroaniline	127.57 (f)	1.83 (f)	-2.306592	4.94E-03	2.14E-02	3.06E-07	5.45E-01	3.16E-01	3.48E-01	1.31E+00
4-Nitroaniline	138.13 (f)	1.39 (f)	-2.656128	2.21E-03	9.98E-03	2.67E-07	6.24E-01	3.09E-01	3.40E-01	1.50E+00
Benzo(g,h,i)perylene	276.34 (f)	6.63 (f)	0.028296	1.07E+00	6.82E+00	4.49E-08	3.71E+00	3.21E+01	6.87E+00	1.65E+01
Benzo(k)fluoranthene	252.32 (f)	6.11 (f)	-0.180392	6.60E-01	4.03E+00	6.12E-08	2.72E+00	1.20E+01	4.10E+00	1.18E+01
Benzyl Butyl Phthalate	312.37 (f)	4.73 (f)	-1.427472	3.74E-02	2.54E-01	2.82E-08	5.90E+00	4.81E-01	5.20E-01	1.42E+01
Di-n-octylphthalate	390.57 (f)	8.1 (f)	0.358808	2.28E+00	1.74E+01	1.03E-08	1.62E+01	1.97E+02	1.74E+01	7.45E+01
Dinoseb	240.22 (f)	3.56 (f)	-1.795632	1.60E-02	9.54E-02	7.16E-08	2.33E+00	3.64E-01	4.00E-01	5.59E+00
Nitrobenzene	123.11 (f)	1.85 (f)	-2.268416	5.39E-03	2.30E-02	3.24E-07	5.14E-01	3.17E-01	3.49E-01	1.23E+00
Pesticides										
beta-BHC	290.83 (f)	4.14 (f)	-1.696248	2.01E-02	1.32E-01	3.73E-08	4.47E+00	3.89E-01	4.26E-01	1.07E+01
Endrin Ketone	380.9 (g)	3.2 (g)	-2.82104	1.51E-03	1.13E-02	1.17E-08	1.43E+01	3.10E-01	3.41E-01	3.43E+01
Heptachlor Epoxide	389.32 (f)	4.98 (f)	-1.693392	2.03E-02	1.54E-01	1.05E-08	1.59E+01	4.05E-01	4.43E-01	3.82E+01
Herbicides										
2,4,5-T	255.49 (f)	3.31 (f)	-2.046144	8.99E-03	5.53E-02	5.88E-08	2.84E+00	3.38E-01	3.71E-01	6.80E+00
2,4,5-TP (Silvex)	269.51 (f)	3.8 (f)	-1.801256	1.58E-02	9.98E-02	4.91E-08	3.40E+00	3.67E-01	4.03E-01	8.15E+00
2,4-D	221.04 (f)	2.81 (f)	-2.183224	6.56E-03	3.75E-02	9.17E-08	1.82E+00	3.26E-01	3.59E-01	4.36E+00
2,4-DB	249.1 (f)	3.53 (f)	-1.86516	1.36E-02	8.28E-02	6.38E-08	2.61E+00	3.56E-01	3.91E-01	6.27E+00
Dicamba	221.04 (f)	2.21 (f)	-2.579224	2.63E-03	1.51E-02	9.17E-08	1.82E+00	3.12E-01	3.43E-01	4.36E+00
Dichlorprop	235.07 (g)	3.43 (g)	-1.852592	1.40E-02	8.28E-02	7.65E-08	2.18E+00	3.56E-01	3.91E-01	5.23E+00
MCPA	200.62 (f)	3.25 (f)	-1.778472	1.67E-02	9.07E-02	1.19E-07	1.40E+00	3.61E-01	3.96E-01	3.35E+00
MCPP	214.65 (f)	3.13 (f)	-1.93624	1.16E-02	6.53E-02	9.95E-08	1.67E+00	3.44E-01	3.78E-01	4.02E+00

Notes:

Kow - Octanol-Water Partition Coefficient.

PC - Permeability Constant.

SVOCs - Semivolatile Organic Compounds.

VOCs - Volatile Organic Compounds.

(a) U.S. EPA, 2004. Supplemental Guidance for Dermal Risk Assessment, Equation 3.8: Log PC = -2.80 + 0.66 log Kow - 0.0056 MW

(b) U.S. EPA, 2004. Supplemental Guidance for Dermal Risk Assessment, Equation A.1: $B = PC \times MW^{0.5}/2.6$

(c) U.S. EPA, 2004. Supplemental Guidance for Dermal Risk Assessment, Equation A.2: Log Dsc/lsc = -2.8-0.0056 MW, where lsc = 1E-3 cm.
Solving for Dsc: $Dsc = 10^{-2.8-0.0056\ MW} * lsc$.

(d) U.S. EPA, 2004. Supplemental Guidance for Dermal Risk Assessment, Equation A.4: $t = \hat{l}_{sc}/(6*D_{sc})$.

(e) U.S. EPA, 2004. Supplemental Guidance for Dermal Risk Assessment:
If $B \leq 0.6$, Equation A.5: $t^* = 2.4* t$
If B> 0.6: $t^* = (b- (b^2-c^2)^{0.5}) * l^2sc/(Dsc)$
Equation A-7: $b = (2*(1+B)^2/p) -c$
Equation A-8: $c = (1+3B+3B^2)/(3*(1+B))$

(f) Risk Assessment Information System (RAIS). Toxicity and Chemical-Specific Factors Data Base. URL: <http://risk.lsd.ornl.gov/index.shtml>.

(g) National Institutes of Health. Specialized Information Services. http://sis.nlm.nih.gov/chemical.html

Attachment I

Tiers of Cancer Slope Factors for Environmental PCBs

TABLE I-1
TIERS OF CANCER SLOPE FACTORS FOR ENVIRONMENTAL PCBs (a)
HUMAN HEALTH RISK ASSESSMENT
SAUGET AREA 2 RI/FS
SAUGET, ILLINOIS

HIGH RISK AND PERSISTENCE
Upper-bound slope factor: 2.0 per (mg/kg)/day Central-estimate slope factor: 1.0 per (mg/kg)/day
Criteria for use: - Food chain exposure - Sediment or soil ingestion - Dust or aerosol inhalation - Dermal exposure, if an absorption factor has been applied - Presence of dioxin-like, tumor-promoting, or persistent congeners - Early-life exposure (all pathways and mixtures)
LOW RISK AND PERSISTENCE
Upper-bound slope factor: 0.4 (mg/kg-day)-1 Central-estimate slope factor: 0.3 (mg/kg-day)-1
Criteria for use: - Ingestion of water-soluble congeners - Inhalation of evaporated congeners - Dermal exposure if no absorption factor has been applied
LOWEST RISK AND PERSISTENCE
Upper-bound slope factor: 0.07 (mg/kg-day)-1 Central-estimate slope factor: 0.04 (mg/kg-day)-1
Criteria for use: Congener or isomer analyses verify that congeners with more than 4 chlorines comprise less than 0.5% of total PCBs.
Notes: (a) - USEPA. 2008. Integrated Risk Information System (IRIS).

Sauget Area 2 Sites Group

April 24th, 2008

Ms. Leah Evison
US EPA - Region 5 (SR-6J)
77 W. Jackson Boulevard
Chicago, IL 60604

Re: Sauget Area 2 Human Health Risk Assessment

Overnight Mail

Dear Ms. Evison:

Attached, is the requested Sauget Area 2 Human Health Risk Assessment Interim Deliverable. Once CH2M Hill has had a chance to review this document I suggest we hold a conference call with both ENSR and CH2M Hill to discuss any questions.

The Sauget Area 2 Sites Group looks forward to meeting you on April 30th.

Sincerely,

Gary Uphoff
By. SD.Smith

Gary D. Uphoff
Co-Project Coordinator

Steven D. Smith
Co-Project Coordinator

cc: Distribution List Attached

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