

**SUMMARY REPORT FOR EVALUATION OF
CONCENTRATIONS OF POLYCYCLIC AROMATIC
HYDROCARBONS (PAHs) AND METALS IN BACKGROUND
SOILS IN MAINE**

Prepared for:

**Maine Department of Environmental Protection
17 State House Station
Augusta, Maine**

Prepared by:



**AMEC Environment & Infrastructure, Inc.
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Portland, ME 04101**

November 16, 2012

AMEC Project: 3612112178

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A handwritten signature in black ink, appearing to read "Peter Baker", written over a horizontal line.

Peter Baker
Project Manager

A handwritten signature in black ink, appearing to read "Michael J. Murphy", written over a horizontal line.

Michael J. Murphy
Principal Scientist

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ACRONYMS AND ABBREVIATIONS

AMEC	AMEC Environment & Infrastructure, Inc.
bgs	below ground surface
BTVs	Background threshold values
ICP	Inductively Coupled Plasma
KM	Kaplan-Meier statistic
Maine DOT	Maine Department of Transportation
MassDEP	Massachusetts Department of Environmental Protection
MEDEP	Maine Department of Environmental Protection
MRSA	Maine Statutes Revised Annotated
NAS	Naval Air Station
PAHs	polycyclic aromatic hydrocarbons
RAGS	Remedial Action Guidelines for Soil
UPL	upper prediction limit
USGS	United States Geological Survey
UTL	upper tolerance limit

1.0 INTRODUCTION

AMEC Environment & Infrastructure (AMEC) is pleased to submit this summary report for the evaluation of concentrations of polycyclic aromatic hydrocarbons (PAHs) and metals in background soils throughout the state of Maine. The purpose of this document is to identify background levels of metals and PAHs in soils to assist future policy development by the Maine Department of Environmental Protection (MEDEP). To complete this evaluation, MEDEP has provided PAH and metals laboratory data associated with soil samples collected from background locations across the state.

MEDEP defines Background Contaminants as follows (MEDEP, 2010):

“Background Contaminants” means those contaminants that are not due to the release of contaminants at the Hazardous Substance Site. The background contaminants may be naturally occurring or anthropogenic. Note: Hazardous Substance Site activity (such as waste disposal practices) may chemically transform or release naturally occurring substances into other environmental media. The additional concentrations of the naturally occurring substance that are released from the Hazardous Substance Site activity are not representative of natural background concentrations.

MEDEP currently utilizes the MEDEP Remedial Action Guidelines for Soil (RAGS) to establish risk-based clean-up goals for contaminated sites. The MEDEP RAGS allow consideration of non-site related background concentrations in deriving site specific clean-up goals, but do not specify typical background concentrations in Maine soil. Some of the risk-based RAGS for PAHs are lower than reported background levels found in the United States; a situation that often triggers costly site-specific background evaluations. For example, the Massachusetts Department of Environmental Protection’s (MassDEP) 2002 document *Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil* identifies background concentrations of PAHs for Massachusetts soils (natural soils and soils containing fill). The MEDEP Residential RAGS value for benzo(a)pyrene is reported at 0.026 mg/kg in soil. MassDEP identified background PAH concentrations for benzo(a)pyrene of 2 mg/kg for “natural soil” and up to 7 mg/kg for soil with fill.

As such, this document evaluates laboratory data for PAHs and metals associated with soil samples collected in Maine to identify typical background conditions to support policy or guidance development for remediation sites.

1.1 Approach

PAHs and metals are present everywhere in our environment. The sources of PAHs in our environment include road, driveway or parking lot runoff, urban fill material that may contain ash or partially burned material, and airborne deposition from fires and internal combustion engines. Metals are naturally occurring elements that are also widely distributed in the environment.

The first step in development of typical background concentrations of PAHs in Maine was to conduct a literature search, and subsequently identify gaps in the existing data. Based on this assessment, additional unpublished sample results of PAH samples in Maine were compiled and data gaps were reassessed. Additional sampling and testing was further completed to supplement the pre-existing data within the literature and establish a Maine specific compilation of background PAH samples that was robust enough to support a policy decision.

The MEDEP initially sought unpublished PAHs concentrations in background samples (i.e., samples unrelated to site activities) by compiling data associated with samples from thirty Brownfield Phase II reports. This information was readily available and collected following appropriate quality assurance protocols. Data from five additional sites (mostly within the VRAP Program) were subsequently added to the list by MEDEP. The detection of PAHs in most of these samples is believed to be generally related to urban fill. Additionally, an asphalt-specific sampling round was conducted to evaluate the concentration of PAHs due to pavement runoff. Samples were collected from an additional 27 near-asphalt locations across the state with samples collected in each county. Lastly, PAH data collected at two Navy bases in Maine were added to the dataset. A total of 24 samples were collected at the Portsmouth Navy facility while 42 samples were collected at the Naval Air Station (NAS) Brunswick. These data were statistically analyzed and are presented herein.

The data gathered above were used to develop PAH concentrations representative of background conditions found in soil throughout Maine. The background metals data were obtained by MEDEP from the United States Geological Survey (USGS) and since MEDEP deemed that dataset robust enough for its purposes, were not subject to the same data gap analysis by AMEC described above for PAHs.

For purposes of this assessment, background is assumed to represent PAHs and metals present in the environment that are not influenced by releases from a site and that are usually described as naturally occurring and/or anthropogenic (USEPA, 2002). The data have been evaluated to identify concentrations of PAHs and metals that, if exceeded, would likely indicate a site-specific impact rather than a background condition (in the absence of a site-specific background study). Background threshold values (BTVs) are often estimated using an upper prediction limit (UPL) or upper tolerance limit (UTL). Since EPA guidance documents for the statistical software commonly used for these types of evaluations (ProUCL) expresses a preference for UPLs, and consistent with requests from MEDEP, only UPLs (based on the distribution of each dataset) are presented in this report.

The following EPA guidance documents were reviewed to assist in providing a consistent set of definitions as well as recommended approaches to estimate UPLs.

- ProUCL Version 4.1 Technical Guide (USEPA, 2010).
- Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites; Appendix B Policy Considerations for the Application of Background Data in Risk Assessment and Remedy Selection (USEPA, 2002).

2.0 DISCUSSION OF AVAILABLE DATA

2.1 PAH Datasets (Urban and Rural)

To complete this evaluation, MEDEP originally provided analytical data associated with 53 soil samples that have been identified as site-specific background samples at Brownfield sites as well as 31 surface soil samples that were intentionally collected in 2011 by MEDEP in close proximity to asphalt paving at locations not known to be a release site. Background samples at Brownfield sites and the soil samples collected in proximity to asphalt paving were assumed to have PAH concentrations representative of typical background conditions found across developed areas of the state. An additional 25 soil samples previously collected at the Portsmouth Naval Shipyard and 32 samples from the Brunswick military facilities in Maine that were also from developed areas have also been considered in this background evaluation. A summary of all soil samples analyzed for PAHs and considered in this study is presented in Table A-1 of Appendix A. Table A-2 presents a detailed summary of all PAH analytical data used in the evaluation (excluding field duplicates).

Soil samples that had been collected specifically to characterize background conditions at Brownfield sites were collected from 48 different locations within the State of Maine. Those soil samples are hereafter referred to as Brownfields samples (identified in Table A-2). Background samples at Brownfield sites were collected at varying depths of 0 to 6 ft below ground surface (bgs). Twenty of those locations were in urban areas and thirty five of those locations were in rural areas, although all were from developed areas, meaning the areas were *not* from undisturbed, pristine locations. Soil samples intentionally collected in proximity to asphalt paving were collected in 2011 by MEDEP from 29 different locations (identified in Table A-1). Eight of those locations were in urban areas and twenty one of those locations were in rural areas. For simplicity, MEDEP's definition of urban corresponds to the Maine Department of Transportation (Maine DOT) Urban Compact Zone, which is based on population density. Field duplicates were collected for several samples for quality assurance purposes, but the analytical data for those field duplicates were not included in the statistical analysis of the data, although the results for field samples and duplicates were checked for consistency. Soil samples collected in 2011, in proximity to asphalt paving, were all surface soil (0 – 6 inches bgs) samples. For each sample in the dataset, laboratory analysis of PAHs was conducted using USEPA Methods 8270 or 8270C SIM or both.

Samples collected at two Navy bases in Maine (the Portsmouth Naval Shipyard and NAS Brunswick) were also included in this background evaluation. A total of 24 samples were collected at the Portsmouth site and 32 samples were collected at the NAS Brunswick site. All samples collected at the Portsmouth site were classified as urban, while 13 samples were classified as urban and 19 samples were classified as rural from the NAS Brunswick dataset. To avoid inappropriately influencing the final background concentrations by the large number of samples collected at these two facilities, a small random subset of these samples was extracted from each site's data for inclusion. Upon discussion and agreement with MEDEP, 5 urban samples were identified from the Portsmouth dataset while 10 samples (5 urban and 5 rural)

were identified from the NAS Brunswick dataset for inclusion in background calculations. To obtain random samples from each dataset, sample IDs were listed sequentially and then sample IDs falling at the minimum, 25th, 50th, 75th, and maximum position within the list were retained. This method allowed for identification of a random, unbiased subset of samples representative of background conditions across each Navy site.

2.2 Metals Dataset

To complete the evaluation of background metals in soil, MEDEP provided analytical data associated with 150 soil samples collected through Maine by the USGS for the Geochemical Landscapes Project (USGS, 2011). Unlike the PAH samples, USGS selected samples from undeveloped, relatively pristine locations. The principal author summarized the sample collection as follows (Smith, 2011a and Smith, 2011b):

From 2004 to 2007 we conducted a pilot phase to test sampling and analytical protocols for the full continental-scale soil geochemical survey. The results of this pilot phase were published as 21 papers in a special issue of the journal Applied Geochemistry in August 2009, [which is available] on-line via the Applied Geochemistry web site.... We started the full sampling the conterminous U.S. in 2007. We pre-selected about 4,800 sites (a density of 1 site per 1,600 sq. km.) by a generalized random tessellation stratified design. At each site we collected 3 samples (0-5 cm depth; soil A horizon; soil C horizon), for a total of something over 14,000 samples. ...Maine was the first state we completed. In late 2010 we completed all the sampling for the coterminous U.S. and are currently awaiting results from the labs. These results should all be ... [published in 2012]... as a USGS Data Series report.

Note that there are two values for arsenic. The first value (column J in each file) was determined by hydride-generation atomic absorption spectrometry following a fusion in sodium peroxide. The second value (column U) was determined by ICP-MS following a 4-acid digestion. The hydride method seems to give more consistent concentrations and this will likely be the only arsenic value we will report in the final data set

AMEC obtained the USGS dataset for Maine. Forty-nine of the USGS samples were collected from the A horizon (with depths ranging from 0-5 inches), 48 from the C horizon (with depths ranging from 5 to 20 inches), and 53 were identified as having been collected from 0 to 5 centimeters. The samples included in these datasets are assumed to represent background conditions found across the state, and were combined into one dataset for the purposes of this evaluation.

A summary of all soil samples analyzed for metals and considered in this study is presented in Table A-3 of Appendix A. Table A-4 presents a detailed summary of all analytical data used in the background metals evaluation.

3.0 DATA SET EVALUATION

3.1 Preprocessing of Background Datasets

The PAH and metals datasets were preprocessed for the evaluation as described below.

3.1.1 Preprocessing of Background PAH Datasets

The evaluation of laboratory data for background soil samples was conducted in a step-wise fashion. The steps of the evaluation used specifically for the three PAH datasets (urban developed, rural developed and urban fill PAHs) are as follows:

- Remove field duplicate sample results from the dataset. The analytical results for field duplicate samples were generally very similar to the results for their respective original samples. The field duplicate samples were collected as a QA/QC measure and the associated analytical results were not intended to replace or modify the results from the original field samples. The removal of field duplicates from the dataset does not introduce any substantial bias to the evaluation;
- For each compound analyzed in each sample, identify a single representative analytical result. Some samples were analyzed by two analytical methods, and some samples were re-run by the laboratory because the results of the initial run were outside the calibration range;
- Segregate the data set into two subsets: data associated with soil samples collected in urban developed areas and the data associated with soil samples collected in rural developed areas were segregated using the Maine DOT Urban Compact Zone definition of urban and rural;
- Evaluate the data distribution for each analyte and identify/remove statistical outliers (applicable to urban developed and rural developed datasets only); and
- Evaluate the processed dataset for presence of single/multiple populations.

Removal of analytical data for field duplicates. To prevent unduly weighting the results from any single location, the data associated with field duplicates (QA/QC samples) were removed from further consideration. The original field samples have been relied upon in this evaluation. Field duplicate samples from the PAH datasets that were not evaluated include the following: HA-4-6-14-D, JF-5-6-13, and TS-5-6-15-DUP. The list of samples included in the PAH background evaluation is presented in Table A-1.

Identify Single Analytical Result for Each Compound in Each Sample. Some samples were analyzed by two analytical methods (USEPA Method 8270 and USEPA 8270 SIM) and some samples were analyzed in more than one run (results from the original laboratory run were outside of the calibration range). Therefore, multiple laboratory results were reported for PAHs for numerous samples. Multiple results were reviewed and a single analytical result was identified for each compound in each soil sample using the following guidelines:

1. If all Method 8270 results were detects (unqualified or “J” values) and Method 8270C SIM results are “E” qualified, the highest Method 8270 result was selected
2. If all Method 8270 results were detects (unqualified or “J” values) and the Method 8270C SIM results were detects (unqualified or “J” values), the highest result among all reported results was selected
3. If the Method 8270 results were non-detects and the Method 8270C SIM results were detects (unqualified or “J” values), the highest unqualified Method 8270C SIM result (or the highest “E” qualified result if there are no unqualified Method 8270C SIM results) was selected
4. If Method 8270 results and Method 8270C SIM results were all non-detects, the lowest reporting limit among all results was selected.

The selection of the single results is documented in Table A-2 (summarizing all analytical results for PAHs utilized in this background evaluation).

Segregate Data into Urban and Rural Subsets. Data from the PAH dataset were separated into two categories of samples (those collected in urban areas and those collected in rural areas). The urban/rural distinction was based on the definitions of urban compact areas per Maine Statutes Revised Annotated (MRSA) 23 sub-section 754. Generally, areas designated by the Maine Department of Transportation to be Urban Compact Areas are "built-up" sections of road where structures along the highway are nearer than 200 feet apart for a distance of 1/4 of a mile.¹ MEDEP identified the urban/rural category assignment for each of the samples included in the evaluation. Urban and rural designations for each of the samples evaluated are presented in Table A-2.

Inspect Distributions and Remove Statistical Outliers. An important element when developing appropriate estimates of background conditions is to ensure that the dataset is free of data points that are not considered representative of background conditions in the area. The main objective of the statistical procedures used in this assessment is to model the majority of the data representing the dominant population, while not accommodating the few low or high probability outliers that may yield unrealistic results. These types of outlying observations (i.e., representing contaminated locations) can distort the mean and standard deviation calculations, ultimately yielding distorted estimates of background threshold values (i.e., UPLs). Therefore, it is desirable to identify and remove potential outliers prior to estimating background concentrations.

Urban and rural datasets, for which outliers were identified and removed, formed the final urban developed and rural developed PAH datasets. In undertaking this process, it became apparent that the urban dataset was actually two statistical populations; urban developed areas and urban fill. Therefore, a third dataset, “urban fill”, was also developed from the available urban PAH data. This dataset did not undergo the same outlier analysis and as such, all available results were included in UPL estimates. Details regarding outlier identification for each dataset are described in detail below.

¹Urban areas are available from the Maine Department of Transportation, Bureau of Planning, TRIM Section, State House Station #16, Augusta, ME 04333. For more information see: <http://www.maine.gov/mdot/maines-transportation-systems/state-urban-municipalities.php>

Urban and Rural PAHs

To support identification of outliers in this evaluation, box-and-whisker plots, based upon the full PAH datasets with non-detects set at the full reporting limit, were created and qualitatively reviewed for each analyte. Box plots for urban PAHs and rural PAHs (based on the raw analytical data) are presented in Appendix B-1 and C-1.

These graphs were used in conjunction (and verified) with the common inter-quartile range (IQR) approach of identifying outliers (based on flagging upper and lower fences/thresholds). Essentially, the IQR is calculated as the 75th percentile – 25th percentile for each compound. The upper fence is calculated as the 75th percentile + (1.5 x IQR) and the lower fence is calculated as the 25th percentile – (1.5 x IQR). Data points that fall either above the upper fence or below the lower fence are identified as outliers and removed from the dataset.

All data points that were identified as outliers and consequently removed from their respective dataset are documented in Table B-2 and Table C-2 for urban and rural PAH concentrations, respectively. For further clarification, IQR calculations are presented (along with the upper and lower fence thresholds) at the bottom of each of these tables.

Urban Fill PAHs

In order to maximize the use of available background soil data, a third dataset titled “Urban Fill” was developed. This dataset did not undergo the process detailed above for outlier analysis. Urban fill UPLs, rather, were estimated retaining all available urban data so as to capture some of the elevated PAH concentrations (likely representative of urban fill conditions) in the final estimated background UPLs.

MEDEP and AMEC discussions resulted in the following working definition of urban fill. Urban fill material includes components in the soil matrix that are unrelated to a specific property activity or past property use. The fill material has been placed over an area for the purpose of modifying the elevation of the land surface for the development of the property or properties. Urban fill components in the soil matrix may include a variety of identifiable materials including brick, cement, wood, wood ash, coal, coal ash, ash, boiler ash, clunkers, asphalt, glass, plastic, metal, inert demolition debris, and roadside ditch materials. Certain urban areas of Maine, such as the Back Bay Area of Portland, have large quantities of Urban Fill present. Many properties in Maine have smaller quantities of Urban Fill present, including developed properties in rural areas of the state. Soil descriptions should include the components of fill materials present and the Conceptual Site Model should include the extent or approximate extent of the materials both vertically and horizontally. The use of a soil management plan may be appropriate for managing potential exposure risks to the Urban Fill material.

Evaluate Data for Single/Multiple Populations. A basic assumption of background evaluations is that the appropriate background dataset consists of a single statistically consistent population. To verify that this assumption was met for each analyte, Q/Q probability plots of the raw and lognormal datasets were reviewed. Since a majority of the PAH datasets fit a

lognormal distribution, the Q/Q plots using log transformed data served as the primary focus of this evaluation. Based on careful review of these, in conjunction with histogram graphs, it was concluded that all datasets fit a single population. For the few cases where a handful of samples appeared slightly different than the larger population (and that were not identified as outliers as per the description above), these samples were included in the population, to reduce additional segmentation of the larger datasets. The probability plots for acenaphthene, acenaphthylene, anthracene, and naphthalene suggest some possible multiple populations within the urban and rural datasets. Q/Q probability plots are presented in Appendices B-3 and C-3 for urban and rural PAHs, respectively.

3.1.2 Preprocessing of Background Metals Datasets

The preprocessing of the metals dataset was conducted in a similar fashion to the PAH datasets, with a few distinctions. The specific steps used to develop the final background metals dataset are as follows and described in more detail below:

- Evaluate the spatial distribution of the dataset to ensure even distribution of samples across the state of Maine;
- Evaluate the dataset for field duplicates;
- For each analytical parameter analyzed in each sample, identify a single representative analytical result;
- Evaluate the data distribution for each analyte and identify/remove statistical outliers; and
- Evaluate the processed dataset for single/multiple populations.

Evaluate the Spatial Distribution of the Samples Collected. To ensure that the samples collected adequately represented background soil conditions across the state of the Maine, X and Y coordinates for each sample location where plotted in GIS. Once this figure was developed and reviewed, it was determined that metals sampling locations were spatially distributed equally across the state and as such, no additional samples were needed. See Appendix D-1 for this figure.

Removal of analytical data for field duplicates. There were no field duplicates identified in the metals dataset and as such, no data processing was required.

Identify Single Analytical Result for Each Compound in Each Sample. Samples presented in the metals dataset were only analyzed by one method for all metals except arsenic, eliminating the need to identify a single analytical result for each metal. For arsenic, the Inductively Coupled Plasma (ICP) analytical data were selected for evaluation. This is consistent with the remainder of the metals data (also analyzed via ICP).

Inspect Distributions and Remove Statistical Outliers. Statistical outliers for the metals dataset were treated in the same fashion as the PAHS (as described in Section 3.1), including box plots

and Q-Q plots. However, since a majority of the metals dataset fit a normal distribution, additional higher level statistics for normally distributed data were used to verify outliers.

ProUCL software includes interface for the commonly used and robust Dixon (for datasets with 25 or fewer observations) and Rosner (for datasets with greater than 25 observations) outlier tests, with the stipulation that these tests are appropriate for resultant normally distributed datasets when outliers are removed. Since a majority of environmental datasets are right skewed and/or simply do not fit the assumptions of normality (as seen for nearly all of the PAHs described above), this requirement is often not met, and, as such, these tests could result in false outlier identification if applied to data sets that are not normally distributed. While Rosner tests can be used as a crude statistic to support identification of outliers for all data distributions, the Rosner test was only run for those datasets fitting a normal distribution in this evaluation. For all metals fitting a normal distribution, Rosner statistical outputs were reviewed in conjunction with the IQR calculations and box-and-whisker plots.

The Rosner statistical test identified the same outliers (and in some cases a few less) than those identified via box-and-whisker plots and IQR calculations. Rosner test outputs for all analytes fitting a normal distribution are presented in Appendix D-4.

Evaluate Data for Single/Multiple Populations. Similar to the approach used for PAHs to verify that data comes from a single population, Q/Q probability plots for metals (excluding outliers) were reviewed. Unlike PAHs, however, these Q/Q plots were reviewed on a normal (raw data), rather than lognormal (log-transformed), scale. The metals concentration data were not as skewed as those for the PAHs and included far fewer nondetects, allowing for the presentation of raw data to identify single or multiple populations.

Based on careful review of these, in conjunction with histogram graphs, it was concluded that all datasets fit a single population. Q/Q probability plots are presented in Appendix D-5.

3.2 Development of Background Concentrations for PAHs and Metals

After removal of outliers and development of the final four background datasets (urban PAHs, rural PAHs, urban fill PAHs, and metals), EPA's ProUCL software package (version 4.1) was used to determine the shape of each data distribution. Goodness-of-fit statistics were primarily used for this assessment (note that Q/Q probability plots and histograms from earlier analyses were also reviewed as part of this determination). Based on these qualitative and semi-quantitative evaluations, each data set was classified as following a normal, lognormal, or not identified (nonparametric) distribution. ProUCL outputs for the goodness-of-fit statistics are presented in Appendices B-4, C-4, D-6, and E-1 for urban PAHs, rural PAHs, metals and urban fill PAHs, respectively.

Once the distribution was established, BTVs were estimated using ProUCL software (Version 4.1). While ProUCL presents a number of BTVs, the 90% upper prediction limit (UPL) was selected to represent final background concentrations for this evaluation. UPL's are defined as the upper boundaries of a prediction interval for an independently obtained observation

(USEPA, 2010). They are often used in background evaluations as reasonable, yet conservative estimates.

Based on the distribution of the datasets, UPLs were developed using a variety of parametric and nonparametric statistics. Note: that when calculating these statistics, nondetects were included and a 90% confidence (or probability) was specified. For datasets that fit either a normal or lognormal distribution and at least 70% of the results were reported as detected concentrations, the corresponding normal or lognormal UPL was retained. For analytes that did not fit either distribution or for those which fit more than two distributions, nonparametric techniques (based on ranking) were employed in order to reliably estimate an upper limit. Per ProUCL guidance, nonparametric statistics were also used for all analytes that were infrequently detected (<70% detected) and reported with varying detection limits.

When nonparametric statistics are used, ProUCL guidance (USEPA, 2010) provides no specific recommendations regarding the most appropriate upper limit to use. However, the technical guidance document (USEPA, 2010) suggests the use of the Kaplan-Meier statistic (KM) estimates and their associated upper limits to estimate BTVs for datasets that are not highly left skewed and/or datasets with multiple detection limits. Since much of the data used in this evaluation fits both of these criteria, 90% KM estimates were retained for all datasets with nondetects requiring nonparametric statistics. ProUCL outputs for estimating background concentrations are presented in Appendices B-5, C-5, and D-7 for urban PAHs, rural PAHs, and metals, respectively.

When datasets only included one distinct detected value (and could therefore not be processed by ProUCL at all), or when all results for a given analyte were reported as nondetect, BTVs were not estimated.

Summary statistics including the number of samples (after removing outliers), frequency of detection, minimum detected concentrations, maximum detected concentrations, arithmetic means (calculated while substituting $\frac{1}{2}$ the reporting limit for nondetects), and final UPLs are presented in Table 4-1, 4-2, 4-3 and 4-4 for urban developed PAHs, rural developed PAHs, metals and urban fill PAHs, respectively.

4.0 FINDINGS/CONCLUSIONS

4.1 PAHs

Table 4-1 and 4-2 present the final UPLs for urban developed and rural developed PAHs, respectively. These summaries indicate that the 90% UPLs for urban and rural background soil concentrations for some PAHs (particularly benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) are greater than corresponding Maine risk-based RAGS for soil for residential, park user, and in some cases commercial receptors. Table 4-4 presents the final UPLs for urban fill background PAHs. This summary indicates that 90% UPLs for urban fill background soil for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-sd)pyrene are greater than corresponding Maine risk-based RAGS for soil for one or more receptor groups.

These findings suggest that in the absence of site-specific background concentration determinations, application of the Maine risk-based RAGS could often trigger remediation for conditions that are not site-related. Consequently, the background PAH soil data evaluated in this report may be useful in establishing typical background concentrations of PAHs in soil in developed rural areas, developed urban areas, and urban fill sites in Maine that could be used instead of numerous site-specific background studies.

4.2 Metals

Table 4-3 presents the final UPLs for metals. The summaries indicate that the 90% UPLs for background soil concentrations of arsenic are greater than corresponding Maine risk based RAGS for soil for residential, park user, and commercial receptors. These findings suggest that in the absence of site-specific background metals concentration determinations, application of the Maine risk-based RAGS could often trigger remediation for conditions that are not site-related. Consequently, the background arsenic soil data evaluated in this report may be useful in revising the typical background metal concentrations that are currently in the RAGs.

5.0 REFERENCES

- MEDEP, 2010. Maine Remedial Action Guidelines (RAGS) for Soil Contaminated with Hazardous Substances (from MEDEP website):
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TABLES

Table 4-1
Analytical PAH Distribution Summary: Urban Developed Areas Background PAHs
PAHS in Maine Soil

PAHs	Data Distribution ¹		Summary Statistics (mg/kg)						Background Threshold Value ³		Maine RAGs for Comparison ⁴ (mg/kg)			
	Normal	Lognormal	Number of Results	Number Detected	Percent Detected	Minimum Detected	Maximum Detected	Mean ²	Final UPL (mg/kg)	Statistic / Rationale	Residential	Park User	Commercial	Construction
2-Methylnaphthalene		X	30	7	23%	0.012	0.172	0.11	0.089	90% KM UPL	94	160	480	35
Acenaphthene	X	X	35	7	20%	0.0093	0.609	0.13	0.20	90% KM UPL	970	1600	2000	110
Acenaphthylene	X	X	35	13	37%	0.045	0.699	0.20	0.39	90% KM UPL	1000	1700	2200	130
Anthracene	X	X	33	11	33%	0.002	0.9	0.19	0.40	90% KM UPL	4300	7200	7800	430
Benzo(a)anthracene		X	34	22	65%	0.002	3.59	0.57	1.6	90% KM UPL	0.26	0.44	3.5	43
Benzo(a)pyrene		X	34	23	68%	0.004	3.29	0.62	1.7	90% KM UPL	0.026	0.044	0.35	4.3
Benzo(b)fluoranthene		X	33	23	70%	0.034	3.72	0.75	1.9	90% KM UPL	0.26	0.44	3.5	43
Benzo(g,h,i)perylene		X	33	21	64%	0.002	1.61	0.31	0.79	90% KM UPL	750	1200	5500	10000
Benzo(k)fluoranthene	X	X	32	16	50%	0.006	1.47	0.31	0.76	90% KM UPL	2.6	4.4	35	430
Carbazole			7	0	0%	NA	NA	0.18		NA ⁶	--	--	--	--
Chrysene		X	33	24	73%	0.002	3.37	0.66	2.2	90% UPL (t) lognormal	26	44	350	4300
Dibenzo(a,h)anthracene	X	X	34	13	38%	0.005	0.418	0.16	0.28	90% KM UPL	0.026	0.044	0.35	4.3
Dibenzofuran			11	1	9%	0.531	0.531	0.21		NA ⁵	--	--	--	--
Fluoranthene		X	33	30	91%	0.002	4.49	0.85	3.2	90% UPL (t) lognormal	1000	1700	7300	10000
Fluorene	X	X	35	8	23%	0.022	0.676	0.16	0.29	90% KM UPL	830	1400	2700	200
Indeno(1,2,3-cd)pyrene	X	X	32	22	69%	0.002	1.33	0.31	0.74	90% KM UPL	0.26	0.44	3.5	43
Naphthalene		X	35	10	29%	0.014	0.537	0.13	0.22	90% KM UPL	200	330	200	32
Phenanthrene		X	32	25	78%	0.002	2.17	0.40	1.6	90% UPL (t) lognormal	700	1200	3600	470
Pyrene		X	33	28	85%	0.003	4.24	0.78	2.8	90% KM UPL	750	1200	5500	10000

Notes

- 1) Represents the distribution of each dataset once outliers were removed. Data distribution was determined via ProUCL's Goodness of Fit tests (See Appendix B-3). Goodness of fit tests included Shapiro-Wilkes and Lilliefors tests looking at detects only, nondetects treated as detects, and using lognormal ROS estimates. Prepared By: EYM
Checked By: RRD
 - 2) Mean was calculated using 1/2 the reporting limit for nondetects
 - 3) Hierachy followed for UPL selection is normal distribution, lognormal distribution then nonparametric distribution. Nonparametric statistics are used for all analytes detected in less than 70% samples. For analytes detected in >70% samples, lognormal or normal UPLs (based on distribution of data) were retained. See text for further discussion. See Attachment B-5 for ProUCL Outputs
 - 4) Guidelines for residential, park user, commercial worker and excavation or construction worker were selected from the MEDEP Soil Remediation Guidelines.
http://maine.gov/dep/rwm/publications/guidance/rags/Final%201-13-2010/3-RAGs_Appendix_1-2-3_Jan_13_2010.pdf
Highlighted cells indicate those which are lower than their respective estimated background value (UPL)
 - 5) UPL could not be calculated as there is only 1 distinct value (detect) within the dataset.
 - 6) UPL could not be calculated as all results were reported as nondetect
- UPL: Upper Prediction Limit
PAH: Polycyclic aromatic hydrocarbon
"--" indicates that Maine RAGs were not available.
"NA" indicates value is not applicable or not available

Table 4-2
Analytical PAH Distribution Summary: Rural Developed Areas Background PAHs
PAHs in Maine Soil

PAHs	Data Distribution ¹		Summary Statistics (mg/kg)						Background Threshold Value ³		Maine RAGs for Comparison ⁴ (mg/kg)			
	Normal	Lognormal	Number of Results	Number Detected	Percent Detected	Minimum Detected	Maximum Detected	Mean ²	Final UPL (mg/kg)	Statistic / Rationale	Residential	Park User	Commercial	Construction
2-Methylnaphthalene		X	53	16	30%	0.0039	0.69	0.096	0.16	90% KM UPL	94	160	480	35
Acenaphthene		X	57	12	21%	0.0048	0.359	0.11	0.10	90% KM UPL	970	1600	2000	110
Acenaphthylene		X	56	24	43%	0.002	0.621	0.15	0.32	90% KM UPL	1000	1700	2200	130
Anthracene		X	55	24	44%	0.002	0.67	0.14	0.29	90% KM UPL	4300	7200	7800	430
Benzo(a)anthracene		X	51	34	67%	0.003	1.7	0.33	0.86	90% KM UPL	0.26	0.44	3.5	43
Benzo(a)pyrene		X	55	36	65%	0.005	2.9	0.53	1.5	90% KM UPL	0.026	0.044	0.35	4.3
Benzo(b)fluoranthene		X	52	38	73%	0.005	2.46	0.52	1.3	90% KM UPL	0.26	0.44	3.5	43
Benzo(g,h,i)perylene		X	52	31	60%	0.003	1.2	0.22	0.57	90% KM UPL	750	1200	5500	10000
Benzo(k)fluoranthene		X	53	31	58%	0.0065	1.3	0.26	0.69	90% KM UPL	2.6	4.4	35	430
Carbazole			11	0	0%	NA	NA	NA		NA ⁵	--	--	--	--
Chrysene		X	52	39	75%	0.002	2.04	0.40	1.0	90% KM UPL	26	44	350	4300
Dibenzo(a,h)anthracene		X	53	22	42%	0.005	0.77	0.13	0.32	90% KM UPL	0.026	0.044	0.35	4.3
Dibenzofuran			13	0	0%	NA	NA	NA		NA ⁵	--	--	--	--
Fluoranthene		X	51	41	80%	0.003	2.7	0.52	2.0	90% UPL (t) Lognormal	1000	1700	7300	10000
Fluorene		X	57	19	33%	0.005	0.55	0.12	0.22	90% KM UPL	830	1400	2700	200
Indeno(1,2,3-cd)pyrene		X	48	28	58%	0.003	1	0.16	0.40	90% KM UPL	0.26	0.44	3.5	43
Naphthalene		X	57	17	30%	0.004	0.26	0.094	0.11	90% KM UPL	200	330	200	32
Phenanthrene		X	53	37	70%	0.002	1.71	0.32	0.83	90% KM UPL	700	1200	3600	470
Pyrene		X	51	41	80%	0.003	2.9	0.56	2.0	90% UPL (t) Lognormal	750	1200	5500	10000

Notes

- 1) Represents the distribution of each dataset once outliers were removed. Data distribution was determined via ProUCL's Goodness of Fit tests (See Appendix C-3). Goodness of fit tests included in Prepared By: EYM
 ProUCL outputs are Shapiro-Wilkes and Lilliefors tests looking at detects only, nondetects treated as detects, and using lognormal ROS estimates. Checked By: RRD
 - 2) Mean was calculated using 1/2 the reporting limit for nondetects
 - 3) Hierachy followed for UPL selection is normal distribution, lognormal distribution then nonparametric distribution. Nonparametric statistics are used for all analytes detected in less than 70% samples. For analytes detected in >70% samples, lognormal or normal UPLs (based on distribution of data) were retained. See text for further discussion. See Attachment C-5 for ProUCL Outputs
 - 4) Guidelines for residential, park user, commercial worker and excavation or construction worker were selected from the MEDEP Soil Remediation Guidelines.
http://maine.gov/dep/rwm/publications/guidance/rags/Final%201-13-2010/3-RAGs_Appendix_1-2-3_Jan_13_2010.pdf
 Highlighted cells indicate those which are lower than their respective estimated background value (UPL)
 - 5) UPL could not be calculated as all results were reported as nondetect
- UPL: Upper Prediction Limit
 PAH: Polycyclic aromatic hydrocarbon
 "--" indicates that Maine RAGs were not available.
 "NA" indicates value is not applicable or not available

Table 4-3
Analytical Distribution Summary: Background Metals
Metals in Maine Soil

Metal	Data Distribution ¹		Summary Statistics (mg/kg)						Background Threshold Value		Maine RAGs for Comparison ⁴ (mg/kg)			
	Normal	Lognormal	Number of Results	Number Detected	Percent Detected	Minimum Detected	Maximum Detected	Mean ²	Final UPL ³ (mg/kg)	Statistic / Rationale	Residential	Park User	Commercial	Construction
Mercury			140	135	96%	0.01	0.18	0.0674	0.123	90% KM(t)	51	510	85	930
Silver			140	1	1%	1	1	NA	NA ⁵		850	8500	1400	1500
Arsenic	X		143	143	100%	1	25	9.8	16.4	90% Normal UPL	1.4	4.2	2.3	42
Barium	X		144	144	100%	117	602	351	469	90% Normal UPL	34000	340000	57000	62000
Beryllium			144	144	100%	0.2	3.1	1.5	2.4	90% UPL; nonparametric	340	3400	570	620
Bismuth		X	140	140	100%	0.06	0.32	0.17	0.25	90% Lognormal UPL	--	--	--	--
Cadmium			133	94	71%	0.1	0.3	0.15	0.26	90% KM(t)	11	94	18	19
Cerium			147	147	100%	10.8	81	48	63	90% UPL; nonparametric	--	--	--	--
Cobalt	X		150	150	100%	0.6	20.8	8.9	14.9	90% Normal UPL	51	510	85	920
Chromium	X		150	150	100%	7	98	51	79	90% Normal UPL	--	--	--	--
Cesium			137	3	0%	NA	NA	NA	NA ⁵		--	--	--	--
Copper			141	141	100%	2.4	32	13.0	23	90% UPL; nonparametric	2400	24000	4000	4300
Gallium	X		141	141	100%	6.23	22.1	13.9	18.0	90% Normal UPL	--	--	--	--
Indium			148	135	91%	0.02	0.09	0.044	0.065	90% KM(t)	--	--	--	--
Lanthanum			148	148	100%	5.2	37.3	22	30	90% NP UPL	--	--	--	--
Lithium	X		147	147	100%	3	55	27	42	90% Normal UPL	--	--	--	--
Manganese	X		138	138	100%	103	1210	549	841	90% Normal UPL	4100	40000	6800	7400
Molybdenum		X	142	142	100%	0.21	1.3	0.65	0.98	90% Lognormal UPL	850	8500	1400	1500
Niobium	X		138	138	100%	0.9	11.7	6.1	8.9	90% Normal UPL	--	--	--	--
Nickel	X	X	149	149	100%	4.1	55.4	24	39	90% Normal UPL	510	5100	850	930
Phosphorus		X	147	147	100%	240	1460	721	1126	90% Lognormal UPL	--	--	--	--
Lead		X	134	134	100%	7.2	43.2	23	32	90% Lognormal UPL	340	1100	530	950
Rubidium			136	136	100%	29.3	128	75	104	90% NP UPL	--	--	--	--
Antimony	X		141	140	99%	0.05	0.99	0.46	0.71	90% Normal UPL	68	680	110	120
Scandium	X		148	148	100%	1	17	9.2	13.7	90% Normal UPL	--	--	--	--
Tin			133	133	100%	0.8	3.4	2.0	2.7	90% NP UPL	--	--	--	--
Strontium		X	141	141	100%	23.9	167	86	131	90% Lognormal UPL	--	--	--	--
Tellurium			159	0	0%	NA	NA	NA	NA ⁶		--	--	--	--
Thorium			138	138	100%	2.9	10.9	6.9	8.8	90% NP UPL	--	--	--	--
Thallium			124	124	100%	0.3	0.6	0.45	0.60	90% NP UPL	14	140	23	250
Uranium			142	142	100%	0.5	2.9	1.7	2.2	90% NP UPL	--	--	--	--
Vanadium	X		159	150	94%	10	134	68	103	90% KM(t)	1200	12000	2000	2200
Tungsten			136	136	100%	0.1	1.4	0.60	1.1	90% NP UPL	--	--	--	--
Yttrium	X		144	144	100%	2	19.3	10.3	15.1	90% Normal UPL	--	--	--	--
Zinc	X		148	148	100%	10	139	66	101	90% Normal UPL	51000	510000	85000	93000
Selenium	X		148	92	62%	0.2	0.9	0.32	0.61	90% KM(t) UPL	340	3400	570	1500

Notes

- 1) Represents the distribution of each dataset once outliers were removed. Data distribution was determined via ProUCL's Goodness of Fit tests (See Attachment D-4).
 - 2) Mean was calculated using 1/2 the reporting limit for nondetects
 - 3) Hierachy followed for UPL selection is normal distribution, lognormal distribution then nonparametric distribution. See text for further discussion. See Attachment D-7 for ProUCL Outputs
 - 4) 1. Guidelines for residential, park user, commercial worker and excavation or construction worker were selected from the MEDEP Soil Remediation Guidelines.
http://maine.gov/dep/rwm/publications/guidance/rags/Final%201-13-2010/3-RAGs_Appendix_1-2-3_Jan_13_2010.pdf
 Highlighted cells indicate those which are lower than their respective estimated background value (UPL)
 - 5) UPL could not be calculated as there is only 1 distinct value (detect) within the dataset.
 - 6) UPL could not be calculated as all results were reported as nondetect
- UPL: Upper Prediction Limit
 "--" indicates that Maine RAGs were not available.
 "NA" indicates value is not applicable or not available
 NP indicates nonparametric statistic

Prepared By: RRD
 Checked By: EYM

Table 4-4
Analytical PAH Distribution Summary: Urban Fill Background PAHs
PAHS in Maine Soil

PAHs	Data Distribution ¹		Summary Statistics (mg/kg)					Background Threshold Value ³		Maine RAGs for Comparison ⁴ (mg/kg)				
	Normal	Lognormal	Number of Results	Number Detected	Percent Detected	Minimum Detected	Maximum Detected	Mean ²	Final UPL (mg/kg)	Statistic / Rationale	Residential	Park User	Commercial	Construction
2-Methylnaphthalene		X	33	9	27%	0.012	1.11	0.22	0.41	90% KM UPL	94	160	480	35
Acenaphthene	X	X	38	9	24%	0.0093	14.5	0.58	3.53	90% KM UPL	970	1600	2000	110
Acenaphthylene	X	X	38	15	39%	0.045	4.74	0.40	1.35	90% KM UPL	1000	1700	2200	130
Anthracene	X	X	38	15	39%	0.002	27.1	1.07	6.69	90% KM UPL	4300	7200	7800	430
Benzo(a)anthracene		X	38	26	68%	0.002	109.1	3.88	26.8	90% KM UPL	0.26	0.44	3.5	43
Benzo(a)pyrene		X	38	27	71%	0.004	100.5	3.78	5.2	90% UPL (t) lognormal	0.026	0.044	0.35	4.3
Benzo(b)fluoranthene		X	38	28	74%	0.034	159.8	5.79	6.8	90% UPL (t) lognormal	0.26	0.44	3.5	43
Benzo(g,h,i)perylene		X	38	25	66%	0.002	63.7	2.29	15.68	90% KM UPL	750	1200	5500	10000
Benzo(k)fluoranthene	X	X	38	21	55%	0.006	49.7	2.01	12.44	90% KM UPL	2.6	4.4	35	430
Carbazole			10	3	30%	0.146	0.844	0.24	0.53	90% KM UPL	--	--	--	--
Chrysene		X	37	28	76%	0.002	128.5	4.64	6.4	90% UPL (t) lognormal	26	44	350	4300
Dibenzo(a,h)anthracene	X	X	38	16	42%	0.005	18.3	0.75	4.52	90% KM UPL	0.026	0.044	0.35	4.3
Dibenzofuran			14	1	7%	0.531	0.531	0.30		NA ⁵	--	--	--	--
Fluoranthene		X	38	35	92%	0.002	250.2	8.46	10.5	90% UPL (t) lognormal	1000	1700	7300	10000
Fluorene	X	X	38	10	26%	0.022	17.9	0.70	4.37	90% KM UPL	830	1400	2700	200
Indeno(1,2,3-cd)pyrene	X	X	38	27	71%	0.002	73.8	2.66	3.32	90% UPL (t) lognormal	0.26	0.44	3.5	43
Naphthalene		X	38	12	32%	0.014	2.9	0.27	0.82	90% KM UPL	200	330	200	32
Phenanthrene		X	37	30	81%	0.002	177.8	5.87	6.1	90% UPL (t) lognormal	700	1200	3600	470
Pyrene		X	38	33	87%	0.003	202.9	7.06	9.5	90% UPL (t) lognormal	750	1200	5500	10000

- Notes
- 1) Data distribution was determined via ProUCL's Goodness of Fit tests (See Appendix E-1). Goodness of fit tests included in ProUCL outputs are Shapiro-Wilkes and Lilliefors tests looking at detects only, nondetects treated as detects, and using lognormal ROS estimates. Prepared By: EYM
Checked By: RRD
- 2) Mean was calculated using 1/2 the reporting limit for nondetects
- 3) Hierachy followed for UPL selection is normal distribution, lognormal distribution then nonparametric distribution. Nonparametric statistics are used for all analytes detected in less than 70% samples. For analytes detected in >70% samples, lognormal or normal UPLs (based on distribution of data) were retained. See text for further discussion. See Attachment E-2 for ProUCL Outputs
- 4) Guidelines for residential, park user, commercial worker and excavation or construction worker were selected from the MEDEP Soil Remediation Guidelines.
http://maine.gov/dep/rwm/publications/guidance/rags/Final%201-13-2010/3-RAGs_Appendix_1-2-3_Jan_13_2010.pdf
 Highlighted cells indicate those which are lower than their respective estimated background value (UPL)
- 5) UPL could not be calculated as there is only 1 distinct value (detect) within the dataset.
- UPL: Upper Prediction Limit
 PAH: Polycyclic aromatic hydrocarbon
 "--" indicates that Maine RAGs were not available.
 "NA" indicates value is not applicable or not available

APPENDICES

Appendix A

Samples and Laboratory Data Included in the Background Soil Evaluation

- A1: List of All Soil Samples Considered in Background Evaluation for PAHs
 - A2: Analytical Data used in the Evaluation for PAHs
- A3: All Soil Samples Considered in the Background Evaluation for Metals
 - A4: Analytical Data used in the Evaluation for Metals

Appendix A1

Appendix A-1: Soil Samples Considered in the Background Evaluation for PAHs

Sample ID	Sample Date	Depth	Brownfield, Asphalt or Military Base	Urban or Rural
15 Sea St, Eastport BK101	11/10/2010	0.5-1'	Brownfield	Rural
15 Sea St, Eastport BK102	11/10/2010	0.5-1'	Brownfield	Rural
15 Sea St, Eastport BK103	11/10/2010	0.5-1'	Brownfield	Rural
15 Sea St, Eastport BK104	11/10/2010	0.5-1'	Brownfield	Rural
24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'	Brownfield	Urban
Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'	Brownfield	Urban
Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'	Brownfield	Urban
Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'	Brownfield	Urban
Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'	Brownfield	Urban
Bath, Armory BK	3/15/2010	0-0.5'	Brownfield	Urban
Bath, MW Sewell Office BK-1	7/27/2010	0-1'	Brownfield	Urban
Bath, MW Sewell Office BK-2	7/27/2010	0-1'	Brownfield	Urban
Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'	Brownfield	Urban
Berwick, Prime Tanning SS-101B	7/20/2010	0-2'	Brownfield	Rural
Biddeford, North Dam Background-1	10/23/2007	0-0.5'	Brownfield	Urban
Bridges Property, Calais BK-101	12/15/2010	0.5-1'	Brownfield	Rural
Bridges Property, Calais BK-102	12/15/2010	0.5-1'	Brownfield	Rural
Bridges Property, Calais BK-103	12/15/2010	0.5-1'	Brownfield	Rural
Bridges Property, Calais BK-104(1')	12/15/2010	0.5-1'	Brownfield	Rural
Bridges Property, Calais BK-104(2')	12/15/2010	1-2'	Brownfield	Rural
Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'	Brownfield	Rural
Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'	Brownfield	Rural
Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'	Brownfield	Rural
Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'	Brownfield	Urban
Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'	Brownfield	Rural
Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'	Brownfield	Rural
Consea, Eastport BK1	2/23/2011	0.5-1'	Brownfield	Rural
Consea, Eastport BK2	2/23/2011	0.5-1'	Brownfield	Rural
Consea, Eastport BK3	2/23/2011	0.5-1'	Brownfield	Rural
Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'	Brownfield	Rural
Gardiner, Usdamn Property SS-1	8/31/2005	0-1'	Brownfield	Urban
HA-1-6-8	6/8/2011	0-0.5'	Asphalt	Rural
HA-2-6-10	6/10/2011	0-0.5'	Asphalt	Rural
HA-3-6-14	6/14/2011	0-0.5'	Asphalt	Rural
HA-4-6-14	6/14/2011	0-0.5'	Asphalt	Rural
HA-5-6-14	6/14/2011	0-0.5'	Asphalt	Urban
HA-6-6-15	6/15/2011	0-0.5'	Asphalt	Urban
HA-7-6-15	6/15/2011	0-0.5'	Asphalt	Rural
HA-8-6-15	6/15/2011	0-0.5'	Asphalt	Rural
HA-9-6-15	6/15/2011	0-0.5'	Asphalt	Urban
Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'	Brownfield	Rural
Hancock, Sammis BK-SS01	9/28/2009	0-2'	Brownfield	Rural
Hermon, Quinns SS-106	4/30/2009	0-2'	Brownfield	Rural
Howland, Tannery TP-05	4/10/2004	5'	Brownfield	Rural
JF-10-6-16	6/16/2011	0-0.5'	Asphalt	Urban
JF-1-6-9	6/9/2011	0-0.5'	Asphalt	Urban
JF-2-6-9	6/9/2011	0-0.5'	Asphalt	Urban
JF-3-6-9	6/9/2011	0-0.5'	Asphalt	Rural
JF-4-6-11	6/11/2011	0-0.5'	Asphalt	Rural
JF-6-6-13	6/13/2011	0-0.5'	Asphalt	Urban
JF-7-6-16	6/16/2011	0-0.5'	Asphalt	Rural
JF-8-6-16	6/16/2011	0-0.5'	Asphalt	Rural
JF-9-6-16	6/16/2011	0-0.5'	Asphalt	Rural

Appendix A-1: Soil Samples Considered in the Background Evaluation for PAHs

Sample ID	Sample Date	Depth	Brownfield, Asphalt or Military Base	Urban or Rural
Kennebunk, 51 Main St BK-1	3/30/2010	0-2'	Brownfield	Urban
Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'	Brownfield	Urban
Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'	Brownfield	Rural
Milo, Downtown BK2	12/18/2008	0-2'	Brownfield	Rural
Milo, Downtown BK3	12/18/2008	0-2'	Brownfield	Rural
Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'	Brownfield	Rural
Old Town, OTC BK-1	10/21/2009	0-2'	Brownfield	Rural
Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'	Brownfield	Urban
Sanford, Aerofab BK-B-01	4/22/2008	0-2'	Brownfield	Urban
South Portland, Jett Property SS-101	10/16/2009	0-2'	Brownfield	Urban
TS-1-6-14	6/14/2011	0-0.5'	Asphalt	Rural
TS-2-6-14	6/14/2011	0-0.5'	Asphalt	Urban
TS-3-6-14	6/14/2011	0-0.5'	Asphalt	Rural
TS-4-6-15	6/15/2011	0-0.5'	Asphalt	Rural
TS-5-6-15	6/15/2011	0-0.5'	Asphalt	Rural
TS-6-6-15	6/15/2011	0-0.5'	Asphalt	Rural
TS-7-6-15	6/15/2011	0-0.5'	Asphalt	Rural
TS-8-6-16	6/16/2011	0-0.5'	Asphalt	Rural
TS-9-6-16	6/16/2011	0-0.5'	Asphalt	Rural
Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'	Brownfield	Rural
Windham, 13 Depot St BK-B-01	10/26/2010	0-2'	Brownfield	Urban
Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'	Brownfield	Urban
BGS-01	8/12/1991	N/A	Portsmouth Naval Shipyard	Urban
BGS-07	8/13/1991	N/A	Portsmouth Naval Shipyard	Urban
BGS-13	8/3/1993	N/A	Portsmouth Naval Shipyard	Urban
BGS-19	8/3/1993	N/A	Portsmouth Naval Shipyard	Urban
BGS-25	8/3/1993	N/A	Portsmouth Naval Shipyard	Urban
MW-SB-NASB-BKD-06	8/18/2009	N/A	NAS Brunswick	Rural
MW-SB-NASB-BKD-10	8/17/2009	N/A	NAS Brunswick	Rural
MW-SB-NASB-BKD-15	8/25/2009	N/A	NAS Brunswick	Rural
MW-SB-NASB-BKD-24	8/14/2009	N/A	NAS Brunswick	Rural
MW-SB-NASB-BKD-29	8/19/2009	N/A	NAS Brunswick	Rural
MW-SB-NASB-BKD-01	8/20/2009	N/A	NAS Brunswick	Urban
MW-SB-NASB-BKD-04	8/20/2009	N/A	NAS Brunswick	Urban
MW-SB-NASB-BKD-19	8/13/2009	N/A	NAS Brunswick	Urban
MW-SB-NASB-BKD-30	11/11/2009	N/A	NAS Brunswick	Urban
MW-SB-NASB-BKD-39	8/17/2009	N/A	NAS Brunswick	Urban
ADCG-BK1	11/29/2011	N/A	Brownfield	Rural
ADCG-BK2	11/29/2011	N/A	Brownfield	Rural
ADCG-BK3	11/29/2011	N/A	Brownfield	Rural
Frd Plmb B-102	5/11/2011	N/A	Brownfield	Rural
OP-HS BK-1	2/15/2012	N/A	Brownfield	Rural
OP-HS BK-2	2/15/2012	N/A	Brownfield	Rural
OP-HS BK-3	2/15/2012	N/A	Brownfield	Rural
PTC-BG	7/7/2011	N/A	Brownfield	Rural
Wash Sch BK-1	2/1/2012	N/A	Brownfield	Urban

Appendix A2

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
2-Methylnaphthalene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Acenaphthene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		0.41	U	mg/kg	SW8270
Acenaphthylene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		0.41	U	mg/kg	SW8270
Anthracene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		0.41	U	mg/kg	SW8270
Benzo(g,h,i) perylene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		0.52		mg/kg	SW8270
Benzo(a)anthracene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		0.8		mg/kg	SW8270
Benzo(a)pyrene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		0.91		mg/kg	SW8270
Benzo(b)fluoranthene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		1.2		mg/kg	SW8270
Benzo(k)fluoranthene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		0.61		mg/kg	SW8270
Carbazole	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Chrysene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		1		mg/kg	SW8270
Dibenzo(a,h)anthracene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Dibenzofuran	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Fluoranthene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		1.6		mg/kg	SW8270
Fluorene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		0.41	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Naphthalene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		0.41	U	mg/kg	SW8270
Phenanthrene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		1.2		mg/kg	SW8270
Pyrene	15 Sea St, Eastport BK101	11/10/2010	0.5-1'		1.8		mg/kg	SW8270
2-Methylnaphthalene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Acenaphthene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		0.32	U	mg/kg	SW8270
Acenaphthylene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		0.32	U	mg/kg	SW8270
Anthracene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		0.33		mg/kg	SW8270
Benzo(g,h,i) perylene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		0.8		mg/kg	SW8270
Benzo(a)anthracene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		1.4		mg/kg	SW8270
Benzo(a)pyrene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		1.6		mg/kg	SW8270
Benzo(b)fluoranthene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		2.2		mg/kg	SW8270
Benzo(k)fluoranthene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		0.9		mg/kg	SW8270
Carbazole	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Chrysene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		1.6		mg/kg	SW8270
Dibenzo(a,h)anthracene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Dibenzofuran	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Fluoranthene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		2.5		mg/kg	SW8270
Fluorene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		0.32	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Naphthalene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		0.32	U	mg/kg	SW8270
Phenanthrene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		1.2		mg/kg	SW8270
Pyrene	15 Sea St, Eastport BK102	11/10/2010	0.5-1'		2.3		mg/kg	SW8270
2-Methylnaphthalene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Acenaphthene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.37	U	mg/kg	SW8270
Acenaphthylene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.37	U	mg/kg	SW8270
Anthracene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.37	U	mg/kg	SW8270
Benzo(g,h,i) perylene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.37	U	mg/kg	SW8270
Benzo(a)anthracene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.38		mg/kg	SW8270
Benzo(a)pyrene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.48		mg/kg	SW8270
Benzo(b)fluoranthene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.67		mg/kg	SW8270
Benzo(k)fluoranthene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.37	U	mg/kg	SW8270
Carbazole	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Chrysene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.53		mg/kg	SW8270
Dibenzo(a,h)anthracene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Dibenzofuran	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Fluoranthene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.53		mg/kg	SW8270
Fluorene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.37	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.37	U	mg/kg	SW8270
Naphthalene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.37	U	mg/kg	SW8270
Phenanthrene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.37	U	mg/kg	SW8270
Pyrene	15 Sea St, Eastport BK103	11/10/2010	0.5-1'		0.61		mg/kg	SW8270
2-Methylnaphthalene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Acenaphthene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Acenaphthylene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Anthracene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Benzo(g,h,i) perylene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Benzo(a)anthracene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Benzo(a)pyrene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Benzo(b)fluoranthene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Benzo(k)fluoranthene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Carbazole	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Chrysene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		NA		mg/kg	SW8270
Dibenzofuran	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Fluoranthene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Fluorene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Naphthalene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Phenanthrene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
Pyrene	15 Sea St, Eastport BK104	11/10/2010	0.5-1'		0.35	U	mg/kg	SW8270
2-Methylnaphthalene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Acenaphthene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Acenaphthylene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Anthracene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Benzo(a)anthracene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Benzo(a)pyrene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Benzo(b)fluoranthene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Benzo(g,h,i) perylene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Benzo(k)fluoranthene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Carbazole	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		NA		mg/kg	SW8270
Chrysene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Dibenzofuran	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Fluoranthene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Fluorene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Naphthalene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
Phenanthrene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		NA		mg/kg	SW8270
Pyrene	24-26 Bridgeton Rd, Westbrook MW-1	12/15/2008	0-4'		3.7	U	mg/kg	SW8270
2-Methylnaphthalene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.3	U	mg/kg	SW8270
Acenaphthene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.3	U	mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Acenaphthylene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.163	J	mg/kg	SW8270
Anthracene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.181	J	mg/kg	SW8270
Benzo(a)anthracene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.367		mg/kg	SW8270
Benzo(a)pyrene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.345		mg/kg	SW8270
Benzo(b)fluoranthene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.905		mg/kg	SW8270
Benzo(g,h,i) perylene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.174	U	mg/kg	SW8270
Benzo(k)fluoranthene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.255	J	mg/kg	SW8270
Carbazole	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.185	J	mg/kg	SW8270
Chrysene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.604		mg/kg	SW8270
Dibenzo(a,h)anthracene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.3	U	mg/kg	SW8270
Dibenzofuran	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.3	U	mg/kg	SW8270
Fluoranthene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.998		mg/kg	SW8270
Fluorene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.3	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.217	J	mg/kg	SW8270
Naphthalene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.165	J	mg/kg	SW8270
Phenanthrene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.823		mg/kg	SW8270
Pyrene	Augusta, Augusta Tissue BK-SS-03	9/30/2009	0-0.5'		0.732		mg/kg	SW8270
2-Methylnaphthalene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Acenaphthene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Acenaphthylene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Anthracene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Benzo(a)anthracene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Benzo(a)pyrene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Benzo(b)fluoranthene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Benzo(g,h,i) perylene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Benzo(k)fluoranthene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Carbazole	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		NA		mg/kg	SW8270
Chrysene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Dibenzofuran	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Fluoranthene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Fluorene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Naphthalene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Phenanthrene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Pyrene	Augusta, Community Gardens BKSS-1	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
2-Methylnaphthalene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Acenaphthene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Acenaphthylene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Anthracene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Benzo(a)anthracene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.36		mg/kg	SW8270
Benzo(a)pyrene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.43		mg/kg	SW8270
Benzo(b)fluoranthene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.39		mg/kg	SW8270
Benzo(g,h,i) perylene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.16		mg/kg	SW8270
Benzo(k)fluoranthene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.4		mg/kg	SW8270
Carbazole	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		NA		mg/kg	SW8270
Chrysene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.44		mg/kg	SW8270
Dibenzo(a,h)anthracene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.08		mg/kg	SW8270
Dibenzofuran	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Fluoranthene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.68		mg/kg	SW8270
Fluorene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.16		mg/kg	SW8270
Naphthalene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
Phenanthrene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.29		mg/kg	SW8270
Pyrene	Augusta, Community Gardens BKSS-2	7/14/2010	0-0.5'		0.07	U	mg/kg	SW8270
2-Methylnaphthalene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.1	U	mg/kg	SW8270
Acenaphthene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.1	U	mg/kg	SW8270
Acenaphthylene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.1	U	mg/kg	SW8270
Anthracene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.1	U	mg/kg	SW8270
Benzo(a)anthracene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.1	U	mg/kg	SW8270
Benzo(a)pyrene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.6		mg/kg	SW8270
Benzo(b)fluoranthene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.4		mg/kg	SW8270
Benzo(g,h,i) perylene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.9		mg/kg	SW8270
Benzo(k)fluoranthene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.4		mg/kg	SW8270
Carbazole	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		NA		mg/kg	SW8270
Chrysene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.2		mg/kg	SW8270
Dibenzo(a,h)anthracene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.4		mg/kg	SW8270
Dibenzofuran	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		NA		mg/kg	SW8270
Fluoranthene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.2		mg/kg	SW8270
Fluorene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.1	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.8		mg/kg	SW8270
Naphthalene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.1	U	mg/kg	SW8270
Phenanthrene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.1	U	mg/kg	SW8270
Pyrene	Bangor, Bldg 278 BKSS-3	4/28/2010	0.5-1.0'		0.1	U	mg/kg	SW8270
2-Methylnaphthalene	Bath, Armory BK	3/15/2010	0-0.5'		0.329	U	mg/kg	SW8270
Acenaphthene	Bath, Armory BK	3/15/2010	0-0.5'		0.329	U	mg/kg	SW8270
Acenaphthylene	Bath, Armory BK	3/15/2010	0-0.5'		0.329	U	mg/kg	SW8270
Anthracene	Bath, Armory BK	3/15/2010	0-0.5'		0.329	U	mg/kg	SW8270
Benzo(a)anthracene	Bath, Armory BK	3/15/2010	0-0.5'		0.248	J	mg/kg	SW8270
Benzo(a)pyrene	Bath, Armory BK	3/15/2010	0-0.5'		0.272	J	mg/kg	SW8270
Benzo(b)fluoranthene	Bath, Armory BK	3/15/2010	0-0.5'		0.356		mg/kg	SW8270
Benzo(g,h,i) perylene	Bath, Armory BK	3/15/2010	0-0.5'		0.215	J	mg/kg	SW8270
Benzo(k)fluoranthene	Bath, Armory BK	3/15/2010	0-0.5'		0.329	U	mg/kg	SW8270
Carbazole	Bath, Armory BK	3/15/2010	0-0.5'		NA		mg/kg	SW8270
Chrysene	Bath, Armory BK	3/15/2010	0-0.5'		0.238	J	mg/kg	SW8270
Dibenzo(a,h)anthracene	Bath, Armory BK	3/15/2010	0-0.5'		0.329	U	mg/kg	SW8270
Dibenzofuran	Bath, Armory BK	3/15/2010	0-0.5'		NA		mg/kg	SW8270
Fluoranthene	Bath, Armory BK	3/15/2010	0-0.5'		0.417		mg/kg	SW8270
Fluorene	Bath, Armory BK	3/15/2010	0-0.5'		0.329	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Bath, Armory BK	3/15/2010	0-0.5'		0.216	J	mg/kg	SW8270
Naphthalene	Bath, Armory BK	3/15/2010	0-0.5'		0.329	U	mg/kg	SW8270
Phenanthrene	Bath, Armory BK	3/15/2010	0-0.5'		0.193	J	mg/kg	SW8270
Pyrene	Bath, Armory BK	3/15/2010	0-0.5'		0.458		mg/kg	SW8270
2-Methylnaphthalene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Acenaphthene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Acenaphthylene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Anthracene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Benzo(a)anthracene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Benzo(a)pyrene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Benzo(b)fluoranthene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.305	J	mg/kg	SW8270
Benzo(g,h,i) perylene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Benzo(k)fluoranthene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Carbazole	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		NA		mg/kg	SW8270
Chrysene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Dibenzofuran	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		NA		mg/kg	SW8270
Fluoranthene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Fluorene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.342	J	mg/kg	SW8270
Naphthalene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Phenanthrene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
Pyrene	Bath, MW Sewell Office BK-1	7/27/2010	0-1'		0.35	U	mg/kg	SW8270
2-Methylnaphthalene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.603	U	mg/kg	SW8270
Acenaphthene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.603	U	mg/kg	SW8270
Acenaphthylene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.603	U	mg/kg	SW8270
Anthracene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.603	U	mg/kg	SW8270
Benzo(a)anthracene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.603	U	mg/kg	SW8270
Benzo(a)pyrene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.511	J	mg/kg	SW8270
Benzo(b)fluoranthene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.803	U	mg/kg	SW8270
Benzo(g,h,i) perylene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.418	J	mg/kg	SW8270
Benzo(k)fluoranthene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.603	U	mg/kg	SW8270
Carbazole	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		NA		mg/kg	SW8270
Chrysene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.37	J	mg/kg	SW8270
Dibenzo(a,h)anthracene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.603	U	mg/kg	SW8270
Dibenzofuran	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		NA		mg/kg	SW8270
Fluoranthene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.792	U	mg/kg	SW8270
Fluorene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.603	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.75	U	mg/kg	SW8270
Naphthalene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.603	U	mg/kg	SW8270
Phenanthrene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.456	J	mg/kg	SW8270
Pyrene	Bath, MW Sewell Office BK-2	7/27/2010	0-1'		0.73	U	mg/kg	SW8270
2-Methylnaphthalene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.29	U	mg/kg	SW8270
Acenaphthene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.29	U	mg/kg	SW8270
Acenaphthylene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.364	U	mg/kg	SW8270
Anthracene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.29	U	mg/kg	SW8270
Benzo(a)anthracene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.48	U	mg/kg	SW8270
Benzo(a)pyrene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.615	U	mg/kg	SW8270
Benzo(b)fluoranthene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.771	U	mg/kg	SW8270
Benzo(g,h,i) perylene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.452	U	mg/kg	SW8270
Benzo(k)fluoranthene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.239	J	mg/kg	SW8270
Carbazole	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		NA		mg/kg	SW8270
Chrysene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.614	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.29	U	mg/kg	SW8270
Dibenzofuran	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		NA		mg/kg	SW8270
Fluoranthene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.549	U	mg/kg	SW8270
Fluorene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.29	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.517	U	mg/kg	SW8270
Naphthalene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.29	U	mg/kg	SW8270
Phenanthrene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.19	J	mg/kg	SW8270
Pyrene	Belfast, Stintson Canning BK-SS-101	2/11/2011	0.25-0.5'		0.694	U	mg/kg	SW8270
2-Methylnaphthalene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		0.23	U	mg/kg	SW8270
Acenaphthene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		0.23	U	mg/kg	SW8270
Acenaphthylene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		0.23	U	mg/kg	SW8270
Anthracene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		0.23	U	mg/kg	SW8270
Benzo(a)anthracene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		2	U	mg/kg	SW8270
Benzo(a)pyrene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		2.9	U	mg/kg	SW8270
Benzo(b)fluoranthene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		3.5	U	mg/kg	SW8270
Benzo(g,h,i) perylene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		2.6	U	mg/kg	SW8270
Benzo(k)fluoranthene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		2.8	U	mg/kg	SW8270
Carbazole	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		NA		mg/kg	SW8270
Chrysene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		3.2	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		0.23	U	mg/kg	SW8270
Dibenzofuran	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		NA		mg/kg	SW8270
Fluoranthene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		4.4	U	mg/kg	SW8270
Fluorene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		0.23	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		2.7	U	mg/kg	SW8270
Naphthalene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		0.23	U	mg/kg	SW8270
Phenanthrene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		1	U	mg/kg	SW8270
Pyrene	Berwick, Prime Tanning SS-101B	7/20/2010	0-2'		3.6	U	mg/kg	SW8270
2-Methylnaphthalene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.74	U	mg/kg	SW8270
Acenaphthene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.74	U	mg/kg	SW8270
Acenaphthylene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.74	U	mg/kg	SW8270
Anthracene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.74	U	mg/kg	SW8270
Benzo(a)anthracene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.74	U	mg/kg	SW8270
Benzo(a)pyrene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.74	U	mg/kg	SW8270
Benzo(b)fluoranthene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.526	J	mg/kg	SW8270
Benzo(g,h,i) perylene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.74	U	mg/kg	SW8270
Benzo(k)fluoranthene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.74	U	mg/kg	SW8270
Carbazole	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		NA		mg/kg	SW8270
Chrysene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.74	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.52	U	mg/kg	SW8270
Dibenzofuran	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		NA		mg/kg	SW8270
Fluoranthene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.725	J	mg/kg	SW8270
Fluorene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.74	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.74	U	mg/kg	SW8270
Naphthalene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.74	U	mg/kg	SW8270
Phenanthrene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.619	J	mg/kg	SW8270
Pyrene	Biddeford, North Dam Background-1	10/23/2007	0-0.5'		0.569	J	mg/kg	SW8270
2-Methylnaphthalene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.098	U	mg/kg	SW8270
Acenaphthene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.69	U	mg/kg	SW8270
Acenaphthylene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.075	U	mg/kg	SW8270
Anthracene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.09	U	mg/kg	SW8270
Benzo(a)anthracene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.56	U	mg/kg	SW8270
Benzo(a)pyrene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.72	U	mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Benzo(b)fluoranthene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.83		mg/kg	SW8270
Benzo(g,h,i) perylene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.55		mg/kg	SW8270
Benzo(k)fluoranthene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.12		mg/kg	SW8270
Carbazole	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		NA		mg/kg	SW8270
Chrysene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.67		mg/kg	SW8270
Dibenzo(a,h)anthracene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.77		mg/kg	SW8270
Dibenzofuran	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		NA		mg/kg	SW8270
Fluoranthene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.086	U	mg/kg	SW8270
Fluorene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.55		mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.098	U	mg/kg	SW8270
Naphthalene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.093	U	mg/kg	SW8270
Phenanthrene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.25		mg/kg	SW8270
Pyrene	Bridges Property, Calais BK-101	12/15/2010	0.5-1'		0.95		mg/kg	SW8270
2-Methylnaphthalene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		0.11	U	mg/kg	SW8270
Acenaphthene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		0.79	U	mg/kg	SW8270
Acenaphthylene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		0.22		mg/kg	SW8270
Anthracene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		0.13		mg/kg	SW8270
Benzo(a)anthracene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		0.96		mg/kg	SW8270
Benzo(a)pyrene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		1.3		mg/kg	SW8270
Benzo(b)fluoranthene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		1.9		mg/kg	SW8270
Benzo(g,h,i) perylene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		1.2		mg/kg	SW8270
Benzo(k)fluoranthene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		0.34		mg/kg	SW8270
Carbazole	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		NA		mg/kg	SW8270
Chrysene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		1.5		mg/kg	SW8270
Dibenzo(a,h)anthracene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		0.24		mg/kg	SW8270
Dibenzofuran	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		NA		mg/kg	SW8270
Fluoranthene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		1.6		mg/kg	SW8270
Fluorene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		0.098	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		1.2		mg/kg	SW8270
Naphthalene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		0.1	U	mg/kg	SW8270
Phenanthrene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		0.85		mg/kg	SW8270
Pyrene	Bridges Property, Calais BK-102	12/15/2010	0.5-1'		2.2		mg/kg	SW8270
2-Methylnaphthalene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.097	U	mg/kg	SW8270
Acenaphthene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.68	U	mg/kg	SW8270
Acenaphthylene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.074	U	mg/kg	SW8270
Anthracene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.088	U	mg/kg	SW8270
Benzo(a)anthracene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.12		mg/kg	SW8270
Benzo(a)pyrene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.15		mg/kg	SW8270
Benzo(b)fluoranthene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.2		mg/kg	SW8270
Benzo(g,h,i) perylene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.12		mg/kg	SW8270
Benzo(k)fluoranthene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.11		mg/kg	SW8270
Carbazole	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		NA		mg/kg	SW8270
Chrysene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.16		mg/kg	SW8270
Dibenzo(a,h)anthracene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.13	U	mg/kg	SW8270
Dibenzofuran	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		NA		mg/kg	SW8270
Fluoranthene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.14		mg/kg	SW8270
Fluorene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.085	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.15		mg/kg	SW8270
Naphthalene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.092	U	mg/kg	SW8270
Phenanthrene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.087	U	mg/kg	SW8270
Pyrene	Bridges Property, Calais BK-103	12/15/2010	0.5-1'		0.16		mg/kg	SW8270
2-Methylnaphthalene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		140		mg/kg	SW8270
Acenaphthene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		330		mg/kg	SW8270
Acenaphthylene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		8.2		mg/kg	SW8270
Anthracene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		880		mg/kg	SW8270
Benzo(a)anthracene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		1300		mg/kg	SW8270
Benzo(a)pyrene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		1000		mg/kg	SW8270
Benzo(b)fluoranthene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		1300		mg/kg	SW8270
Benzo(g,h,i) perylene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		370		mg/kg	SW8270
Benzo(k)fluoranthene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		550		mg/kg	SW8270
Carbazole	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		NA		mg/kg	SW8270
Chrysene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		1300		mg/kg	SW8270
Dibenzo(a,h)anthracene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		160		mg/kg	SW8270
Dibenzofuran	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		NA		mg/kg	SW8270
Fluoranthene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		2200		mg/kg	SW8270
Fluorene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		670		mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		550		mg/kg	SW8270
Naphthalene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		320		mg/kg	SW8270
Phenanthrene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		2600		mg/kg	SW8270
Pyrene	Bridges Property, Calais BK-104(1)	12/15/2010	0.5-1'		2400		mg/kg	SW8270
2-Methylnaphthalene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		4.9		mg/kg	SW8270
Acenaphthene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		9.2		mg/kg	SW8270
Acenaphthylene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		15		mg/kg	SW8270
Anthracene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		37		mg/kg	SW8270
Benzo(a)anthracene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		72		mg/kg	SW8270
Benzo(a)pyrene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		44		mg/kg	SW8270
Benzo(b)fluoranthene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		55		mg/kg	SW8270
Benzo(g,h,i) perylene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		20		mg/kg	SW8270
Benzo(k)fluoranthene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		22		mg/kg	SW8270
Carbazole	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		NA		mg/kg	SW8270
Chrysene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		54		mg/kg	SW8270
Dibenzo(a,h)anthracene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		8.3		mg/kg	SW8270
Dibenzofuran	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		NA		mg/kg	SW8270
Fluoranthene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		120		mg/kg	SW8270
Fluorene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		30		mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		27		mg/kg	SW8270
Naphthalene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		6.3		mg/kg	SW8270
Phenanthrene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		160		mg/kg	SW8270
Pyrene	Bridges Property, Calais BK-104(2)	12/15/2010	1-2'		130		mg/kg	SW8270
2-Methylnaphthalene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Acenaphthene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Acenaphthylene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Anthracene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Benzo(a)anthracene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Benzo(a)pyrene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Benzo(b)fluoranthene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.268	J	mg/kg	SW8270
Benzo(g,h,i) perylene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Benzo(k)fluoranthene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Carbazole	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		NA		mg/kg	SW8270
Chrysene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Dibenzofuran	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		NA		mg/kg	SW8270
Fluoranthene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Fluorene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Naphthalene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Phenanthrene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
Pyrene	Bridgeton, Memorial School BG-1	7/8/2010	0.5-1'		0.294	U	mg/kg	SW8270
2-Methylnaphthalene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.3	U	mg/kg	SW8270
Acenaphthene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.3	U	mg/kg	SW8270
Acenaphthylene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.3	U	mg/kg	SW8270
Anthracene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.3	U	mg/kg	SW8270
Benzo(a)anthracene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.39		mg/kg	SW8270
Benzo(a)pyrene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.45		mg/kg	SW8270
Benzo(b)fluoranthene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.411		mg/kg	SW8270
Benzo(g,h,i) perylene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.419		mg/kg	SW8270
Benzo(k)fluoranthene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.391		mg/kg	SW8270
Carbazole	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.3	U	mg/kg	SW8270
Chrysene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.483		mg/kg	SW8270
Dibenzo(a,h)anthracene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.3	U	mg/kg	SW8270
Dibenzofuran	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.3	U	mg/kg	SW8270
Fluoranthene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.765		mg/kg	SW8270
Fluorene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.3	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.464		mg/kg	SW8270
Naphthalene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.3	U	mg/kg	SW8270
Phenanthrene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.315		mg/kg	SW8270
Pyrene	Camden, Apollo Tannery SS-3	2/2/2006	0-0.5'		0.725		mg/kg	SW8270
2-Methylnaphthalene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		0.5	U	mg/kg	SW8270
Acenaphthene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		0.5	U	mg/kg	SW8270
Acenaphthylene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		0.9		mg/kg	SW8270
Anthracene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		0.5	U	mg/kg	SW8270
Benzo(a)anthracene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		2.5		mg/kg	SW8270
Benzo(a)pyrene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		2.8		mg/kg	SW8270
Benzo(b)fluoranthene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		2.1		mg/kg	SW8270
Benzo(g,h,i) perylene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		1.7		mg/kg	SW8270
Benzo(k)fluoranthene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		2.7		mg/kg	SW8270
Carbazole	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		NA		mg/kg	SW8270
Chrysene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		2.8		mg/kg	SW8270
Dibenzo(a,h)anthracene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		0.7		mg/kg	SW8270
Dibenzofuran	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		0.5	U	mg/kg	SW8270
Fluoranthene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		4.3		mg/kg	SW8270
Fluorene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		0.5	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		1.7		mg/kg	SW8270
Naphthalene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		0.5	U	mg/kg	SW8270
Phenanthrene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		1		mg/kg	SW8270
Pyrene	Canton, Brindis Leather BKSS-1	5/27/2010	0.5-1'		5.5		mg/kg	SW8270
2-Methylnaphthalene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Acenaphthene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Acenaphthylene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Anthracene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Benzo(a)anthracene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Benzo(a)pyrene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Benzo(b)fluoranthene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Benzo(g,h,i) perylene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Benzo(k)fluoranthene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Carbazole	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Chrysene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Dibenzofuran	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Fluoranthene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.11	J	mg/kg	SW8270
Fluorene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Naphthalene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.36	U	mg/kg	SW8270
Phenanthrene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.08	J	mg/kg	SW8270
Pyrene	Caribou, Children's Discovery BK-SS-01	8/20/2008	3-5'		0.1	J	mg/kg	SW8270
2-Methylnaphthalene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.2	U	mg/kg	SW8270
Acenaphthene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Acenaphthylene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Anthracene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Benzo(a)anthracene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Benzo(a)pyrene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Benzo(b)fluoranthene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Benzo(g,h,i) perylene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Benzo(k)fluoranthene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Carbazole	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.2	U	mg/kg	SW8270
Chrysene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Dibenzofuran	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Fluoranthene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Fluorene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Naphthalene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Phenanthrene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
Pyrene	Charlie's Automotive, Ellsworth SS-13	7/8/2010	0-2'		0.05	U	mg/kg	SW8270
2-Methylnaphthalene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.2	U	mg/kg	SW8270
Acenaphthene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Acenaphthylene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Anthracene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Benzo(a)anthracene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Benzo(a)pyrene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Benzo(b)fluoranthene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Benzo(g,h,i) perylene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Benzo(k)fluoranthene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Carbazole	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.2	U	mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Chrysene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Dibenzofuran	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Fluoranthene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Fluorene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Naphthalene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Phenanthrene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
Pyrene	Charlie's Automotive, Ellsworth TP-1	7/8/2010	10-12'		0.05	U	mg/kg	SW8270
2-Methylnaphthalene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.2	U	mg/kg	SW8270
Acenaphthene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.2	U	mg/kg	SW8270
Acenaphthylene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.2	U	mg/kg	SW8270
Anthracene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.2	U	mg/kg	SW8270
Benzo(a)anthracene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.43		mg/kg	SW8270
Benzo(a)pyrene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.2	U	mg/kg	SW8270
Benzo(b)fluoranthene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.21		mg/kg	SW8270
Benzo(g,h,i) perylene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.2	U	mg/kg	SW8270
Benzo(k)fluoranthene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.2	U	mg/kg	SW8270
Chrysene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.2	U	mg/kg	SW8270
Fluoranthene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.35		mg/kg	SW8270
Fluorene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.2	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.2	U	mg/kg	SW8270
Naphthalene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.2	U	mg/kg	SW8270
Phenanthrene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.2	U	mg/kg	SW8270
Pyrene	Consea, Eastport BK1	2/23/2011	0.5-1'		0.35		mg/kg	SW8270
2-Methylnaphthalene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Acenaphthene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Acenaphthylene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Anthracene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Benzo(a)anthracene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Benzo(a)pyrene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Benzo(b)fluoranthene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Benzo(g,h,i) perylene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Benzo(k)fluoranthene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Chrysene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Fluoranthene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Fluorene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Naphthalene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Phenanthrene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Pyrene	Consea, Eastport BK2	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
2-Methylnaphthalene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Acenaphthene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Acenaphthylene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Anthracene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Benzo(a)anthracene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Benzo(a)pyrene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Benzo(b)fluoranthene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Benzo(g,h,i) perylene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Benzo(k)fluoranthene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Chrysene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Fluoranthene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Fluorene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Naphthalene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Phenanthrene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
Pyrene	Consea, Eastport BK3	2/23/2011	0.5-1'		0.23	U	mg/kg	SW8270
2-Methylnaphthalene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Acenaphthene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Acenaphthylene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Anthracene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Benzo(a)anthracene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Benzo(a)pyrene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Benzo(b)fluoranthene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.321	J	mg/kg	SW8270
Benzo(g,h,i) perylene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Benzo(k)fluoranthene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Carbazole	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		NA		mg/kg	SW8270
Chrysene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Dibenzofuran	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		NA		mg/kg	SW8270
Fluoranthene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.31	J	mg/kg	SW8270
Fluorene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Naphthalene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Phenanthrene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.35	U	mg/kg	SW8270
Pyrene	Edgecomb, Cahill Tire Service SB-1	7/1/2010	0-2'		0.28	J	mg/kg	SW8270
2-Methylnaphthalene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		0.71	U	mg/kg	SW8270
Acenaphthene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		0.609	J	mg/kg	SW8270
Acenaphthylene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		0.38	J	mg/kg	SW8270
Anthracene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		1.49		mg/kg	SW8270
Benzo(a)anthracene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		3.59		mg/kg	SW8270
Benzo(a)pyrene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		2.93		mg/kg	SW8270
Benzo(b)fluoranthene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		2.58		mg/kg	SW8270
Benzo(g,h,i) perylene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		1.61		mg/kg	SW8270
Benzo(k)fluoranthene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		2.17		mg/kg	SW8270
Carbazole	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		0.844		mg/kg	SW8270
Chrysene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		3.37		mg/kg	SW8270
Dibenzo(a,h)anthracene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		0.418	J	mg/kg	SW8270
Dibenzofuran	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		0.531	J	mg/kg	SW8270
Fluoranthene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		7.27		mg/kg	SW8270
Fluorene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		0.676	J	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		2.16		mg/kg	SW8270
Naphthalene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		0.537	J	mg/kg	SW8270
Phenanthrene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		6.45		mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Pyrene	Gardiner, Usdamm Property SS-1	8/31/2005	0-1'		6.12		mg/kg	SW8270
2-Methylnaphthalene	HA-1-6-8	6/8/2011	0-0.5'		0.007	U	mg/kg	SW8270C_SIM
Acenaphthene	HA-1-6-8	6/8/2011	0-0.5'		0.007	U	mg/kg	SW8270C_SIM
Acenaphthylene	HA-1-6-8	6/8/2011	0-0.5'		0.008		mg/kg	SW8270C_SIM
Anthracene	HA-1-6-8	6/8/2011	0-0.5'		0.007	J	mg/kg	SW8270C_SIM
Benzo(a)anthracene	HA-1-6-8	6/8/2011	0-0.5'		0.028		mg/kg	SW8270C_SIM
Benzo(a)pyrene	HA-1-6-8	6/8/2011	0-0.5'		0.031		mg/kg	SW8270C_SIM
Benzo(b)fluoranthene	HA-1-6-8	6/8/2011	0-0.5'		0.068		mg/kg	SW8270C_SIM
Benzo(g,h,i) perylene	HA-1-6-8	6/8/2011	0-0.5'		0.009		mg/kg	SW8270C_SIM
Benzo(k)fluoranthene	HA-1-6-8	6/8/2011	0-0.5'		0.017		mg/kg	SW8270C_SIM
Chrysene	HA-1-6-8	6/8/2011	0-0.5'		0.034		mg/kg	SW8270C_SIM
Dibenzo(a,h)anthracene	HA-1-6-8	6/8/2011	0-0.5'		0.005	J	mg/kg	SW8270C_SIM
Fluoranthene	HA-1-6-8	6/8/2011	0-0.5'		0.025		mg/kg	SW8270C_SIM
Fluorene	HA-1-6-8	6/8/2011	0-0.5'		0.007	U	mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	HA-1-6-8	6/8/2011	0-0.5'		0.014		mg/kg	SW8270C_SIM
Naphthalene	HA-1-6-8	6/8/2011	0-0.5'		0.007	U	mg/kg	SW8270C_SIM
Phenanthrene	HA-1-6-8	6/8/2011	0-0.5'		0.013		mg/kg	SW8270C_SIM
Pyrene	HA-1-6-8	6/8/2011	0-0.5'		0.03		mg/kg	SW8270C_SIM
2-Methylnaphthalene	HA-2-6-10	6/10/2011	0-0.5'		0.005	J	mg/kg	SW8270C_SIM
Acenaphthene	HA-2-6-10	6/10/2011	0-0.5'		0.0075	U	mg/kg	SW8270C_SIM
Acenaphthylene	HA-2-6-10	6/10/2011	0-0.5'		0.027		mg/kg	SW8270C_SIM
Anthracene	HA-2-6-10	6/10/2011	0-0.5'		0.018		mg/kg	SW8270C_SIM
Benzo(a)anthracene	HA-2-6-10	6/10/2011	0-0.5'		0.07		mg/kg	SW8270C_SIM
Benzo(a)pyrene	HA-2-6-10	6/10/2011	0-0.5'		0.053		mg/kg	SW8270C_SIM
Benzo(b)fluoranthene	HA-2-6-10	6/10/2011	0-0.5'		0.126		mg/kg	SW8270C_SIM
Benzo(g,h,i) perylene	HA-2-6-10	6/10/2011	0-0.5'		0.016		mg/kg	SW8270C_SIM
Benzo(k)fluoranthene	HA-2-6-10	6/10/2011	0-0.5'		0.035		mg/kg	SW8270C_SIM
Chrysene	HA-2-6-10	6/10/2011	0-0.5'		0.065		mg/kg	SW8270C_SIM
Dibenzo(a,h)anthracene	HA-2-6-10	6/10/2011	0-0.5'		0.007	J	mg/kg	SW8270C_SIM
Fluoranthene	HA-2-6-10	6/10/2011	0-0.5'		0.08		mg/kg	SW8270C_SIM
Fluorene	HA-2-6-10	6/10/2011	0-0.5'		0.006	J	mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	HA-2-6-10	6/10/2011	0-0.5'		0.024		mg/kg	SW8270C_SIM
Naphthalene	HA-2-6-10	6/10/2011	0-0.5'		0.005	J	mg/kg	SW8270C_SIM
Phenanthrene	HA-2-6-10	6/10/2011	0-0.5'		0.038		mg/kg	SW8270C_SIM
Pyrene	HA-2-6-10	6/10/2011	0-0.5'		0.085		mg/kg	SW8270C_SIM
2-Methylnaphthalene	HA-3-6-14	6/14/2011	0-0.5'		0.008	U	mg/kg	SW8270C_SIM
Acenaphthene	HA-3-6-14	6/14/2011	0-0.5'		0.008	U	mg/kg	SW8270C_SIM
Acenaphthylene	HA-3-6-14	6/14/2011	0-0.5'		0.013		mg/kg	SW8270C_SIM
Anthracene	HA-3-6-14	6/14/2011	0-0.5'		0.0099		mg/kg	SW8270C_SIM
Benzo(a)anthracene	HA-3-6-14	6/14/2011	0-0.5'		0.052		mg/kg	SW8270C_SIM
Benzo(a)pyrene	HA-3-6-14	6/14/2011	0-0.5'		0.039		mg/kg	SW8270C_SIM
Benzo(b)fluoranthene	HA-3-6-14	6/14/2011	0-0.5'		0.072		mg/kg	SW8270C_SIM
Benzo(g,h,i) perylene	HA-3-6-14	6/14/2011	0-0.5'		0.0084		mg/kg	SW8270C_SIM
Benzo(k)fluoranthene	HA-3-6-14	6/14/2011	0-0.5'		0.023		mg/kg	SW8270C_SIM
Chrysene	HA-3-6-14	6/14/2011	0-0.5'		0.044		mg/kg	SW8270C_SIM
Dibenzo(a,h)anthracene	HA-3-6-14	6/14/2011	0-0.5'		0.005	J	mg/kg	SW8270C_SIM
Fluoranthene	HA-3-6-14	6/14/2011	0-0.5'		0.073		mg/kg	SW8270C_SIM
Fluorene	HA-3-6-14	6/14/2011	0-0.5'		0.005	J	mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	HA-3-6-14	6/14/2011	0-0.5'		0.016		mg/kg	SW8270C_SIM
Naphthalene	HA-3-6-14	6/14/2011	0-0.5'		0.008	U	mg/kg	SW8270C_SIM
Phenanthrene	HA-3-6-14	6/14/2011	0-0.5'		0.04		mg/kg	SW8270C_SIM
Pyrene	HA-3-6-14	6/14/2011	0-0.5'		0.068		mg/kg	SW8270C_SIM
2-Methylnaphthalene	HA-4-6-14	6/14/2011	0-0.5'		0.131		mg/kg	SW8270C_SIM
Acenaphthene	HA-4-6-14	6/14/2011	0-0.5'		0.138		mg/kg	SW8270C_SIM
Acenaphthylene	HA-4-6-14	6/14/2011	0-0.5'		2.32		mg/kg	SW8270
Anthracene	HA-4-6-14	6/14/2011	0-0.5'		0.943		mg/kg	SW8270
Benzo(a)anthracene	HA-4-6-14	6/14/2011	0-0.5'		3.87		mg/kg	SW8270
Benzo(a)pyrene	HA-4-6-14	6/14/2011	0-0.5'		4.16		mg/kg	SW8270
Benzo(b)fluoranthene	HA-4-6-14	6/14/2011	0-0.5'		6.24		mg/kg	SW8270
Benzo(g,h,i) perylene	HA-4-6-14	6/14/2011	0-0.5'		1.24		mg/kg	SW8270
Benzo(k)fluoranthene	HA-4-6-14	6/14/2011	0-0.5'		1.97		mg/kg	SW8270
Chrysene	HA-4-6-14	6/14/2011	0-0.5'		4.94		mg/kg	SW8270
Dibenzo(a,h)anthracene	HA-4-6-14	6/14/2011	0-0.5'		0.495	J	mg/kg	SW8270
Fluoranthene	HA-4-6-14	6/14/2011	0-0.5'		7.64		mg/kg	SW8270
Fluorene	HA-4-6-14	6/14/2011	0-0.5'		0.516		mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	HA-4-6-14	6/14/2011	0-0.5'		1.91		mg/kg	SW8270
Naphthalene	HA-4-6-14	6/14/2011	0-0.5'		0.206		mg/kg	SW8270C_SIM
Phenanthrene	HA-4-6-14	6/14/2011	0-0.5'		5.55		mg/kg	SW8270
Pyrene	HA-4-6-14	6/14/2011	0-0.5'		8.55		mg/kg	SW8270
2-Methylnaphthalene	HA-5-6-14	6/14/2011	0-0.5'		15	U	mg/kg	SW8270
Acenaphthene	HA-5-6-14	6/14/2011	0-0.5'		14.5	J	mg/kg	SW8270
Acenaphthylene	HA-5-6-14	6/14/2011	0-0.5'		15	U	mg/kg	SW8270
Anthracene	HA-5-6-14	6/14/2011	0-0.5'		27.1		mg/kg	SW8270
Benzo(a)anthracene	HA-5-6-14	6/14/2011	0-0.5'		109.1		mg/kg	SW8270
Benzo(a)pyrene	HA-5-6-14	6/14/2011	0-0.5'		100.5		mg/kg	SW8270
Benzo(b)fluoranthene	HA-5-6-14	6/14/2011	0-0.5'		159.8		mg/kg	SW8270
Benzo(g,h,i) perylene	HA-5-6-14	6/14/2011	0-0.5'		63.7		mg/kg	SW8270
Benzo(k)fluoranthene	HA-5-6-14	6/14/2011	0-0.5'		49.7		mg/kg	SW8270
Chrysene	HA-5-6-14	6/14/2011	0-0.5'		128.5		mg/kg	SW8270
Dibenzo(a,h)anthracene	HA-5-6-14	6/14/2011	0-0.5'		18.3		mg/kg	SW8270
Fluoranthene	HA-5-6-14	6/14/2011	0-0.5'		250.2		mg/kg	SW8270
Fluorene	HA-5-6-14	6/14/2011	0-0.5'		17.9		mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	HA-5-6-14	6/14/2011	0-0.5'		73.8		mg/kg	SW8270
Naphthalene	HA-5-6-14	6/14/2011	0-0.5'		0.982	E	mg/kg	SW8270C_SIM
Phenanthrene	HA-5-6-14	6/14/2011	0-0.5'		177.8		mg/kg	SW8270
Pyrene	HA-5-6-14	6/14/2011	0-0.5'		202.9		mg/kg	SW8270
2-Methylnaphthalene	HA-6-6-15	6/15/2011	0-0.5'		0.11		mg/kg	SW8270C_SIM
Acenaphthene	HA-6-6-15	6/15/2011	0-0.5'		1.12	J	mg/kg	SW8270
Acenaphthylene	HA-6-6-15	6/15/2011	0-0.5'		0.067		mg/kg	SW8270C_SIM
Anthracene	HA-6-6-15	6/15/2011	0-0.5'		1.77		mg/kg	SW8270
Benzo(a)anthracene	HA-6-6-15	6/15/2011	0-0.5'		5.56		mg/kg	SW8270
Benzo(a)pyrene	HA-6-6-15	6/15/2011	0-0.5'		5.44		mg/kg	SW8270
Benzo(b)fluoranthene	HA-6-6-15	6/15/2011	0-0.5'		8.68		mg/kg	SW8270
Benzo(g,h,i) perylene	HA-6-6-15	6/15/2011	0-0.5'		2.07		mg/kg	SW8270
Benzo(k)fluoranthene	HA-6-6-15	6/15/2011	0-0.5'		2.75		mg/kg	SW8270
Chrysene	HA-6-6-15	6/15/2011	0-0.5'		6.74		mg/kg	SW8270
Dibenzo(a,h)anthracene	HA-6-6-15	6/15/2011	0-0.5'		0.381	E	mg/kg	SW8270C_SIM

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Fluoranthene	HA-6-6-15	6/15/2011	0-0.5'		14.9		mg/kg	SW8270
Fluorene	HA-6-6-15	6/15/2011	0-0.5'		1.38		mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	HA-6-6-15	6/15/2011	0-0.5'		2.8		mg/kg	SW8270
Naphthalene	HA-6-6-15	6/15/2011	0-0.5'		0.26		mg/kg	SW8270C SIM
Phenanthrene	HA-6-6-15	6/15/2011	0-0.5'		12.1		mg/kg	SW8270
Pyrene	HA-6-6-15	6/15/2011	0-0.5'		11.7		mg/kg	SW8270
2-Methylnaphthalene	HA-7-6-15	6/15/2011	0-0.5'		0.0061	J	mg/kg	SW8270C SIM
Acenaphthene	HA-7-6-15	6/15/2011	0-0.5'		0.0061	J	mg/kg	SW8270C SIM
Acenaphthylene	HA-7-6-15	6/15/2011	0-0.5'		0.024		mg/kg	SW8270C SIM
Anthracene	HA-7-6-15	6/15/2011	0-0.5'		0.02		mg/kg	SW8270C SIM
Benzo(a)anthracene	HA-7-6-15	6/15/2011	0-0.5'		0.191		mg/kg	SW8270C SIM
Benzo(a)pyrene	HA-7-6-15	6/15/2011	0-0.5'		0.213		mg/kg	SW8270C SIM
Benzo(b)fluoranthene	HA-7-6-15	6/15/2011	0-0.5'		0.75	E	mg/kg	SW8270C SIM
Benzo(g,h,i) perylene	HA-7-6-15	6/15/2011	0-0.5'		0.113		mg/kg	SW8270C SIM
Benzo(k)fluoranthene	HA-7-6-15	6/15/2011	0-0.5'		0.188		mg/kg	SW8270C SIM
Chrysene	HA-7-6-15	6/15/2011	0-0.5'		0.281		mg/kg	SW8270C SIM
Dibenzo(a,h)anthracene	HA-7-6-15	6/15/2011	0-0.5'		0.026		mg/kg	SW8270C SIM
Fluoranthene	HA-7-6-15	6/15/2011	0-0.5'		0.248		mg/kg	SW8270C SIM
Fluorene	HA-7-6-15	6/15/2011	0-0.5'		0.01		mg/kg	SW8270C SIM
Indeno(1,2,3-cd)pyrene	HA-7-6-15	6/15/2011	0-0.5'		0.125		mg/kg	SW8270C SIM
Naphthalene	HA-7-6-15	6/15/2011	0-0.5'		0.005	J	mg/kg	SW8270C SIM
Phenanthrene	HA-7-6-15	6/15/2011	0-0.5'		0.103		mg/kg	SW8270C SIM
Pyrene	HA-7-6-15	6/15/2011	0-0.5'		0.229		mg/kg	SW8270C SIM
2-Methylnaphthalene	HA-8-6-15	6/15/2011	0-0.5'		0.011		mg/kg	SW8270C SIM
Acenaphthene	HA-8-6-15	6/15/2011	0-0.5'		0.007	J	mg/kg	SW8270C SIM
Acenaphthylene	HA-8-6-15	6/15/2011	0-0.5'		0.051		mg/kg	SW8270C SIM
Anthracene	HA-8-6-15	6/15/2011	0-0.5'		0.027		mg/kg	SW8270C SIM
Benzo(a)anthracene	HA-8-6-15	6/15/2011	0-0.5'		0.092		mg/kg	SW8270C SIM
Benzo(a)pyrene	HA-8-6-15	6/15/2011	0-0.5'		0.053		mg/kg	SW8270C SIM
Benzo(b)fluoranthene	HA-8-6-15	6/15/2011	0-0.5'		0.084		mg/kg	SW8270C SIM
Benzo(g,h,i) perylene	HA-8-6-15	6/15/2011	0-0.5'		0.012		mg/kg	SW8270C SIM
Benzo(k)fluoranthene	HA-8-6-15	6/15/2011	0-0.5'		0.021		mg/kg	SW8270C SIM
Chrysene	HA-8-6-15	6/15/2011	0-0.5'		0.068		mg/kg	SW8270C SIM
Dibenzo(a,h)anthracene	HA-8-6-15	6/15/2011	0-0.5'		0.006	J	mg/kg	SW8270C SIM
Fluoranthene	HA-8-6-15	6/15/2011	0-0.5'		0.116		mg/kg	SW8270C SIM
Fluorene	HA-8-6-15	6/15/2011	0-0.5'		0.019		mg/kg	SW8270C SIM
Indeno(1,2,3-cd)pyrene	HA-8-6-15	6/15/2011	0-0.5'		0.019		mg/kg	SW8270C SIM
Naphthalene	HA-8-6-15	6/15/2011	0-0.5'		0.008	J	mg/kg	SW8270C SIM
Phenanthrene	HA-8-6-15	6/15/2011	0-0.5'		0.145		mg/kg	SW8270C SIM
Pyrene	HA-8-6-15	6/15/2011	0-0.5'		0.161		mg/kg	SW8270C SIM
2-Methylnaphthalene	HA-9-6-15	6/15/2011	0-0.5'		0.012	J	mg/kg	SW8270
Acenaphthene	HA-9-6-15	6/15/2011	0-0.5'		0.0093	J	mg/kg	SW8270
Acenaphthylene	HA-9-6-15	6/15/2011	0-0.5'		0.221		mg/kg	SW8270
Anthracene	HA-9-6-15	6/15/2011	0-0.5'		0.089		mg/kg	SW8270
Benzo(a)anthracene	HA-9-6-15	6/15/2011	0-0.5'		0.48		mg/kg	SW8270
Benzo(a)pyrene	HA-9-6-15	6/15/2011	0-0.5'		0.331		mg/kg	SW8270
Benzo(b)fluoranthene	HA-9-6-15	6/15/2011	0-0.5'		0.552		mg/kg	SW8270
Benzo(g,h,i) perylene	HA-9-6-15	6/15/2011	0-0.5'		0.123		mg/kg	SW8270
Benzo(k)fluoranthene	HA-9-6-15	6/15/2011	0-0.5'		0.155		mg/kg	SW8270
Chrysene	HA-9-6-15	6/15/2011	0-0.5'		0.338		mg/kg	SW8270
Dibenzo(a,h)anthracene	HA-9-6-15	6/15/2011	0-0.5'		0.035		mg/kg	SW8270
Fluoranthene	HA-9-6-15	6/15/2011	0-0.5'		0.453		mg/kg	SW8270
Fluorene	HA-9-6-15	6/15/2011	0-0.5'		0.024		mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	HA-9-6-15	6/15/2011	0-0.5'		0.158		mg/kg	SW8270
Naphthalene	HA-9-6-15	6/15/2011	0-0.5'		0.014	J	mg/kg	SW8270
Phenanthrene	HA-9-6-15	6/15/2011	0-0.5'		0.193		mg/kg	SW8270
Pyrene	HA-9-6-15	6/15/2011	0-0.5'		0.453		mg/kg	SW8270
2-Methylnaphthalene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		0.43	UJ	mg/kg	SW8270
Acenaphthene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		0.43	UJ	mg/kg	SW8270
Acenaphthylene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		0.43	UJ	mg/kg	SW8270
Anthracene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		0.4	J	mg/kg	SW8270
Benzo(a)anthracene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		2.7	J	mg/kg	SW8270
Benzo(a)pyrene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		2.4	J	mg/kg	SW8270
Benzo(b)fluoranthene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		3.5	J	mg/kg	SW8270
Benzo(g,h,i) perylene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		1.1	J	mg/kg	SW8270
Benzo(k)fluoranthene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		1.2	J	mg/kg	SW8270
Carbazole	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		0.43	UJ	mg/kg	SW8270
Chrysene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		4	J	mg/kg	SW8270
Dibenzo(a,h)anthracene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		0.43	UJ	mg/kg	SW8270
Dibenzofuran	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		0.43	UJ	mg/kg	SW8270
Fluoranthene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		3.8	J	mg/kg	SW8270
Fluorene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		0.22	J	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		1.2	J	mg/kg	SW8270
Naphthalene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		0.43	UJ	mg/kg	SW8270
Phenanthrene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		3.4	J	mg/kg	SW8270
Pyrene	Hallowell, Eastern Steamship BKSS-02	4/11/2007	0-2'		11	J	mg/kg	SW8270
2-Methylnaphthalene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Acenaphthene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Acenaphthylene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Anthracene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Benzo(a)anthracene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Benzo(a)pyrene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Benzo(b)fluoranthene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Benzo(g,h,i) perylene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Benzo(k)fluoranthene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.44		mg/kg	SW8270
Carbazole	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Chrysene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.53		mg/kg	SW8270
Dibenzo(a,h)anthracene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Dibenzofuran	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Fluoranthene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.95		mg/kg	SW8270
Fluorene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.4	U	mg/kg	SW8270
Naphthalene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.43	U	mg/kg	SW8270
Phenanthrene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.68		mg/kg	SW8270
Pyrene	Hancock, Sammis BK-SS01	9/28/2009	0-2'		0.76		mg/kg	SW8270
2-Methylnaphthalene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.34	U	mg/kg	SW8270
Acenaphthene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.34	U	mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Acenaphthylene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.34	U	mg/kg	SW8270
Anthracene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.34	U	mg/kg	SW8270
Benzo(a)anthracene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.289	J	mg/kg	SW8270
Benzo(a)pyrene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.316	J	mg/kg	SW8270
Benzo(b)fluoranthene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.475		mg/kg	SW8270
Benzo(g,h,i) perylene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.264	J	mg/kg	SW8270
Benzo(k)fluoranthene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.34	U	mg/kg	SW8270
Carbazole	Hermon, Quinns SS-106	4/30/2009	0-2'		NA		mg/kg	SW8270
Chrysene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.391		mg/kg	SW8270
Dibenzo(a,h)anthracene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.34	U	mg/kg	SW8270
Dibenzofuran	Hermon, Quinns SS-106	4/30/2009	0-2'		NA		mg/kg	SW8270
Fluoranthene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.606		mg/kg	SW8270
Fluorene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.34	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.28	J	mg/kg	SW8270
Naphthalene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.34	U	mg/kg	SW8270
Phenanthrene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.235	J	mg/kg	SW8270
Pyrene	Hermon, Quinns SS-106	4/30/2009	0-2'		0.597		mg/kg	SW8270
2-Methylnaphthalene	Howland, Tannery TP-05	4/10/2004	5'		0.03	U	mg/kg	SW8270
Acenaphthene	Howland, Tannery TP-05	4/10/2004	5'		0.03	U	mg/kg	SW8270
Acenaphthylene	Howland, Tannery TP-05	4/10/2004	5'		0.08		mg/kg	SW8270
Anthracene	Howland, Tannery TP-05	4/10/2004	5'		0.03	U	mg/kg	SW8270
Benzo(a)anthracene	Howland, Tannery TP-05	4/10/2004	5'		0.12		mg/kg	SW8270
Benzo(a)pyrene	Howland, Tannery TP-05	4/10/2004	5'		0.15		mg/kg	SW8270
Benzo(b)fluoranthene	Howland, Tannery TP-05	4/10/2004	5'		0.1		mg/kg	SW8270
Benzo(g,h,i) perylene	Howland, Tannery TP-05	4/10/2004	5'		0.06		mg/kg	SW8270
Benzo(k)fluoranthene	Howland, Tannery TP-05	4/10/2004	5'		0.13		mg/kg	SW8270
Carbazole	Howland, Tannery TP-05	4/10/2004	5'		0.1	U	mg/kg	SW8270
Chrysene	Howland, Tannery TP-05	4/10/2004	5'		0.16		mg/kg	SW8270
Dibenzo(a,h)anthracene	Howland, Tannery TP-05	4/10/2004	5'		0.03	U	mg/kg	SW8270
Dibenzofuran	Howland, Tannery TP-05	4/10/2004	5'		0.03	U	mg/kg	SW8270
Fluoranthene	Howland, Tannery TP-05	4/10/2004	5'		0.2		mg/kg	SW8270
Fluorene	Howland, Tannery TP-05	4/10/2004	5'		0.03	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Howland, Tannery TP-05	4/10/2004	5'		0.05		mg/kg	SW8270
Naphthalene	Howland, Tannery TP-05	4/10/2004	5'		0.03	U	mg/kg	SW8270
Phenanthrene	Howland, Tannery TP-05	4/10/2004	5'		0.1		mg/kg	SW8270
Pyrene	Howland, Tannery TP-05	4/10/2004	5'		0.25		mg/kg	SW8270
2-Methylnaphthalene	JF-10-6-16	6/16/2011	0-0.5'		0.026		mg/kg	SW8270C_SIM
Acenaphthene	JF-10-6-16	6/16/2011	0-0.5'		0.05		mg/kg	SW8270C_SIM
Acenaphthylene	JF-10-6-16	6/16/2011	0-0.5'		0.366		mg/kg	SW8270
Anthracene	JF-10-6-16	6/16/2011	0-0.5'		0.295	J	mg/kg	SW8270
Benzo(a)anthracene	JF-10-6-16	6/16/2011	0-0.5'		0.935		mg/kg	SW8270
Benzo(a)pyrene	JF-10-6-16	6/16/2011	0-0.5'		1.01		mg/kg	SW8270
Benzo(b)fluoranthene	JF-10-6-16	6/16/2011	0-0.5'		2.01		mg/kg	SW8270
Benzo(g,h,i) perylene	JF-10-6-16	6/16/2011	0-0.5'		0.231	J	mg/kg	SW8270
Benzo(k)fluoranthene	JF-10-6-16	6/16/2011	0-0.5'		0.687		mg/kg	SW8270
Chrysene	JF-10-6-16	6/16/2011	0-0.5'		1.23		mg/kg	SW8270
Dibenzo(a,h)anthracene	JF-10-6-16	6/16/2011	0-0.5'		0.082		mg/kg	SW8270C_SIM
Fluoranthene	JF-10-6-16	6/16/2011	0-0.5'		2.21		mg/kg	SW8270
Fluorene	JF-10-6-16	6/16/2011	0-0.5'		0.097		mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	JF-10-6-16	6/16/2011	0-0.5'		0.313		mg/kg	SW8270C_SIM
Naphthalene	JF-10-6-16	6/16/2011	0-0.5'		0.033		mg/kg	SW8270C_SIM
Phenanthrene	JF-10-6-16	6/16/2011	0-0.5'		1.22		mg/kg	SW8270
Pyrene	JF-10-6-16	6/16/2011	0-0.5'		1.9		mg/kg	SW8270
2-Methylnaphthalene	JF-1-6-9	6/9/2011	0-0.5'		0.03		mg/kg	SW8270C_SIM
Acenaphthene	JF-1-6-9	6/9/2011	0-0.5'		0.06		mg/kg	SW8270C_SIM
Acenaphthylene	JF-1-6-9	6/9/2011	0-0.5'		0.699		mg/kg	SW8270
Anthracene	JF-1-6-9	6/9/2011	0-0.5'		0.518	J	mg/kg	SW8270
Benzo(a)anthracene	JF-1-6-9	6/9/2011	0-0.5'		1.86		mg/kg	SW8270
Benzo(a)pyrene	JF-1-6-9	6/9/2011	0-0.5'		2.22		mg/kg	SW8270
Benzo(b)fluoranthene	JF-1-6-9	6/9/2011	0-0.5'		3.23		mg/kg	SW8270
Benzo(g,h,i) perylene	JF-1-6-9	6/9/2011	0-0.5'		0.559		mg/kg	SW8270
Benzo(k)fluoranthene	JF-1-6-9	6/9/2011	0-0.5'		1.12		mg/kg	SW8270
Chrysene	JF-1-6-9	6/9/2011	0-0.5'		1.91		mg/kg	SW8270
Dibenzo(a,h)anthracene	JF-1-6-9	6/9/2011	0-0.5'		0.192		mg/kg	SW8270C_SIM
Fluoranthene	JF-1-6-9	6/9/2011	0-0.5'		2.87		mg/kg	SW8270
Fluorene	JF-1-6-9	6/9/2011	0-0.5'		0.14		mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	JF-1-6-9	6/9/2011	0-0.5'		0.715		mg/kg	SW8270
Naphthalene	JF-1-6-9	6/9/2011	0-0.5'		0.046		mg/kg	SW8270C_SIM
Phenanthrene	JF-1-6-9	6/9/2011	0-0.5'		1.19		mg/kg	SW8270
Pyrene	JF-1-6-9	6/9/2011	0-0.5'		3.05		mg/kg	SW8270
2-Methylnaphthalene	JF-2-6-9	6/9/2011	0-0.5'		0.016	J	mg/kg	SW8270C_SIM
Acenaphthene	JF-2-6-9	6/9/2011	0-0.5'		0.024		mg/kg	SW8270C_SIM
Acenaphthylene	JF-2-6-9	6/9/2011	0-0.5'		0.045		mg/kg	SW8270C_SIM
Anthracene	JF-2-6-9	6/9/2011	0-0.5'		0.059		mg/kg	SW8270C_SIM
Benzo(a)anthracene	JF-2-6-9	6/9/2011	0-0.5'		0.285		mg/kg	SW8270C_SIM
Benzo(a)pyrene	JF-2-6-9	6/9/2011	0-0.5'		0.251		mg/kg	SW8270C_SIM
Benzo(b)fluoranthene	JF-2-6-9	6/9/2011	0-0.5'		0.472		mg/kg	SW8270C_SIM
Benzo(g,h,i) perylene	JF-2-6-9	6/9/2011	0-0.5'		0.079		mg/kg	SW8270C_SIM
Benzo(k)fluoranthene	JF-2-6-9	6/9/2011	0-0.5'		0.166		mg/kg	SW8270C_SIM
Chrysene	JF-2-6-9	6/9/2011	0-0.5'		0.325		mg/kg	SW8270C_SIM
Dibenzo(a,h)anthracene	JF-2-6-9	6/9/2011	0-0.5'		0.025		mg/kg	SW8270C_SIM
Fluoranthene	JF-2-6-9	6/9/2011	0-0.5'		0.519		mg/kg	SW8270C_SIM
Fluorene	JF-2-6-9	6/9/2011	0-0.5'		0.022		mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	JF-2-6-9	6/9/2011	0-0.5'		0.099		mg/kg	SW8270C_SIM
Naphthalene	JF-2-6-9	6/9/2011	0-0.5'		0.026		mg/kg	SW8270C_SIM
Phenanthrene	JF-2-6-9	6/9/2011	0-0.5'		0.389		mg/kg	SW8270C_SIM
Pyrene	JF-2-6-9	6/9/2011	0-0.5'		0.475		mg/kg	SW8270C_SIM
2-Methylnaphthalene	JF-3-6-9	6/9/2011	0-0.5'		0.018		mg/kg	SW8270C_SIM
Acenaphthene	JF-3-6-9	6/9/2011	0-0.5'		0.015		mg/kg	SW8270C_SIM
Acenaphthylene	JF-3-6-9	6/9/2011	0-0.5'		0.422	J	mg/kg	SW8270
Anthracene	JF-3-6-9	6/9/2011	0-0.5'		0.19		mg/kg	SW8270C_SIM
Benzo(a)anthracene	JF-3-6-9	6/9/2011	0-0.5'		0.351	J	mg/kg	SW8270
Benzo(a)pyrene	JF-3-6-9	6/9/2011	0-0.5'		0.484	J	mg/kg	SW8270
Benzo(b)fluoranthene	JF-3-6-9	6/9/2011	0-0.5'		0.801		mg/kg	SW8270
Benzo(g,h,i) perylene	JF-3-6-9	6/9/2011	0-0.5'		0.129		mg/kg	SW8270C_SIM
Benzo(k)fluoranthene	JF-3-6-9	6/9/2011	0-0.5'		0.253		mg/kg	SW8270C_SIM
Chrysene	JF-3-6-9	6/9/2011	0-0.5'		0.455	J	mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Dibenzo(a,h)anthracene	JF-3-6-9	6/9/2011	0-0.5'		0.039		mg/kg	SW8270C_SIM
Fluoranthene	JF-3-6-9	6/9/2011	0-0.5'		0.484	J	mg/kg	SW8270
Fluorene	JF-3-6-9	6/9/2011	0-0.5'		0.045		mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	JF-3-6-9	6/9/2011	0-0.5'		0.145		mg/kg	SW8270C_SIM
Naphthalene	JF-3-6-9	6/9/2011	0-0.5'		0.019		mg/kg	SW8270C_SIM
Phenanthrene	JF-3-6-9	6/9/2011	0-0.5'		0.114		mg/kg	SW8270C_SIM
Pyrene	JF-3-6-9	6/9/2011	0-0.5'		0.605		mg/kg	SW8270
2-Methylnaphthalene	JF-4-6-11	6/11/2011	0-0.5'		0.0073	U	mg/kg	SW8270C_SIM
Acenaphthene	JF-4-6-11	6/11/2011	0-0.5'		0.0073	U	mg/kg	SW8270C_SIM
Acenaphthylene	JF-4-6-11	6/11/2011	0-0.5'		0.0094		mg/kg	SW8270C_SIM
Anthracene	JF-4-6-11	6/11/2011	0-0.5'		0.0063	J	mg/kg	SW8270C_SIM
Benzo(a)anthracene	JF-4-6-11	6/11/2011	0-0.5'		0.0093		mg/kg	SW8270C_SIM
Benzo(a)pyrene	JF-4-6-11	6/11/2011	0-0.5'		0.0061	J	mg/kg	SW8270C_SIM
Benzo(b)fluoranthene	JF-4-6-11	6/11/2011	0-0.5'		0.023		mg/kg	SW8270C_SIM
Benzo(g,h,i) perylene	JF-4-6-11	6/11/2011	0-0.5'		0.0073	U	mg/kg	SW8270C_SIM
Benzo(k)fluoranthene	JF-4-6-11	6/11/2011	0-0.5'		0.0065	J	mg/kg	SW8270C_SIM
Chrysene	JF-4-6-11	6/11/2011	0-0.5'		0.0078		mg/kg	SW8270C_SIM
Dibenzo(a,h)anthracene	JF-4-6-11	6/11/2011	0-0.5'		0.0073	U	mg/kg	SW8270C_SIM
Fluoranthene	JF-4-6-11	6/11/2011	0-0.5'		0.0072	J	mg/kg	SW8270C_SIM
Fluorene	JF-4-6-11	6/11/2011	0-0.5'		0.0073	U	mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	JF-4-6-11	6/11/2011	0-0.5'		0.0059	J	mg/kg	SW8270C_SIM
Naphthalene	JF-4-6-11	6/11/2011	0-0.5'		0.0073	U	mg/kg	SW8270C_SIM
Phenanthrene	JF-4-6-11	6/11/2011	0-0.5'		0.0038	J	mg/kg	SW8270C_SIM
Pyrene	JF-4-6-11	6/11/2011	0-0.5'		0.0057	J	mg/kg	SW8270C_SIM
2-Methylnaphthalene	JF-5-6-13	6/13/2011	0-0.5'		0.158		mg/kg	SW8270C_SIM
Acenaphthene	JF-5-6-13	6/13/2011	0-0.5'		0.17		mg/kg	SW8270C_SIM
Acenaphthylene	JF-5-6-13	6/13/2011	0-0.5'		3.94		mg/kg	SW8270
Anthracene	JF-5-6-13	6/13/2011	0-0.5'		1.64		mg/kg	SW8270
Benzo(a)anthracene	JF-5-6-13	6/13/2011	0-0.5'		8.29		mg/kg	SW8270
Benzo(a)pyrene	JF-5-6-13	6/13/2011	0-0.5'		9.83		mg/kg	SW8270
Benzo(b)fluoranthene	JF-5-6-13	6/13/2011	0-0.5'		14.6		mg/kg	SW8270
Benzo(g,h,i) perylene	JF-5-6-13	6/13/2011	0-0.5'		5.04		mg/kg	SW8270
Benzo(k)fluoranthene	JF-5-6-13	6/13/2011	0-0.5'		4.99		mg/kg	SW8270
Chrysene	JF-5-6-13	6/13/2011	0-0.5'		8.73		mg/kg	SW8270
Dibenzo(a,h)anthracene	JF-5-6-13	6/13/2011	0-0.5'		1.45		mg/kg	SW8270
Fluoranthene	JF-5-6-13	6/13/2011	0-0.5'		11.3		mg/kg	SW8270
Fluorene	JF-5-6-13	6/13/2011	0-0.5'		0.441		mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	JF-5-6-13	6/13/2011	0-0.5'		6.25		mg/kg	SW8270
Naphthalene	JF-5-6-13	6/13/2011	0-0.5'		0.289		mg/kg	SW8270C_SIM
Phenanthrene	JF-5-6-13	6/13/2011	0-0.5'		3.77		mg/kg	SW8270
Pyrene	JF-5-6-13	6/13/2011	0-0.5'		13.3		mg/kg	SW8270
2-Methylnaphthalene	JF-6-6-13	6/13/2011	0-0.5'		0.172		mg/kg	SW8270C_SIM
Acenaphthene	JF-6-6-13	6/13/2011	0-0.5'		0.207		mg/kg	SW8270C_SIM
Acenaphthylene	JF-6-6-13	6/13/2011	0-0.5'		4.74		mg/kg	SW8270
Anthracene	JF-6-6-13	6/13/2011	0-0.5'		2.18		mg/kg	SW8270
Benzo(a)anthracene	JF-6-6-13	6/13/2011	0-0.5'		8.7		mg/kg	SW8270
Benzo(a)pyrene	JF-6-6-13	6/13/2011	0-0.5'		10.7		mg/kg	SW8270
Benzo(b)fluoranthene	JF-6-6-13	6/13/2011	0-0.5'		16.4		mg/kg	SW8270
Benzo(g,h,i) perylene	JF-6-6-13	6/13/2011	0-0.5'		7.15		mg/kg	SW8270
Benzo(k)fluoranthene	JF-6-6-13	6/13/2011	0-0.5'		4.71		mg/kg	SW8270
Chrysene	JF-6-6-13	6/13/2011	0-0.5'		10		mg/kg	SW8270
Dibenzo(a,h)anthracene	JF-6-6-13	6/13/2011	0-0.5'		1.64		mg/kg	SW8270
Fluoranthene	JF-6-6-13	6/13/2011	0-0.5'		12.8		mg/kg	SW8270
Fluorene	JF-6-6-13	6/13/2011	0-0.5'		0.542		mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	JF-6-6-13	6/13/2011	0-0.5'		8.18		mg/kg	SW8270
Naphthalene	JF-6-6-13	6/13/2011	0-0.5'		0.303		mg/kg	SW8270C_SIM
Phenanthrene	JF-6-6-13	6/13/2011	0-0.5'		4.64		mg/kg	SW8270
Pyrene	JF-6-6-13	6/13/2011	0-0.5'		14.4		mg/kg	SW8270
2-Methylnaphthalene	JF-7-6-16	6/16/2011	0-0.5'		0.0052	J	mg/kg	SW8270C_SIM
Acenaphthene	JF-7-6-16	6/16/2011	0-0.5'		0.0048	J	mg/kg	SW8270C_SIM
Acenaphthylene	JF-7-6-16	6/16/2011	0-0.5'		0.051		mg/kg	SW8270C_SIM
Anthracene	JF-7-6-16	6/16/2011	0-0.5'		0.048		mg/kg	SW8270C_SIM
Benzo(a)anthracene	JF-7-6-16	6/16/2011	0-0.5'		0.151		mg/kg	SW8270C_SIM
Benzo(a)pyrene	JF-7-6-16	6/16/2011	0-0.5'		0.115		mg/kg	SW8270C_SIM
Benzo(b)fluoranthene	JF-7-6-16	6/16/2011	0-0.5'		0.28		mg/kg	SW8270C_SIM
Benzo(g,h,i) perylene	JF-7-6-16	6/16/2011	0-0.5'		0.034		mg/kg	SW8270C_SIM
Benzo(k)fluoranthene	JF-7-6-16	6/16/2011	0-0.5'		0.079		mg/kg	SW8270C_SIM
Chrysene	JF-7-6-16	6/16/2011	0-0.5'		0.14		mg/kg	SW8270C_SIM
Dibenzo(a,h)anthracene	JF-7-6-16	6/16/2011	0-0.5'		0.01		mg/kg	SW8270C_SIM
Fluoranthene	JF-7-6-16	6/16/2011	0-0.5'		0.222		mg/kg	SW8270C_SIM
Fluorene	JF-7-6-16	6/16/2011	0-0.5'		0.0082		mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	JF-7-6-16	6/16/2011	0-0.5'		0.04		mg/kg	SW8270C_SIM
Naphthalene	JF-7-6-16	6/16/2011	0-0.5'		0.0057	J	mg/kg	SW8270C_SIM
Phenanthrene	JF-7-6-16	6/16/2011	0-0.5'		0.128		mg/kg	SW8270C_SIM
Pyrene	JF-7-6-16	6/16/2011	0-0.5'		0.197		mg/kg	SW8270C_SIM
2-Methylnaphthalene	JF-8-6-16	6/16/2011	0-0.5'		0.012		mg/kg	SW8270C_SIM
Acenaphthene	JF-8-6-16	6/16/2011	0-0.5'		0.0069	J	mg/kg	SW8270C_SIM
Acenaphthylene	JF-8-6-16	6/16/2011	0-0.5'		0.036		mg/kg	SW8270C_SIM
Anthracene	JF-8-6-16	6/16/2011	0-0.5'		0.028		mg/kg	SW8270C_SIM
Benzo(a)anthracene	JF-8-6-16	6/16/2011	0-0.5'		0.182		mg/kg	SW8270C_SIM
Benzo(a)pyrene	JF-8-6-16	6/16/2011	0-0.5'		0.161		mg/kg	SW8270C_SIM
Benzo(b)fluoranthene	JF-8-6-16	6/16/2011	0-0.5'		0.29		mg/kg	SW8270
Benzo(g,h,i) perylene	JF-8-6-16	6/16/2011	0-0.5'		0.037		mg/kg	SW8270C_SIM
Benzo(k)fluoranthene	JF-8-6-16	6/16/2011	0-0.5'		0.093		mg/kg	SW8270C_SIM
Chrysene	JF-8-6-16	6/16/2011	0-0.5'		0.156		mg/kg	SW8270C_SIM
Dibenzo(a,h)anthracene	JF-8-6-16	6/16/2011	0-0.5'		0.015		mg/kg	SW8270C_SIM
Fluoranthene	JF-8-6-16	6/16/2011	0-0.5'		0.222	J	mg/kg	SW8270
Fluorene	JF-8-6-16	6/16/2011	0-0.5'		0.0092		mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	JF-8-6-16	6/16/2011	0-0.5'		0.051		mg/kg	SW8270C_SIM
Naphthalene	JF-8-6-16	6/16/2011	0-0.5'		0.012		mg/kg	SW8270C_SIM
Phenanthrene	JF-8-6-16	6/16/2011	0-0.5'		0.096		mg/kg	SW8270C_SIM
Pyrene	JF-8-6-16	6/16/2011	0-0.5'		0.216	J	mg/kg	SW8270
2-Methylnaphthalene	JF-9-6-16	6/16/2011	0-0.5'		0.023		mg/kg	SW8270C_SIM
Acenaphthene	JF-9-6-16	6/16/2011	0-0.5'		0.012		mg/kg	SW8270C_SIM
Acenaphthylene	JF-9-6-16	6/16/2011	0-0.5'		0.372		mg/kg	SW8270
Anthracene	JF-9-6-16	6/16/2011	0-0.5'		0.196		mg/kg	SW8270C_SIM
Benzo(a)anthracene	JF-9-6-16	6/16/2011	0-0.5'		0.532		mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Benzo(a)pyrene	JF-9-6-16	6/16/2011	0-0.5'		0.624		mg/kg	SW8270
Benzo(b)fluoranthene	JF-9-6-16	6/16/2011	0-0.5'		0.997		mg/kg	SW8270
Benzo(g,h,i) perylene	JF-9-6-16	6/16/2011	0-0.5'		0.174		mg/kg	SW8270C_SIM
Benzo(k)fluoranthene	JF-9-6-16	6/16/2011	0-0.5'		0.261	J	mg/kg	SW8270
Chrysene	JF-9-6-16	6/16/2011	0-0.5'		0.574		mg/kg	SW8270
Dibenzo(a,h)anthracene	JF-9-6-16	6/16/2011	0-0.5'		0.059		mg/kg	SW8270C_SIM
Fluoranthene	JF-9-6-16	6/16/2011	0-0.5'		0.702		mg/kg	SW8270
Fluorene	JF-9-6-16	6/16/2011	0-0.5'		0.047		mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	JF-9-6-16	6/16/2011	0-0.5'		0.228		mg/kg	SW8270C_SIM
Naphthalene	JF-9-6-16	6/16/2011	0-0.5'		0.033		mg/kg	SW8270C_SIM
Phenanthrene	JF-9-6-16	6/16/2011	0-0.5'		0.307		mg/kg	SW8270
Pyrene	JF-9-6-16	6/16/2011	0-0.5'		0.824		mg/kg	SW8270
2-Methylnaphthalene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		0.282	U	mg/kg	SW8270
Acenaphthene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		0.282	U	mg/kg	SW8270
Acenaphthylene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		0.392		mg/kg	SW8270
Anthracene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		0.308		mg/kg	SW8270
Benzo(a)anthracene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		1.54		mg/kg	SW8270
Benzo(a)pyrene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		1.6		mg/kg	SW8270
Benzo(b)fluoranthene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		1.84		mg/kg	SW8270
Benzo(g,h,i) perylene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		0.845		mg/kg	SW8270
Benzo(k)fluoranthene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		0.676		mg/kg	SW8270
Carbazole	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		NA		mg/kg	SW8270
Chrysene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		1.59		mg/kg	SW8270
Dibenzo(a,h)anthracene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		0.202		mg/kg	SW8270
Dibenzofuran	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		NA		mg/kg	SW8270
Fluoranthene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		2.26		mg/kg	SW8270
Fluorene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		0.282	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		0.909		mg/kg	SW8270
Naphthalene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		0.282	U	mg/kg	SW8270
Phenanthrene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		1.45		mg/kg	SW8270
Pyrene	Kennebunk, 51 Main St BK-1	3/30/2010	0-2'		2.42		mg/kg	SW8270
2-Methylnaphthalene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.36	U	mg/kg	SW8270
Acenaphthene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.36	U	mg/kg	SW8270
Acenaphthylene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.36	U	mg/kg	SW8270
Anthracene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.36	U	mg/kg	SW8270
Benzo(a)anthracene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.428		mg/kg	SW8270
Benzo(a)pyrene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.403		mg/kg	SW8270
Benzo(b)fluoranthene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.434		mg/kg	SW8270
Benzo(g,h,i) perylene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.36	U	mg/kg	SW8270
Benzo(k)fluoranthene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.36	U	mg/kg	SW8270
Carbazole	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.36	U	mg/kg	SW8270
Chrysene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.448		mg/kg	SW8270
Dibenzo(a,h)anthracene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.36	U	mg/kg	SW8270
Dibenzofuran	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.36	U	mg/kg	SW8270
Fluoranthene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.633		mg/kg	SW8270
Fluorene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.36	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.36	U	mg/kg	SW8270
Naphthalene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.36	U	mg/kg	SW8270
Phenanthrene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.412		mg/kg	SW8270
Pyrene	Lisbon, Worumbo Mill, BK-SS-03	4/14/2009	0-2'		0.56		mg/kg	SW8270
2-Methylnaphthalene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Acenaphthene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Acenaphthylene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Anthracene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Benzo(a)anthracene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Benzo(a)pyrene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Benzo(b)fluoranthene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Benzo(g,h,i) perylene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Benzo(k)fluoranthene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Carbazole	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Chrysene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Dibenzofuran	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Fluoranthene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.24	J	mg/kg	SW8270
Fluorene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Naphthalene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.29	U	mg/kg	SW8270
Phenanthrene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.225	J	mg/kg	SW8270
Pyrene	Mapleton, Auto Repair BK-SS-02	6/9/2009	4-6'		0.196	J	mg/kg	SW8270
2-Methylnaphthalene	Milo, Downtown BK2	12/18/2008	0-2'		NA		mg/kg	SW8270
Acenaphthene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Acenaphthylene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Anthracene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Benzo(a)anthracene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Benzo(a)pyrene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Benzo(b)fluoranthene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Benzo(g,h,i) perylene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Benzo(k)fluoranthene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Carbazole	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Chrysene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Dibenzofuran	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Fluoranthene	Milo, Downtown BK2	12/18/2008	0-2'		0.183	J	mg/kg	SW8270
Fluorene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Naphthalene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Phenanthrene	Milo, Downtown BK2	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Pyrene	Milo, Downtown BK2	12/18/2008	0-2'		0.183	J	mg/kg	SW8270
2-Methylnaphthalene	Milo, Downtown BK3	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Acenaphthene	Milo, Downtown BK3	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Acenaphthylene	Milo, Downtown BK3	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Anthracene	Milo, Downtown BK3	12/18/2008	0-2'		0.182	J	mg/kg	SW8270
Benzo(a)anthracene	Milo, Downtown BK3	12/18/2008	0-2'		0.65		mg/kg	SW8270
Benzo(a)pyrene	Milo, Downtown BK3	12/18/2008	0-2'		0.757		mg/kg	SW8270
Benzo(b)fluoranthene	Milo, Downtown BK3	12/18/2008	0-2'		0.986		mg/kg	SW8270
Benzo(g,h,i) perylene	Milo, Downtown BK3	12/18/2008	0-2'		0.278	J	mg/kg	SW8270
Benzo(k)fluoranthene	Milo, Downtown BK3	12/18/2008	0-2'		0.366		mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Carbazole	Milo, Downtown BK3	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Chrysene	Milo, Downtown BK3	12/18/2008	0-2'		0.706		mg/kg	SW8270
Dibenzo(a,h)anthracene	Milo, Downtown BK3	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Dibenzofuran	Milo, Downtown BK3	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Fluoranthene	Milo, Downtown BK3	12/18/2008	0-2'		1.36		mg/kg	SW8270
Fluorene	Milo, Downtown BK3	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Milo, Downtown BK3	12/18/2008	0-2'		0.347		mg/kg	SW8270
Naphthalene	Milo, Downtown BK3	12/18/2008	0-2'		0.34	U	mg/kg	SW8270
Phenanthrene	Milo, Downtown BK3	12/18/2008	0-2'		0.937		mg/kg	SW8270
Pyrene	Milo, Downtown BK3	12/18/2008	0-2'		1.13		mg/kg	SW8270
2-Methylnaphthalene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Acenaphthene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Acenaphthylene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Anthracene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Benzo(a)anthracene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Benzo(a)pyrene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Benzo(b)fluoranthene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Benzo(g,h,i)perylene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Benzo(k)fluoranthene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Carbazole	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Chrysene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Dibenzo(a,h)anthracene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Dibenzofuran	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Fluoranthene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.43		mg/kg	SW8270
Fluorene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Naphthalene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Phenanthrene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
Pyrene	Norway, Former Corn Shop SS-BKGD	11/20/2007	0-6'		0.41	U	mg/kg	SW8270
2-Methylnaphthalene	Old Town, OTC BK-1	10/21/2009	0-2'		0.297	U	mg/kg	SW8270
Acenaphthene	Old Town, OTC BK-1	10/21/2009	0-2'		0.297	U	mg/kg	SW8270
Acenaphthylene	Old Town, OTC BK-1	10/21/2009	0-2'		0.297	U	mg/kg	SW8270
Anthracene	Old Town, OTC BK-1	10/21/2009	0-2'		0.297	U	mg/kg	SW8270
Benzo(a)anthracene	Old Town, OTC BK-1	10/21/2009	0-2'		0.276	J	mg/kg	SW8270
Benzo(a)pyrene	Old Town, OTC BK-1	10/21/2009	0-2'		0.281	J	mg/kg	SW8270
Benzo(b)fluoranthene	Old Town, OTC BK-1	10/21/2009	0-2'		0.347		mg/kg	SW8270
Benzo(g,h,i)perylene	Old Town, OTC BK-1	10/21/2009	0-2'		0.296		mg/kg	SW8270
Benzo(k)fluoranthene	Old Town, OTC BK-1	10/21/2009	0-2'		0.297	U	mg/kg	SW8270
Carbazole	Old Town, OTC BK-1	10/21/2009	0-2'		NA		mg/kg	SW8270
Chrysene	Old Town, OTC BK-1	10/21/2009	0-2'		0.263	J	mg/kg	SW8270
Dibenzo(a,h)anthracene	Old Town, OTC BK-1	10/21/2009	0-2'		0.297	U	mg/kg	SW8270
Dibenzofuran	Old Town, OTC BK-1	10/21/2009	0-2'		NA		mg/kg	SW8270
Fluoranthene	Old Town, OTC BK-1	10/21/2009	0-2'		0.664		mg/kg	SW8270
Fluorene	Old Town, OTC BK-1	10/21/2009	0-2'		0.297	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Old Town, OTC BK-1	10/21/2009	0-2'		0.278	J	mg/kg	SW8270
Naphthalene	Old Town, OTC BK-1	10/21/2009	0-2'		0.297	U	mg/kg	SW8270
Phenanthrene	Old Town, OTC BK-1	10/21/2009	0-2'		0.328		mg/kg	SW8270
Pyrene	Old Town, OTC BK-1	10/21/2009	0-2'		0.6		mg/kg	SW8270
2-Methylnaphthalene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		0.28	U	mg/kg	SW8270
Acenaphthene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		0.28	U	mg/kg	SW8270
Acenaphthylene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		0.373		mg/kg	SW8270
Anthracene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		0.465		mg/kg	SW8270
Benzo(a)anthracene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		2.48		mg/kg	SW8270
Benzo(a)pyrene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		3.29		mg/kg	SW8270
Benzo(b)fluoranthene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		5.07		mg/kg	SW8270
Benzo(g,h,i)perylene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		1.16		mg/kg	SW8270
Benzo(k)fluoranthene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		1.47		mg/kg	SW8270
Carbazole	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		0.146	J	mg/kg	SW8270
Chrysene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		2.93		mg/kg	SW8270
Dibenzo(a,h)anthracene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		0.279	J	mg/kg	SW8270
Dibenzofuran	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		0.28	U	mg/kg	SW8270
Fluoranthene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		4.49		mg/kg	SW8270
Fluorene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		0.28	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		1.33		mg/kg	SW8270
Naphthalene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		0.28	U	mg/kg	SW8270
Phenanthrene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		1.06		mg/kg	SW8270
Pyrene	Presque Isle, Chapman St BK-SS-01	5/21/2008	0-0.5'		4.24		mg/kg	SW8270
2-Methylnaphthalene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.3	U	mg/kg	SW8270
Acenaphthene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.3	U	mg/kg	SW8270
Acenaphthylene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.3	U	mg/kg	SW8270
Anthracene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.3	U	mg/kg	SW8270
Benzo(a)anthracene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.228	J	mg/kg	SW8270
Benzo(a)pyrene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.192	J	mg/kg	SW8270
Benzo(b)fluoranthene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.521		mg/kg	SW8270
Benzo(g,h,i)perylene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.188	J	mg/kg	SW8270
Benzo(k)fluoranthene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.186	J	mg/kg	SW8270
Carbazole	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.3	U	mg/kg	SW8270
Chrysene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.487		mg/kg	SW8270
Dibenzo(a,h)anthracene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.3	U	mg/kg	SW8270
Dibenzofuran	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.3	U	mg/kg	SW8270
Fluoranthene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.926		mg/kg	SW8270
Fluorene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.3	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.211	J	mg/kg	SW8270
Naphthalene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.3	U	mg/kg	SW8270
Phenanthrene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.24	J	mg/kg	SW8270
Pyrene	Sanford, Aerofab BK-B-01	4/22/2008	0-2'		0.758		mg/kg	SW8270
2-Methylnaphthalene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.274	U	mg/kg	SW8270
Acenaphthene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.274	U	mg/kg	SW8270
Acenaphthylene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.274	U	mg/kg	SW8270
Anthracene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.274	U	mg/kg	SW8270
Benzo(a)anthracene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.64		mg/kg	SW8270
Benzo(a)pyrene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.57		mg/kg	SW8270
Benzo(b)fluoranthene	South Portland, Jett Property SS-101	10/16/2009	0-2'		1.31		mg/kg	SW8270
Benzo(g,h,i)perylene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.87		mg/kg	SW8270
Benzo(k)fluoranthene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.49		mg/kg	SW8270
Carbazole	South Portland, Jett Property SS-101	10/16/2009	0-2'		NA		mg/kg	SW8270
Chrysene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.91		mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Dibenzo(a,h)anthracene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.147	J	mg/kg	SW8270
Dibenzofuran	South Portland, Jett Property SS-101	10/16/2009	0-2'		NA		mg/kg	SW8270
Fluoranthene	South Portland, Jett Property SS-101	10/16/2009	0-2'		1.45		mg/kg	SW8270
Fluorene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.274	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.85		mg/kg	SW8270
Naphthalene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.274	U	mg/kg	SW8270
Phenanthrene	South Portland, Jett Property SS-101	10/16/2009	0-2'		0.62		mg/kg	SW8270
Pyrene	South Portland, Jett Property SS-101	10/16/2009	0-2'		1.39		mg/kg	SW8270
2-Methylnaphthalene	TS-1-6-14	6/14/2011	0-0.5'		0.0039	J	mg/kg	SW8270C SIM
Acenaphthene	TS-1-6-14	6/14/2011	0-0.5'		0.0074	U	mg/kg	SW8270C SIM
Acenaphthylene	TS-1-6-14	6/14/2011	0-0.5'		0.059		mg/kg	SW8270C SIM
Anthracene	TS-1-6-14	6/14/2011	0-0.5'		0.028		mg/kg	SW8270C SIM
Benzo(a)anthracene	TS-1-6-14	6/14/2011	0-0.5'		0.146		mg/kg	SW8270C SIM
Benzo(a)pyrene	TS-1-6-14	6/14/2011	0-0.5'		0.131		mg/kg	SW8270C SIM
Benzo(b)fluoranthene	TS-1-6-14	6/14/2011	0-0.5'		0.185		mg/kg	SW8270C SIM
Benzo(g,h,i) perylene	TS-1-6-14	6/14/2011	0-0.5'		0.085		mg/kg	SW8270C SIM
Benzo(k)fluoranthene	TS-1-6-14	6/14/2011	0-0.5'		0.062		mg/kg	SW8270C SIM
Chrysene	TS-1-6-14	6/14/2011	0-0.5'		0.139		mg/kg	SW8270C SIM
Dibenzo(a,h)anthracene	TS-1-6-14	6/14/2011	0-0.5'		0.022		mg/kg	SW8270C SIM
Fluoranthene	TS-1-6-14	6/14/2011	0-0.5'		0.159		mg/kg	SW8270C SIM
Fluorene	TS-1-6-14	6/14/2011	0-0.5'		0.0077		mg/kg	SW8270C SIM
Indeno(1,2,3-cd)pyrene	TS-1-6-14	6/14/2011	0-0.5'		0.091		mg/kg	SW8270C SIM
Naphthalene	TS-1-6-14	6/14/2011	0-0.5'		0.0075		mg/kg	SW8270C SIM
Phenanthrene	TS-1-6-14	6/14/2011	0-0.5'		0.07		mg/kg	SW8270C SIM
Pyrene	TS-1-6-14	6/14/2011	0-0.5'		0.193		mg/kg	SW8270C SIM
2-Methylnaphthalene	TS-2-6-14	6/14/2011	0-0.5'		0.014	J	mg/kg	SW8270C SIM
Acenaphthene	TS-2-6-14	6/14/2011	0-0.5'		0.086		mg/kg	SW8270C SIM
Acenaphthylene	TS-2-6-14	6/14/2011	0-0.5'		0.128		mg/kg	SW8270C SIM
Anthracene	TS-2-6-14	6/14/2011	0-0.5'		0.329		mg/kg	SW8270C SIM
Benzo(a)anthracene	TS-2-6-14	6/14/2011	0-0.5'		1.67		mg/kg	SW8270
Benzo(a)pyrene	TS-2-6-14	6/14/2011	0-0.5'		2.09		mg/kg	SW8270
Benzo(b)fluoranthene	TS-2-6-14	6/14/2011	0-0.5'		3.72		mg/kg	SW8270
Benzo(g,h,i) perylene	TS-2-6-14	6/14/2011	0-0.5'		0.508		mg/kg	SW8270C SIM
Benzo(k)fluoranthene	TS-2-6-14	6/14/2011	0-0.5'		1.15		mg/kg	SW8270
Chrysene	TS-2-6-14	6/14/2011	0-0.5'		2.2		mg/kg	SW8270
Dibenzo(a,h)anthracene	TS-2-6-14	6/14/2011	0-0.5'		0.163		mg/kg	SW8270C SIM
Fluoranthene	TS-2-6-14	6/14/2011	0-0.5'		4.49		mg/kg	SW8270
Fluorene	TS-2-6-14	6/14/2011	0-0.5'		0.113		mg/kg	SW8270C SIM
Indeno(1,2,3-cd)pyrene	TS-2-6-14	6/14/2011	0-0.5'		0.696		mg/kg	SW8270
Naphthalene	TS-2-6-14	6/14/2011	0-0.5'		0.032		mg/kg	SW8270C SIM
Phenanthrene	TS-2-6-14	6/14/2011	0-0.5'		2.17		mg/kg	SW8270
Pyrene	TS-2-6-14	6/14/2011	0-0.5'		3.61		mg/kg	SW8270
2-Methylnaphthalene	TS-3-6-14	6/14/2011	0-0.5'		0.087		mg/kg	SW8270C SIM
Acenaphthene	TS-3-6-14	6/14/2011	0-0.5'		0.1		mg/kg	SW8270C SIM
Acenaphthylene	TS-3-6-14	6/14/2011	0-0.5'		0.521		mg/kg	SW8270
Anthracene	TS-3-6-14	6/14/2011	0-0.5'		0.584		mg/kg	SW8270
Benzo(a)anthracene	TS-3-6-14	6/14/2011	0-0.5'		1.51		mg/kg	SW8270
Benzo(a)pyrene	TS-3-6-14	6/14/2011	0-0.5'		1.51		mg/kg	SW8270
Benzo(b)fluoranthene	TS-3-6-14	6/14/2011	0-0.5'		2.46		mg/kg	SW8270
Benzo(g,h,i) perylene	TS-3-6-14	6/14/2011	0-0.5'		0.242	J	mg/kg	SW8270
Benzo(k)fluoranthene	TS-3-6-14	6/14/2011	0-0.5'		0.785		mg/kg	SW8270
Chrysene	TS-3-6-14	6/14/2011	0-0.5'		1.48		mg/kg	SW8270
Dibenzo(a,h)anthracene	TS-3-6-14	6/14/2011	0-0.5'		0.101		mg/kg	SW8270C SIM
Fluoranthene	TS-3-6-14	6/14/2011	0-0.5'		2.59		mg/kg	SW8270
Fluorene	TS-3-6-14	6/14/2011	0-0.5'		0.264		mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	TS-3-6-14	6/14/2011	0-0.5'		0.331		mg/kg	SW8270
Naphthalene	TS-3-6-14	6/14/2011	0-0.5'		0.074		mg/kg	SW8270C SIM
Phenanthrene	TS-3-6-14	6/14/2011	0-0.5'		1.71		mg/kg	SW8270
Pyrene	TS-3-6-14	6/14/2011	0-0.5'		2.38		mg/kg	SW8270
2-Methylnaphthalene	TS-4-6-15	6/15/2011	0-0.5'		0.011		mg/kg	SW8270C SIM
Acenaphthene	TS-4-6-15	6/15/2011	0-0.5'		0.014		mg/kg	SW8270C SIM
Acenaphthylene	TS-4-6-15	6/15/2011	0-0.5'		0.15	J	mg/kg	SW8270
Anthracene	TS-4-6-15	6/15/2011	0-0.5'		0.116		mg/kg	SW8270C SIM
Benzo(a)anthracene	TS-4-6-15	6/15/2011	0-0.5'		0.532		mg/kg	SW8270
Benzo(a)pyrene	TS-4-6-15	6/15/2011	0-0.5'		0.563		mg/kg	SW8270
Benzo(b)fluoranthene	TS-4-6-15	6/15/2011	0-0.5'		1.04		mg/kg	SW8270
Benzo(g,h,i) perylene	TS-4-6-15	6/15/2011	0-0.5'		0.12		mg/kg	SW8270C SIM
Benzo(k)fluoranthene	TS-4-6-15	6/15/2011	0-0.5'		0.297		mg/kg	SW8270
Chrysene	TS-4-6-15	6/15/2011	0-0.5'		0.565		mg/kg	SW8270
Dibenzo(a,h)anthracene	TS-4-6-15	6/15/2011	0-0.5'		0.043		mg/kg	SW8270C SIM
Fluoranthene	TS-4-6-15	6/15/2011	0-0.5'		0.961		mg/kg	SW8270
Fluorene	TS-4-6-15	6/15/2011	0-0.5'		0.027		mg/kg	SW8270C SIM
Indeno(1,2,3-cd)pyrene	TS-4-6-15	6/15/2011	0-0.5'		0.164		mg/kg	SW8270C SIM
Naphthalene	TS-4-6-15	6/15/2011	0-0.5'		0.014		mg/kg	SW8270C SIM
Phenanthrene	TS-4-6-15	6/15/2011	0-0.5'		0.415		mg/kg	SW8270
Pyrene	TS-4-6-15	6/15/2011	0-0.5'		0.798		mg/kg	SW8270
2-Methylnaphthalene	TS-5-6-15	6/15/2011	0-0.5'		0.047		mg/kg	SW8270C SIM
Acenaphthene	TS-5-6-15	6/15/2011	0-0.5'		0.031		mg/kg	SW8270C SIM
Acenaphthylene	TS-5-6-15	6/15/2011	0-0.5'		0.621		mg/kg	SW8270
Anthracene	TS-5-6-15	6/15/2011	0-0.5'		0.29	J	mg/kg	SW8270
Benzo(a)anthracene	TS-5-6-15	6/15/2011	0-0.5'		0.739		mg/kg	SW8270
Benzo(a)pyrene	TS-5-6-15	6/15/2011	0-0.5'		0.857		mg/kg	SW8270
Benzo(b)fluoranthene	TS-5-6-15	6/15/2011	0-0.5'		1.12		mg/kg	SW8270
Benzo(g,h,i) perylene	TS-5-6-15	6/15/2011	0-0.5'		0.168		mg/kg	SW8270C SIM
Benzo(k)fluoranthene	TS-5-6-15	6/15/2011	0-0.5'		0.319		mg/kg	SW8270C SIM
Chrysene	TS-5-6-15	6/15/2011	0-0.5'		0.82		mg/kg	SW8270
Dibenzo(a,h)anthracene	TS-5-6-15	6/15/2011	0-0.5'		0.076		mg/kg	SW8270C SIM
Fluoranthene	TS-5-6-15	6/15/2011	0-0.5'		0.74		mg/kg	SW8270
Fluorene	TS-5-6-15	6/15/2011	0-0.5'		0.122		mg/kg	SW8270C SIM
Indeno(1,2,3-cd)pyrene	TS-5-6-15	6/15/2011	0-0.5'		0.203		mg/kg	SW8270C SIM
Naphthalene	TS-5-6-15	6/15/2011	0-0.5'		0.041		mg/kg	SW8270C SIM
Phenanthrene	TS-5-6-15	6/15/2011	0-0.5'		0.519		mg/kg	SW8270
Pyrene	TS-5-6-15	6/15/2011	0-0.5'		1.19		mg/kg	SW8270
2-Methylnaphthalene	TS-6-6-15	6/15/2011	0-0.5'		0.076		mg/kg	SW8270C SIM
Acenaphthene	TS-6-6-15	6/15/2011	0-0.5'		0.359		mg/kg	SW8270
Acenaphthylene	TS-6-6-15	6/15/2011	0-0.5'		0.06		mg/kg	SW8270C SIM
Anthracene	TS-6-6-15	6/15/2011	0-0.5'		1.05		mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Benzo(a)anthracene	TS-6-6-15	6/15/2011	0-0.5'		2.08		mg/kg	SW8270
Benzo(a)pyrene	TS-6-6-15	6/15/2011	0-0.5'		2.04		mg/kg	SW8270
Benzo(b)fluoranthene	TS-6-6-15	6/15/2011	0-0.5'		3.38		mg/kg	SW8270
Benzo(g,h,i) perylene	TS-6-6-15	6/15/2011	0-0.5'		0.377		mg/kg	SW8270
Benzo(k)fluoranthene	TS-6-6-15	6/15/2011	0-0.5'		1.07		mg/kg	SW8270
Chrysene	TS-6-6-15	6/15/2011	0-0.5'		2.04		mg/kg	SW8270
Dibenzo(a,h)anthracene	TS-6-6-15	6/15/2011	0-0.5'		0.157		mg/kg	SW8270C_SIM
Fluoranthene	TS-6-6-15	6/15/2011	0-0.5'		5.44		mg/kg	SW8270
Fluorene	TS-6-6-15	6/15/2011	0-0.5'		0.458		mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	TS-6-6-15	6/15/2011	0-0.5'		0.533		mg/kg	SW8270
Naphthalene	TS-6-6-15	6/15/2011	0-0.5'		0.14	J	mg/kg	SW8270
Phenanthrene	TS-6-6-15	6/15/2011	0-0.5'		4.03		mg/kg	SW8270
Pyrene	TS-6-6-15	6/15/2011	0-0.5'		4.12		mg/kg	SW8270
2-Methylnaphthalene	TS-7-6-15	6/15/2011	0-0.5'		0.0077	U	mg/kg	SW8270C_SIM
Acenaphthene	TS-7-6-15	6/15/2011	0-0.5'		0.0077	U	mg/kg	SW8270C_SIM
Acenaphthylene	TS-7-6-15	6/15/2011	0-0.5'		0.0077	U	mg/kg	SW8270C_SIM
Anthracene	TS-7-6-15	6/15/2011	0-0.5'		0.0077	U	mg/kg	SW8270C_SIM
Benzo(a)anthracene	TS-7-6-15	6/15/2011	0-0.5'		0.012		mg/kg	SW8270C_SIM
Benzo(a)pyrene	TS-7-6-15	6/15/2011	0-0.5'		0.005	J	mg/kg	SW8270C_SIM
Benzo(b)fluoranthene	TS-7-6-15	6/15/2011	0-0.5'		0.0093		mg/kg	SW8270C_SIM
Benzo(g,h,i) perylene	TS-7-6-15	6/15/2011	0-0.5'		0.0077	U	mg/kg	SW8270C_SIM
Benzo(k)fluoranthene	TS-7-6-15	6/15/2011	0-0.5'		0.0077	U	mg/kg	SW8270C_SIM
Chrysene	TS-7-6-15	6/15/2011	0-0.5'		0.005	J	mg/kg	SW8270C_SIM
Dibenzo(a,h)anthracene	TS-7-6-15	6/15/2011	0-0.5'		0.0077	U	mg/kg	SW8270C_SIM
Fluoranthene	TS-7-6-15	6/15/2011	0-0.5'		0.008		mg/kg	SW8270C_SIM
Fluorene	TS-7-6-15	6/15/2011	0-0.5'		0.0077	U	mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	TS-7-6-15	6/15/2011	0-0.5'		0.0077	U	mg/kg	SW8270C_SIM
Naphthalene	TS-7-6-15	6/15/2011	0-0.5'		0.004	J	mg/kg	SW8270C_SIM
Phenanthrene	TS-7-6-15	6/15/2011	0-0.5'		0.005	J	mg/kg	SW8270C_SIM
Pyrene	TS-7-6-15	6/15/2011	0-0.5'		0.005	J	mg/kg	SW8270C_SIM
2-Methylnaphthalene	TS-8-6-16	6/16/2011	0-0.5'		0.051		mg/kg	SW8270C_SIM
Acenaphthene	TS-8-6-16	6/16/2011	0-0.5'		0.017		mg/kg	SW8270C_SIM
Acenaphthylene	TS-8-6-16	6/16/2011	0-0.5'		0.352		mg/kg	SW8270
Anthracene	TS-8-6-16	6/16/2011	0-0.5'		0.17	J	mg/kg	SW8270
Benzo(a)anthracene	TS-8-6-16	6/16/2011	0-0.5'		0.664	E	mg/kg	SW8270C_SIM
Benzo(a)pyrene	TS-8-6-16	6/16/2011	0-0.5'		0.482		mg/kg	SW8270
Benzo(b)fluoranthene	TS-8-6-16	6/16/2011	0-0.5'		0.722		mg/kg	SW8270
Benzo(g,h,i) perylene	TS-8-6-16	6/16/2011	0-0.5'		0.256		mg/kg	SW8270C_SIM
Benzo(k)fluoranthene	TS-8-6-16	6/16/2011	0-0.5'		0.191		mg/kg	SW8270C_SIM
Chrysene	TS-8-6-16	6/16/2011	0-0.5'		0.662		mg/kg	SW8270
Dibenzo(a,h)anthracene	TS-8-6-16	6/16/2011	0-0.5'		0.076		mg/kg	SW8270C_SIM
Fluoranthene	TS-8-6-16	6/16/2011	0-0.5'		0.903		mg/kg	SW8270
Fluorene	TS-8-6-16	6/16/2011	0-0.5'		0.078		mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	TS-8-6-16	6/16/2011	0-0.5'		0.291		mg/kg	SW8270
Naphthalene	TS-8-6-16	6/16/2011	0-0.5'		0.044		mg/kg	SW8270C_SIM
Phenanthrene	TS-8-6-16	6/16/2011	0-0.5'		0.912		mg/kg	SW8270
Pyrene	TS-8-6-16	6/16/2011	0-0.5'		1.2		mg/kg	SW8270
2-Methylnaphthalene	TS-9-6-16	6/16/2011	0-0.5'		0.005	J	mg/kg	SW8270C_SIM
Acenaphthene	TS-9-6-16	6/16/2011	0-0.5'		0.009	U	mg/kg	SW8270C_SIM
Acenaphthylene	TS-9-6-16	6/16/2011	0-0.5'		0.035		mg/kg	SW8270C_SIM
Anthracene	TS-9-6-16	6/16/2011	0-0.5'		0.013		mg/kg	SW8270C_SIM
Benzo(a)anthracene	TS-9-6-16	6/16/2011	0-0.5'		0.082		mg/kg	SW8270C_SIM
Benzo(a)pyrene	TS-9-6-16	6/16/2011	0-0.5'		0.066		mg/kg	SW8270C_SIM
Benzo(b)fluoranthene	TS-9-6-16	6/16/2011	0-0.5'		0.112		mg/kg	SW8270C_SIM
Benzo(g,h,i) perylene	TS-9-6-16	6/16/2011	0-0.5'		0.039		mg/kg	SW8270C_SIM
Benzo(k)fluoranthene	TS-9-6-16	6/16/2011	0-0.5'		0.03		mg/kg	SW8270C_SIM
Chrysene	TS-9-6-16	6/16/2011	0-0.5'		0.076		mg/kg	SW8270C_SIM
Dibenzo(a,h)anthracene	TS-9-6-16	6/16/2011	0-0.5'		0.012		mg/kg	SW8270C_SIM
Fluoranthene	TS-9-6-16	6/16/2011	0-0.5'		0.106		mg/kg	SW8270C_SIM
Fluorene	TS-9-6-16	6/16/2011	0-0.5'		0.005	J	mg/kg	SW8270C_SIM
Indeno(1,2,3-cd)pyrene	TS-9-6-16	6/16/2011	0-0.5'		0.048		mg/kg	SW8270C_SIM
Naphthalene	TS-9-6-16	6/16/2011	0-0.5'		0.007	J	mg/kg	SW8270C_SIM
Phenanthrene	TS-9-6-16	6/16/2011	0-0.5'		0.061		mg/kg	SW8270C_SIM
Pyrene	TS-9-6-16	6/16/2011	0-0.5'		0.123		mg/kg	SW8270C_SIM
2-Methylnaphthalene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		0.38	U	mg/kg	SW8270
Acenaphthene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		0.38	U	mg/kg	SW8270
Acenaphthylene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		0.3	J	mg/kg	SW8270
Anthracene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		0.67		mg/kg	SW8270
Benzo(a)anthracene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		4.3		mg/kg	SW8270
Benzo(a)pyrene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		4.7		mg/kg	SW8270
Benzo(b)fluoranthene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		6.2		mg/kg	SW8270
Benzo(g,h,i) perylene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		2.4		mg/kg	SW8270
Benzo(k)fluoranthene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		2.4		mg/kg	SW8270
Carbazole	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		0.38	U	mg/kg	SW8270
Chrysene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		5.9		mg/kg	SW8270
Dibenzo(a,h)anthracene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		0.63		mg/kg	SW8270
Dibenzofuran	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		0.38	U	mg/kg	SW8270
Fluoranthene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		4.7		mg/kg	SW8270
Fluorene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		0.18	J	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		2.6		mg/kg	SW8270
Naphthalene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		0.38	U	mg/kg	SW8270
Phenanthrene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		2.5		mg/kg	SW8270
Pyrene	Vinalhaven, Fish Pier SS-2	4/25/2006	0-0.5'		9.8		mg/kg	SW8270
2-Methylnaphthalene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		0.9		mg/kg	SW8270
Acenaphthene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		0.1	U	mg/kg	SW8270
Acenaphthylene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		1.6		mg/kg	SW8270
Anthracene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		0.9		mg/kg	SW8270
Benzo(a)anthracene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		4.6		mg/kg	SW8270
Benzo(a)pyrene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		6		mg/kg	SW8270
Benzo(b)fluoranthene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		5.6		mg/kg	SW8270
Benzo(g,h,i) perylene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		2		mg/kg	SW8270
Benzo(k)fluoranthene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		5.1		mg/kg	SW8270
Carbazole	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		NA		mg/kg	SW8270
Chrysene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		4.5		mg/kg	SW8270
Dibenzo(a,h)anthracene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		1.2		mg/kg	SW8270
Dibenzofuran	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		NA		mg/kg	SW8270
Fluoranthene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		8		mg/kg	SW8270

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
Fluorene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		0.4		mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		2.4		mg/kg	SW8270
Naphthalene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		2.9		mg/kg	SW8270
Phenanthrene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		3.2		mg/kg	SW8270
Pyrene	Windham, 13 Depot St BK-B-01	10/26/2010	0-2'		7.3		mg/kg	SW8270
2-Methylnaphthalene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Acenaphthene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Acenaphthylene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Anthracene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Benzo(a)anthracene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Benzo(a)pyrene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Benzo(b)fluoranthene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.2		mg/kg	SW8270
Benzo(g,h,i)perylene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Benzo(k)fluoranthene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Carbazole	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		NA		mg/kg	SW8270
Chrysene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1		mg/kg	SW8270
Dibenzo(a,h)anthracene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Dibenzofuran	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		NA		mg/kg	SW8270
Fluoranthene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.2		mg/kg	SW8270
Fluorene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Indeno(1,2,3-cd)pyrene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Naphthalene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Phenanthrene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.1	U	mg/kg	SW8270
Pyrene	Windham, Heritage Metalcraft BK-SS-01	5/25/2010	0-2'		0.2		mg/kg	SW8270
ACENAPHTHENE	BGS-01	8/12/1991			0.4	U	mg/kg	
ACENAPHTHYLENE	BGS-01	8/12/1991			0.4	U	mg/kg	
ANTHRACENE	BGS-01	8/12/1991			0.4	U	mg/kg	
BENZO(A)ANTHRACENE	BGS-01	8/12/1991			0.14	J	mg/kg	
BENZO(A)PYRENE	BGS-01	8/12/1991			0.11	J	mg/kg	
BENZO(B)FLUORANTHENE	BGS-01	8/12/1991			0.14	J	mg/kg	
BENZO(G,H,I)PERYLENE	BGS-01	8/12/1991			0.066	J	mg/kg	
BENZO(K)FLUORANTHENE	BGS-01	8/12/1991			0.11	J	mg/kg	
CARBAZOLE	BGS-01	8/12/1991			0.36	U	mg/kg	
CHRYSENE	BGS-01	8/12/1991			0	0	mg/kg	
DIBENZO(A,H)ANTHRACENE	BGS-01	8/12/1991			0.4	U	mg/kg	
DIBENZOFURAN	BGS-01	8/12/1991			0.4	U	mg/kg	
FLUORANTHENE	BGS-01	8/12/1991			0.18	J	mg/kg	
FLUORENE	BGS-01	8/12/1991			0.4	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	BGS-01	8/12/1991			0.079	J	mg/kg	
NAPHTHALENE	BGS-01	8/12/1991			0.043	J	mg/kg	
PHENANTHRENE	BGS-01	8/12/1991			0.21	J	mg/kg	
PYRENE	BGS-01	8/12/1991			0.18	J	mg/kg	
ACENAPHTHENE	BGS-07	8/13/1991			0.41	U	mg/kg	
ACENAPHTHYLENE	BGS-07	8/13/1991			0.41	U	mg/kg	
ANTHRACENE	BGS-07	8/13/1991			0.41	U	mg/kg	
BENZO(A)ANTHRACENE	BGS-07	8/13/1991			0.21	J	mg/kg	
BENZO(A)PYRENE	BGS-07	8/13/1991			0.2	J	mg/kg	
BENZO(B)FLUORANTHENE	BGS-07	8/13/1991			0.25	J	mg/kg	
BENZO(G,H,I)PERYLENE	BGS-07	8/13/1991			0.072	J	mg/kg	
BENZO(K)FLUORANTHENE	BGS-07	8/13/1991			0.15	J	mg/kg	
CHRYSENE	BGS-07	1/0/1900			0.24	J	mg/kg	
DIBENZO(A,H)ANTHRACENE	BGS-07	8/13/1991			0.41	U	mg/kg	
DIBENZOFURAN	BGS-07	8/13/1991			0.41	U	mg/kg	
FLUORANTHENE	BGS-07	8/13/1991			0.34	J	mg/kg	
FLUORENE	BGS-07	8/13/1991			0.41	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	BGS-07	8/13/1991			0.1	J	mg/kg	
NAPHTHALENE	BGS-07	8/13/1991			0.41	U	mg/kg	
PHENANTHRENE	BGS-07	8/13/1991			0.19	J	mg/kg	
PYRENE	BGS-07	8/13/1991			0.32	J	mg/kg	
ACENAPHTHENE	BGS-13	8/3/1993			0.36	U	mg/kg	
ACENAPHTHYLENE	BGS-13	8/3/1993			0.36	U	mg/kg	
ANTHRACENE	BGS-13	8/3/1993			0.36	U	mg/kg	
BENZO(A)ANTHRACENE	BGS-13	8/3/1993			0.048	J	mg/kg	
BENZO(A)PYRENE	BGS-13	8/3/1993			0.043	J	mg/kg	
BENZO(B)FLUORANTHENE	BGS-13	8/3/1993			0.36	U	mg/kg	
BENZO(G,H,I)PERYLENE	BGS-13	8/3/1993			0.36	U	mg/kg	
BENZO(K)FLUORANTHENE	BGS-13	8/3/1993			0.36	U	mg/kg	
CARBAZOLE	BGS-13	8/3/1993			0.36	U	mg/kg	
CHRYSENE	BGS-13	1/0/1900			0.061	J	mg/kg	
DIBENZO(A,H)ANTHRACENE	BGS-13	8/3/1993			0.36	U	mg/kg	
DIBENZOFURAN	BGS-13	8/3/1993			0.36	U	mg/kg	
FLUORANTHENE	BGS-13	8/3/1993			0.11	J	mg/kg	
FLUORENE	BGS-13	8/3/1993			0.36	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	BGS-13	8/3/1993			0.36	U	mg/kg	
NAPHTHALENE	BGS-13	8/3/1993			0.36	U	mg/kg	
PHENANTHRENE	BGS-13	8/3/1993			0.067	J	mg/kg	
PYRENE	BGS-13	8/3/1993			0.083	J	mg/kg	
ACENAPHTHENE	BGS-19	8/3/1993			0.37	U	mg/kg	
ACENAPHTHYLENE	BGS-19	8/3/1993			0.37	U	mg/kg	
ANTHRACENE	BGS-19	8/3/1993			0.37	U	mg/kg	
BENZO(A)ANTHRACENE	BGS-19	8/3/1993			0.096	J	mg/kg	
BENZO(A)PYRENE	BGS-19	8/3/1993			0.1	J	mg/kg	
BENZO(B)FLUORANTHENE	BGS-19	8/3/1993			0.24	J	mg/kg	
BENZO(G,H,I)PERYLENE	BGS-19	8/3/1993			0.039	J	mg/kg	
BENZO(K)FLUORANTHENE	BGS-19	8/3/1993			0.37	U	mg/kg	
CARBAZOLE	BGS-19	8/3/1993			0.37	U	mg/kg	
CHRYSENE	BGS-19	1/0/1900			0.15	J	mg/kg	
DIBENZO(A,H)ANTHRACENE	BGS-19	8/3/1993			0.37	U	mg/kg	
DIBENZOFURAN	BGS-19	8/3/1993			0.37	U	mg/kg	
FLUORANTHENE	BGS-19	8/3/1993			0.2	J	mg/kg	
FLUORENE	BGS-19	8/3/1993			0.37	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	BGS-19	8/3/1993			0.047	J	mg/kg	
NAPHTHALENE	BGS-19	8/3/1993			0.37	U	mg/kg	
PHENANTHRENE	BGS-19	8/3/1993			0.091	J	mg/kg	
PYRENE	BGS-19	8/3/1993			0.18	J	mg/kg	
ACENAPHTHENE	BGS-25	8/3/1993			0.4	U	mg/kg	
ACENAPHTHYLENE	BGS-25	8/3/1993			0.4	U	mg/kg	

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
ANTHRACENE	BGS-25	8/3/1993			0.4	U	mg/kg	
BENZO(A)ANTHRACENE	BGS-25	8/3/1993			0.4	U	mg/kg	
BENZO(A)PYRENE	BGS-25	8/3/1993			0.4	U	mg/kg	
BENZO(B)FLUORANTHENE	BGS-25	8/3/1993			0.4	U	mg/kg	
BENZO(G,H,I)PERYLENE	BGS-25	8/3/1993			0.4	U	mg/kg	
BENZO(K)FLUORANTHENE	BGS-25	8/3/1993			0.4	U	mg/kg	
CARBAZOLE	BGS-25	8/3/1993			0.4	U	mg/kg	
CHRYSENE	BGS-25	1/0/1900			0.4	U	mg/kg	
DIBENZO(A,H)ANTHRACENE	BGS-25	8/3/1993			0.4	U	mg/kg	
DIBENZOFURAN	BGS-25	8/3/1993			0.4	U	mg/kg	
FLUORANTHENE	BGS-25	8/3/1993			0.043	J	mg/kg	
FLUORENE	BGS-25	8/3/1993			0.4	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	BGS-25	8/3/1993			0.4	U	mg/kg	
NAPHTHALENE	BGS-25	8/3/1993			0.4	U	mg/kg	
PHENANTHRENE	BGS-25	8/3/1993			0.4	U	mg/kg	
PYRENE	BGS-25	8/3/1993			0.047	J	mg/kg	
2-METHYLNAPHTHALENE	MW-SB-NASB-BKD-01	8/20/2009			0.002	U	mg/kg	
ACENAPHTHENE	MW-SB-NASB-BKD-01	8/20/2009			0.002	U	mg/kg	
ACENAPHTHYLENE	MW-SB-NASB-BKD-01	8/20/2009			0.001	U	mg/kg	
ANTHRACENE	MW-SB-NASB-BKD-01	8/20/2009			0.005	J	mg/kg	
BENZO(A)ANTHRACENE	MW-SB-NASB-BKD-01	8/20/2009			0.003	J	mg/kg	
BENZO(A)PYRENE	MW-SB-NASB-BKD-01	8/20/2009			0.004	J	mg/kg	
BENZO(B)FLUORANTHENE	MW-SB-NASB-BKD-01	8/20/2009			0.002	U	mg/kg	
BENZO(G,H,I)PERYLENE	MW-SB-NASB-BKD-01	8/20/2009			0.004	J	mg/kg	
BENZO(K)FLUORANTHENE	MW-SB-NASB-BKD-01	8/20/2009			0.003	U	mg/kg	
CHRYSENE	MW-SB-NASB-BKD-01	8/20/2009			0.004	J	mg/kg	
DIBENZO(A,H)ANTHRACENE	MW-SB-NASB-BKD-01	8/20/2009			0.002	U	mg/kg	
FLUORANTHENE	MW-SB-NASB-BKD-01	8/20/2009			0.009	J	mg/kg	
FLUORENE	MW-SB-NASB-BKD-01	8/20/2009			0.003	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	MW-SB-NASB-BKD-01	8/20/2009			0.005	J	mg/kg	
NAPHTHALENE	MW-SB-NASB-BKD-01	8/20/2009			0.003	U	mg/kg	
PHENANTHRENE	MW-SB-NASB-BKD-01	8/20/2009			0.005	J	mg/kg	
PYRENE	MW-SB-NASB-BKD-01	8/20/2009			0.007	J	mg/kg	
2-METHYLNAPHTHALENE	MW-SB-NASB-BKD-04	8/20/2009			0.002	U	mg/kg	
ACENAPHTHENE	MW-SB-NASB-BKD-04	8/20/2009			0.002	U	mg/kg	
ACENAPHTHYLENE	MW-SB-NASB-BKD-04	8/20/2009			0.001	U	mg/kg	
ANTHRACENE	MW-SB-NASB-BKD-04	8/20/2009			0.002	J	mg/kg	
BENZO(A)ANTHRACENE	MW-SB-NASB-BKD-04	8/20/2009			0.002	J	mg/kg	
BENZO(A)PYRENE	MW-SB-NASB-BKD-04	8/20/2009			0.004	U	mg/kg	
BENZO(B)FLUORANTHENE	MW-SB-NASB-BKD-04	8/20/2009			0.003	U	mg/kg	
BENZO(G,H,I)PERYLENE	MW-SB-NASB-BKD-04	8/20/2009			0.002	J	mg/kg	
BENZO(K)FLUORANTHENE	MW-SB-NASB-BKD-04	8/20/2009			0.003	U	mg/kg	
CHRYSENE	MW-SB-NASB-BKD-04	8/20/2009			0.002	J	mg/kg	
DIBENZO(A,H)ANTHRACENE	MW-SB-NASB-BKD-04	8/20/2009			0.002	U	mg/kg	
FLUORANTHENE	MW-SB-NASB-BKD-04	8/20/2009			0.004	J	mg/kg	
FLUORENE	MW-SB-NASB-BKD-04	8/20/2009			0.003	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	MW-SB-NASB-BKD-04	8/20/2009			0.002	J	mg/kg	
NAPHTHALENE	MW-SB-NASB-BKD-04	8/20/2009			0.003	U	mg/kg	
PHENANTHRENE	MW-SB-NASB-BKD-04	8/20/2009			0.002	J	mg/kg	
PYRENE	MW-SB-NASB-BKD-04	8/20/2009			0.004	J	mg/kg	
2-METHYLNAPHTHALENE	MW-SB-NASB-BKD-19	8/13/2009			0.003	U	mg/kg	
ACENAPHTHENE	MW-SB-NASB-BKD-19	8/13/2009			0.002	U	mg/kg	
ACENAPHTHYLENE	MW-SB-NASB-BKD-19	8/13/2009			0.002	U	mg/kg	
ANTHRACENE	MW-SB-NASB-BKD-19	8/13/2009			0.002	U	mg/kg	
BENZO(A)ANTHRACENE	MW-SB-NASB-BKD-19	8/13/2009			0.002	U	mg/kg	
BENZO(A)PYRENE	MW-SB-NASB-BKD-19	8/13/2009			0.004	U	mg/kg	
BENZO(B)FLUORANTHENE	MW-SB-NASB-BKD-19	8/13/2009			0.003	U	mg/kg	
BENZO(G,H,I)PERYLENE	MW-SB-NASB-BKD-19	8/13/2009			0.002	U	mg/kg	
BENZO(K)FLUORANTHENE	MW-SB-NASB-BKD-19	8/13/2009			0.004	U	mg/kg	
CHRYSENE	MW-SB-NASB-BKD-19	8/13/2009			0.002	U	mg/kg	
DIBENZO(A,H)ANTHRACENE	MW-SB-NASB-BKD-19	8/13/2009			0.002	U	mg/kg	
FLUORANTHENE	MW-SB-NASB-BKD-19	8/13/2009			0.004	J	mg/kg	
FLUORENE	MW-SB-NASB-BKD-19	8/13/2009			0.004	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	MW-SB-NASB-BKD-19	8/13/2009			0.002	U	mg/kg	
NAPHTHALENE	MW-SB-NASB-BKD-19	8/13/2009			0.003	U	mg/kg	
PHENANTHRENE	MW-SB-NASB-BKD-19	8/13/2009			0.003	J	mg/kg	
PYRENE	MW-SB-NASB-BKD-19	8/13/2009			0.003	J	mg/kg	
2-METHYLNAPHTHALENE	MW-SB-NASB-BKD-30	11/11/2009			0.002	U	mg/kg	
ACENAPHTHENE	MW-SB-NASB-BKD-30	11/11/2009			0.002	U	mg/kg	
ACENAPHTHYLENE	MW-SB-NASB-BKD-30	11/11/2009			0.001	U	mg/kg	
ANTHRACENE	MW-SB-NASB-BKD-30	11/11/2009			0.001	U	mg/kg	
BENZO(A)ANTHRACENE	MW-SB-NASB-BKD-30	11/11/2009			0.018	J	mg/kg	
BENZO(A)PYRENE	MW-SB-NASB-BKD-30	11/11/2009			0.02	J	mg/kg	
BENZO(B)FLUORANTHENE	MW-SB-NASB-BKD-30	11/11/2009			0.034	J	mg/kg	
BENZO(G,H,I)PERYLENE	MW-SB-NASB-BKD-30	11/11/2009			0.006	J	mg/kg	
BENZO(K)FLUORANTHENE	MW-SB-NASB-BKD-30	11/11/2009			0.006	J	mg/kg	
CHRYSENE	MW-SB-NASB-BKD-30	11/11/2009			0.026	J	mg/kg	
DIBENZO(A,H)ANTHRACENE	MW-SB-NASB-BKD-30	11/11/2009			0.005	J	mg/kg	
FLUORANTHENE	MW-SB-NASB-BKD-30	11/11/2009			0.045	J	mg/kg	
FLUORENE	MW-SB-NASB-BKD-30	11/11/2009			0.004	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	MW-SB-NASB-BKD-30	11/11/2009			0.03	J	mg/kg	
NAPHTHALENE	MW-SB-NASB-BKD-30	11/11/2009			0.003	U	mg/kg	
PHENANTHRENE	MW-SB-NASB-BKD-30	11/11/2009			0.025	J	mg/kg	
PYRENE	MW-SB-NASB-BKD-30	11/11/2009			0.052	J	mg/kg	
2-METHYLNAPHTHALENE	MW-SB-NASB-BKD-39	8/17/2009			0.002	UJ	mg/kg	
ACENAPHTHENE	MW-SB-NASB-BKD-39	8/17/2009			0.002	UJ	mg/kg	
ACENAPHTHYLENE	MW-SB-NASB-BKD-39	8/17/2009			0.001	U	mg/kg	
ANTHRACENE	MW-SB-NASB-BKD-39	8/17/2009			0.001	U	mg/kg	
BENZO(A)ANTHRACENE	MW-SB-NASB-BKD-39	8/17/2009			0.002	U	mg/kg	
BENZO(A)PYRENE	MW-SB-NASB-BKD-39	8/17/2009			0.004	U	mg/kg	
BENZO(B)FLUORANTHENE	MW-SB-NASB-BKD-39	8/17/2009			0.002	U	mg/kg	
BENZO(G,H,I)PERYLENE	MW-SB-NASB-BKD-39	8/17/2009			0.002	U	mg/kg	
BENZO(K)FLUORANTHENE	MW-SB-NASB-BKD-39	8/17/2009			0.003	U	mg/kg	
CHRYSENE	MW-SB-NASB-BKD-39	8/17/2009			0.002	U	mg/kg	
DIBENZO(A,H)ANTHRACENE	MW-SB-NASB-BKD-39	8/17/2009			0.002	UJ	mg/kg	
FLUORANTHENE	MW-SB-NASB-BKD-39	8/17/2009			0.002	J	mg/kg	
FLUORENE	MW-SB-NASB-BKD-39	8/17/2009			0.003	UJ	mg/kg	

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
INDENO(1,2,3-CD)PYRENE	MW-SB-NASB-BKD-39	8/17/2009			0.002	U	mg/kg	
NAPHTHALENE	MW-SB-NASB-BKD-39	8/17/2009			0.003	U	mg/kg	
PHENANTHRENE	MW-SB-NASB-BKD-39	8/17/2009			0.002	U	mg/kg	
PYRENE	MW-SB-NASB-BKD-39	8/17/2009			0.002	U	mg/kg	
2-METHYLNAPHTHALENE	MW-SB-NASB-BKD-06	8/18/2009			0.003	U	mg/kg	
ACENAPHTHENE	MW-SB-NASB-BKD-06	8/18/2009			0.002	U	mg/kg	
ACENAPHTHYLENE	MW-SB-NASB-BKD-06	8/18/2009			0.002	U	mg/kg	
ANTHRACENE	MW-SB-NASB-BKD-06	8/18/2009			0.002	U	mg/kg	
BENZO(A)ANTHRACENE	MW-SB-NASB-BKD-06	8/18/2009			0.002	U	mg/kg	
BENZO(A)PYRENE	MW-SB-NASB-BKD-06	8/18/2009			0.004	U	mg/kg	
BENZO(B)FLUORANTHENE	MW-SB-NASB-BKD-06	8/18/2009			0.003	U	mg/kg	
BENZO(G,H,I)PERYLENE	MW-SB-NASB-BKD-06	8/18/2009			0.003	U	mg/kg	
BENZO(K)FLUORANTHENE	MW-SB-NASB-BKD-06	8/18/2009			0.004	U	mg/kg	
CHRYSENE	MW-SB-NASB-BKD-06	8/18/2009			0.002	U	mg/kg	
DIBENZO(A,H)ANTHRACENE	MW-SB-NASB-BKD-06	8/18/2009			0.002	UJ	mg/kg	
FLUORANTHENE	MW-SB-NASB-BKD-06	8/18/2009			0.002	U	mg/kg	
FLUORENE	MW-SB-NASB-BKD-06	8/18/2009			0.004	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	MW-SB-NASB-BKD-06	8/18/2009			0.002	U	mg/kg	
NAPHTHALENE	MW-SB-NASB-BKD-06	8/18/2009			0.003	U	mg/kg	
PHENANTHRENE	MW-SB-NASB-BKD-06	8/18/2009			0.002	U	mg/kg	
PYRENE	MW-SB-NASB-BKD-06	8/18/2009			0.003	U	mg/kg	
2-METHYLNAPHTHALENE	MW-SB-NASB-BKD-10	8/17/2009			0.002	UJ	mg/kg	
ACENAPHTHENE	MW-SB-NASB-BKD-10	8/17/2009			0.002	UJ	mg/kg	
ACENAPHTHYLENE	MW-SB-NASB-BKD-10	8/17/2009			0.002	J	mg/kg	
ANTHRACENE	MW-SB-NASB-BKD-10	8/17/2009			0.002	J	mg/kg	
BENZO(A)ANTHRACENE	MW-SB-NASB-BKD-10	8/17/2009			0.012	J	mg/kg	
BENZO(A)PYRENE	MW-SB-NASB-BKD-10	8/17/2009			0.014	J	mg/kg	
BENZO(B)FLUORANTHENE	MW-SB-NASB-BKD-10	8/17/2009			0.017	J	mg/kg	
BENZO(G,H,I)PERYLENE	MW-SB-NASB-BKD-10	8/17/2009			0.01	J	mg/kg	
BENZO(K)FLUORANTHENE	MW-SB-NASB-BKD-10	8/17/2009			0.014	J	mg/kg	
CHRYSENE	MW-SB-NASB-BKD-10	8/17/2009			0.017	J	mg/kg	
DIBENZO(A,H)ANTHRACENE	MW-SB-NASB-BKD-10	8/17/2009			0.002	UJ	mg/kg	
FLUORANTHENE	MW-SB-NASB-BKD-10	8/17/2009			0.028	J	mg/kg	
FLUORENE	MW-SB-NASB-BKD-10	8/17/2009			0.004	UJ	mg/kg	
INDENO(1,2,3-CD)PYRENE	MW-SB-NASB-BKD-10	8/17/2009			0.01	J	mg/kg	
NAPHTHALENE	MW-SB-NASB-BKD-10	8/17/2009			0.003	U	mg/kg	
PHENANTHRENE	MW-SB-NASB-BKD-10	8/17/2009			0.015	J	mg/kg	
PYRENE	MW-SB-NASB-BKD-10	8/17/2009			0.026	U	mg/kg	
2-METHYLNAPHTHALENE	MW-SB-NASB-BKD-15	8/25/2009			0.003	UJ	mg/kg	
ACENAPHTHENE	MW-SB-NASB-BKD-15	8/25/2009			0.002	U	mg/kg	
ACENAPHTHYLENE	MW-SB-NASB-BKD-15	8/25/2009			0.002	U	mg/kg	
ANTHRACENE	MW-SB-NASB-BKD-15	8/25/2009			0.002	U	mg/kg	
BENZO(A)ANTHRACENE	MW-SB-NASB-BKD-15	8/25/2009			0.002	U	mg/kg	
BENZO(A)PYRENE	MW-SB-NASB-BKD-15	8/25/2009			0.004	U	mg/kg	
BENZO(B)FLUORANTHENE	MW-SB-NASB-BKD-15	8/25/2009			0.003	U	mg/kg	
BENZO(G,H,I)PERYLENE	MW-SB-NASB-BKD-15	8/25/2009			0.003	U	mg/kg	
BENZO(K)FLUORANTHENE	MW-SB-NASB-BKD-15	8/25/2009			0.004	U	mg/kg	
CHRYSENE	MW-SB-NASB-BKD-15	8/25/2009			0.003	J	mg/kg	
DIBENZO(A,H)ANTHRACENE	MW-SB-NASB-BKD-15	8/25/2009			0.002	U	mg/kg	
FLUORANTHENE	MW-SB-NASB-BKD-15	8/25/2009			0.006	J	mg/kg	
FLUORENE	MW-SB-NASB-BKD-15	8/25/2009			0.004	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	MW-SB-NASB-BKD-15	8/25/2009			0.003	J	mg/kg	
NAPHTHALENE	MW-SB-NASB-BKD-15	8/25/2009			0.003	UJ	mg/kg	
PHENANTHRENE	MW-SB-NASB-BKD-15	8/25/2009			0.003	J	mg/kg	
PYRENE	MW-SB-NASB-BKD-15	8/25/2009			0.006	J	mg/kg	
2-METHYLNAPHTHALENE	MW-SB-NASB-BKD-24	8/14/2009			0.003	U	mg/kg	
ACENAPHTHENE	MW-SB-NASB-BKD-24	8/14/2009			0.002	U	mg/kg	
ACENAPHTHYLENE	MW-SB-NASB-BKD-24	8/14/2009			0.001	U	mg/kg	
ANTHRACENE	MW-SB-NASB-BKD-24	8/14/2009			0.001	U	mg/kg	
BENZO(A)ANTHRACENE	MW-SB-NASB-BKD-24	8/14/2009			0.003	J	mg/kg	
BENZO(A)PYRENE	MW-SB-NASB-BKD-24	8/14/2009			0.004	U	mg/kg	
BENZO(B)FLUORANTHENE	MW-SB-NASB-BKD-24	8/14/2009			0.005	J	mg/kg	
BENZO(G,H,I)PERYLENE	MW-SB-NASB-BKD-24	8/14/2009			0.003	J	mg/kg	
BENZO(K)FLUORANTHENE	MW-SB-NASB-BKD-24	8/14/2009			0.004	U	mg/kg	
CHRYSENE	MW-SB-NASB-BKD-24	8/14/2009			0.004	J	mg/kg	
DIBENZO(A,H)ANTHRACENE	MW-SB-NASB-BKD-24	8/14/2009			0.002	U	mg/kg	
FLUORANTHENE	MW-SB-NASB-BKD-24	8/14/2009			0.007	J	mg/kg	
FLUORENE	MW-SB-NASB-BKD-24	8/14/2009			0.004	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	MW-SB-NASB-BKD-24	8/14/2009			0.004	J	mg/kg	
NAPHTHALENE	MW-SB-NASB-BKD-24	8/14/2009			0.003	UJ	mg/kg	
PHENANTHRENE	MW-SB-NASB-BKD-24	8/14/2009			0.004	J	mg/kg	
PYRENE	MW-SB-NASB-BKD-24	8/14/2009			0.007	J	mg/kg	
2-METHYLNAPHTHALENE	MW-SB-NASB-BKD-29	8/19/2009			0.002	UJ	mg/kg	
ACENAPHTHENE	MW-SB-NASB-BKD-29	8/19/2009			0.002	U	mg/kg	
ACENAPHTHYLENE	MW-SB-NASB-BKD-29	8/19/2009			0.001	U	mg/kg	
ANTHRACENE	MW-SB-NASB-BKD-29	8/19/2009			0.001	U	mg/kg	
BENZO(A)ANTHRACENE	MW-SB-NASB-BKD-29	8/19/2009			0.002	U	mg/kg	
BENZO(A)PYRENE	MW-SB-NASB-BKD-29	8/19/2009			0.004	U	mg/kg	
BENZO(B)FLUORANTHENE	MW-SB-NASB-BKD-29	8/19/2009			0.002	U	mg/kg	
BENZO(G,H,I)PERYLENE	MW-SB-NASB-BKD-29	8/19/2009			0.002	U	mg/kg	
BENZO(K)FLUORANTHENE	MW-SB-NASB-BKD-29	8/19/2009			0.003	U	mg/kg	
CHRYSENE	MW-SB-NASB-BKD-29	8/19/2009			0.002	J	mg/kg	
DIBENZO(A,H)ANTHRACENE	MW-SB-NASB-BKD-29	8/19/2009			0.002	U	mg/kg	
FLUORANTHENE	MW-SB-NASB-BKD-29	8/19/2009			0.003	J	mg/kg	
FLUORENE	MW-SB-NASB-BKD-29	8/19/2009			0.003	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	MW-SB-NASB-BKD-29	8/19/2009			0.002	U	mg/kg	
NAPHTHALENE	MW-SB-NASB-BKD-29	8/19/2009			0.003	U	mg/kg	
PHENANTHRENE	MW-SB-NASB-BKD-29	8/19/2009			0.002	J	mg/kg	
PYRENE	MW-SB-NASB-BKD-29	8/19/2009			0.003	J	mg/kg	
2-METHYLNAPHTHALENE	ADCG-BK1	11/29/2011			0.26	U	mg/kg	
ACENAPHTHENE	ADCG-BK1	11/29/2011			0.26	U	mg/kg	
ACENAPHTHYLENE	ADCG-BK1	11/29/2011			0.3		mg/kg	
ANTHRACENE	ADCG-BK1	11/29/2011			0.28		mg/kg	
BENZO(A)ANTHRACENE	ADCG-BK1	11/29/2011			1.7		mg/kg	
BENZO(A)PYRENE	ADCG-BK1	11/29/2011			1.3		mg/kg	
BENZO(B)FLUORANTHENE	ADCG-BK1	11/29/2011			1.4		mg/kg	
BENZO(G,H,I)PERYLENE	ADCG-BK1	11/29/2011			1		mg/kg	

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
BENZO(K)FLUORANTHENE	ADCG-BK1	11/29/2011			1.3		mg/kg	
CHRYSENE	ADCG-BK1	11/29/2011			1.6		mg/kg	
DIBENZO(A,H)ANTHRACENE	ADCG-BK1	11/29/2011			0.29		mg/kg	
FLUORANTHENE	ADCG-BK1	11/29/2011			2.7		mg/kg	
FLUORENE	ADCG-BK1	11/29/2011			0.26	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	ADCG-BK1	11/29/2011			1		mg/kg	
NAPHTHALENE	ADCG-BK1	11/29/2011			0.26	U	mg/kg	
PHENANTHRENE	ADCG-BK1	11/29/2011			0.92		mg/kg	
PYRENE	ADCG-BK1	11/29/2011			2.9		mg/kg	
2-METHYLNAPHTHALENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
ACENAPHTHENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
ACENAPHTHYLENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
ANTHRACENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
BENZO(A)ANTHRACENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
BENZO(A)PYRENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
BENZO(B)FLUORANTHENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
BENZO(G,H,I)PERYLENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
BENZO(K)FLUORANTHENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
CHRYSENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
DIBENZO(A,H)ANTHRACENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
FLUORANTHENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
FLUORENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
NAPHTHALENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
PHENANTHRENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
PYRENE	ADCG-BK2	11/29/2011			0.31	U	mg/kg	
2-METHYLNAPHTHALENE	ADCG-BK3	11/29/2011			0.26	U	mg/kg	
ACENAPHTHENE	ADCG-BK3	11/29/2011			0.26	U	mg/kg	
ACENAPHTHYLENE	ADCG-BK3	11/29/2011			0.26	U	mg/kg	
ANTHRACENE	ADCG-BK3	11/29/2011			0.26	U	mg/kg	
BENZO(A)ANTHRACENE	ADCG-BK3	11/29/2011			0.57		mg/kg	
BENZO(A)PYRENE	ADCG-BK3	11/29/2011			1.5		mg/kg	
BENZO(B)FLUORANTHENE	ADCG-BK3	11/29/2011			0.68		mg/kg	
BENZO(G,H,I)PERYLENE	ADCG-BK3	11/29/2011			0.55		mg/kg	
BENZO(K)FLUORANTHENE	ADCG-BK3	11/29/2011			0.72		mg/kg	
CHRYSENE	ADCG-BK3	11/29/2011			0.64		mg/kg	
DIBENZO(A,H)ANTHRACENE	ADCG-BK3	11/29/2011			0.26	U	mg/kg	
FLUORANTHENE	ADCG-BK3	11/29/2011			1.1		mg/kg	
FLUORENE	ADCG-BK3	11/29/2011			0.26	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	ADCG-BK3	11/29/2011			0.61		mg/kg	
NAPHTHALENE	ADCG-BK3	11/29/2011			0.26	U	mg/kg	
PHENANTHRENE	ADCG-BK3	11/29/2011			0.54		mg/kg	
PYRENE	ADCG-BK3	11/29/2011			1.2		mg/kg	
2-METHYLNAPHTHALENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
ACENAPHTHENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
ACENAPHTHYLENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
ANTHRACENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
BENZO(A)ANTHRACENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
BENZO(A)PYRENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
BENZO(B)FLUORANTHENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
BENZO(G,H,I)PERYLENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
BENZO(K)FLUORANTHENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
CHRYSENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
DIBENZO(A,H)ANTHRACENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
FLUORANTHENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
FLUORENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
NAPHTHALENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
PHENANTHRENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
PYRENE	Frd Plmb B-102	5/11/11 2:15 PM			0.28	U	mg/kg	
2-METHYLNAPHTHALENE	OP-HS BK-1	2/15/12 9:15 AM			0.69		mg/kg	
ACENAPHTHENE	OP-HS BK-1	2/15/12 9:15 AM			3		mg/kg	
ACENAPHTHYLENE	OP-HS BK-1	2/15/12 9:15 AM			0.53		mg/kg	
ANTHRACENE	OP-HS BK-1	2/15/12 9:15 AM			7.8		mg/kg	
BENZO(A)ANTHRACENE	OP-HS BK-1	2/15/12 9:15 AM			23		mg/kg	
BENZO(A)PYRENE	OP-HS BK-1	2/15/12 9:15 AM			16		mg/kg	
BENZO(B)FLUORANTHENE	OP-HS BK-1	2/15/12 9:15 AM			15		mg/kg	
BENZO(G,H,I)PERYLENE	OP-HS BK-1	2/15/12 9:15 AM			9.1		mg/kg	
BENZO(K)FLUORANTHENE	OP-HS BK-1	2/15/12 9:15 AM			16		mg/kg	
CHRYSENE	OP-HS BK-1	2/15/12 9:15 AM			21		mg/kg	
DIBENZO(A,H)ANTHRACENE	OP-HS BK-1	2/15/12 9:15 AM			2.1		mg/kg	
FLUORANTHENE	OP-HS BK-1	2/15/12 9:15 AM			37		mg/kg	
FLUORENE	OP-HS BK-1	2/15/12 9:15 AM			3.5		mg/kg	
INDENO(1,2,3-CD)PYRENE	OP-HS BK-1	2/15/12 9:15 AM			11		mg/kg	
NAPHTHALENE	OP-HS BK-1	2/15/12 9:15 AM			1.4		mg/kg	
PHENANTHRENE	OP-HS BK-1	2/15/12 9:15 AM			38		mg/kg	
PYRENE	OP-HS BK-1	2/15/12 9:15 AM			43		mg/kg	
2-METHYLNAPHTHALENE	OP-HS BK-2	2/15/12 11:05 AM			2.2		mg/kg	
ACENAPHTHENE	OP-HS BK-2	2/15/12 11:05 AM			11		mg/kg	
ACENAPHTHYLENE	OP-HS BK-2	2/15/12 11:05 AM			1.8		mg/kg	
ANTHRACENE	OP-HS BK-2	2/15/12 11:05 AM			12		mg/kg	
BENZO(A)ANTHRACENE	OP-HS BK-2	2/15/12 11:05 AM			38		mg/kg	
BENZO(A)PYRENE	OP-HS BK-2	2/15/12 11:05 AM			21		mg/kg	
BENZO(B)FLUORANTHENE	OP-HS BK-2	2/15/12 11:05 AM			24		mg/kg	
BENZO(G,H,I)PERYLENE	OP-HS BK-2	2/15/12 11:05 AM			11		mg/kg	
BENZO(K)FLUORANTHENE	OP-HS BK-2	2/15/12 11:05 AM			24		mg/kg	
CHRYSENE	OP-HS BK-2	2/15/12 11:05 AM			32		mg/kg	
DIBENZO(A,H)ANTHRACENE	OP-HS BK-2	2/15/12 11:05 AM			3.2		mg/kg	
FLUORANTHENE	OP-HS BK-2	2/15/12 11:05 AM			59		mg/kg	
FLUORENE	OP-HS BK-2	2/15/12 11:05 AM			9		mg/kg	
INDENO(1,2,3-CD)PYRENE	OP-HS BK-2	2/15/12 11:05 AM			15		mg/kg	
NAPHTHALENE	OP-HS BK-2	2/15/12 11:05 AM			5		mg/kg	
PHENANTHRENE	OP-HS BK-2	2/15/12 11:05 AM			54		mg/kg	
PYRENE	OP-HS BK-2	2/15/12 11:05 AM			58		mg/kg	
2-METHYLNAPHTHALENE	OP-HS BK-3	2/15/12 11:25 AM			0.24	U	mg/kg	
ACENAPHTHENE	OP-HS BK-3	2/15/12 11:25 AM			0.24	U	mg/kg	
ACENAPHTHYLENE	OP-HS BK-3	2/15/12 11:25 AM			0.52		mg/kg	

Appendix A-2: Analytical Data used in Background Evaluation for PAHs

Parameter	Sample ID	Date	Depth	Removed Duplicate Analysis	Result	Qualifier	Units	Method
ANTHRACENE	OP-HS_BK-3	2/15/12 11:25 AM			0.29		mg/kg	
BENZO(A)ANTHRACENE	OP-HS_BK-3	2/15/12 11:25 AM			1.3		mg/kg	
BENZO(A)PYRENE	OP-HS_BK-3	2/15/12 11:25 AM			1.6		mg/kg	
BENZO(B)FLUORANTHENE	OP-HS_BK-3	2/15/12 11:25 AM			1.6		mg/kg	
BENZO(G,H,I)PERYLENE	OP-HS_BK-3	2/15/12 11:25 AM			1.4		mg/kg	
BENZO(K)FLUORANTHENE	OP-HS_BK-3	2/15/12 11:25 AM			1.2		mg/kg	
CHRYSENE	OP-HS_BK-3	2/15/12 11:25 AM			1.1		mg/kg	
DIBENZO(A,H)ANTHRACENE	OP-HS_BK-3	2/15/12 11:25 AM			0.24	U	mg/kg	
FLUORANTHENE	OP-HS_BK-3	2/15/12 11:25 AM			1.2		mg/kg	
FLUORENE	OP-HS_BK-3	2/15/12 11:25 AM			0.24	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	OP-HS_BK-3	2/15/12 11:25 AM			1.3		mg/kg	
NAPHTHALENE	OP-HS_BK-3	2/15/12 11:25 AM			0.26		mg/kg	
PHENANTHRENE	OP-HS_BK-3	2/15/12 11:25 AM			0.64		mg/kg	
PYRENE	OP-HS_BK-3	2/15/12 11:25 AM			1.5		mg/kg	
2-METHYLNAPHTHALENE	PTC-BG	7/7/11			0.38	U	mg/kg	
ACENAPHTHENE	PTC-BG	7/7/11			0.38	U	mg/kg	
ACENAPHTHYLENE	PTC-BG	7/7/11			0.38	U	mg/kg	
ANTHRACENE	PTC-BG	7/7/11			0.38	U	mg/kg	
BENZO(A)ANTHRACENE	PTC-BG	7/7/11			0.38	U	mg/kg	
BENZO(A)PYRENE	PTC-BG	7/7/11			0.38	U	mg/kg	
BENZO(B)FLUORANTHENE	PTC-BG	7/7/11			0.318	U	mg/kg	
BENZO(G,H,I)PERYLENE	PTC-BG	7/7/11			0.38	U	mg/kg	
BENZO(K)FLUORANTHENE	PTC-BG	7/7/11			0.38	U	mg/kg	
CHRYSENE	PTC-BG	7/7/11			0.227		mg/kg	
DIBENZO(A,H)ANTHRACENE	PTC-BG	7/7/11			0.38	U	mg/kg	
FLUORANTHENE	PTC-BG	7/7/11			0.228		mg/kg	
FLUORENE	PTC-BG	7/7/11			0.38	U	mg/kg	
INDENO(1,2,3-CD)PYRENE	PTC-BG	7/7/11			0.38	U	mg/kg	
NAPHTHALENE	PTC-BG	7/7/11			0.38	U	mg/kg	
PHENANTHRENE	PTC-BG	7/7/11			0.38	U	mg/kg	
PYRENE	PTC-BG	7/7/11			0.231		mg/kg	
2-METHYLNAPHTHALENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
ACENAPHTHENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
ACENAPHTHYLENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
ANTHRACENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
BENZO(A)ANTHRACENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
BENZO(A)PYRENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
BENZO(B)FLUORANTHENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
benzo(ghi)perylene	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
BENZO(K)FLUORANTHENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
CHRYSENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
dibenzo(ah)anthracene	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
FLUORANTHENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
FLUORENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
ideno(123-cd)pyrene	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
NAPHTHALENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
PHENANTHRENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	
PYRENE	Wash Sch_BK-1	2/1/12 12:50 PM			0.324	U	mg/kg	

Notes:

mg/kg - milligram per kilogram

U - undetected

J - estimated

E - exceeds calibration range

NA - not measured

Blank cells indicate that information was unavailable

Appendix A3

Appendix A-3: Soil Samples Considered in the Background Evaluation for Metals

Lab Number	Field Number	Sample Date	Depth	Data Set
C-299944	10041A	7/27/2007	0-2 in	A Horiz
C-299946	297A	6/24/2007	0-5 in	A Horiz
C-299948	2153A	6/25/2007	0-4 in	A Horiz
C-299949	10729A	7/13/2007	2-4 in	A Horiz
C-299951	11753A	7/1/2007	0-3 in	A Horiz
C-299952	2873A	6/27/2007	0-3 in	A Horiz
C-299953	9321A	7/8/2007	0-2 in	A Horiz
C-299954	8297A	6/24/2007	0-3 in	A Horiz
C-299955	9337A	6/26/2007	0-5 in	A Horiz
C-299957	6441A	7/2/2007	0-3 in	A Horiz
C-299958	11065A	6/30/2007	1-3 in	A Horiz
C-299959	5673A	7/2/2007	0-4 in	A Horiz
C-299961	6953A	6/24/2007	0-3 in	A Horiz
C-299963	7209A	7/3/2007	0-5 in	A Horiz
C-299966	4649A	7/2/2007	0-4 in	A Horiz
C-299967	6633A	6/28/2007	0-4 in	A Horiz
C-299968	3881A	6/25/2007	0-5 in	A Horiz
C-299970	5945A	6/27/2007	0-4 in	A Horiz
C-299971	2537A	6/30/2007	0-3 in	A Horiz
C-299975	6521A	6/28/2007	0-4 in	A Horiz
C-299976	1129A	7/4/2007	0-4 in	A Horiz
C-299984	3369A	7/2/2007	0-5 in	A Horiz
C-299985	4329A	6/28/2007	0-3 in	A Horiz
C-299989	1769A	7/6/2007	0-4 in	A Horiz
C-299990	4201A	7/4/2007	0-1.5 in	A Horiz
C-299991	6249A	6/25/2007	0-3 in	A Horiz
C-299995	4729A	6/28/2007	0-3 in	A Horiz
C-299997	12841A	7/6/2007	0-5 in	A Horiz
C-300005	8489A	7/3/2007	0-3 in	A Horiz
C-300007	3897A	6/28/2007	0-3 in	A Horiz
C-300010	3561A	7/13/2007	2-4 in	A Horiz
C-300012	9513A	7/3/2007	0-2 in	A Horiz
C-300016	7993A	6/28/2007	0-3 in	A Horiz
C-300018	233A	6/29/2007	0-4 in	A Horiz
C-300019	12073A	7/7/2007	0-2 in	A Horiz
C-300021	6969A	6/24/2007	0-4 in	A Horiz
C-300024	7977A	6/25/2007	0-3 in	A Horiz
C-300026	105A	7/4/2007	0-2 in	A Horiz
C-300027	13033A	6/30/2007	0-4 in	A Horiz
C-300033	10537A	7/2/2007	0-5 in	A Horiz
C-300035	12393A	6/26/2007	0-3 in	A Horiz
C-300038	5225A	6/25/2007	0-3 in	A Horiz
C-300041	1849A	6/27/2007	0-4 in	A Horiz
C-300042	7465A	6/24/2007	0-3 in	A Horiz
C-300043	7017A	6/23/2007	0-7 in	A Horiz
C-300044	4393A	6/24/2007	0-3 in	A Horiz
C-300045	11561A	7/2/2007	0-2 in	A Horiz
C-300047	3113A	7/3/2007	0-2 in	A Horiz
C-300051	633A	6/28/2007	0-3 in	A Horiz
C-300261	7017C	6/23/2007	5-12 in	C Horiz
C-300168	297C	6/24/2007	30-40 in	C Horiz
C-300176	8297C	6/24/2007	10-20 in	C Horiz
C-300182	6953C	6/24/2007	35-40 in	C Horiz
C-300242	6969C	6/24/2007	15-20 in	C Horiz

Appendix A-3: Soil Samples Considered in the Background Evaluation for Metals

Lab Number	Field Number	Sample Date	Depth	Data Set
C-300260	7465C	6/24/2007	3-10 in	C Horiz
C-300263	4393C	6/24/2007	30-40 in	C Horiz
C-300170	2153C	6/25/2007	30-40 in	C Horiz
C-300189	3881C	6/25/2007	5-10 in	C Horiz
C-300212	6249C	6/25/2007	3-12 in	C Horiz
C-300245	7977C	6/25/2007	20-30 in	C Horiz
C-300257	5225C	6/25/2007	25-35 in	C Horiz
C-300177	9337C	6/26/2007	5-15 in	C Horiz
C-300254	12393C	6/26/2007	35-48 in	C Horiz
C-300173	2873C	6/27/2007	30-40 in	C Horiz
C-300191	5945C	6/27/2007	10-20 in	C Horiz
C-300259	1849C	6/27/2007	4-12 in	C Horiz
C-300188	6633C	6/28/2007	6-12 in	C Horiz
C-300196	6521C	6/28/2007	10-15 in	C Horiz
C-300208	4329C	6/28/2007	15-20 in	C Horiz
C-300217	4729C	6/28/2007	10-17 in	C Horiz
C-300230	3897C	6/28/2007	10-15 in	C Horiz
C-300237	7993C	6/28/2007	7-15 in	C Horiz
C-300270	633C	6/28/2007	5-10 in	C Horiz
C-300271	10729C	6/28/2007	5-10 in	C Horiz
C-300238	233C	6/29/2007	12-20 in	C Horiz
C-300179	11065C	6/30/2007	13-23 in	C Horiz
C-300193	2537C	6/30/2007	10-18 in	C Horiz
C-300172	11753C	7/1/2007	7-15 in	C Horiz
C-300178	6441C	7/2/2007	12-20 in	C Horiz
C-300180	5673C	7/2/2007	12-18 in	C Horiz
C-300187	4649C	7/2/2007	15-25 in	C Horiz
C-300205	3369C	7/2/2007	5-12 in	C Horiz
C-300252	10537C	7/2/2007	15-25 in	C Horiz
C-300264	11561C	7/2/2007	15-25 in	C Horiz
C-300186	7209C	7/3/2007	5-10 in	C Horiz
C-300226	8489C	7/3/2007	6-12 in	C Horiz
C-300233	9513C	7/3/2007	25-35 in	C Horiz
C-300266	3113C	7/3/2007	35-48 in	C Horiz
C-300197	1129C	7/4/2007	15-20 in	C Horiz
C-300211	4201C	7/4/2007	5-10 in	C Horiz
C-300246	105C	7/4/2007	6-15 in	C Horiz
C-300210	1769C	7/6/2007	5-17 in	C Horiz
C-300218	12841C	7/6/2007	5-10 in	C Horiz
C-300239	12073C	7/7/2007	0	C Horiz
C-300174	9321C	7/8/2007	15-20 in	C Horiz
C-300231	3561C	7/13/2007	5-10 in	C Horiz
C-300166	10041C	7/27/2007	5-20 in	C Horiz
C-300148	7017PH	06/23/2007	0-5 cm	0-5cm
C-300056	297PH	6/24/2007	0-5 cm	0-5cm
C-300064	8297PH	6/24/2007	0-5 cm	0-5cm
C-300070	6953PH	6/24/2007	0-5 cm	0-5cm
C-300127	6969PH	6/24/2007	0-5 cm	0-5cm
C-300147	7465PH	6/24/2007	0-5 cm	0-5cm
C-300149	4393PH	6/24/2007	0-5 cm	0-5cm
C-300161	11049PH	6/24/2007	0-5 cm	0-5cm
C-300164	2857PH	6/24/2007	0-5 cm	0-5cm
C-300058	2153PH	6/25/2007	0-5 cm	0-5cm
C-300077	3881PH	6/25/2007	0-5 cm	0-5cm

Appendix A-3: Soil Samples Considered in the Background Evaluation for Metals

Lab Number	Field Number	Sample Date	Depth	Data Set
C-300099	6249PH	6/25/2007	0-5 cm	0-5cm
C-300131	7977PH	6/25/2007	0-5 cm	0-5cm
C-300144	5225PH	6/25/2007	0-5 cm	0-5cm
C-300065	9337PH	6/26/2007	0-5 cm	0-5cm
C-300139	12393PH	6/26/2007	0-5 cm	0-5cm
C-300061	2873PH	6/27/2007	0-5 cm	0-5cm
C-300079	5945PH	6/27/2007	0-5 cm	0-5cm
C-300146	1849PH	6/27/2007	0-5 cm	0-5cm
C-300076	6633PH	6/28/2007	0-5 cm	0-5cm
C-300083	6521PH	6/28/2007	0-5 cm	0-5cm
C-300093	4329PH	6/28/2007	0-5 cm	0-5cm
C-300103	4729PH	6/28/2007	0-5 cm	0-5cm
C-300114	3897PH	6/28/2007	0-5 cm	0-5cm
C-300123	7993PH	6/28/2007	0-5 cm	0-5cm
C-300157	633PH	6/28/2007	0-5 cm	0-5cm
C-300124	233PH	6/29/2007	0-5 cm	0-5cm
C-300158	745PH	6/29/2007	0-5 cm	0-5cm
C-300067	11065PH	6/30/2007	0-5 cm	0-5cm
C-300080	2537PH	6/30/2007	0-5 cm	0-5cm
C-300133	13033PH	6/30/2007	0-5 cm	0-5cm
C-300060	11753PH	7/1/2007	0-5 cm	0-5cm
C-300066	6441PH	7/2/2007	0-5 cm	0-5cm
C-300068	5673PH	7/2/2007	0-5 cm	0-5cm
C-300073	4649PH	7/2/2007	0-5 cm	0-5cm
C-300092	3369PH	7/2/2007	0-5 cm	0-5cm
C-300137	10537PH	7/2/2007	0-5 cm	0-5cm
C-300150	11561PH	7/2/2007	0-5 cm	0-5cm
C-300072	7209PH	7/3/2007	0-5 cm	0-5cm
C-300112	8489PH	7/3/2007	0-5 cm	0-5cm
C-300117	9513PH	7/3/2007	0-5 cm	0-5cm
C-300153	3113PH	7/3/2007	0-5 cm	0-5cm
C-300159	11305PH	7/3/2007	0-5 cm	0-5cm
C-300084	1129PH	7/4/2007	0-5 cm	0-5cm
C-300098	4201PH	7/4/2007	0-5 cm	0-5cm
C-300132	105PH	7/4/2007	0-5 cm	0-5cm
C-300095	1769PH	7/6/2007	0-5 cm	0-5cm
C-300105	12841PH	7/6/2007	0-5 cm	0-5cm
C-300125	12073PH	7/7/2007	0-5 cm	0-5cm
C-300062	9321PH	7/8/2007	0-5 cm	0-5cm
C-300059	10729PH	7/13/2007	0-5 cm	0-5cm
C-300115	3561PH	7/13/2007	0-5 cm	0-5cm
C-300054	10041PH	7/27/2007	0-5 cm	0-5cm

Notes:
in - inches
cm - centimeters

Appendix A4

Appendix A-4: Analytical Data used in Background Evaluation for Metals

Dataset	Lab Number	Field Number	Sampling Date	Depth	Units	Hg	Ag	As	Ba	Be	Bi	Cd	Ce	Co	Cr	Cs	Cu
A Horiz	C-299944	10041A	7/27/2007	0-2 in	mg/kg	0.07	<1	9	283	1.1	0.24	<0.1	36.6	4	41	<5	6.6
A Horiz	C-299946	297A	6/24/2007	0-5 in	mg/kg	0.03	<1	3	311	1.7	0.13	<0.1	37	0.6	10	<5	6.5
A Horiz	C-299948	2153A	6/25/2007	0-4 in	mg/kg	0.07	<1	16	405	1.8	0.25	0.2	50.5	7	56	6	8.9
A Horiz	C-299949	10729A	7/13/2007	2-4 in	mg/kg	0.1	<1	7	250	0.9	0.17	0.2	47.9	5.4	52	<5	7.2
A Horiz	C-299951	11753A	7/1/2007	0-3 in	mg/kg	0.05	<1	13	500	2	0.18	0.3	59.8	19	92	6	24.1
A Horiz	C-299952	2873A	6/27/2007	0-3 in	mg/kg	0.16	<1	18	417	1.9	0.14	0.3	45.2	7.9	45	<5	14.2
A Horiz	C-299953	9321A	7/8/2007	0-2 in	mg/kg	0.11	<1	7	287	1.4	0.23	<0.1	36.4	4.8	48	<5	6.2
A Horiz	C-299954	8297A	6/24/2007	0-3 in	mg/kg	0.08	<1	7	259	1	0.15	<0.1	26	2.4	25	<5	4
A Horiz	C-299955	9337A	6/26/2007	0-5 in	mg/kg	0.08	<1	43	408	1.6	0.27	0.3	53.1	15	53	<5	19.6
A Horiz	C-299957	6441A	7/2/2007	0-3 in	mg/kg	0.17	<1	14	270	1.2	0.59	0.3	41.7	11.3	75	<5	22.5
A Horiz	C-299958	11065A	6/30/2007	1-3 in	mg/kg	0.05	<1	9	430	1.6	0.15	0.2	56.6	6.2	44	<5	9.6
A Horiz	C-299959	5673A	7/2/2007	0-4 in	mg/kg	0.05	<1	9	417	1.4	0.14	0.2	52.8	10.7	91	<5	22.5
A Horiz	C-299961	6953A	6/24/2007	0-3 in	mg/kg	0.02	<1	21	553	2.6	0.3	<0.1	89.2	17	91	7	18.3
A Horiz	C-299963	7209A	7/3/2007	0-5 in	mg/kg	0.04	<1	5	352	2.3	0.47	0.5	43	5.2	63	<5	16.5
A Horiz	C-299966	4649A	7/2/2007	0-4 in	mg/kg	0.06	<1	9	380	0.8	0.2	0.7	23	5.1	37	<5	11.6
A Horiz	C-299967	6633A	6/28/2007	0-4 in	mg/kg	0.12	<1	6	211	0.5	0.19	0.5	24.8	3	26	<5	13.9
A Horiz	C-299968	3881A	6/25/2007	0-5 in	mg/kg	0.21	<1	5	140	0.4	0.15	1.1	20.6	4.9	26	<5	23
A Horiz	C-299970	5945A	6/27/2007	0-4 in	mg/kg	0.1	<1	16	717	1.2	0.22	0.3	37	4.5	39	<5	10.9
A Horiz	C-299971	2537A	6/30/2007	0-3 in	mg/kg	0.08	<1	12	304	1.1	0.19	0.3	60.4	10.3	59	<5	13.9
A Horiz	C-299975	6521A	6/28/2007	0-4 in	mg/kg	0.05	<1	16	323	1.5	0.15	0.2	56.6	12.2	76	<5	51
A Horiz	C-299976	1129A	7/4/2007	0-4 in	mg/kg	0.06	<1	11	426	1.8	0.14	<0.1	57.4	8.8	46	<5	44.2
A Horiz	C-299984	3369A	7/2/2007	0-5 in	mg/kg	0.01	<1	13	454	1.7	0.23	0.2	57	10.9	54	<5	12.2
A Horiz	C-299985	4329A	6/28/2007	0-3 in	mg/kg	0.06	<1	10	401	1.5	0.17	0.2	63.2	13.7	69	<5	11.1
A Horiz	C-299989	1769A	7/6/2007	0-4 in	mg/kg	0.04	<1	11	402	1.2	0.14	0.2	53.3	10.8	62	<5	12
A Horiz	C-299990	4201A	7/4/2007	0-1.5 in	mg/kg	0.08	<1	19	359	1.6	0.2	0.2	53	12.6	69	<5	12.4
A Horiz	C-299991	6249A	6/25/2007	0-3 in	mg/kg	0.02	<1	17	455	2.2	0.21	0.1	53	8.9	35	<5	14.8
A Horiz	C-299995	4729A	6/28/2007	0-3 in	mg/kg	0.14	<1	16	324	1.1	0.15	0.3	52.2	11	61	<5	27.3
A Horiz	C-299997	12841A	7/6/2007	0-5 in	mg/kg	0.08	<1	25	301	1.2	0.35	0.3	46.3	7.3	45	<5	10.8
A Horiz	C-300005	8489A	7/3/2007	0-3 in	mg/kg	0.01	<1	10	405	8.9	0.98	0.1	72	12.2	47	12	17.8
A Horiz	C-300007	3897A	6/28/2007	0-3 in	mg/kg	0.24	<1	29	298	1.3	0.24	0.4	54.3	13.6	68	<5	47.8
A Horiz	C-300010	3561A	7/13/2007	2-4 in	mg/kg	0.02	<1	13	463	1.4	0.13	0.1	71.8	15.1	72	<5	21.5
A Horiz	C-300012	9513A	7/3/2007	0-2 in	mg/kg	0.02	2	5	320	2.4	0.35	0.2	46.7	7	24	<5	18.7
A Horiz	C-300016	7993A	6/28/2007	0-3 in	mg/kg	0.09	<1	13	375	1.4	0.2	0.4	59.2	16.6	69	<5	30.7
A Horiz	C-300018	233A	6/29/2007	0-4 in	mg/kg	0.07	<1	8	292	0.8	0.22	0.2	52	4.4	67	<5	7.7
A Horiz	C-300019	12073A	7/7/2007	0-2 in	mg/kg	0.18	<1	16	315	1.3	0.24	0.1	49.2	9.7	54	<5	22
A Horiz	C-300021	6969A	6/24/2007	0-4 in	mg/kg	<0.01	<1	10	497	2.4	0.09	<0.1	60.3	5	18	<5	9.4
A Horiz	C-300024	7977A	6/25/2007	0-3 in	mg/kg	0.08	<1	21	279	1.1	0.18	0.2	45.6	7.8	54	<5	13.1
A Horiz	C-300026	105A	7/4/2007	0-2 in	mg/kg	0.08	1	13	326	1.4	0.18	0.2	54.6	11.2	73	<5	19.2
A Horiz	C-300027	13033A	6/30/2007	0-4 in	mg/kg	0.19	<1	4	99	0.2	0.18	0.5	12.4	2.6	17	<5	12.4
A Horiz	C-300033	10537A	7/2/2007	0-5 in	mg/kg	<0.01	<1	4	536	1.2	0.17	<0.1	42.7	6.8	34	<5	15.9
A Horiz	C-300035	12393A	6/26/2007	0-3 in	mg/kg	0.06	<1	8	347	1.5	0.17	<0.1	37.6	6.1	45	<5	5.3
A Horiz	C-300038	5225A	6/25/2007	0-3 in	mg/kg	0.06	<1	15	280	1.6	0.19	0.2	48.4	11.7	68	<5	12.7
A Horiz	C-300041	1849A	6/27/2007	0-4 in	mg/kg	0.18	<1	26	280	1.3	0.22	0.3	38.6	10.5	64	<5	11.7
A Horiz	C-300042	7465A	6/24/2007	0-3 in	mg/kg	0.05	<1	9	314	1.6	0.19	0.1	46.8	7.9	45	<5	10.9
A Horiz	C-300043	7017A	6/23/2007	0-7 in	mg/kg	0.15	<1	4	233	2.1	0.19	0.1	31.5	1.7	15	<5	5.3
A Horiz	C-300044	4393A	6/24/2007	0-3 in	mg/kg	0.15	<1	5	199	1.6	0.16	0.2	29.1	1	9	<5	3.2
A Horiz	C-300045	11561A	7/2/2007	0-2 in	mg/kg	0.05	<1	12	311	1.6	0.12	0.2	43.7	13.9	69	<5	14.9
A Horiz	C-300047	3113A	7/3/2007	0-2 in	mg/kg	0.04	<1	2	402	2.7	0.14	0.1	40	4.7	26	<5	9.1
A Horiz	C-300051	633A	6/28/2007	0-3 in	mg/kg	0.08	<1	9	493	1.8	0.14	0.4	57.9	18.8	74	<5	27.9
C Horiz	C-300261	7017C	6/23/2007	5-12 in	mg/kg	0.1	<1	16	277	3.1	0.7	0.1	57.5	3.2	30	<5	3.4
C Horiz	C-300168	297C	6/24/2007	30-40 in	mg/kg	0.02	<1	2	351	2.5	0.16	<0.1	40.9	2.6	8	<5	3.1
C Horiz	C-300176	8297C	6/24/2007	10-20 in	mg/kg	0.05	<1	7	317	1.6	0.08	0.1	41.8	4.7	32	<5	5.2
C Horiz	C-300182	6953C	6/24/2007	35-40 in	mg/kg	0.01	<1	12	619	3.2	0.29	<0.1	131	17.1	62	8	14.8

Appendix A-4: Analytical Data used in Background Evaluation for Metals

Dataset	Lab Number	Field Number	Sampling Date	Depth	Units	Hg	Ag	As	Ba	Be	Bi	Cd	Ce	Co	Cr	Cs	Cu
C Horiz	C-300242	6969C	6/24/2007	15-20 in	mg/kg	0.02	<1	9	494	3.1	0.12	<0.1	52.9	4.1	20	<5	8.7
C Horiz	C-300260	7465C	6/24/2007	3-10 in	mg/kg	0.05	<1	12	358	2.3	0.32	0.1	52.2	10.4	59	<5	12.9
C Horiz	C-300263	4393C	6/24/2007	30-40 in	mg/kg	0.01	<1	3	335	3.3	0.1	<0.1	31.2	2.2	9	<5	2.7
C Horiz	C-300170	2153C	6/25/2007	30-40 in	mg/kg	0.03	<1	18	522	2.5	0.31	<0.1	81	15.5	63	8	15.8
C Horiz	C-300189	3881C	6/25/2007	5-10 in	mg/kg	0.24	<1	2	117	0.6	0.1	0.8	24.4	3.7	31	<5	13.9
C Horiz	C-300212	6249C	6/25/2007	3-12 in	mg/kg	0.02	<1	12	437	2.2	0.18	<0.1	57.1	6	32	<5	8.6
C Horiz	C-300245	7977C	6/25/2007	20-30 in	mg/kg	0.01	<1	14	371	2	0.15	<0.1	63	12.4	65	<5	16.4
C Horiz	C-300257	5225C	6/25/2007	25-35 in	mg/kg	0.05	<1	12	311	1.9	0.17	<0.1	64.5	11.4	77	<5	16.9
C Horiz	C-300177	9337C	6/26/2007	5-15 in	mg/kg	0.09	<1	42	427	1.7	0.3	0.3	75.5	15.5	61	7	17.1
C Horiz	C-300254	12393C	6/26/2007	35-48 in	mg/kg	0.01	<1	6	384	1.8	0.11	<0.1	33.6	7.2	44	<5	7.7
C Horiz	C-300173	2873C	6/27/2007	30-40 in	mg/kg	0.04	<1	10	459	2.4	0.17	<0.1	43.2	8.9	41	<5	8.6
C Horiz	C-300191	5945C	6/27/2007	10-20 in	mg/kg	0.08	<1	17	638	1.4	0.2	0.3	53.2	7.2	50	<5	9.4
C Horiz	C-300259	1849C	6/27/2007	4-12 in	mg/kg	0.1	<1	15	280	1.3	0.21	0.1	52.1	8.1	55	<5	9.8
C Horiz	C-300188	6633C	6/28/2007	6-12 in	mg/kg	0.07	<1	11	244	1.2	0.16	0.2	44.6	7.1	46	<5	9.5
C Horiz	C-300196	6521C	6/28/2007	10-15 in	mg/kg	0.07	<1	32	332	1.3	0.21	0.2	66.9	11.9	75	<5	101
C Horiz	C-300208	4329C	6/28/2007	15-20 in	mg/kg	0.07	<1	11	381	1.4	0.17	0.1	72.3	15.7	98	<5	13.3
C Horiz	C-300217	4729C	6/28/2007	10-17 in	mg/kg	0.09	<1	15	344	1.1	0.21	0.2	57.3	11.6	67	<5	29.5
C Horiz	C-300230	3897C	6/28/2007	10-15 in	mg/kg	0.18	<1	18	308	1.6	0.21	0.2	59.9	18.5	77	<5	24.1
C Horiz	C-300237	7993C	6/28/2007	7-15 in	mg/kg	0.18	<1	12	374	1.6	0.19	0.3	61.6	14.8	70	<5	27.6
C Horiz	C-300270	633C	6/28/2007	5-10 in	mg/kg	0.11	<1	13	602	2	0.19	0.1	66.6	20.8	92	5	36.8
C Horiz	C-300271	10729C	6/28/2007	5-10 in	mg/kg	0.05	<1	10	393	1.5	0.23	<0.1	52.6	7.8	82	5	5
C Horiz	C-300238	233C	6/29/2007	12-20 in	mg/kg	0.08	<1	9	366	1.6	0.22	0.2	54.1	9.8	86	<5	12.8
C Horiz	C-300179	11065C	6/30/2007	13-23 in	mg/kg	0.05	<1	8	355	1.1	0.11	0.1	48.4	8	46	<5	4.9
C Horiz	C-300193	2537C	6/30/2007	10-18 in	mg/kg	0.06	<1	16	288	0.9	0.25	0.2	59.7	7.1	64	<5	11.4
C Horiz	C-300172	11753C	7/1/2007	7-15 in	mg/kg	0.02	<1	8	392	1.2	0.12	<0.1	60.6	12.5	57	<5	12.7
C Horiz	C-300178	6441C	7/2/2007	12-20 in	mg/kg	0.04	<1	7	313	1	0.16	<0.1	46.8	8.2	96	<5	5.7
C Horiz	C-300180	5673C	7/2/2007	12-18 in	mg/kg	0.09	<1	6	374	1.2	0.11	0.3	63.1	9	48	<5	13
C Horiz	C-300187	4649C	7/2/2007	15-25 in	mg/kg	0.02	<1	7	405	1.1	0.11	0.2	31.8	7.3	34	<5	5
C Horiz	C-300205	3369C	7/2/2007	5-12 in	mg/kg	0.02	<1	9	434	1.5	0.18	<0.1	58.9	11.2	46	<5	19.7
C Horiz	C-300252	10537C	7/2/2007	15-25 in	mg/kg	0.07	<1	4	445	1.1	0.17	0.1	33.8	4.7	26	<5	11.2
C Horiz	C-300264	11561C	7/2/2007	15-25 in	mg/kg	0.05	<1	20	348	1.9	0.17	0.1	67.2	16.4	90	<5	12.7
C Horiz	C-300186	7209C	7/3/2007	5-10 in	mg/kg	0.04	<1	4	358	2.2	0.37	0.1	60.5	4.1	22	<5	6.5
C Horiz	C-300226	8489C	7/3/2007	6-12 in	mg/kg	0.05	<1	3	298	4.1	0.29	<0.1	31.5	3	21	<5	3.4
C Horiz	C-300233	9513C	7/3/2007	25-35 in	mg/kg	0.02	<1	1	395	2.6	0.16	0.1	64.6	4.9	20	<5	3.7
C Horiz	C-300266	3113C	7/3/2007	35-48 in	mg/kg	0.02	<1	3	435	3.3	0.24	0.1	70.8	8.4	30	<5	9.5
C Horiz	C-300197	1129C	7/4/2007	15-20 in	mg/kg	0.06	<1	11	427	1.6	0.15	<0.1	53.6	8.2	43	<5	10
C Horiz	C-300211	4201C	7/4/2007	5-10 in	mg/kg	0.04	<1	14	351	1.1	0.2	0.1	55.9	8.6	69	6	7.5
C Horiz	C-300246	105C	7/4/2007	6-15 in	mg/kg	0.07	<1	13	309	2	0.18	<0.1	32.4	11.8	79	<5	10.4
C Horiz	C-300210	1769C	7/6/2007	5-17 in	mg/kg	0.04	<1	11	432	1.3	0.13	0.1	62.4	11.2	66	<5	6.7
C Horiz	C-300218	12841C	7/6/2007	5-10 in	mg/kg	0.08	<1	34	284	1.7	0.38	0.2	53.8	9.7	53	<5	10.9
C Horiz	C-300239	12073C	7/7/2007	0	mg/kg	0.16	<1	15	322	1.6	0.21	0.1	49.2	9.7	58	<5	18.6
C Horiz	C-300174	9321C	7/8/2007	15-20 in	mg/kg	0.08	<1	5	352	1.6	0.22	<0.1	46.9	9.2	57	6	7.8
C Horiz	C-300231	3561C	7/13/2007	5-10 in	mg/kg	0.02	<1	11	441	1.5	0.13	<0.1	61.7	14.2	70	<5	20.4
C Horiz	C-300166	10041C	7/27/2007	5-20 in	mg/kg	0.07	<1	9	357	2.1	0.12	0.1	56	11.6	74	<5	6.6
0-5cm	C-300148	7017PH	06/23/2007	0-5 cm	mg/kg	0.23	<1	2	89	0.4	0.11	0.4	9.86	1.2	10	<5	17.5
0-5cm	C-300056	297PH	6/24/2007	0-5 cm	mg/kg	0.15	<1	1	213	1.2	0.09	0.1	14.8	0.9	7	<5	4.4
0-5cm	C-300064	8297PH	6/24/2007	0-5 cm	mg/kg	0.16	<1	2	208	0.5	0.15	<0.1	17.2	1.1	14	<5	5.8
0-5cm	C-300070	6953PH	6/24/2007	0-5 cm	mg/kg	0.02	<1	15	531	3	0.24	<0.1	75.8	17	81	6	19.4
0-5cm	C-300127	6969PH	6/24/2007	0-5 cm	mg/kg	<0.01	<1	9	465	2.8	0.07	<0.1	53	5	19	<5	9.6
0-5cm	C-300147	7465PH	6/24/2007	0-5 cm	mg/kg	0.05	<1	13	334	2	0.25	0.2	55.3	9.9	54	<5	11.5
0-5cm	C-300149	4393PH	6/24/2007	0-5 cm	mg/kg	0.23	<1	2	163	1.4	0.19	0.3	20.6	0.9	9	<5	3.9
0-5cm	C-300161	11049PH	6/24/2007	0-5 cm	mg/kg	0.06	<1	14	361	2.3	0.43	1	54.3	8.3	63	6	33.4
0-5cm	C-300164	2857PH	6/24/2007	0-5 cm	mg/kg	0.12	<1	8	295	1.1	0.16	0.8	30.8	6.2	38	<5	16.3

Appendix A-4: Analytical Data used in Background Evaluation for Metals

Dataset	Lab Number	Field Number	Sampling Date	Depth	Units	Hg	Ag	As	Ba	Be	Bi	Cd	Ce	Co	Cr	Cs	Cu
0-5cm	C-300058	2153PH	6/25/2007	0-5 cm	mg/kg	0.08	<1	8	290	1.3	0.18	0.1	38.9	4.8	37	<5	4.7
0-5cm	C-300077	3881PH	6/25/2007	0-5 cm	mg/kg	0.12	<1	3	125	0.2	0.06	0.5	10.8	4.7	15	<5	20.1
0-5cm	C-300099	6249PH	6/25/2007	0-5 cm	mg/kg	0.02	<1	10	430	2	0.13	<0.1	41.9	6.6	33	<5	11.7
0-5cm	C-300131	7977PH	6/25/2007	0-5 cm	mg/kg	0.09	<1	14	270	1.2	0.12	0.2	55.1	7.7	52	<5	11.1
0-5cm	C-300144	5225PH	6/25/2007	0-5 cm	mg/kg	0.06	<1	12	283	1.4	0.26	0.2	51.5	10.5	66	<5	12.3
0-5cm	C-300065	9337PH	6/26/2007	0-5 cm	mg/kg	0.07	<1	29	409	1.5	0.2	0.2	49.5	14.4	52	<5	24.7
0-5cm	C-300139	12393PH	6/26/2007	0-5 cm	mg/kg	0.06	<1	6	313	1.5	0.12	<0.1	32.1	5.1	40	<5	5.9
0-5cm	C-300061	2873PH	6/27/2007	0-5 cm	mg/kg	0.09	<1	11	401	1.4	0.1	0.2	32.1	6.3	37	<5	13.3
0-5cm	C-300079	5945PH	6/27/2007	0-5 cm	mg/kg	0.1	<1	12	688	1	0.17	0.3	30.9	3.9	37	<5	9.9
0-5cm	C-300146	1849PH	6/27/2007	0-5 cm	mg/kg	0.15	<1	20	294	1.4	0.22	0.3	52.7	11.1	58	<5	11.9
0-5cm	C-300076	6633PH	6/28/2007	0-5 cm	mg/kg	0.11	<1	4	207	0.5	0.11	0.4	25.3	2.7	26	<5	8.9
0-5cm	C-300083	6521PH	6/28/2007	0-5 cm	mg/kg	0.05	<1	13	305	1.3	0.13	0.2	53.7	10.9	68	<5	54.4
0-5cm	C-300093	4329PH	6/28/2007	0-5 cm	mg/kg	0.06	<1	8	390	1.4	0.14	0.2	58.4	13.3	69	<5	10.9
0-5cm	C-300103	4729PH	6/28/2007	0-5 cm	mg/kg	0.09	<1	11	310	1.3	0.12	0.2	47	10.8	59	<5	29
0-5cm	C-300114	3897PH	6/28/2007	0-5 cm	mg/kg	0.25	<1	19	286	1.2	0.16	0.3	45.2	11.7	55	<5	48
0-5cm	C-300123	7993PH	6/28/2007	0-5 cm	mg/kg	0.29	<1	9	338	1.4	0.14	0.2	47	13.9	64	<5	28.9
0-5cm	C-300157	633PH	6/28/2007	0-5 cm	mg/kg	0.08	<1	10	497	1.7	0.18	0.5	64	19.4	75	<5	26.4
0-5cm	C-300124	233PH	6/29/2007	0-5 cm	mg/kg	0.05	<1	6	291	0.9	0.13	0.1	53.5	2.5	59	<5	6.8
0-5cm	C-300158	745PH	6/29/2007	0-5 cm	mg/kg	0.05	<1	21	526	2	0.2	0.1	71.4	20.3	74	5	32
0-5cm	C-300067	11065PH	6/30/2007	0-5 cm	mg/kg	0.03	<1	6	430	1.8	0.11	0.1	49.4	6	35	<5	10.4
0-5cm	C-300080	2537PH	6/30/2007	0-5 cm	mg/kg	0.08	<1	7	273	0.8	0.13	0.4	41.4	6.5	53	<5	11.9
0-5cm	C-300133	13033PH	6/30/2007	0-5 cm	mg/kg	0.14	<1	2	146	0.5	0.09	0.3	24.2	3	25	<5	6.1
0-5cm	C-300060	11753PH	7/1/2007	0-5 cm	mg/kg	0.05	<1	9	482	1.9	0.17	0.2	52.8	18.2	90	<5	22.4
0-5cm	C-300066	6441PH	7/2/2007	0-5 cm	mg/kg	0.26	<1	9	267	1	0.29	0.1	31.3	9.1	74	<5	16.6
0-5cm	C-300068	5673PH	7/2/2007	0-5 cm	mg/kg	0.11	<1	5	332	1.2	0.15	0.3	42.5	10.5	51	<5	18.3
0-5cm	C-300073	4649PH	7/2/2007	0-5 cm	mg/kg	0.06	<1	5	368	0.8	0.19	1.6	21.7	4.6	35	<5	12.9
0-5cm	C-300092	3369PH	7/2/2007	0-5 cm	mg/kg	<0.01	<1	8	525	2	0.14	<0.1	53.4	11	62	<5	17.5
0-5cm	C-300137	10537PH	7/2/2007	0-5 cm	mg/kg	<0.01	<1	3	513	1.6	0.13	<0.1	49.3	8	24	<5	15.5
0-5cm	C-300150	11561PH	7/2/2007	0-5 cm	mg/kg	0.05	<1	13	319	1.7	0.14	0.3	46.7	14.1	72	<5	13.7
0-5cm	C-300072	7209PH	7/3/2007	0-5 cm	mg/kg	0.04	<1	3	313	2	0.29	0.1	60.5	3.6	15	<5	6.5
0-5cm	C-300112	8489PH	7/3/2007	0-5 cm	mg/kg	0.02	<1	6	380	10.7	0.47	0.1	48.3	10.4	49	11	13.2
0-5cm	C-300117	9513PH	7/3/2007	0-5 cm	mg/kg	0.02	<1	2	299	3.1	0.23	<0.1	35.6	6.5	24	<5	14.2
0-5cm	C-300153	3113PH	7/3/2007	0-5 cm	mg/kg	0.04	<1	5	420	2.9	0.16	0.2	52.6	5.2	25	<5	8
0-5cm	C-300159	11305PH	7/3/2007	0-5 cm	mg/kg	0.05	<1	7	335	2.6	0.24	0.2	57.9	9.9	50	6	12.1
0-5cm	C-300084	1129PH	7/4/2007	0-5 cm	mg/kg	0.05	<1	8	428	1.7	0.12	<0.1	52.8	8.2	42	<5	10.7
0-5cm	C-300098	4201PH	7/4/2007	0-5 cm	mg/kg	0.09	<1	16	352	1.7	0.17	0.2	52.3	11	74	<5	11.9
0-5cm	C-300132	105PH	7/4/2007	0-5 cm	mg/kg	0.09	<1	11	347	1.6	0.14	0.2	50.8	12.5	74	<5	13.8
0-5cm	C-300095	1769PH	7/6/2007	0-5 cm	mg/kg	0.04	<1	10	404	1.5	0.12	0.2	58.1	12	67	<5	9.7
0-5cm	C-300105	12841PH	7/6/2007	0-5 cm	mg/kg	0.07	<1	13	247	1.1	0.21	0.2	29.2	6.3	40	<5	44.9
0-5cm	C-300125	12073PH	7/7/2007	0-5 cm	mg/kg	0.17	<1	13	308	1.5	0.18	0.2	51.6	9.8	58	<5	21.6
0-5cm	C-300062	9321PH	7/8/2007	0-5 cm	mg/kg	0.22	<1	2	157	0.6	0.15	0.1	21.2	2.9	24	<5	7
0-5cm	C-300059	10729PH	7/13/2007	0-5 cm	mg/kg	0.12	<1	5	226	0.7	0.11	0.2	38.2	5.2	47	<5	7.4
0-5cm	C-300115	3561PH	7/13/2007	0-5 cm	mg/kg	0.02	<1	8	395	1.5	0.09	<0.1	59.3	14.1	63	<5	20.4
0-5cm	C-300054	10041PH	7/27/2007	0-5 cm	mg/kg	0.07	<1	5	267	1	0.14	<0.1	34.4	3.5	44	<5	2.4

Notes:
mg/kg - milligram per kilogram
in - inches
cm - centimeters
"<" indicates that the analyte was not detected. Value presented represents the laboratory reporting limit

Appendix A-4: Analytical Data used in Background Evaluation for Metals

Dataset	Lab Number	Field Number	Sampling Date	Depth	Units	Ga	In	La	Li	Mn	Mo	Nb	Ni	P	Pb	Rb	Sb
A Horiz	C-299944	10041A	7/27/2007	0-2 in	mg/kg	13.7	0.04	17	17	294	0.67	6.5	50.3	350	26	70.6	0.54
A Horiz	C-299946	297A	6/24/2007	0-5 in	mg/kg	11	<0.02	18	7	122	0.28	5.1	5.1	240	36.1	127	0.25
A Horiz	C-299948	2153A	6/25/2007	0-4 in	mg/kg	19.6	0.06	23.8	35	406	1.24	11.7	19.9	640	64.1	129	0.58
A Horiz	C-299949	10729A	7/13/2007	2-4 in	mg/kg	12.7	0.04	23.3	17	170	0.43	4.4	15.6	550	19.8	61.4	0.46
A Horiz	C-299951	11753A	7/1/2007	0-3 in	mg/kg	17.9	0.07	27.1	46	1210	0.82	5	50.5	750	23.6	115	0.53
A Horiz	C-299952	2873A	6/27/2007	0-3 in	mg/kg	14.9	0.05	19.2	27	469	0.68	4.9	23.9	1170	30.4	113	0.7
A Horiz	C-299953	9321A	7/8/2007	0-2 in	mg/kg	17	0.06	17.5	13	271	0.53	5.9	11.5	660	26.2	91.2	1.31
A Horiz	C-299954	8297A	6/24/2007	0-3 in	mg/kg	12	0.03	12.8	7	333	0.64	6.6	6.9	380	20.3	55.6	0.57
A Horiz	C-299955	9337A	6/26/2007	0-5 in	mg/kg	16.3	0.06	24.5	47	1570	1.02	6	25.6	950	32.1	92.4	1.49
A Horiz	C-299957	6441A	7/2/2007	0-3 in	mg/kg	12.6	0.05	18	24	565	0.76	6.9	32	710	364	52	15.1
A Horiz	C-299958	11065A	6/30/2007	1-3 in	mg/kg	16.1	0.06	26.6	25	638	0.65	7.2	17	580	24.1	106	0.65
A Horiz	C-299959	5673A	7/2/2007	0-4 in	mg/kg	13.9	0.04	24.4	20	523	1.03	9.5	61.8	520	26.9	70.4	0.49
A Horiz	C-299961	6953A	6/24/2007	0-3 in	mg/kg	21.3	0.07	41.6	54	693	0.67	12.8	44	420	24.3	153	0.47
A Horiz	C-299963	7209A	7/3/2007	0-5 in	mg/kg	12.1	0.13	19.4	23	635	1.06	8.2	34.8	690	34	79	1.6
A Horiz	C-299966	4649A	7/2/2007	0-4 in	mg/kg	11	0.03	11.1	14	387	0.66	3.4	14.3	860	99.2	69.7	0.41
A Horiz	C-299967	6633A	6/28/2007	0-4 in	mg/kg	8.7	0.03	12	8	1400	0.4	4.2	11.7	1000	23.6	38.3	0.56
A Horiz	C-299968	3881A	6/25/2007	0-5 in	mg/kg	3.07	<0.02	12.5	6	594	1.48	1.4	18.9	1130	48	21.6	0.47
A Horiz	C-299970	5945A	6/27/2007	0-4 in	mg/kg	15.9	0.05	16.7	20	363	3.58	9	13.7	480	34.1	67.3	0.73
A Horiz	C-299971	2537A	6/30/2007	0-3 in	mg/kg	14	0.05	28.5	28	760	0.63	5.4	23.2	620	21.4	75	0.7
A Horiz	C-299975	6521A	6/28/2007	0-4 in	mg/kg	14.8	0.05	27	40	472	0.47	5	40.5	1450	21.8	88.9	0.54
A Horiz	C-299976	1129A	7/4/2007	0-4 in	mg/kg	13.9	0.05	26.3	26	554	0.53	6	22.5	520	19.3	95	0.57
A Horiz	C-299984	3369A	7/2/2007	0-5 in	mg/kg	14.7	0.04	27.6	26	606	0.57	4.3	35.9	380	21.1	92.1	0.59
A Horiz	C-299985	4329A	6/28/2007	0-3 in	mg/kg	15	0.05	29.6	42	1430	0.42	4.2	30.3	820	23.2	98.4	0.37
A Horiz	C-299989	1769A	7/6/2007	0-4 in	mg/kg	12.7	0.04	25	36	589	0.72	3.6	30.5	550	16	76.1	0.5
A Horiz	C-299990	4201A	7/4/2007	0-1.5 in	mg/kg	15	0.06	24.5	44	1560	0.86	5.6	39.6	790	20.9	82.1	1.05
A Horiz	C-299991	6249A	6/25/2007	0-3 in	mg/kg	16	0.04	26	30	478	0.69	8.7	18.5	560	27.7	133	0.65
A Horiz	C-299995	4729A	6/28/2007	0-3 in	mg/kg	13.7	0.05	24.8	34	586	0.61	6.4	26.2	2440	17.2	74.1	0.46
A Horiz	C-299997	12841A	7/6/2007	0-5 in	mg/kg	16	0.05	21.2	19	737	0.77	9.6	13	580	24	80.8	0.45
A Horiz	C-300005	8489A	7/3/2007	0-3 in	mg/kg	21	0.06	36.1	145	724	1.16	32.4	26.7	1280	33.8	234	0.21
A Horiz	C-300007	3897A	6/28/2007	0-3 in	mg/kg	16.3	0.07	25.7	26	694	0.81	7.1	28.6	1420	25.2	68	0.94
A Horiz	C-300010	3561A	7/13/2007	2-4 in	mg/kg	14.9	0.05	34.2	35	891	1.24	7.1	50	540	16.6	82.1	0.53
A Horiz	C-300012	9513A	7/3/2007	0-2 in	mg/kg	12.3	0.03	23.1	19	761	0.65	7.4	12.2	490	27.8	93.3	0.18
A Horiz	C-300016	7993A	6/28/2007	0-3 in	mg/kg	15.8	0.06	27.2	43	1040	0.5	4.5	47.8	840	23	93.3	0.73
A Horiz	C-300018	233A	6/29/2007	0-4 in	mg/kg	18.7	0.06	25.5	21	197	0.44	4.6	17.6	730	16.6	80.9	0.31
A Horiz	C-300019	12073A	7/7/2007	0-2 in	mg/kg	12.3	0.04	22.6	27	682	0.64	7.1	28	1070	83.4	76.8	0.49
A Horiz	C-300021	6969A	6/24/2007	0-4 in	mg/kg	16.9	0.06	26.6	23	365	0.28	7.1	9.5	450	21.1	138	0.44
A Horiz	C-300024	7977A	6/25/2007	0-3 in	mg/kg	12.1	0.04	20.3	25	508	0.75	5.9	24.8	930	36.4	64.4	0.73
A Horiz	C-300026	105A	7/4/2007	0-2 in	mg/kg	14.8	0.05	26.1	35	606	0.58	6.3	31.5	580	26.8	80.9	0.57
A Horiz	C-300027	13033A	6/30/2007	0-4 in	mg/kg	3.07	<0.02	6	5	277	0.43	0.9	13.9	770	50.3	14.6	0.47
A Horiz	C-300033	10537A	7/2/2007	0-5 in	mg/kg	12.3	0.02	21.7	15	405	0.43	4.8	21.2	450	11.1	64.6	0.21
A Horiz	C-300035	12393A	6/26/2007	0-3 in	mg/kg	13.2	0.04	18	25	281	0.38	5.7	17.8	340	23.8	84.9	0.58
A Horiz	C-300038	5225A	6/25/2007	0-3 in	mg/kg	13.9	0.05	19.6	33	437	0.55	7.6	32.8	900	23.1	72.3	0.58
A Horiz	C-300041	1849A	6/27/2007	0-4 in	mg/kg	13.7	0.06	17.5	33	798	0.69	5.1	22	1280	20.7	68.6	0.67
A Horiz	C-300042	7465A	6/24/2007	0-3 in	mg/kg	9.6	0.04	20.9	30	483	0.46	6.3	21.7	1050	22.5	60.9	0.2
A Horiz	C-300043	7017A	6/23/2007	0-7 in	mg/kg	12.2	0.04	14.1	10	346	2.49	29.2	5.4	530	66.7	74.4	0.51
A Horiz	C-300044	4393A	6/24/2007	0-3 in	mg/kg	9.43	<0.02	13.8	7	133	0.68	10.6	4.1	360	48.3	68.5	0.42
A Horiz	C-300045	11561A	7/2/2007	0-2 in	mg/kg	12.4	0.04	19.3	28	756	0.87	8.3	29.1	790	21.7	51.8	0.32
A Horiz	C-300047	3113A	7/3/2007	0-2 in	mg/kg	9.79	0.03	20.4	18	456	0.58	10.7	10.2	730	25.5	75.1	0.13
A Horiz	C-300051	633A	6/28/2007	0-3 in	mg/kg	14.4	0.06	28.4	36	796	0.78	6.9	44.7	750	17.5	83.1	0.53
C Horiz	C-300261	7017C	6/23/2007	5-12 in	mg/kg	23.2	0.1	21.6	18	516	4.27	35	7.2	1130	28.7	84.7	0.33
C Horiz	C-300168	297C	6/24/2007	30-40 in	mg/kg	12.8	<0.02	17.7	16	188	0.21	5.8	6.5	370	28.6	128	<0.05
C Horiz	C-300176	8297C	6/24/2007	10-20 in	mg/kg	11.3	0.04	16.7	23	315	0.42	5.8	15.1	320	16.9	65.3	0.47
C Horiz	C-300182	6953C	6/24/2007	35-40 in	mg/kg	25.4	0.09	57.4	57	1520	4.65	21	31.3	1380	23.6	126	0.24

Appendix A-4: Analytical Data used in Background Evaluation for Metals

Dataset	Lab Number	Field Number	Sampling Date	Depth	Units	Ga	In	La	Li	Mn	Mo	Nb	Ni	P	Pb	Rb	Sb
C Horiz	C-300242	6969C	6/24/2007	15-20 in	mg/kg	16.6	0.07	24.2	27	428	0.37	9.2	9.2	480	19.7	118	0.44
C Horiz	C-300260	7465C	6/24/2007	3-10 in	mg/kg	14.2	0.04	21.4	30	546	0.54	8.9	24.9	840	20.5	81.1	0.25
C Horiz	C-300263	4393C	6/24/2007	30-40 in	mg/kg	13.8	<0.02	14.8	15	196	0.25	9.7	5.4	460	23.3	141	0.08
C Horiz	C-300170	2153C	6/25/2007	30-40 in	mg/kg	22.1	0.09	31.6	54	803	0.84	12.9	31.9	420	29.3	130	0.7
C Horiz	C-300189	3881C	6/25/2007	5-10 in	mg/kg	3.76	<0.02	14.9	4	572	1.41	1.4	13.8	1260	30.7	19.3	0.43
C Horiz	C-300212	6249C	6/25/2007	3-12 in	mg/kg	15.4	0.05	26.9	28	347	0.51	8.3	12.8	800	23.8	110	0.6
C Horiz	C-300245	7977C	6/25/2007	20-30 in	mg/kg	13.8	0.04	30.2	28	720	0.4	5	37.9	480	14.1	72.2	0.86
C Horiz	C-300257	5225C	6/25/2007	25-35 in	mg/kg	13.6	0.05	26.9	31	441	0.52	7	34.2	640	17.1	70.2	0.49
C Horiz	C-300177	9337C	6/26/2007	5-15 in	mg/kg	19.2	0.07	35.5	54	1690	1.1	7.5	23.5	880	28.1	90.2	1.5
C Horiz	C-300254	12393C	6/26/2007	35-48 in	mg/kg	12.4	0.04	15.9	22	372	0.25	2.8	20.3	280	13.5	79.8	0.49
C Horiz	C-300173	2873C	6/27/2007	30-40 in	mg/kg	16.2	0.06	20	32	633	0.51	5.1	22.2	340	20.7	107	0.65
C Horiz	C-300191	5945C	6/27/2007	10-20 in	mg/kg	18.4	0.07	23	42	349	3.88	7.5	22.8	370	23.7	73.8	0.51
C Horiz	C-300259	1849C	6/27/2007	4-12 in	mg/kg	16	0.05	23.9	26	724	0.7	6.9	14.8	770	13.7	64.4	0.56
C Horiz	C-300188	6633C	6/28/2007	6-12 in	mg/kg	12.8	0.06	21.7	31	391	0.51	5.2	17	560	13.8	52.7	0.49
C Horiz	C-300196	6521C	6/28/2007	10-15 in	mg/kg	18.3	0.05	32.7	39	674	0.44	6.8	32.1	1960	22.5	84.5	0.69
C Horiz	C-300208	4329C	6/28/2007	15-20 in	mg/kg	18.5	0.06	33.3	54	508	0.38	5.8	47.6	540	17.8	87.7	0.42
C Horiz	C-300217	4729C	6/28/2007	10-17 in	mg/kg	16.2	0.05	27.3	38	515	0.58	7.4	31.9	1430	16.4	70.4	0.46
C Horiz	C-300230	3897C	6/28/2007	10-15 in	mg/kg	19.2	0.07	28.2	33	877	0.7	6.7	29.4	1350	17.1	64.3	0.83
C Horiz	C-300237	7993C	6/28/2007	7-15 in	mg/kg	16.6	0.06	29	40	1180	0.58	8	42.5	850	31.8	80.5	0.8
C Horiz	C-300270	633C	6/28/2007	5-10 in	mg/kg	17.7	0.07	32.8	37	837	1	7.4	55.4	580	16.8	90.5	0.65
C Horiz	C-300271	10729C	6/28/2007	5-10 in	mg/kg	20.1	0.05	25.5	32	265	0.35	6	20.8	420	16.3	106	0.3
C Horiz	C-300238	233C	6/29/2007	12-20 in	mg/kg	16.6	0.06	25.9	42	281	0.42	3.7	43.2	880	15.6	78.9	0.28
C Horiz	C-300179	11065C	6/30/2007	13-23 in	mg/kg	14.9	0.06	23.3	31	509	0.5	6.7	19.7	760	14.7	72	0.36
C Horiz	C-300193	2537C	6/30/2007	10-18 in	mg/kg	19.6	0.06	29.6	24	281	0.62	5.6	17.1	850	22.2	77.4	0.81
C Horiz	C-300172	11753C	7/1/2007	7-15 in	mg/kg	13.3	0.05	26.3	30	792	0.44	5.5	30.4	340	14.3	60.6	0.33
C Horiz	C-300178	6441C	7/2/2007	12-20 in	mg/kg	15	0.04	21.9	17	446	0.44	6.4	18.9	280	22.8	59.4	0.25
C Horiz	C-300180	5673C	7/2/2007	12-18 in	mg/kg	12.8	0.03	25.9	12	560	0.66	8.8	37.2	520	22.1	46.3	0.52
C Horiz	C-300187	4649C	7/2/2007	15-25 in	mg/kg	12.8	0.04	15.8	20	367	0.32	3.2	16.8	500	18.2	61.6	0.25
C Horiz	C-300205	3369C	7/2/2007	5-12 in	mg/kg	15.2	0.05	28.4	27	629	0.46	4.7	27	410	16	78.9	0.44
C Horiz	C-300252	10537C	7/2/2007	15-25 in	mg/kg	10	0.02	16.9	11	236	0.88	4.9	13.2	480	17.8	60	0.32
C Horiz	C-300264	11561C	7/2/2007	15-25 in	mg/kg	14.8	0.05	25.9	34	676	1.09	9	36.4	700	14.8	53.6	0.3
C Horiz	C-300186	7209C	7/3/2007	5-10 in	mg/kg	12.7	0.03	27.4	20	585	0.41	9.4	9.3	620	25.7	70.1	0.05
C Horiz	C-300226	8489C	7/3/2007	6-12 in	mg/kg	18.4	0.03	15.8	30	624	0.89	29.1	6.5	980	24.4	146	0.12
C Horiz	C-300233	9513C	7/3/2007	25-35 in	mg/kg	13.9	0.03	28.8	20	619	0.74	14.1	6.8	380	21	80.9	0.06
C Horiz	C-300266	3113C	7/3/2007	35-48 in	mg/kg	15.8	0.05	37.3	23	658	0.74	19.6	12.9	500	19.5	97.5	0.1
C Horiz	C-300197	1129C	7/4/2007	15-20 in	mg/kg	16	0.05	24.3	26	610	0.58	6.4	18.2	530	20.3	85.8	0.78
C Horiz	C-300211	4201C	7/4/2007	5-10 in	mg/kg	17.5	0.06	26.7	31	1330	0.86	5.9	22.4	610	15.3	83.7	0.9
C Horiz	C-300246	105C	7/4/2007	6-15 in	mg/kg	14.2	0.05	14.8	33	547	0.6	7	33.3	530	17.7	65.4	0.52
C Horiz	C-300210	1769C	7/6/2007	5-17 in	mg/kg	15.4	0.05	30.2	38	619	0.82	3.8	26.9	490	15.8	77.7	0.33
C Horiz	C-300218	12841C	7/6/2007	5-10 in	mg/kg	17	0.06	24.1	29	684	0.7	10.1	17.7	570	21.2	72.1	0.42
C Horiz	C-300239	12073C	7/7/2007	0	mg/kg	12.7	0.04	22.1	25	677	0.61	7.1	27.7	940	77.1	66.3	0.47
C Horiz	C-300174	9321C	7/8/2007	15-20 in	mg/kg	18.9	0.07	22.3	20	503	0.48	6.5	17.3	580	13.9	96.5	1.21
C Horiz	C-300231	3561C	7/13/2007	5-10 in	mg/kg	16.3	0.05	30.2	34	819	1.26	9.5	45.5	490	15.5	73.5	0.53
C Horiz	C-300166	10041C	7/27/2007	5-20 in	mg/kg	15.1	0.05	22.5	29	546	0.82	7.7	24.4	420	18	74.6	0.41
0-5cm	C-300148	7017PH	06/23/2007	0-5 cm	mg/kg	2.26	<0.02	5.2	3	383	0.66	3.1	7.1	950	59.4	14.1	0.62
0-5cm	C-300056	297PH	6/24/2007	0-5 cm	mg/kg	6.23	<0.02	7.1	7	222	0.4	3	4.6	630	37.6	77	0.3
0-5cm	C-300064	8297PH	6/24/2007	0-5 cm	mg/kg	4.91	<0.02	8.4	4	530	0.46	2.6	5	540	43.2	29.3	0.56
0-5cm	C-300070	6953PH	6/24/2007	0-5 cm	mg/kg	17.6	0.06	34.9	55	735	0.65	11.5	41.5	410	22.6	127	0.42
0-5cm	C-300127	6969PH	6/24/2007	0-5 cm	mg/kg	14.6	0.06	24.6	25	393	0.37	7.2	10	430	20	119	0.42
0-5cm	C-300147	7465PH	6/24/2007	0-5 cm	mg/kg	14.6	0.06	22.2	30	491	0.58	8.8	21.4	1240	27.2	71.8	0.27
0-5cm	C-300149	4393PH	6/24/2007	0-5 cm	mg/kg	6.83	<0.02	10.2	5	103	0.65	8.2	6.3	530	68.4	48.2	0.5
0-5cm	C-300161	11049PH	6/24/2007	0-5 cm	mg/kg	14.5	0.05	26.6	35	517	1.19	9.8	32.3	870	210	86.8	0.78
0-5cm	C-300164	2857PH	6/24/2007	0-5 cm	mg/kg	8.52	0.03	14.8	18	407	1.3	4.9	17.7	1360	28.7	37.3	0.43

Appendix A-4: Analytical Data used in Background Evaluation for Metals

Dataset	Lab Number	Field Number	Sampling Date	Depth	Units	Ga	In	La	Li	Mn	Mo	Nb	Ni	P	Pb	Rb	Sb
0-5cm	C-300058	2153PH	6/25/2007	0-5 cm	mg/kg	12.8	0.04	19.5	26	317	0.92	8.3	10.9	510	41.7	88.3	0.4
0-5cm	C-300077	3881PH	6/25/2007	0-5 cm	mg/kg	1.37	<0.02	6.5	4	1240	0.92	0.6	15.9	1140	12.2	10.2	0.23
0-5cm	C-300099	6249PH	6/25/2007	0-5 cm	mg/kg	11.8	0.03	22.2	30	428	0.58	6.4	16	570	21.5	104	0.52
0-5cm	C-300131	7977PH	6/25/2007	0-5 cm	mg/kg	10.3	0.04	26.7	24	537	0.76	5.3	22.5	970	31.1	56.9	0.56
0-5cm	C-300144	5225PH	6/25/2007	0-5 cm	mg/kg	14	0.05	21.1	30	462	0.54	7	30.2	1010	21.8	61.8	0.51
0-5cm	C-300065	9337PH	6/26/2007	0-5 cm	mg/kg	11.6	0.04	23.2	50	1670	0.86	4.9	29.1	1180	25.5	74.7	1.2
0-5cm	C-300139	12393PH	6/26/2007	0-5 cm	mg/kg	10.1	0.04	16.3	22	254	0.43	5.1	16.1	330	28.8	70	0.51
0-5cm	C-300061	2873PH	6/27/2007	0-5 cm	mg/kg	10.4	0.04	13.6	26	486	0.44	3.7	19.7	1210	22.9	79.8	0.56
0-5cm	C-300079	5945PH	6/27/2007	0-5 cm	mg/kg	12.1	0.04	14.7	19	388	3.03	7.4	13.2	520	32.1	55	0.55
0-5cm	C-300146	1849PH	6/27/2007	0-5 cm	mg/kg	16	0.06	23.1	34	980	0.69	5.7	21.5	1280	22.2	66.5	0.65
0-5cm	C-300076	6633PH	6/28/2007	0-5 cm	mg/kg	7.02	0.03	12.1	9	1460	0.34	3.3	8.8	950	19.2	33.6	0.42
0-5cm	C-300083	6521PH	6/28/2007	0-5 cm	mg/kg	12	0.04	26.7	39	447	0.43	4.5	39.1	1460	18.2	75.8	0.48
0-5cm	C-300093	4329PH	6/28/2007	0-5 cm	mg/kg	13.1	0.05	28	46	1250	0.44	4	32.1	830	20.2	90.2	0.46
0-5cm	C-300103	4729PH	6/28/2007	0-5 cm	mg/kg	11.7	0.04	23.2	34	590	0.66	5.6	25.4	2330	15.8	63.1	0.4
0-5cm	C-300114	3897PH	6/28/2007	0-5 cm	mg/kg	12.2	0.05	22	28	709	0.76	5.5	27.6	1450	21.3	53.7	0.77
0-5cm	C-300123	7993PH	6/28/2007	0-5 cm	mg/kg	12.1	0.05	23	41	1020	0.55	4.8	41.2	940	26.1	71.3	0.66
0-5cm	C-300157	633PH	6/28/2007	0-5 cm	mg/kg	17.5	0.06	29.9	35	838	0.73	7.3	42.8	770	18.6	77.5	0.58
0-5cm	C-300124	233PH	6/29/2007	0-5 cm	mg/kg	14.3	0.04	27.9	10	129	0.34	4.3	9.1	550	7.2	59.9	0.31
0-5cm	C-300158	745PH	6/29/2007	0-5 cm	mg/kg	18.9	0.07	34.2	35	1040	1.19	5.5	41.1	520	19.1	86.4	1.01
0-5cm	C-300067	11065PH	6/30/2007	0-5 cm	mg/kg	13.1	0.06	23.4	24	617	0.54	6.5	14.7	600	21.9	94.9	0.46
0-5cm	C-300080	2537PH	6/30/2007	0-5 cm	mg/kg	8.9	0.03	20.9	24	666	0.45	3.8	20.2	750	15.8	50.4	0.48
0-5cm	C-300133	13033PH	6/30/2007	0-5 cm	mg/kg	4.78	0.02	11.8	8	461	0.4	1.2	9.8	790	26	29.8	0.33
0-5cm	C-300060	11753PH	7/1/2007	0-5 cm	mg/kg	15.4	0.06	24.8	47	1190	0.88	4	50.3	730	21.9	104	0.51
0-5cm	C-300066	6441PH	7/2/2007	0-5 cm	mg/kg	9.34	<0.02	14.3	24	540	0.66	4.9	32.1	720	233	41.1	0.81
0-5cm	C-300068	5673PH	7/2/2007	0-5 cm	mg/kg	8.6	0.03	19.4	17	860	0.78	5.7	46.4	750	36.6	47.6	0.41
0-5cm	C-300073	4649PH	7/2/2007	0-5 cm	mg/kg	8.51	0.03	10.8	15	416	0.64	3.2	13	1060	91.7	57.5	0.32
0-5cm	C-300092	3369PH	7/2/2007	0-5 cm	mg/kg	14.1	0.05	27.8	32	767	0.57	4.7	30.5	450	17.5	93.7	0.45
0-5cm	C-300137	10537PH	7/2/2007	0-5 cm	mg/kg	10.5	0.03	26.2	15	394	0.39	4.9	20.3	420	12.6	72.3	0.23
0-5cm	C-300150	11561PH	7/2/2007	0-5 cm	mg/kg	15.1	0.05	19.8	25	713	0.89	10.3	27	760	23.3	51.5	0.34
0-5cm	C-300072	7209PH	7/3/2007	0-5 cm	mg/kg	9.14	0.02	28.9	21	471	0.82	5.7	9.1	630	35.7	62.4	0.15
0-5cm	C-300112	8489PH	7/3/2007	0-5 cm	mg/kg	16.7	0.05	26.2	137	699	1.05	26.3	24.5	1220	30.8	188	0.18
0-5cm	C-300117	9513PH	7/3/2007	0-5 cm	mg/kg	9.74	0.02	18	18	827	0.56	6.1	9.4	480	21.2	74.9	0.13
0-5cm	C-300153	3113PH	7/3/2007	0-5 cm	mg/kg	13.9	0.04	25.7	17	483	0.52	13.4	8.4	710	31	88.4	0.14
0-5cm	C-300159	11305PH	7/3/2007	0-5 cm	mg/kg	14.6	0.05	26.4	34	570	0.6	10.5	21.4	1050	25.6	80.1	0.2
0-5cm	C-300084	1129PH	7/4/2007	0-5 cm	mg/kg	11.2	0.04	25.3	24	600	0.55	5.9	20.6	550	17.6	80.5	0.61
0-5cm	C-300098	4201PH	7/4/2007	0-5 cm	mg/kg	12.7	0.05	25.8	43	1660	0.95	5.8	39.5	870	21	70.8	0.99
0-5cm	C-300132	105PH	7/4/2007	0-5 cm	mg/kg	13.2	0.05	25	36	643	0.64	6.4	30.7	620	25.5	76.6	0.48
0-5cm	C-300095	1769PH	7/6/2007	0-5 cm	mg/kg	11.9	0.04	28.8	38	703	0.81	4	30.4	610	16.4	75.4	0.47
0-5cm	C-300105	12841PH	7/6/2007	0-5 cm	mg/kg	10.5	0.04	13.5	22	789	0.95	6.5	12.6	660	16.1	55.1	0.31
0-5cm	C-300125	12073PH	7/7/2007	0-5 cm	mg/kg	10.7	0.04	25.3	28	675	0.69	6.9	27.1	1180	71.8	69.2	0.46
0-5cm	C-300062	9321PH	7/8/2007	0-5 cm	mg/kg	6.63	0.03	10.2	6	244	0.44	2.6	8.8	640	38.5	41.3	0.65
0-5cm	C-300059	10729PH	7/13/2007	0-5 cm	mg/kg	8.17	0.03	19.5	16	160	0.44	2.8	17.1	640	19.9	43.9	0.35
0-5cm	C-300115	3561PH	7/13/2007	0-5 cm	mg/kg	12.1	0.05	28.3	34	817	1.17	6.9	44.1	560	13.4	67	0.41
0-5cm	C-300054	10041PH	7/27/2007	0-5 cm	mg/kg	10.9	0.03	16.8	16	314	0.65	5	9.9	380	47.4	53.7	0.43

Notes:

mg/kg - milligram per kilogram

in - inches

cm - centimeters

"<" indicates that the analyte was not detected. Value presented represents the laboratory report

Appendix A-4: Analytical Data used in Background Evaluation for Metals

Dataset	Lab Number	Field Number	Sampling Date	Depth	Units	Sc	Sn	Sr	Te	Th	Tl	U	V	W	Y	Zn	Se
A Horiz	C-299944	10041A	7/27/2007	0-2 in	mg/kg	7.7	2	71.8	<0.1	5.1	0.4	1.3	55	0.5	7	29	0.4
A Horiz	C-299946	297A	6/24/2007	0-5 in	mg/kg	1.4	1.8	93.5	<0.1	8	0.7	1.5	10	0.4	3.7	10	<0.2
A Horiz	C-299948	2153A	6/25/2007	0-4 in	mg/kg	11.4	3.5	69.9	<0.1	8.4	0.6	1.8	85	0.9	9.9	68	0.9
A Horiz	C-299949	10729A	7/13/2007	2-4 in	mg/kg	9.5	2	50.4	<0.1	5.7	0.4	1.5	64	0.4	7.5	37	<0.2
A Horiz	C-299951	11753A	7/1/2007	0-3 in	mg/kg	15.5	2.1	66.9	<0.1	8	0.6	2.2	105	0.5	13.2	109	0.2
A Horiz	C-299952	2873A	6/27/2007	0-3 in	mg/kg	8.5	2.2	58.9	<0.1	6.3	0.6	1.9	51	0.5	10.5	85	0.3
A Horiz	C-299953	9321A	7/8/2007	0-2 in	mg/kg	11.2	2.5	44.5	<0.1	5.3	0.5	1.3	82	0.7	6.6	40	0.9
A Horiz	C-299954	8297A	6/24/2007	0-3 in	mg/kg	4.3	1.6	49.6	<0.1	3.8	0.4	1.1	44	0.5	5.4	17	0.4
A Horiz	C-299955	9337A	6/26/2007	0-5 in	mg/kg	11.4	2.2	62.7	<0.1	8.2	0.5	1.8	86	1	9	122	0.7
A Horiz	C-299957	6441A	7/2/2007	0-3 in	mg/kg	9.2	375	78.8	<0.1	5.9	0.4	1.6	74	0.6	7.7	79	0.5
A Horiz	C-299958	11065A	6/30/2007	1-3 in	mg/kg	10.7	3.9	84.7	<0.1	7.5	0.5	1.6	63	0.6	17.6	59	0.3
A Horiz	C-299959	5673A	7/2/2007	0-4 in	mg/kg	8.4	1.7	158	<0.1	5.9	0.4	1.4	62	0.7	11.1	57	<0.2
A Horiz	C-299961	6953A	6/24/2007	0-3 in	mg/kg	15.6	3.4	123	<0.1	13.1	0.8	2.6	110	1.2	15.9	79	0.2
A Horiz	C-299963	7209A	7/3/2007	0-5 in	mg/kg	6.2	2.5	175	<0.1	6.7	0.4	3.5	33	0.8	11.8	1440	0.2
A Horiz	C-299966	4649A	7/2/2007	0-4 in	mg/kg	7	3.3	69.1	<0.1	3.5	0.3	1.1	50	0.4	5.4	120	<0.2
A Horiz	C-299967	6633A	6/28/2007	0-4 in	mg/kg	5.4	1.8	42.6	<0.1	3.9	0.4	1.1	46	0.5	6.2	69	0.3
A Horiz	C-299968	3881A	6/25/2007	0-5 in	mg/kg	2.6	1.2	102	<0.1	2.6	0.2	1.3	21	2.4	8.6	86	0.8
A Horiz	C-299970	5945A	6/27/2007	0-4 in	mg/kg	7.7	2.9	58.7	<0.1	5.7	0.5	2	76	0.9	8.6	50	0.7
A Horiz	C-299971	2537A	6/30/2007	0-3 in	mg/kg	9.5	1.7	51	<0.1	7.8	0.5	2	80	0.4	9.7	72	0.3
A Horiz	C-299975	6521A	6/28/2007	0-4 in	mg/kg	11.1	1.7	70.6	<0.1	7.9	0.4	2.2	79	0.5	13.8	89	<0.2
A Horiz	C-299976	1129A	7/4/2007	0-4 in	mg/kg	8.7	1.7	66.5	<0.1	7.9	0.5	1.8	57	0.6	10.8	57	0.4
A Horiz	C-299984	3369A	7/2/2007	0-5 in	mg/kg	10.5	3.1	128	<0.1	8.7	0.5	2	74	5.1	12.6	60	<0.2
A Horiz	C-299985	4329A	6/28/2007	0-3 in	mg/kg	10.4	1.8	83.2	<0.1	7.7	0.5	1.9	81	0.3	11.7	94	<0.2
A Horiz	C-299989	1769A	7/6/2007	0-4 in	mg/kg	9.2	1.4	67.5	<0.1	6.8	0.4	1.9	69	0.3	9.2	77	<0.2
A Horiz	C-299990	4201A	7/4/2007	0-1.5 in	mg/kg	10.5	1.9	62.6	<0.1	7	0.5	1.8	76	0.6	7.6	108	0.5
A Horiz	C-299991	6249A	6/25/2007	0-3 in	mg/kg	8.8	3.1	91.2	<0.1	7.3	0.6	1.8	51	0.8	17.2	56	0.3
A Horiz	C-299995	4729A	6/28/2007	0-3 in	mg/kg	9.4	1.6	81.2	<0.1	7	0.4	2.4	86	0.6	10.5	105	0.2
A Horiz	C-299997	12841A	7/6/2007	0-5 in	mg/kg	10.6	2.7	68.9	<0.1	7.3	0.5	1.7	98	3.3	9.6	51	0.4
A Horiz	C-300005	8489A	7/3/2007	0-3 in	mg/kg	9	8.2	256	<0.1	10.8	1.2	4.5	63	2.1	14.2	73	<0.2
A Horiz	C-300007	3897A	6/28/2007	0-3 in	mg/kg	12.7	2.2	70.2	<0.1	7.1	0.4	2.2	117	0.7	11.9	94	0.6
A Horiz	C-300010	3561A	7/13/2007	2-4 in	mg/kg	11.8	1.5	99.4	<0.1	7	0.5	2	76	0.3	18.7	66	<0.2
A Horiz	C-300012	9513A	7/3/2007	0-2 in	mg/kg	7.3	1.8	141	<0.1	6.7	0.5	2.4	47	0.6	12.9	37	<0.2
A Horiz	C-300016	7993A	6/28/2007	0-3 in	mg/kg	13.7	1.9	97.7	<0.1	7.9	0.5	1.8	96	0.4	16.4	99	<0.2
A Horiz	C-300018	233A	6/29/2007	0-4 in	mg/kg	10.9	1.9	43.3	<0.1	7.2	0.5	1.6	96	0.2	7.5	49	0.4
A Horiz	C-300019	12073A	7/7/2007	0-2 in	mg/kg	8.6	6.6	132	<0.1	7	0.4	1.6	59	0.7	10.5	102	0.2
A Horiz	C-300021	6969A	6/24/2007	0-4 in	mg/kg	10.8	1.9	75.4	<0.1	9.4	0.5	1.4	28	0.8	21.8	51	<0.2
A Horiz	C-300024	7977A	6/25/2007	0-3 in	mg/kg	7.8	1.9	71	<0.1	6.6	0.4	1.7	62	0.5	6.4	73	0.6
A Horiz	C-300026	105A	7/4/2007	0-2 in	mg/kg	11.1	6.5	77.4	<0.1	7.3	0.5	1.6	79	43	11.3	78	0.4
A Horiz	C-300027	13033A	6/30/2007	0-4 in	mg/kg	2.2	0.6	23.9	<0.1	1.5	0.1	0.5	17	0.3	2.6	43	0.4
A Horiz	C-300033	10537A	7/2/2007	0-5 in	mg/kg	6.9	0.8	167	<0.1	7.6	0.3	1.3	54	0.4	8.8	37	<0.2
A Horiz	C-300035	12393A	6/26/2007	0-3 in	mg/kg	7.6	1.9	65.2	<0.1	6.3	0.4	1.3	55	1.1	7.9	44	0.5
A Horiz	C-300038	5225A	6/25/2007	0-3 in	mg/kg	10.6	2.1	86.3	<0.1	6.6	0.4	1.7	77	0.7	9.9	71	0.6
A Horiz	C-300041	1849A	6/27/2007	0-4 in	mg/kg	9.4	1.8	60	<0.1	7.2	0.4	1.7	83	0.4	9.4	97	0.9
A Horiz	C-300042	7465A	6/24/2007	0-3 in	mg/kg	7.8	1.9	98.5	<0.1	7.1	0.4	1.5	65	0.6	8.5	62	0.4
A Horiz	C-300043	7017A	6/23/2007	0-7 in	mg/kg	3	3.9	78.4	<0.1	5.7	0.3	1.5	31	1.2	7.9	39	0.7
A Horiz	C-300044	4393A	6/24/2007	0-3 in	mg/kg	1.9	2.4	84.3	<0.1	6	0.2	1.3	24	0.7	3.7	18	0.7
A Horiz	C-300045	11561A	7/2/2007	0-2 in	mg/kg	13.4	2.1	156	<0.1	6.2	0.2	1.5	100	1.1	13.5	69	0.3
A Horiz	C-300047	3113A	7/3/2007	0-2 in	mg/kg	6	2	175	<0.1	7.8	0.4	2.2	48	0.7	9.3	48	<0.2
A Horiz	C-300051	633A	6/28/2007	0-3 in	mg/kg	14.7	1.9	103	<0.1	7.9	0.4	2	117	0.5	19.3	111	<0.2
C Horiz	C-300261	7017C	6/23/2007	5-12 in	mg/kg	5.9	4.6	82.7	<0.1	12.7	0.5	2.3	44	6.8	12.8	84	1.7
C Horiz	C-300168	297C	6/24/2007	30-40 in	mg/kg	2.8	1.6	125	<0.1	8.8	0.9	1.9	15	0.3	5.9	19	<0.2
C Horiz	C-300176	8297C	6/24/2007	10-20 in	mg/kg	6.4	1.3	74.2	<0.1	5.5	0.5	1.2	41	0.4	8.3	44	0.5
C Horiz	C-300182	6953C	6/24/2007	35-40 in	mg/kg	17	4	260	<0.1	16	0.8	2.9	111	1.1	25.7	107	<0.2

Appendix A-4: Analytical Data used in Background Evaluation for Metals

Dataset	Lab Number	Field Number	Sampling Date	Depth	Units	Sc	Sn	Sr	Te	Th	Tl	U	V	W	Y	Zn	Se
C Horiz	C-300242	6969C	6/24/2007	15-20 in	mg/kg	13.1	2.2	76.2	<0.1	9.4	0.7	1.5	31	0.9	25.1	62	<0.2
C Horiz	C-300260	7465C	6/24/2007	3-10 in	mg/kg	11.1	2.3	108	<0.1	8.2	0.5	1.9	73	0.8	10.6	63	0.4
C Horiz	C-300263	4393C	6/24/2007	30-40 in	mg/kg	2.4	1.5	150	<0.1	8.5	0.8	1.6	13	0.4	6.7	23	<0.2
C Horiz	C-300170	2153C	6/25/2007	30-40 in	mg/kg	16.8	3.7	87.9	<0.1	14.4	0.9	2.5	103	1.1	14.7	88	0.3
C Horiz	C-300189	3881C	6/25/2007	5-10 in	mg/kg	3.2	1.3	108	<0.1	2.9	0.1	1.8	17	0.3	10.2	46	1
C Horiz	C-300212	6249C	6/25/2007	3-12 in	mg/kg	8.1	2.5	105	<0.1	7.7	0.7	1.6	43	0.8	16.7	46	<0.2
C Horiz	C-300245	7977C	6/25/2007	20-30 in	mg/kg	11.4	1.6	69.9	<0.1	9.4	0.4	1.7	70	0.3	10.7	57	<0.2
C Horiz	C-300257	5225C	6/25/2007	25-35 in	mg/kg	11.1	1.9	91.2	<0.1	8.3	0.4	1.7	77	0.6	9.8	63	0.5
C Horiz	C-300177	9337C	6/26/2007	5-15 in	mg/kg	13.6	2.6	70	<0.1	9.6	0.6	2	95	1.1	11.4	139	0.9
C Horiz	C-300254	12393C	6/26/2007	35-48 in	mg/kg	8.5	1.3	76.5	<0.1	5.6	0.4	1.2	49	0.6	9.5	38	<0.2
C Horiz	C-300173	2873C	6/27/2007	30-40 in	mg/kg	11	1.8	65.3	<0.1	7.1	0.7	1.6	54	0.5	13.8	51	0.2
C Horiz	C-300191	5945C	6/27/2007	10-20 in	mg/kg	10.1	2	62.4	<0.1	7.2	0.6	2	76	0.7	10.9	91	0.8
C Horiz	C-300259	1849C	6/27/2007	4-12 in	mg/kg	10.2	2	62.2	<0.1	7.8	0.5	1.8	93	0.6	10.8	67	0.5
C Horiz	C-300188	6633C	6/28/2007	6-12 in	mg/kg	9.4	1.5	51.1	<0.1	6.2	0.4	1.5	64	0.4	11.4	75	0.3
C Horiz	C-300196	6521C	6/28/2007	10-15 in	mg/kg	10.9	1.8	71.6	<0.1	8	0.5	3	81	0.5	13	95	<0.2
C Horiz	C-300208	4329C	6/28/2007	15-20 in	mg/kg	13.5	1.9	102	<0.1	9.3	0.5	2.2	96	0.4	13.8	94	<0.2
C Horiz	C-300217	4729C	6/28/2007	10-17 in	mg/kg	10.9	1.7	91.4	<0.1	7.3	0.4	2.4	94	1.7	12.1	93	<0.2
C Horiz	C-300230	3897C	6/28/2007	10-15 in	mg/kg	14.1	2.1	81.8	<0.1	7.7	0.5	2.1	131	0.5	13.6	102	0.5
C Horiz	C-300237	7993C	6/28/2007	7-15 in	mg/kg	13.8	2.8	100	<0.1	8.2	0.5	2.1	103	0.7	16.7	103	<0.2
C Horiz	C-300270	633C	6/28/2007	5-10 in	mg/kg	18.3	2.1	103	<0.1	8.9	0.5	2.3	134	0.7	25.4	93	<0.2
C Horiz	C-300271	10729C	6/28/2007	5-10 in	mg/kg	14.6	2.3	57.9	<0.1	6.9	0.6	1.7	103	0.5	7.7	55	<0.2
C Horiz	C-300238	233C	6/29/2007	12-20 in	mg/kg	12.2	1.8	47.5	<0.1	7.8	0.5	1.6	103	0.2	9	89	0.3
C Horiz	C-300179	11065C	6/30/2007	13-23 in	mg/kg	9.9	1.9	71.6	<0.1	5.9	0.5	1.3	72	0.5	11.6	81	0.4
C Horiz	C-300193	2537C	6/30/2007	10-18 in	mg/kg	11.5	2.1	49.4	<0.1	6.9	0.6	1.9	110	0.4	10.3	68	0.2
C Horiz	C-300172	11753C	7/1/2007	7-15 in	mg/kg	12	1.4	83.9	<0.1	6.7	0.4	1.6	74	0.3	12.2	59	<0.2
C Horiz	C-300178	6441C	7/2/2007	12-20 in	mg/kg	10.5	2.8	88.2	<0.1	5.7	0.5	1.5	102	0.6	7.8	37	0.2
C Horiz	C-300180	5673C	7/2/2007	12-18 in	mg/kg	6.8	1.6	140	<0.1	5	0.3	1.4	51	0.5	11.6	39	0.3
C Horiz	C-300187	4649C	7/2/2007	15-25 in	mg/kg	9	1.2	83.7	<0.1	4.1	0.3	1	55	0.3	8.3	61	<0.2
C Horiz	C-300205	3369C	7/2/2007	5-12 in	mg/kg	11.4	1.6	137	<0.1	7.2	0.5	1.7	77	0.5	13.5	60	<0.2
C Horiz	C-300252	10537C	7/2/2007	15-25 in	mg/kg	6.3	1	162	<0.1	6.5	0.3	1.7	39	2.7	7.2	33	<0.2
C Horiz	C-300264	11561C	7/2/2007	15-25 in	mg/kg	15.8	2.2	147	<0.1	8.1	0.3	2	116	1.1	14.2	62	0.4
C Horiz	C-300186	7209C	7/3/2007	5-10 in	mg/kg	6.3	1.9	193	<0.1	8.2	0.5	3.6	31	0.6	14	28	<0.2
C Horiz	C-300226	8489C	7/3/2007	6-12 in	mg/kg	3.3	3.4	136	<0.1	7.4	1	2.2	25	1.4	8.7	35	0.3
C Horiz	C-300233	9513C	7/3/2007	25-35 in	mg/kg	6.2	1.6	177	<0.1	9.7	0.5	3.9	40	1	11.3	31	<0.2
C Horiz	C-300266	3113C	7/3/2007	35-48 in	mg/kg	10.6	2.4	180	<0.1	14.5	0.6	4.6	65	32.1	17.3	52	<0.2
C Horiz	C-300197	1129C	7/4/2007	15-20 in	mg/kg	9.6	1.8	69	<0.1	6.9	0.6	1.6	62	0.5	10.9	62	0.4
C Horiz	C-300211	4201C	7/4/2007	5-10 in	mg/kg	10.9	2	62.4	<0.1	7.3	0.6	1.8	83	0.5	7.6	65	0.3
C Horiz	C-300246	105C	7/4/2007	6-15 in	mg/kg	12.3	1.8	79.2	<0.1	6.6	0.4	1.5	86	0.6	10.4	69	0.5
C Horiz	C-300210	1769C	7/6/2007	5-17 in	mg/kg	10.8	1.5	66.1	<0.1	7	0.5	1.9	75	0.2	9.8	70	<0.2
C Horiz	C-300218	12841C	7/6/2007	5-10 in	mg/kg	12.3	2.6	86	<0.1	8.4	0.5	1.9	93	5	12.1	65	0.4
C Horiz	C-300239	12073C	7/7/2007	0	mg/kg	9.3	6.4	129	<0.1	7.3	0.4	1.5	64	0.7	10.2	96	<0.2
C Horiz	C-300174	9321C	7/8/2007	15-20 in	mg/kg	13.7	2.2	54.8	<0.1	7.1	0.6	1.5	89	1.1	8.2	55	0.9
C Horiz	C-300231	3561C	7/13/2007	5-10 in	mg/kg	12.9	1.8	98.9	<0.1	7	0.5	2.1	74	0.5	19	65	<0.2
C Horiz	C-300166	10041C	7/27/2007	5-20 in	mg/kg	12.8	1.7	127	<0.1	7.7	0.6	1.8	72	0.7	11.8	72	0.5
0-5cm	C-300148	7017PH	06/23/2007	0-5 cm	mg/kg	1	1.7	39.6	<0.1	1.9	0.2	0.5	15	1	2	61	0.5
0-5cm	C-300056	297PH	6/24/2007	0-5 cm	mg/kg	1.2	1.4	69.3	<0.1	3.1	0.3	0.8	12	0.3	2.3	21	0.4
0-5cm	C-300064	8297PH	6/24/2007	0-5 cm	mg/kg	2.2	1.7	41	<0.1	2.1	0.3	0.6	25	0.3	3.1	22	0.5
0-5cm	C-300070	6953PH	6/24/2007	0-5 cm	mg/kg	14.9	3.1	136	<0.1	10.9	0.7	2.3	107	1.1	15.2	68	0.2
0-5cm	C-300127	6969PH	6/24/2007	0-5 cm	mg/kg	10.8	1.9	75.5	<0.1	8.9	0.6	1.3	29	0.8	20.7	45	<0.2
0-5cm	C-300147	7465PH	6/24/2007	0-5 cm	mg/kg	10.8	2.4	106	<0.1	7.7	0.5	1.9	69	0.8	10.5	74	0.3
0-5cm	C-300149	4393PH	6/24/2007	0-5 cm	mg/kg	1.5	2	65.5	<0.1	4.6	0.5	1.1	19	0.8	3.4	31	0.7
0-5cm	C-300161	11049PH	6/24/2007	0-5 cm	mg/kg	10	3.4	143	<0.1	7.7	0.7	2.9	67	8.6	13.7	126	0.3
0-5cm	C-300164	2857PH	6/24/2007	0-5 cm	mg/kg	6.3	1.5	97.5	<0.1	3.9	0.3	1.9	46	1.3	8.2	218	0.5

Appendix A-4: Analytical Data used in Background Evaluation for Metals

Dataset	Lab Number	Field Number	Sampling Date	Depth	Units	Sc	Sn	Sr	Te	Th	Tl	U	V	W	Y	Zn	Se
0-5cm	C-300058	2153PH	6/25/2007	0-5 cm	mg/kg	8.2	2.6	54.4	<0.1	6.6	0.5	1.4	64	0.6	7.5	46	0.9
0-5cm	C-300077	3881PH	6/25/2007	0-5 cm	mg/kg	1.3	0.4	108	<0.1	1.3	0.1	0.7	14	3	5.1	70	0.6
0-5cm	C-300099	6249PH	6/25/2007	0-5 cm	mg/kg	6.9	2.3	97.9	<0.1	6.3	0.6	1.4	47	0.7	14	51	<0.2
0-5cm	C-300131	7977PH	6/25/2007	0-5 cm	mg/kg	7.8	1.8	73.8	<0.1	7.4	0.2	1.7	62	0.6	7	68	0.6
0-5cm	C-300144	5225PH	6/25/2007	0-5 cm	mg/kg	10.4	2.1	92.5	<0.1	6.3	0.4	1.6	77	0.6	9.3	76	0.4
0-5cm	C-300065	9337PH	6/26/2007	0-5 cm	mg/kg	9.5	1.9	70.5	<0.1	6.7	0.5	1.4	85	0.8	8.2	105	0.7
0-5cm	C-300139	12393PH	6/26/2007	0-5 cm	mg/kg	6.7	1.9	60.4	<0.1	4.7	0.4	1.1	54	1	7.6	39	0.5
0-5cm	C-300061	2873PH	6/27/2007	0-5 cm	mg/kg	6.7	1.8	61	<0.1	4.6	0.5	1.4	50	0.4	8.1	75	0.3
0-5cm	C-300079	5945PH	6/27/2007	0-5 cm	mg/kg	6.2	2.3	61.6	<0.1	4.9	0.4	1.7	74	0.8	7.2	54	0.7
0-5cm	C-300146	1849PH	6/27/2007	0-5 cm	mg/kg	11.2	2.2	64	<0.1	7.5	0.5	1.8	91	0.6	10.6	99	0.6
0-5cm	C-300076	6633PH	6/28/2007	0-5 cm	mg/kg	4.8	1.3	46.6	<0.1	3.5	0.3	0.9	44	0.4	5.6	59	0.3
0-5cm	C-300083	6521PH	6/28/2007	0-5 cm	mg/kg	10.1	1.7	65.9	<0.1	7.3	0.4	2	74	0.6	12.7	79	<0.2
0-5cm	C-300093	4329PH	6/28/2007	0-5 cm	mg/kg	10.5	1.7	89.9	<0.1	7.3	0.3	1.8	84	0.3	11.3	89	<0.2
0-5cm	C-300103	4729PH	6/28/2007	0-5 cm	mg/kg	9.1	1.4	83.8	<0.1	6.5	0.3	2.1	81	0.5	10.2	96	0.3
0-5cm	C-300114	3897PH	6/28/2007	0-5 cm	mg/kg	10.7	2.1	71	<0.1	6.2	0.4	1.9	117	0.4	10.8	88	0.5
0-5cm	C-300123	7993PH	6/28/2007	0-5 cm	mg/kg	11.5	2.2	96.2	<0.1	6.9	0.4	1.7	89	0.5	13.6	89	<0.2
0-5cm	C-300157	633PH	6/28/2007	0-5 cm	mg/kg	16.4	2	109	<0.1	8.2	0.5	2.2	119	0.6	18.5	132	<0.2
0-5cm	C-300124	233PH	6/29/2007	0-5 cm	mg/kg	9.9	1.8	42.6	<0.1	6.8	0.5	1.5	96	0.2	7.1	31	<0.2
0-5cm	C-300158	745PH	6/29/2007	0-5 cm	mg/kg	18.7	1.9	81.7	<0.1	8.8	0.6	2.4	130	0.5	23.5	86	<0.2
0-5cm	C-300067	11065PH	6/30/2007	0-5 cm	mg/kg	11.2	2.2	91.6	<0.1	7.3	0.4	1.4	53	0.5	19.3	55	<0.2
0-5cm	C-300080	2537PH	6/30/2007	0-5 cm	mg/kg	6.9	1.3	51.7	<0.1	5.4	0.3	1.3	71	0.3	6.7	85	0.3
0-5cm	C-300133	13033PH	6/30/2007	0-5 cm	mg/kg	4.1	1	27.4	<0.1	2.8	0.2	0.7	28	0.1	3.8	37	0.4
0-5cm	C-300060	11753PH	7/1/2007	0-5 cm	mg/kg	15.1	1.9	67.1	<0.1	7.3	0.5	1.9	106	0.5	12.5	99	0.2
0-5cm	C-300066	6441PH	7/2/2007	0-5 cm	mg/kg	7.6	88.9	76.2	<0.1	4.6	0.3	1.2	79	0.6	6.3	71	0.5
0-5cm	C-300068	5673PH	7/2/2007	0-5 cm	mg/kg	6	1.7	121	<0.1	4.5	0.2	1.1	53	0.4	8.2	60	0.5
0-5cm	C-300073	4649PH	7/2/2007	0-5 cm	mg/kg	6.3	3	72.7	<0.1	3.2	0.3	0.9	47	0.4	5	125	<0.2
0-5cm	C-300092	3369PH	7/2/2007	0-5 cm	mg/kg	11.4	1.6	156	<0.1	7.8	0.5	1.8	85	0.5	14.1	60	<0.2
0-5cm	C-300137	10537PH	7/2/2007	0-5 cm	mg/kg	7.7	0.9	166	<0.1	8.2	0.3	1.5	51	0.5	9.3	34	<0.2
0-5cm	C-300150	11561PH	7/2/2007	0-5 cm	mg/kg	14.7	2.4	159	<0.1	5.6	0.3	1.5	98	1.1	15	74	0.2
0-5cm	C-300072	7209PH	7/3/2007	0-5 cm	mg/kg	5	2	167	<0.1	9.2	0.3	3.4	30	0.6	11	29	0.2
0-5cm	C-300112	8489PH	7/3/2007	0-5 cm	mg/kg	7.7	6.6	237	<0.1	7.5	1.1	3.3	62	1.5	12.8	65	<0.2
0-5cm	C-300117	9513PH	7/3/2007	0-5 cm	mg/kg	6.9	1.5	137	<0.1	6.5	0.4	2	45	0.6	12.9	34	<0.2
0-5cm	C-300153	3113PH	7/3/2007	0-5 cm	mg/kg	7.1	2.3	190	<0.1	8.8	0.5	2.5	46	0.8	11.7	51	<0.2
0-5cm	C-300159	11305PH	7/3/2007	0-5 cm	mg/kg	11	2.7	128	<0.1	8.7	0.6	2.4	71	1.1	12.4	61	0.2
0-5cm	C-300084	1129PH	7/4/2007	0-5 cm	mg/kg	8.6	1.6	59.7	<0.1	7.3	0.5	1.5	61	0.6	10	55	0.4
0-5cm	C-300098	4201PH	7/4/2007	0-5 cm	mg/kg	9.3	1.9	63.2	<0.1	7	0.4	1.6	76	0.5	7.7	107	0.6
0-5cm	C-300132	105PH	7/4/2007	0-5 cm	mg/kg	11.9	2.8	83.5	<0.1	7.3	0.4	1.7	85	0.6	11.8	77	0.5
0-5cm	C-300095	1769PH	7/6/2007	0-5 cm	mg/kg	10.1	1.4	66.7	<0.1	7.2	0.4	1.9	71	0.4	9.7	71	<0.2
0-5cm	C-300105	12841PH	7/6/2007	0-5 cm	mg/kg	8.3	4.9	71	<0.1	4.4	0.3	1.2	87	1.7	7.6	56	0.4
0-5cm	C-300125	12073PH	7/7/2007	0-5 cm	mg/kg	8.4	6.1	138	<0.1	7.3	0.4	1.5	60	0.7	10.3	99	0.2
0-5cm	C-300062	9321PH	7/8/2007	0-5 cm	mg/kg	5.6	1.7	36.3	<0.1	2.6	0.2	0.6	44	0.3	3.8	35	0.8
0-5cm	C-300059	10729PH	7/13/2007	0-5 cm	mg/kg	6.7	1.4	53.6	<0.1	4.5	0.2	1.2	55	0.2	6.5	34	0.3
0-5cm	C-300115	3561PH	7/13/2007	0-5 cm	mg/kg	11.3	1.3	100	<0.1	6.6	0.4	1.9	68	0.3	19.2	54	<0.2
0-5cm	C-300054	10041PH	7/27/2007	0-5 cm	mg/kg	6.6	1.8	90.3	<0.1	4.4	0.4	1.1	59	0.4	6.8	24	0.5

Notes:

mg/kg - milligram per kilogram

in - inches

cm - centimeters

"<" indicates that the analyte was not detected. Value presented represents the laboratory report

Appendix B

Summary of Evaluation for Urban Developed Area Background PAHs

B1: Box and Whisker Plots for Raw Dataset

B2: Identification of Outliers

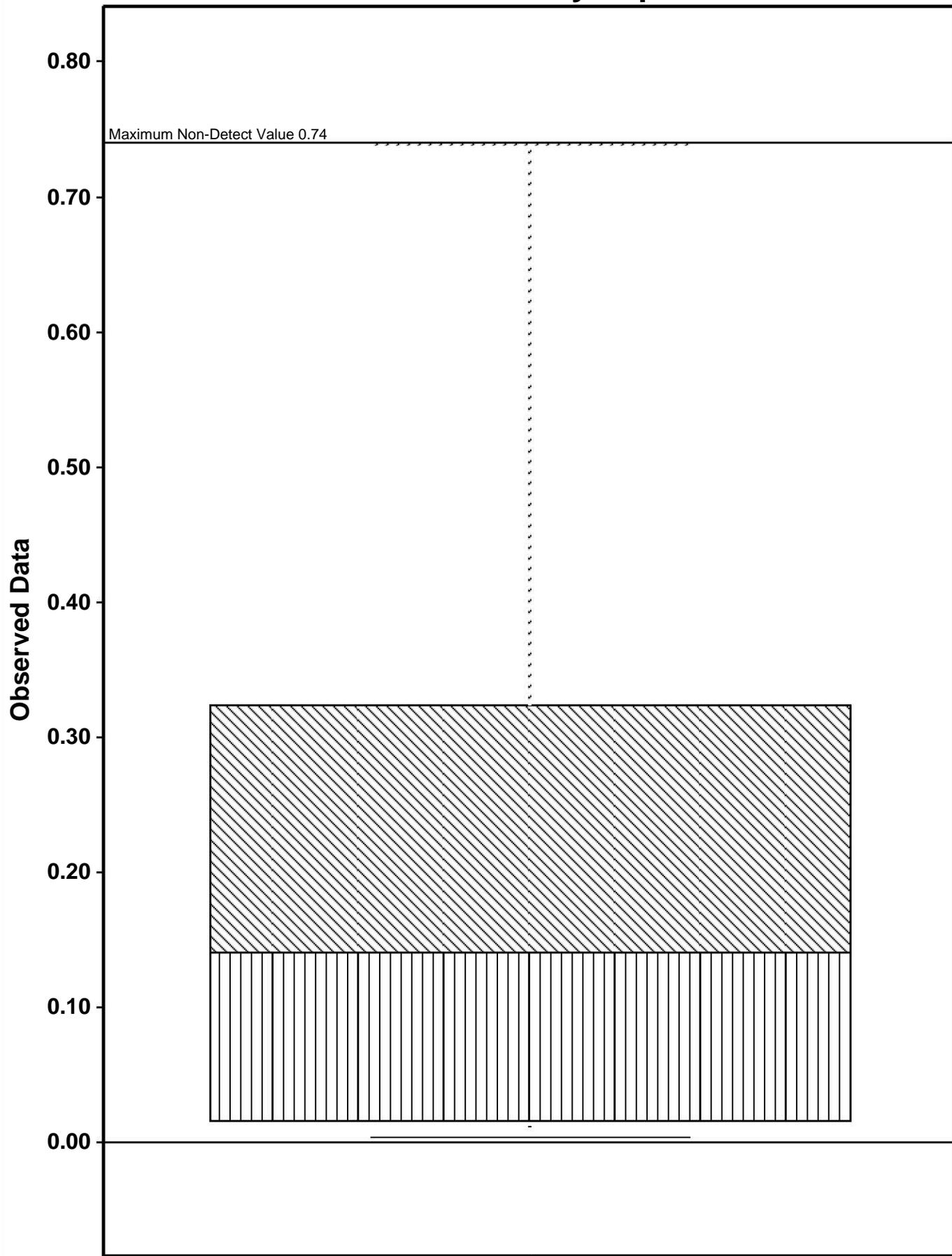
B3: Q-Q Probability Plots for Logged Dataset (Without Outliers)

B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)

B5: ProUCL Outputs for Background UPLs

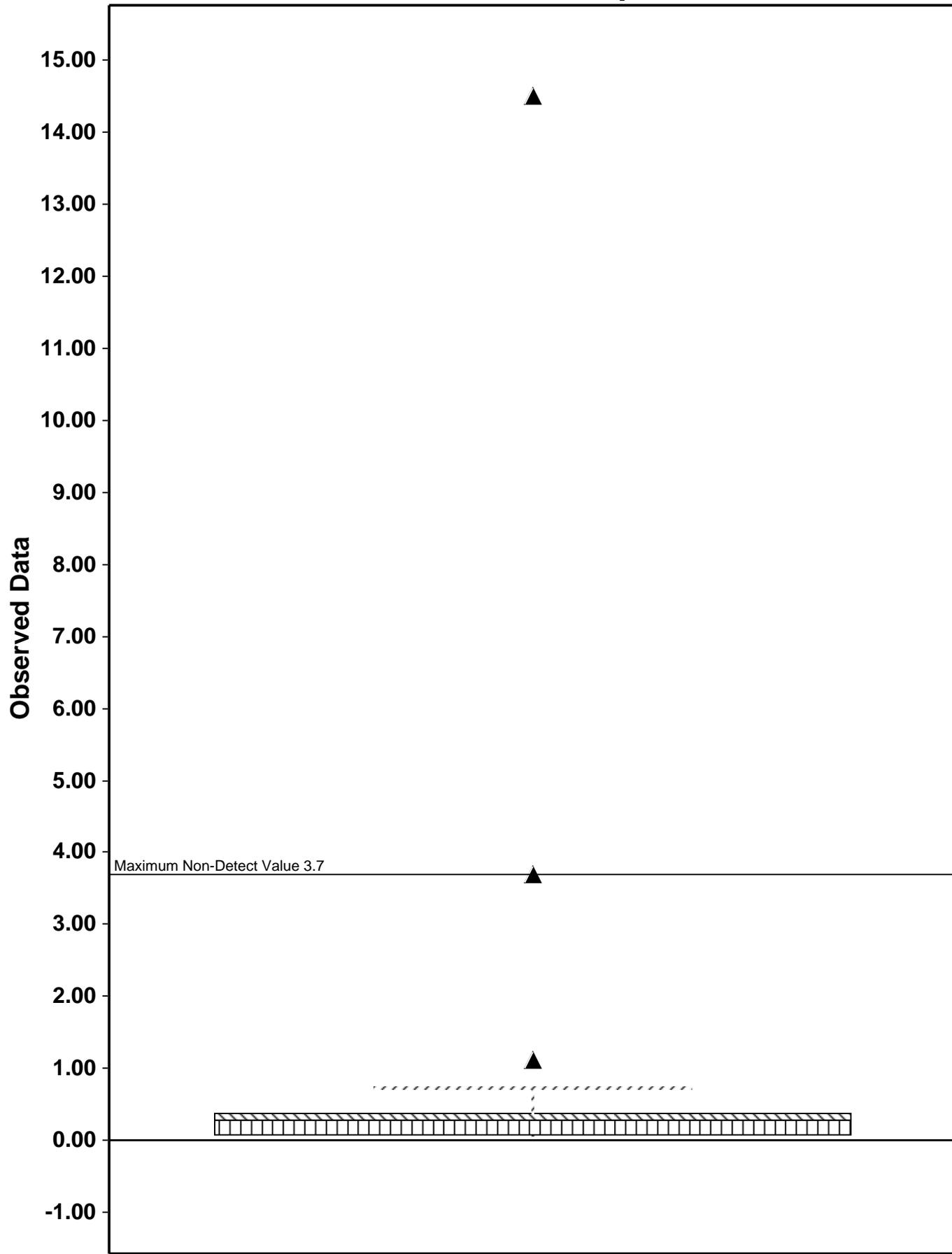
Appendix B1

Box Plot for 2-Methylnaphthalene



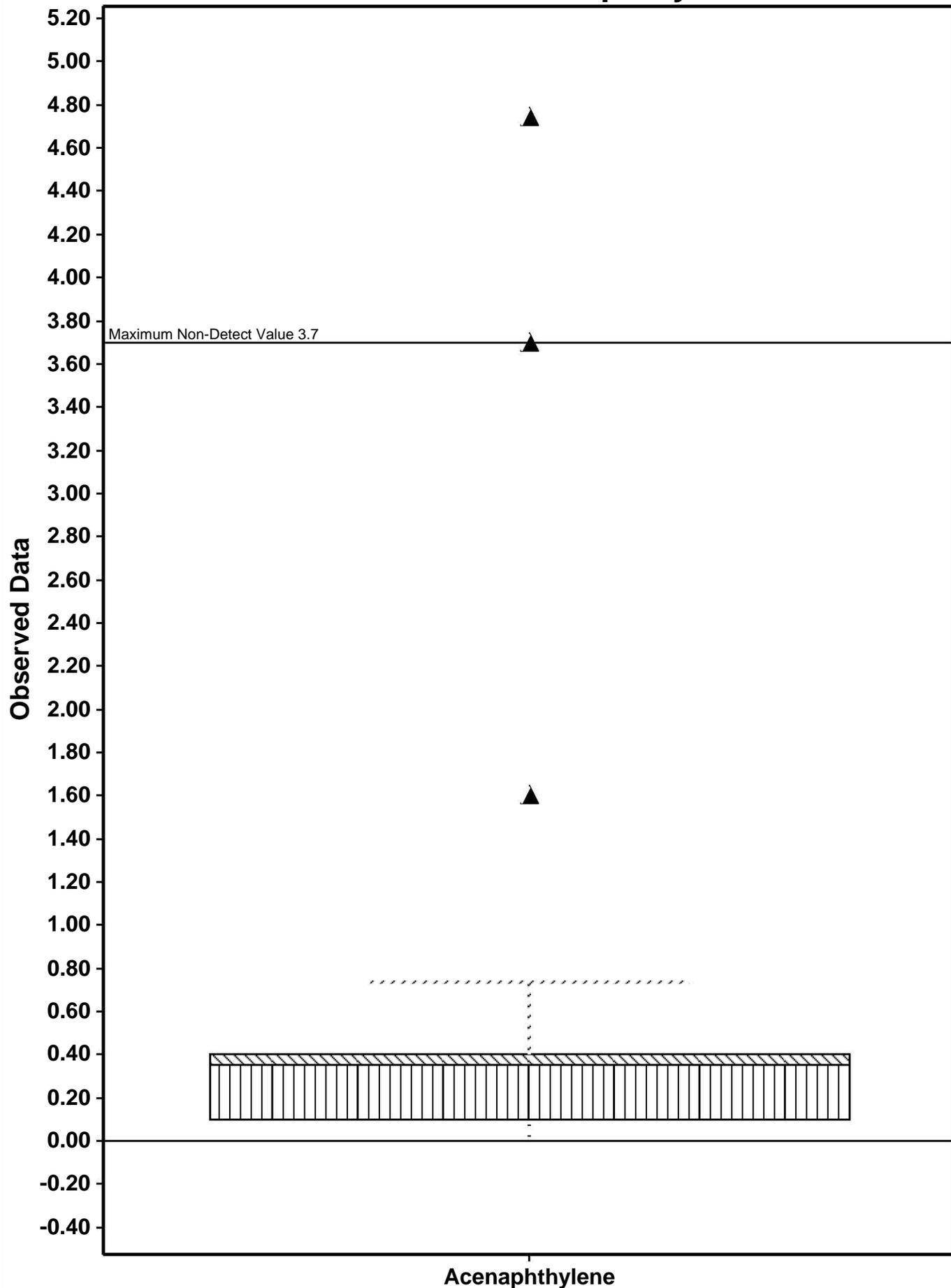
2-Methylnaphthalene

Box Plot for Acenaphthene

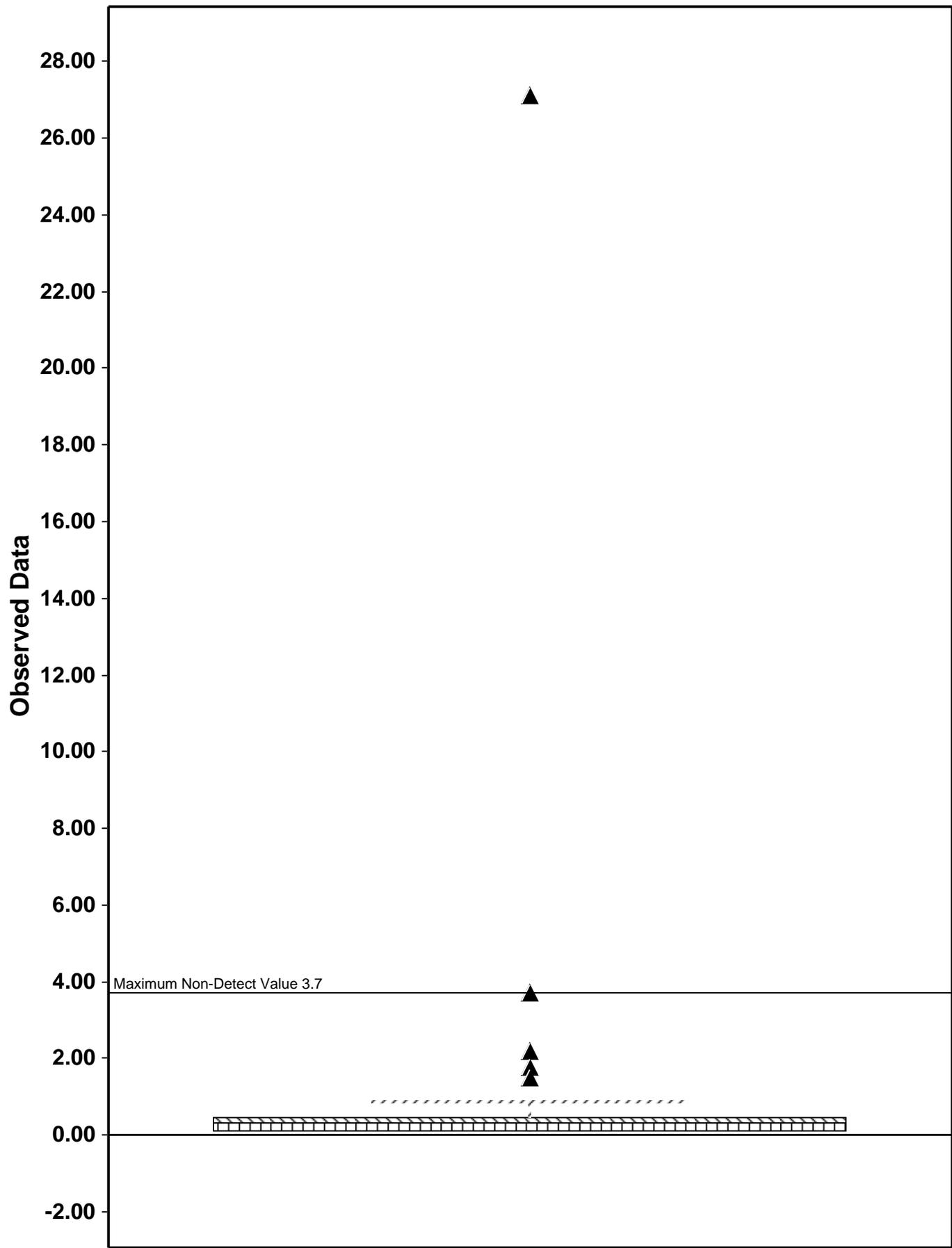


Acenaphthene

Box Plot for Acenaphthylene

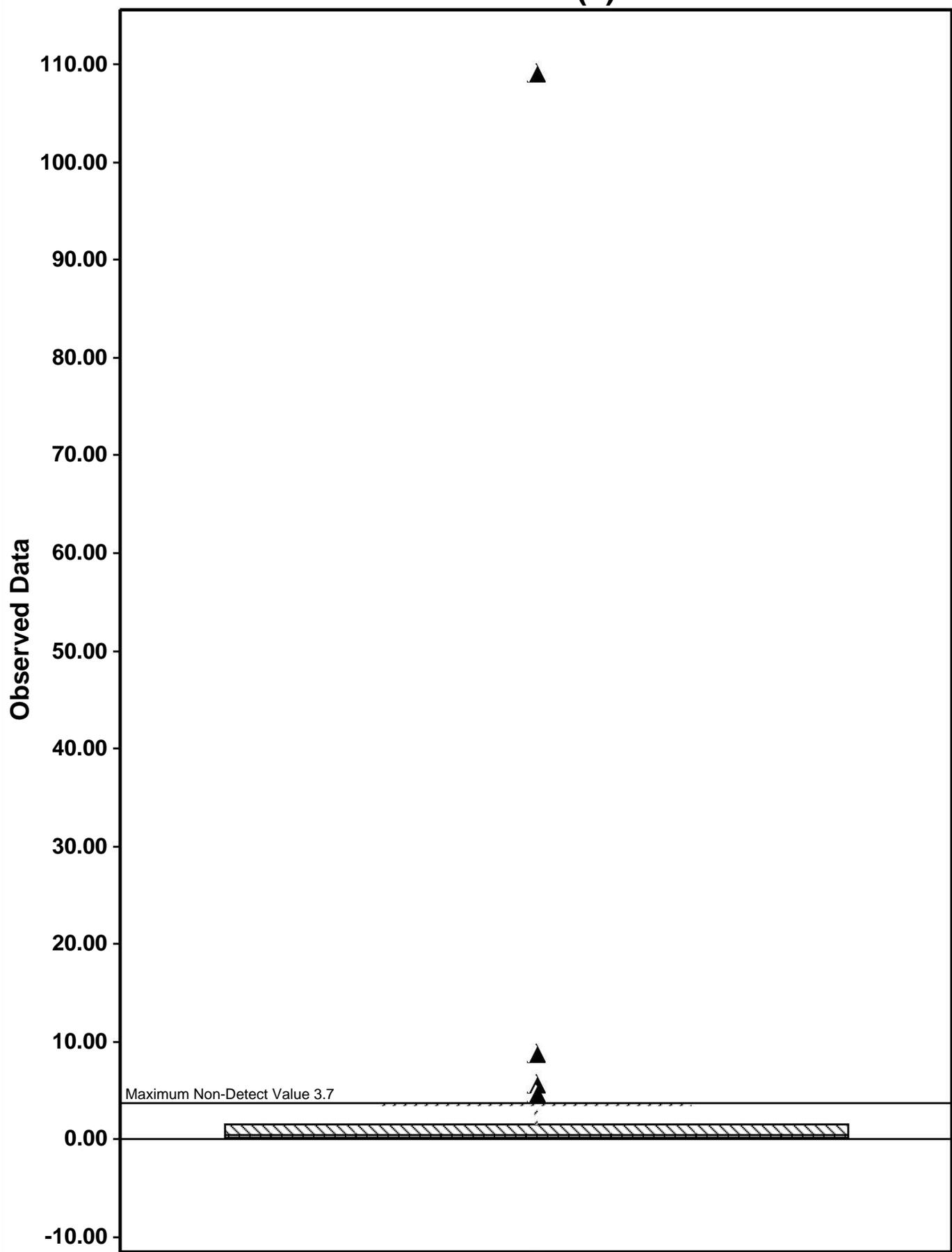


Box Plot for Anthracene



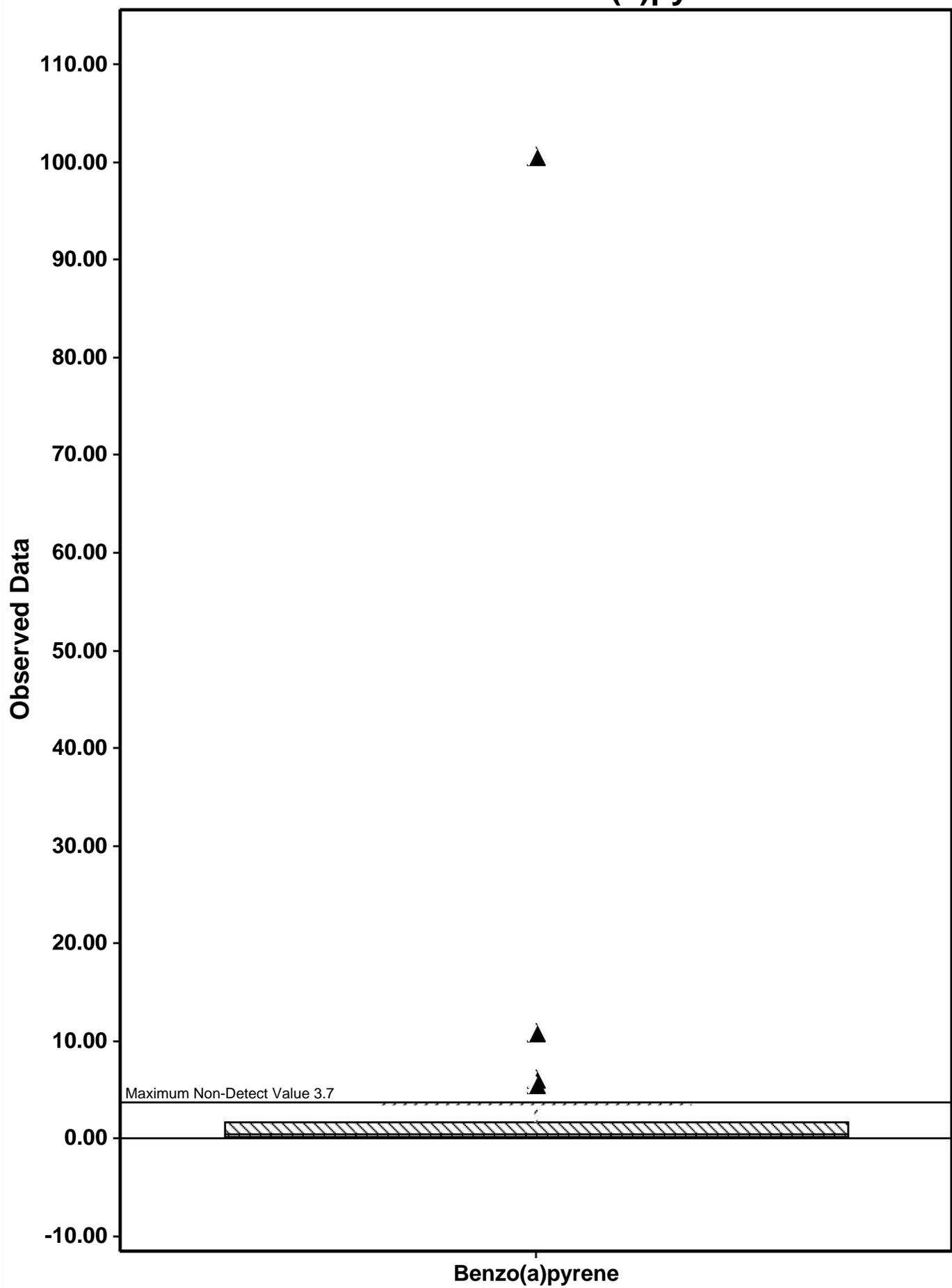
Anthracene

Box Plot for Benzo(a)anthracene

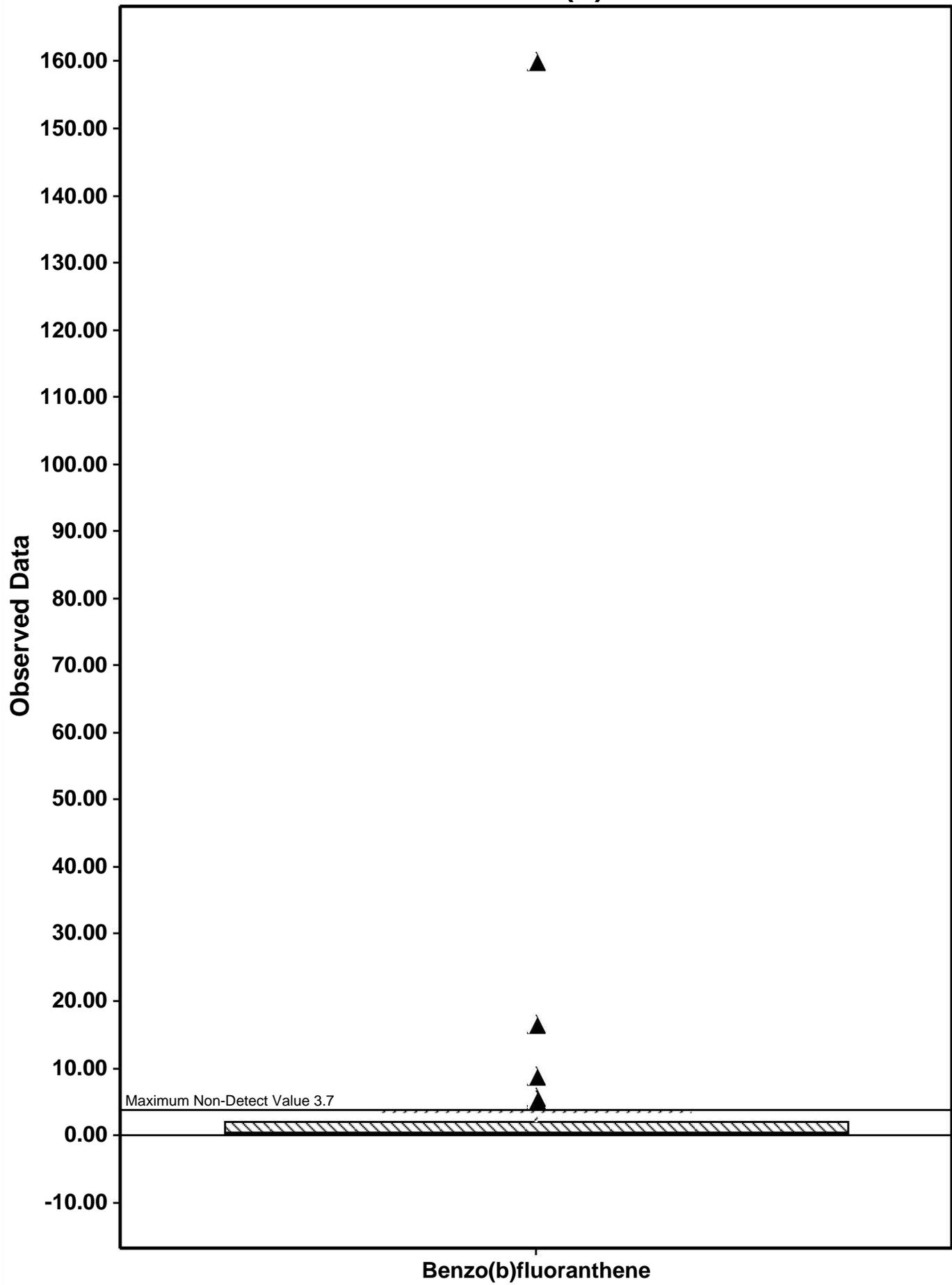


Benzo(a)anthracene

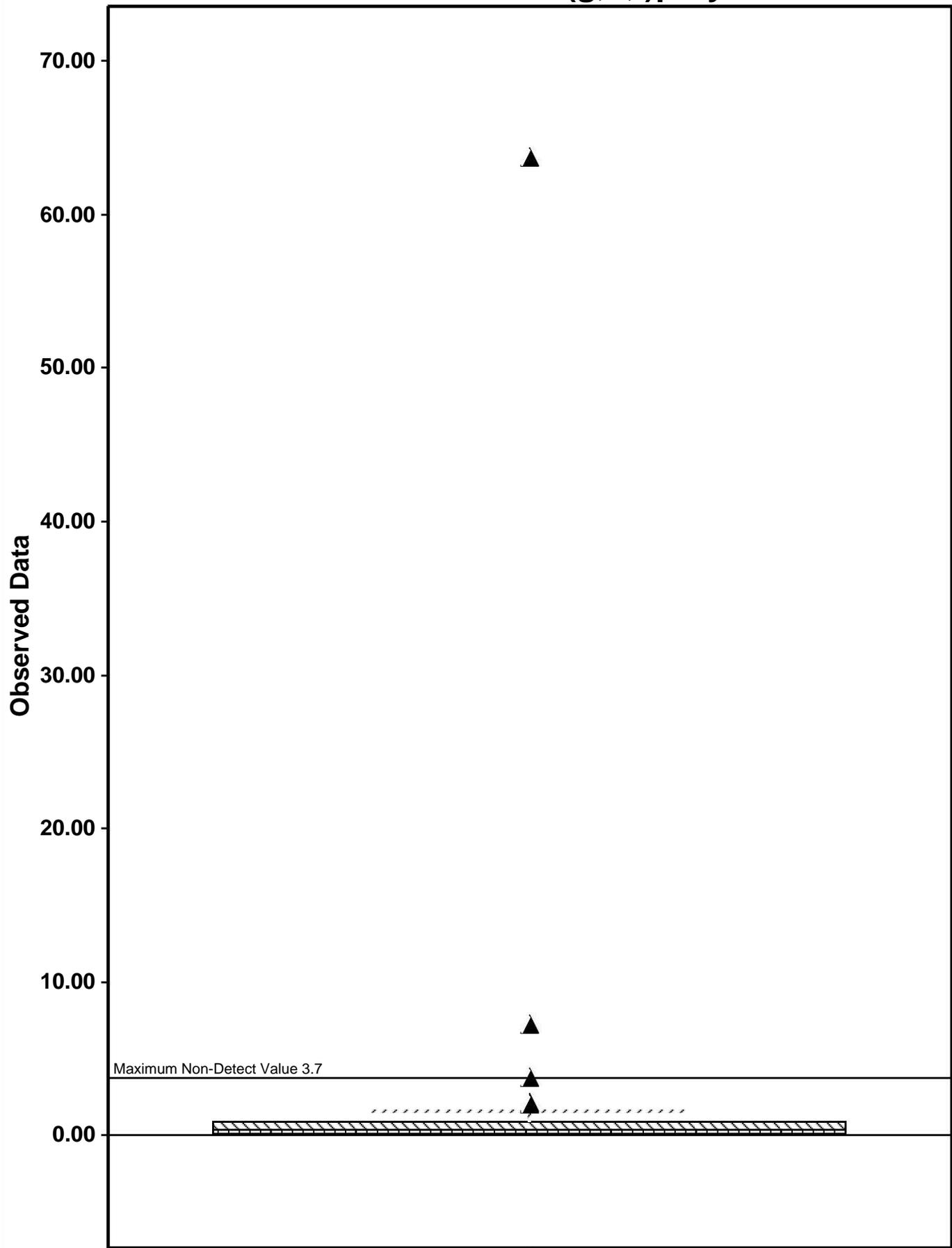
Box Plot for Benzo(a)pyrene



Box Plot for Benzo(b)fluoranthene

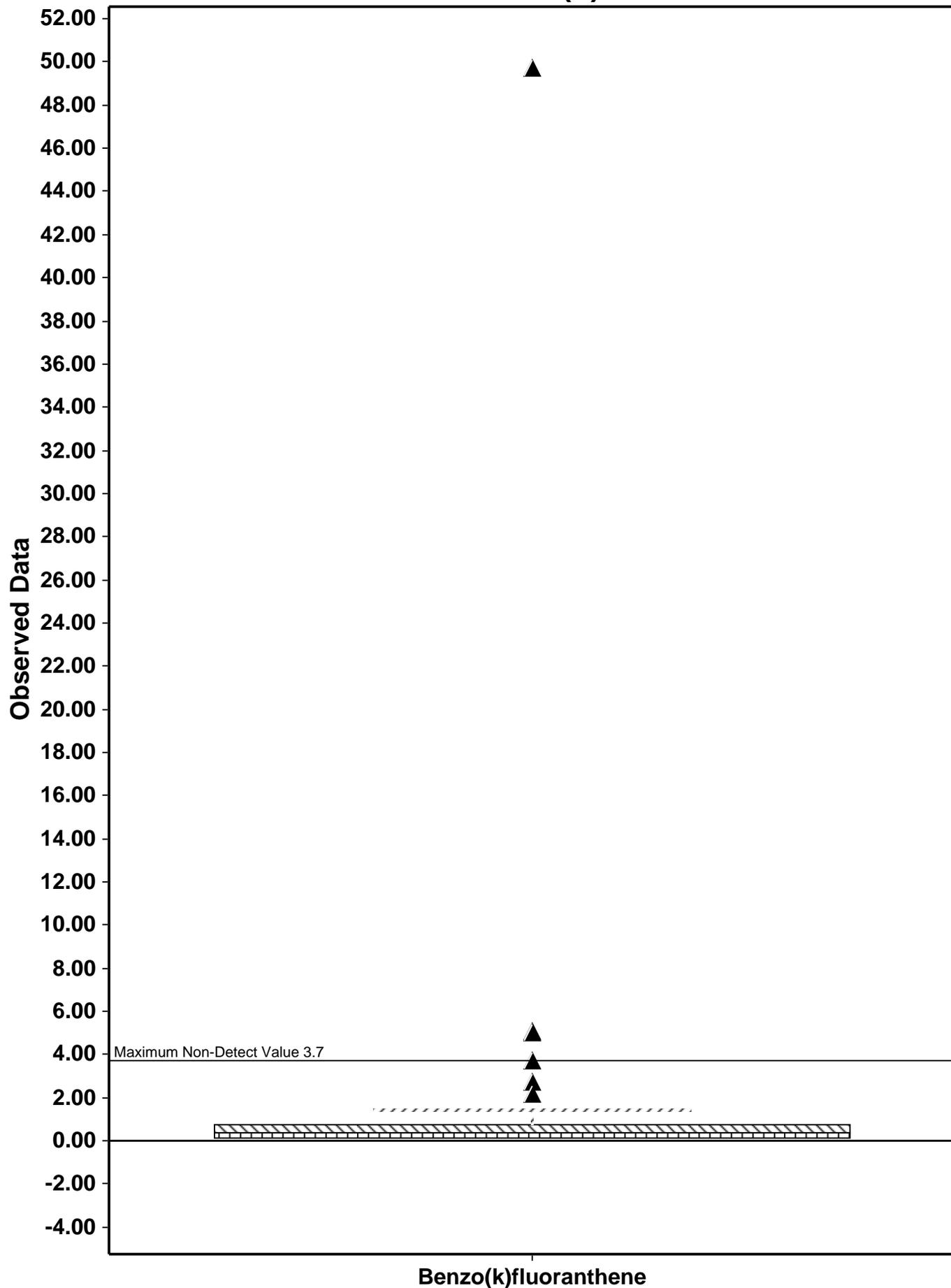


Box Plot for Benzo(g,h,i)perylene

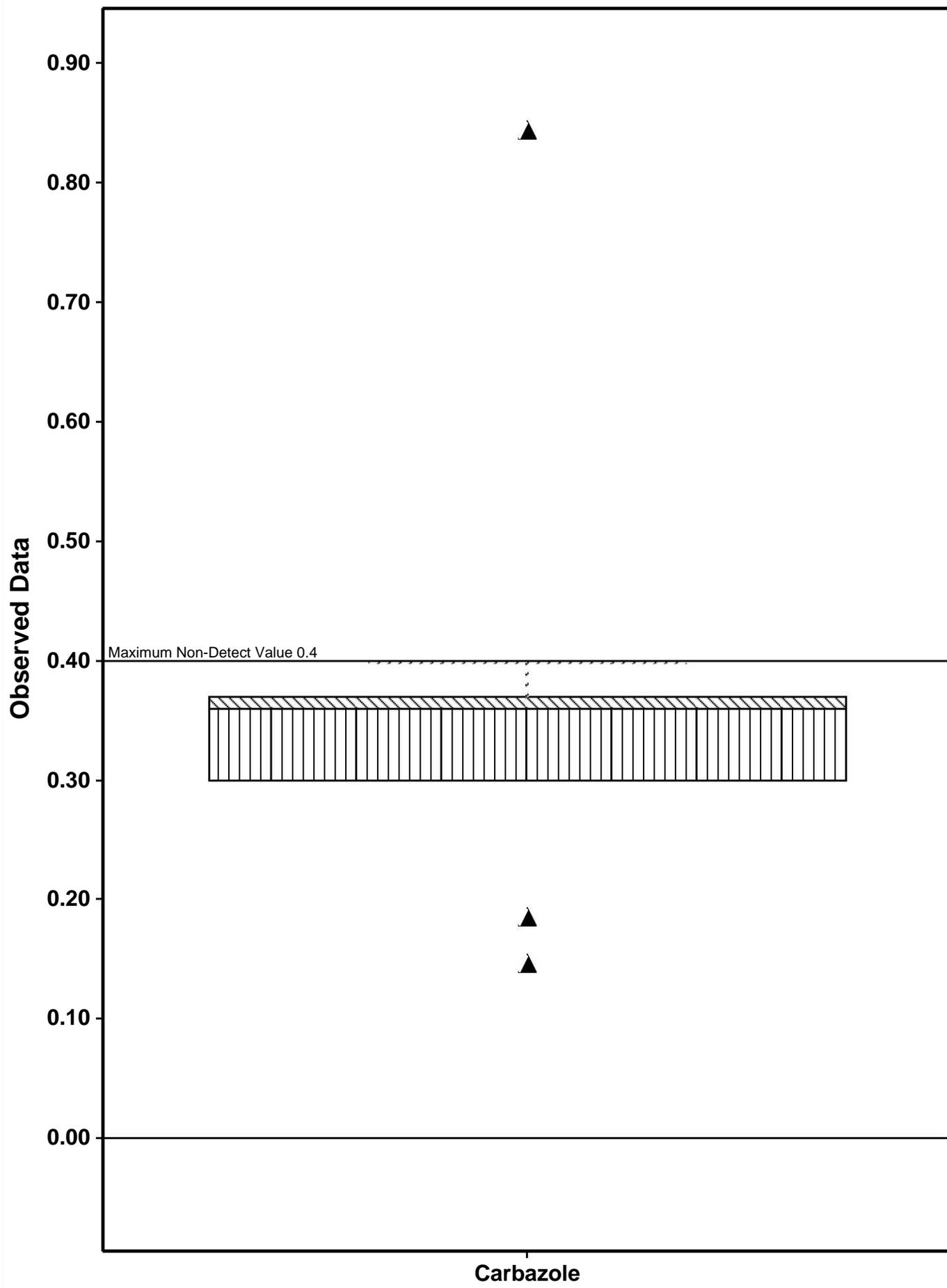


Benzo(g,h,i)perylene

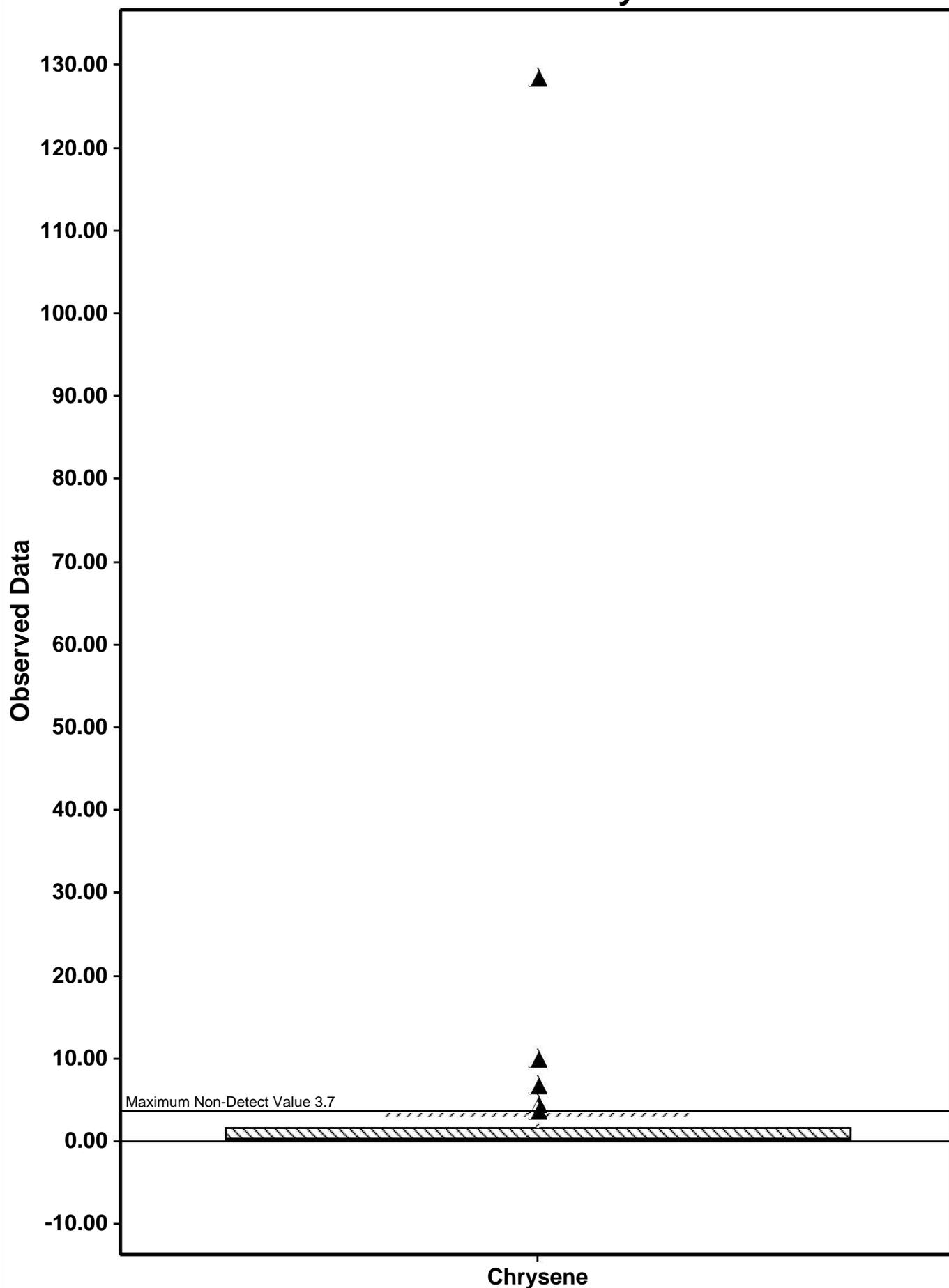
Box Plot for Benzo(k)fluoranthene



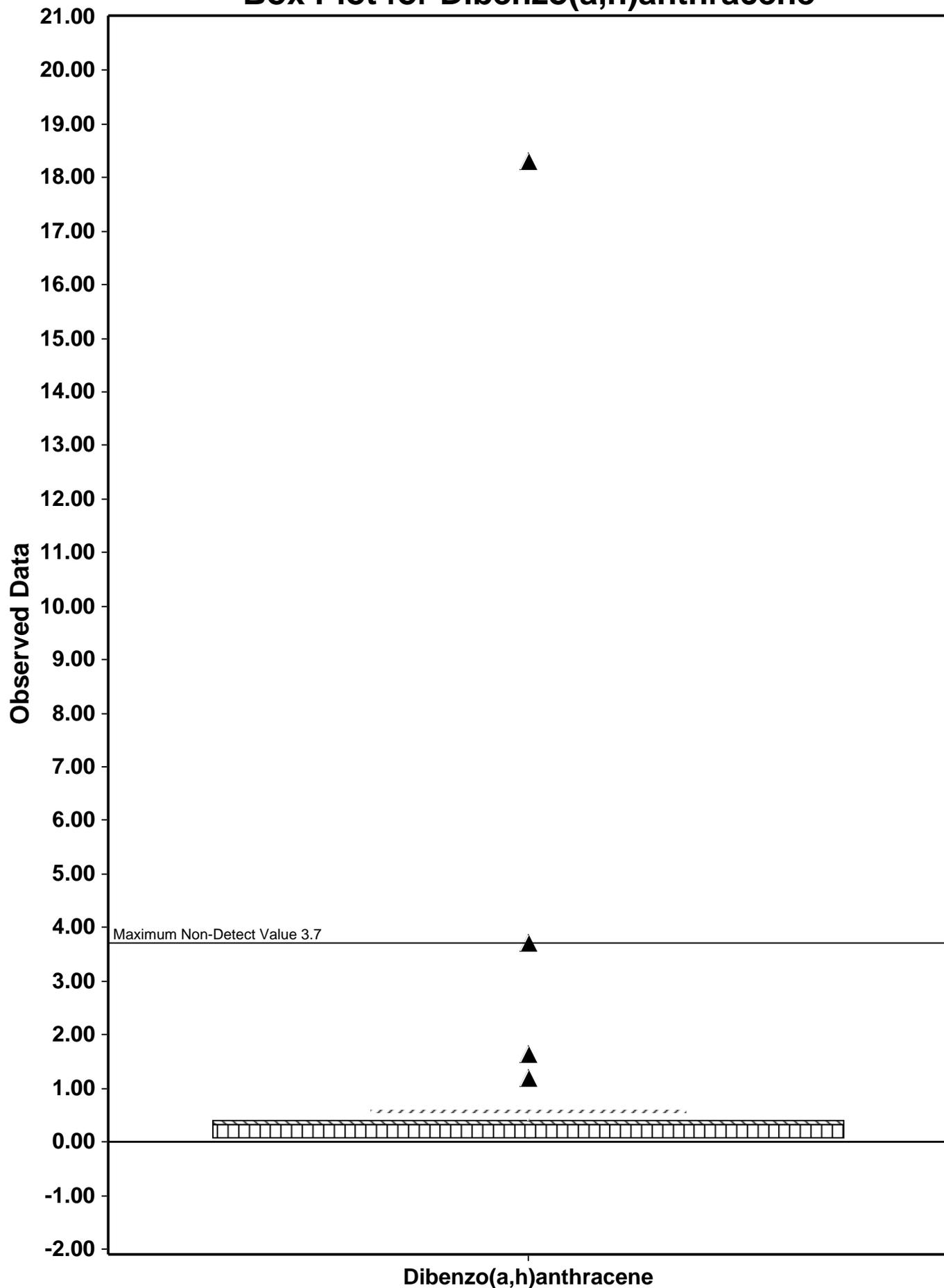
Box Plot for Carbazole



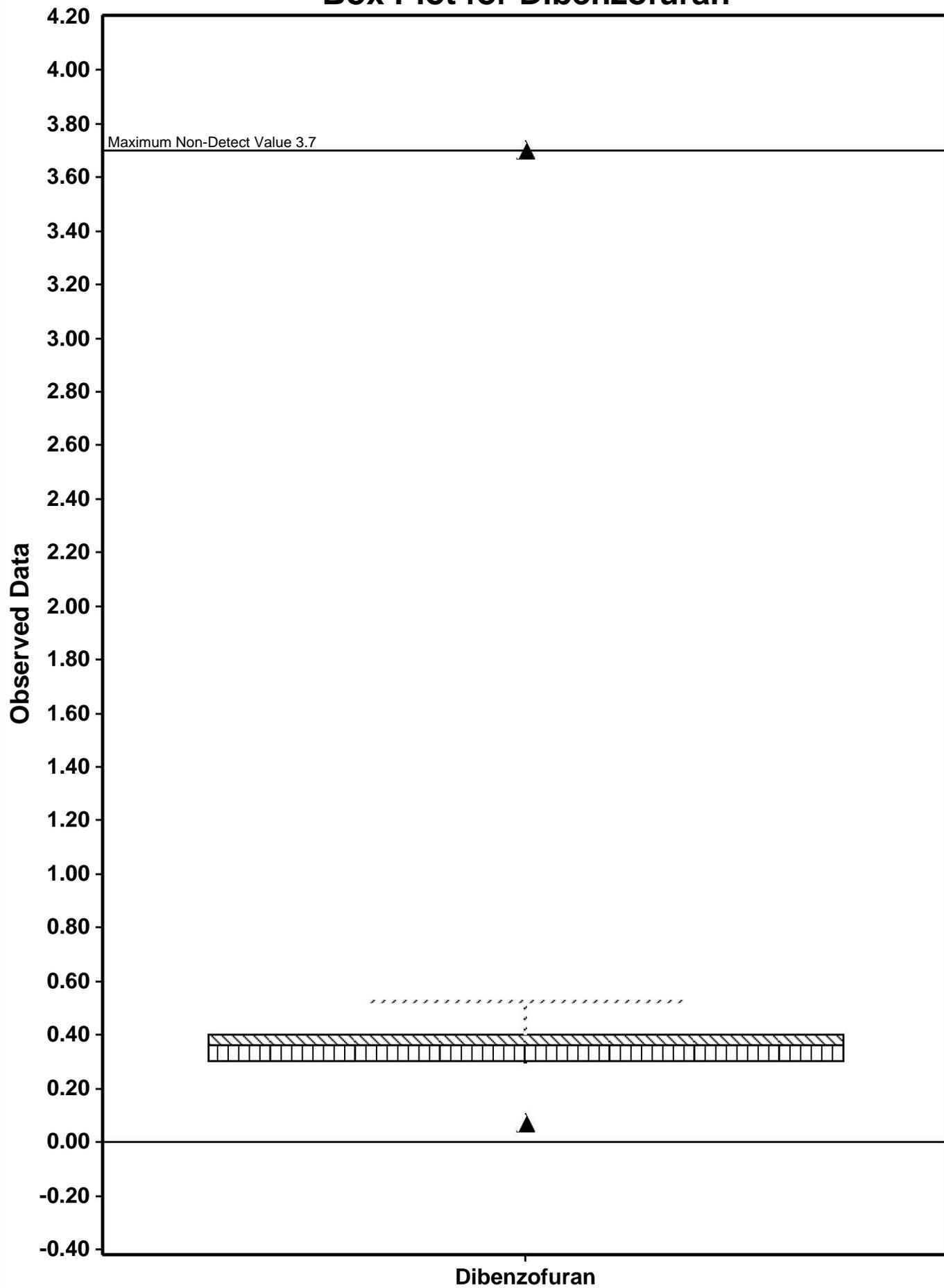
Box Plot for Chrysene



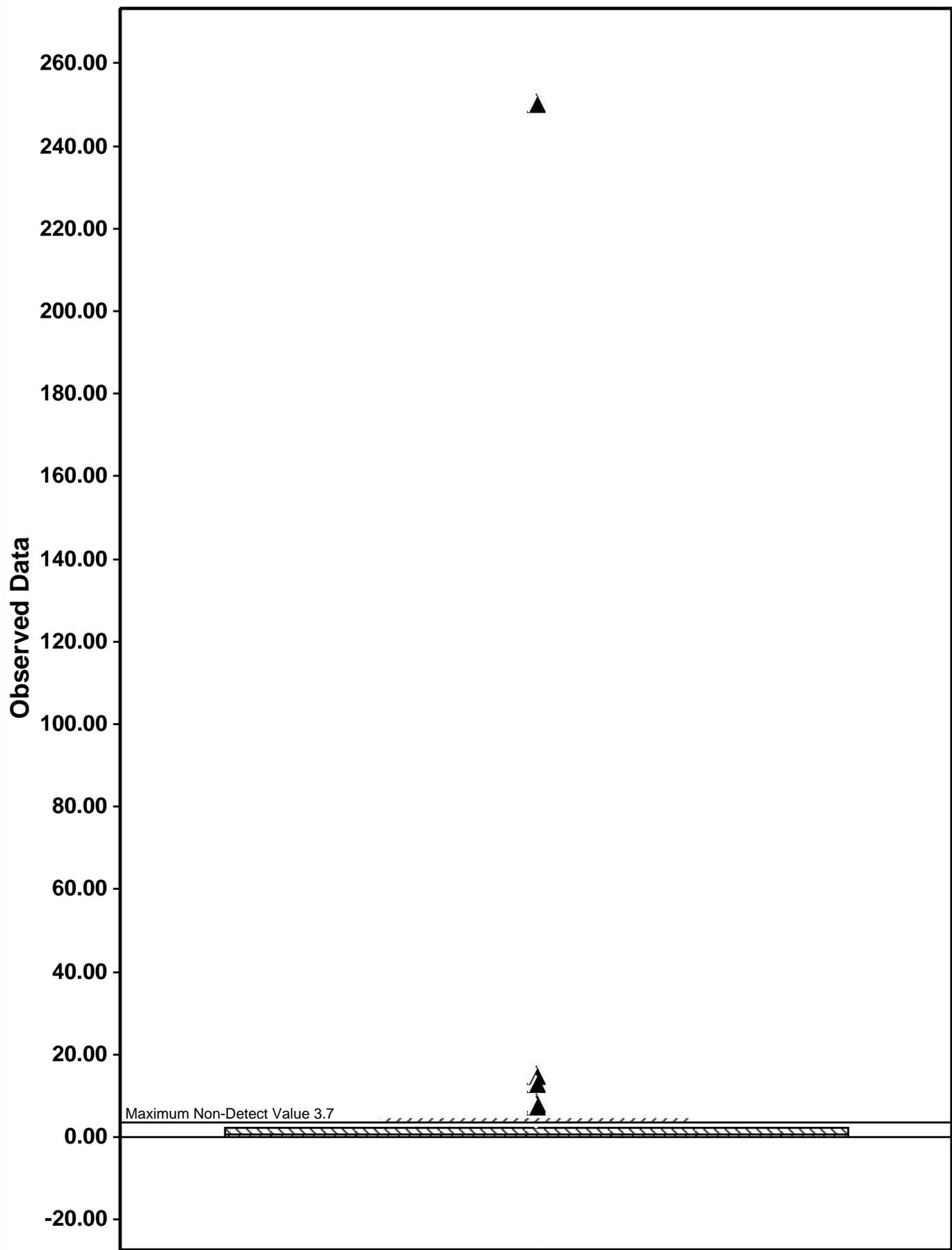
Box Plot for Dibenzo(a,h)anthracene



Box Plot for Dibenzofuran

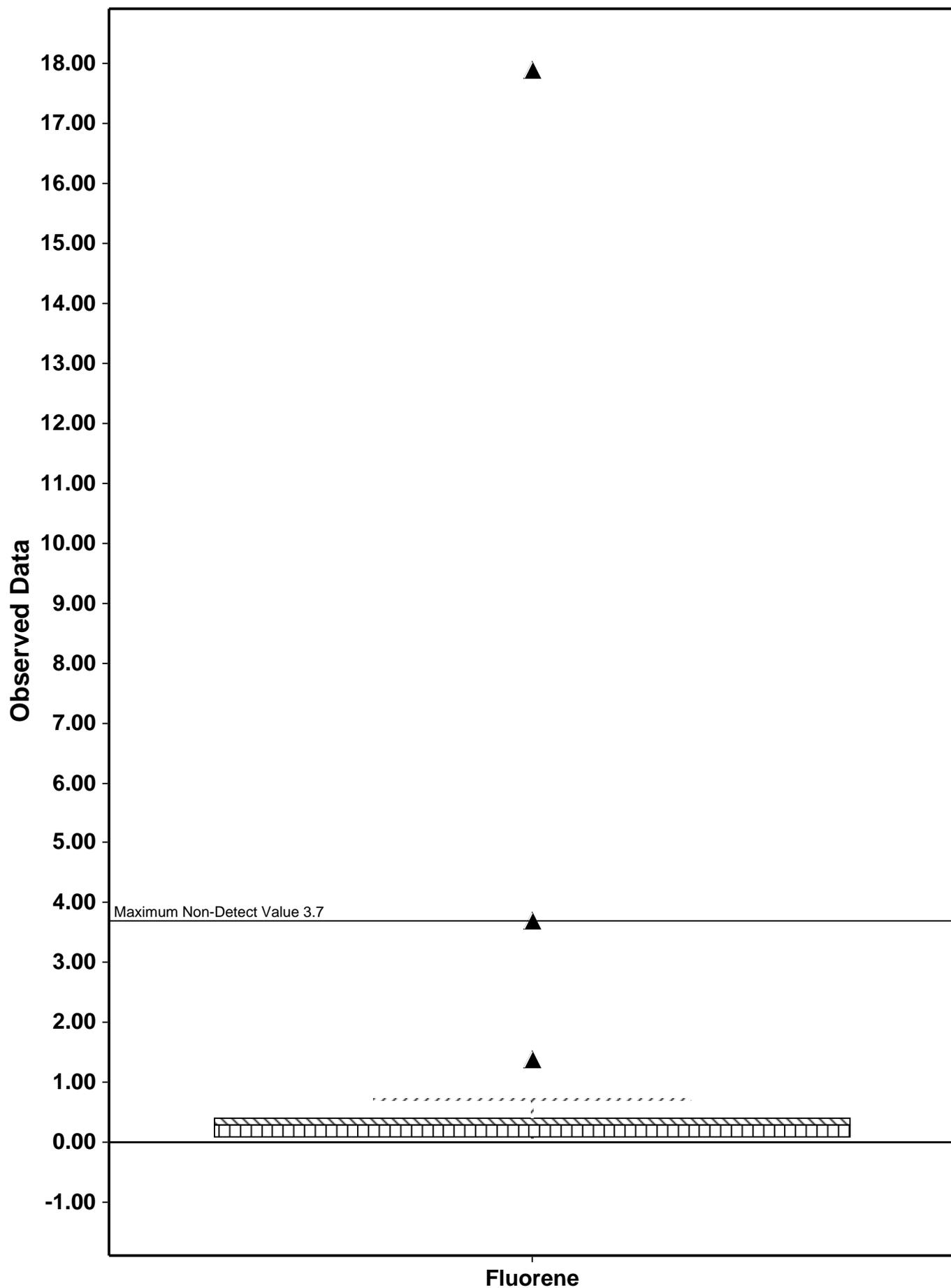


Box Plot for Fluoranthene

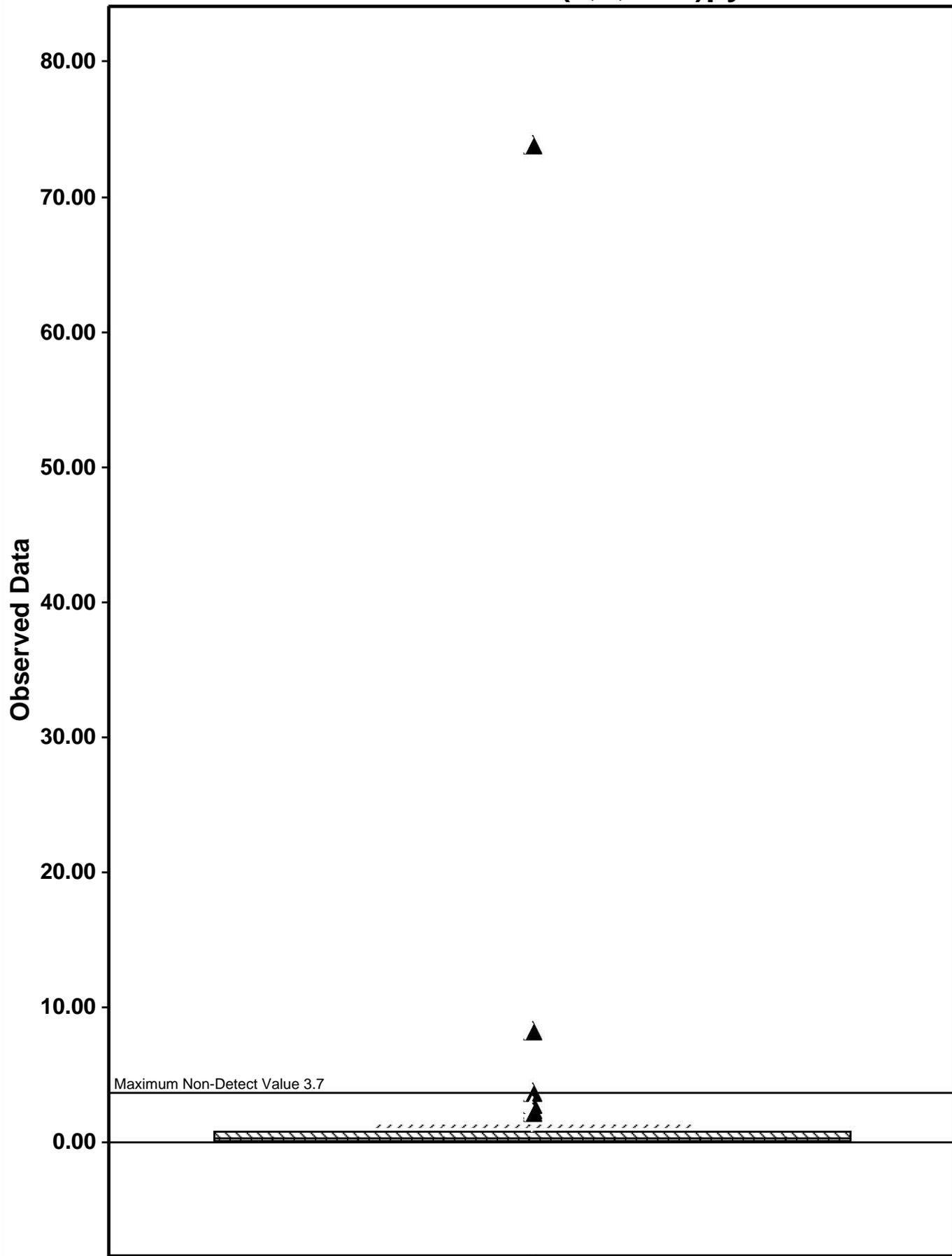


Fluoranthene

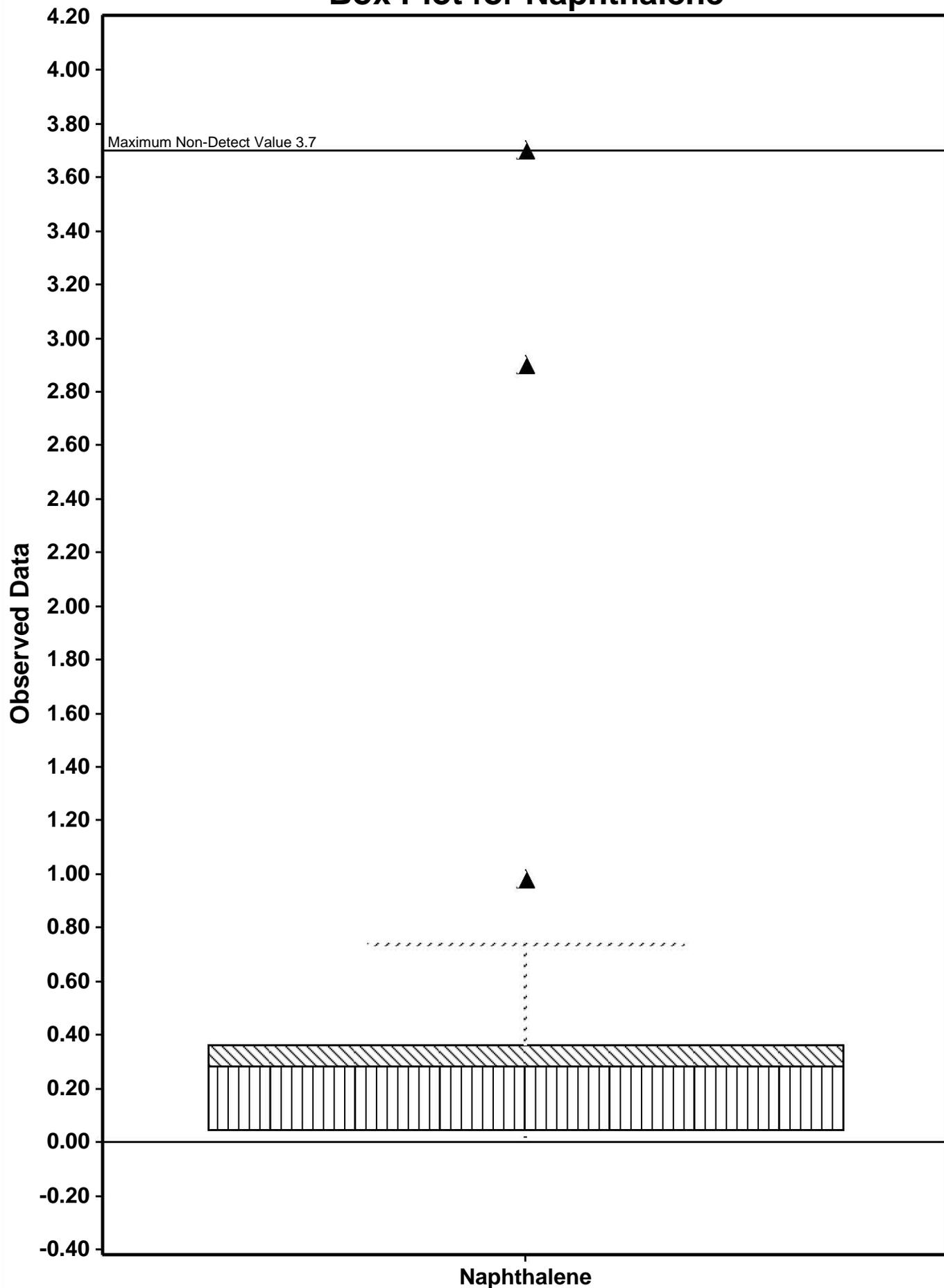
Box Plot for Fluorene



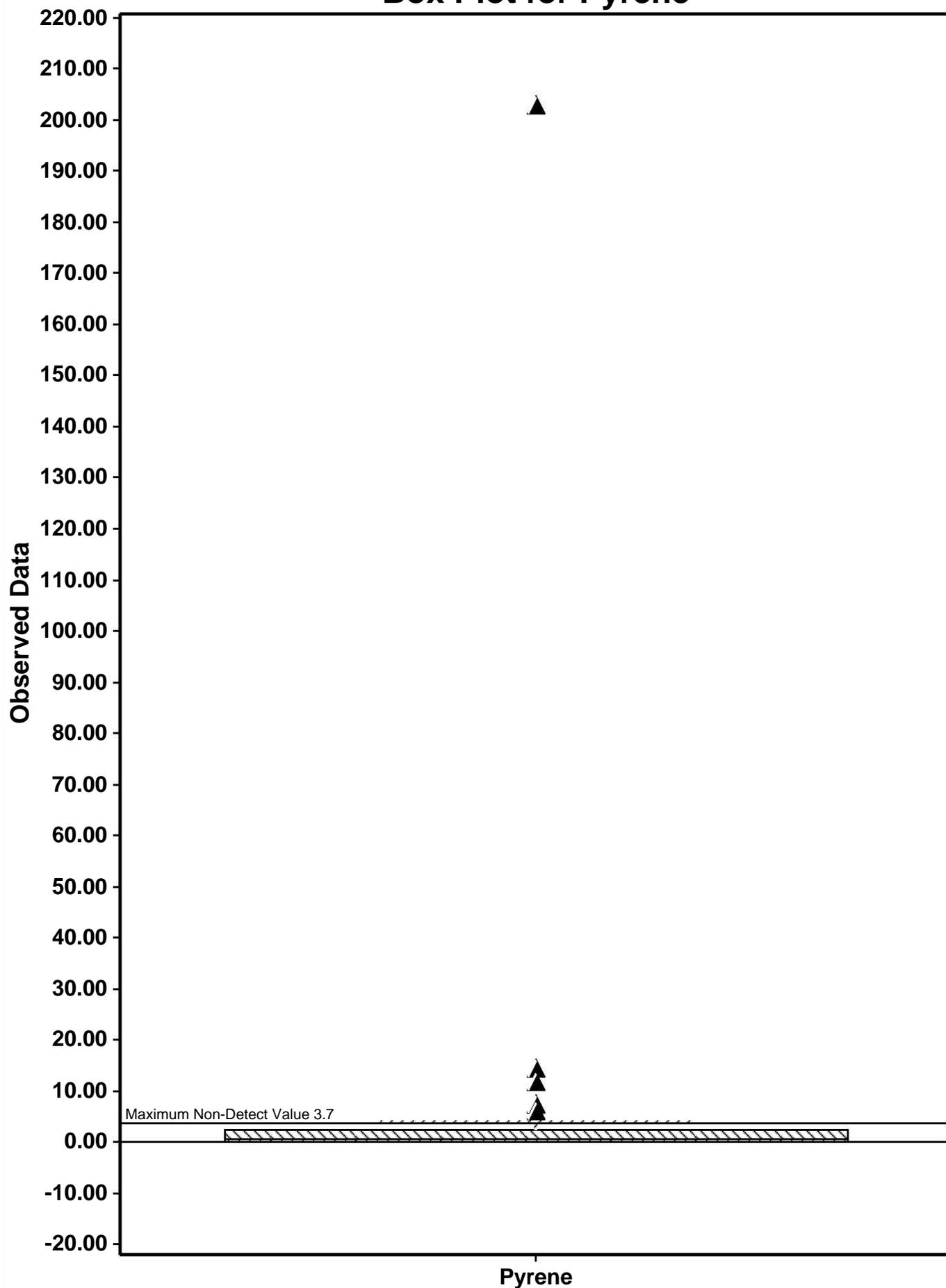
Box Plot for Indeno(1,2,3-cd)pyrene



Box Plot for Naphthalene



Box Plot for Pyrene



Appendix B2

Appendix B2. Identification of Outliers for Background PAHs in Urban Developed Area Soil

Sample ID	Units	2-Methylnaphthalene	Qualifier	Acenaphthene	Qualifier	Acenaphthylene	Qualifier	Anthracene	Qualifier	Benzo(a)anthracene	Qualifier	Benzo(a)pyrene	Qualifier
Augusta, Augusta Tissue BK-SS-03 09/30/09 0-0.5'	mg/kg	0.3	U	0.3	U	0.163	J	0.181	J	0.367		0.345	
Augusta, Community Gardens BKSS-1 07/14/10 0-0.5'	mg/kg	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U
Augusta, Community Gardens BKSS-2 07/14/10 0-0.5'	mg/kg	0.07	U	0.07	U	0.17	U	0.07	U	0.36		0.43	
Bangor, Bldg 278 BKSS-3 04/28/10 0.5-1.0'	mg/kg	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.6	
Belfast, Stintson Canning BK-SS-101 02/11/11 0.25-0.5'	mg/kg	0.29	U	0.29	U	0.364		0.29	U	0.48		0.615	
Bath, Armory BK 03/15/10 0-0.5'	mg/kg	0.329	U	0.329	U	0.329	U	0.329	U	0.248	J	0.272	J
Biddeford, North Dam Background-1 10/23/07 0-0.5'	mg/kg	0.74	U	0.74	U	0.74	U	0.74	U	0.74	U	0.74	U
Gardiner, Usdamn Property SS-1 08/31/05 0-1'	mg/kg	0.71	U	0.609	J	0.38	J	1.49		3.59		2.93	
Kennebunk, 51 Main St BK-1 03/30/10 0-2'	mg/kg	0.282	U	0.282	U	0.392		0.308		1.54		1.6	
Lisbon, Worumbo Mill, BK-SS-03 04/14/09 0-2'	mg/kg	0.36	U	0.36	U	0.36	U	0.36	U	0.428		0.403	
Bath, MW Sewell Office BK-2 07/27/10 0-1'	mg/kg	0.603	U	0.603	U	0.603	U	0.603	U	0.603	U	0.511	J
Bath, MW Sewell Office BK-1 07/27/10 0-1'	mg/kg	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
Presque Isle, Chapman St BK-SS-01 05/21/08 0-0.5'	mg/kg	0.28	U	0.28	U	0.373		0.465		2.48		3.29	
Sanford, Aerofab BK-B-01 4/22/08 0-2'	mg/kg	0.3	U	0.3	U	0.3	U	0.3	U	0.228	J	0.192	J
South Portland, Jett Property SS-101 10/16/09 0-2'	mg/kg	0.274	U	0.274	U	0.274	U	0.274	U	0.64		0.57	
Windham, 13 Depot St BK-B-01 10/26/10 0-2'	mg/kg	0.9		0.1	U	1.6		0.9		4.6		6	
Caribou, Children's Discovery BK-SS-01 08/20/08 3-5'	mg/kg	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U
Windham, Heritage Metalcraft BK-SS-01 05/25/10 0-2'	mg/kg	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
24-26 Bridgeton Rd, Westbrook MW-1 12/15/08 0-4'	mg/kg	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U
HA-5-6-14	mg/kg	1.11	E	14.5	J	0.531	E	27.1		109.1		100.5	
HA-6-6-15	mg/kg	0.11		1.12	J	0.067		1.77		5.56		5.44	
HA-9-6-15	mg/kg	0.012	J	0.0093	J	0.221		0.089		0.48		0.331	
JF-10-6-16	mg/kg	0.026		0.05		0.366		0.295	J	0.935		1.01	
JF-1-6-9	mg/kg	0.03		0.06		0.699		0.518		1.86		2.22	
JF-2-6-9	mg/kg	0.016	J	0.024		0.045		0.059		0.285		0.251	
JF-6-6-13	mg/kg	0.172		0.207		4.74		2.18		8.7		10.7	
TS-2-6-14	mg/kg	0.014	J	0.086		0.128		0.329		1.67		2.09	
BGS-01	mg/kg			0.4	U	0.4	U	0.4	U	0.14	J	0.11	J
BGS-07	mg/kg			0.41	U	0.41	U	0.41	U	0.21	J	0.2	J
BGS-13	mg/kg			0.36	U	0.36	U	0.36	U	0.048	J	0.043	J
BGS-19	mg/kg			0.37	U	0.37	U	0.37	U	0.096	J	0.1	J
BGS-25	mg/kg			0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
MW-SB-NASB-BKD-01	mg/kg	0.002	U	0.002	U	0.001	U	0.005	J	0.003	J	0.004	J
MW-SB-NASB-BKD-04	mg/kg	0.002	U	0.002	U	0.001	U	0.002	J	0.002	J	0.004	U
MW-SB-NASB-BKD-19	mg/kg	0.003	U	0.002	U	0.002	U	0.002	U	0.002	U	0.004	U
MW-SB-NASB-BKD-30	mg/kg	0.002	U	0.002	U	0.001	U	0.001	U	0.018	J	0.02	J
MW-SB-NASB-BKD-39	mg/kg	0.002	UJ	0.002	UJ	0.001	U	0.001	U	0.002	U	0.004	U
Wash Sch_BK-1	mg/kg	0.324	U	0.324	U	0.324	U	0.324	U	0.324	U	0.324	U

IQR EVALUATION

Max	mg/kg	3.7		14.5		4.74		27.1		109.1		100.5	
25%	mg/kg	0.026		0.07		0.107		0.1		0.11		0.1305	
50%	mg/kg	0.274		0.286		0.355		0.329		0.3635		0.38	
75%	mg/kg	0.35		0.3675		0.398		0.45125		1.38875		1.4525	
90%	mg/kg	0.734		0.6483		0.7113		1.574		3.97		4.222	
95%	mg/kg	0.984		1.507		1.915		2.408		6.031		6.705	
	mg/kg												
IQR	mg/kg	0.324		0.2975		0.291		0.35125		1.27875		1.322	
Upper IQR	mg/kg	0.836		0.81375		0.8345		0.978125		3.306875		3.4355	
Lower IQR	mg/kg	-0.46		-0.37625		-0.3295		-0.426875		-1.808125		-1.8525	

Notes:

mg/kg - milligram per kilogram

U - undetected

J - estimated

E - exceeds calibration range

Yellow highlighted cells indicate outliers above the upper IQR

Orange highlighted cell indicate outliers below the lower IQR

IQR - interquartile range

Appendix B2. Identification of Outliers for Background PAHs in Urban Developed Area Soil

Sample ID	Units	Benzo(b)fluoranthene	Qualifier	Benzo(g,h,i)perylene	Qualifier	Benzo(k)fluoranthene	Qualifier	Carbazole	Qualifier	Chrysene	Qualifier	Dibenzo(a,h)anthracene	Qualifier
Augusta, Augusta Tissue BK-SS-03 09/30/09 0-0.5'	mg/kg	0.905		0.174	U	0.255	J	0.185	J	0.604		0.3	U
Augusta, Community Gardens BKSS-1 07/14/10 0-0.5'	mg/kg	0.07	U	0.07	U	0.07	U			0.07	U	0.07	U
Augusta, Community Gardens BKSS-2 07/14/10 0-0.5'	mg/kg	0.39		0.16		0.4				0.44		0.08	
Bangor, Bldg 278 BKSS-3 04/28/10 0.5-1.0'	mg/kg	0.4		0.9		0.4				0.2		0.4	
Belfast, Stintson Canning BK-SS-101 02/11/11 0.25-0.5'	mg/kg	0.771		0.452		0.239	J			0.614		0.29	U
Bath, Armory BK 03/15/10 0-0.5'	mg/kg	0.356		0.215	J	0.329	U			0.238	J	0.329	U
Biddeford, North Dam Background-1 10/23/07 0-0.5'	mg/kg	0.526	J	0.74	U	0.74	U			0.74	U	0.52	U
Gardiner, Usdamn Property SS-1 08/31/05 0-1'	mg/kg	2.58		1.61		2.17		0.844		3.37		0.418	J
Kennebunk, 51 Main St BK-1 03/30/10 0-2'	mg/kg	1.84		0.845		0.676				1.59		0.202	
Lisbon, Worumbo Mill, BK-SS-03 04/14/09 0-2'	mg/kg	0.434		0.36	U	0.36	U	0.36	U	0.448		0.36	U
Bath, MW Sewell Office BK-2 07/27/10 0-1'	mg/kg	0.803		0.418	J	0.603	U			0.37	J	0.603	U
Bath, MW Sewell Office BK-1 07/27/10 0-1'	mg/kg	0.305	J	0.35	U	0.35	U			0.35	U	0.35	U
Presque Isle, Chapman St BK-SS-01 05/21/08 0-0.5'	mg/kg	5.07		1.16		1.47		0.146	J	2.93		0.279	J
Sanford, Aerofab BK-B-01 4/22/08 0-2'	mg/kg	0.521		0.188	J	0.186	J	0.3	U	0.487		0.3	U
South Portland, Jett Property SS-101 10/16/09 0-2'	mg/kg	1.31		0.87		0.49				0.91		0.147	J
Windham, 13 Depot St BK-B-01 10/26/10 0-2'	mg/kg	5.6		2		5.1				4.5		1.2	
Caribou, Children's Discovery BK-SS-01 08/20/08 3-5'	mg/kg	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U	0.36	U
Windham, Heritage Metalcraft BK-SS-01 05/25/10 0-2'	mg/kg	0.2		0.1	U	0.1	U			0.1		0.1	U
24-26 Bridgeton Rd, Westbrook MW-1 12/15/08 0-4'	mg/kg	3.7	U	3.7	U	3.7	U			3.7	U	3.7	U
HA-5-6-14	mg/kg	159.8		63.7		49.7				128.5		18.3	
HA-6-6-15	mg/kg	8.68		2.07		2.75				6.74		0.381	E
HA-9-6-15	mg/kg	0.552		0.123		0.155				0.338		0.035	
JF-10-6-16	mg/kg	2.01		0.231	J	0.687				1.23		0.082	
JF-1-6-9	mg/kg	3.23		0.559		1.12				1.91		0.192	
JF-2-6-9	mg/kg	0.472		0.079		0.166				0.325		0.025	
JF-6-6-13	mg/kg	16.4		7.15		4.99				10		1.64	
TS-2-6-14	mg/kg	3.72		0.508		1.15				2.2		0.163	
BGS-01	mg/kg	0.14	J	0.066	J	0.11	J	0.36	U			0.4	U
BGS-07	mg/kg	0.25	J	0.072	J	0.15	J			0.24	J	0.41	U
BGS-13	mg/kg	0.36	U	0.36	U	0.36	U	0.36	U	0.061	J	0.36	U
BGS-19	mg/kg	0.24	J	0.039	J	0.37	U	0.37	U	0.15	J	0.37	U
BGS-25	mg/kg	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
MW-SB-NASB-BKD-01	mg/kg	0.002	U	0.004	J	0.003	U			0.004	J	0.002	U
MW-SB-NASB-BKD-04	mg/kg	0.003	U	0.002	J	0.003	U			0.002	J	0.002	U
MW-SB-NASB-BKD-19	mg/kg	0.003	U	0.002	U	0.004	U			0.002	U	0.002	U
MW-SB-NASB-BKD-30	mg/kg	0.034		0.006	J	0.006	J			0.026		0.005	J
MW-SB-NASB-BKD-39	mg/kg	0.002	U	0.002	U	0.003	U			0.002	U	0.002	UJ
Wash Sch_BK-1	mg/kg	0.324	U	0.324	U	0.324	U			0.324	U	0.324	U

IQR EVALUATION

Max	mg/kg	159.8		63.7		49.7		0.844		128.5		18.3	
25%	mg/kg	0.26375		0.08425		0.15775		0.315		0.2		0.0865	
50%	mg/kg	0.453		0.355		0.36		0.36		0.4		0.312	
75%	mg/kg	1.9675		0.81875		0.72675		0.3675		1.59		0.4	
90%	mg/kg	5.229		2.021		3.035		0.4444		4.02		0.7821	
95%	mg/kg	9.838		4.2175		5.0065		0.6442		7.392		1.949	
IQR	mg/kg	1.70375		0.7345		0.569		0.0525		1.39		0.3135	
Upper IQR	mg/kg	4.523125		1.9205		1.58025		0.44625		3.675		0.87025	
Lower IQR	mg/kg	-2.291875		-1.0175		-0.69575		0.23625		-1.885		-0.38375	

Notes:

mg/kg - milligram per kilogram

U - undetected

J - estimated

E - exceeds calibration range

Yellow highlighted cells indicate outliers above the upper IQR

Orange highlighted cell indicate outliers below the lower IQR

IQR - interquartile range

Appendix B2. Identification of Outliers for Background PAHs in Urban Developed Area Soil

Sample ID	Units	Dibenzofuran	Qualifier	Fluoranthene	Qualifier	Fluorene	Qualifier	Indeno(1,2,3-cd)pyrene	Qualifier	Naphthalene	Qualifier	Phenanthrene	Qualifier	Pyrene	Qualifier
Augusta, Augusta Tissue BK-SS-03 09/30/09 0-0.5'	mg/kg	0.3	U	0.998		0.3	U	0.217	J	0.165	J	0.823		0.732	
Augusta, Community Gardens BKSS-1 07/14/10 0-0.5'	mg/kg	0.07	U	0.07		0.07	U	0.07	U	0.07	U	0.07	U	0.07	
Augusta, Community Gardens BKSS-2 07/14/10 0-0.5'	mg/kg	0.07	U	0.68		0.07	U	0.16	U	0.07	U	0.29		0.07	U
Bangor, Bldg 278 BKSS-3 04/28/10 0.5-1.0'	mg/kg			0.2		0.1	U	0.8		0.1	U	0.1	U	0.1	
Belfast, Stintson Canning BK-SS-101 02/11/11 0.25-0.5'	mg/kg			0.549		0.29	U	0.517		0.29	U	0.19	J	0.694	
Bath, Armory BK 03/15/10 0-0.5'	mg/kg			0.417		0.329	U	0.216	J	0.329	U	0.193	J	0.458	
Biddeford, North Dam Background-1 10/23/07 0-0.5'	mg/kg			0.725	J	0.74	U	0.74	U	0.74	U	0.619	J	0.569	J
Gardiner, Usdamn Property SS-1 08/31/05 0-1'	mg/kg	0.531	J	7.27		0.676	J	2.16		0.537	J	6.45		6.12	
Kennebunk, 51 Main St BK-1 03/30/10 0-2'	mg/kg			2.26		0.282	U	0.909		0.282	U	1.45		2.42	
Lisbon, Worumbo Mill, BK-SS-03 04/14/09 0-2'	mg/kg	0.36	U	0.633		0.36	U	0.36	U	0.36	U	0.412		0.56	
Bath, MW Sewell Office BK-2 07/27/10 0-1'	mg/kg			0.792		0.603	U	0.75		0.603	U	0.456	J	0.73	
Bath, MW Sewell Office BK-1 07/27/10 0-1'	mg/kg			0.35	U	0.35	U	0.342	J	0.35	U	0.35	U	0.35	U
Presque Isle, Chapman St BK-SS-01 05/21/08 0-0.5'	mg/kg	0.28	U	4.49		0.28	U	1.33		0.28	U	1.06		4.24	
Sanford, Aerofab BK-B-01 4/22/08 0-2'	mg/kg	0.3	U	0.926		0.3	U	0.211	J	0.3	U	0.24	J	0.758	
South Portland, Jett Property SS-101 10/16/09 0-2'	mg/kg			1.45		0.274	U	0.85		0.274	U	0.62		1.39	
Windham, 13 Depot St BK-B-01 10/26/10 0-2'	mg/kg			8		0.4		2.4		2.9		3.2		7.3	
Caribou, Children's Discovery BK-SS-01 08/20/08 3-5'	mg/kg	0.36	U	0.11	J	0.36	U	0.36	U	0.36	U	0.08	J	0.1	J
Windham, Heritage Metalcraft BK-SS-01 05/25/10 0-2'	mg/kg			0.2		0.1	U	0.1	U	0.1	U	0.1	U	0.2	
24-26 Bridgeton Rd, Westbrook MW-1 12/15/08 0-4'	mg/kg	3.7	U	3.7	U	3.7	U	3.7	U	3.7	U			3.7	U
HA-5-6-14	mg/kg			250.2		17.9		73.8		0.982	E	177.8		202.9	
HA-6-6-15	mg/kg			14.9		1.38		2.8		0.26		12.1		11.7	
HA-9-6-15	mg/kg			0.453		0.024		0.158		0.014	J	0.193		0.553	
JF-10-6-16	mg/kg			2.21		0.097		0.313		0.033		1.22		1.9	
JF-1-6-9	mg/kg			2.87		0.14		0.715		0.046		1.19		3.05	
JF-2-6-9	mg/kg			0.519		0.022		0.099		0.026		0.389		0.475	
JF-6-6-13	mg/kg			12.8		0.542		8.18		0.303		4.64		14.4	
TS-2-6-14	mg/kg			4.49		0.113		0.696		0.032		2.17		3.61	
BGS-01	mg/kg	0.4	U	0.18	J	0.4	U	0.079	J	0.043	J	0.21	J	0.18	J
BGS-07	mg/kg	0.41	U	0.34	J	0.41	U	0.1	J	0.41	U	0.19	J	0.32	J
BGS-13	mg/kg	0.36	U	0.11	J	0.36	U	0.36	U	0.36	U	0.067	J	0.083	J
BGS-19	mg/kg	0.37	U	0.2	J	0.37	U	0.047	J	0.37	U	0.091	J	0.18	J
BGS-25	mg/kg	0.4	U	0.043	J	0.4	U	0.4	U	0.4	U	0.4	U	0.047	J
MW-SB-NASB-BKD-01	mg/kg			0.009	J	0.003	U	0.005	J	0.003	U	0.005	J	0.007	J
MW-SB-NASB-BKD-04	mg/kg			0.004	J	0.003	U	0.002	J	0.003	U	0.002	J	0.004	J
MW-SB-NASB-BKD-19	mg/kg			0.004	J	0.004	U	0.002	U	0.003	U	0.003	J	0.003	J
MW-SB-NASB-BKD-30	mg/kg			0.045	U	0.004	U	0.03	U	0.003	U	0.025	U	0.052	U
MW-SB-NASB-BKD-39	mg/kg			0.002	J	0.003	UJ	0.002	U	0.003	U	0.002	U	0.002	U
Wash Sch_BK-1	mg/kg			0.324	U	0.324	U	0.324	U	0.324	U	0.324	U	0.324	U

IQR EVALUATION

Max	mg/kg	3.7		250.2		17.9		73.8		3.7		177.8		202.9	
25%	mg/kg	0.3		0.185		0.09775		0.1		0.04375		0.1		0.1	
50%	mg/kg	0.36		0.534		0.3		0.351		0.281		0.324		0.514	
75%	mg/kg	0.4		2.2475		0.4		0.7875		0.36		1.06		2.29	
90%	mg/kg	0.4947		7.489		0.6952		2.52		0.6441		3.776		6.474	
95%	mg/kg	1.64015		13.115		1.728		4.372		1.2697		7.58		12.105	
IQR	mg/kg	0.1		2.0625		0.30225		0.6875		0.31625		0.96		2.19	
Upper IQR	mg/kg	0.55		5.34125		0.853375		1.81875		0.834375		2.5		5.575	
Lower IQR	mg/kg	0.15		-2.90875		-0.355625		-0.93125		-0.430625		-1.34		-3.185	

Notes:

mg/kg - milligram per kilogram

U - undetected

J - estimated

E - exceeds calibration range

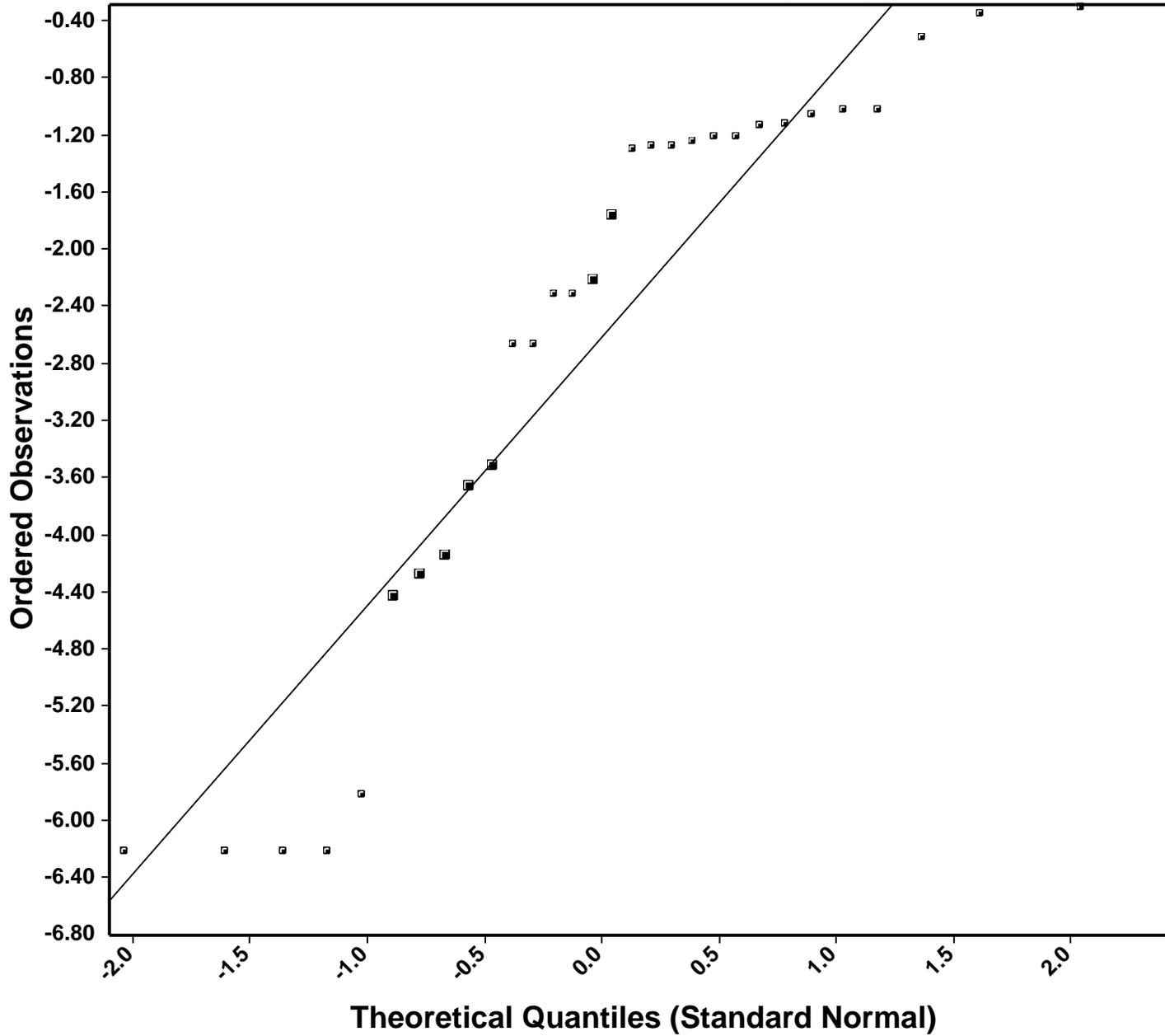
Yellow highlighted cells indicate outliers above the upper IQR

Orange highlighted cell indicate outliers below the lower IQR

IQR - interquartile range

Appendix B3

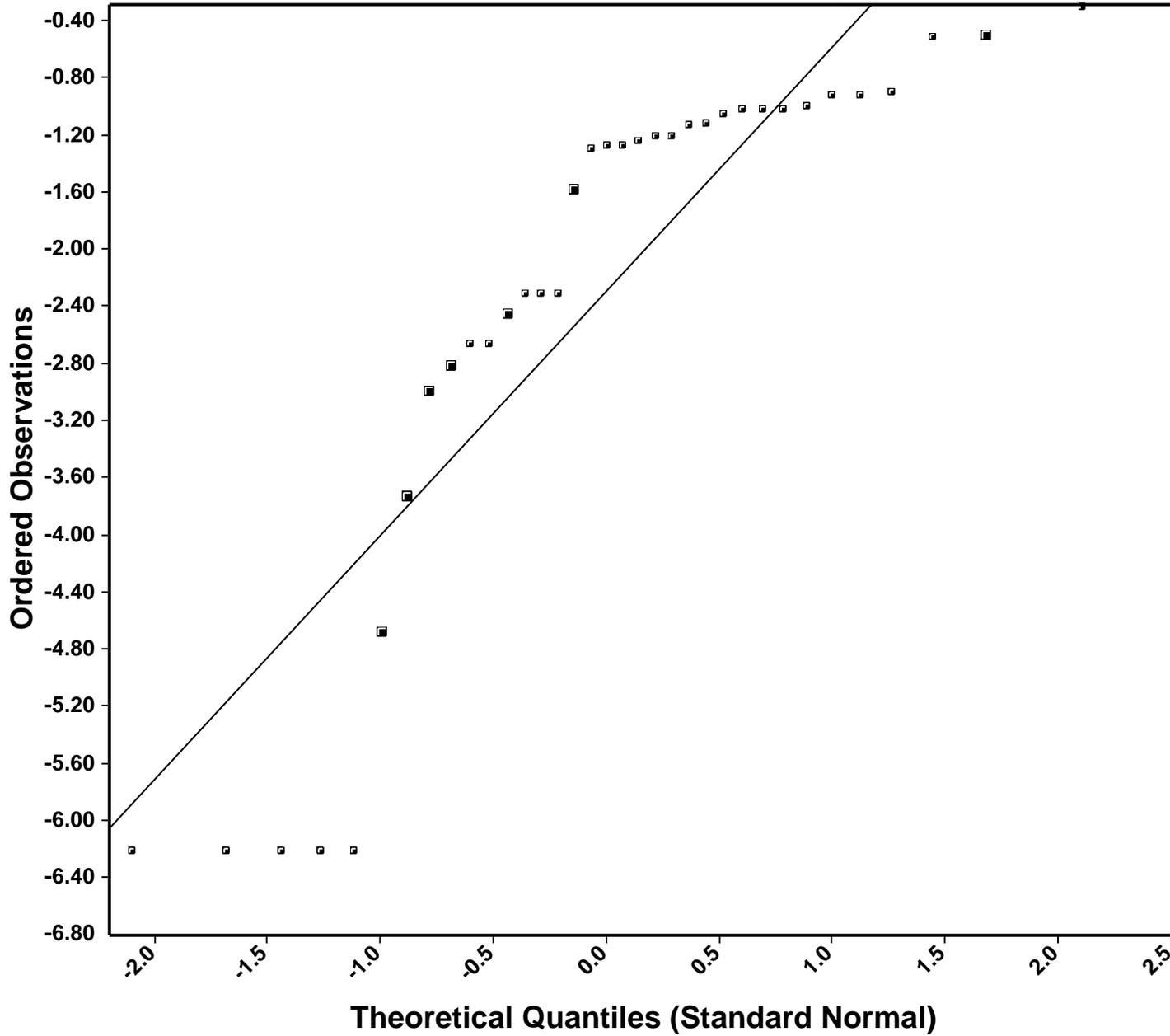
Q-Q Plot with NDs for 2-Methylnaphthalene



2-Methylnaphthalene
Total Number of Data = 30
Number of Non-Detects = 23
Number of Detects = 7
Mean = -2.6167
Sd = 1.9610
Slope = 1.8786
Intercept = -2.6167
Correlation, R = 0.9319

■ 2-Methylnaphthalene

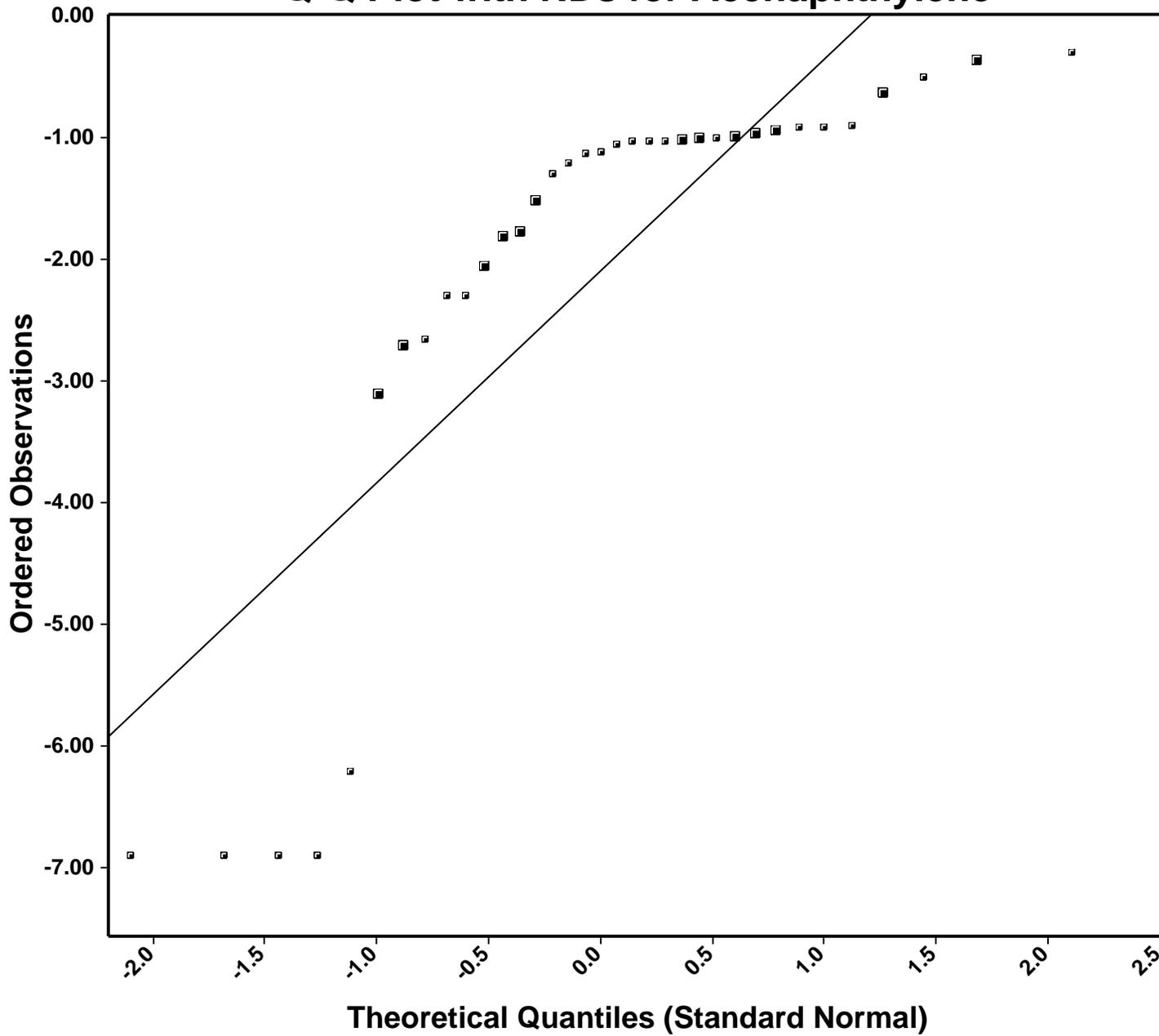
Q-Q Plot with NDs for Acenaphthene



Acenaphthene

Total Number of Data = 35
Number of Non-Detects = 28
Number of Detects = 7
Mean = -2.2971
Sd = 1.8769
Slope = 1.7109
Intercept = -2.2971
Correlation, R = 0.8894

Q-Q Plot with NDs for Acenaphthylene



Acenaphthylene

Total Number of Data = 35

Number of Non-Detects = 22

Number of Detects = 13

Mean = -2.0954

Sd = 2.0463

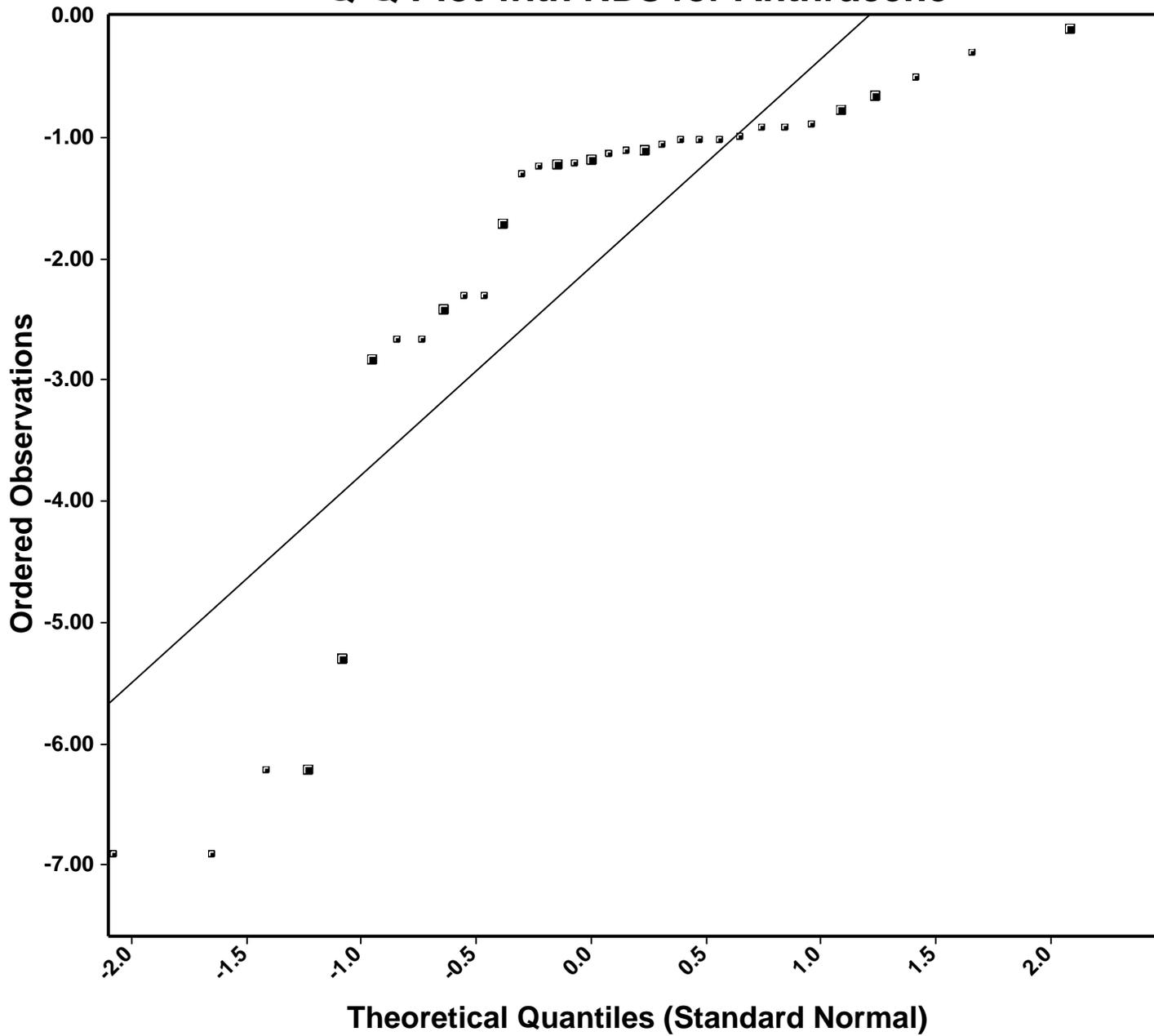
Slope = 1.7397

Intercept = -2.0954

Correlation, R = 0.8295

■ Acenaphthylene

Q-Q Plot with NDs for Anthracene

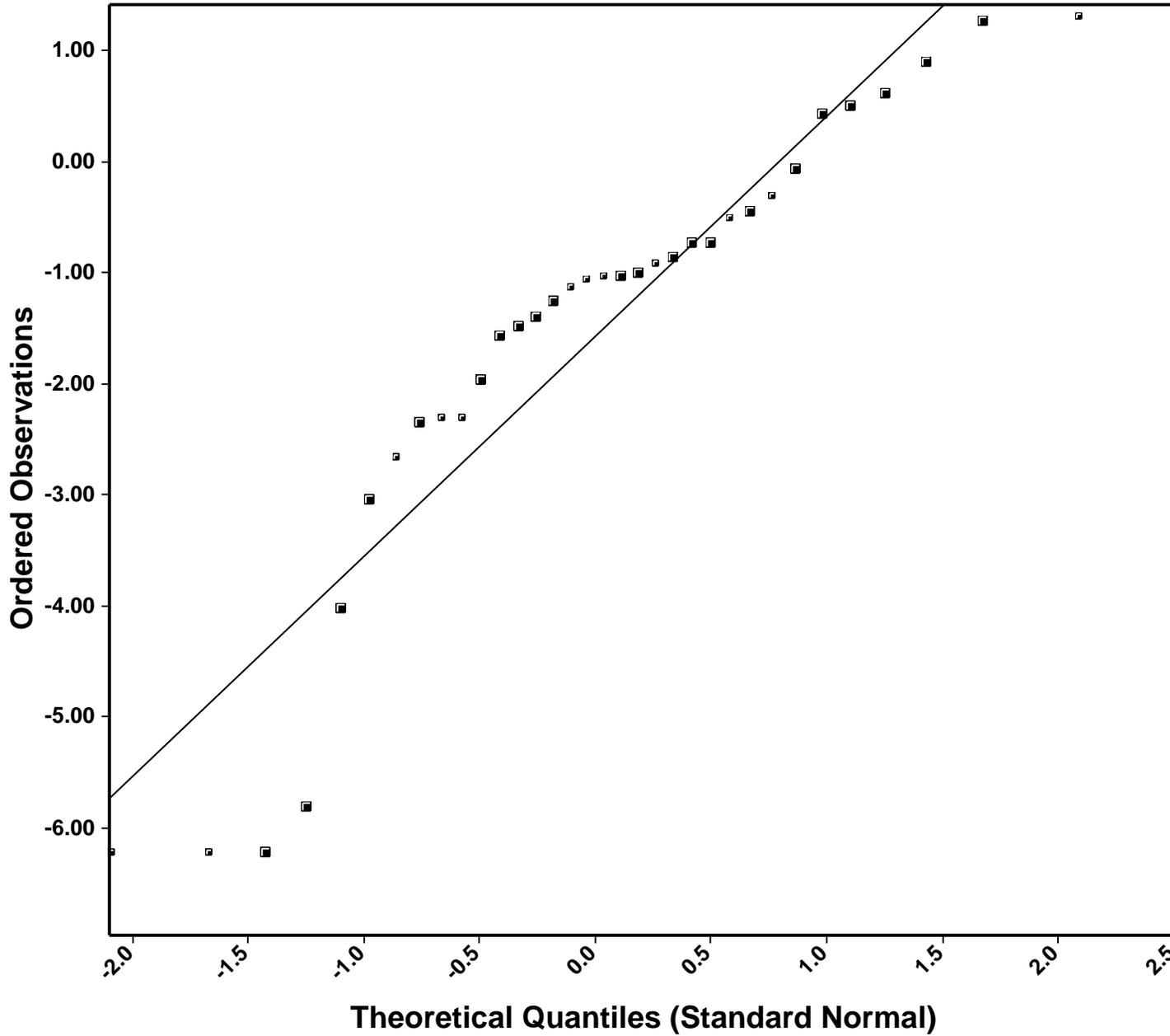


Anthracene

Total Number of Data = 33
Number of Non-Detects = 22
Number of Detects = 11
Mean = -2.0630
Sd = 1.9540
Slope = 1.7155
Intercept = -2.0630
Correlation, R = 0.8557

■ Anthracene

Q-Q Plot with NDs for Benzo(a)anthracene

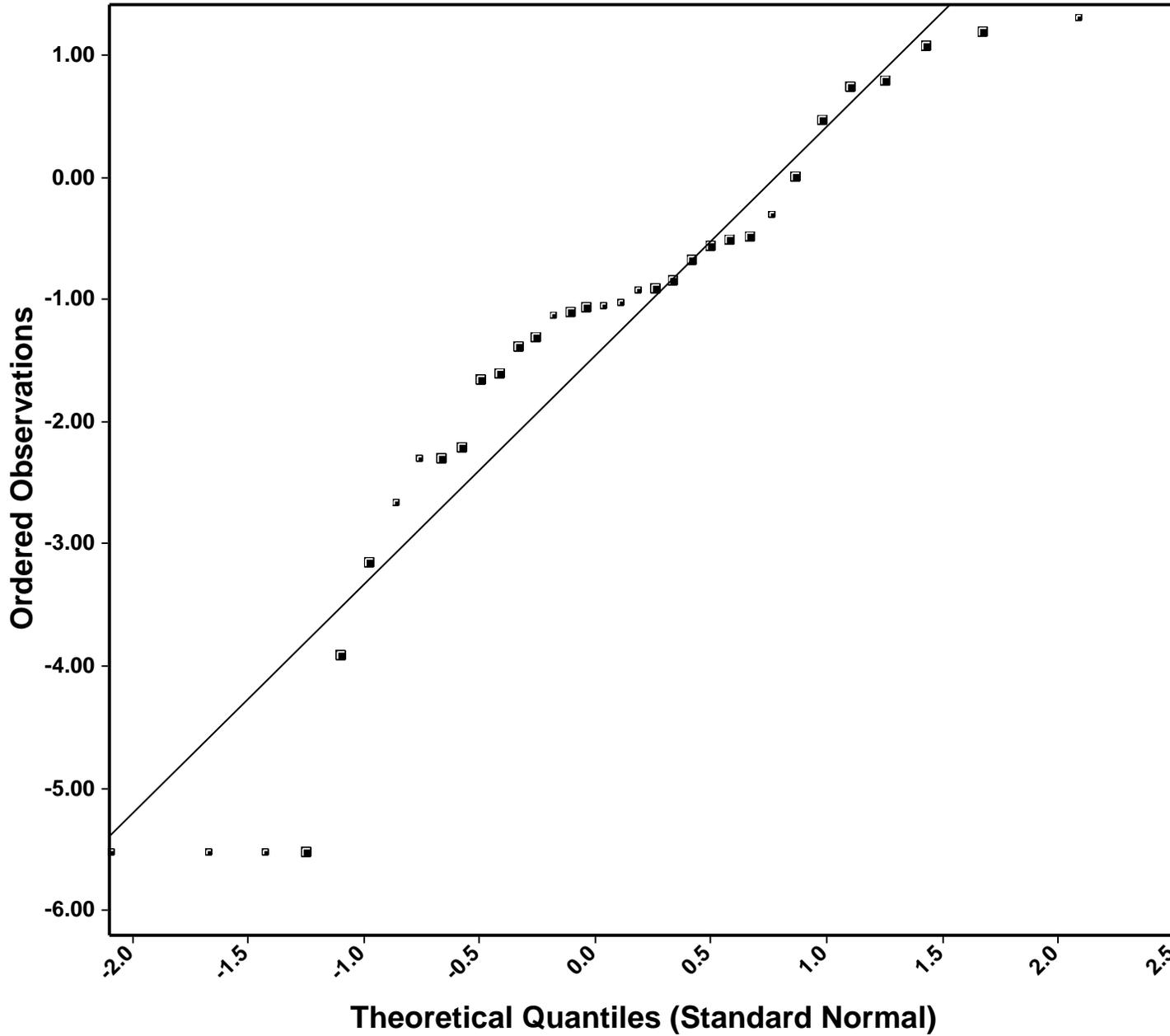


■ Benzo(a)anthracene

Benzo(a)anthracene

Total Number of Data = 34
 Number of Non-Detects = 12
 Number of Detects = 22
 Mean = -1.5731
 Sd = 2.0572
 Slope = 1.9840
 Intercept = -1.5731
 Correlation, R = 0.9405

Q-Q Plot with NDs for Benzo(a)pyrene



Benzo(a)pyrene

Total Number of Data = 34

Number of Non-Detects = 11

Number of Detects = 23

Mean = -1.4571

Sd = 1.9198

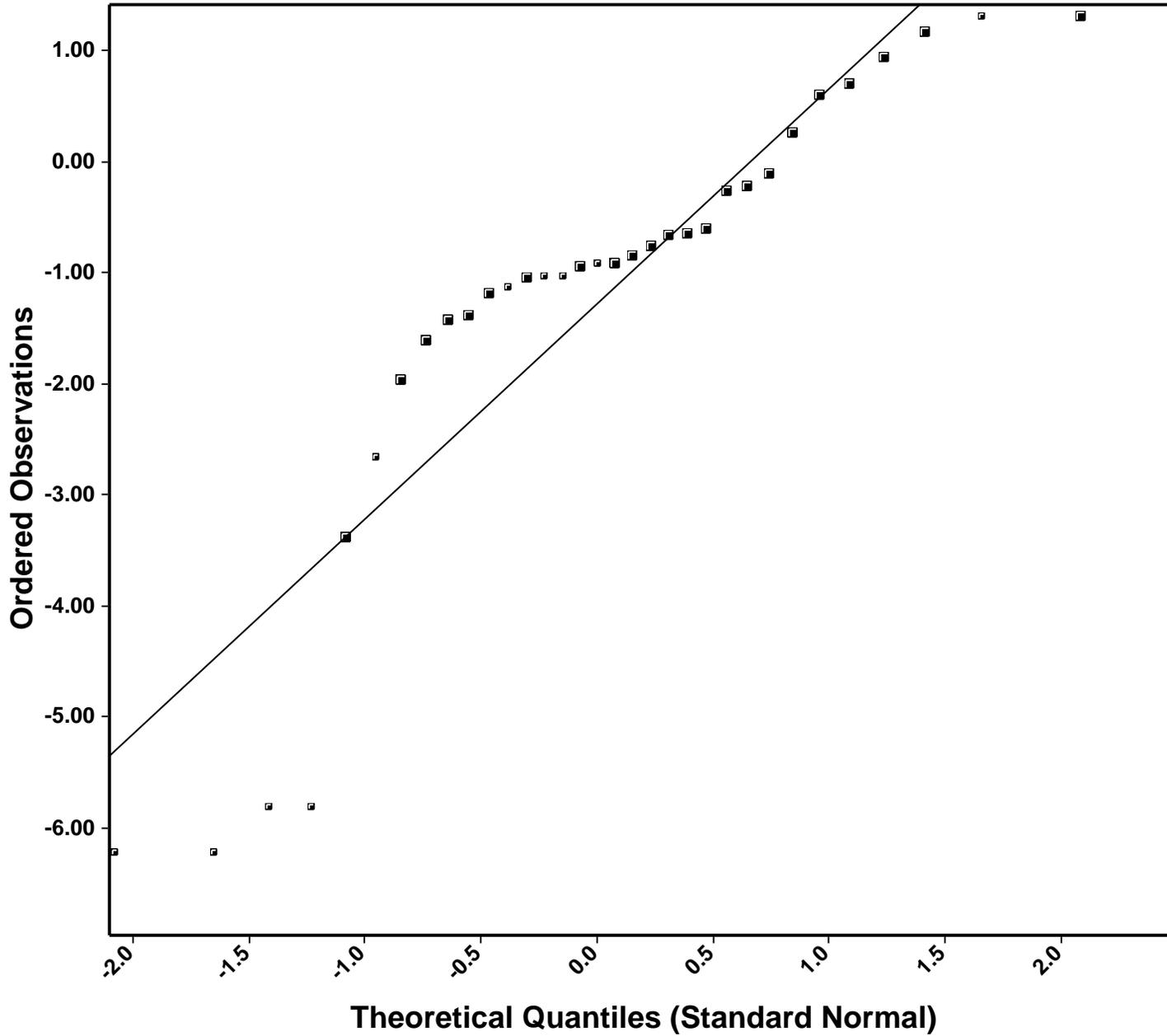
Slope = 1.8723

Intercept = -1.4571

Correlation, R = 0.9511

■ Benzo(a)pyrene

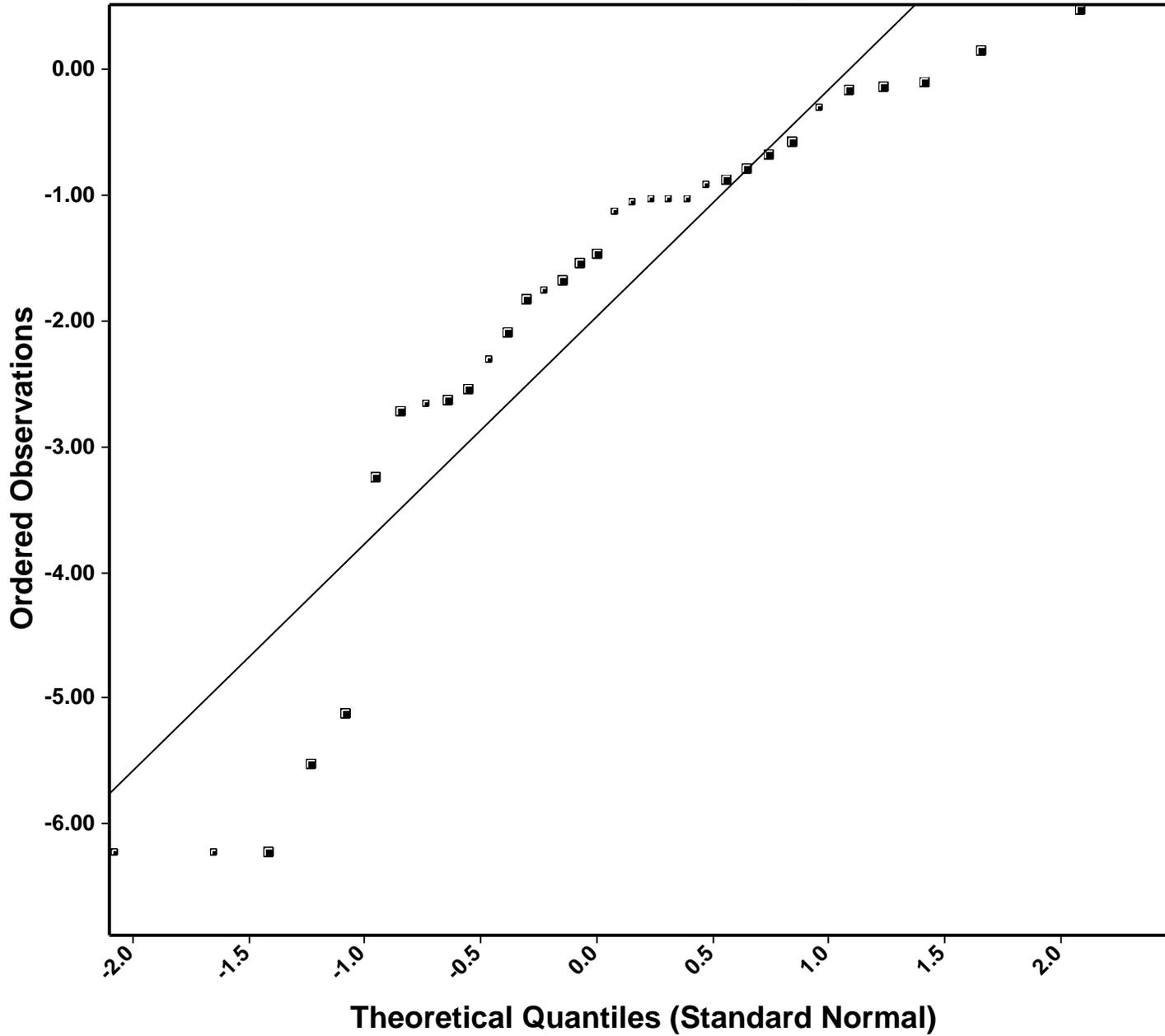
Q-Q Plot with NDs for Benzo(b)fluoranthene



Benzo(b)fluoranthene
Total Number of Data = 33
Number of Non-Detects = 10
Number of Detects = 23
Mean = -1.2841
Sd = 2.0681
Slope = 1.9386
Intercept = -1.2841
Correlation, R = 0.9136

■ Benzo(b)fluoranthene

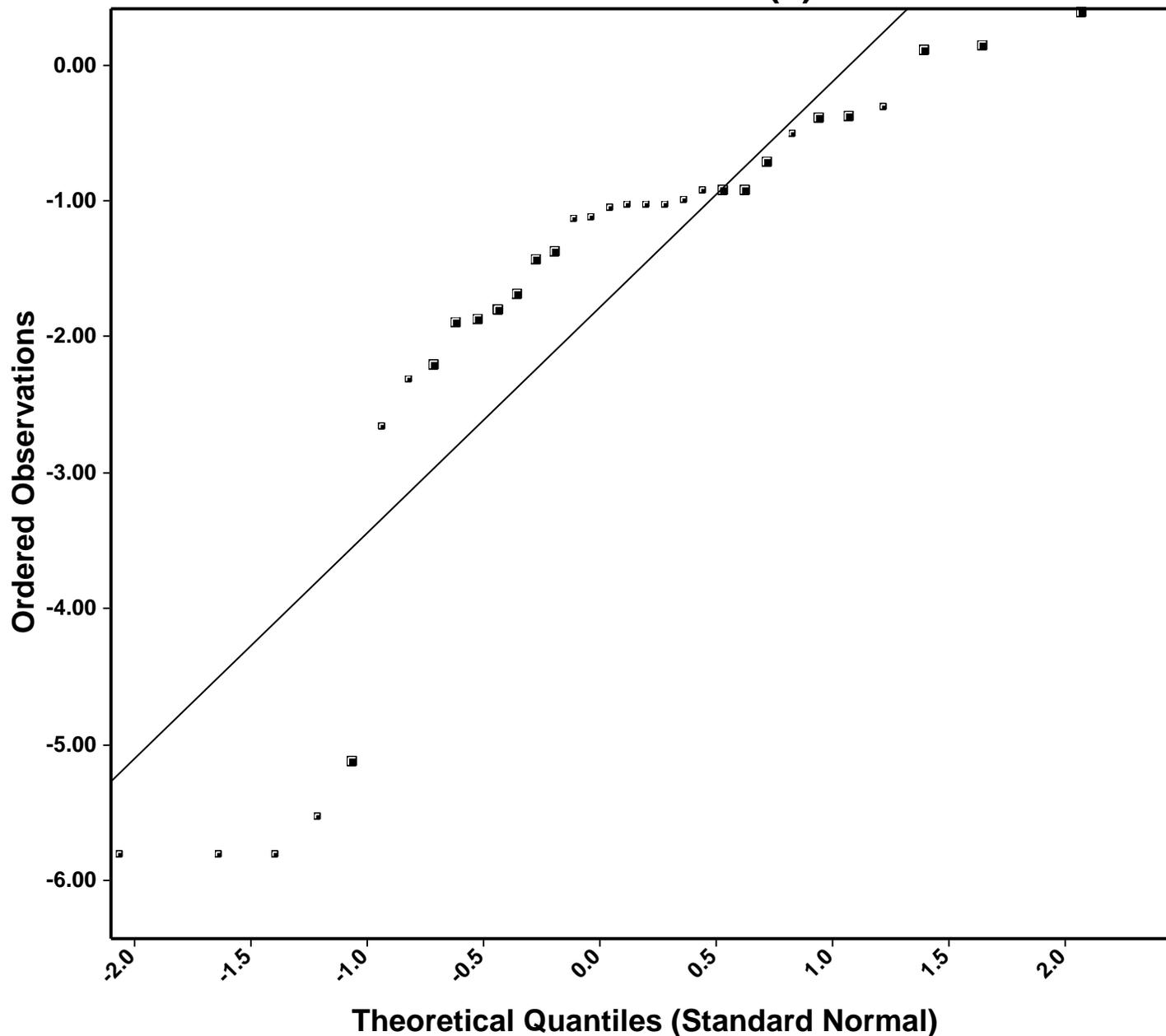
Q-Q Plot with NDs for Benzo(g,h,i)perylene



Benzo(g,h,i)perylene
Total Number of Data = 33
Number of Non-Detects = 12
Number of Detects = 21
Mean = -1.9666
Sd = 1.9006
Slope = 1.8052
Intercept = -1.9666
Correlation, R = 0.9257

■ Benzo(g,h,i)perylene

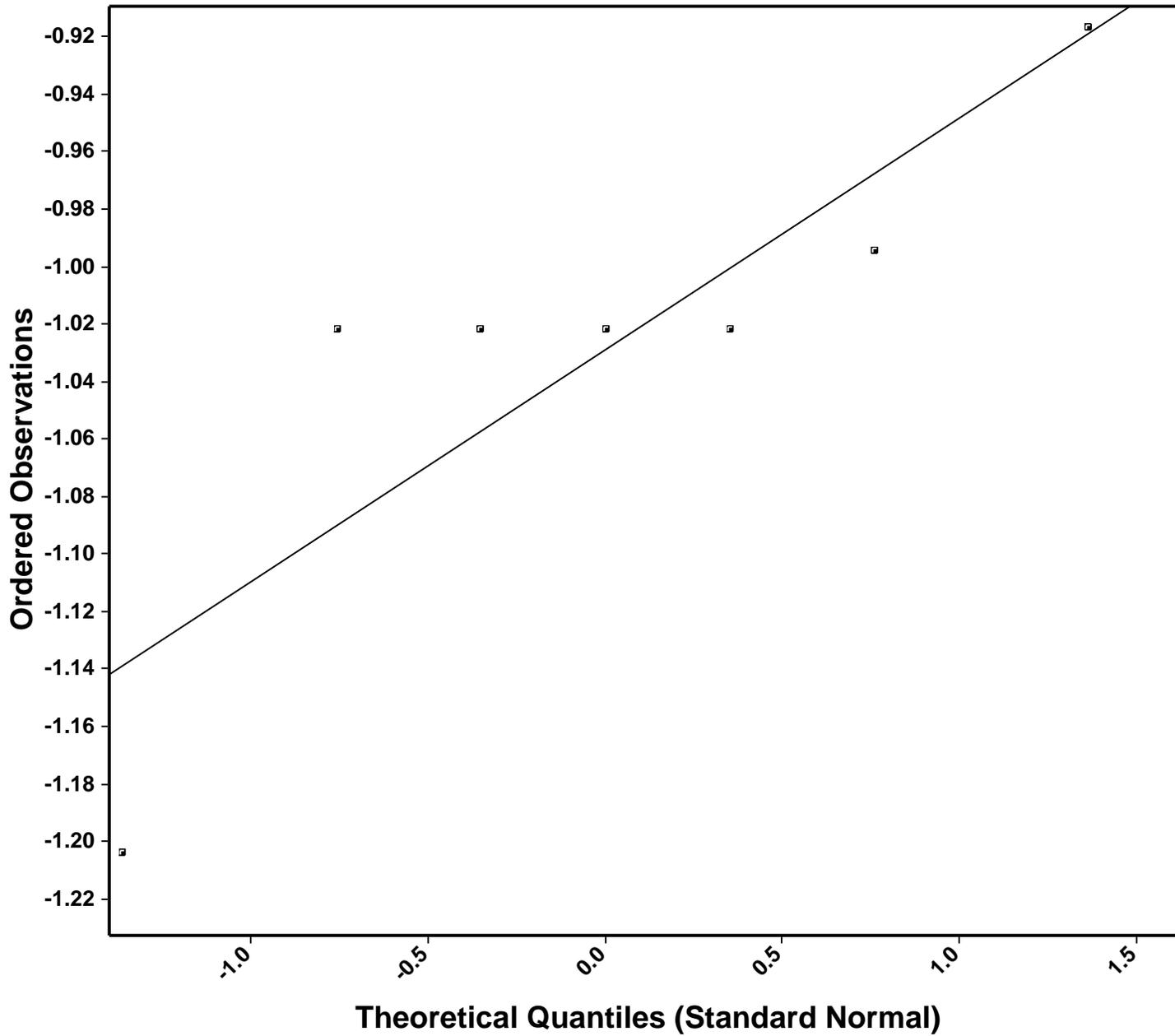
Q-Q Plot with NDs for Benzo(k)fluoranthene



■ Benzo(k)fluoranthene

Benzo(k)fluoranthene
 Total Number of Data = 32
 Number of Non-Detects = 16
 Number of Detects = 16
 Mean = -1.7818
 Sd = 1.8155
 Slope = 1.6602
 Intercept = -1.7818
 Correlation, R = 0.8907

Q-Q Plot with NDs for Carbazole

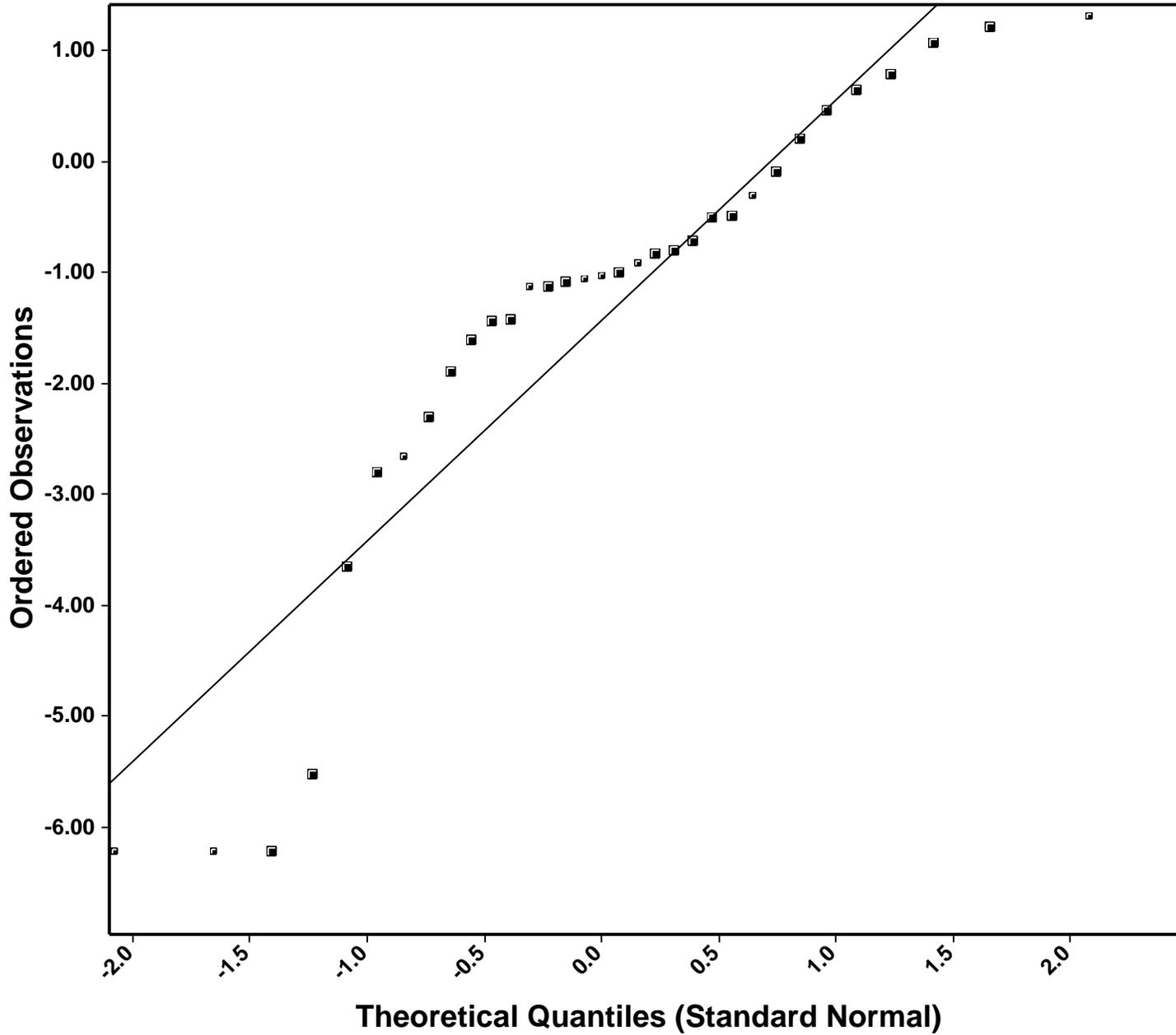


Carbazole

Total Number of Data = 7
Number of Non-Detects = 7
Number of Detects = 0
Mean = -1.0287
Sd = 0.0864
Slope = 0.0807
Intercept = -1.0287
Correlation, R = 0.8633

■ Carbazole

Q-Q Plot with NDs for Chrysene



Chrysene

Total Number of Data = 33

Number of Non-Detects = 9

Number of Detects = 24

Mean = -1.4329

Sd = 2.0778

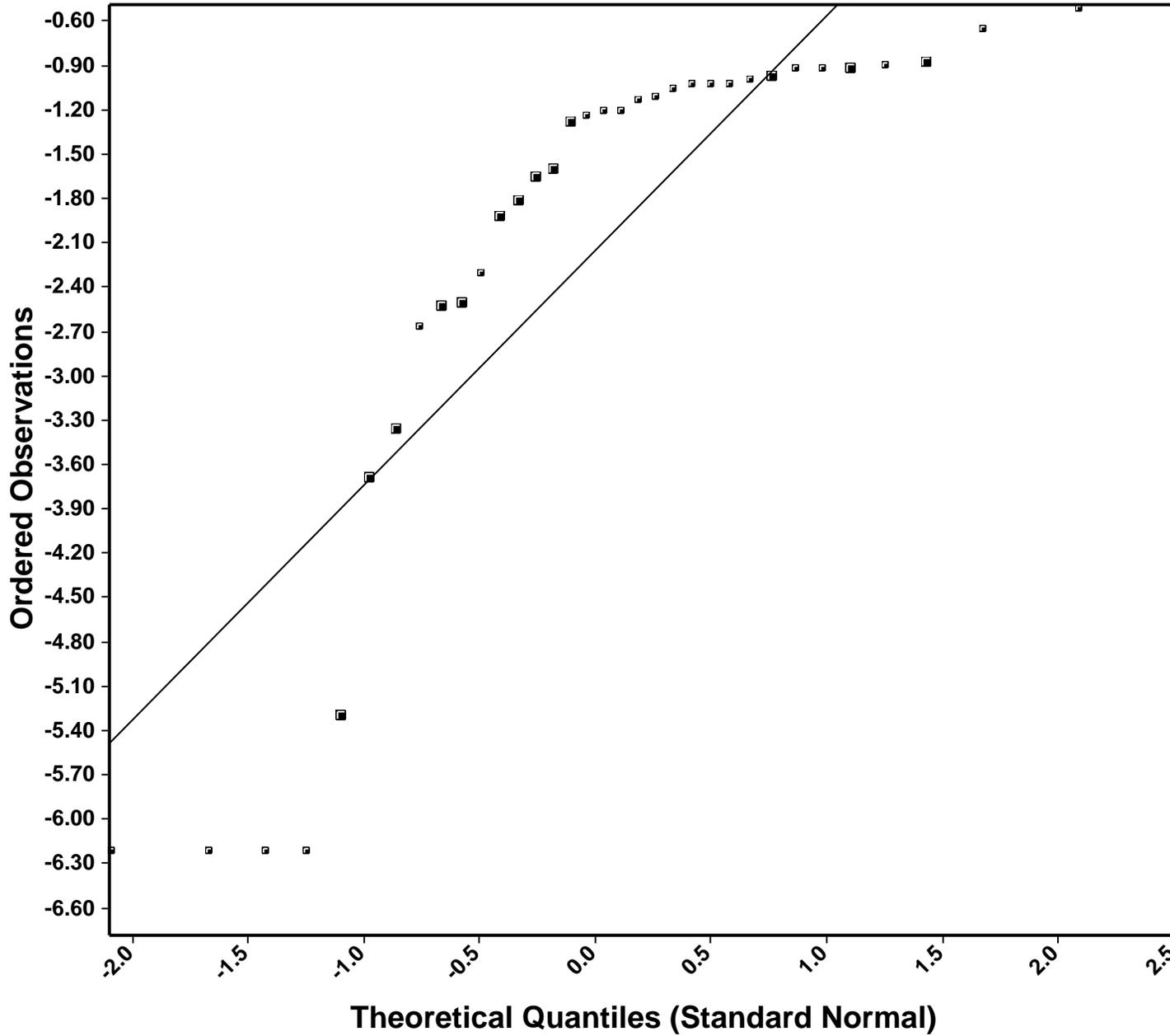
Slope = 1.9872

Intercept = -1.4329

Correlation, R = 0.9322

■ Chrysene

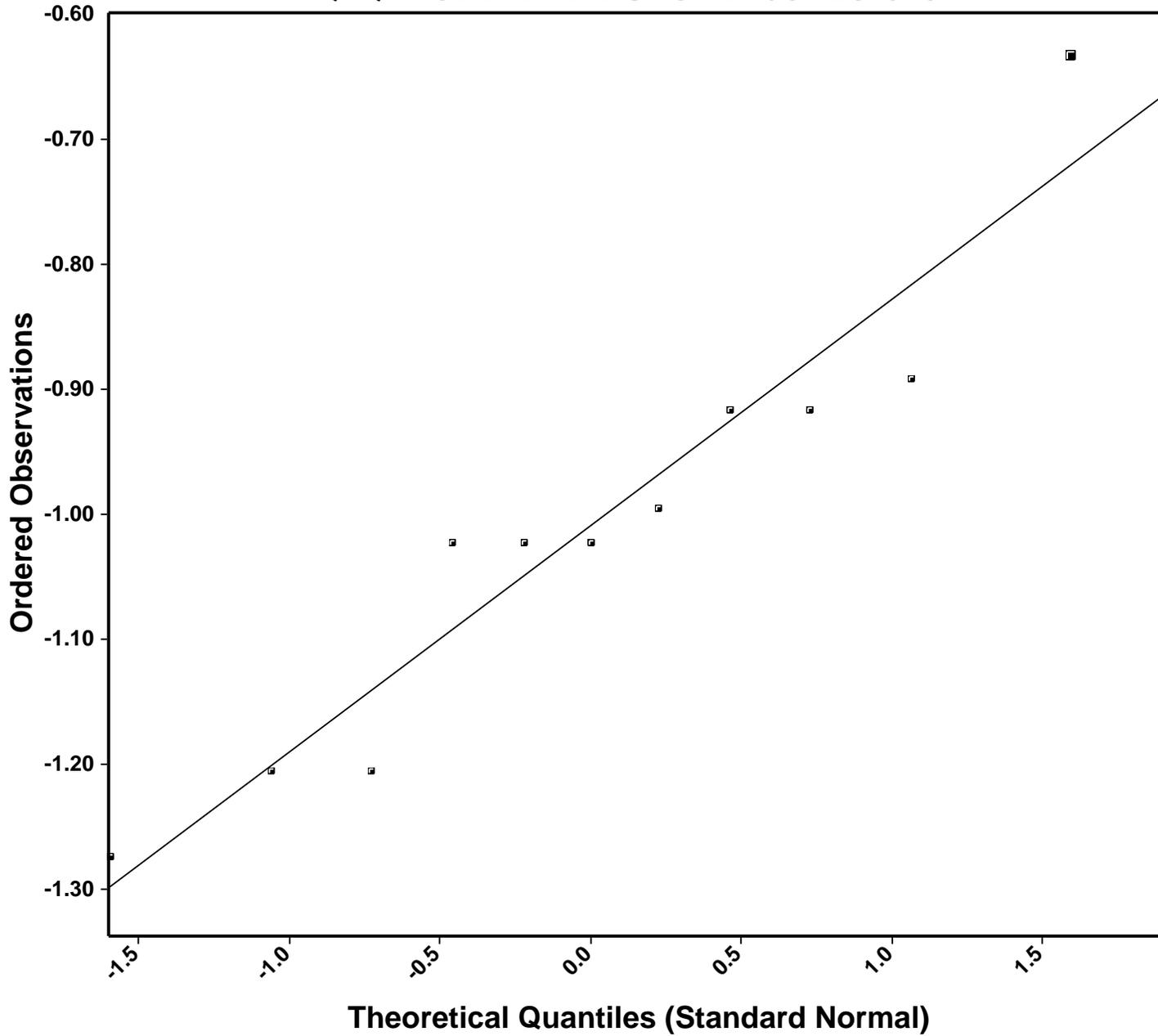
Q-Q Plot with NDs for Dibenzo(a,h)anthracene



■ Dibenzo(a,h)anthracene

Dibenzo(a,h)anthracene
 Total Number of Data = 34
 Number of Non-Detects = 21
 Number of Detects = 13
 Mean = -2.1493
 Sd = 1.8013
 Slope = 1.5876
 Intercept = -2.1493
 Correlation, R = 0.8595

Q-Q Plot with NDs for Dibenzofuran

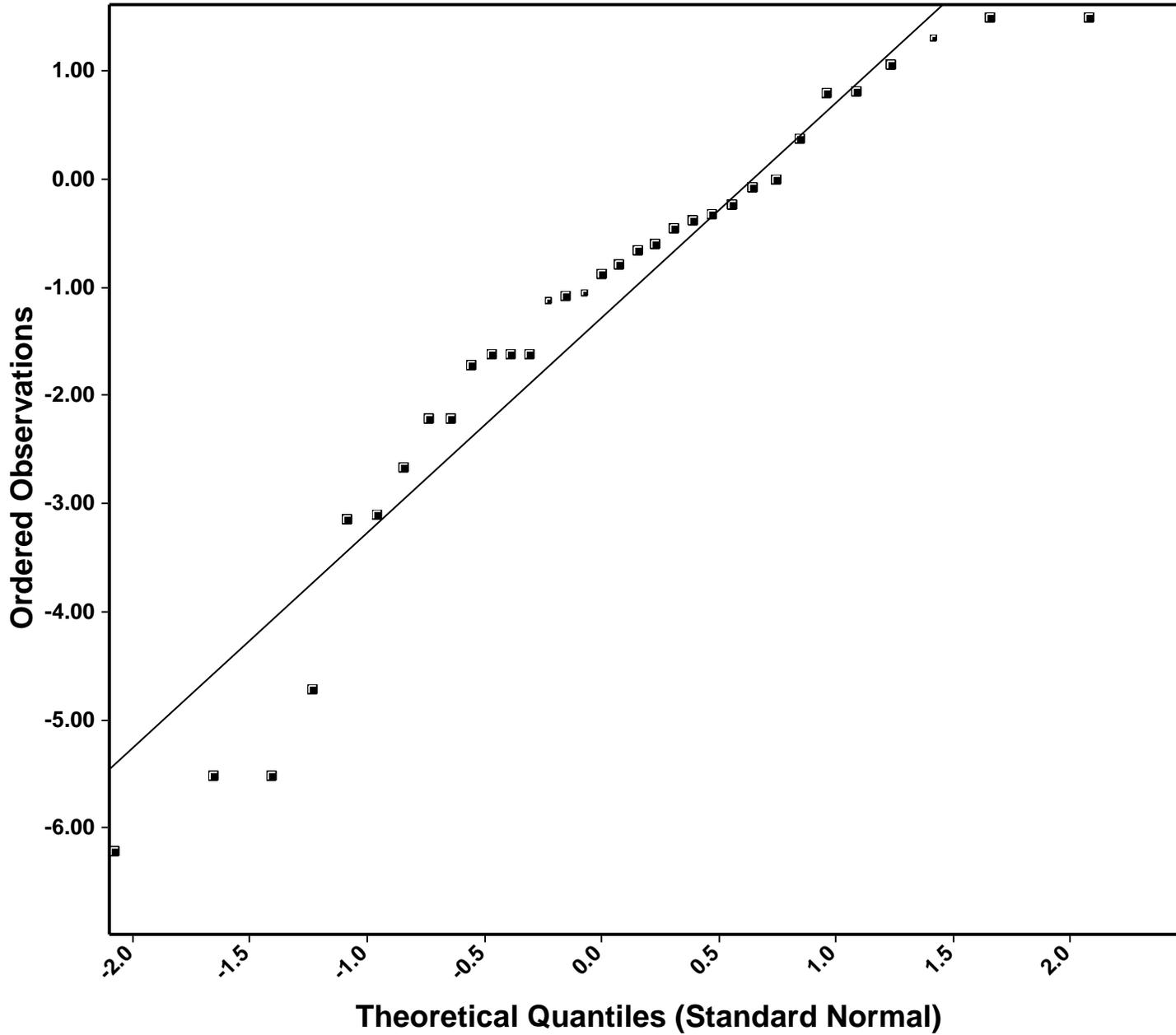


■ Dibenzofuran

Dibenzofuran

Total Number of Data = 11
Number of Non-Detects = 10
Number of Detects = 1
Mean = -1.0088
Sd = 0.1785
Slope = 0.1812
Intercept = -1.0088
Correlation, R = 0.9582

Q-Q Plot with NDs for Fluoranthene



Fluoranthene

Total Number of Data = 33

Number of Non-Detects = 3

Number of Detects = 30

Mean = -1.2770

Sd = 2.0157

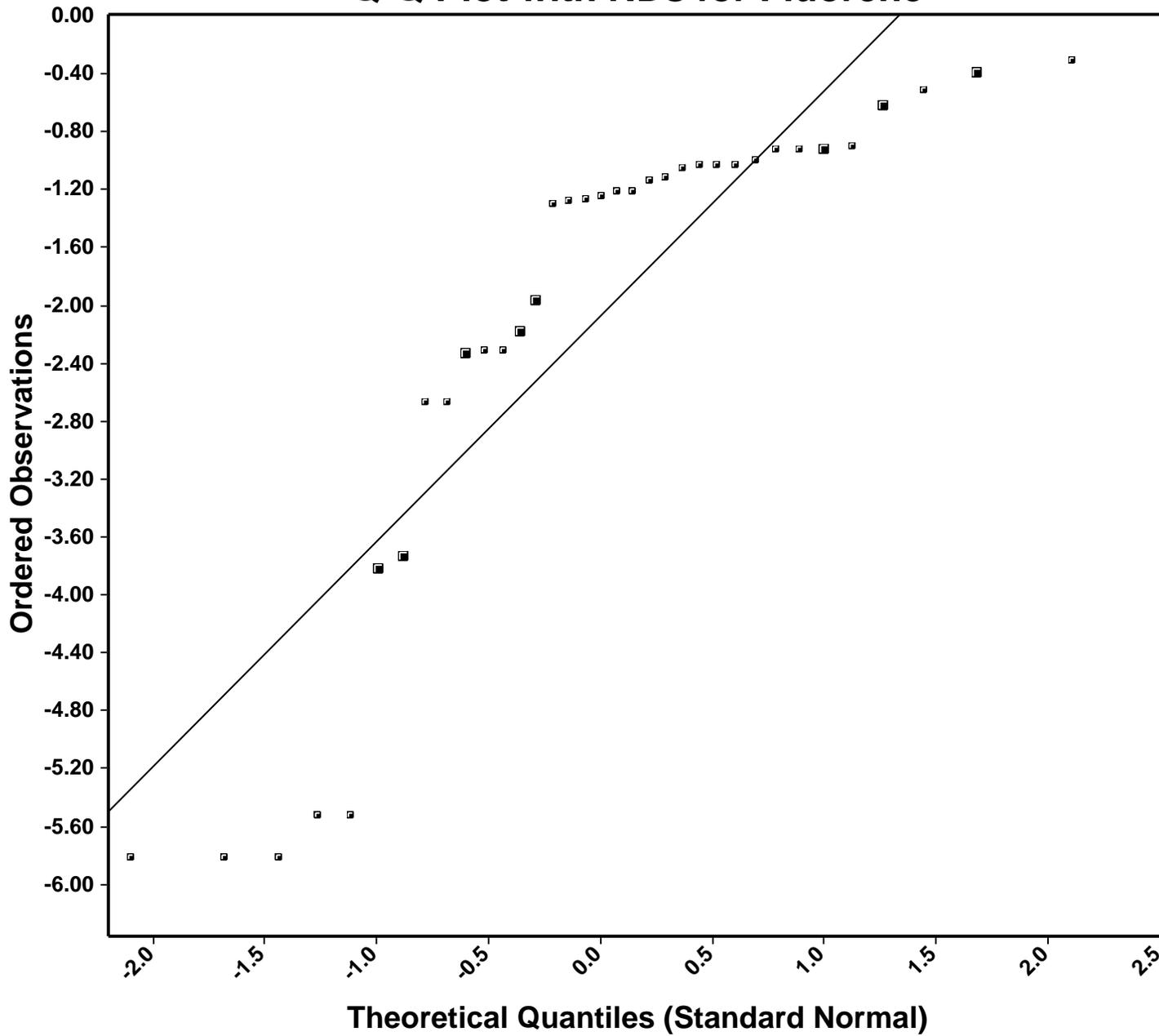
Slope = 1.9892

Intercept = -1.2770

Correlation, R = 0.9618

■ Fluoranthene

Q-Q Plot with NDs for Fluorene

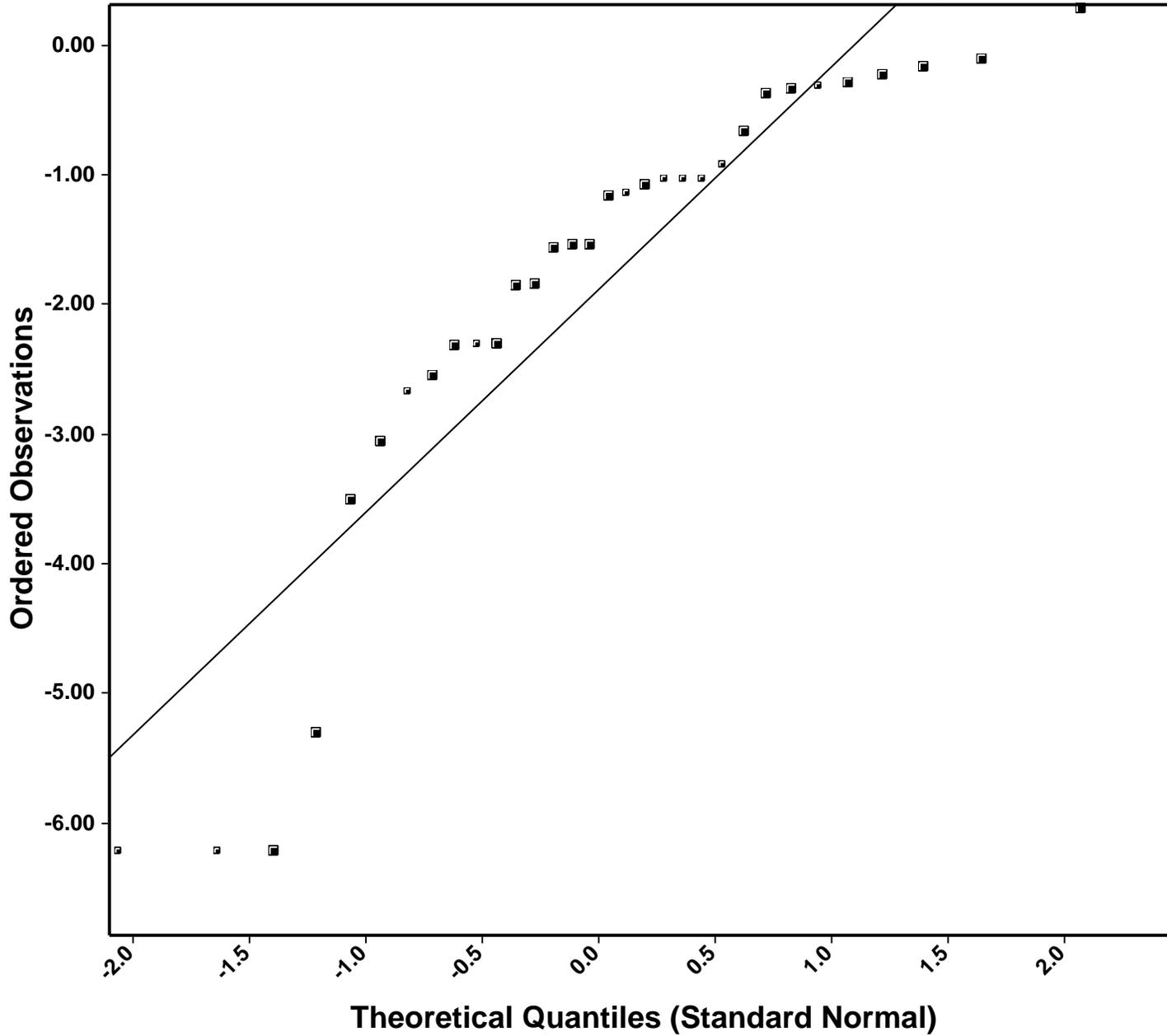


Fluorene

Total Number of Data = 35
Number of Non-Detects = 27
Number of Detects = 8
Mean = -2.0771
Sd = 1.7128
Slope = 1.5567
Intercept = -2.0771
Correlation, R = 0.8868

■ Fluorene

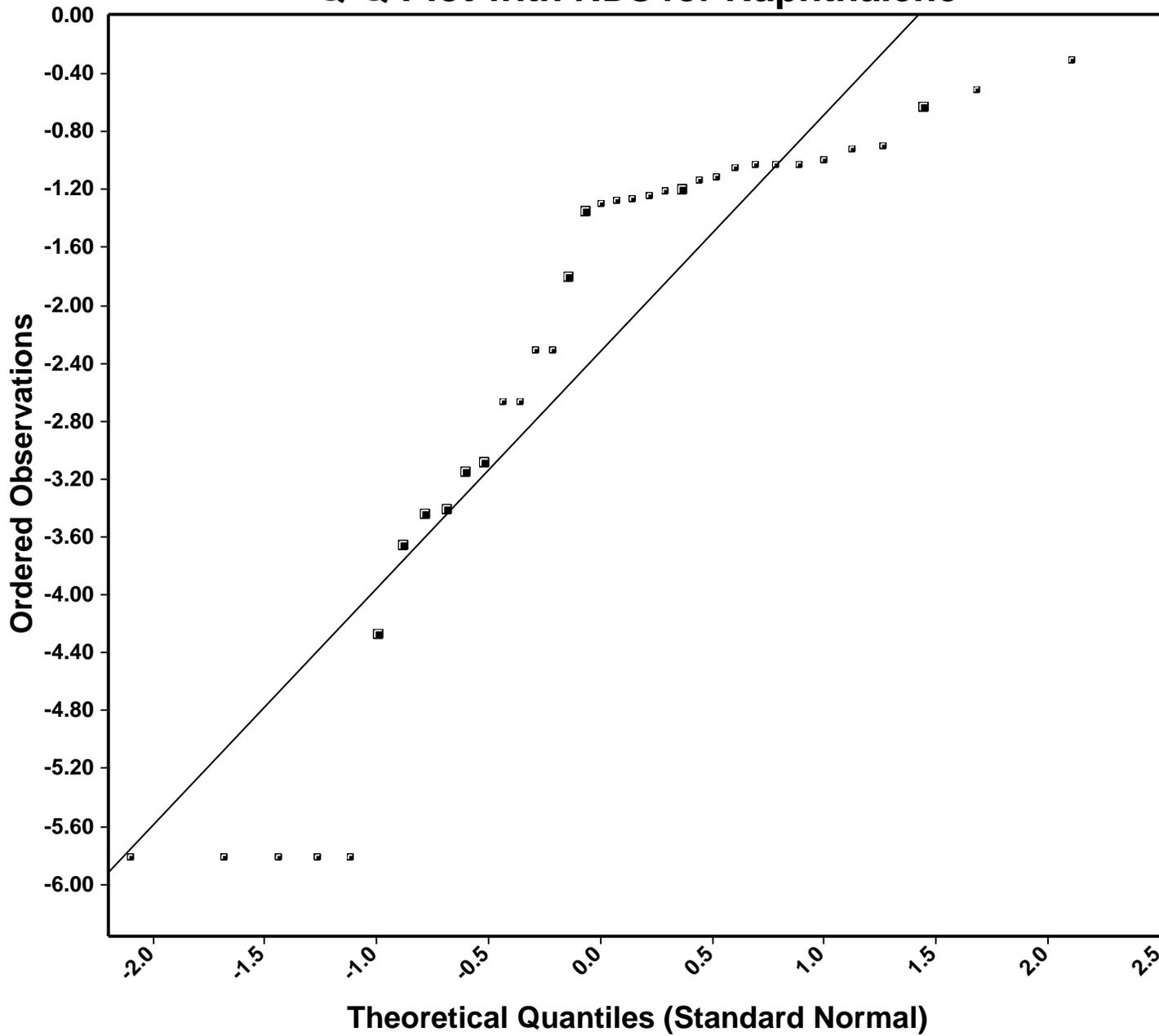
Q-Q Plot with NDs for Indeno(1,2,3-cd)pyrene



Indeno(1,2,3-cd)pyrene
Total Number of Data = 32
Number of Non-Detects = 10
Number of Detects = 22
Mean = -1.8875
Sd = 1.8287
Slope = 1.7191
Intercept = -1.8875
Correlation, R = 0.9157

■ Indeno(1,2,3-cd)pyrene

Q-Q Plot with NDs for Naphthalene



Naphthalene

Total Number of Data = 35

Number of Non-Detects = 25

Number of Detects = 10

Mean = -2.3191

Sd = 1.7499

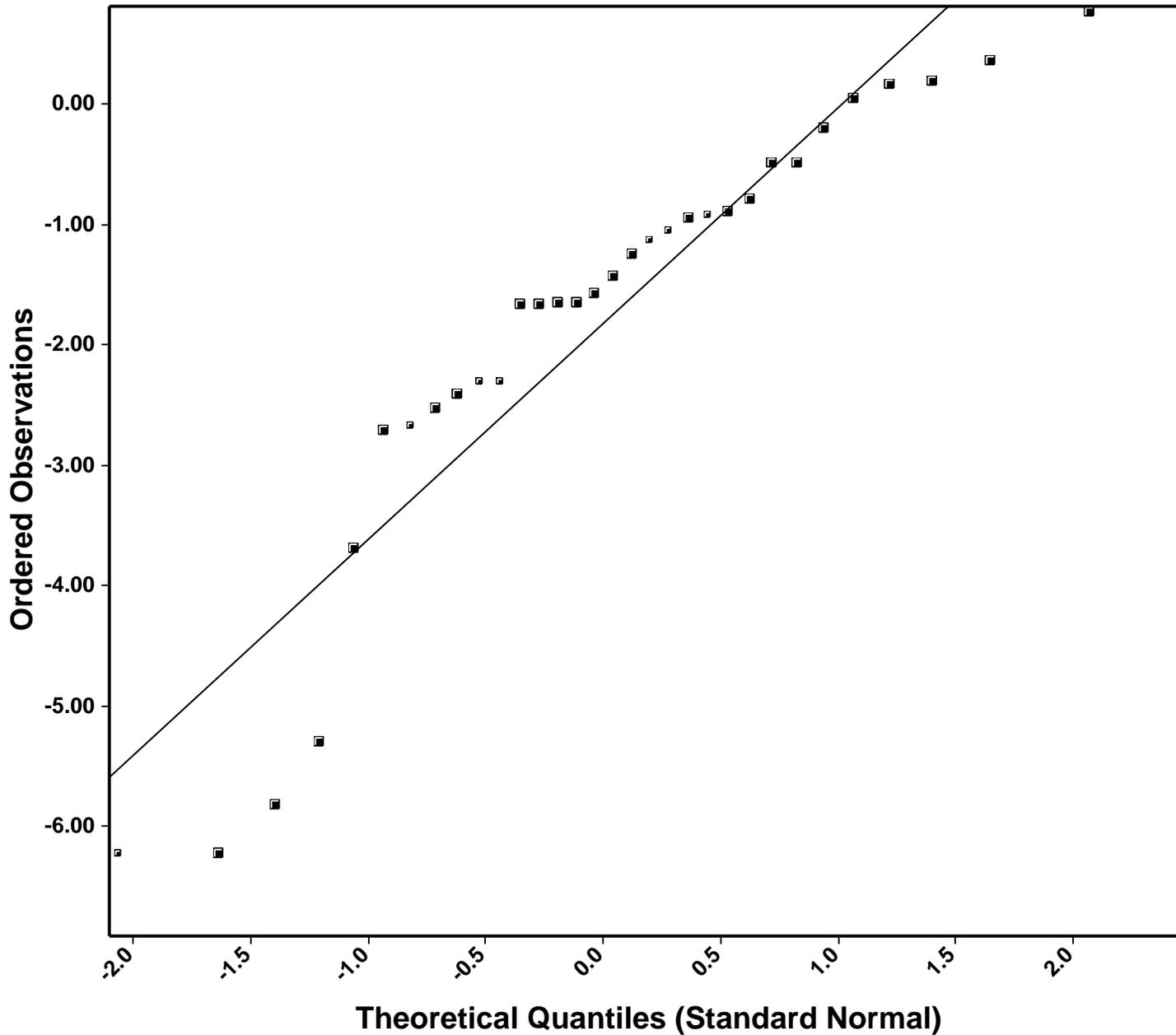
Slope = 1.6364

Intercept = -2.3191

Correlation, R = 0.9125

■ Naphthalene

Q-Q Plot with NDs for Phenanthrene



Phenanthrene

Total Number of Data = 32

Number of Non-Detects = 7

Number of Detects = 25

Mean = -1.8199

Sd = 1.8625

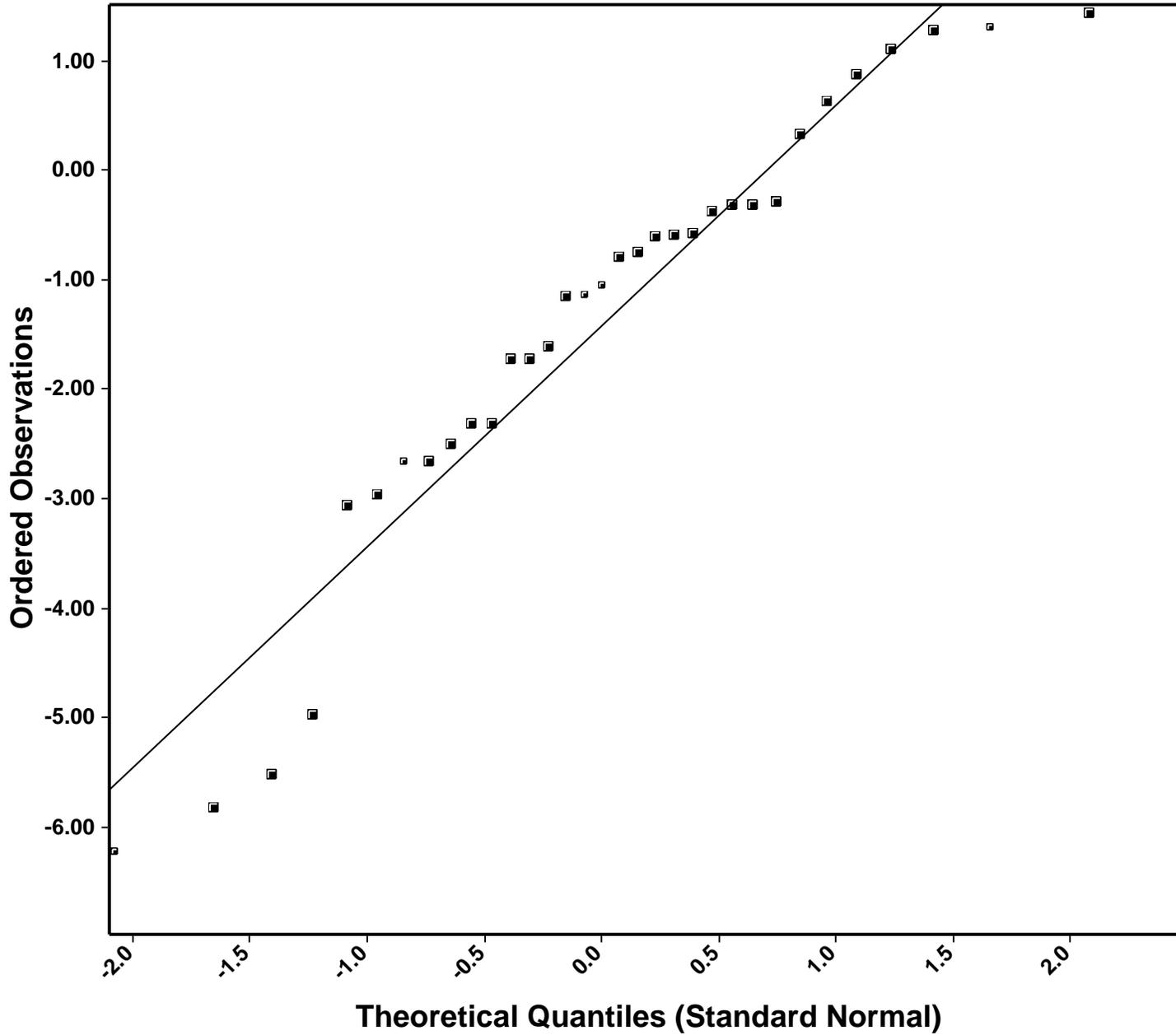
Slope = 1.7960

Intercept = -1.8199

Correlation, R = 0.9393

■ Phenanthrene

Q-Q Plot with NDs for Pyrene



Pyrene

Total Number of Data = 33

Number of Non-Detects = 5

Number of Detects = 28

Mean = -1.4186

Sd = 2.0372

Slope = 2.0179

Intercept = -1.4186

Correlation, R = 0.9654

■ Pyrene

Appendix B4

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_PAH_Data No_Outliers.wst
Full Precision OFF
Confidence Coefficient 0.95

2-Methylnaphthalene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	30	0	30	7	23	76.67%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	23	0.002	0.74	0.254	0.282	0.218
Statistics (Detects Only)	7	0.012	0.172	0.0543	0.026	0.0622
Statistics (All: NDs treated as DL value)	30	0.002	0.74	0.208	0.141	0.211
Statistics (All: NDs treated as DL/2 value)	30	0.001	0.37	0.11	0.124	0.104
Statistics (Normal ROS Estimated Data)	30	-0.142	0.172	-0.014	-0.0154	0.0598
Statistics (Gamma ROS Estimated Data)	30	0.000001	0.172	0.015	0.000001	0.0367
Statistics (Lognormal ROS Estimated Data)	30	0.00101	0.172	0.0191	0.00953	0.0348
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.122	1.032	0.0484	-3.421	1.043	-0.305
Statistics (NDs = DL)	0.592	0.555	0.351	-2.617	1.961	-0.749
Statistics (NDs = DL/2)	0.648	0.605	0.17	-3.148	1.914	-0.608
Statistics (Gamma ROS Estimates)	0.132	0.141	0.113	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.628	1.044	-0.226

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.858	0.925	0.932	0.945
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.736	0.803	Data Not Normal	
Lilliefors (Detects Only)	0.366	0.335	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.845	0.927	Data Not Normal	
Lilliefors (NDs = DL)	0.179	0.162	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.858	0.927	Data Not Normal	
Lilliefors (NDs = DL/2)	0.185	0.162	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.915	0.927	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.191	0.162	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.972	0.942	0.936	0.982
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	0.675	0.726		
Kolmogorov-Smirnov (Detects Only)	0.31	0.319	Data Appear Gamma Distributed	
Anderson-Darling (NDs = DL)	0.991	0.801		
Kolmogorov-Smirnov (NDs = DL)	0.21	0.168	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	1.197	0.797		
Kolmogorov-Smirnov (NDs = DL/2)	0.224	0.167	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	4.136	0.932		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.404	0.18	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.937	0.932	0.913	0.958
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.863	0.803	Data Appear Lognormal	
Lilliefors (Detects Only)	0.247	0.335	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.849	0.927	Data Not Lognormal	
Lilliefors (NDs = DL)	0.217	0.162	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.817	0.927	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.228	0.162	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.932	0.927	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.191	0.162	Data Not Lognormal	

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Acenaphthene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	35	0	35	7	28	80.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	28	0.002	0.74	0.257	0.295	0.188
Statistics (Detects Only)	7	0.0093	0.609	0.149	0.06	0.213
Statistics (All: NDs treated as DL value)	35	0.002	0.74	0.235	0.28	0.195
Statistics (All: NDs treated as DL/2 value)	35	0.001	0.609	0.132	0.141	0.123
Statistics (Normal ROS Estimated Data)	35	-0.45	0.609	-0.0788	-0.0955	0.179
Statistics (Gamma ROS Estimated Data)	35	0.000001	0.609	0.0353	0.000001	0.108
Statistics (Lognormal ROS Estimated Data)	35	0.00105	0.609	0.0397	0.0125	0.106
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.769	0.722	0.194	-2.677	1.369	-0.512
Statistics (NDs = DL)	0.71	0.668	0.331	-2.297	1.877	-0.817
Statistics (NDs = DL/2)	0.725	0.681	0.183	-2.852	1.869	-0.655
Statistics (Gamma ROS Estimates)	0.114	0.123	0.311	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.267	1.227	-0.288

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.822	0.955	0.902	0.925
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.694	0.803	Data Not Normal	
Lilliefors (Detects Only)	0.331	0.335	Data Appear Normal	
Shapiro-Wilks (NDs = DL)	0.901	0.934	Data Not Normal	
Lilliefors (NDs = DL)	0.184	0.15	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.828	0.934	Data Not Normal	
Lilliefors (NDs = DL/2)	0.186	0.15	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.886	0.934	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.173	0.15	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.981	0.921	0.956	0.974
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	0.335	0.735		
Kolmogorov-Smirnov (Detects Only)	0.233	0.322	Data Appear Gamma Distributed	
Anderson-Darling (NDs = DL)	1.829	0.792		
Kolmogorov-Smirnov (NDs = DL)	0.244	0.155	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	1.777	0.79		
Kolmogorov-Smirnov (NDs = DL/2)	0.236	0.155	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	5.702	0.947		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.434	0.168	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.992	0.889	0.881	0.959
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.989	0.803	Data Appear Lognormal	
Lilliefors (Detects Only)	0.149	0.335	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.776	0.934	Data Not Lognormal	
Lilliefors (NDs = DL)	0.246	0.15	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.766	0.934	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.249	0.15	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.934	0.934	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.202	0.15	Data Not Lognormal	

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Acenaphthylene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	35	0	35	13	22	62.86%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	22	0.001	0.74	0.266	0.327	0.206
Statistics (Detects Only)	13	0.045	0.699	0.3	0.364	0.19
Statistics (All: NDs treated as DL value)	35	0.001	0.74	0.279	0.329	0.198
Statistics (All: NDs treated as DL/2 value)	35	0.0005	0.699	0.195	0.175	0.161
Statistics (Normal ROS Estimated Data)	35	-0.32	0.699	0.0829	0.045	0.222
Statistics (Gamma ROS Estimated Data)	35	0.000001	0.699	0.122	0.00204	0.182
Statistics (Lognormal ROS Estimated Data)	35	0.0193	0.699	0.152	0.0672	0.163
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	2.185	2.017	0.137	-1.45	0.81	-0.558
Statistics (NDs = DL)	0.734	0.69	0.38	-2.095	2.046	-0.977
Statistics (NDs = DL/2)	0.677	0.638	0.288	-2.531	2.155	-0.851
Statistics (Gamma ROS Estimates)	0.138	0.145	0.881	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.324	0.909	-0.391

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.968	0.965	0.946	0.97

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.935	0.866	Data Appear Normal
Lilliefors (Detects Only)	0.171	0.246	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.919	0.934	Data Not Normal
Lilliefors (NDs = DL)	0.139	0.15	Data Appear Normal
Shapiro-Wilks (NDs = DL/2)	0.895	0.934	Data Not Normal
Lilliefors (NDs = DL/2)	0.19	0.15	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.944	0.934	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.151	0.15	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.969	0.893	0.957	0.884

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.401	0.742	
Kolmogorov-Smirnov (Detects Only)	0.237	0.239	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	3.043	0.789	
Kolmogorov-Smirnov (NDs = DL)	0.248	0.155	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.411	0.795	
Kolmogorov-Smirnov (NDs = DL/2)	0.252	0.155	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	3.698	0.934	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.324	0.167	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.959	0.83	0.838	0.969

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.917	0.866	Data Appear Lognormal
Lilliefors (Detects Only)	0.245	0.246	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.68	0.934	Data Not Lognormal
Lilliefors (NDs = DL)	0.252	0.15	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.696	0.934	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.302	0.15	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.93	0.934	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.174	0.15	Data Not Lognormal

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Anthracene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	33	0	33	11	22	66.67%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	22	0.001	0.74	0.282	0.327	0.193
Statistics (Detects Only)	11	0.002	0.9	0.286	0.295	0.269
Statistics (All: NDs treated as DL value)	33	0.001	0.9	0.284	0.308	0.217
Statistics (All: NDs treated as DL/2 value)	33	0.0005	0.9	0.19	0.175	0.183
Statistics (Normal ROS Estimated Data)	33	-0.419	0.9	0.0281	-0.0287	0.265
Statistics (Gamma ROS Estimated Data)	33	0.000001	0.9	0.104	0.000001	0.203
Statistics (Lognormal ROS Estimated Data)	33	0.00108	0.9	0.104	0.0145	0.2
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.684	0.642	0.419	-2.137	1.959	-0.916
Statistics (NDs = DL)	0.746	0.698	0.381	-2.063	1.954	-0.947
Statistics (NDs = DL/2)	0.701	0.657	0.271	-2.525	1.973	-0.781
Statistics (Gamma ROS Estimates)	0.115	0.125	0.908	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.856	1.819	-0.472

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.947	0.958	0.896	0.948
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.899	0.85	Data Appear Normal	
Lilliefors (Detects Only)	0.165	0.267	Data Appear Normal	
Shapiro-Wilks (NDs = DL)	0.914	0.931	Data Not Normal	
Lilliefors (NDs = DL)	0.135	0.154	Data Appear Normal	
Shapiro-Wilks (NDs = DL/2)	0.818	0.931	Data Not Normal	
Lilliefors (NDs = DL/2)	0.224	0.154	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.912	0.931	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.201	0.154	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.972	0.934	0.977	0.958
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	0.423	0.767		
Kolmogorov-Smirnov (Detects Only)	0.212	0.266	Data Appear Gamma Distributed	
Anderson-Darling (NDs = DL)	2.348	0.788		
Kolmogorov-Smirnov (NDs = DL)	0.278	0.159	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	1.452	0.792		
Kolmogorov-Smirnov (NDs = DL/2)	0.227	0.16	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	4.356	0.944		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.387	0.173	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.913	0.856	0.88	0.969
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.832	0.85	Data Not Lognormal	
Lilliefors (Detects Only)	0.226	0.267	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.726	0.931	Data Not Lognormal	
Lilliefors (NDs = DL)	0.289	0.154	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.772	0.931	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.274	0.154	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.926	0.931	Data Not Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.209	0.154	Data Not Lognormal	

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Benzo(a)anthracene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	34	0	34	22	12	35.29%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	12	0.002	3.7	0.563	0.337	1.016
Statistics (Detects Only)	22	0.002	3.59	0.732	0.364	0.934
Statistics (All: NDs treated as DL value)	34	0.002	3.7	0.672	0.355	0.952
Statistics (All: NDs treated as DL/2 value)	34	0.001	3.59	0.573	0.238	0.83
Statistics (Normal ROS Estimated Data)	34	-1.482	3.59	0.338	0.175	0.97
Statistics (Gamma ROS Estimated Data)	34	0.000001	3.59	0.48	0.175	0.823
Statistics (Lognormal ROS Estimated Data)	34	0.00172	3.59	0.485	0.119	0.819
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.585	0.553	1.251	-1.372	1.966	-1.433
Statistics (NDs = DL)	0.535	0.507	1.258	-1.573	2.057	-1.308
Statistics (NDs = DL/2)	0.503	0.478	1.139	-1.818	2.129	-1.171
Statistics (Gamma ROS Estimates)	0.163	0.168	2.951	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.26	2.103	-0.93

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.863	0.821	0.823	0.924

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.75	0.911	Data Not Normal
Lilliefors (Detects Only)	0.288	0.189	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.678	0.933	Data Not Normal
Lilliefors (NDs = DL)	0.286	0.152	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.688	0.933	Data Not Normal
Lilliefors (NDs = DL/2)	0.309	0.152	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.873	0.933	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.236	0.152	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.992	0.978	0.987	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.258	0.797	
Kolmogorov-Smirnov (Detects Only)	0.123	0.195	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.499	0.808	
Kolmogorov-Smirnov (NDs = DL)	0.113	0.159	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.441	0.811	
Kolmogorov-Smirnov (NDs = DL/2)	0.125	0.16	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.119	0.919	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.228	0.169	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.946	0.941	0.95	0.989

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.895	0.911	Data Not Lognormal
Lilliefors (Detects Only)	0.189	0.189	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.874	0.933	Data Not Lognormal
Lilliefors (NDs = DL)	0.179	0.152	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.894	0.933	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.178	0.152	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.962	0.933	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.101	0.152	Data Appear Lognormal

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Benzo(a)pyrene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	34	0	34	23	11	32.35%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	11	0.004	3.7	0.551	0.324	1.069
Statistics (Detects Only)	23	0.004	3.29	0.789	0.403	0.956
Statistics (All: NDs treated as DL value)	34	0.004	3.7	0.712	0.348	0.984
Statistics (All: NDs treated as DL/2 value)	34	0.002	3.29	0.623	0.262	0.869
Statistics (Normal ROS Estimated Data)	34	-1.635	3.29	0.357	0.226	1.057
Statistics (Gamma ROS Estimated Data)	34	0.000001	3.29	0.543	0.226	0.862
Statistics (Lognormal ROS Estimated Data)	34	0.004	3.29	0.549	0.196	0.857
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.713	0.67	1.106	-1.083	1.609	-1.486
Statistics (NDs = DL)	0.559	0.529	1.273	-1.457	1.92	-1.318
Statistics (NDs = DL/2)	0.523	0.496	1.191	-1.681	2.038	-1.212
Statistics (Gamma ROS Estimates)	0.189	0.192	2.869	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.846	1.82	-0.986

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.868	0.831	0.836	0.943

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.751	0.914	Data Not Normal
Lilliefors (Detects Only)	0.311	0.185	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.691	0.933	Data Not Normal
Lilliefors (NDs = DL)	0.304	0.152	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.7	0.933	Data Not Normal
Lilliefors (NDs = DL/2)	0.298	0.152	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.897	0.933	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.227	0.152	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.975	0.973	0.977	0.952

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.349	0.786	
Kolmogorov-Smirnov (Detects Only)	0.158	0.189	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.566	0.806	
Kolmogorov-Smirnov (NDs = DL)	0.129	0.159	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.44	0.809	
Kolmogorov-Smirnov (NDs = DL/2)	0.118	0.159	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.144	0.905	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.203	0.168	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.964	0.951	0.954	0.991

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.932	0.914	Data Appear Lognormal
Lilliefors (Detects Only)	0.145	0.185	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.891	0.933	Data Not Lognormal
Lilliefors (NDs = DL)	0.166	0.152	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.897	0.933	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.179	0.152	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.968	0.933	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0729	0.152	Data Appear Lognormal

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Benzo(b)fluoranthene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	33	0	33	23	10	30.30%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	10	0.002	3.7	0.522	0.197	1.13
Statistics (Detects Only)	23	0.034	3.72	0.956	0.521	1.024
Statistics (All: NDs treated as DL value)	33	0.002	3.72	0.825	0.4	1.059
Statistics (All: NDs treated as DL/2 value)	33	0.001	3.72	0.745	0.39	0.957
Statistics (Normal ROS Estimated Data)	33	-1.5	3.72	0.437	0.362	1.208
Statistics (Gamma ROS Estimated Data)	33	0.000001	3.72	0.679	0.39	0.953
Statistics (Lognormal ROS Estimated Data)	33	0.034	3.72	0.698	0.356	0.939
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.107	1.026	0.864	-0.56	1.094	-1.952
Statistics (NDs = DL)	0.57	0.539	1.446	-1.284	2.068	-1.611
Statistics (NDs = DL/2)	0.525	0.498	1.42	-1.494	2.259	-1.512
Statistics (Gamma ROS Estimates)	0.195	0.197	3.488	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.142	1.322	-1.158

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.874	0.844	0.858	0.957

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.764	0.914	Data Not Normal
Lilliefors (Detects Only)	0.262	0.185	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.708	0.931	Data Not Normal
Lilliefors (NDs = DL)	0.299	0.154	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.737	0.931	Data Not Normal
Lilliefors (NDs = DL/2)	0.277	0.154	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.917	0.931	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.189	0.154	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.98	0.966	0.985	0.954

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.648	0.767	
Kolmogorov-Smirnov (Detects Only)	0.187	0.186	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL)	0.841	0.804	
Kolmogorov-Smirnov (NDs = DL)	0.138	0.161	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	0.597	0.809	
Kolmogorov-Smirnov (NDs = DL/2)	0.141	0.162	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	3.496	0.902	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.284	0.17	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.979	0.914	0.912	0.991

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.963	0.914	Data Appear Lognormal
Lilliefors (Detects Only)	0.121	0.185	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.827	0.931	Data Not Lognormal
Lilliefors (NDs = DL)	0.23	0.154	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.823	0.931	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.235	0.154	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.964	0.931	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0702	0.154	Data Appear Lognormal

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Benzo(g,h,i)perylene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	33	0	33	21	12	36.36%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	12	0.002	0.74	0.27	0.337	0.212
Statistics (Detects Only)	21	0.002	1.61	0.405	0.215	0.442
Statistics (All: NDs treated as DL value)	33	0.002	1.61	0.356	0.231	0.377
Statistics (All: NDs treated as DL/2 value)	33	0.001	1.61	0.307	0.18	0.379
Statistics (Normal ROS Estimated Data)	33	-0.675	1.61	0.216	0.079	0.459
Statistics (Gamma ROS Estimated Data)	33	0.000001	1.61	0.266	0.072	0.398
Statistics (Lognormal ROS Estimated Data)	33	0.00144	1.61	0.267	0.072	0.396
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.633	0.596	0.64	-1.871	1.878	-1.004
Statistics (NDs = DL)	0.653	0.614	0.545	-1.967	1.901	-0.966
Statistics (NDs = DL/2)	0.596	0.562	0.515	-2.219	1.953	-0.88
Statistics (Gamma ROS Estimates)	0.179	0.183	1.488	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.687	1.962	-0.73

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.917	0.912	0.867	0.945
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.839	0.908	Data Not Normal	
Lilliefors (Detects Only)	0.224	0.193	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.834	0.931	Data Not Normal	
Lilliefors (NDs = DL)	0.174	0.154	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.758	0.931	Data Not Normal	
Lilliefors (NDs = DL/2)	0.276	0.154	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.907	0.931	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.194	0.154	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.982	0.99	0.992	0.946
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	0.231	0.793		
Kolmogorov-Smirnov (Detects Only)	0.101	0.199	Data Appear Gamma Distributed	
Anderson-Darling (NDs = DL)	0.508	0.797		
Kolmogorov-Smirnov (NDs = DL)	0.12	0.16	Data Appear Gamma Distributed	
Anderson-Darling (NDs = DL/2)	0.399	0.802		
Kolmogorov-Smirnov (NDs = DL/2)	0.105	0.161	Data Appear Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	1.994	0.91		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.218	0.17	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.95	0.926	0.94	0.988
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.897	0.908	Data Not Lognormal	
Lilliefors (Detects Only)	0.136	0.193	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.846	0.931	Data Not Lognormal	
Lilliefors (NDs = DL)	0.164	0.154	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.876	0.931	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.184	0.154	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.96	0.931	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.0951	0.154	Data Appear Lognormal	

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Benzo(k)fluoranthene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	32	0	32	16	16	50.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	16	0.003	0.74	0.274	0.34	0.223
Statistics (Detects Only)	16	0.006	1.47	0.479	0.328	0.432
Statistics (All: NDs treated as DL value)	32	0.003	1.47	0.376	0.34	0.354
Statistics (All: NDs treated as DL/2 value)	32	0.0015	1.47	0.308	0.18	0.356
Statistics (Normal ROS Estimated Data)	32	-0.75	1.47	0.12	0.069	0.504
Statistics (Gamma ROS Estimated Data)	32	0.000001	1.47	0.246	0.0637	0.384
Statistics (Lognormal ROS Estimated Data)	32	0.006	1.47	0.263	0.0957	0.373
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.107	1.024	0.433	-1.252	1.308	-1.045
Statistics (NDs = DL)	0.745	0.696	0.505	-1.782	1.815	-1.019
Statistics (NDs = DL/2)	0.644	0.604	0.478	-2.128	1.949	-0.916
Statistics (Gamma ROS Estimates)	0.142	0.15	1.732	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.251	1.447	-0.643

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.926	0.922	0.86	0.967

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.854	0.887	Data Not Normal
Lilliefors (Detects Only)	0.198	0.222	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.851	0.93	Data Not Normal
Lilliefors (NDs = DL)	0.223	0.157	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.745	0.93	Data Not Normal
Lilliefors (NDs = DL/2)	0.246	0.157	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.938	0.93	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.145	0.157	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.981	0.982	0.982	0.927

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.313	0.761	
Kolmogorov-Smirnov (Detects Only)	0.122	0.221	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.161	0.788	
Kolmogorov-Smirnov (NDs = DL)	0.168	0.162	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.138	0.797	
Kolmogorov-Smirnov (NDs = DL/2)	0.218	0.163	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	3.106	0.929	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.299	0.174	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.916	0.891	0.899	0.991

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.857	0.887	Data Not Lognormal
Lilliefors (Detects Only)	0.186	0.222	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.784	0.93	Data Not Lognormal
Lilliefors (NDs = DL)	0.225	0.157	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.8	0.93	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.297	0.157	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.97	0.93	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0997	0.157	Data Appear Lognormal

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Carbazole

	Num Obs	Num Miss	Num Valid	Detects	NDS	% NDS
Raw Statistics	7	0	7	0	7	100.00%

**Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**

The data set for variable Carbazole was not processed!

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Chrysene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	33	0	33	24	9	27.27%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	9	0.002	3.7	0.661	0.35	1.163
Statistics (Detects Only)	24	0.002	3.37	0.783	0.405	0.944
Statistics (All: NDs treated as DL value)	33	0.002	3.7	0.75	0.36	0.991
Statistics (All: NDs treated as DL/2 value)	33	0.001	3.37	0.659	0.325	0.876
Statistics (Normal ROS Estimated Data)	33	-1.432	3.37	0.479	0.24	0.993
Statistics (Gamma ROS Estimated Data)	33	0.000001	3.37	0.582	0.24	0.869
Statistics (Lognormal ROS Estimated Data)	33	0.002	3.37	0.583	0.238	0.867
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.634	0.596	1.235	-1.212	1.868	-1.541
Statistics (NDs = DL)	0.547	0.518	1.37	-1.433	2.078	-1.45
Statistics (NDs = DL/2)	0.523	0.496	1.26	-1.622	2.155	-1.329
Statistics (Gamma ROS Estimates)	0.215	0.216	2.708	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.837	1.993	-1.085

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.878	0.846	0.853	0.928
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.769	0.916	Data Not Normal	
Lilliefors (Detects Only)	0.279	0.181	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.714	0.931	Data Not Normal	
Lilliefors (NDs = DL)	0.282	0.154	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.727	0.931	Data Not Normal	
Lilliefors (NDs = DL/2)	0.278	0.154	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.873	0.931	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.234	0.154	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.984	0.978	0.983	0.962
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	0.248	0.794		
Kolmogorov-Smirnov (Detects Only)	0.112	0.186	Data Appear Gamma Distributed	
Anderson-Darling (NDs = DL)	0.537	0.807		
Kolmogorov-Smirnov (NDs = DL)	0.108	0.161	Data Appear Gamma Distributed	
Anderson-Darling (NDs = DL/2)	0.415	0.809		
Kolmogorov-Smirnov (NDs = DL/2)	0.113	0.162	Data Appear Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	1.873	0.892		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.192	0.169	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.944	0.932	0.937	0.982
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.891	0.916	Data Not Lognormal	
Lilliefors (Detects Only)	0.166	0.181	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.859	0.931	Data Not Lognormal	
Lilliefors (NDs = DL)	0.196	0.154	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.87	0.931	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.207	0.154	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.952	0.931	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.095	0.154	Data Appear Lognormal	

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Dibenzo(a,h)anthracene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	34	0	34	13	21	61.76%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	21	0.002	0.603	0.279	0.329	0.178
Statistics (Detects Only)	13	0.005	0.418	0.185	0.163	0.145
Statistics (All: NDs treated as DL value)	34	0.002	0.603	0.243	0.295	0.17
Statistics (All: NDs treated as DL/2 value)	34	0.001	0.418	0.157	0.164	0.114
Statistics (Normal ROS Estimated Data)	34	-0.221	0.418	0.0744	0.0458	0.144
Statistics (Gamma ROS Estimated Data)	34	0.000001	0.418	0.0949	0.0337	0.12
Statistics (Lognormal ROS Estimated Data)	34	0.00444	0.418	0.0917	0.0372	0.116
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.144	1.062	0.162	-2.183	1.292	-0.592
Statistics (NDs = DL)	0.807	0.755	0.301	-2.149	1.801	-0.838
Statistics (NDs = DL/2)	0.816	0.764	0.192	-2.577	1.828	-0.709
Statistics (Gamma ROS Estimates)	0.228	0.228	0.416	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.065	1.2	-0.391

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.965	0.965	0.964	0.97
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.91	0.866	Data Appear Normal	
Lilliefors (Detects Only)	0.147	0.246	Data Appear Normal	
Shapiro-Wilks (NDs = DL)	0.915	0.933	Data Not Normal	
Lilliefors (NDs = DL)	0.143	0.152	Data Appear Normal	
Shapiro-Wilks (NDs = DL/2)	0.917	0.933	Data Not Normal	
Lilliefors (NDs = DL/2)	0.16	0.152	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.942	0.933	Data Appear Normal	
Lilliefors (Normal ROS Estimates)	0.155	0.152	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.935	0.858	0.921	0.919
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	0.308	0.755		
Kolmogorov-Smirnov (Detects Only)	0.148	0.242	Data Appear Gamma Distributed	
Anderson-Darling (NDs = DL)	2.563	0.785		
Kolmogorov-Smirnov (NDs = DL)	0.25	0.157	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	2.534	0.785		
Kolmogorov-Smirnov (NDs = DL/2)	0.296	0.156	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	3.034	0.887		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.281	0.166	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.937	0.86	0.849	0.987
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.88	0.866	Data Appear Lognormal	
Lilliefors (Detects Only)	0.197	0.246	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.727	0.933	Data Not Lognormal	
Lilliefors (NDs = DL)	0.245	0.152	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.713	0.933	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.315	0.152	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.962	0.933	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.134	0.152	Data Appear Lognormal	

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Dibenzofuran

	Num Obs	Num Miss	Num Valid	Detects	NDS	% NDS
Raw Statistics	11	0	11	1	10	90.91%

**Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).**

The data set for variable Dibenzofuran was not processed!

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Fluoranthene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	33	0	33	30	3	9.09%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	3	0.324	3.7	1.458	0.35	1.942
Statistics (Detects Only)	30	0.002	4.49	0.866	0.435	1.222
Statistics (All: NDs treated as DL value)	33	0.002	4.49	0.92	0.417	1.272
Statistics (All: NDs treated as DL/2 value)	33	0.002	4.49	0.854	0.417	1.189
Statistics (Normal ROS Estimated Data)	33	0.002	4.49	0.812	0.417	1.18
Statistics (Gamma ROS Estimated Data)	33	0.000001	4.49	0.799	0.389	1.184
Statistics (Lognormal ROS Estimated Data)	33	0.002	4.49	0.796	0.34	1.185
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.514	0.487	1.686	-1.376	2.059	-1.497
Statistics (NDs = DL)	0.528	0.5	1.743	-1.277	2.016	-1.578
Statistics (NDs = DL/2)	0.532	0.504	1.603	-1.34	1.994	-1.488
Statistics (Gamma ROS Estimates)	0.355	0.343	2.253	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.481	1.998	-1.349

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.833	0.84	0.838	0.823

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.695	0.927	Data Not Normal
Lilliefors (Detects Only)	0.257	0.162	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.702	0.931	Data Not Normal
Lilliefors (NDs = DL)	0.267	0.154	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.703	0.931	Data Not Normal
Lilliefors (NDs = DL/2)	0.248	0.154	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.68	0.931	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.264	0.154	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.977	0.971	0.981	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.229	0.808	
Kolmogorov-Smirnov (Detects Only)	0.0846	0.169	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.293	0.808	
Kolmogorov-Smirnov (NDs = DL)	0.0892	0.162	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.237	0.808	
Kolmogorov-Smirnov (NDs = DL/2)	0.0981	0.162	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.493	0.843	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.116	0.165	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.963	0.962	0.964	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.919	0.927	Data Not Lognormal
Lilliefors (Detects Only)	0.135	0.162	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.916	0.931	Data Not Lognormal
Lilliefors (NDs = DL)	0.141	0.154	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.922	0.931	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.132	0.154	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.939	0.931	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.12	0.154	Data Appear Lognormal

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Fluorene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	35	0	35	8	27	77.14%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	27	0.003	0.74	0.263	0.3	0.189
Statistics (Detects Only)	8	0.022	0.676	0.252	0.127	0.253
Statistics (All: NDs treated as DL value)	35	0.003	0.74	0.26	0.29	0.201
Statistics (All: NDs treated as DL/2 value)	35	0.0015	0.676	0.159	0.145	0.15
Statistics (Normal ROS Estimated Data)	35	-0.527	0.676	-0.106	-0.163	0.257
Statistics (Gamma ROS Estimated Data)	35	0.000001	0.676	0.0592	0.000001	0.157
Statistics (Lognormal ROS Estimated Data)	35	0.00226	0.676	0.0689	0.0154	0.153

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.946	0.884	0.266	-1.993	1.316	-0.66
Statistics (NDs = DL)	0.811	0.761	0.321	-2.077	1.713	-0.825
Statistics (NDs = DL/2)	0.773	0.725	0.206	-2.612	1.746	-0.668
Statistics (Gamma ROS Estimates)	0.102	0.112	0.582	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.875	1.349	-0.348

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.928	0.964	0.902	0.939

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.844	0.818	Data Appear Normal
Lilliefors (Detects Only)	0.296	0.313	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.915	0.934	Data Not Normal
Lilliefors (NDs = DL)	0.139	0.15	Data Appear Normal
Shapiro-Wilks (NDs = DL/2)	0.82	0.934	Data Not Normal
Lilliefors (NDs = DL/2)	0.236	0.15	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.89	0.934	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.185	0.15	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.957	0.921	0.974	0.966

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.359	0.738	
Kolmogorov-Smirnov (Detects Only)	0.189	0.302	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.962	0.785	
Kolmogorov-Smirnov (NDs = DL)	0.263	0.154	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.583	0.787	
Kolmogorov-Smirnov (NDs = DL/2)	0.231	0.154	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	6.95	0.954	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.47	0.168	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.965	0.887	0.892	0.941

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.908	0.818	Data Appear Lognormal
Lilliefors (Detects Only)	0.168	0.313	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.773	0.934	Data Not Lognormal
Lilliefors (NDs = DL)	0.276	0.15	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.786	0.934	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.268	0.15	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.884	0.934	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.2	0.15	Data Not Lognormal

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Indeno(1,2,3-cd)pyrene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	32	0	32	22	10	31.25%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	10	0.002	0.74	0.272	0.342	0.23
Statistics (Detects Only)	22	0.002	1.33	0.388	0.217	0.371
Statistics (All: NDs treated as DL value)	32	0.002	1.33	0.352	0.265	0.334
Statistics (All: NDs treated as DL/2 value)	32	0.001	1.33	0.31	0.18	0.334
Statistics (Normal ROS Estimated Data)	32	-0.531	1.33	0.248	0.156	0.397
Statistics (Gamma ROS Estimated Data)	32	0.000001	1.33	0.286	0.14	0.346
Statistics (Lognormal ROS Estimated Data)	32	0.002	1.33	0.28	0.113	0.347
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.78	0.728	0.498	-1.709	1.669	-0.976
Statistics (NDs = DL)	0.715	0.668	0.493	-1.888	1.829	-0.969
Statistics (NDs = DL/2)	0.655	0.614	0.473	-2.104	1.904	-0.905
Statistics (Gamma ROS Estimates)	0.284	0.278	1.007	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.316	1.756	-0.758

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.936	0.938	0.904	0.965

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.871	0.911	Data Not Normal
Lilliefors (Detects Only)	0.223	0.189	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.876	0.93	Data Not Normal
Lilliefors (NDs = DL)	0.178	0.157	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.816	0.93	Data Not Normal
Lilliefors (NDs = DL/2)	0.265	0.157	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.938	0.93	Data Appear Normal
Lilliefors (Normal ROS Estimates)	0.187	0.157	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.96	0.967	0.976	0.933

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.337	0.782	
Kolmogorov-Smirnov (Detects Only)	0.143	0.192	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.601	0.791	
Kolmogorov-Smirnov (NDs = DL)	0.12	0.162	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.492	0.796	
Kolmogorov-Smirnov (NDs = DL/2)	0.133	0.163	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.881	0.862	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.202	0.169	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.936	0.916	0.925	0.981

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.877	0.911	Data Not Lognormal
Lilliefors (Detects Only)	0.149	0.189	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.829	0.93	Data Not Lognormal
Lilliefors (NDs = DL)	0.166	0.157	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.849	0.93	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.21	0.157	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.949	0.93	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0865	0.157	Data Appear Lognormal

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Naphthalene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	35	0	35	10	25	71.43%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	25	0.003	0.74	0.255	0.29	0.194
Statistics (Detects Only)	10	0.014	0.537	0.146	0.0445	0.173
Statistics (All: NDs treated as DL value)	35	0.003	0.74	0.224	0.274	0.193
Statistics (All: NDs treated as DL/2 value)	35	0.0015	0.537	0.133	0.141	0.121
Statistics (Normal ROS Estimated Data)	35	-0.354	0.537	-0.013	-0.0278	0.16
Statistics (Gamma ROS Estimated Data)	35	0.000001	0.537	0.0459	0.000001	0.112
Statistics (Lognormal ROS Estimated Data)	35	0.00185	0.537	0.0544	0.0207	0.107

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.874	0.818	0.167	-2.596	1.242	-0.478
Statistics (NDs = DL)	0.729	0.686	0.307	-2.319	1.75	-0.755
Statistics (NDs = DL/2)	0.752	0.706	0.177	-2.814	1.746	-0.621
Statistics (Gamma ROS Estimates)	0.119	0.127	0.388	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.771	1.17	-0.31

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.878	0.95	0.932	0.928

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.774	0.842	Data Not Normal
Lilliefors (Detects Only)	0.318	0.28	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.894	0.934	Data Not Normal
Lilliefors (NDs = DL)	0.169	0.15	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.872	0.934	Data Not Normal
Lilliefors (NDs = DL/2)	0.182	0.15	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.886	0.934	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.213	0.15	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.986	0.926	0.966	0.99

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.661	0.753	
Kolmogorov-Smirnov (Detects Only)	0.3	0.275	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL)	1.598	0.79	
Kolmogorov-Smirnov (NDs = DL)	0.242	0.155	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.374	0.788	
Kolmogorov-Smirnov (NDs = DL/2)	0.232	0.155	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	4.621	0.944	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.398	0.168	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.959	0.912	0.904	0.946

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.908	0.842	Data Appear Lognormal
Lilliefors (Detects Only)	0.251	0.28	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.815	0.934	Data Not Lognormal
Lilliefors (NDs = DL)	0.254	0.15	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.804	0.934	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.253	0.15	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.905	0.934	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.196	0.15	Data Not Lognormal

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Phenanthrene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	32	0	32	25	7	21.88%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.002	0.4	0.192	0.1	0.16
Statistics (Detects Only)	25	0.002	2.17	0.488	0.24	0.549
Statistics (All: NDs treated as DL value)	32	0.002	2.17	0.423	0.225	0.503
Statistics (All: NDs treated as DL/2 value)	32	0.001	2.17	0.402	0.193	0.511
Statistics (Normal ROS Estimated Data)	32	-0.79	2.17	0.346	0.192	0.572
Statistics (Gamma ROS Estimated Data)	32	0.000001	2.17	0.382	0.192	0.524
Statistics (Lognormal ROS Estimated Data)	32	0.00196	2.17	0.387	0.192	0.52
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.645	0.605	0.756	-1.667	1.877	-1.126
Statistics (NDs = DL)	0.638	0.599	0.663	-1.82	1.862	-1.023
Statistics (NDs = DL/2)	0.585	0.551	0.687	-1.972	1.93	-0.979
Statistics (Gamma ROS Estimates)	0.272	0.267	1.404	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.172	1.982	-0.913

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.899	0.876	0.864	0.929

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.811	0.918	Data Not Normal
Lilliefors (Detects Only)	0.203	0.177	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.775	0.93	Data Not Normal
Lilliefors (NDs = DL)	0.227	0.157	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.753	0.93	Data Not Normal
Lilliefors (NDs = DL/2)	0.249	0.157	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.882	0.93	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.199	0.157	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.991	0.994	0.993	0.971

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.272	0.793	
Kolmogorov-Smirnov (Detects Only)	0.135	0.183	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.317	0.798	
Kolmogorov-Smirnov (NDs = DL)	0.106	0.163	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.283	0.803	
Kolmogorov-Smirnov (NDs = DL/2)	0.0987	0.163	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	0.924	0.867	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.188	0.17	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.94	0.939	0.953	0.976

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.878	0.918	Data Not Lognormal
Lilliefors (Detects Only)	0.221	0.177	Data Not Lognormal
Shapiro-Wilks (NDs = DL)	0.874	0.93	Data Not Lognormal
Lilliefors (NDs = DL)	0.19	0.157	Data Not Lognormal
Shapiro-Wilks (NDs = DL/2)	0.904	0.93	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.188	0.157	Data Not Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.936	0.93	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.164	0.157	Data Not Lognormal

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

**Appendix B4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Developed Area PAHs**

Pyrene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	33	0	33	28	5	15.15%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	0.002	3.7	0.889	0.324	1.579
Statistics (Detects Only)	28	0.003	4.24	0.839	0.467	1.151
Statistics (All: NDs treated as DL value)	33	0.002	4.24	0.846	0.35	1.196
Statistics (All: NDs treated as DL/2 value)	33	0.001	4.24	0.779	0.32	1.103
Statistics (Normal ROS Estimated Data)	33	-1.639	4.24	0.657	0.32	1.181
Statistics (Gamma ROS Estimated Data)	33	0.000001	4.24	0.723	0.32	1.095
Statistics (Lognormal ROS Estimated Data)	33	0.00261	4.24	0.721	0.2	1.095
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.546	0.516	1.537	-1.324	1.928	-1.456
Statistics (NDs = DL)	0.506	0.481	1.671	-1.419	2.037	-1.436
Statistics (NDs = DL/2)	0.499	0.474	1.562	-1.524	2.081	-1.366
Statistics (Gamma ROS Estimates)	0.279	0.274	2.594	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.662	2.026	-1.219

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.845	0.836	0.841	0.888

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.714	0.924	Data Not Normal
Lilliefors (Detects Only)	0.314	0.167	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.695	0.931	Data Not Normal
Lilliefors (NDs = DL)	0.317	0.154	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.708	0.931	Data Not Normal
Lilliefors (NDs = DL/2)	0.295	0.154	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.806	0.931	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.284	0.154	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.98	0.965	0.984	0.972

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.317	0.806	
Kolmogorov-Smirnov (Detects Only)	0.136	0.174	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.397	0.81	
Kolmogorov-Smirnov (NDs = DL)	0.133	0.162	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.281	0.811	
Kolmogorov-Smirnov (NDs = DL/2)	0.112	0.162	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.01	0.865	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.149	0.167	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.968	0.965	0.968	0.978

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.929	0.924	Data Appear Lognormal
Lilliefors (Detects Only)	0.147	0.167	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.921	0.931	Data Not Lognormal
Lilliefors (NDs = DL)	0.13	0.154	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.93	0.931	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.124	0.154	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.943	0.931	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.123	0.154	Data Appear Lognormal

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

Prepared By: EYM
Checked By: RRD

Appendix B5

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File Urban_PAH_Data No_Outliers.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

2-Methylnaphthalene

General Statistics

Number of Valid Data 30	Number of Detected Data 7
Number of Distinct Detected Data 7	Number of Non-Detect Data 23
Tolerance Factor 1.657	Percent Non-Detects 76.67%

Raw Statistics

Minimum Detected 0.012
 Maximum Detected 0.172
 Mean of Detected 0.0543
 SD of Detected 0.0622
 Minimum Non-Detect 0.002
 Maximum Non-Detect 0.74

Log-transformed Statistics

Minimum Detected -4.423
 Maximum Detected -1.76
 Mean of Detected -3.421
 SD of Detected 1.043
 Minimum Non-Detect -6.215
 Maximum Non-Detect -0.301

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 30
 Number treated as Detected with Single DL 0
 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 to draw conclusions**

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.736
 5% Shapiro Wilk Critical Value 0.803

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.863
 5% Shapiro Wilk Critical Value 0.803

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.11
 SD 0.104
 90% UTL 90% Coverage 0.283
 90% UPL (t) 0.249
 90% Percentile (z) 0.244
 95% Percentile (z) 0.281
 99% Percentile (z) 0.352

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -3.148
 SD (Log Scale) 1.914
 90% UTL 90% Coverage 1.024
 90% UPL (t) 0.551
 90% Percentile (z) 0.499
 95% Percentile (z) 1.001
 99% Percentile (z) 3.689

Log ROS Method

Mean in Original Scale 0.0191
 SD in Original Scale 0.0348
 Mean in Log Scale -4.628
 SD in Log Scale 1.044
 90% UTL 90% Coverage 0.0551
 90% UPL (t) 0.0393
 90% Percentile (z) 0.0372
 95% Percentile (z) 0.0544
 99% Percentile (z) 0.111

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.736
 Theta Star 0.0737
 nu star 10.31

A-D Test Statistic 0.675
 5% A-D Critical Value 0.726
 K-S Test Statistic 0.31
 5% K-S Critical Value 0.319

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.015
 Median 0.000001
 SD 0.0367
 k star 0.141
 Theta star 0.106
 Nu star 8.449
 90% Percentile of Chisquare (2k) 0.827
 90% Percentile 0.0439
 95% Percentile 0.0833
 99% Percentile 0.199

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.0315
 SD 0.0432
 SE of Mean 0.0117
 90% KM UTL with 90% Coverage 0.103
 90% KM Chebyshev UPL 0.163
 90% KM UPL (t) 0.0891
 90% Percentile (z) 0.0869
 95% Percentile (z) 0.103
 99% Percentile (z) 0.132

Gamma ROS Limits with Extrapolated Data

90% Wilson Hifferty (WH) Approx. Gamma UPL 0.0357
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.033
 90% WH Approx. Gamma UTL with 90% Coverage 0.0552
 90% HW Approx. Gamma UTL with 90% Coverage 0.0572

Note: DL/2 is not a recommended method.

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Acenaphthene

General Statistics

Number of Valid Data 35	Number of Detected Data 7
Number of Distinct Detected Data 7	Number of Non-Detect Data 28
Tolerance Factor 1.613	Percent Non-Detects 80.00%

Raw Statistics

Minimum Detected 0.0093
 Maximum Detected 0.609
 Mean of Detected 0.149
 SD of Detected 0.213
 Minimum Non-Detect 0.002
 Maximum Non-Detect 0.74

Log-transformed Statistics

Minimum Detected -4.678
 Maximum Detected -0.496
 Mean of Detected -2.677
 SD of Detected 1.369
 Minimum Non-Detect -6.215
 Maximum Non-Detect -0.301

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 35
 Number treated as Detected with Single DL 0
 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 to draw conclusions**

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.694
 5% Shapiro Wilk Critical Value 0.803

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.989
 5% Shapiro Wilk Critical Value 0.803

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.132
 SD 0.123
 90% UTL 90% Coverage 0.331
 90% UPL (t) 0.295
 90% Percentile (z) 0.29
 95% Percentile (z) 0.335
 99% Percentile (z) 0.418

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.852
 SD (Log Scale) 1.869
 90% UTL 90% Coverage 1.177
 90% UPL (t) 0.688
 90% Percentile (z) 0.634
 95% Percentile (z) 1.25
 99% Percentile (z) 4.466

 Log ROS Method
 Mean in Original Scale 0.0397
 SD in Original Scale 0.106
 Mean in Log Scale -4.267
 SD in Log Scale 1.227
 90% UTL 90% Coverage 0.101
 90% UPL (t) 0.0713
 90% Percentile (z) 0.0676
 95% Percentile (z) 0.106
 99% Percentile (z) 0.243

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.535
 Theta Star 0.279
 nu star 7.486

A-D Test Statistic 0.335
 5% A-D Critical Value 0.735
 K-S Test Statistic 0.233
 5% K-S Critical Value 0.322

Data appear Gamma Distributed at 5% Significance Level

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.0546
 SD 0.108
 SE of Mean 0.0226
 90% KM UTL with 90% Coverage 0.229
 90% KM Chebyshev UPL 0.384
 90% KM UPL (t) 0.198
 90% Percentile (z) 0.194
 95% Percentile (z) 0.233
 99% Percentile (z) 0.307

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.0353
 Median 0.000001
 SD 0.108
 k star 0.123
 Theta star 0.287
 Nu star 8.6
 90% Percentile of Chisquare (2k) 0.701

 90% Percentile 0.101
 95% Percentile 0.201
 99% Percentile 0.505

Gamma ROS Limits with Extrapolated Data

90% Wilson Hillferty (WH) Approx. Gamma UPL 0.073
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.062
 90% WH Approx. Gamma UTL with 90% Coverage 0.11
 90% HW Approx. Gamma UTL with 90% Coverage 0.104

Note: DL/2 is not a recommended method.

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Acenaphthylene

General Statistics

Number of Valid Data 35	Number of Detected Data 13
Number of Distinct Detected Data 13	Number of Non-Detect Data 22
Tolerance Factor 1.613	Percent Non-Detects 62.86%

Raw Statistics

Minimum Detected 0.045
 Maximum Detected 0.699
 Mean of Detected 0.3
 SD of Detected 0.19
 Minimum Non-Detect 0.001
 Maximum Non-Detect 0.74

Log-transformed Statistics

Minimum Detected -3.101
 Maximum Detected -0.358
 Mean of Detected -1.45
 SD of Detected 0.81
 Minimum Non-Detect -6.908
 Maximum Non-Detect -0.301

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 35
 Number treated as Detected with Single DL 0
 Single DL Non-Detect Percentage 100.00%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.935
 5% Shapiro Wilk Critical Value 0.866

Data appear Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.917
 5% Shapiro Wilk Critical Value 0.866

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.195
 SD 0.161
 90% UTL 90% Coverage 0.455
 90% UPL (t) 0.409
 90% Percentile (z) 0.402
 95% Percentile (z) 0.46
 99% Percentile (z) 0.57

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.531
 SD (Log Scale) 2.155
 90% UTL 90% Coverage 2.572
 90% UPL (t) 1.385
 90% Percentile (z) 1.26
 95% Percentile (z) 2.756
 99% Percentile (z) 11.97

Log ROS Method

Mean in Original Scale 0.152
 SD in Original Scale 0.163
 Mean in Log Scale -2.324
 SD in Log Scale 0.909
 90% UTL 90% Coverage 0.424
 90% UPL (t) 0.327
 90% Percentile (z) 0.314
 95% Percentile (z) 0.437
 99% Percentile (z) 0.812

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 1.732
 Theta Star 0.173
 nu star 45.03

A-D Test Statistic 0.401
 5% A-D Critical Value 0.742
 K-S Test Statistic 0.237
 5% K-S Critical Value 0.239

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.122
 Median 0.00204
 SD 0.182
 k star 0.145
 Theta star 0.838
 Nu star 10.17
 90% Percentile of Chisquare (2k) 0.857
 90% Percentile 0.359
 95% Percentile 0.674
 99% Percentile 1.593

Data Distribution Test with Detected Values Only

Data appear Normal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.165
 SD 0.167
 SE of Mean 0.032
 90% KM UTL with 90% Coverage 0.433
 90% KM Chebyshev UPL 0.672
 90% KM UPL (t) 0.385
 90% Percentile (z) 0.378
 95% Percentile (z) 0.439
 99% Percentile (z) 0.552

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.354
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.381
 90% WH Approx. Gamma UTL with 90% Coverage 0.507
 90% HW Approx. Gamma UTL with 90% Coverage 0.603

Note: DL/2 is not a recommended method.

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Anthracene

General Statistics

Number of Valid Data 33	Number of Detected Data 11
Number of Distinct Detected Data 11	Number of Non-Detect Data 22
Tolerance Factor 1.624	Percent Non-Detects 66.67%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 0.9
 Mean of Detected 0.286
 SD of Detected 0.269
 Minimum Non-Detect 0.001
 Maximum Non-Detect 0.74

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected -0.105
 Mean of Detected -2.137
 SD of Detected 1.959
 Minimum Non-Detect -6.908
 Maximum Non-Detect -0.301

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 32
 Number treated as Detected with Single DL 1
 Single DL Non-Detect Percentage 96.97%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.899
 5% Shapiro Wilk Critical Value 0.85

Data appear Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.832
 5% Shapiro Wilk Critical Value 0.85

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.19
 SD 0.183
 90% UTL 90% Coverage 0.488
 90% UPL (t) 0.433
 90% Percentile (z) 0.425
 95% Percentile (z) 0.491
 99% Percentile (z) 0.616

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.525
 SD (Log Scale) 1.973
 90% UTL 90% Coverage 1.973
 90% UPL (t) 1.1
 90% Percentile (z) 1.003
 95% Percentile (z) 2.055
 99% Percentile (z) 7.884

Log ROS Method
 Mean in Original Scale 0.104
 SD in Original Scale 0.2
 Mean in Log Scale -3.856
 SD in Log Scale 1.819
 90% UTL 90% Coverage 0.406
 90% UPL (t) 0.237
 90% Percentile (z) 0.218
 95% Percentile (z) 0.422
 99% Percentile (z) 1.456

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.558
 Theta Star 0.514
 nu star 12.27

A-D Test Statistic 0.423
 5% A-D Critical Value 0.767
 K-S Test Statistic 0.212
 5% K-S Critical Value 0.266

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.104
 Median 0.000001
 SD 0.203
 k star 0.125
 Theta star 0.837
 Nu star 8.225
 90% Percentile of Chisquare (2k) 0.713
 90% Percentile 0.299
 95% Percentile 0.592
 99% Percentile 1.481

Data Distribution Test with Detected Values Only

Data appear Normal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.131
 SD 0.201
 SE of Mean 0.0409
 90% KM UTL with 90% Coverage 0.458
 90% KM Chebyshev UPL 0.744
 90% KM UPL (t) 0.398
 90% Percentile (z) 0.389
 95% Percentile (z) 0.462
 99% Percentile (z) 0.599

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.264
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.251
 90% WH Approx. Gamma UTL with 90% Coverage 0.396
 90% HW Approx. Gamma UTL with 90% Coverage 0.42

Note: DL/2 is not a recommended method.

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Benzo(a)anthracene

General Statistics

Number of Valid Data 34	Number of Detected Data 22
Number of Distinct Detected Data 21	Number of Non-Detect Data 12
Tolerance Factor 1.618	Percent Non-Detects 35.29%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 3.59
 Mean of Detected 0.732
 SD of Detected 0.934
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected 1.278
 Mean of Detected -1.372
 SD of Detected 1.966
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 34
 Number treated as Detected with Single DL 0
 Single DL Non-Detect Percentage 100.00%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.75
 5% Shapiro Wilk Critical Value 0.911

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.895
 5% Shapiro Wilk Critical Value 0.911

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.573
 SD 0.83
 90% UTL 90% Coverage 1.917
 90% UPL (t) 1.675
 90% Percentile (z) 1.637
 95% Percentile (z) 1.939
 99% Percentile (z) 2.504

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.818
 SD (Log Scale) 2.129
 90% UTL 90% Coverage 5.091
 90% UPL (t) 2.736
 90% Percentile (z) 2.485
 95% Percentile (z) 5.385
 99% Percentile (z) 22.97

Log ROS Method

Mean in Original Scale 0.485
 SD in Original Scale 0.819
 Mean in Log Scale -2.26
 SD in Log Scale 2.103
 90% UTL 90% Coverage 3.137
 90% UPL (t) 1.699
 90% Percentile (z) 1.545
 95% Percentile (z) 3.316
 99% Percentile (z) 13.9

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.536
 Theta Star 1.367
 nu star 23.57

A-D Test Statistic 0.258
 5% A-D Critical Value 0.797
 K-S Test Statistic 0.123
 5% K-S Critical Value 0.195

Data appear Gamma Distributed at 5% Significance Level

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.512
 SD 0.811
 SE of Mean 0.145
 90% KM UTL with 90% Coverage 1.824
 90% KM Chebyshev UPL 2.979
 90% KM UPL (t) 1.587
 90% Percentile (z) 1.551
 95% Percentile (z) 1.845
 99% Percentile (z) 2.398

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.48
 Median 0.175
 SD 0.823
 k star 0.168
 Theta star 2.859
 Nu star 11.42
 90% Percentile of Chisquare (2k) 1.008
 90% Percentile 1.441
 95% Percentile 2.581
 99% Percentile 5.815

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 1.377
 90% Hawkins Wixley (HW) Approx. Gamma UPL 1.52
 90% WH Approx. Gamma UTL with 90% Coverage 1.937
 90% HW Approx. Gamma UTL with 90% Coverage 2.338

Note: DL/2 is not a recommended method.

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Benzo(a)pyrene

General Statistics

Number of Valid Data 34	Number of Detected Data 23
Number of Distinct Detected Data 23	Number of Non-Detect Data 11
Tolerance Factor 1.618	Percent Non-Detects 32.35%

Raw Statistics

Minimum Detected 0.004
 Maximum Detected 3.29
 Mean of Detected 0.789
 SD of Detected 0.956
 Minimum Non-Detect 0.004
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -5.521
 Maximum Detected 1.191
 Mean of Detected -1.083
 SD of Detected 1.609
 Minimum Non-Detect -5.521
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 34
 Number treated as Detected with Single DL 0
 Single DL Non-Detect Percentage 100.00%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.751
 5% Shapiro Wilk Critical Value 0.914

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.932
 5% Shapiro Wilk Critical Value 0.914

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.623
 SD 0.869
 90% UTL 90% Coverage 2.03
 90% UPL (t) 1.776
 90% Percentile (z) 1.737
 95% Percentile (z) 2.052
 99% Percentile (z) 2.645

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.681
 SD (Log Scale) 2.038
 90% UTL 90% Coverage 5.042
 90% UPL (t) 2.783
 90% Percentile (z) 2.537
 95% Percentile (z) 5.321
 99% Percentile (z) 21.35

Log ROS Method

Mean in Original Scale 0.549
 SD in Original Scale 0.857
 Mean in Log Scale -1.846
 SD in Log Scale 1.82
 90% UTL 90% Coverage 3.007
 90% UPL (t) 1.768
 90% Percentile (z) 1.628
 95% Percentile (z) 3.155
 99% Percentile (z) 10.91

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.649
 Theta Star 1.215
 nu star 29.86

A-D Test Statistic 0.349
 5% A-D Critical Value 0.786
 K-S Test Statistic 0.158
 5% K-S Critical Value 0.189

Data appear Gamma Distributed at 5% Significance Level

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.57
 SD 0.851
 SE of Mean 0.152
 90% KM UTL with 90% Coverage 1.947
 90% KM Chebyshev UPL 3.159
 90% KM UPL (t) 1.699
 90% Percentile (z) 1.661
 95% Percentile (z) 1.97
 99% Percentile (z) 2.549

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.543
 Median 0.226
 SD 0.862
 k star 0.192
 Theta star 2.826
 Nu star 13.06
 90% Percentile of Chisquare (2k) 1.162
 90% Percentile 1.641
 95% Percentile 2.826
 99% Percentile 6.111

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 1.574
 90% Hawkins Wixley (HW) Approx. Gamma UPL 1.775
 90% WH Approx. Gamma UTL with 90% Coverage 2.173
 90% HW Approx. Gamma UTL with 90% Coverage 2.661

Note: DL/2 is not a recommended method.

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Benzo(b)fluoranthene

General Statistics

Number of Valid Data 33	Number of Detected Data 23
Number of Distinct Detected Data 23	Number of Non-Detect Data 10
Tolerance Factor 1.624	Percent Non-Detects 30.30%

Raw Statistics

Minimum Detected 0.034
 Maximum Detected 3.72
 Mean of Detected 0.956
 SD of Detected 1.024
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -3.381
 Maximum Detected 1.314
 Mean of Detected -0.56
 SD of Detected 1.094
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 32
 Number treated as Detected with Single DL 1
 Single DL Non-Detect Percentage 96.97%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.764
 5% Shapiro Wilk Critical Value 0.914

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.963
 5% Shapiro Wilk Critical Value 0.914

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.745
 SD 0.957
 90% UTL 90% Coverage 2.3
 90% UPL (t) 2.017
 90% Percentile (z) 1.972
 95% Percentile (z) 2.32
 99% Percentile (z) 2.972

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.494
 SD (Log Scale) 2.259
 90% UTL 90% Coverage 8.802
 90% UPL (t) 4.51
 90% Percentile (z) 4.058
 95% Percentile (z) 9.22
 99% Percentile (z) 42.98

Log ROS Method

Mean in Original Scale 0.698
 SD in Original Scale 0.939
 Mean in Log Scale -1.142
 SD in Log Scale 1.322
 90% UTL 90% Coverage 2.732
 90% UPL (t) 1.848
 90% Percentile (z) 1.737
 95% Percentile (z) 2.807
 99% Percentile (z) 6.91

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.991
 Theta Star 0.964
 nu star 45.61

A-D Test Statistic 0.648
 5% A-D Critical Value 0.767
 K-S Test Statistic 0.187
 5% K-S Critical Value 0.186

Data follow Appx. Gamma Distribution at 5% Significance Level

Data Distribution Test with Detected Values Only

Data follow Appr. Gamma Distribution at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.707
 SD 0.933
 SE of Mean 0.168
 90% KM UTL with 90% Coverage 2.223
 90% KM Chebyshev UPL 3.548
 90% KM UPL (t) 1.946
 90% Percentile (z) 1.903
 95% Percentile (z) 2.242
 99% Percentile (z) 2.878

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.679
 Median 0.39
 SD 0.953
 k star 0.197
 Theta star 3.443
 Nu star 13.01
 90% Percentile of Chisquare (2k) 1.192
 90% Percentile 2.052
 95% Percentile 3.51
 99% Percentile 7.533

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 2.03
 90% Hawkins Wixley (HW) Approx. Gamma UPL 2.393
 90% WH Approx. Gamma UTL with 90% Coverage 2.778
 90% HW Approx. Gamma UTL with 90% Coverage 3.563

Note: DL/2 is not a recommended method.

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Benzo(g,h,i)perylene

General Statistics

Number of Valid Data 33	Number of Detected Data 21
Number of Distinct Detected Data 21	Number of Non-Detect Data 12
Tolerance Factor 1.624	Percent Non-Detects 36.36%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 1.61
 Mean of Detected 0.405
 SD of Detected 0.442
 Minimum Non-Detect 0.002
 Maximum Non-Detect 0.74

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected 0.476
 Mean of Detected -1.871
 SD of Detected 1.878
 Minimum Non-Detect -6.215
 Maximum Non-Detect -0.301

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 28
 Number treated as Detected with Single DL 5
 Single DL Non-Detect Percentage 84.85%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.839
 5% Shapiro Wilk Critical Value 0.908

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.897
 5% Shapiro Wilk Critical Value 0.908

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.307
 SD 0.379
 90% UTL 90% Coverage 0.922
 90% UPL (t) 0.81
 90% Percentile (z) 0.793
 95% Percentile (z) 0.93
 99% Percentile (z) 1.188

Maximum Likelihood Estimate(MLE) Method

Mean 1.169
 SD 0.289
 90% UTL with 90% Coverage 1.639
 90% UPL (t) 1.554
 90% Percentile (z) 1.54
 95% Percentile (z) 1.645
 99% Percentile (z) 1.843

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.575
 Theta Star 0.705
 nu star 24.14

A-D Test Statistic 0.231
 5% A-D Critical Value 0.793
 K-S Test Statistic 0.101
 5% K-S Critical Value 0.199
Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.266
 Median 0.072
 SD 0.398
 k star 0.183
 Theta star 1.456
 Nu star 12.06
 90% Percentile of Chisquare (2k) 1.103
 90% Percentile 0.803
 95% Percentile 1.403
 99% Percentile 3.079

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.219
 SD (Log Scale) 1.953
 90% UTL 90% Coverage 2.594
 90% UPL (t) 1.455
 90% Percentile (z) 1.328
 95% Percentile (z) 2.7
 99% Percentile (z) 10.22

Log ROS Method

Mean in Original Scale 0.267
 SD in Original Scale 0.396
 90% UTL with 90% Coverage 1.65
 90% BCA UTL with 90% Coverage 1.102
 90% Bootstrap (%) UTL with 90% Coverage 1.108
 90% UPL (t) 0.923
 90% Percentile (z) 0.842
 95% Percentile (z) 1.718
 99% Percentile (z) 6.543

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.279
 SD 0.386
 SE of Mean 0.0695
 90% KM UTL with 90% Coverage 0.906
 90% KM Chebyshev UPL 1.455
 90% KM UPL (t) 0.792
 90% Percentile (z) 0.774
 95% Percentile (z) 0.914
 99% Percentile (z) 1.177

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.786
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.882
 90% WH Approx. Gamma UTL with 90% Coverage 1.101
 90% HW Approx. Gamma UTL with 90% Coverage 1.35

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Benzo(k)fluoranthene

General Statistics

Number of Valid Data 32	Number of Detected Data 16
Number of Distinct Detected Data 15	Number of Non-Detect Data 16
Tolerance Factor 1.63	Percent Non-Detects 50.00%

Raw Statistics

Minimum Detected 0.006
 Maximum Detected 1.47
 Mean of Detected 0.479
 SD of Detected 0.432
 Minimum Non-Detect 0.003
 Maximum Non-Detect 0.74

Log-transformed Statistics

Minimum Detected -5.116
 Maximum Detected 0.385
 Mean of Detected -1.252
 SD of Detected 1.308
 Minimum Non-Detect -5.809
 Maximum Non-Detect -0.301

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 29
 Number treated as Detected with Single DL 3
 Single DL Non-Detect Percentage 90.63%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.854
 5% Shapiro Wilk Critical Value 0.887

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.857
 5% Shapiro Wilk Critical Value 0.887

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.308
 SD 0.356
 90% UTL 90% Coverage 0.888
 90% UPL (t) 0.781
 90% Percentile (z) 0.764
 95% Percentile (z) 0.893
 99% Percentile (z) 1.136

Maximum Likelihood Estimate(MLE) Method

Mean 0.353
 SD 0.691
 90% UTL with 90% Coverage 1.48
 90% UPL (t) 1.272
 90% Percentile (z) 1.239
 95% Percentile (z) 1.49
 99% Percentile (z) 1.961

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.128
 SD (Log Scale) 1.949
 90% UTL 90% Coverage 2.856
 90% UPL (t) 1.59
 90% Percentile (z) 1.447
 95% Percentile (z) 2.938
 99% Percentile (z) 11.09

Log ROS Method

Mean in Original Scale 0.263
 SD in Original Scale 0.373
 90% UTL with 90% Coverage 1.115
 90% BCA UTL with 90% Coverage 1.12
 90% Bootstrap (%) UTL with 90% Coverage 1.147
 90% UPL (t) 0.722
 90% Percentile (z) 0.673
 95% Percentile (z) 1.138
 99% Percentile (z) 3.052

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.941
 Theta Star 0.509
 nu star 30.11

A-D Test Statistic 0.313
 5% A-D Critical Value 0.761
 K-S Test Statistic 0.122
 5% K-S Critical Value 0.221

Data appear Gamma Distributed at 5% Significance Level

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.273
 SD 0.368
 SE of Mean 0.0686
 90% KM UTL with 90% Coverage 0.873
 90% KM Chebyshev UPL 1.393
 90% KM UPL (t) 0.762
 90% Percentile (z) 0.744
 95% Percentile (z) 0.878
 99% Percentile (z) 1.128

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.246
 Median 0.0637
 SD 0.384
 k star 0.15
 Theta star 1.645
 Nu star 9.583
 90% Percentile of Chisquare (2k) 0.888
 90% Percentile 0.73
 95% Percentile 1.356
 99% Percentile 3.173

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.728
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.803
 90% WH Approx. Gamma UTL with 90% Coverage 1.048
 90% HW Approx. Gamma UTL with 90% Coverage 1.282

Note: DL/2 is not a recommended method.

Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs

Carbazole

General Statistics

Number of Valid Data	7	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	7

**Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**

The data set for variable Carbazole was not processed!

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Chrysene

General Statistics

Number of Valid Data 33	Number of Detected Data 24
Number of Distinct Detected Data 24	Number of Non-Detect Data 9
Tolerance Factor 1.624	Percent Non-Detects 27.27%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 3.37
 Mean of Detected 0.783
 SD of Detected 0.944
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected 1.215
 Mean of Detected -1.212
 SD of Detected 1.868
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 33
 Number treated as Detected with Single DL 0
 Single DL Non-Detect Percentage 100.00%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.769
 5% Shapiro Wilk Critical Value 0.916

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.891
 5% Shapiro Wilk Critical Value 0.916

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.659
 SD 0.876
 90% UTL 90% Coverage 2.082
 90% UPL (t) 1.823
 90% Percentile (z) 1.782
 95% Percentile (z) 2.1
 99% Percentile (z) 2.697

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.622
 SD (Log Scale) 2.155
 90% UTL 90% Coverage 6.545
 90% UPL (t) 3.458
 90% Percentile (z) 3.127
 95% Percentile (z) 6.842
 99% Percentile (z) 29.72

Log ROS Method

Mean in Original Scale 0.583
 SD in Original Scale 0.867
 Mean in Log Scale -1.837
 SD in Log Scale 1.993
 90% UTL 90% Coverage 4.058
 90% UPL (t) 2.249
 90% Percentile (z) 2.049
 95% Percentile (z) 4.227
 99% Percentile (z) 16.44

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.582
 Theta Star 1.344
 nu star 27.95

A-D Test Statistic 0.248
 5% A-D Critical Value 0.794
 K-S Test Statistic 0.112
 5% K-S Critical Value 0.186

Data appear Gamma Distributed at 5% Significance Level

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.609
 SD 0.858
 SE of Mean 0.155
 90% KM UTL with 90% Coverage 2.002
 90% KM Chebyshev UPL 3.221
 90% KM UPL (t) 1.748
 90% Percentile (z) 1.708
 95% Percentile (z) 2.02
 99% Percentile (z) 2.605

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.582
 Median 0.24
 SD 0.869
 k star 0.216
 Theta star 2.7
 Nu star 14.23
 90% Percentile of Chisquare (2k) 1.304
 90% Percentile 1.76
 95% Percentile 2.94
 99% Percentile 6.151

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 1.696
 90% Hawkins Wixley (HW) Approx. Gamma UPL 1.928
 90% WH Approx. Gamma UTL with 90% Coverage 2.325
 90% HW Approx. Gamma UTL with 90% Coverage 2.857

Note: DL/2 is not a recommended method.

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Dibenzo(a,h)anthracene

General Statistics

Number of Valid Data 34	Number of Detected Data 13
Number of Distinct Detected Data 13	Number of Non-Detect Data 21
Tolerance Factor 1.618	Percent Non-Detects 61.76%

Raw Statistics

Minimum Detected 0.005
Maximum Detected 0.418
Mean of Detected 0.185
SD of Detected 0.145
Minimum Non-Detect 0.002
Maximum Non-Detect 0.603

Log-transformed Statistics

Minimum Detected -5.298
Maximum Detected -0.872
Mean of Detected -2.183
SD of Detected 1.292
Minimum Non-Detect -6.215
Maximum Non-Detect -0.506

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 34
Number treated as Detected with Single DL 0
Single DL Non-Detect Percentage 100.00%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.91
5% Shapiro Wilk Critical Value 0.866

Data appear Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.88
5% Shapiro Wilk Critical Value 0.866

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
Mean 0.157
SD 0.114
90% UTL 90% Coverage 0.341
90% UPL (t) 0.308
90% Percentile (z) 0.303
95% Percentile (z) 0.344
99% Percentile (z) 0.421

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
Mean (Log Scale) -2.577
SD (Log Scale) 1.828
90% UTL 90% Coverage 1.465
90% UPL (t) 0.86
90% Percentile (z) 0.791
95% Percentile (z) 1.538
99% Percentile (z) 5.346

Log ROS Method

Mean in Original Scale 0.0917
SD in Original Scale 0.116
Mean in Log Scale -3.065
SD in Log Scale 1.2
90% UTL 90% Coverage 0.325
90% UPL (t) 0.229
90% Percentile (z) 0.217
95% Percentile (z) 0.336
99% Percentile (z) 0.76

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.931
Theta Star 0.199
nu star 24.21

A-D Test Statistic 0.308
5% A-D Critical Value 0.755
K-S Test Statistic 0.148
5% K-S Critical Value 0.242

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
Mean 0.0949
Median 0.0337
SD 0.12
k star 0.228
Theta star 0.417
Nu star 15.47
90% Percentile of Chisquare (2k) 1.373
90% Percentile 0.286
95% Percentile 0.472
99% Percentile 0.974

Data Distribution Test with Detected Values Only

Data appear Normal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
Mean 0.111
SD 0.126
SE of Mean 0.0272
90% KM UTL with 90% Coverage 0.314
90% KM Chebyshev UPL 0.494
90% KM UPL (t) 0.278
90% Percentile (z) 0.272
95% Percentile (z) 0.318
99% Percentile (z) 0.404

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.285
90% Hawkins Wixley (HW) Approx. Gamma UPL 0.334
90% WH Approx. Gamma UTL with 90% Coverage 0.386
90% HW Approx. Gamma UTL with 90% Coverage 0.491

Note: DL/2 is not a recommended method.

Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs

Dibenzofuran

General Statistics

Number of Valid Data	11	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	10

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g.,
EPC, BTV).

The data set for variable Dibenzofuran was not processed!

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Fluoranthene

General Statistics

Number of Valid Data 33	Number of Detected Data 30
Number of Distinct Detected Data 25	Number of Non-Detect Data 3
Tolerance Factor 1.624	Percent Non-Detects 9.09%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 4.49
 Mean of Detected 0.866
 SD of Detected 1.222
 Minimum Non-Detect 0.324
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected 1.502
 Mean of Detected -1.376
 SD of Detected 2.059
 Minimum Non-Detect -1.127
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 31
 Number treated as Detected with Single DL 2
 Single DL Non-Detect Percentage 93.94%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.695
 5% Shapiro Wilk Critical Value 0.927

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.919
 5% Shapiro Wilk Critical Value 0.927

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.854
 SD 1.189
 90% UTL 90% Coverage 2.784
 90% UPL (t) 2.432
 90% Percentile (z) 2.377
 95% Percentile (z) 2.809
 99% Percentile (z) 3.619

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.34
 SD (Log Scale) 1.994
 90% UTL 90% Coverage 6.677
 90% UPL (t) 3.7
 90% Percentile (z) 3.371
 95% Percentile (z) 6.957
 99% Percentile (z) 27.07

Log ROS Method

Mean in Original Scale 0.796
 SD in Original Scale 1.185
 Mean in Log Scale -1.481
 SD in Log Scale 1.998
 90% UTL 90% Coverage 5.838
 90% UPL (t) 3.232
 90% Percentile (z) 2.944
 95% Percentile (z) 6.083
 99% Percentile (z) 23.74

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.484
 Theta Star 1.788
 nu star 29.06

A-D Test Statistic 0.229
 5% A-D Critical Value 0.808
 K-S Test Statistic 0.0846
 5% K-S Critical Value 0.169

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.799
 Median 0.389
 SD 1.184
 k star 0.343
 Theta star 2.332
 Nu star 22.61
 90% Percentile of Chisquare (2k) 1.985
 90% Percentile 2.315
 95% Percentile 3.5
 99% Percentile 6.53

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.811
 SD 1.167
 SE of Mean 0.208
 90% KM UTL with 90% Coverage 2.707
 90% KM Chebyshev UPL 4.365
 90% KM UPL (t) 2.361
 90% Percentile (z) 2.307
 95% Percentile (z) 2.731
 99% Percentile (z) 3.526

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 2.195
 90% Hawkins Wixley (HW) Approx. Gamma UPL 2.377
 90% WH Approx. Gamma UTL with 90% Coverage 2.922
 90% HW Approx. Gamma UTL with 90% Coverage 3.342

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Fluorene

General Statistics

Number of Valid Data 35	Number of Detected Data 8
Number of Distinct Detected Data 8	Number of Non-Detect Data 27
Tolerance Factor 1.613	Percent Non-Detects 77.14%

Raw Statistics

Minimum Detected 0.022
 Maximum Detected 0.676
 Mean of Detected 0.252
 SD of Detected 0.253
 Minimum Non-Detect 0.003
 Maximum Non-Detect 0.74

Log-transformed Statistics

Minimum Detected -3.817
 Maximum Detected -0.392
 Mean of Detected -1.993
 SD of Detected 1.316
 Minimum Non-Detect -5.809
 Maximum Non-Detect -0.301

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 35
 Number treated as Detected with Single DL 0
 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 to draw conclusions**

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.844
 5% Shapiro Wilk Critical Value 0.818

Data appear Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.908
 5% Shapiro Wilk Critical Value 0.818

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.159
 SD 0.15
 90% UTL 90% Coverage 0.401
 90% UPL (t) 0.358
 90% Percentile (z) 0.351
 95% Percentile (z) 0.406
 99% Percentile (z) 0.508

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.612
 SD (Log Scale) 1.746
 90% UTL 90% Coverage 1.226
 90% UPL (t) 0.743
 90% Percentile (z) 0.688
 95% Percentile (z) 1.297
 99% Percentile (z) 4.262

Log ROS Method

Mean in Original Scale 0.0689
 SD in Original Scale 0.153
 Mean in Log Scale -3.875
 SD in Log Scale 1.349
 90% UTL 90% Coverage 0.183
 90% UPL (t) 0.124
 90% Percentile (z) 0.117
 95% Percentile (z) 0.191
 99% Percentile (z) 0.478

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.675
 Theta Star 0.373
 nu star 10.8

A-D Test Statistic 0.359
 5% A-D Critical Value 0.738
 K-S Test Statistic 0.189
 5% K-S Critical Value 0.302

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.0592
 Median 0.000001
 SD 0.157
 k star 0.112
 Theta star 0.528
 Nu star 7.839
 90% Percentile of Chisquare (2k) 0.622
 90% Percentile 0.164
 95% Percentile 0.34
 99% Percentile 0.888

Data Distribution Test with Detected Values Only

Data appear Normal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.0885
 SD 0.151
 SE of Mean 0.0291
 90% KM UTL with 90% Coverage 0.332
 90% KM Chebyshev UPL 0.547
 90% KM UPL (t) 0.288
 90% Percentile (z) 0.282
 95% Percentile (z) 0.336
 99% Percentile (z) 0.439

Gamma ROS Limits with Extrapolated Data

90% Wilson Hillferty (WH) Approx. Gamma UPL 0.116
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.0916
 90% WH Approx. Gamma UTL with 90% Coverage 0.177
 90% HW Approx. Gamma UTL with 90% Coverage 0.157

Note: DL/2 is not a recommended method.

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Indeno(1,2,3-cd)pyrene

General Statistics

Number of Valid Data 32	Number of Detected Data 22
Number of Distinct Detected Data 22	Number of Non-Detect Data 10
Tolerance Factor 1.63	Percent Non-Detects 31.25%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 1.33
 Mean of Detected 0.388
 SD of Detected 0.371
 Minimum Non-Detect 0.002
 Maximum Non-Detect 0.74

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected 0.285
 Mean of Detected -1.709
 SD of Detected 1.669
 Minimum Non-Detect -6.215
 Maximum Non-Detect -0.301

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 27
 Number treated as Detected with Single DL 5
 Single DL Non-Detect Percentage 84.38%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.871
 5% Shapiro Wilk Critical Value 0.911

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.877
 5% Shapiro Wilk Critical Value 0.911

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.31
 SD 0.334
 90% UTL 90% Coverage 0.854
 90% UPL (t) 0.753
 90% Percentile (z) 0.737
 95% Percentile (z) 0.859
 99% Percentile (z) 1.086

Maximum Likelihood Estimate(MLE) Method

Mean 0.338
 SD 0.392
 90% UTL with 90% Coverage 0.978

90% UPL (t) 0.86
 90% Percentile (z) 0.841
 95% Percentile (z) 0.983
 99% Percentile (z) 1.251

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.704
 Theta Star 0.552
 nu star 30.97

A-D Test Statistic 0.337
 5% A-D Critical Value 0.782
 K-S Test Statistic 0.143
 5% K-S Critical Value 0.192

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data

Mean 0.286
 Median 0.14
 SD 0.346
 k star 0.278
 Theta star 1.028
 Nu star 17.79
 90% Percentile of Chisquare (2k) 1.654

90% Percentile 0.85
 95% Percentile 1.339
 99% Percentile 2.622

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.104
 SD (Log Scale) 1.904
 90% UTL 90% Coverage 2.72
 90% UPL (t) 1.534
 90% Percentile (z) 1.4
 95% Percentile (z) 2.796
 99% Percentile (z) 10.24

Log ROS Method

Mean in Original Scale 0.28
 SD in Original Scale 0.347
 90% UTL with 90% Coverage 1.729
 90% BCA UTL with 90% Coverage 0.893
 90% Bootstrap (%) UTL with 90% Coverage 0.898
 90% UPL (t) 1.019
 90% Percentile (z) 0.937
 95% Percentile (z) 1.773
 99% Percentile (z) 5.868

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method

Mean 0.291
 SD 0.34
 SE of Mean 0.0624
 90% KM UTL with 90% Coverage 0.845
 90% KM Chebyshev UPL 1.326
 90% KM UPL (t) 0.743
 90% Percentile (z) 0.726
 95% Percentile (z) 0.85
 99% Percentile (z) 1.081

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.83
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.958
 90% WH Approx. Gamma UTL with 90% Coverage 1.114
 90% HW Approx. Gamma UTL with 90% Coverage 1.377

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Naphthalene

General Statistics

Number of Valid Data 35	Number of Detected Data 10
Number of Distinct Detected Data 10	Number of Non-Detect Data 25
Tolerance Factor 1.613	Percent Non-Detects 71.43%

Raw Statistics

Minimum Detected 0.014
 Maximum Detected 0.537
 Mean of Detected 0.146
 SD of Detected 0.173
 Minimum Non-Detect 0.003
 Maximum Non-Detect 0.74

Log-transformed Statistics

Minimum Detected -4.269
 Maximum Detected -0.622
 Mean of Detected -2.596
 SD of Detected 1.242
 Minimum Non-Detect -5.809
 Maximum Non-Detect -0.301

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 35
 Number treated as Detected with Single DL 0
 Single DL Non-Detect Percentage 100.00%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.774
 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 0.908
 5% Shapiro Wilk Critical Value 0.842

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.133
 SD 0.121
 90% UTL 90% Coverage 0.328
 90% UPL (t) 0.293
 90% Percentile (z) 0.288
 95% Percentile (z) 0.332
 99% Percentile (z) 0.414

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.814
 SD (Log Scale) 1.746
 90% UTL 90% Coverage 1.002
 90% UPL (t) 0.607
 90% Percentile (z) 0.562
 95% Percentile (z) 1.06
 99% Percentile (z) 3.485

Log ROS Method
 Mean in Original Scale 0.0544
 SD in Original Scale 0.107
 Mean in Log Scale -3.771
 SD in Log Scale 1.17
 90% UTL 90% Coverage 0.152
 90% UPL (t) 0.109
 90% Percentile (z) 0.103
 95% Percentile (z) 0.158
 99% Percentile (z) 0.35

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.678
 Theta Star 0.215
 nu star 13.57

A-D Test Statistic 0.661
 5% A-D Critical Value 0.753
 K-S Test Statistic 0.3
 5% K-S Critical Value 0.275

Data follow Appx. Gamma Distribution at 5% Significance Level

Data Distribution Test with Detected Values Only

Data follow Appr. Gamma Distribution at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.0719
 SD 0.115
 SE of Mean 0.0242
 90% KM UTL with 90% Coverage 0.257
 90% KM Chebyshev UPL 0.422
 90% KM UPL (t) 0.224
 90% Percentile (z) 0.219
 95% Percentile (z) 0.261
 99% Percentile (z) 0.339

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.0459
 Median 0.000001
 SD 0.112
 k star 0.127
 Theta star 0.361
 Nu star 8.917
 90% Percentile of Chisquare (2k) 0.733
 90% Percentile 0.132
 95% Percentile 0.26
 99% Percentile 0.645

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.104
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.0925
 90% WH Approx. Gamma UTL with 90% Coverage 0.154
 90% HW Approx. Gamma UTL with 90% Coverage 0.153

Note: DL/2 is not a recommended method.

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Phenanthrene

General Statistics

Number of Valid Data 32	Number of Detected Data 25
Number of Distinct Detected Data 23	Number of Non-Detect Data 7
Tolerance Factor 1.63	Percent Non-Detects 21.88%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 2.17
 Mean of Detected 0.488
 SD of Detected 0.549
 Minimum Non-Detect 0.002
 Maximum Non-Detect 0.4

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected 0.775
 Mean of Detected -1.667
 SD of Detected 1.877
 Minimum Non-Detect -6.215
 Maximum Non-Detect -0.916

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 22
 Number treated as Detected with Single DL 10
 Single DL Non-Detect Percentage 68.75%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.811
 5% Shapiro Wilk Critical Value 0.918

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.878
 5% Shapiro Wilk Critical Value 0.918

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.402
 SD 0.511
 90% UTL 90% Coverage 1.235
 90% UPL (t) 1.082
 90% Percentile (z) 1.057
 95% Percentile (z) 1.243
 99% Percentile (z) 1.591

Maximum Likelihood Estimate(MLE) Method

Mean -0.0714
 SD 0.953
 90% UTL with 90% Coverage 1.483
 90% UPL (t) 1.196
 90% Percentile (z) 1.15
 95% Percentile (z) 1.496
 99% Percentile (z) 2.146

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.594
 Theta Star 0.821
 nu star 29.71

A-D Test Statistic 0.272
 5% A-D Critical Value 0.793
 K-S Test Statistic 0.135
 5% K-S Critical Value 0.183
Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.382
 Median 0.192
 SD 0.524
 k star 0.267
 Theta star 1.428
 Nu star 17.11
 90% Percentile of Chisquare (2k) 1.596
 90% Percentile 1.14
 95% Percentile 1.811
 99% Percentile 3.581

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.972
 SD (Log Scale) 1.93
 90% UTL 90% Coverage 3.239
 90% UPL (t) 1.813
 90% Percentile (z) 1.652
 95% Percentile (z) 3.33
 99% Percentile (z) 12.41

Log ROS Method

Mean in Original Scale 0.387
 SD in Original Scale 0.52
 90% UTL with 90% Coverage 2.886
 90% BCA UTL with 90% Coverage 1.424
 90% Bootstrap (%) UTL with 90% Coverage 1.427
 90% UPL (t) 1.59
 90% Percentile (z) 1.445
 95% Percentile (z) 2.97
 99% Percentile (z) 11.46

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.394
 SD 0.509
 SE of Mean 0.092
 90% KM UTL with 90% Coverage 1.223
 90% KM Chebyshev UPL 1.943
 90% KM UPL (t) 1.07
 90% Percentile (z) 1.045
 95% Percentile (z) 1.23
 99% Percentile (z) 1.577

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 1.107
 90% Hawkins Wixley (HW) Approx. Gamma UPL 1.239
 90% WH Approx. Gamma UTL with 90% Coverage 1.508
 90% HW Approx. Gamma UTL with 90% Coverage 1.809

**Appendix B5: ProUCL Outputs for Background UPLs
Urban Developed Area PAHs**

Pyrene

General Statistics

Number of Valid Data 33	Number of Detected Data 28
Number of Distinct Detected Data 26	Number of Non-Detect Data 5
Tolerance Factor 1.624	Percent Non-Detects 15.15%

Raw Statistics

Minimum Detected 0.003
 Maximum Detected 4.24
 Mean of Detected 0.839
 SD of Detected 1.151
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -5.809
 Maximum Detected 1.445
 Mean of Detected -1.324
 SD of Detected 1.928
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 32
 Number treated as Detected with Single DL 1
 Single DL Non-Detect Percentage 96.97%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.714
 5% Shapiro Wilk Critical Value 0.924

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.929
 5% Shapiro Wilk Critical Value 0.924

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.779
 SD 1.103
 90% UTL 90% Coverage 2.57
 90% UPL (t) 2.244
 90% Percentile (z) 2.192
 95% Percentile (z) 2.593
 99% Percentile (z) 3.344

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.524
 SD (Log Scale) 2.081
 90% UTL 90% Coverage 6.397
 90% UPL (t) 3.455
 90% Percentile (z) 3.135
 95% Percentile (z) 6.677
 99% Percentile (z) 27.56

Log ROS Method

Mean in Original Scale 0.721
 SD in Original Scale 1.095
 Mean in Log Scale -1.662
 SD in Log Scale 2.026
 90% UTL 90% Coverage 5.1
 90% UPL (t) 2.799
 90% Percentile (z) 2.546
 95% Percentile (z) 5.316
 99% Percentile (z) 21.15

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.511
 Theta Star 1.641
 nu star 28.63

A-D Test Statistic 0.317
 5% A-D Critical Value 0.806
 K-S Test Statistic 0.136
 5% K-S Critical Value 0.174

Data appear Gamma Distributed at 5% Significance Level

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.737
 SD 1.084
 SE of Mean 0.194
 90% KM UTL with 90% Coverage 2.498
 90% KM Chebyshev UPL 4.038
 90% KM UPL (t) 2.177
 90% Percentile (z) 2.126
 95% Percentile (z) 2.52
 99% Percentile (z) 3.259

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.723
 Median 0.32
 SD 1.095
 k star 0.274
 Theta star 2.643
 Nu star 18.06
 90% Percentile of Chisquare (2k) 1.63
 90% Percentile 2.154
 95% Percentile 3.405
 99% Percentile 6.695

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 2.031
 90% Hawkins Wixley (HW) Approx. Gamma UPL 2.242
 90% WH Approx. Gamma UTL with 90% Coverage 2.741
 90% HW Approx. Gamma UTL with 90% Coverage 3.227

Note: DL/2 is not a recommended method.

Appendix C

Summary of Evaluation for Rural Developed Area Background PAHs

C1: Box and Whisker Plots for Raw Dataset

C2: Identification of Outliers

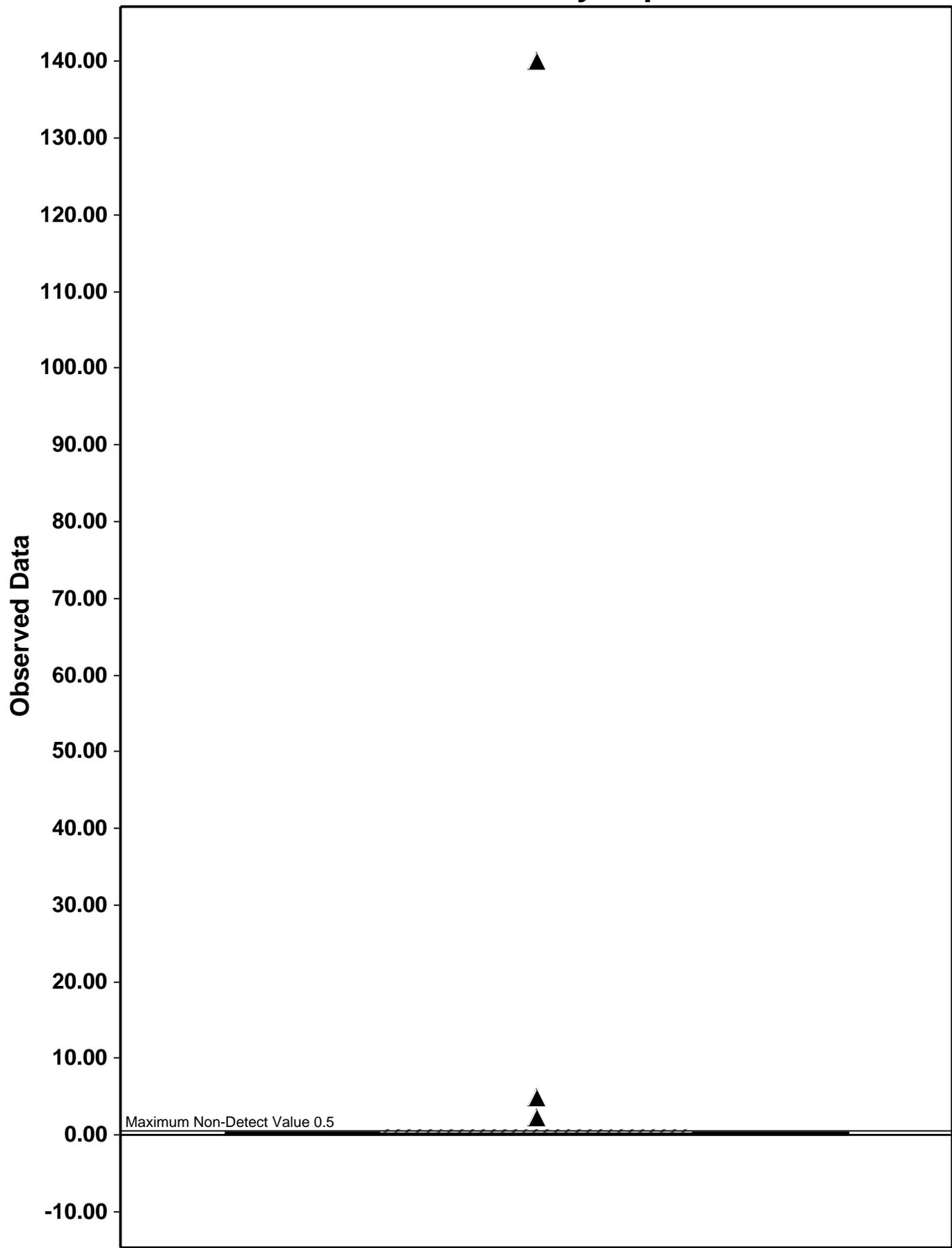
C3: Q-Q Probability Plots for Logged Dataset (Without Outliers)

C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)

C5: ProUCL Outputs for Background UPLs

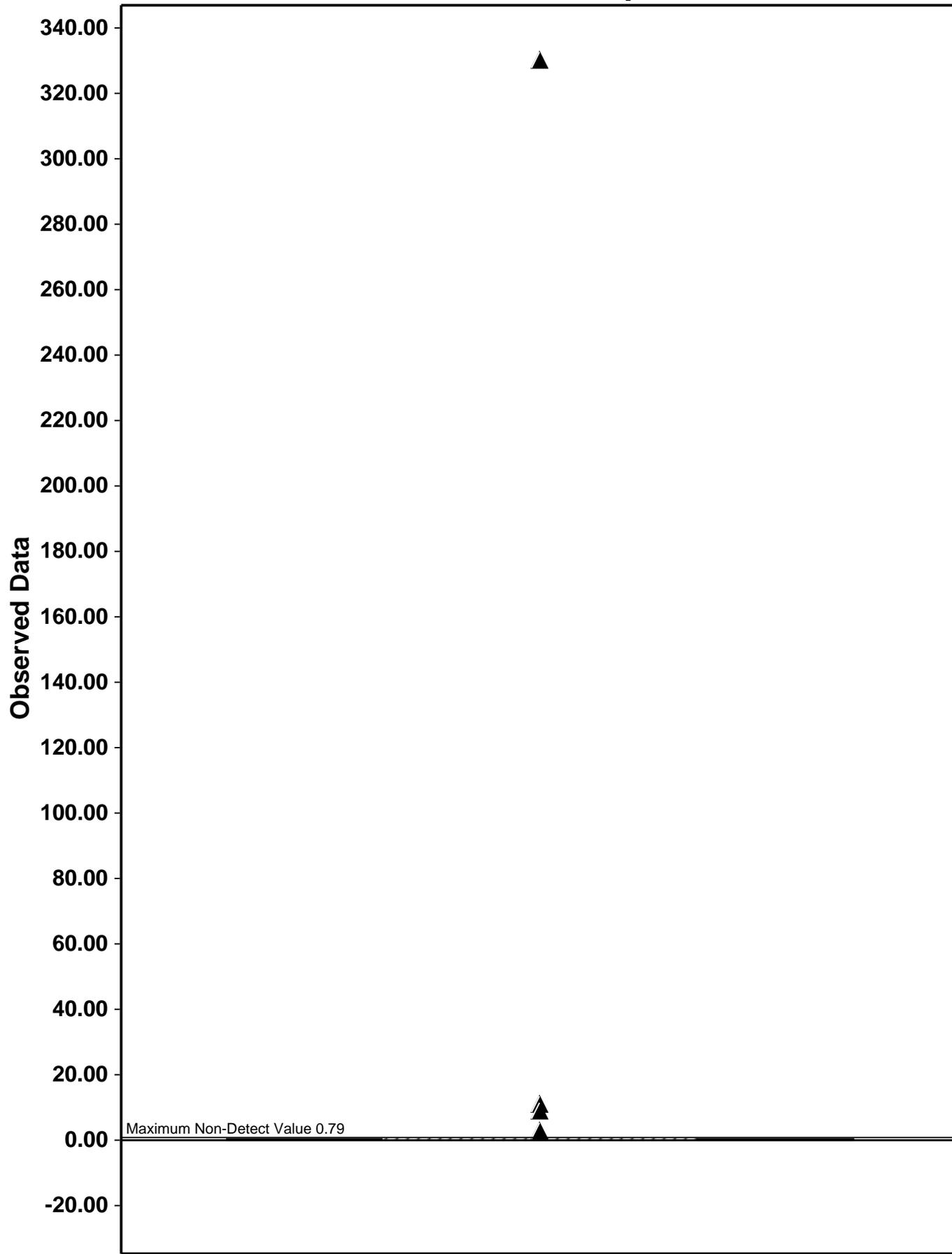
Appendix C1

Box Plot for 2-Methylnaphthalene



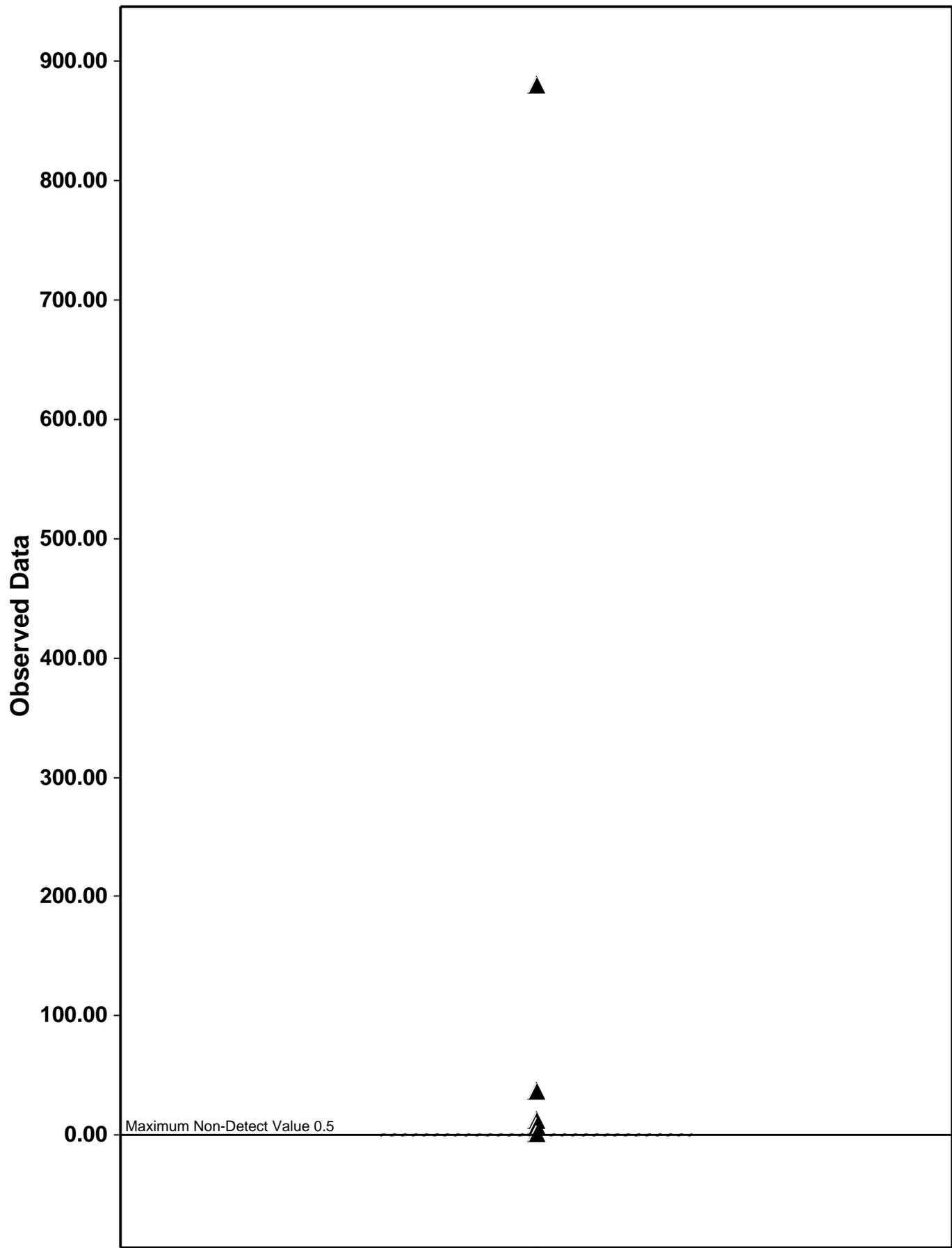
2-Methylnaphthalene

Box Plot for Acenaphthene



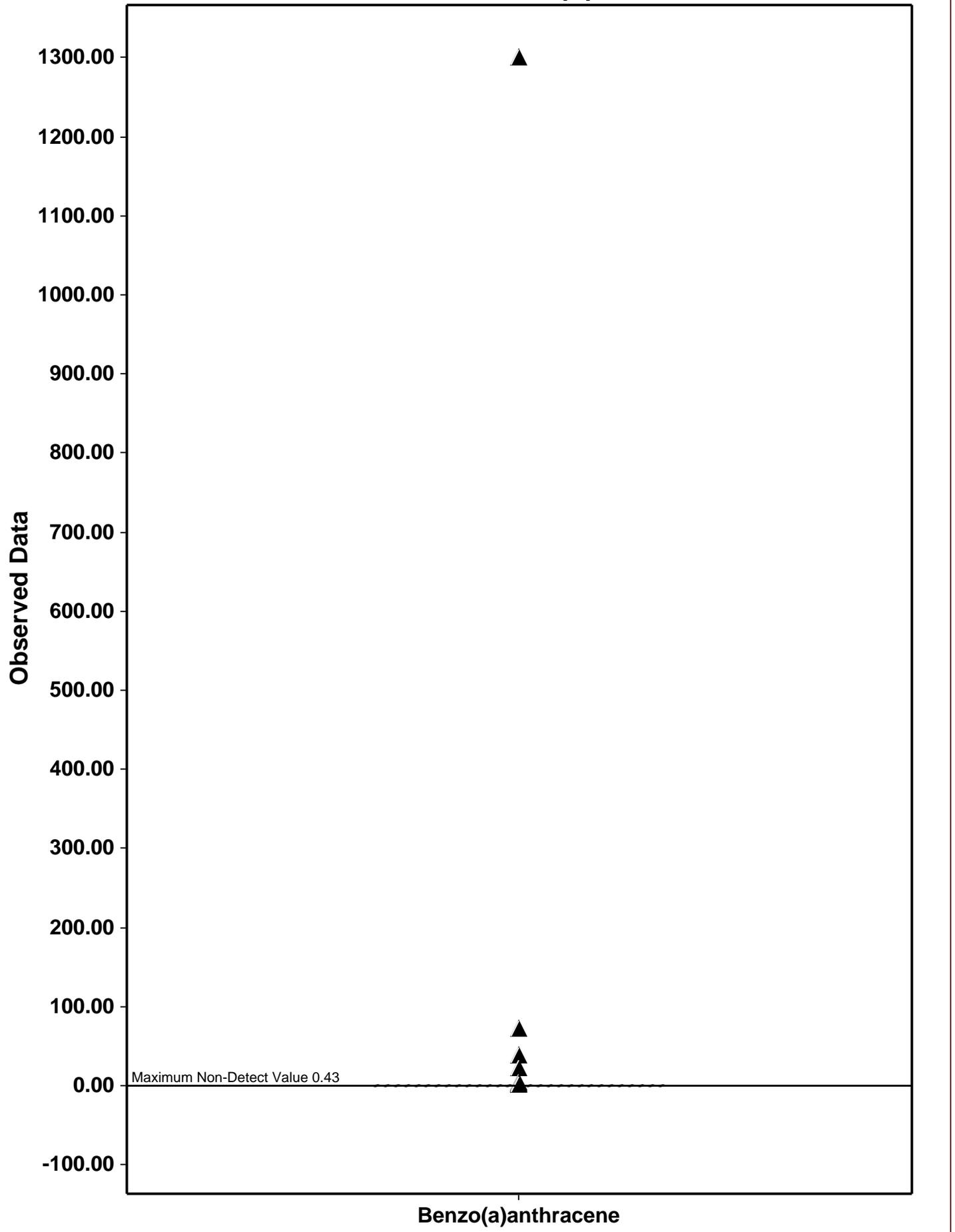
Acenaphthene

Box Plot for Anthracene

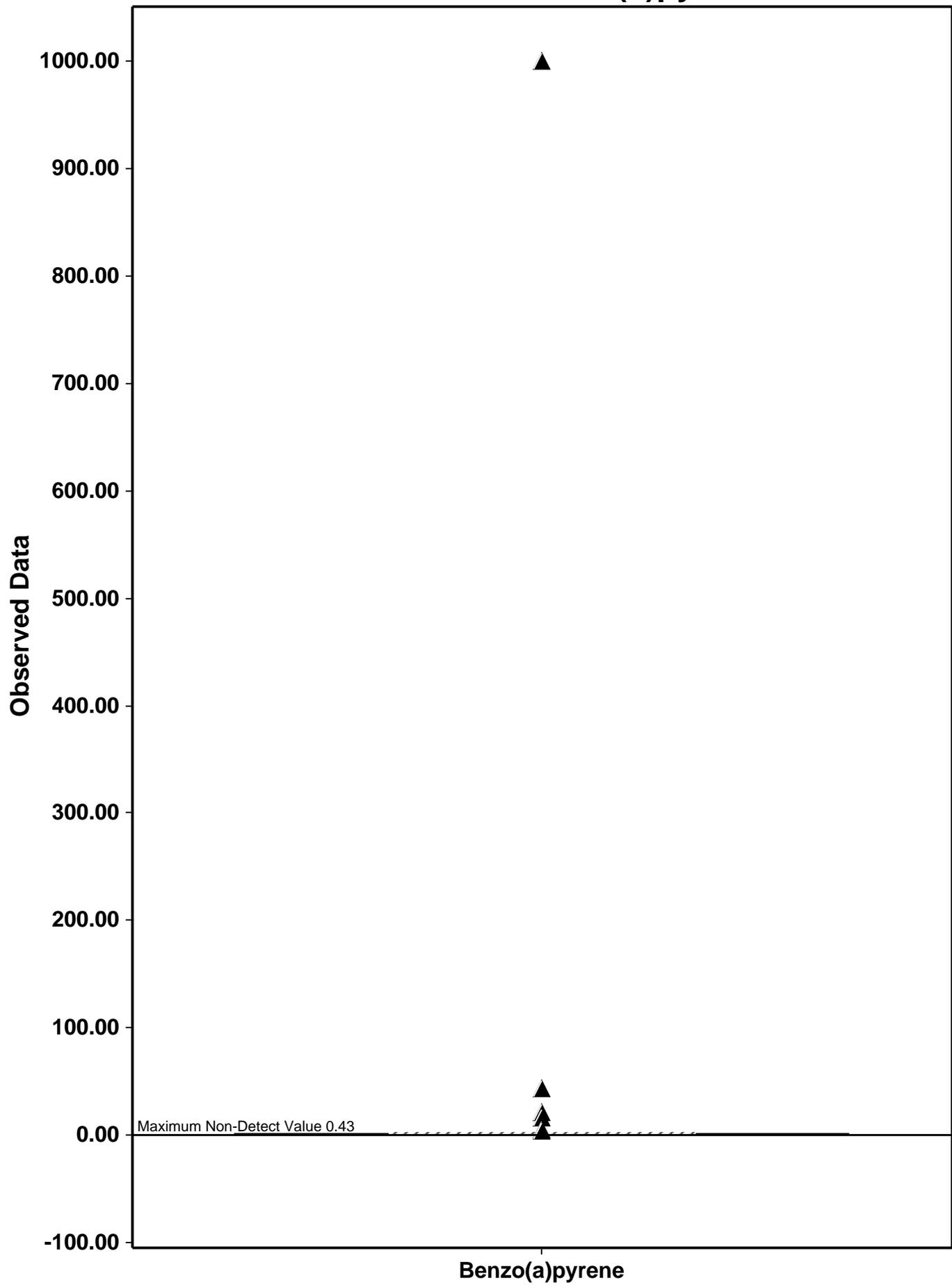


Anthracene

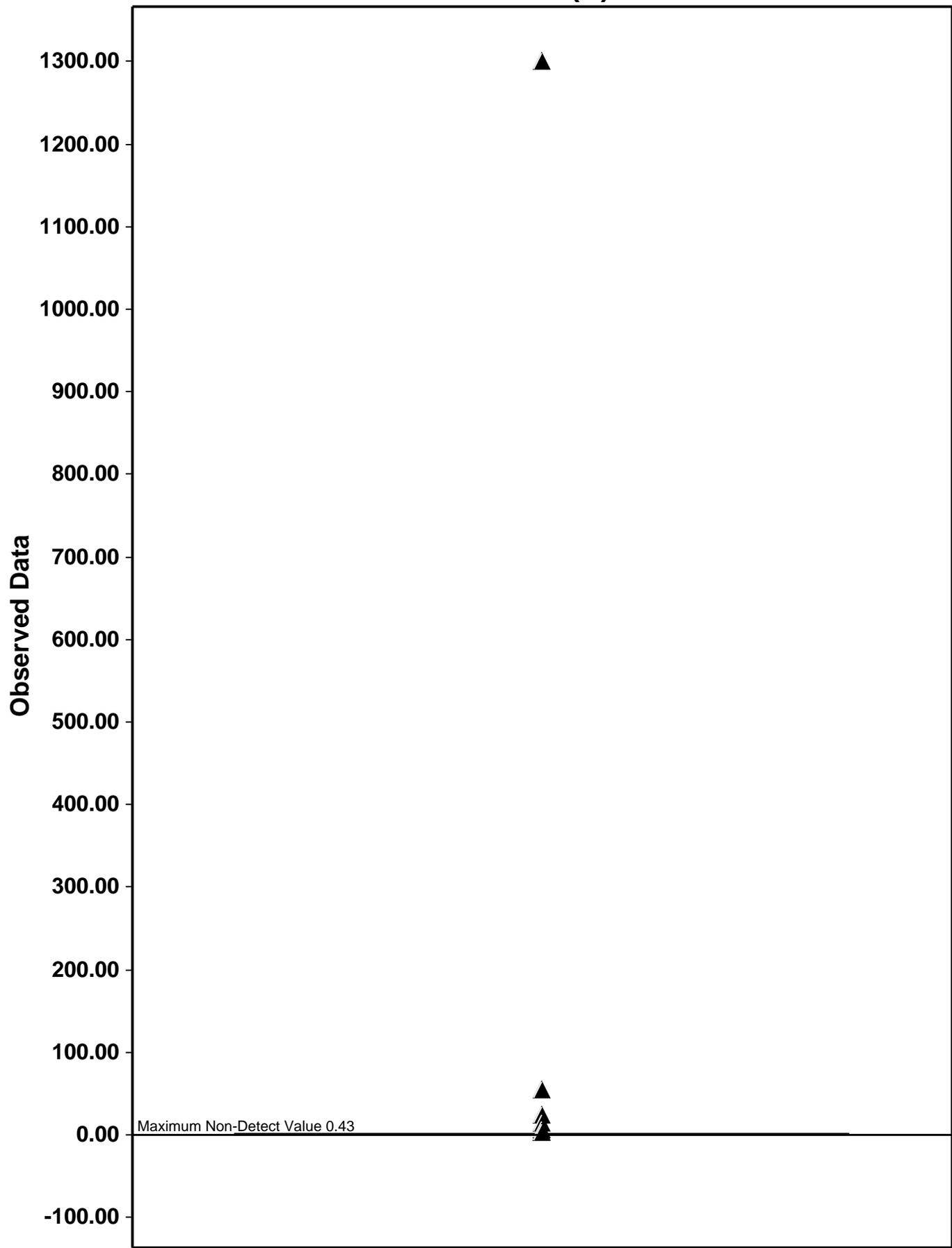
Box Plot for Benzo(a)anthracene



Box Plot for Benzo(a)pyrene

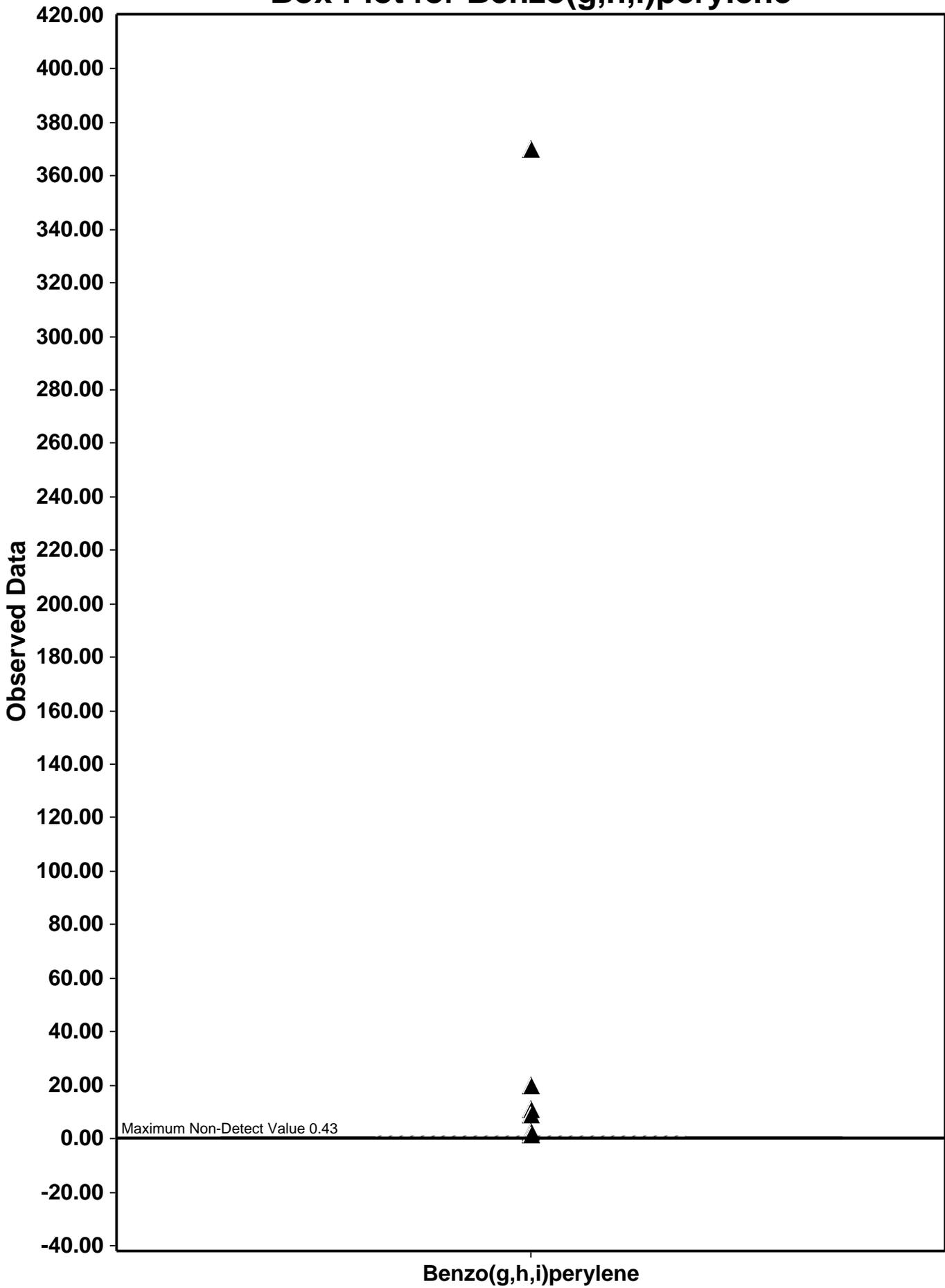


Box Plot for Benzo(b)fluoranthene



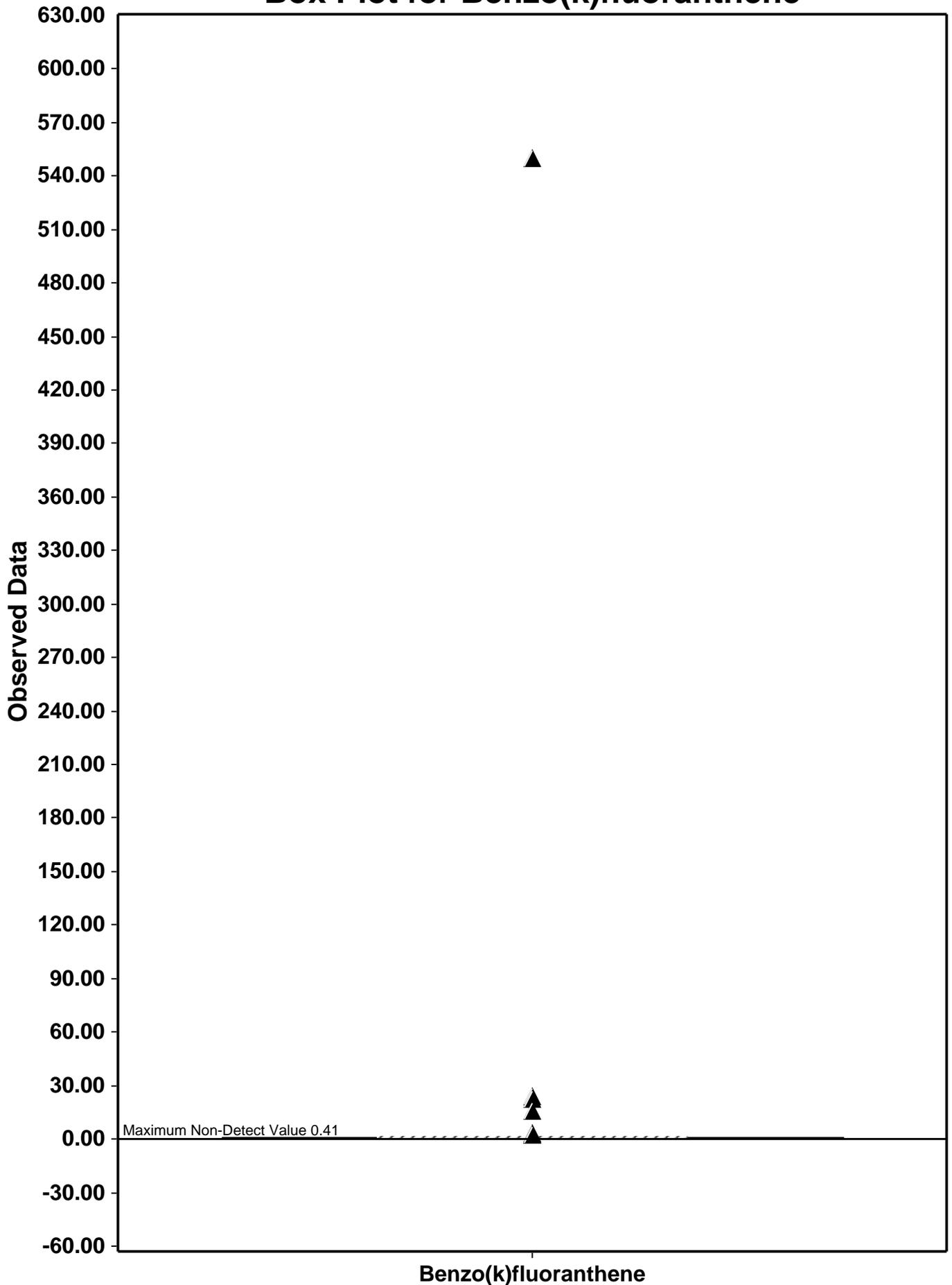
Benzo(b)fluoranthene

Box Plot for Benzo(g,h,i)perylene

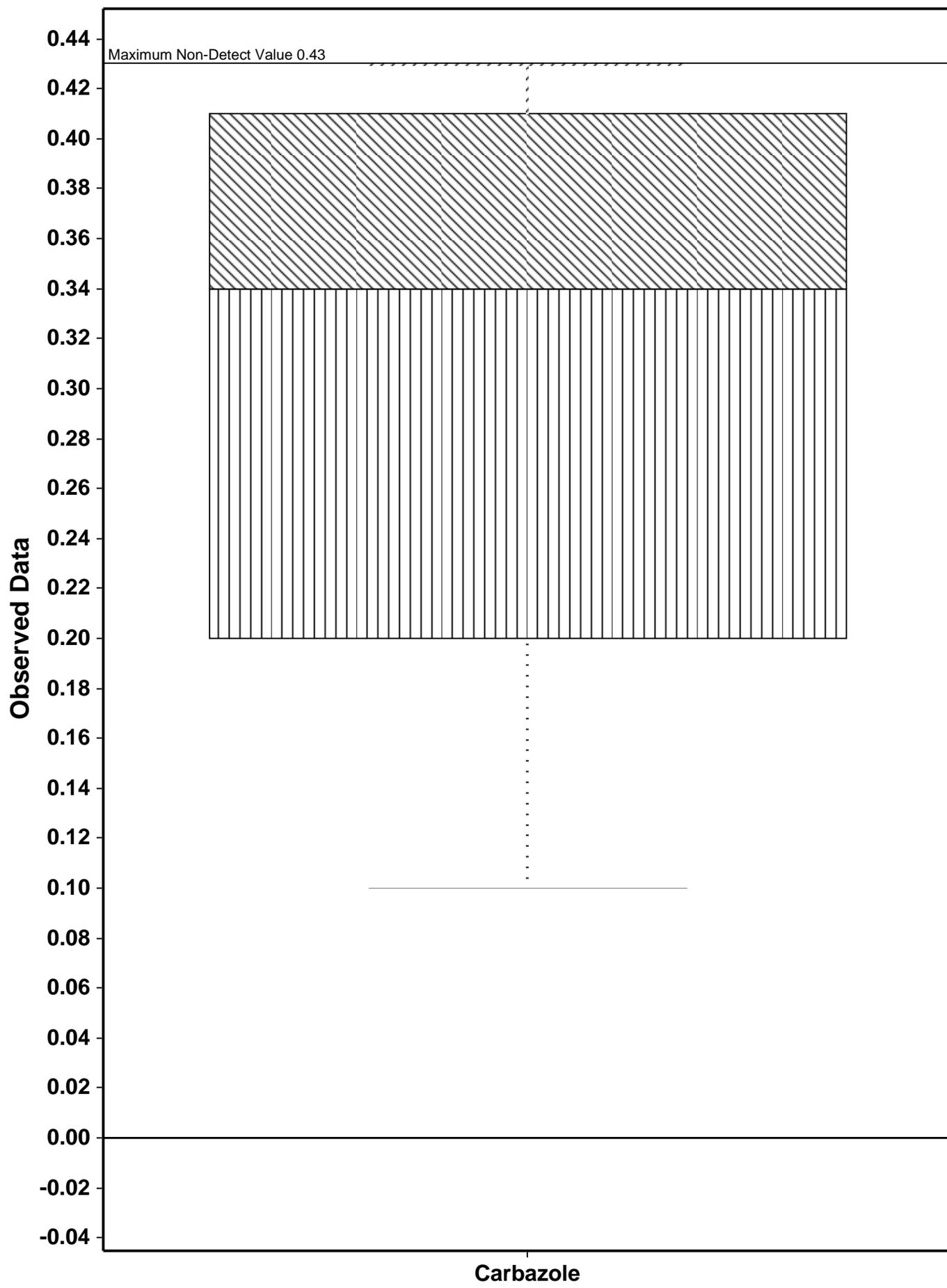


Benzo(g,h,i)perylene

Box Plot for Benzo(k)fluoranthene

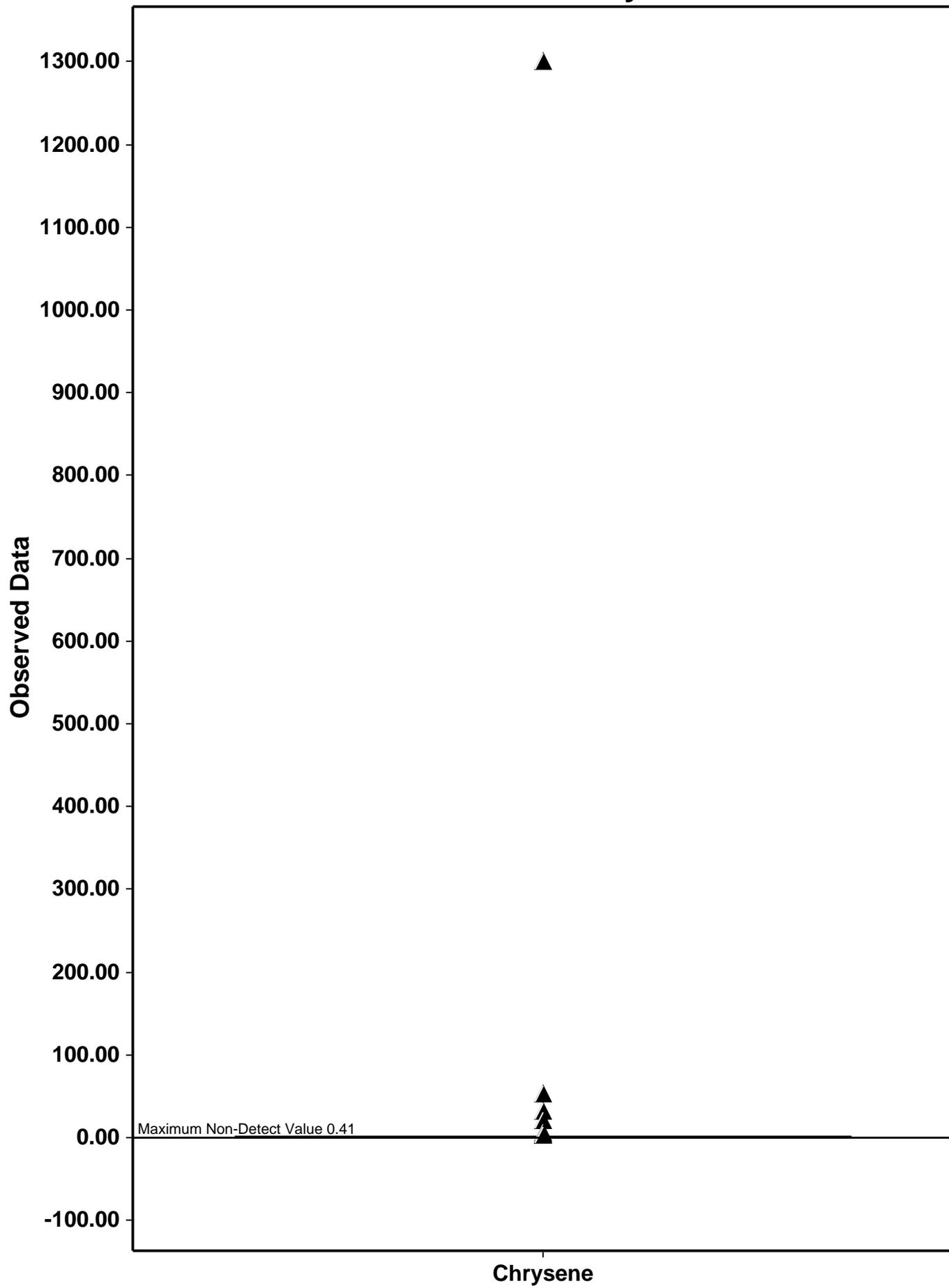


Box Plot for Carbazole

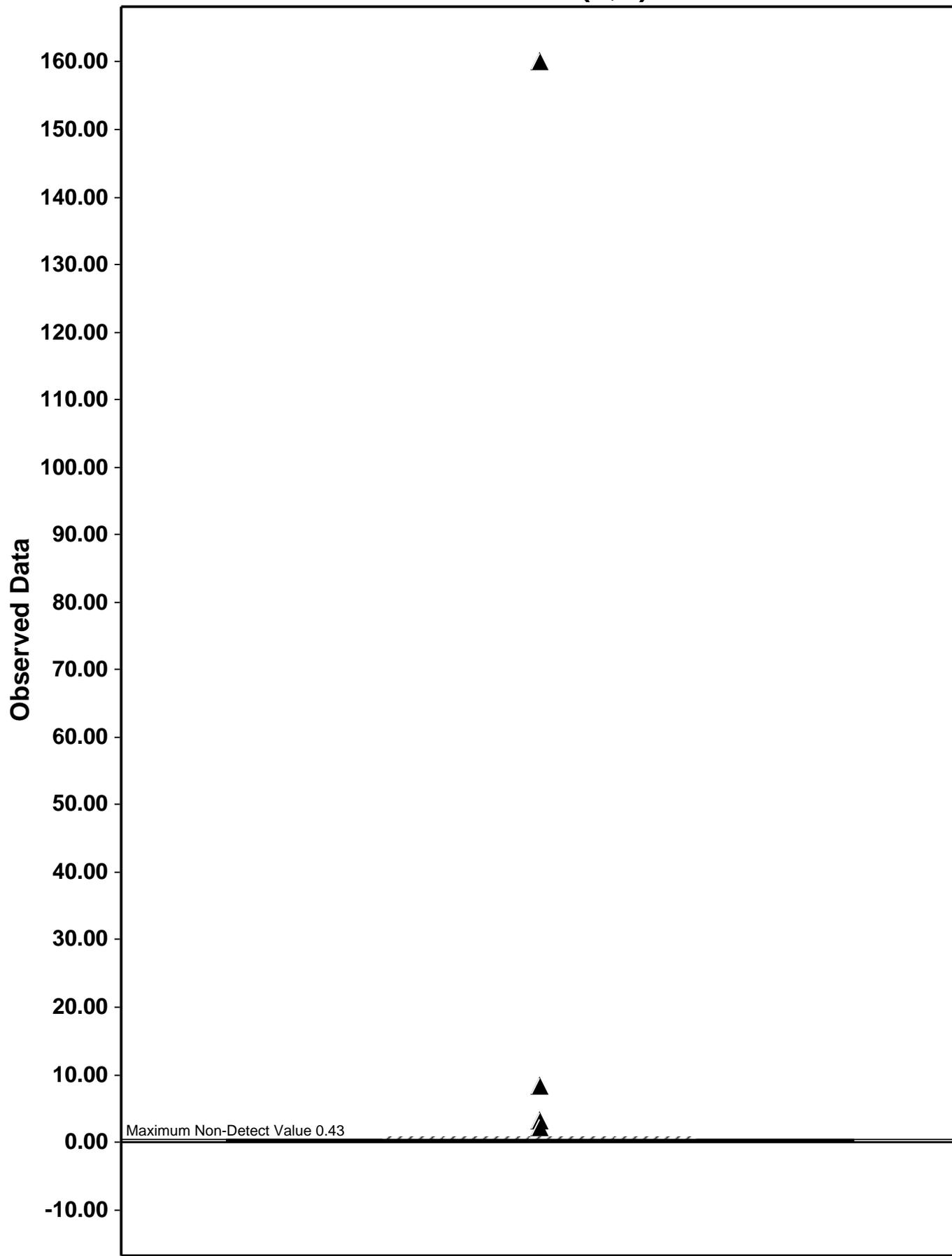


Carbazole

Box Plot for Chrysene

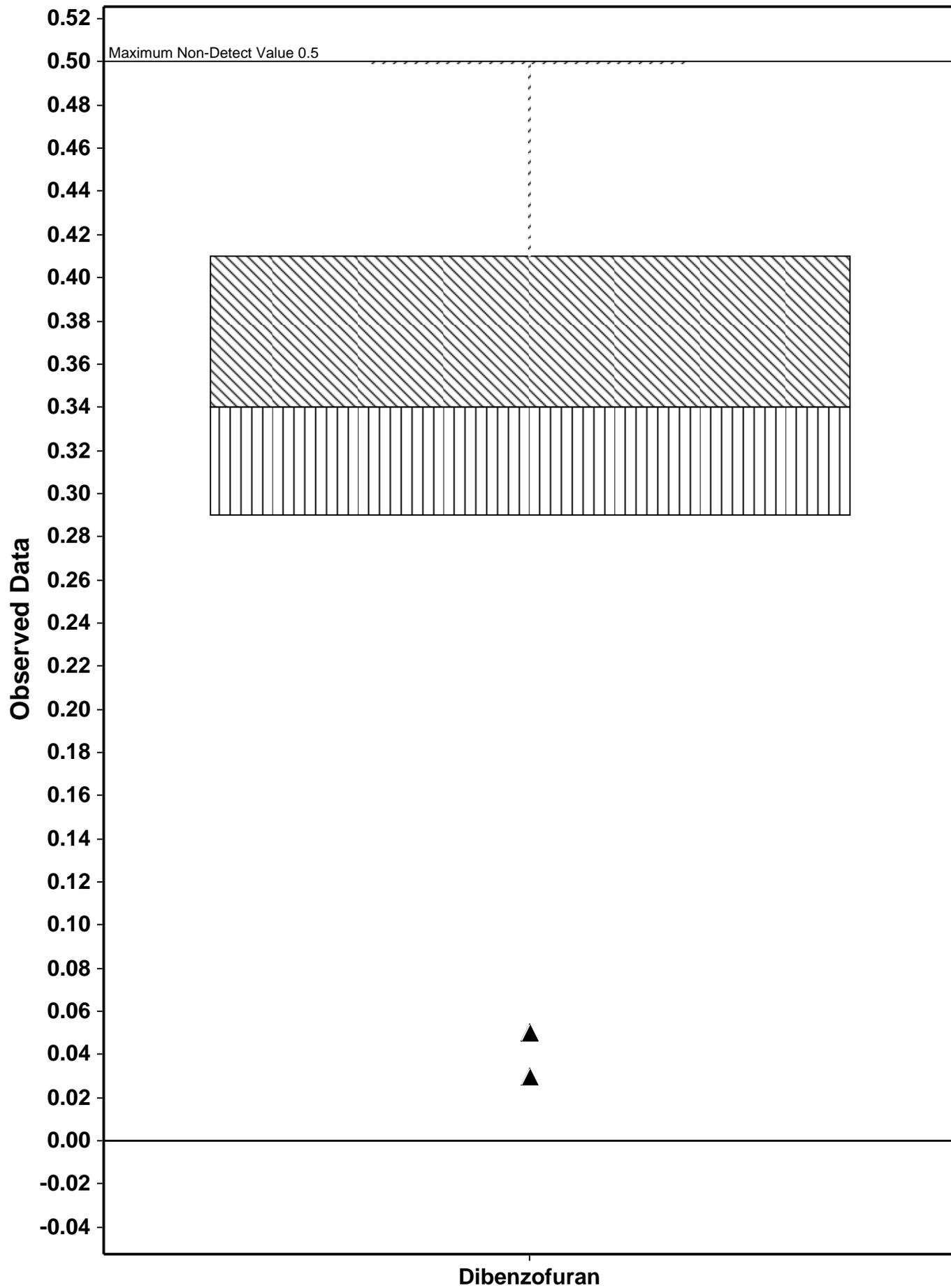


Box Plot for Dibenzo(a,h)anthracene



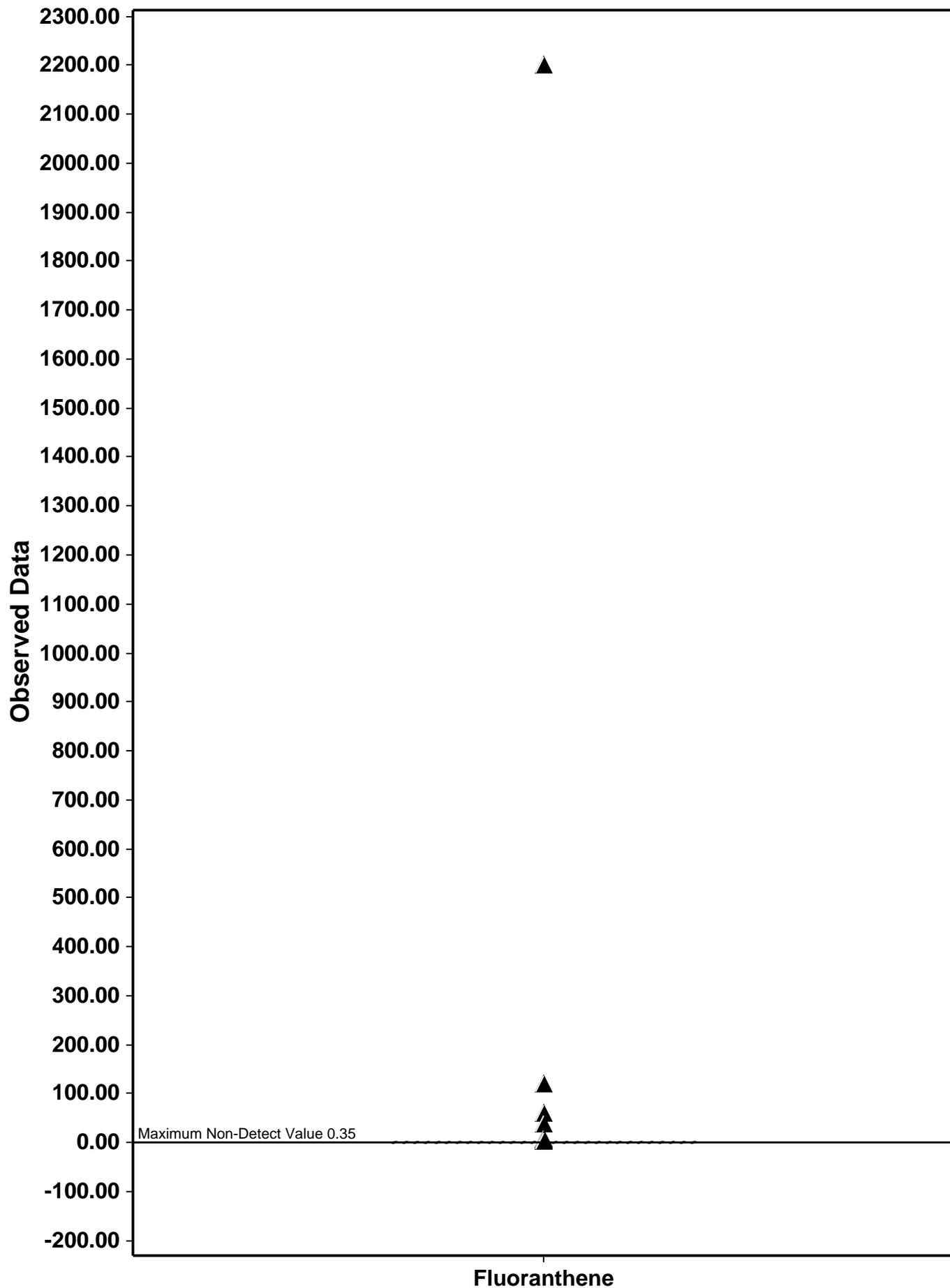
Dibenzo(a,h)anthracene

Box Plot for Dibenzofuran

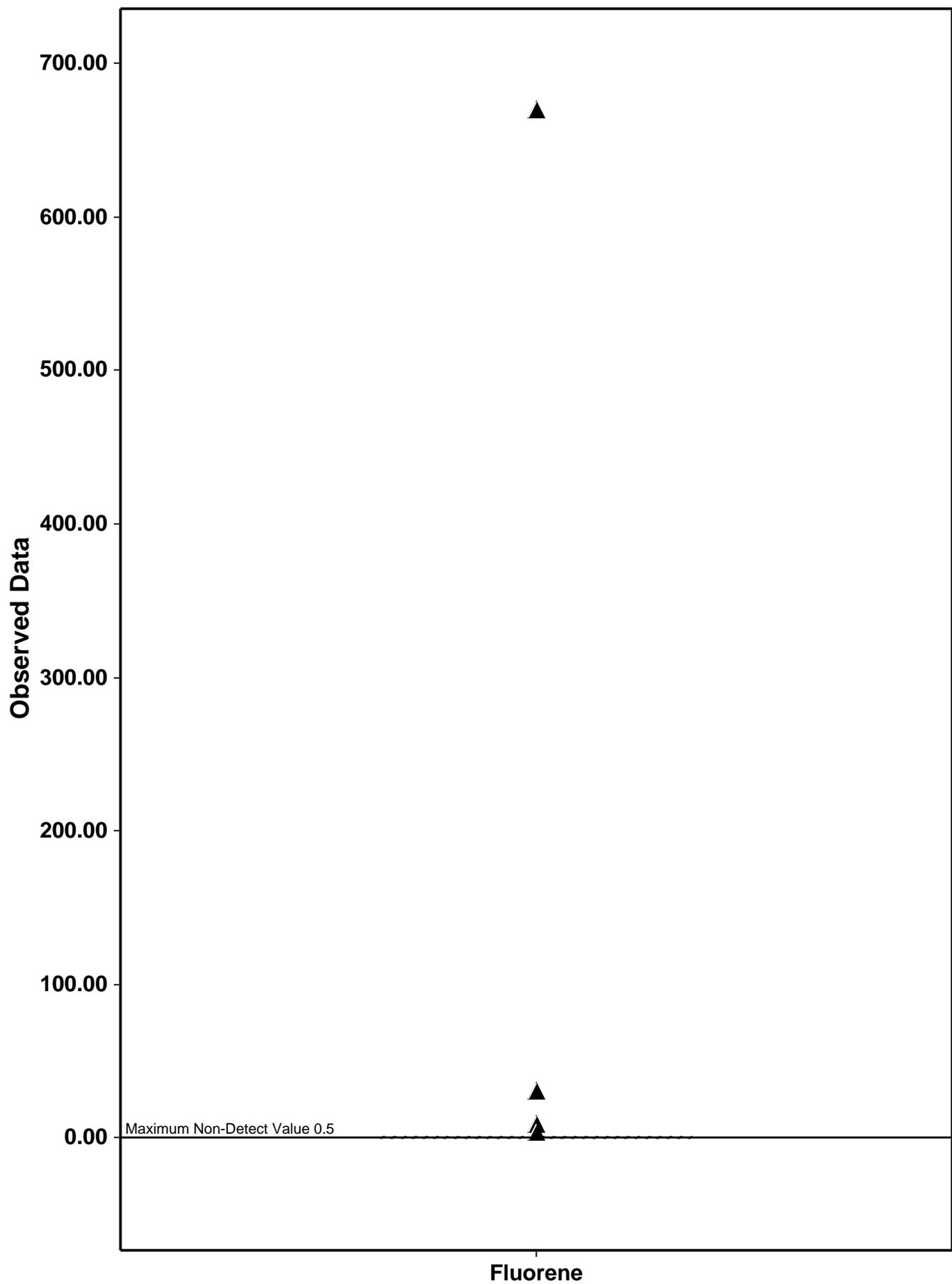


Dibenzofuran

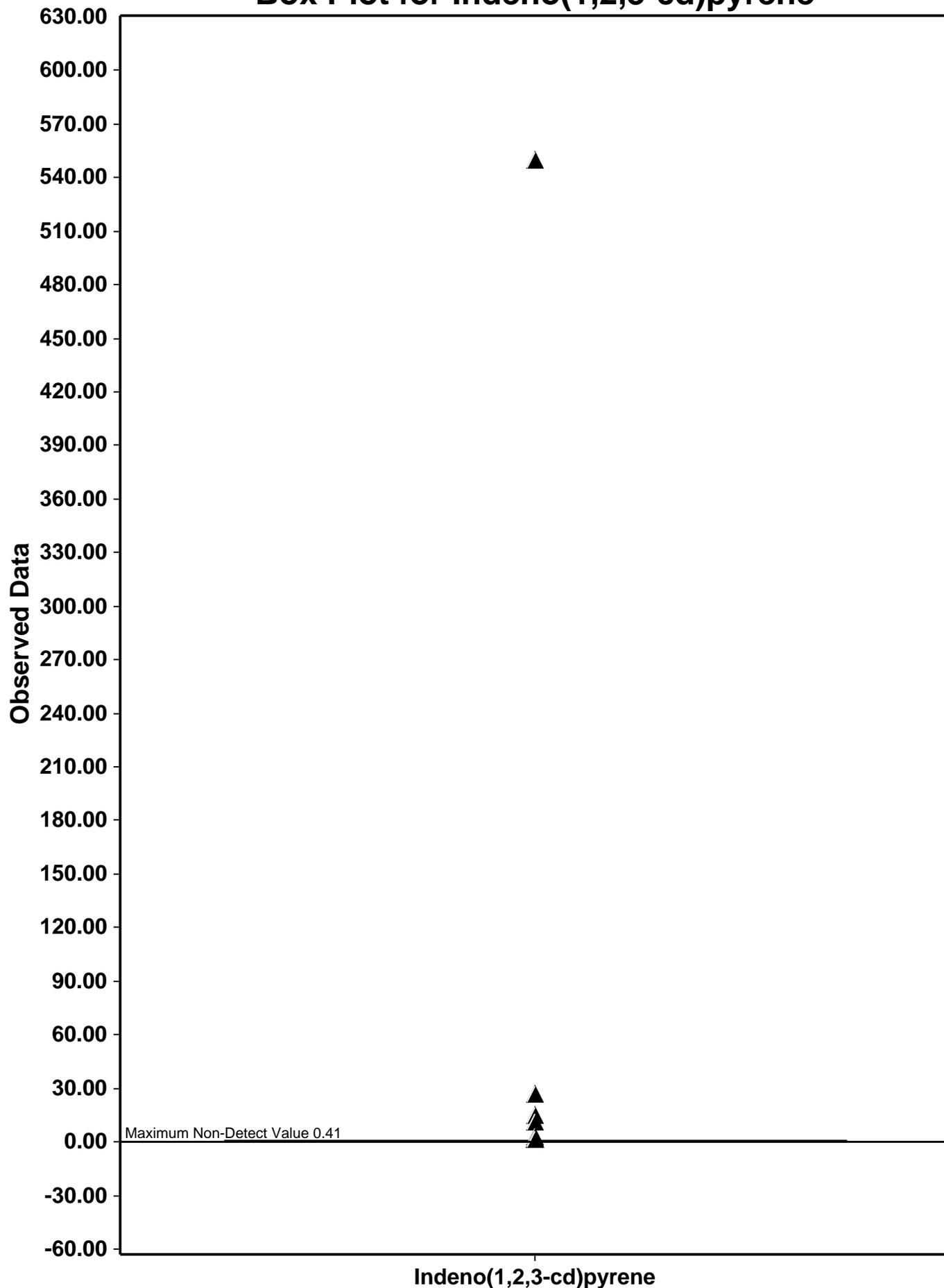
Box Plot for Fluoranthene



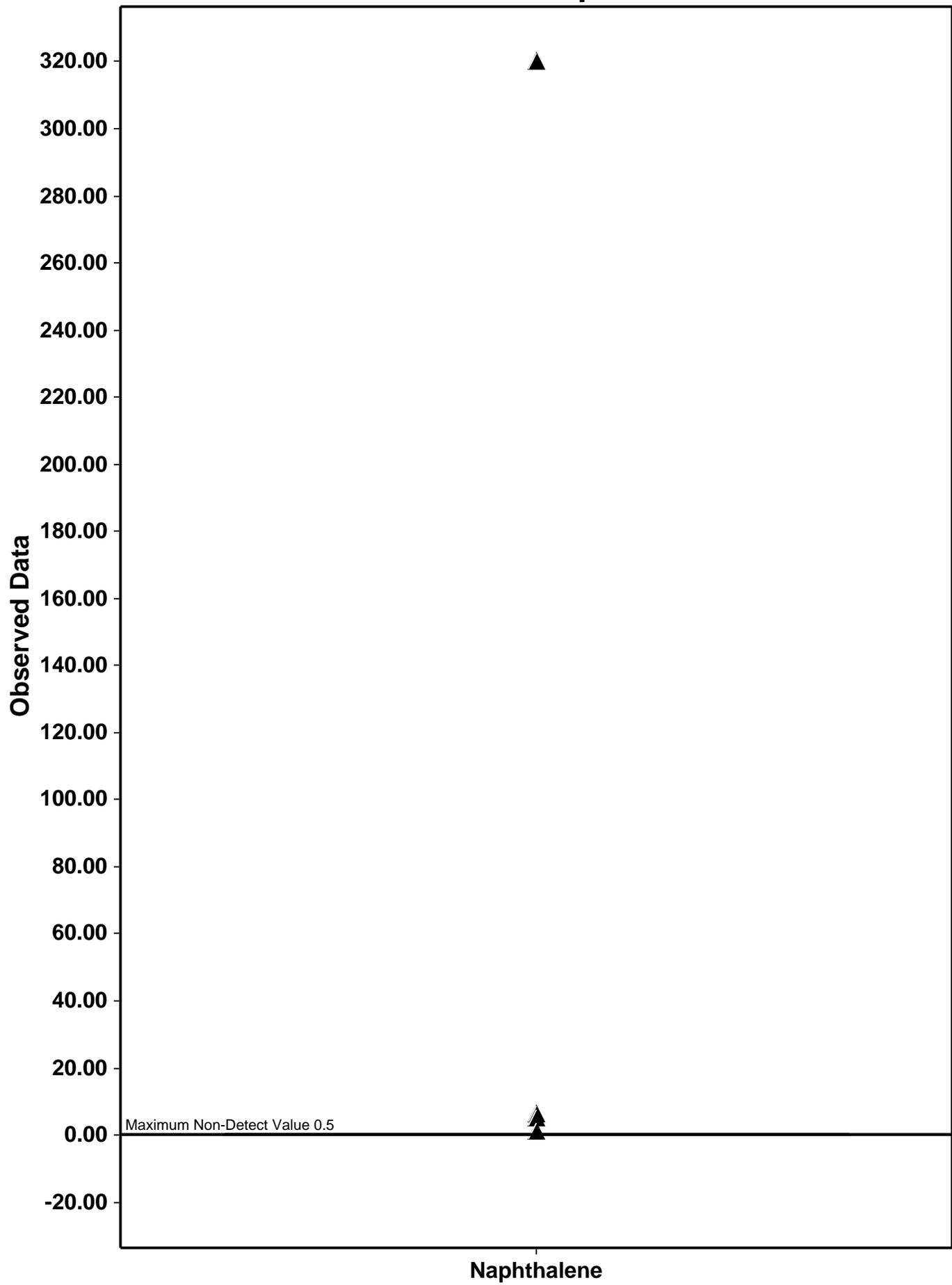
Box Plot for Fluorene



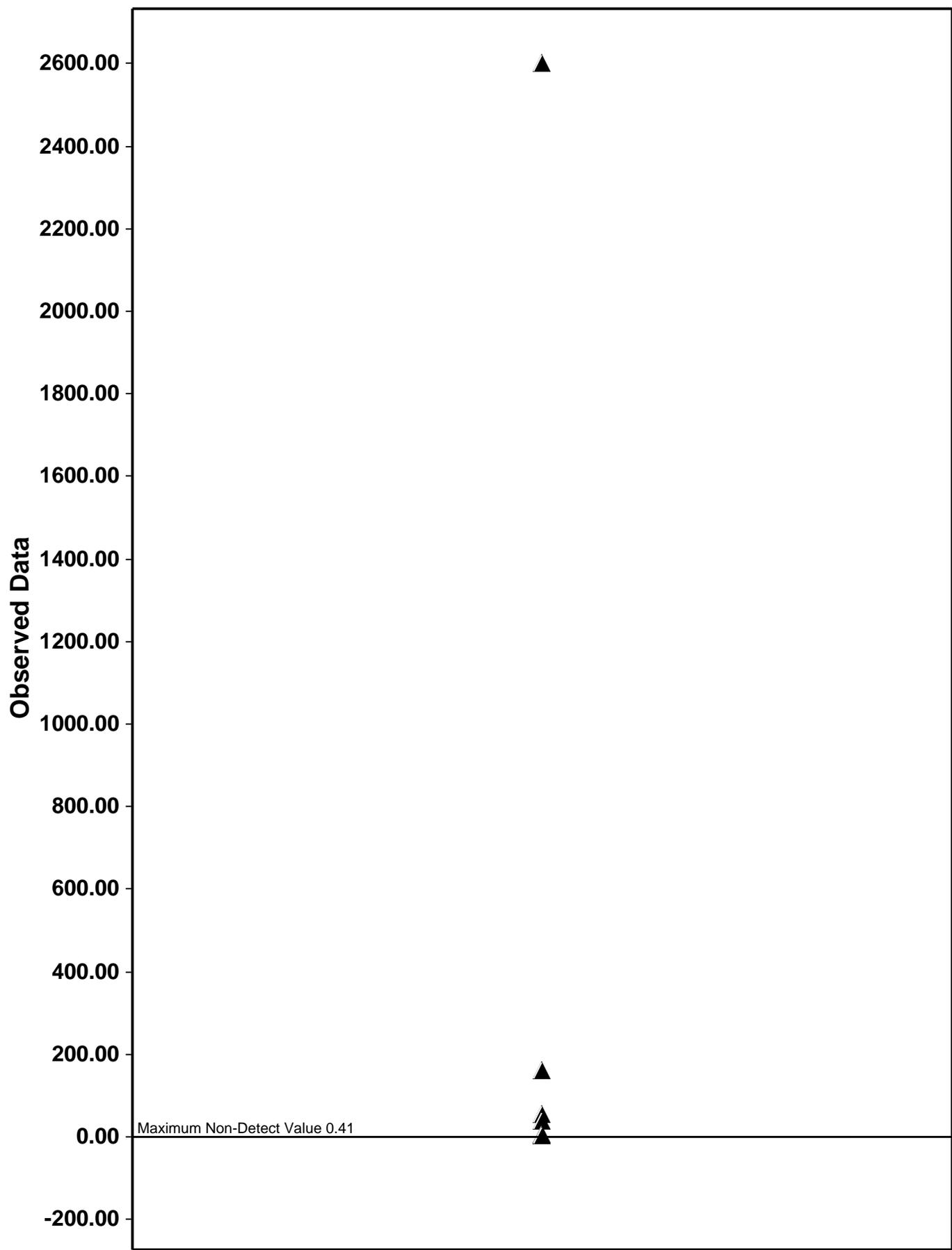
Box Plot for Indeno(1,2,3-cd)pyrene



Box Plot for Naphthalene

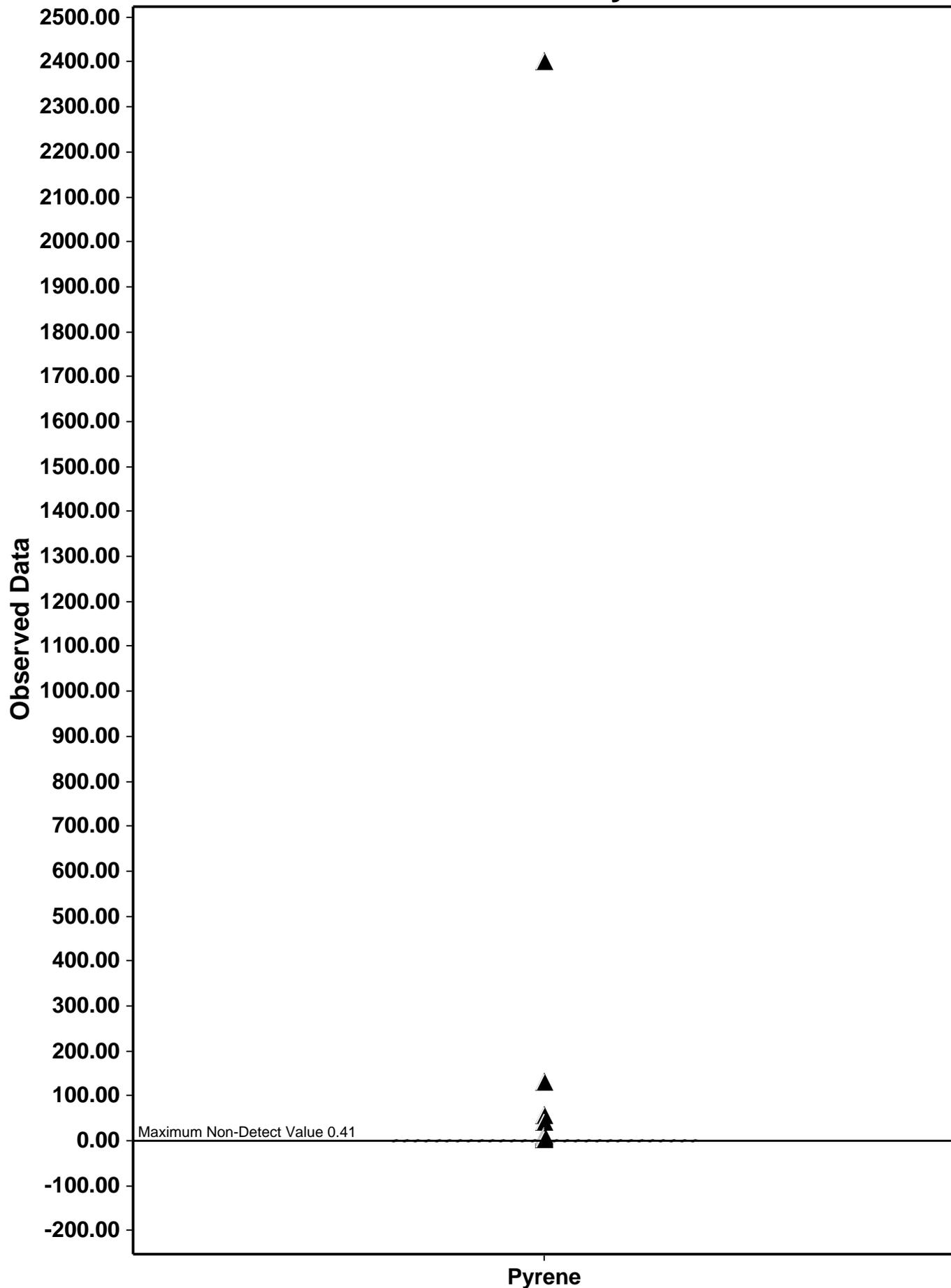


Box Plot for Phenanthrene



Phenanthrene

Box Plot for Pyrene



Appendix C2

Appendix C2. Identification of Outliers for Background PAHs in Rural Developed Area Soil

Sample ID	Units	2-Methylnaphthalene	Qualifier	Acenaphthene	Qualifier	Acenaphthylene	Qualifier	Anthracene	Qualifier	Benzo(a)anthracene	Qualifier	Benzo(a)pyrene	Qualifier	Benzo(b)fluoranthene	Qualifier	Benzo(g,h,i)perylene	Qualifier
Berwick, Prime Tanning SS-101B 07/20/10 0-2'	mg/kg	0.23	U	0.23	U	0.23	U	0.23	U	2		2.9		3.5		2.6	
Camden, Apollo Tannery SS-3 02/02/06 0-0.5'	mg/kg	0.3	U	0.3	U	0.3	U	0.3	U	0.39		0.45		0.411		0.419	
Canton, Brindis Leather BKSS-1 05/27/10 0.5-1'	mg/kg	0.5	U	0.5	U	0.9		0.5	U	2.5		2.8		2.1		1.7	
Edgecomb, Cahill Tire Service SB-1 07/01/10 0-2'	mg/kg	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.321	J	0.35	U
Hallowell, Eastern Steamship BKSS-02 04/11/07 0-2'	mg/kg	0.43	UJ	0.43	UJ	0.43	UJ	0.4	J	2.7	J	2.4	J	3.5	J	1.1	J
Hancock, Sammis BK-SS01 09/28/09 0-2'	mg/kg	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U
Hermon, Quinns SS-106/04/30/09 0-2'	mg/kg	0.34	U	0.34	U	0.34	U	0.34	U	0.289	J	0.316	J	0.475		0.264	J
Howland, Tannery TP-05 04/10/04 5'	mg/kg	0.03	U	0.03	U	0.08		0.03	U	0.12		0.15		0.1		0.06	
Mapleton, Auto Repair BK-SS-02 06/09/09 4-6'	mg/kg	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U
Milo, Downtown BK2 12/18/08 0-2'	mg/kg			0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U
Milo, Downtown BK3 12/18/08 0-2'	mg/kg	0.34	U	0.34	U	0.34	U	0.182	J	0.65		0.757		0.986		0.278	J
Norway, Former Corn Shop SS-BKGD 11/20/07 0-6'	mg/kg	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U
Old Town, OTC BK-1 10/21/09 0-2'	mg/kg	0.297	U	0.297	U	0.297	U	0.297	U	0.276	J	0.281	J	0.347		0.296	
Vinalhaven, Fish Pier SS-2 04/25/06 0-0.5'	mg/kg	0.38	U	0.38	U	0.3	J	0.67		4.3		4.7		6.2		2.4	
Bridgeton, Memorial School BG-1 07/08/10 0.5-1'	mg/kg	0.294	U	0.294	U	0.294	U	0.294	U	0.294	U	0.294	U	0.268	J	0.294	U
Charlie's Automotive, Ellsworth SS-13 07/08/10 0-2'	mg/kg	0.2	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Charlie's Automotive, Ellsworth TP-1 07/08/10 10-12'	mg/kg	0.2	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Consea, Eastport BK1 02/23/11 0.5-1'	mg/kg	0.2	U	0.2	U	0.2	U	0.2	U	0.43		0.2	U	0.21		0.2	U
Consea, Eastport BK2 02/23/11 0.5-1'	mg/kg	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
Consea, Eastport BK3 02/23/11 0.5-1'	mg/kg	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
15 Sea St, Eastport BK101 11/10/10 0.5-1'	mg/kg			0.41	U	0.41	U	0.41	U	0.8		0.91		1.2		0.52	
15 Sea St, Eastport BK102 11/10/10 0.5-1'	mg/kg			0.32	U	0.32	U	0.33		1.4		1.6		2.2		0.8	
15 Sea St, Eastport BK103 11/10/10 0.5-1'	mg/kg			0.37	U	0.37	U	0.37	U	0.38		0.48		0.67		0.37	U
15 Sea St, Eastport BK104 11/10/10 0.5-1'	mg/kg			0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
Bridges Property, Calais BK-101 12/15/10 0.5-1'	mg/kg	0.098	U	0.69	U	0.075	U	0.09	U	0.56	U	0.72		0.83		0.55	
Bridges Property, Calais BK-102 12/15/10 0.5-1'	mg/kg	0.11	U	0.79	U	0.22		0.13		0.96		1.3		1.9		1.2	
Bridges Property, Calais BK-103 12/15/10 0.5-1'	mg/kg	0.097	U	0.68	U	0.074	U	0.088	U	0.12		0.15		0.2		0.12	
Bridges Property, Calais BK-104(1) 12/15/10 0.5-1'	mg/kg	140		330		8.2		880		1300		1000		1300		370	
Bridges Property, Calais BK-104(2) 12/15/10 1-2'	mg/kg	4.9		9.2		15		37		72		44		55		20	
HA-1-6-8	mg/kg	0.007	U	0.007	U	0.008		0.007	J	0.028		0.031		0.068		0.009	
HA-2-6-10	mg/kg	0.005	J	0.0075	U	0.027		0.018		0.07		0.053		0.126		0.016	
HA-3-6-14	mg/kg	0.008	U	0.008	U	0.013		0.0099		0.052		0.039		0.072		0.0084	
HA-4-6-14	mg/kg	0.131		0.138		2.32		0.943		3.87		4.16		6.24		1.61	
HA-7-6-15	mg/kg	0.0061	J	0.0061	J	0.024		0.02		0.191		0.213		0.75	E	0.113	
HA-8-6-15	mg/kg	0.011		0.007	J	0.051		0.027		0.092		0.053		0.084		0.012	
JF-3-6-9	mg/kg	0.018		0.015		0.422	J	0.19		0.351	J	0.484	J	0.801		0.129	
JF-4-6-11	mg/kg	0.0073	U	0.0073	U	0.0094		0.0063	J	0.0093		0.0061	J	0.023		0.0073	U
JF-7-6-16	mg/kg	0.0052	J	0.0048	J	0.051		0.048		0.151		0.115		0.28		0.034	
JF-8-6-16	mg/kg	0.012		0.0069	J	0.036		0.028		0.182		0.161		0.29		0.037	
JF-9-6-16	mg/kg	0.023		0.012		0.372		0.196		0.532		0.624		0.997		0.174	
TS-1-6-14	mg/kg	0.0039	J	0.0074	U	0.059		0.028		0.146		0.131		0.185		0.085	
TS-3-6-14	mg/kg	0.087		0.1		0.521		0.584		1.51		1.51		2.46		0.242	J
TS-4-6-15	mg/kg	0.011		0.014		0.15	J	0.116		0.532		0.563		1.04		0.12	
TS-5-6-15	mg/kg	0.047		0.031		0.621		0.29	J	0.739		0.857		1.12		0.168	
TS-6-6-15	mg/kg	0.076		0.359		0.06		1.05		2.08		2.04		3.38		0.377	
TS-7-6-15	mg/kg	0.0077	U	0.0077	U	0.0077	U	0.0077	U	0.012		0.005	J	0.0093		0.0077	U
TS-8-6-16	mg/kg	0.051		0.017		0.352		0.17	J	0.401		0.482		0.722		0.256	
TS-9-6-16	mg/kg	0.005	J	0.009	U	0.035		0.013		0.082		0.066		0.112		0.039	
MW-SB-NASB-BKD-06	mg/kg	0.003	U	0.002	U	0.002	U	0.002	U	0.002	U	0.004	U	0.003	U	0.003	U
MW-SB-NASB-BKD-10	mg/kg	0.002	UJ	0.002	UJ	0.002	J	0.002	J	0.012	J	0.014	J	0.017	J	0.01	J
MW-SB-NASB-BKD-15	mg/kg	0.003	UJ	0.002	U	0.002	U	0.002	U	0.002	U	0.004	U	0.003	U	0.003	U
MW-SB-NASB-BKD-24	mg/kg	0.003	U	0.002	U	0.001	U	0.001	U	0.003	J	0.004	U	0.005	J	0.003	J
MW-SB-NASB-BKD-29	mg/kg	0.002	UJ	0.002	U	0.001	U	0.001	U	0.002	U	0.004	U	0.002	U	0.002	U
ADCG-BK1	mg/kg	0.26	U	0.26	U	0.3		0.28		1.7		1.3		1.4		1	
ADCG-BK2	mg/kg	0.31	U	0.31	U	0.31	U	0.31	U	0.31	U	0.31	U	0.31	U	0.31	U
ADCG-BK3	mg/kg	0.26	U	0.26	U	0.26	U	0.26	U	0.57		1.5		0.68		0.55	
Frd Plmb_B-102	mg/kg	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U	0.28	U
OP-HS_BK-1	mg/kg	0.69		3		5.3		7.8		23		16		15		9.1	
OP-HS_BK-2	mg/kg	2.2		11		1.8		12		38		21		24		11	
OP-HS_BK-3	mg/kg	0.24	U	0.24	U	0.52		0.29		1.3		1.6		1.6		1.4	
PTC-BG	mg/kg	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.318		0.38	U
IQR EVALUATION																	
Max	mg/kg	140		330		15		880		1300		1000		1300		370	
25%	mg/kg	0.01025		0.009		0.051		0.03		0.12		0.131		0.185		0.05	
50%	mg/kg	0.1655		0.24		0.29		0.23		0.35		0.35		0.35		0.278	
75%	mg/kg	0.3025		0.359		0.372		0.35		0.8		1.3		1.2		0.52	
90%	mg/kg	0.43		0.68		0.53		0.67		2.7		2.9		3.5		1.7	
95%	mg/kg	1.0675		3		1.8		7.8		23		16		15		9.1	
IQR	mg/kg	0.29225		0.35		0.321		0.32		0.68		1.169		1.015		0.47	
Upper IQR	mg/kg	0.740875		0.884		0.8535		0.83		1.82		3.0535		2.7225		1.225	
Lower IQR	mg/kg	-1.1010625		-1.317		-1.22925		-1.215		-2.61		-4.44925		-3.89875		-1.7875	

Notes:
mg/kg - milligram per kilogram
U - undetected
J - estimated
E - exceeds calibration range
Highlighted cells indicate outliers
IQR - interquartile range
LN - indicates that concentration is the natural log of the raw data

Appendix C2. Identification of Outliers for Background PAHs in Rural Developed Area Soil

Sample ID	Units	Benzo(k)fluoranthene	Qualifier	Carbazole	Qualifier	Chrysene	Qualifier	Dibenzo(a,h)anthracene	Qualifier	Dibenzofuran	Qualifier	Fluoranthene	Qualifier	Fluorene	Qualifier	Indeno(1,2,3-cd)pyrene	Qualifier
Berwick, Prime Tanning SS-101B 07/20/10 0-2'	mg/kg	2.8				3.2		0.23	U			4.4		0.23	U	2.7	
Camden, Apollo Tannery SS-3 02/02/06 0-0.5'	mg/kg	0.391		0.3	U	0.483		0.3	U	0.3	U	0.765		0.3	U	0.464	
Canton, Brindis Leather BKSS-1 05/27/10 0.5-1'	mg/kg	2.7				2.8		0.7	U	0.5	U	4.3		0.5	U	1.7	
Edgecomb, Cahill Tire Service SB-1 07/01/10 0-2'	mg/kg	0.35	U			0.35	U	0.35	U			0.31	J	0.35	U	0.35	U
Hallowell, Eastern Steamship BKSS-02 04/11/07 0-2'	mg/kg	1.2	J	0.43	UJ	4	J	0.43	UJ	0.43	UJ	3.8	J	0.22	J	1.2	J
Hancock, Sammis BK-SS01 09/28/09 0-2'	mg/kg	0.44		0.43	U	0.53		0.43	U	0.43	U	0.95		0.43	U	0.4	U
Hermon, Quinns SS-106/04/30/09 0-2'	mg/kg	0.34	U			0.391		0.34	U			0.606		0.34	U	0.28	J
Howland, Tannery TP-05 04/10/04 5'	mg/kg	0.13		0.1	U	0.16		0.03	U	0.03	U	0.2		0.03	U	0.05	
Mapleton, Auto Repair BK-SS-02 06/09/09 4-6'	mg/kg	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U	0.24	J	0.29	U	0.29	U
Milo, Downtown BK2 12/18/08 0-2'	mg/kg	0.34	U	0.34	U	0.34	U	0.34	U	0.34	U	0.183	J	0.34	U	0.34	U
Milo, Downtown BK3 12/18/08 0-2'	mg/kg	0.366		0.34	U	0.706		0.34	U	0.34	U	1.36		0.34	U	0.347	
Norway, Former Corn Shop SS-BKGD 11/20/07 0-6'	mg/kg	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.43		0.41	U	0.41	U
Old Town, OTC BK-1 10/21/09 0-2'	mg/kg	0.297	U			0.263	J	0.297	U			0.664		0.297	U	0.278	J
Vinalhaven, Fish Pier SS-2 04/25/06 0-0.5'	mg/kg	2.4		0.38	U	5.9		0.63		0.38	U	4.7		0.18	J	2.6	
Bridgeton, Memorial School BG-1 07/08/10 0.5-1'	mg/kg	0.294	U			0.294	U	0.294	U			0.294	U	0.294	U	0.294	U
Charlie's Automotive, Ellsworth SS-13 07/08/10 0-2'	mg/kg	0.05	U	0.2	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Charlie's Automotive, Ellsworth TP-1 07/08/10 10-12'	mg/kg	0.05	U	0.2	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Consea, Eastport BK1 02/23/11 0.5-1'	mg/kg	0.2	U			0.23		0.2	U			0.35		0.2	U	0.2	U
Consea, Eastport BK2 02/23/11 0.5-1'	mg/kg	0.23	U			0.23	U	0.23	U			0.23	U	0.23	U	0.23	U
Consea, Eastport BK3 02/23/11 0.5-1'	mg/kg	0.23	U			0.23	U	0.23	U			0.23	U	0.23	U	0.23	U
15 Sea St, Eastport BK101 11/10/10 0.5-1'	mg/kg	0.61				1						1.6		0.41	U		
15 Sea St, Eastport BK102 11/10/10 0.5-1'	mg/kg	0.9				1.6						2.5		0.32	U		
15 Sea St, Eastport BK103 11/10/10 0.5-1'	mg/kg	0.37	U			0.53						0.53		0.37	U	0.37	U
15 Sea St, Eastport BK104 11/10/10 0.5-1'	mg/kg	0.35	U			0.35	U			0.35	U	0.35	U	0.35	U	0.35	U
Bridges Property, Calais BK-101 12/15/10 0.5-1'	mg/kg	0.12				0.67		0.77				0.086	U	0.55	U	0.098	U
Bridges Property, Calais BK-102 12/15/10 0.5-1'	mg/kg	0.34				1.5		0.24				1.6		0.098	U	1.2	
Bridges Property, Calais BK-103 12/15/10 0.5-1'	mg/kg	0.11				0.16		0.13	U			0.14		0.085	U	0.15	
Bridges Property, Calais BK-104(1) 12/15/10 0.5-1'	mg/kg	550				1300		160				2200		670		550	
Bridges Property, Calais BK-104(2) 12/15/10 1-2'	mg/kg	22				54		8.3				120		30		27	
HA-1-6-8	mg/kg	0.017				0.034		0.005	J			0.025		0.007	U	0.014	
HA-2-6-10	mg/kg	0.035				0.065		0.007	J			0.08		0.006	J	0.024	
HA-3-6-14	mg/kg	0.023				0.044		0.005	J			0.073		0.005	J	0.016	
HA-4-6-14	mg/kg	1.97				4.94		0.495	J			7.64		0.516		1.91	
HA-7-6-15	mg/kg	0.188				0.281		0.026				0.248		0.01		0.125	
HA-8-6-15	mg/kg	0.021				0.068		0.006	J			0.116		0.019		0.019	
JF-3-6-9	mg/kg	0.253				0.455	J	0.039				0.484	J	0.045		0.145	
JF-4-6-11	mg/kg	0.0065	J			0.0078		0.0073	U			0.0072	J	0.0073	U	0.0059	J
JF-7-6-16	mg/kg	0.079				0.14		0.01				0.222		0.0082		0.04	
JF-8-6-16	mg/kg	0.093				0.156		0.015				0.222	J	0.0092		0.051	
JF-9-6-16	mg/kg	0.261	J			0.574		0.059				0.702		0.047		0.228	
TS-1-6-14	mg/kg	0.062				0.139		0.022				0.159		0.0077		0.091	
TS-3-6-14	mg/kg	0.785				1.48		0.101				2.59		0.264		0.331	
TS-4-6-15	mg/kg	0.297				0.565		0.043				0.961		0.027		0.164	
TS-5-6-15	mg/kg	0.319				0.82		0.076				0.74		0.122		0.203	
TS-6-6-15	mg/kg	1.07				2.04		0.157				5.44		0.458		0.533	
TS-7-6-15	mg/kg	0.0077	U			0.005	J	0.0077	U			0.008		0.0077	U	0.0077	U
TS-8-6-16	mg/kg	0.191				0.662		0.076				0.903		0.078		0.291	
TS-9-6-16	mg/kg	0.03				0.076		0.012				0.106		0.005	J	0.048	
MW-SB-NASB-BKD-06	mg/kg	0.004	U			0.002	U	0.002	UJ			0.002	U	0.004	U	0.002	U
MW-SB-NASB-BKD-10	mg/kg	0.014	J			0.017	J	0.002	UJ			0.028		0.004	UJ	0.01	J
MW-SB-NASB-BKD-15	mg/kg	0.004	U			0.003	J	0.002	J			0.006	J	0.004	U	0.003	J
MW-SB-NASB-BKD-24	mg/kg	0.004	U			0.004	J	0.002	U			0.007	J	0.004	U	0.004	J
MW-SB-NASB-BKD-29	mg/kg	0.003	U			0.002	J	0.002	U			0.003	J	0.003	U	0.002	U
ADCG-BK1	mg/kg	1.3				1.6		0.29				2.7		0.26	U	1	
ADCG-BK2	mg/kg	0.31	U			0.31	U	0.31	U			0.31	U	0.31	U	0.31	U
ADCG-BK3	mg/kg	0.72				0.64		0.26	U			1.1		0.26	U	0.61	
Frd Plmb_B-102	mg/kg	0.28	U			0.28	U	0.28	U			0.28	U	0.28	U	0.28	U
OP-HS_BK-1	mg/kg	16				21		2.1				37		3.5		11	
OP-HS_BK-2	mg/kg	24				32		3.2				59		9		15	
OP-HS_BK-3	mg/kg	1.2				1.1		0.24	U			1.2		0.24	U	1.3	
PTC-BG	mg/kg	0.38	U			0.227		0.38	U			0.228		0.38	U	0.38	U
IQR EVALUATION																	
Max	mg/kg	550		0.43		1300		160		0.5		2200		670		550	
25%	mg/kg	0.079		0.245		0.14		0.022		0.29		0.14		0.019		0.05	
50%	mg/kg	0.297		0.34		0.35		0.23		0.34		0.35		0.23		0.28	
75%	mg/kg	0.61		0.395		1		0.34		0.41		1.36		0.34		0.437	
90%	mg/kg	2.4		0.43		4		0.658		0.43		4.7		0.5		2.048	
95%	mg/kg	16		0.43		21		2.32		0.458		37		3.5		11.4	
IQR	mg/kg	0.531		0.15		0.86		0.318		0.12		1.22		0.321		0.387	
Upper IQR	mg/kg	1.4065		0.62		2.29		0.817		0.59		3.19		0.8215		1.0175	
Lower IQR	mg/kg	-2.03075		-0.685		-3.295		-1.2035		-0.595		-4.645		-1.21325		-1.47625	

Notes:
mg/kg - milligram per kilogram
U - undetected
J - estimated
E - exceeds calibration range
Highlighted cells indicate outliers
IQR - interquartile range
LN - indicates that concentration is the natural log of the raw data

Appendix C2. Identification of Outliers for Background PAHs in Rural Developed Area Soil

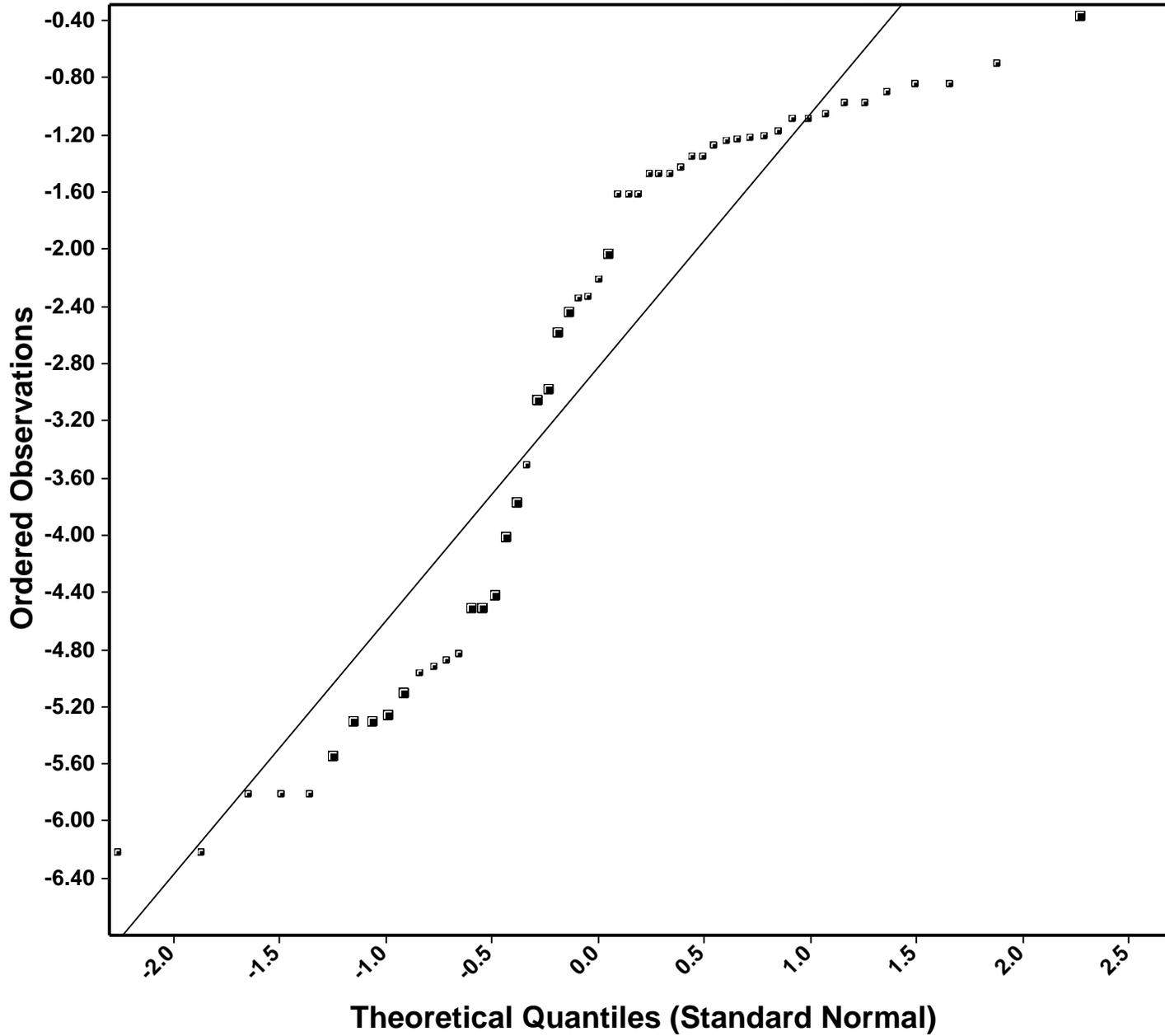
Sample ID	Units	Naphthalene	Qualifier	Phenanthrene	Qualifier	Pyrene	Qualifier
Berwick, Prime Tanning SS-101B 07/20/10 0-2'	mg/kg	0.23	U	1		3.6	
Camden, Apollo Tannery SS-3 02/02/06 0-0.5'	mg/kg	0.3	U	0.315		0.725	
Canton, Brindis Leather BKSS-1 05/27/10 0.5-1'	mg/kg	0.5	U	1		5.5	
Edgecomb, Cahill Tire Service SB-1 07/01/10 0-2'	mg/kg	0.35	U	0.35	U	0.28	J
Hallowell, Eastern Steamship BKSS-02 04/11/07 0-2'	mg/kg	0.43	UJ	3.4	J	11	J
Hancock, Sammis BK-SS01 09/28/09 0-2'	mg/kg	0.43	U	0.68		0.76	
Hermon, Quinns SS-106/04/30/09 0-2'	mg/kg	0.34	U	0.235	J	0.597	
Howland, Tannery TP-05 04/10/04 5'	mg/kg	0.03	U	0.1		0.25	
Mapleton, Auto Repair BK-SS-02 06/09/09 4-6'	mg/kg	0.29	U	0.225	J	0.196	J
Milo, Downtown BK2 12/18/08 0-2'	mg/kg	0.34	U	0.34	U	0.183	J
Milo, Downtown BK3 12/18/08 0-2'	mg/kg	0.34	U	0.937		1.13	
Norway, Former Corn Shop SS-BKGD 11/20/07 0-6'	mg/kg	0.41	U	0.41	U	0.41	U
Old Town, OTC BK-1 10/21/09 0-2'	mg/kg	0.297	U	0.328		0.6	
Vinalhaven, Fish Pier SS-2 04/25/06 0-0.5'	mg/kg	0.38	U	2.5		9.8	
Bridgeton, Memorial School BG-1 07/08/10 0.5-1'	mg/kg	0.294	U	0.294	U	0.294	U
Charlie's Automotive, Ellsworth SS-13 07/08/10 0-2'	mg/kg	0.05	U	0.05	U	0.05	U
Charlie's Automotive, Ellsworth TP-1 07/08/10 10-12'	mg/kg	0.05	U	0.05	U	0.05	U
Consea, Eastport BK1 02/23/11 0.5-1'	mg/kg	0.2	U	0.2	U	0.35	
Consea, Eastport BK2 02/23/11 0.5-1'	mg/kg	0.23	U	0.23	U	0.23	U
Consea, Eastport BK3 02/23/11 0.5-1'	mg/kg	0.23	U	0.23	U	0.23	U
15 Sea St, Eastport BK101 11/10/10 0.5-1'	mg/kg	0.41	U	1.2		1.8	
15 Sea St, Eastport BK102 11/10/10 0.5-1'	mg/kg	0.32	U	1.2		2.3	
15 Sea St, Eastport BK103 11/10/10 0.5-1'	mg/kg	0.37	U	0.37	U	0.61	
15 Sea St, Eastport BK104 11/10/10 0.5-1'	mg/kg	0.35	U	0.35	U	0.35	U
Bridges Property, Calais BK-101 12/15/10 0.5-1'	mg/kg	0.093	U	0.25		0.95	
Bridges Property, Calais BK-102 12/15/10 0.5-1'	mg/kg	0.1	U	0.85		2.2	
Bridges Property, Calais BK-103 12/15/10 0.5-1'	mg/kg	0.092	U	0.087	U	0.16	
Bridges Property, Calais BK-104(1) 12/15/10 0.5-1'	mg/kg	320		2600		2400	
Bridges Property, Calais BK-104(2) 12/15/10 1-2'	mg/kg	6.3		160		130	
HA-1-6-8	mg/kg	0.007	U	0.013		0.03	
HA-2-6-10	mg/kg	0.005	J	0.038		0.085	
HA-3-6-14	mg/kg	0.008	U	0.04		0.068	
HA-4-6-14	mg/kg	0.206		5.55		8.55	
HA-7-6-15	mg/kg	0.005	J	0.103		0.229	
HA-8-6-15	mg/kg	0.008	J	0.145		0.161	
JF-3-6-9	mg/kg	0.019		0.114		0.605	
JF-4-6-11	mg/kg	0.0073	U	0.0038	J	0.0057	J
JF-7-6-16	mg/kg	0.0057	J	0.128		0.197	
JF-8-6-16	mg/kg	0.012		0.096		0.216	J
JF-9-6-16	mg/kg	0.033		0.307		0.824	
TS-1-6-14	mg/kg	0.0075		0.07		0.193	
TS-3-6-14	mg/kg	0.074		1.71		2.38	
TS-4-6-15	mg/kg	0.014		0.415		0.798	
TS-5-6-15	mg/kg	0.041		0.519		1.19	
TS-6-6-15	mg/kg	0.14	J	4.03		4.12	
TS-7-6-15	mg/kg	0.004	J	0.005	J	0.005	J
TS-8-6-16	mg/kg	0.044		0.912		1.2	
TS-9-6-16	mg/kg	0.007	J	0.061		0.123	
MW-SB-NASB-BKD-06	mg/kg	0.003	U	0.002	U	0.003	U
MW-SB-NASB-BKD-10	mg/kg	0.003	U	0.015	J	0.026	
MW-SB-NASB-BKD-15	mg/kg	0.003	UJ	0.003	J	0.006	J
MW-SB-NASB-BKD-24	mg/kg	0.003	UJ	0.004	J	0.007	J
MW-SB-NASB-BKD-29	mg/kg	0.003	U	0.002	J	0.003	J
ADCG-BK1	mg/kg	0.26	U	0.92		2.9	
ADCG-BK2	mg/kg	0.31	U	0.31	U	0.31	U
ADCG-BK3	mg/kg	0.26	U	0.54		1.2	
Frd Plmb_B-102	mg/kg	0.28	U	0.28	U	0.28	U
OP-HS_BK-1	mg/kg	1.4		38		43	
OP-HS_BK-2	mg/kg	5		54		58	
OP-HS_BK-3	mg/kg	0.26		0.64		1.5	
PTC-BG	mg/kg	0.38	U	0.38	U	0.231	
IQR EVALUATION							
Max	mg/kg	320		2600		2400	
25%	mg/kg	0.012		0.096		0.183	
50%	mg/kg	0.206		0.31		0.35	
75%	mg/kg	0.34		0.912		1.5	
90%	mg/kg	0.43		3.4		8.55	
95%	mg/kg	1.4		38		43	
IQR	mg/kg	0.328		0.816		1.317	
Upper IQR	mg/kg	0.832		2.136		3.4755	
Lower IQR	mg/kg	-1.236		-3.108		-5.03025	

Notes:
mg/kg - milligram per kilogram
U - undetected
J - estimated
E - exceeds calibration range
Highlighted cells indicate outliers
IQR - interquartile range
LN - indicates that concentration is the natural log of the raw data

Prepared By: EYM
Checked By: RRD

Appendix C3

Q-Q Plot with NDs for 2-Methylnaphthalene

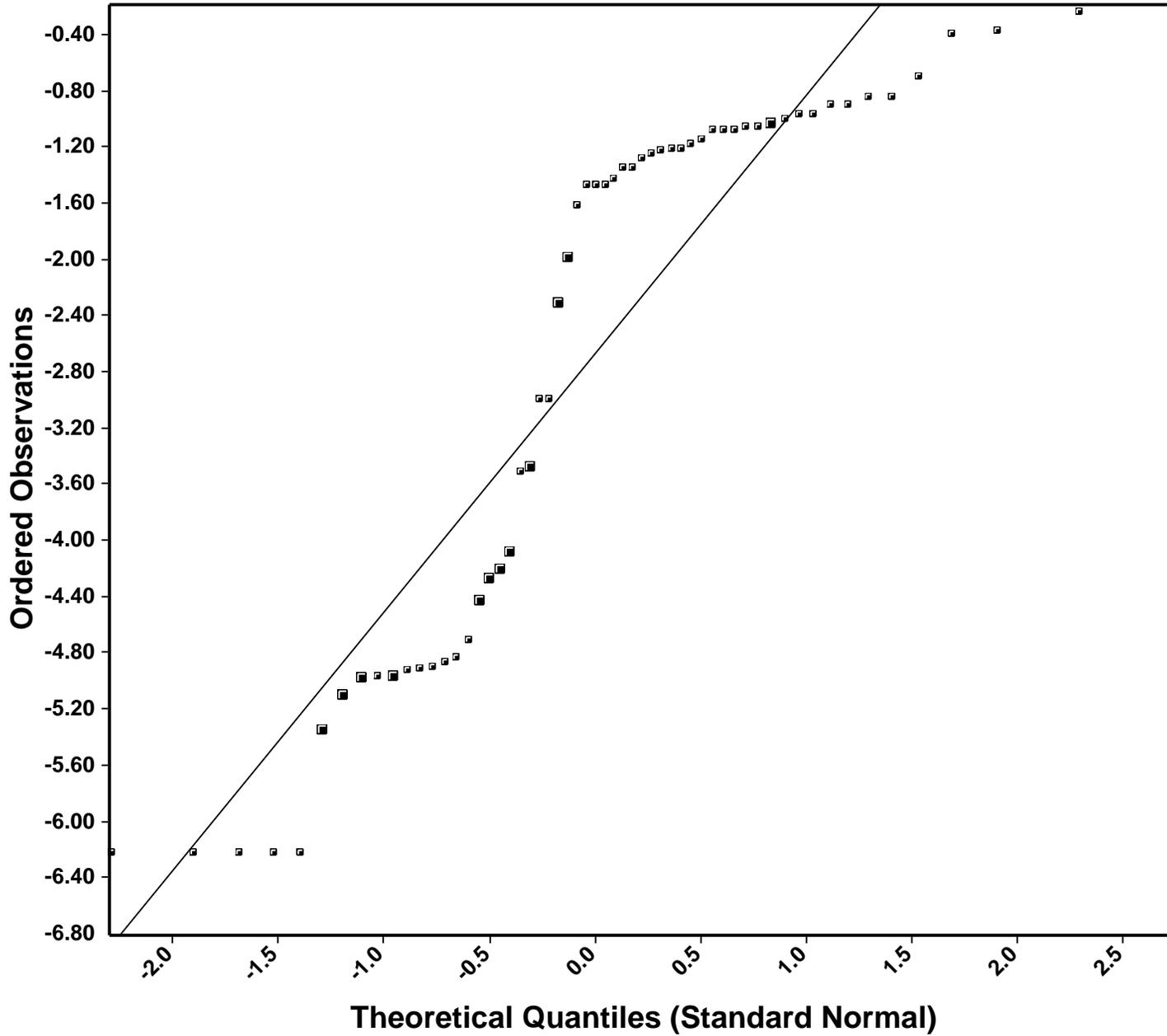


■ 2-Methylnaphthalene

2-Methylnaphthalene

Total Number of Data = 53
Number of Non-Detects = 37
Number of Detects = 16
Mean = -2.8319
Sd = 1.8625
Slope = 1.7769
Intercept = -2.8319
Correlation, R = 0.9371

Q-Q Plot with NDs for Acenaphthene

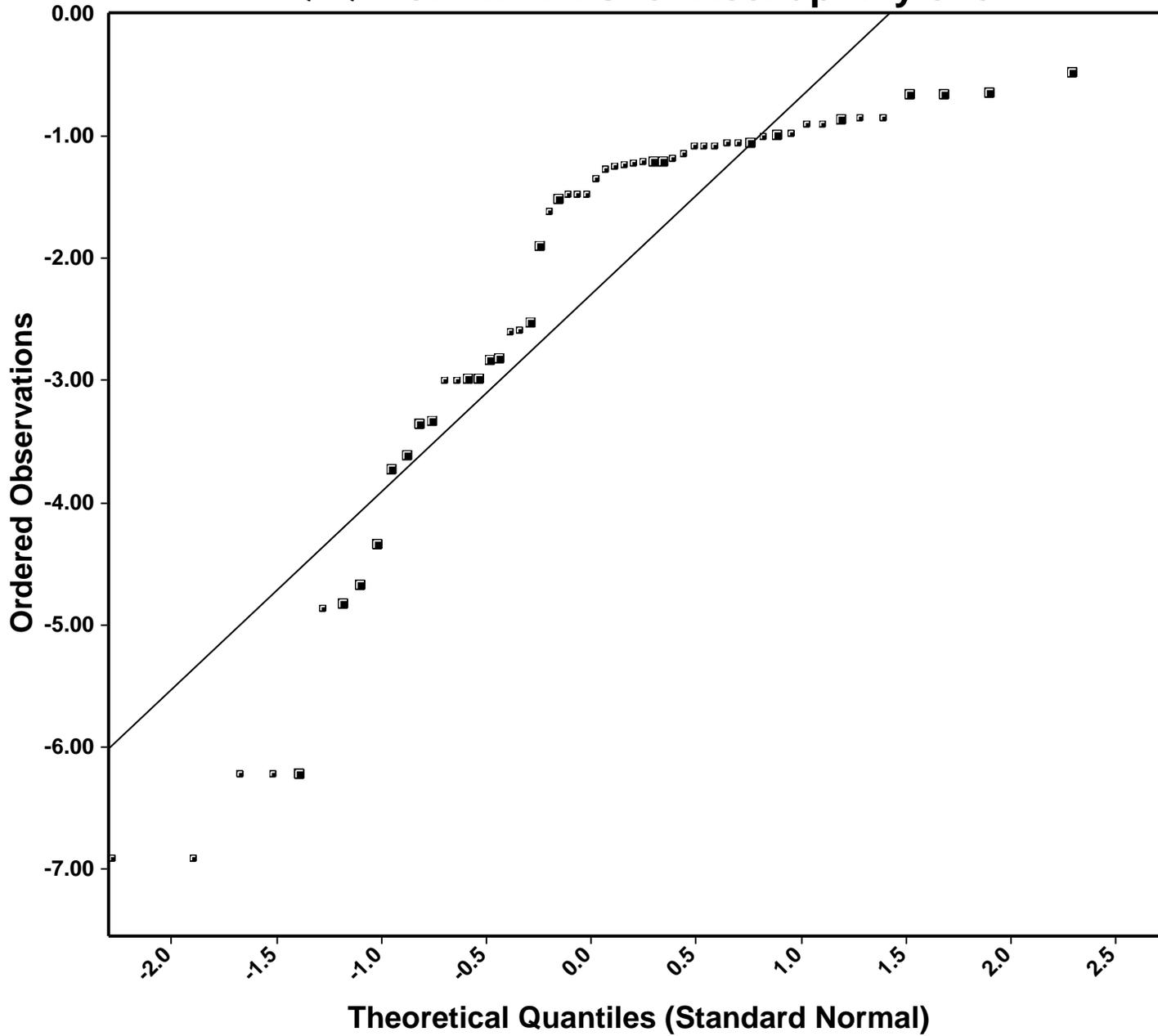


Acenaphthene

Total Number of Data = 57
Number of Non-Detects = 45
Number of Detects = 12
Mean = -2.6808
Sd = 1.9610
Slope = 1.8404
Intercept = -2.6808
Correlation, R = 0.9227

■ Acenaphthene

Q-Q Plot with NDs for Acenaphthylene



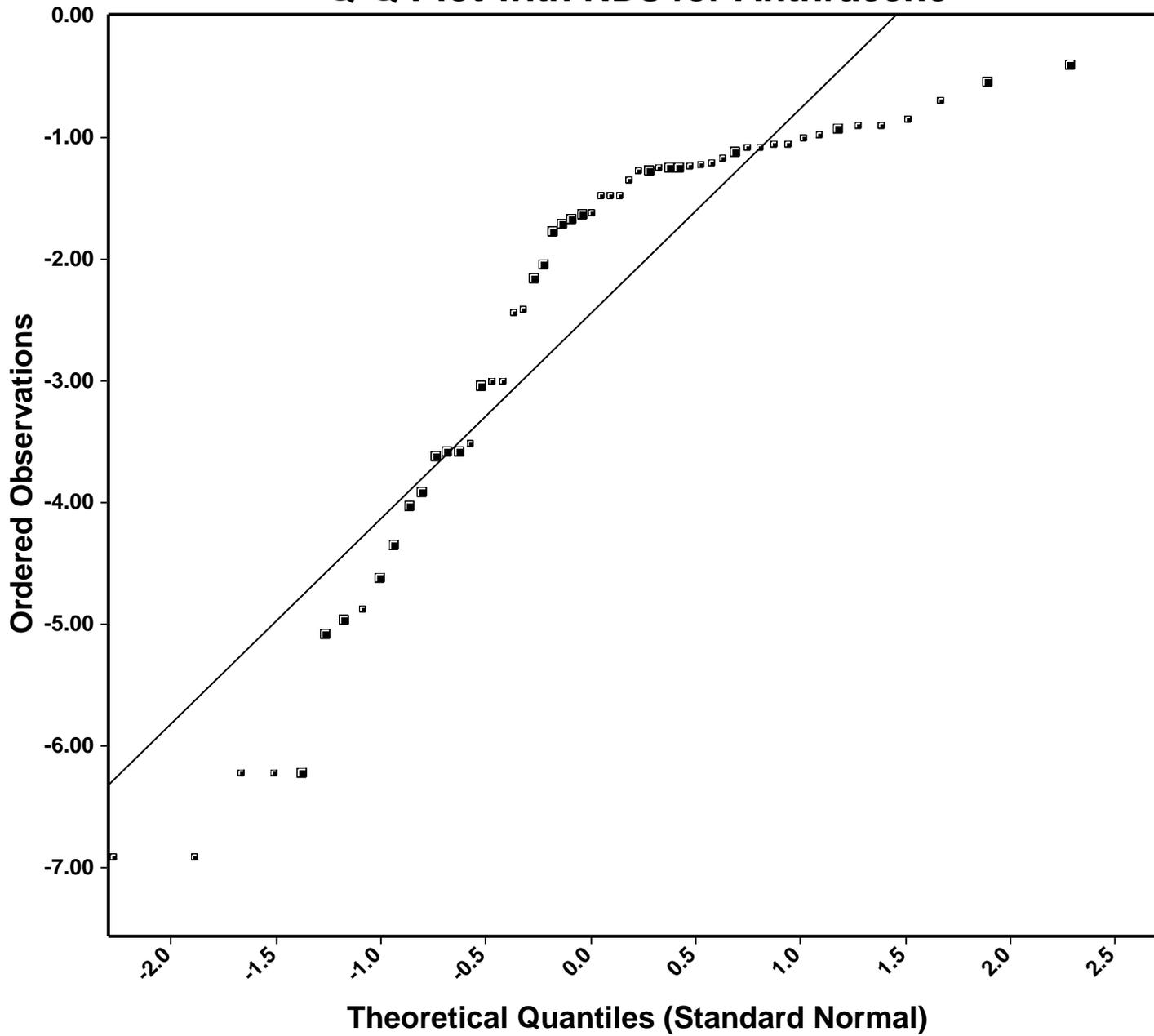
Acenaphthylene

Total Number of Data = 56
Number of Non-Detects = 32
Number of Detects = 24
Mean = -2.2896
Sd = 1.7628
Slope = 1.6195
Intercept = -2.2896
Correlation, R = 0.9031

■ Acenaphthylene

Rural - Natural Log

Q-Q Plot with NDs for Anthracene



■ Anthracene

Anthracene

Total Number of Data = 55

Number of Non-Detects = 31

Number of Detects = 24

Mean = -2.4415

Sd = 1.8021

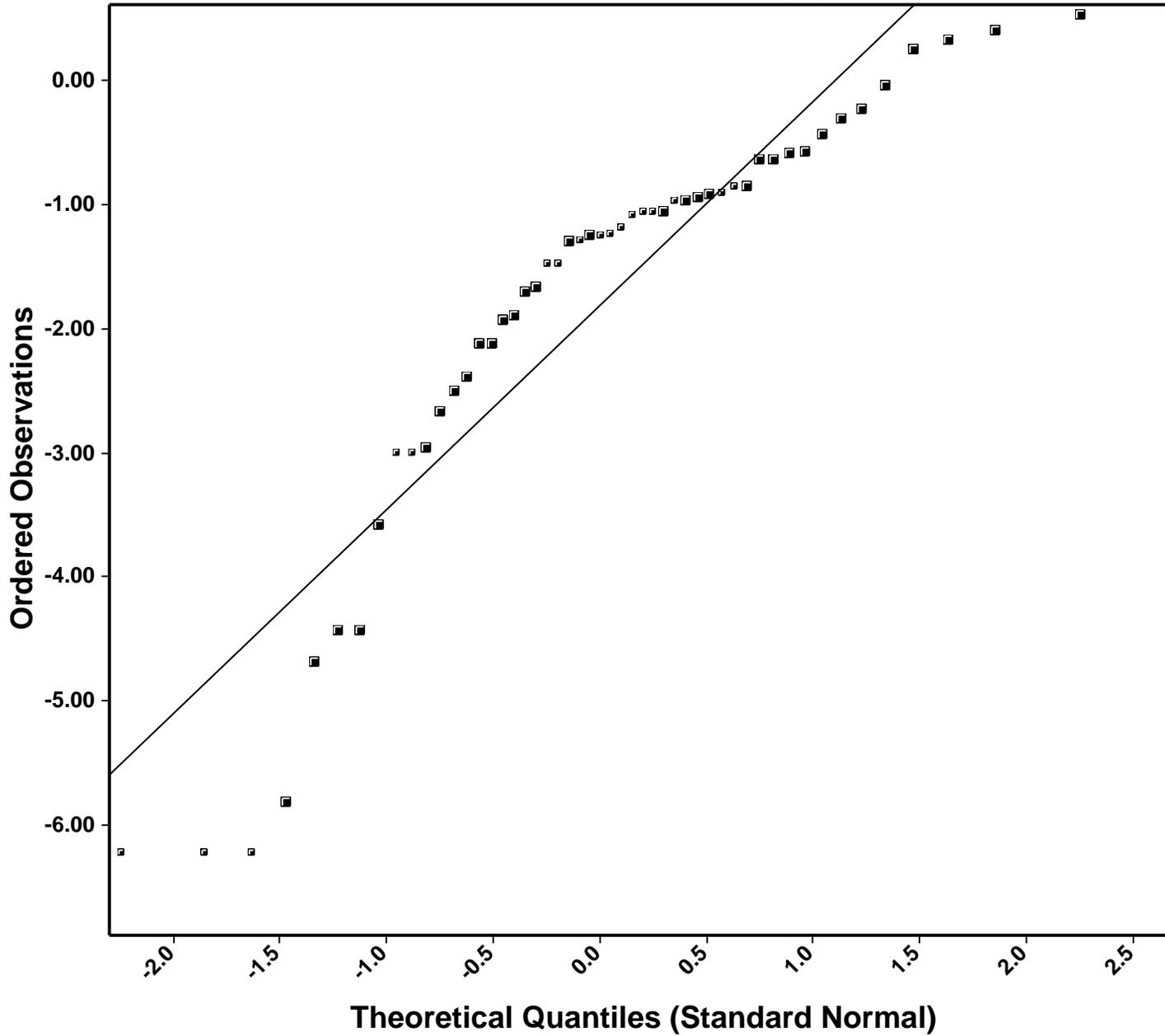
Slope = 1.6828

Intercept = -2.4415

Correlation, R = 0.9177

Rural - Natural Log

Q-Q Plot with NDs for Benzo(a)anthracene



■ Benzo(a)anthracene

Benzo(a)anthracene

Total Number of Data = 51

Number of Non-Detects = 17

Number of Detects = 34

Mean = -1.8096

Sd = 1.7334

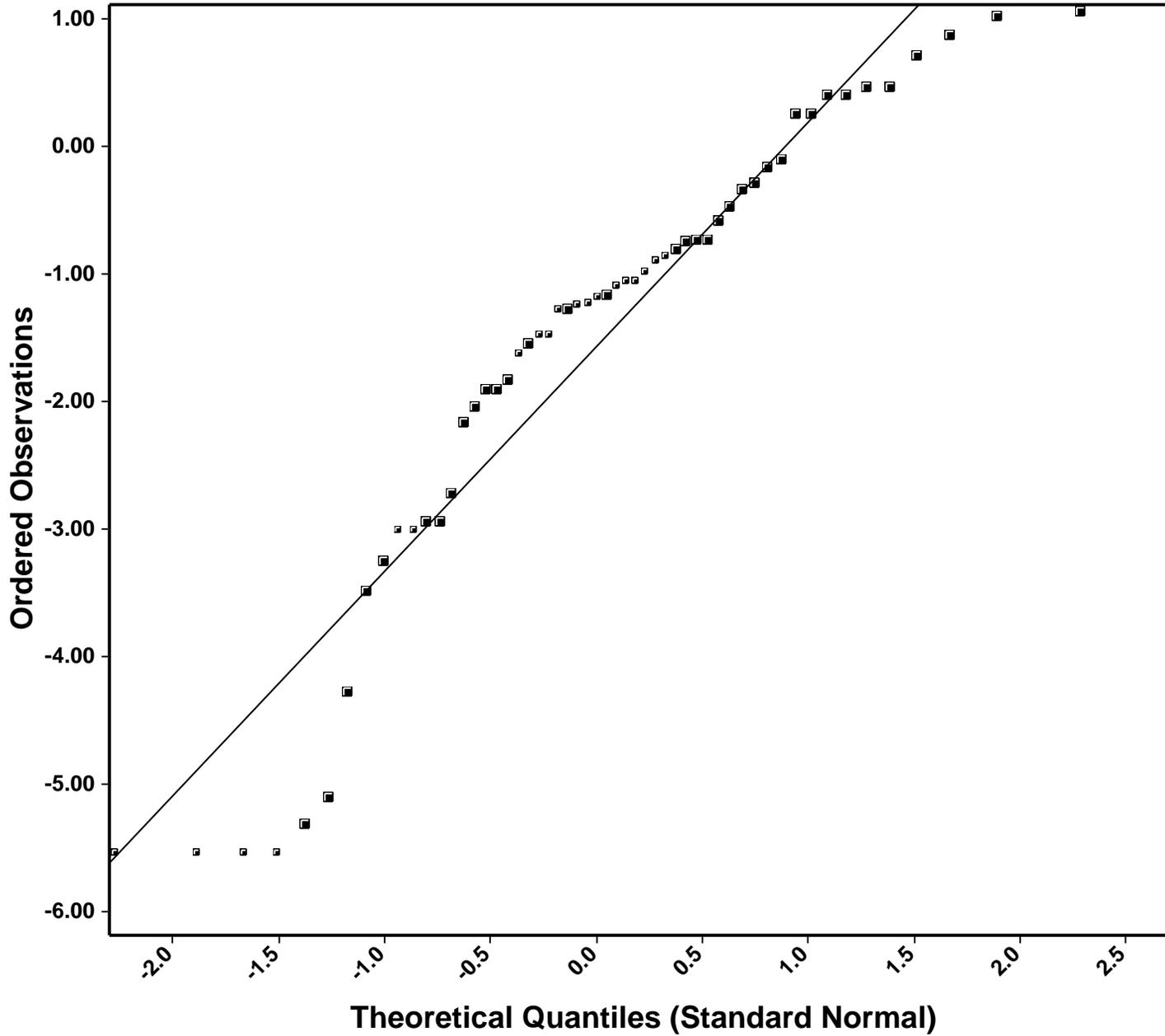
Slope = 1.6434

Intercept = -1.8096

Correlation, R = 0.9308

Rural - Natural Log

Q-Q Plot with NDs for Benzo(a)pyrene

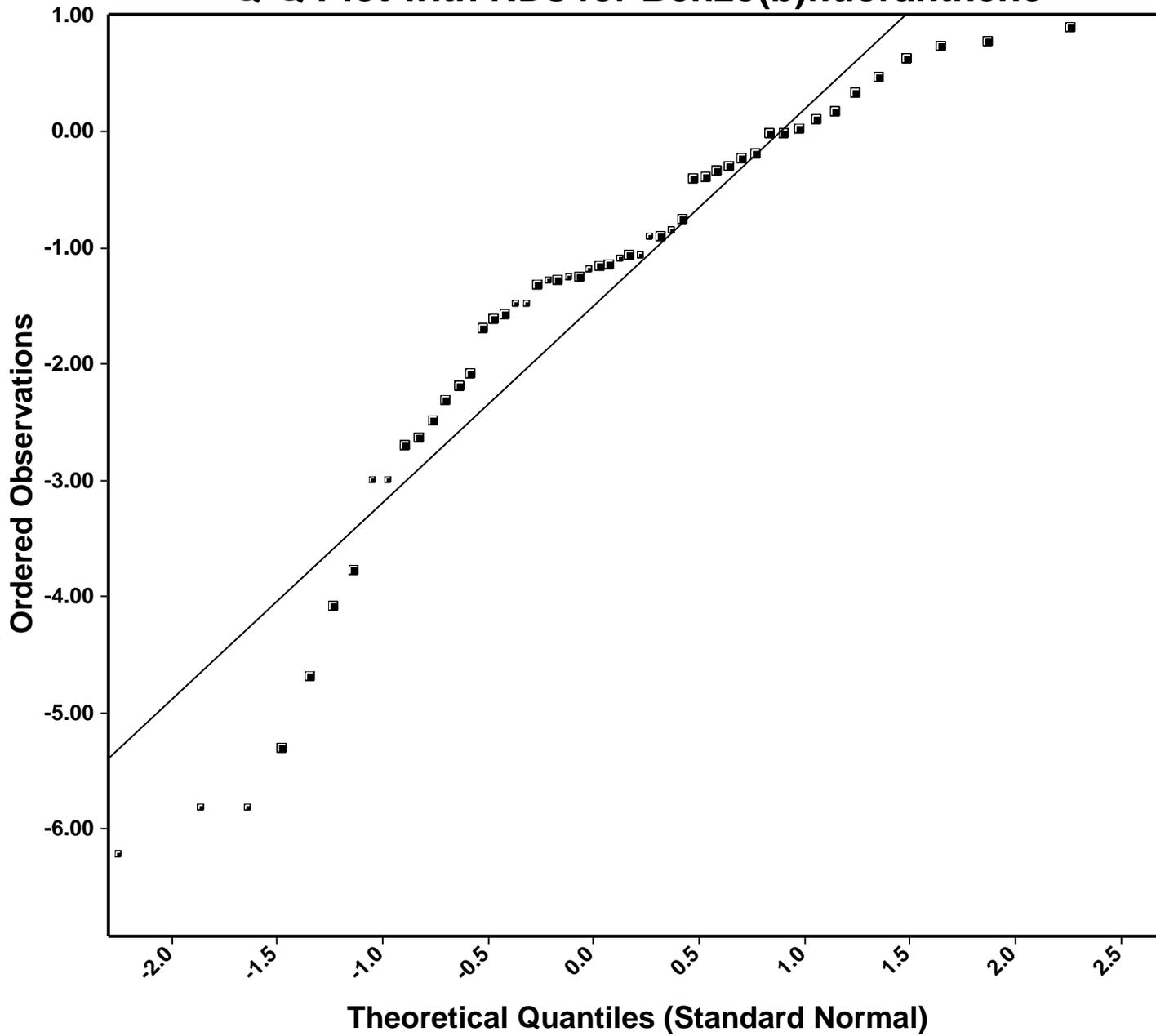


Benzo(a)pyrene

Total Number of Data = 55
Number of Non-Detects = 19
Number of Detects = 36
Mean = -1.5654
Sd = 1.8025
Slope = 1.7570
Intercept = -1.5654
Correlation, R = 0.9580

■ Benzo(a)pyrene

Q-Q Plot with NDs for Benzo(b)fluoranthene

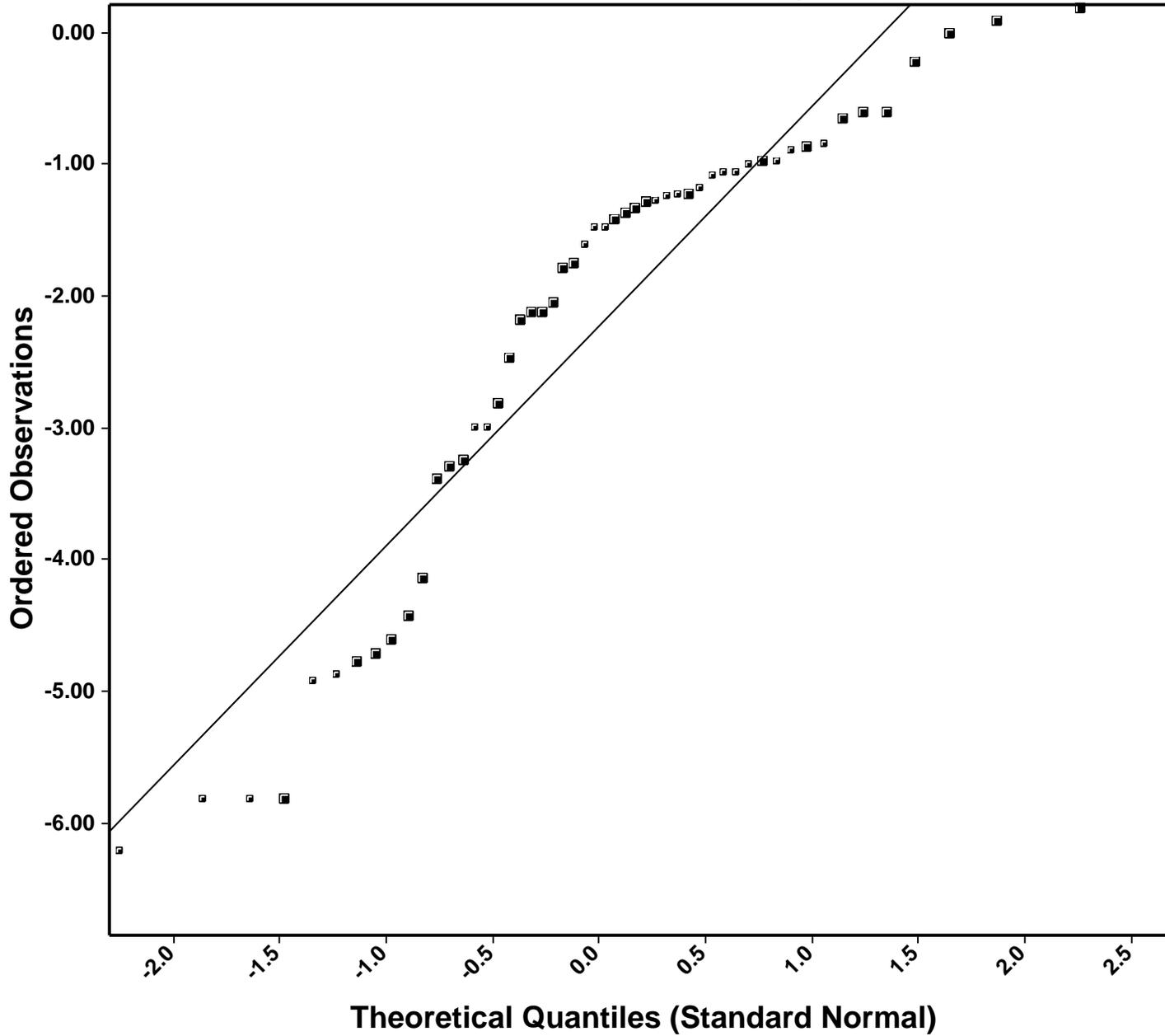


Benzo(b)fluoranthene

Total Number of Data = 52
Number of Non-Detects = 14
Number of Detects = 38
Mean = -1.4954
Sd = 1.7547
Slope = 1.6949
Intercept = -1.4954
Correlation, R = 0.9485

■ Benzo(b)fluoranthene

Q-Q Plot with NDs for Benzo(g,h,i)perylene

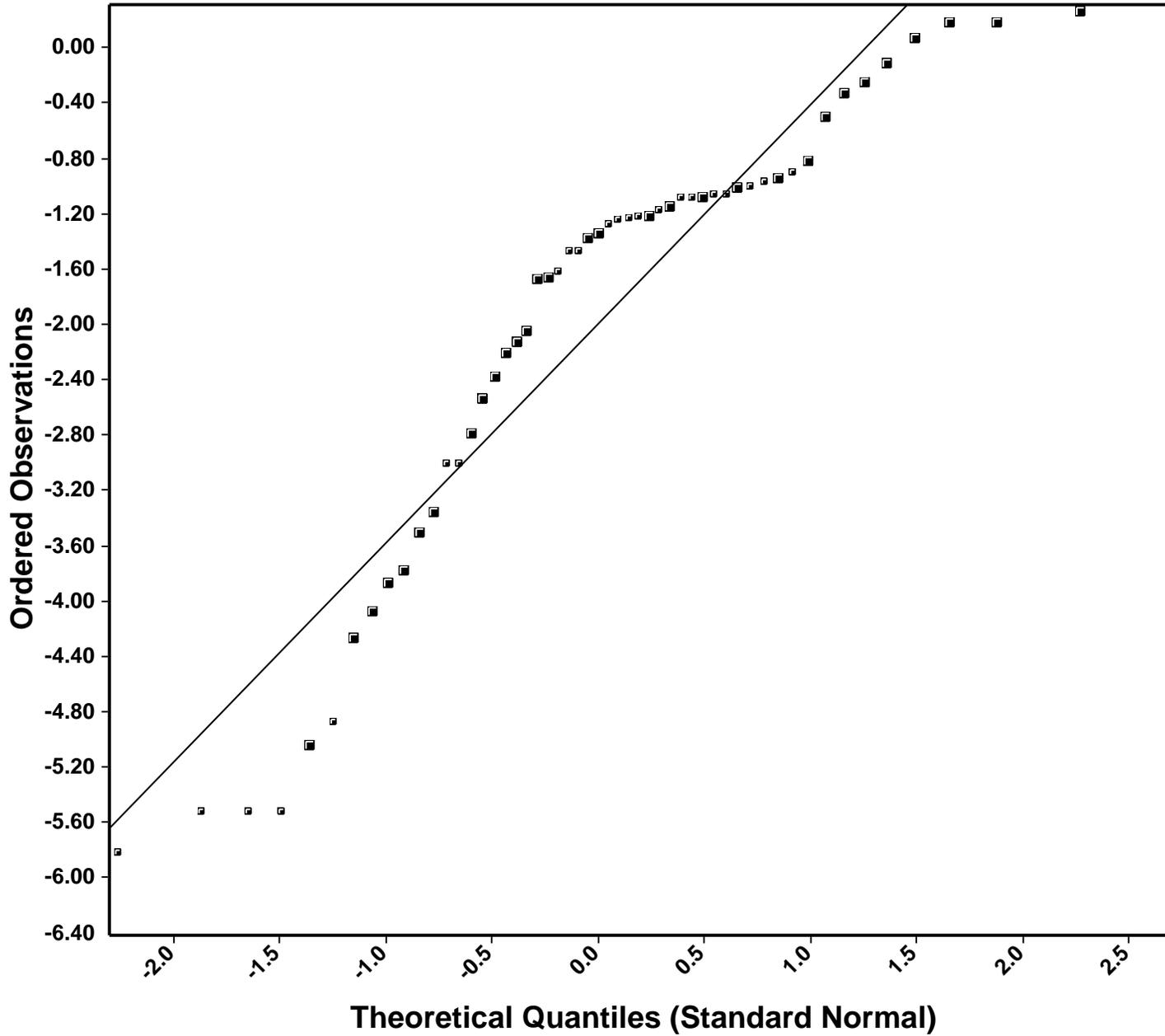


■ Benzo(g,h,i)perylene

Benzo(g,h,i)perylene

Total Number of Data = 52
Number of Non-Detects = 21
Number of Detects = 31
Mean = -2.2280
Sd = 1.7315
Slope = 1.6689
Intercept = -2.2280
Correlation, R = 0.9466

Q-Q Plot with NDs for Benzo(k)fluoranthene

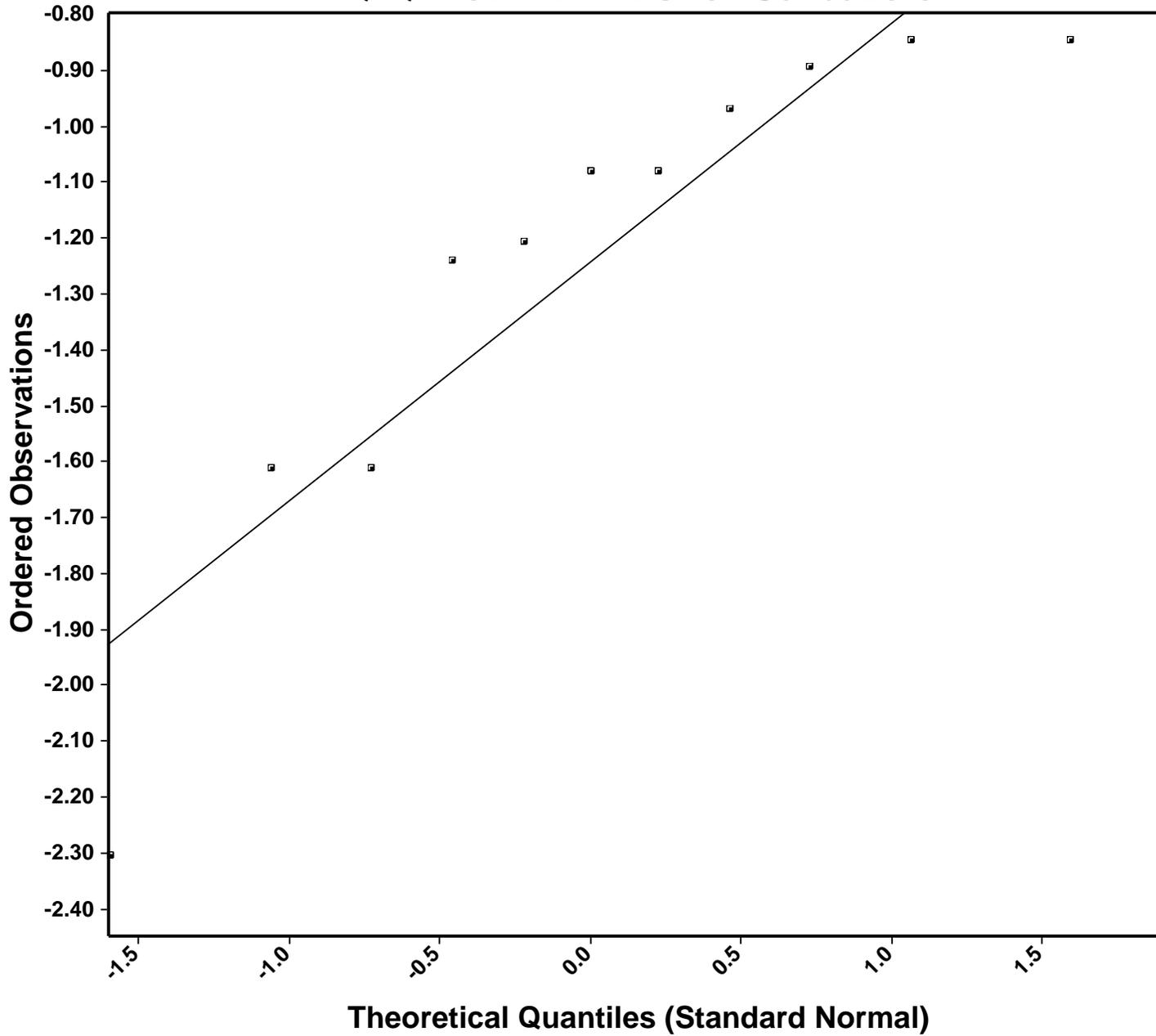


Benzo(k)fluoranthene

Total Number of Data = 53
Number of Non-Detects = 22
Number of Detects = 31
Mean = -1.9937
Sd = 1.6428
Slope = 1.5842
Intercept = -1.9937
Correlation, R = 0.9473

■ Benzo(k)fluoranthene

Q-Q Plot with NDs for Carbazole

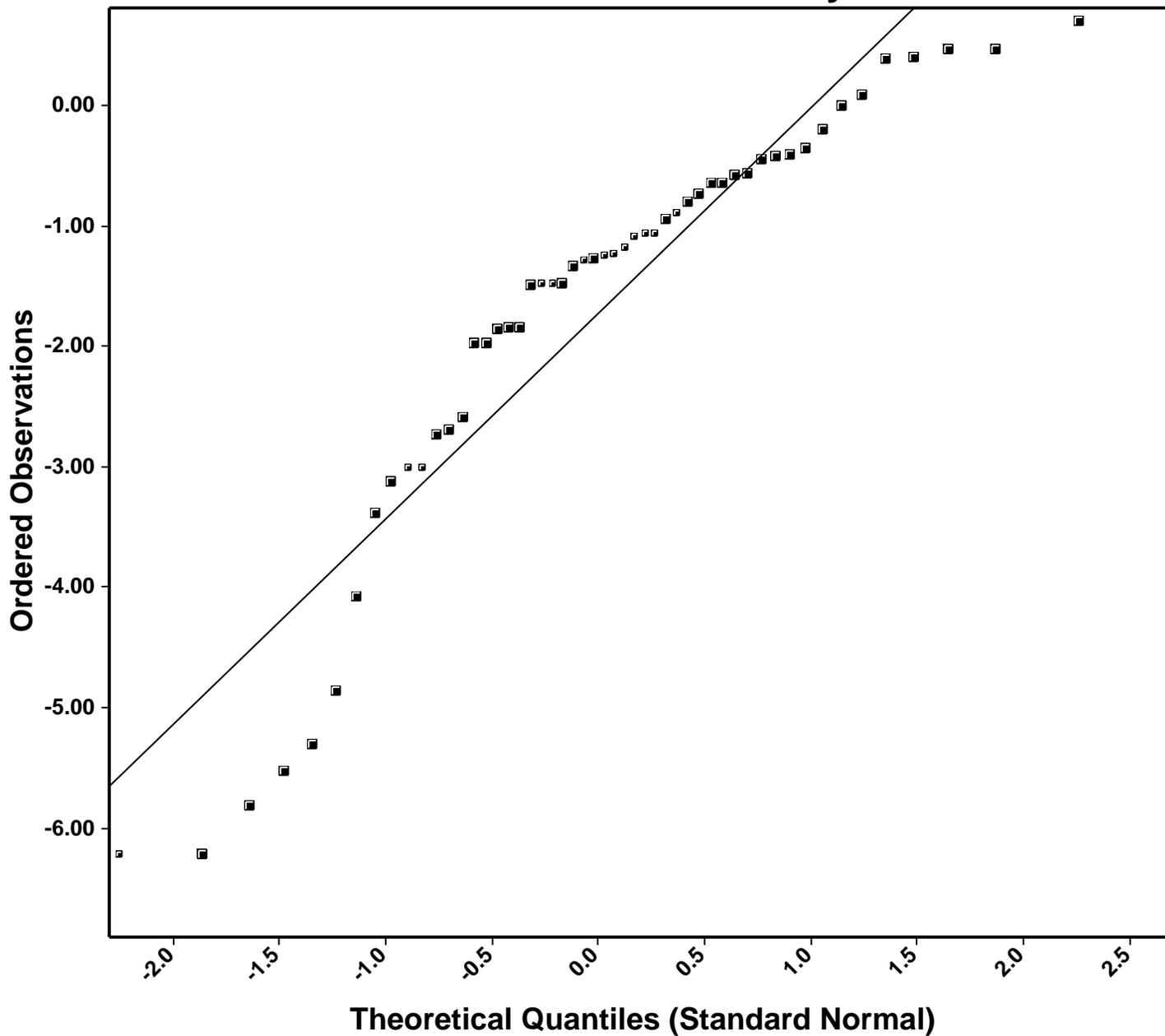


Carbazole

Total Number of Data = 11
Number of Non-Detects = 11
Number of Detects = 0
Mean = -1.2425
Sd = 0.4432
Slope = 0.4276
Intercept = -1.2425
Correlation, R = 0.9108

■ Carbazole

Q-Q Plot with NDs for Chrysene

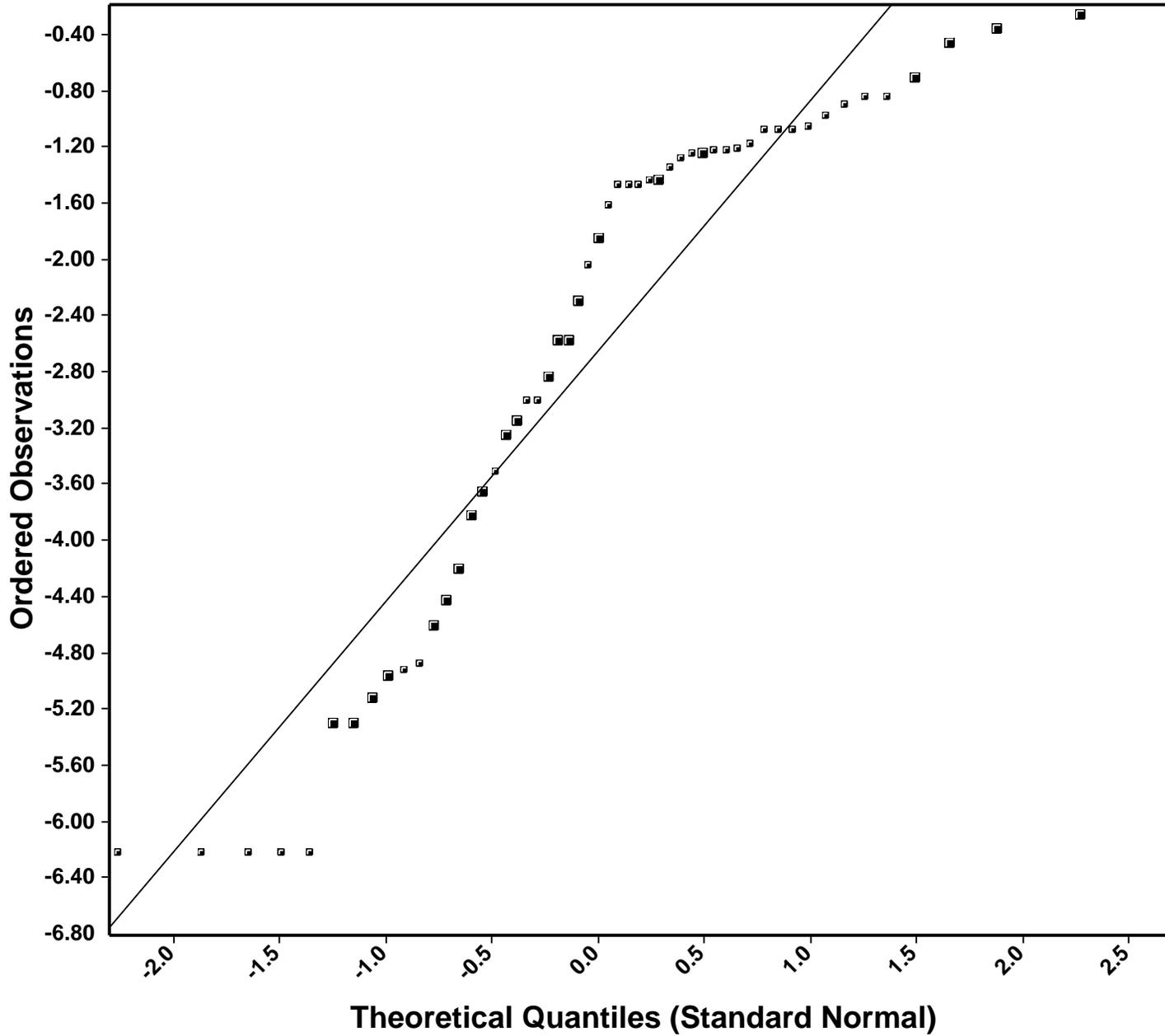


■ Chrysene

Chrysene

Total Number of Data = 52
Number of Non-Detects = 13
Number of Detects = 39
Mean = -1.7217
Sd = 1.7805
Slope = 1.7078
Intercept = -1.7217
Correlation, R = 0.9419

Q-Q Plot with NDs for Dibenzo(a,h)anthracene

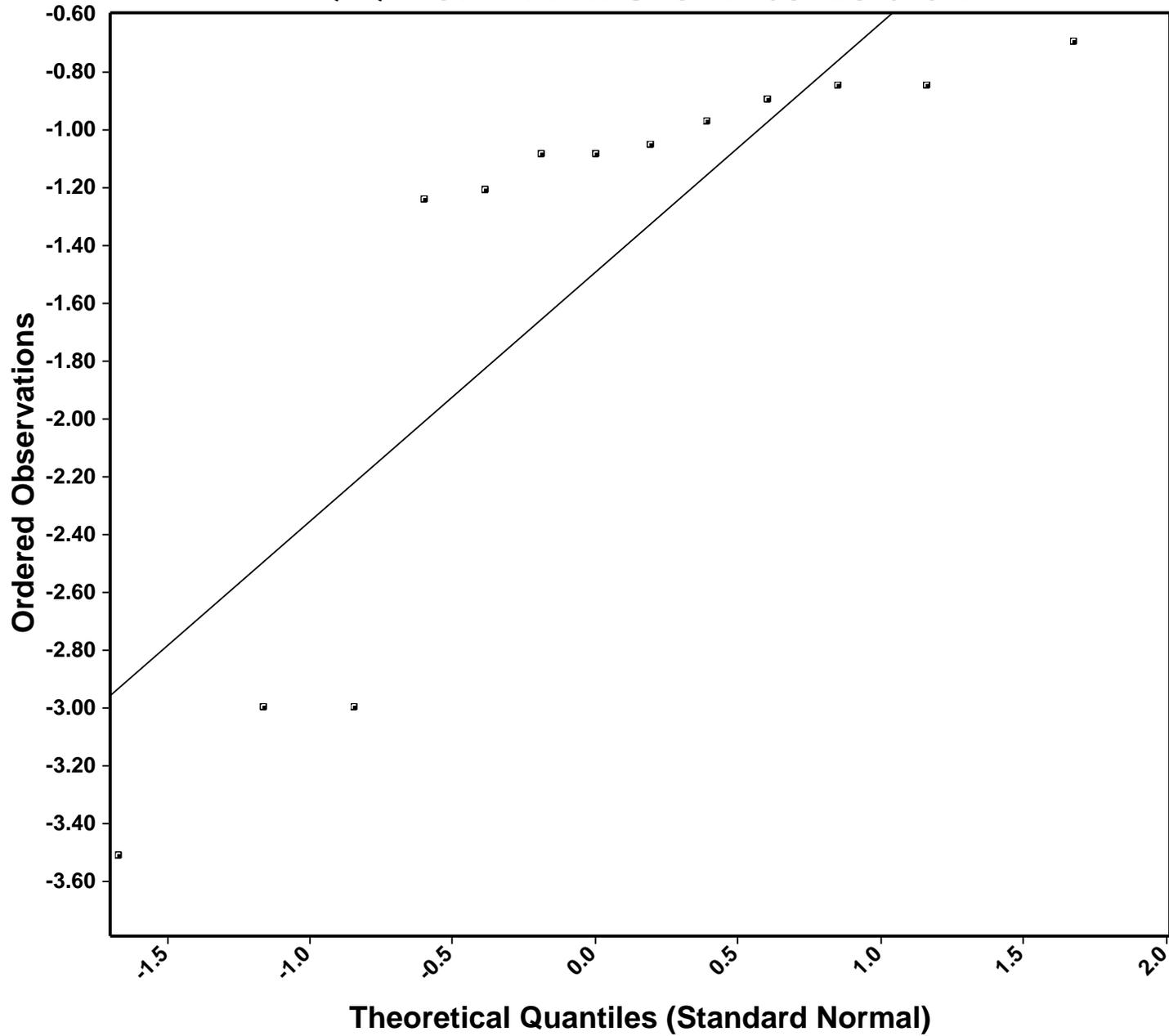


■ Dibenzo(a,h)anthracene

Dibenzo(a,h)anthracene
Total Number of Data = 53
Number of Non-Detects = 31
Number of Detects = 22
Mean = -2.6544
Sd = 1.8589
Slope = 1.7845
Intercept = -2.6544
Correlation, R = 0.9430

Rural - Natural Log

Q-Q Plot with NDs for Dibenzofuran



■ Dibenzofuran

Dibenzofuran

Total Number of Data = 13

Number of Non-Detects = 13

Number of Detects = 0

Mean = -1.4914

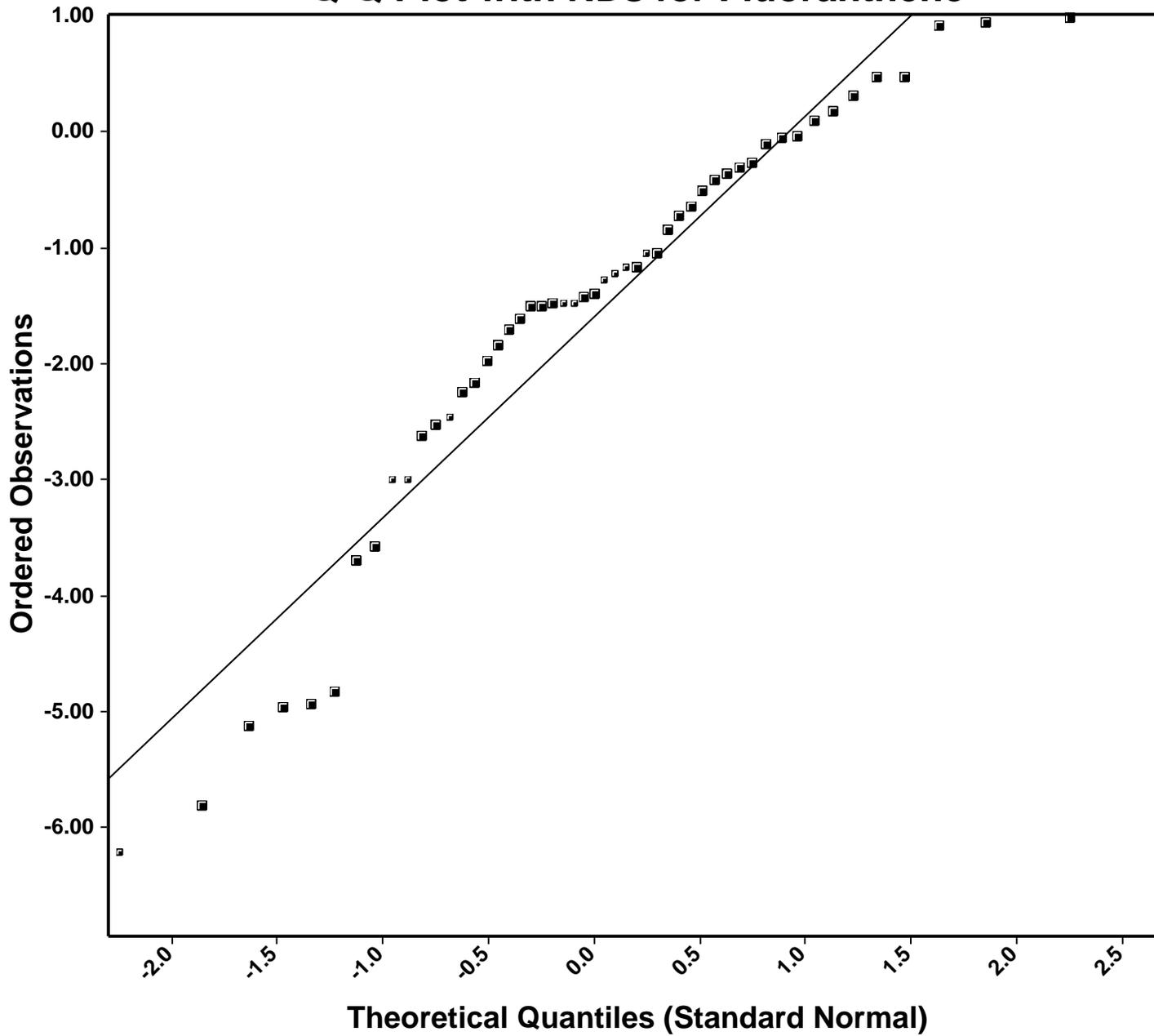
Sd = 0.9738

Slope = 0.8618

Intercept = -1.4914

Correlation, R = 0.8410

Q-Q Plot with NDs for Fluoranthene



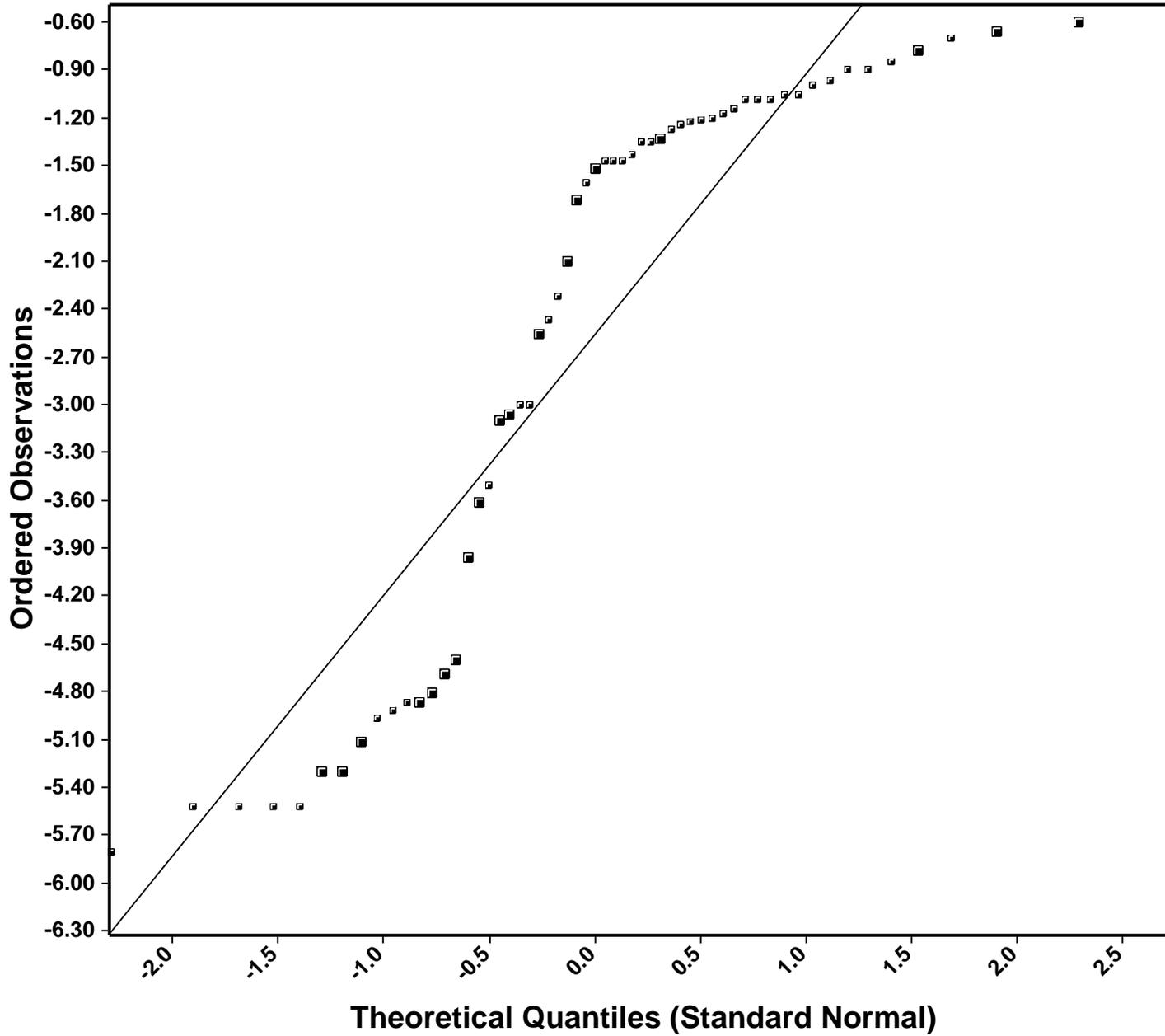
Fluoranthene

Total Number of Data = 51
Number of Non-Detects = 10
Number of Detects = 41
Mean = -1.5933
Sd = 1.7668
Slope = 1.7333
Intercept = -1.5933
Correlation, R = 0.9631

■ Fluoranthene

Rural - Natural Log

Q-Q Plot with NDs for Fluorene



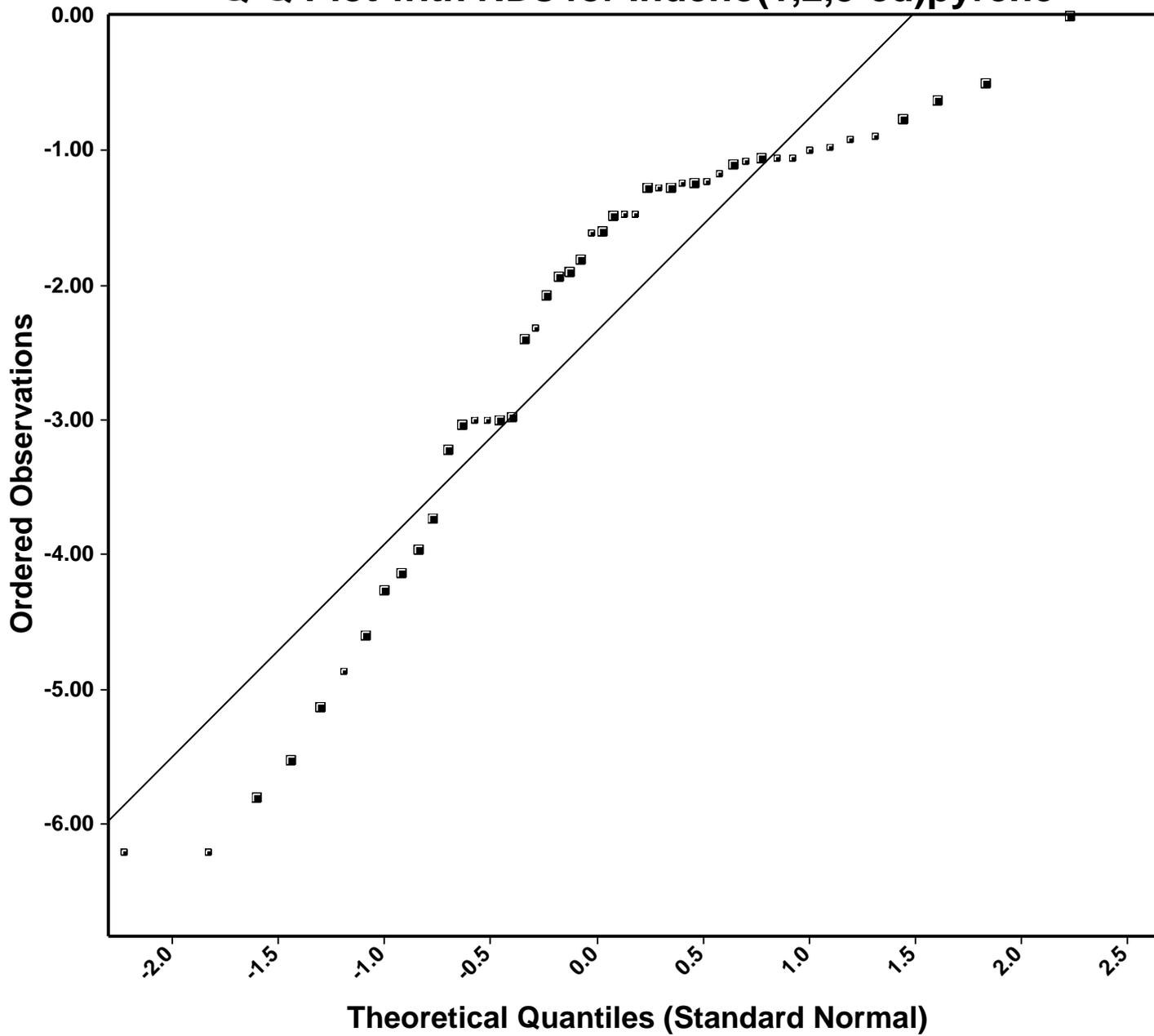
Fluorene

Total Number of Data = 57
Number of Non-Detects = 38
Number of Detects = 19
Mean = -2.5582
Sd = 1.7505
Slope = 1.6354
Intercept = -2.5582
Correlation, R = 0.9186

■ Fluorene

Rural - Natural Log

Q-Q Plot with NDs for Indeno(1,2,3-cd)pyrene



■ Indeno(1,2,3-cd)pyrene

Indeno(1,2,3-cd)pyrene

Total Number of Data = 48

Number of Non-Detects = 20

Number of Detects = 28

Mean = -2.3424

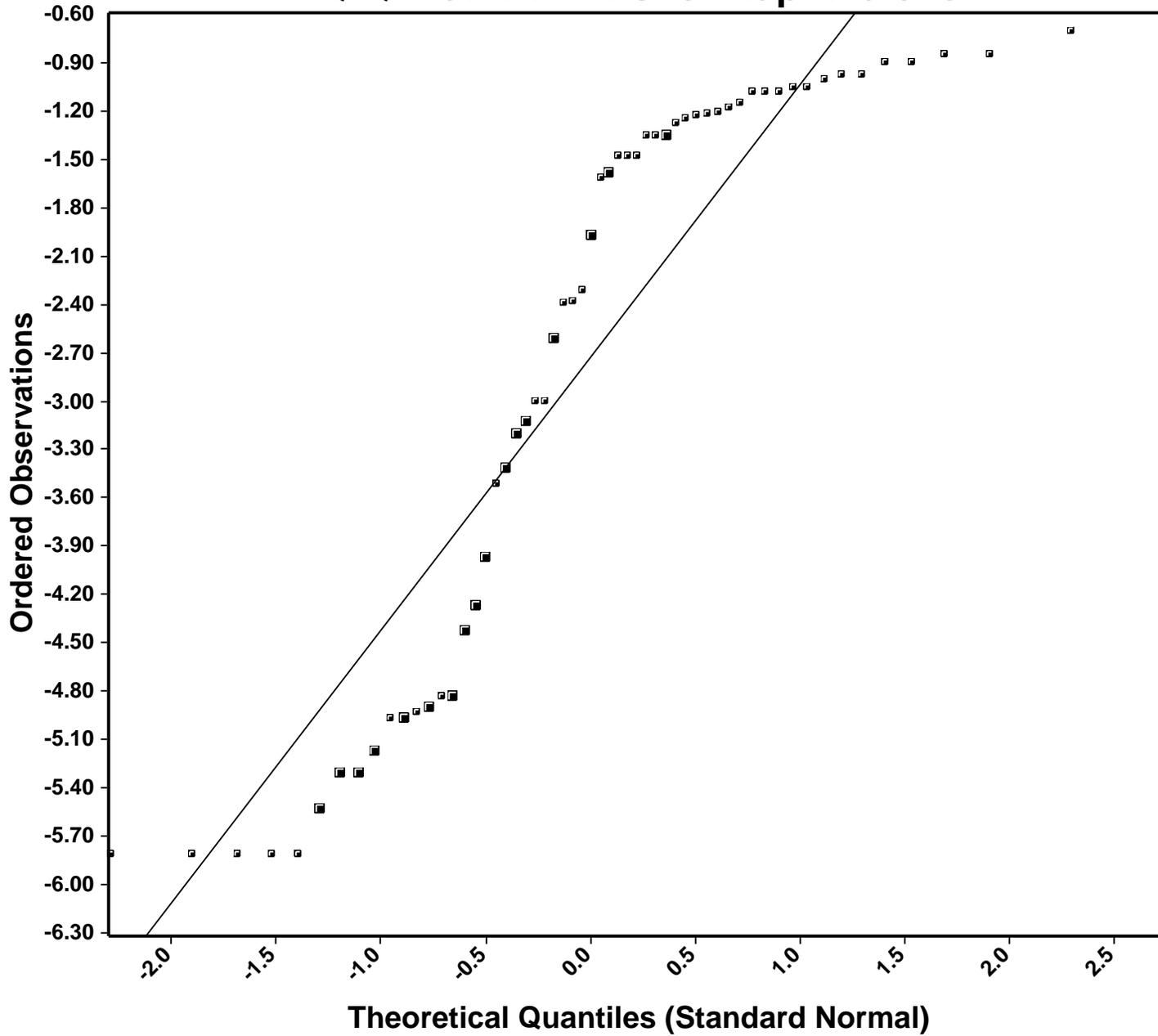
Sd = 1.6545

Slope = 1.5824

Intercept = -2.3424

Correlation, R = 0.9382

Q-Q Plot with NDs for Naphthalene



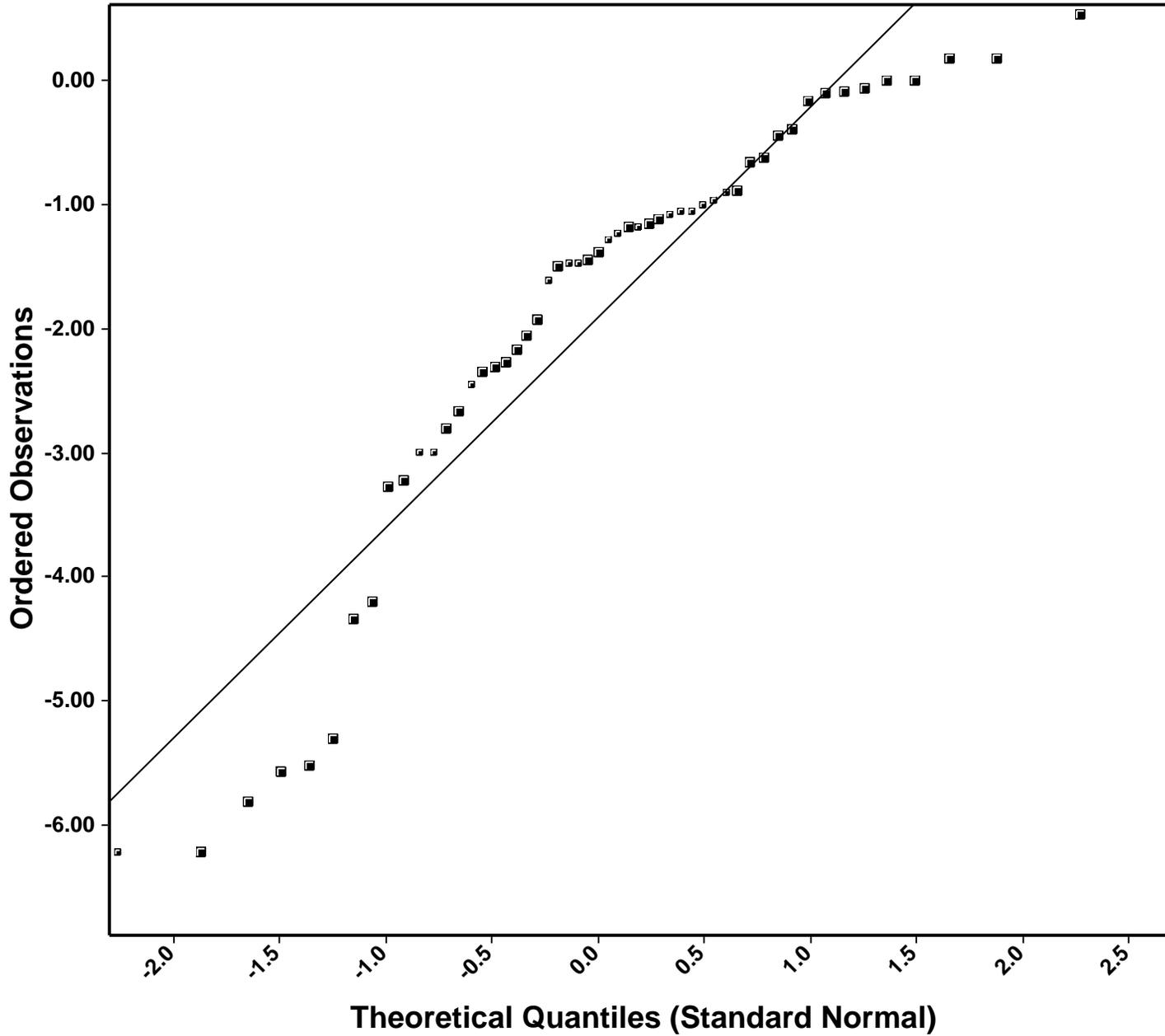
■ Naphthalene

Naphthalene

Total Number of Data = 57
Number of Non-Detects = 40
Number of Detects = 17
Mean = -2.7329
Sd = 1.8042
Slope = 1.6950
Intercept = -2.7329
Correlation, R = 0.9238

Rural - Natural Log

Q-Q Plot with NDs for Phenanthrene



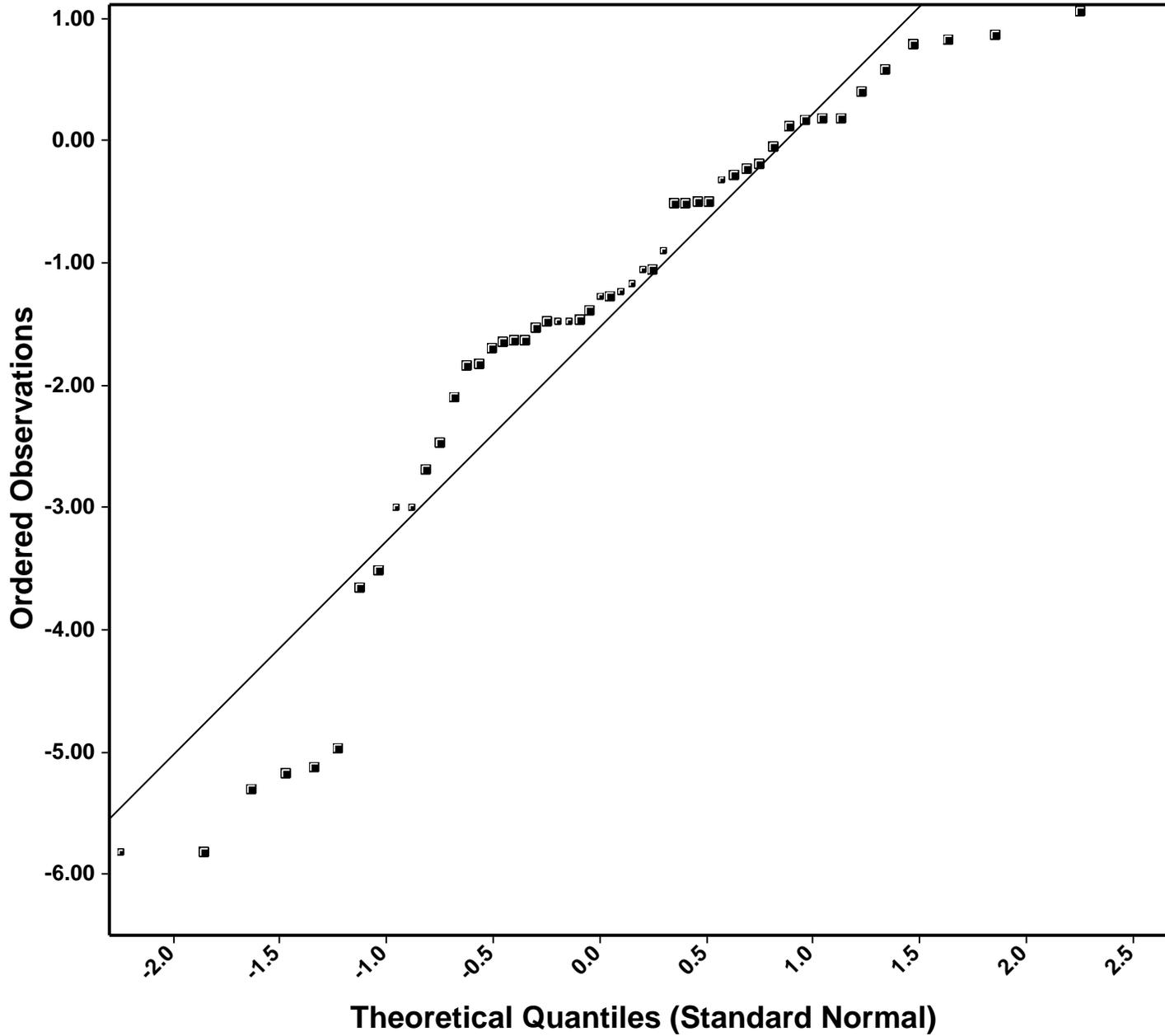
Phenanthrene

Total Number of Data = 53
Number of Non-Detects = 16
Number of Detects = 37
Mean = -1.9083
Sd = 1.7684
Slope = 1.6993
Intercept = -1.9083
Correlation, R = 0.9439

■ Phenanthrene

Rural - Natural Log

Q-Q Plot with NDs for Pyrene



■ Pyrene

Pyrene

Total Number of Data = 51
Number of Non-Detects = 11
Number of Detects = 40
Mean = -1.5182
Sd = 1.7971
Slope = 1.7478
Intercept = -1.5182
Correlation, R = 0.9548

Appendix C4

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Rural_PAH_Data REV Input noOut.wst
Full Precision OFF
Confidence Coefficient 0.95

2-Methylnaphthalene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	53	0	53	16	37	69.81%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	37	0.002	0.5	0.21	0.23	0.152
Statistics (Detects Only)	16	0.0039	0.69	0.0739	0.015	0.168
Statistics (All: NDs treated as DL value)	53	0.002	0.69	0.169	0.11	0.168
Statistics (All: NDs treated as DL/2 value)	53	0.001	0.69	0.0955	0.087	0.111
Statistics (Normal ROS Estimated Data)	53	-0.264	0.69	-0.0249	-0.0333	0.13
Statistics (Gamma ROS Estimated Data)	53	0.000001	0.69	0.0283	0.000001	0.097
Statistics (Lognormal ROS Estimated Data)	53	0.00042226	0.69	0.0265	0.00625	0.0959
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.518	0.501	0.143	-3.824	1.466	-0.383
Statistics (NDs = DL)	0.589	0.568	0.287	-2.832	1.863	-0.658
Statistics (NDs = DL/2)	0.634	0.61	0.151	-3.316	1.775	-0.535
Statistics (Gamma ROS Estimates)	0.13	0.136	0.217	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.977	1.341	-0.269

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.642	0.935	0.836	0.84
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.442	0.887	Data Not Normal	
Lilliefors (Detects Only)	0.344	0.222	Data Not Normal	
Lilliefors (NDs = DL)	0.174	0.122	Data Not Normal	
Lilliefors (NDs = DL/2)	0.198	0.122	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.173	0.122	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.898	0.93	0.93	0.907
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	1.206	0.795		
Kolmogorov-Smirnov (Detects Only)	0.21	0.227	Data appear Approximate Gamma Distribution	
Anderson-Darling (NDs = DL)	2.158	0.807		
Kolmogorov-Smirnov (NDs = DL)	0.187	0.128	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	1.751	0.803		
Kolmogorov-Smirnov (NDs = DL/2)	0.167	0.128	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	5.971	0.956		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.371	0.138	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.959	0.937	0.942	0.964
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.917	0.887	Data Appear Lognormal	
Lilliefors (Detects Only)	0.158	0.222	Data Appear Lognormal	
Lilliefors (NDs = DL)	0.216	0.122	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.207	0.122	Data Not Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.208	0.122	Data Not Lognormal	

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Acenaphthene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	57	0	57	12	45	78.95%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	45	0.002	0.79	0.247	0.28	0.203
Statistics (Detects Only)	12	0.0048	0.359	0.0592	0.0145	0.103
Statistics (All: NDs treated as DL value)	57	0.002	0.79	0.208	0.23	0.201
Statistics (All: NDs treated as DL/2 value)	57	0.001	0.395	0.11	0.115	0.104
Statistics (Normal ROS Estimated Data)	57	-0.225	0.359	-0.0388	-0.0455	0.0831
Statistics (Gamma ROS Estimated Data)	57	0.000001	0.359	0.0154	0.000001	0.052
Statistics (Lognormal ROS Estimated Data)	57	0.00025847	0.359	0.0158	0.0042	0.0512
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.606	0.586	0.0977	-3.844	1.381	-0.359
Statistics (NDs = DL)	0.563	0.545	0.369	-2.681	1.961	-0.732
Statistics (NDs = DL/2)	0.604	0.584	0.182	-3.228	1.892	-0.586
Statistics (Gamma ROS Estimates)	0.125	0.13	0.123	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-5.368	1.24	-0.231

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.755	0.932	0.936	0.907

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.591	0.859	Data Not Normal
Lilliefors (Detects Only)	0.358	0.256	Data Not Normal
Lilliefors (NDs = DL)	0.205	0.117	Data Not Normal
Lilliefors (NDs = DL/2)	0.197	0.117	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.165	0.117	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.968	0.915	0.924	0.96

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.108	0.777	
Kolmogorov-Smirnov (Detects Only)	0.303	0.257	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	3.256	0.81	
Kolmogorov-Smirnov (NDs = DL)	0.226	0.124	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.833	0.806	
Kolmogorov-Smirnov (NDs = DL/2)	0.223	0.124	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	8.663	0.963	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.421	0.133	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.942	0.923	0.927	0.95

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.88	0.859	Data Appear Lognormal
Lilliefors (Detects Only)	0.233	0.256	Data Appear Lognormal
Lilliefors (NDs = DL)	0.258	0.117	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.267	0.117	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.166	0.117	Data Not Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Acenaphthylene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	56	0	56	24	32	57.14%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	32	0.001	0.43	0.239	0.292	0.146
Statistics (Detects Only)	24	0.002	0.621	0.198	0.07	0.206
Statistics (All: NDs treated as DL value)	56	0.001	0.621	0.222	0.245	0.174
Statistics (All: NDs treated as DL/2 value)	56	0.0005	0.621	0.153	0.143	0.149
Statistics (Normal ROS Estimated Data)	56	-0.304	0.621	0.0607	0.0122	0.2
Statistics (Gamma ROS Estimated Data)	56	0.000001	0.621	0.0969	0.0087	0.164
Statistics (Lognormal ROS Estimated Data)	56	0.00166	0.621	0.0953	0.0195	0.161
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.706	0.68	0.281	-2.472	1.592	-0.644
Statistics (NDs = DL)	0.762	0.734	0.291	-2.29	1.763	-0.77
Statistics (NDs = DL/2)	0.74	0.712	0.207	-2.686	1.766	-0.657
Statistics (Gamma ROS Estimates)	0.147	0.151	0.659	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.55	1.555	-0.438

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.919	0.959	0.92	0.946

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.83	0.916	Data Not Normal
Lilliefors (Detects Only)	0.259	0.181	Data Not Normal
Lilliefors (NDs = DL)	0.186	0.118	Data Not Normal
Lilliefors (NDs = DL/2)	0.167	0.118	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.198	0.118	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.927	0.883	0.976	0.898

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.662	0.787	
Kolmogorov-Smirnov (Detects Only)	0.161	0.185	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	2.753	0.792	
Kolmogorov-Smirnov (NDs = DL)	0.219	0.124	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.007	0.794	
Kolmogorov-Smirnov (NDs = DL/2)	0.154	0.124	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	4.273	0.947	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.297	0.134	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.968	0.903	0.922	0.977

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.928	0.916	Data Appear Lognormal
Lilliefors (Detects Only)	0.162	0.181	Data Appear Lognormal
Lilliefors (NDs = DL)	0.241	0.118	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.206	0.118	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.128	0.118	Data Not Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Anthracene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	55	0	55	24	31	56.36%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	31	0.001	0.5	0.23	0.28	0.153
Statistics (Detects Only)	24	0.002	0.67	0.168	0.123	0.186
Statistics (All: NDs treated as DL value)	55	0.001	0.67	0.203	0.2	0.17
Statistics (All: NDs treated as DL/2 value)	55	0.0005	0.67	0.138	0.13	0.137
Statistics (Normal ROS Estimated Data)	55	-0.272	0.67	0.0602	0.028	0.174
Statistics (Gamma ROS Estimated Data)	55	0.000001	0.67	0.0871	0.0214	0.145
Statistics (Lognormal ROS Estimated Data)	55	0.00134	0.67	0.0831	0.02	0.144
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.669	0.645	0.251	-2.692	1.641	-0.61
Statistics (NDs = DL)	0.712	0.686	0.285	-2.441	1.802	-0.738
Statistics (NDs = DL/2)	0.708	0.681	0.195	-2.832	1.793	-0.633
Statistics (Gamma ROS Estimates)	0.212	0.212	0.412	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.654	1.543	-0.422

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.912	0.959	0.906	0.937

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.827	0.916	Data Not Normal
Lilliefors (Detects Only)	0.199	0.181	Data Not Normal
Lilliefors (NDs = DL)	0.162	0.119	Data Not Normal
Lilliefors (NDs = DL/2)	0.158	0.119	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.219	0.119	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.979	0.917	0.974	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.543	0.79	
Kolmogorov-Smirnov (Detects Only)	0.173	0.186	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	2.289	0.796	
Kolmogorov-Smirnov (NDs = DL)	0.186	0.125	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.518	0.796	
Kolmogorov-Smirnov (NDs = DL/2)	0.201	0.125	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.759	0.903	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.165	0.133	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.971	0.918	0.926	0.979

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.932	0.916	Data Appear Lognormal
Lilliefors (Detects Only)	0.171	0.181	Data Appear Lognormal
Lilliefors (NDs = DL)	0.227	0.119	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.246	0.119	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.159	0.119	Data Not Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Benzo(a)anthracene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	51	0	51	34	17	33.33%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	17	0.002	0.43	0.235	0.29	0.153
Statistics (Detects Only)	34	0.003	1.7	0.442	0.32	0.46
Statistics (All: NDs treated as DL value)	51	0.002	1.7	0.373	0.29	0.396
Statistics (All: NDs treated as DL/2 value)	51	0.001	1.7	0.334	0.175	0.407
Statistics (Normal ROS Estimated Data)	51	-0.766	1.7	0.247	0.12	0.491
Statistics (Gamma ROS Estimated Data)	51	0.000001	1.7	0.3	0.12	0.426
Statistics (Lognormal ROS Estimated Data)	51	0.00289	1.7	0.307	0.092	0.421
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.774	0.741	0.572	-1.586	1.574	-0.992
Statistics (NDs = DL)	0.729	0.699	0.512	-1.81	1.733	-0.958
Statistics (NDs = DL/2)	0.647	0.622	0.516	-2.041	1.823	-0.893
Statistics (Gamma ROS Estimates)	0.204	0.205	1.473	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.275	1.702	-0.748

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.915	0.892	0.864	0.947

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.83	0.933	Data Not Normal
Lilliefors (Detects Only)	0.17	0.152	Data Not Normal
Lilliefors (NDs = DL)	0.208	0.124	Data Not Normal
Lilliefors (NDs = DL/2)	0.243	0.124	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.173	0.124	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.981	0.984	0.986	0.938

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.191	0.787	
Kolmogorov-Smirnov (Detects Only)	0.0766	0.157	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.731	0.795	
Kolmogorov-Smirnov (NDs = DL)	0.131	0.129	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	0.475	0.802	
Kolmogorov-Smirnov (NDs = DL/2)	0.112	0.13	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	3.102	0.906	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.195	0.138	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.962	0.931	0.942	0.988

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.919	0.933	Data Not Lognormal
Lilliefors (Detects Only)	0.134	0.152	Data Appear Lognormal
Lilliefors (NDs = DL)	0.187	0.124	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.199	0.124	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0982	0.124	Data Appear Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Benzo(a)pyrene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	55	0	55	36	19	34.55%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	19	0.004	0.43	0.222	0.28	0.153
Statistics (Detects Only)	36	0.005	2.9	0.752	0.481	0.819
Statistics (All: NDs treated as DL value)	55	0.004	2.9	0.569	0.31	0.712
Statistics (All: NDs treated as DL/2 value)	55	0.002	2.9	0.53	0.175	0.729
Statistics (Normal ROS Estimated Data)	55	-1.555	2.9	0.337	0.124	0.915
Statistics (Gamma ROS Estimated Data)	55	0.000001	2.9	0.493	0.115	0.751
Statistics (Lognormal ROS Estimated Data)	55	0.00213	2.9	0.503	0.115	0.744
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.675	0.65	1.114	-1.186	1.699	-1.433
Statistics (NDs = DL)	0.615	0.594	0.924	-1.565	1.803	-1.151
Statistics (NDs = DL/2)	0.537	0.52	0.988	-1.805	1.926	-1.067
Statistics (Gamma ROS Estimates)	0.163	0.167	3.016	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.078	1.932	-0.93

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.914	0.864	0.847	0.962

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.825	0.935	Data Not Normal
Lilliefors (Detects Only)	0.184	0.148	Data Not Normal
Lilliefors (NDs = DL)	0.256	0.119	Data Not Normal
Lilliefors (NDs = DL/2)	0.267	0.119	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.158	0.119	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.973	0.984	0.981	0.912

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.247	0.795	
Kolmogorov-Smirnov (Detects Only)	0.0907	0.153	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.425	0.805	
Kolmogorov-Smirnov (NDs = DL)	0.087	0.126	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.639	0.812	
Kolmogorov-Smirnov (NDs = DL/2)	0.139	0.127	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	3.481	0.934	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.233	0.134	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.968	0.958	0.966	0.983

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.925	0.935	Data Not Lognormal
Lilliefors (Detects Only)	0.146	0.148	Data Appear Lognormal
Lilliefors (NDs = DL)	0.146	0.119	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.154	0.119	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.11	0.119	Data Appear Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Benzo(b)fluoranthene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	52	0	52	38	14	26.92%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	14	0.002	0.43	0.213	0.255	0.159
Statistics (Detects Only)	38	0.005	2.46	0.668	0.379	0.671
Statistics (All: NDs treated as DL value)	52	0.002	2.46	0.545	0.314	0.612
Statistics (All: NDs treated as DL/2 value)	52	0.001	2.46	0.517	0.213	0.626
Statistics (Normal ROS Estimated Data)	52	-1.04	2.46	0.404	0.205	0.746
Statistics (Gamma ROS Estimated Data)	52	0.000001	2.46	0.488	0.205	0.645
Statistics (Lognormal ROS Estimated Data)	52	0.005	2.46	0.5	0.205	0.637
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.802	0.769	0.833	-1.143	1.533	-1.341
Statistics (NDs = DL)	0.682	0.656	0.799	-1.495	1.755	-1.173
Statistics (NDs = DL/2)	0.604	0.582	0.855	-1.682	1.881	-1.118
Statistics (Gamma ROS Estimates)	0.193	0.195	2.531	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.751	1.712	-0.977

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.926	0.894	0.881	0.962

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.847	0.938	Data Not Normal
Lilliefors (Detects Only)	0.184	0.144	Data Not Normal
Lilliefors (NDs = DL)	0.229	0.123	Data Not Normal
Lilliefors (NDs = DL/2)	0.241	0.123	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.165	0.123	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.978	0.985	0.982	0.907

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.205	0.786	
Kolmogorov-Smirnov (Detects Only)	0.0953	0.149	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.344	0.799	
Kolmogorov-Smirnov (NDs = DL)	0.0829	0.129	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.334	0.806	
Kolmogorov-Smirnov (NDs = DL/2)	0.0761	0.129	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	3.906	0.913	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.206	0.137	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.963	0.949	0.954	0.983

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.919	0.938	Data Not Lognormal
Lilliefors (Detects Only)	0.133	0.144	Data Appear Lognormal
Lilliefors (NDs = DL)	0.168	0.123	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.144	0.123	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.112	0.123	Data Appear Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Benzo(g,h,i)perylene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	52	0	52	31	21	40.38%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	21	0.002	0.43	0.218	0.28	0.156
Statistics (Detects Only)	31	0.003	1.2	0.29	0.168	0.335
Statistics (All: NDs treated as DL value)	52	0.002	1.2	0.261	0.23	0.277
Statistics (All: NDs treated as DL/2 value)	52	0.001	1.2	0.217	0.143	0.276
Statistics (Normal ROS Estimated Data)	52	-0.505	1.2	0.133	0.047	0.345
Statistics (Gamma ROS Estimated Data)	52	0.000001	1.2	0.181	0.0372	0.291
Statistics (Lognormal ROS Estimated Data)	52	0.00206	1.2	0.182	0.0366	0.289
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.683	0.656	0.425	-2.126	1.625	-0.764
Statistics (NDs = DL)	0.685	0.658	0.381	-2.228	1.732	-0.777
Statistics (NDs = DL/2)	0.627	0.603	0.346	-2.508	1.789	-0.713
Statistics (Gamma ROS Estimates)	0.237	0.236	0.762	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.926	1.71	-0.584

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.895	0.901	0.845	0.933

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.794	0.929	Data Not Normal
Lilliefors (Detects Only)	0.203	0.159	Data Not Normal
Lilliefors (NDs = DL)	0.175	0.123	Data Not Normal
Lilliefors (NDs = DL/2)	0.234	0.123	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.184	0.123	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.98	0.98	0.982	0.968

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.243	0.794	
Kolmogorov-Smirnov (Detects Only)	0.0818	0.165	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.96	0.799	
Kolmogorov-Smirnov (NDs = DL)	0.14	0.129	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.611	0.804	
Kolmogorov-Smirnov (NDs = DL/2)	0.124	0.129	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.53	0.891	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.148	0.136	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.976	0.947	0.958	0.988

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.94	0.929	Data Appear Lognormal
Lilliefors (Detects Only)	0.132	0.159	Data Appear Lognormal
Lilliefors (NDs = DL)	0.189	0.123	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.207	0.123	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.112	0.123	Data Appear Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Benzo(k)fluoranthene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	53	0	53	31	22	41.51%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	22	0.003	0.41	0.218	0.285	0.149
Statistics (Detects Only)	31	0.0065	1.3	0.373	0.253	0.399
Statistics (All: NDs treated as DL value)	53	0.003	1.3	0.309	0.261	0.327
Statistics (All: NDs treated as DL/2 value)	53	0.0015	1.3	0.264	0.149	0.333
Statistics (Normal ROS Estimated Data)	53	-0.669	1.3	0.158	0.062	0.425
Statistics (Gamma ROS Estimated Data)	53	0.000001	1.3	0.226	0.062	0.352
Statistics (Lognormal ROS Estimated Data)	53	0.00295	1.3	0.231	0.0545	0.348
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.767	0.737	0.486	-1.763	1.485	-0.842
Statistics (NDs = DL)	0.734	0.705	0.421	-1.994	1.643	-0.824
Statistics (NDs = DL/2)	0.645	0.621	0.409	-2.281	1.734	-0.76
Statistics (Gamma ROS Estimates)	0.183	0.185	1.239	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.602	1.619	-0.622

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.912	0.896	0.849	0.952

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.817	0.929	Data Not Normal
Lilliefors (Detects Only)	0.192	0.159	Data Not Normal
Lilliefors (NDs = DL)	0.212	0.122	Data Not Normal
Lilliefors (NDs = DL/2)	0.268	0.122	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.167	0.122	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.962	0.972	0.972	0.919

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.306	0.787	
Kolmogorov-Smirnov (Detects Only)	0.0864	0.164	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.926	0.794	
Kolmogorov-Smirnov (NDs = DL)	0.13	0.127	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.641	0.802	
Kolmogorov-Smirnov (NDs = DL/2)	0.107	0.128	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.96	0.92	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.219	0.136	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.978	0.947	0.958	0.987

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.941	0.929	Data Appear Lognormal
Lilliefors (Detects Only)	0.119	0.159	Data Appear Lognormal
Lilliefors (NDs = DL)	0.2	0.122	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.177	0.122	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.101	0.122	Data Appear Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Carbazole

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	11	0	11	0	11	100.00%

**Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**

The data set for variable Carbazole was not processed!

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Chrysene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	52	0	52	39	13	25.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	13	0.002	0.41	0.245	0.29	0.13
Statistics (Detects Only)	39	0.002	2.04	0.498	0.281	0.536
Statistics (All: NDs treated as DL value)	52	0.002	2.04	0.435	0.286	0.48
Statistics (All: NDs treated as DL/2 value)	52	0.001	2.04	0.404	0.173	0.492
Statistics (Normal ROS Estimated Data)	52	-0.81	2.04	0.364	0.16	0.536
Statistics (Gamma ROS Estimated Data)	52	0.000001	2.04	0.378	0.151	0.508
Statistics (Lognormal ROS Estimated Data)	52	0.00147	2.04	0.382	0.148	0.505
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.626	0.603	0.795	-1.677	1.885	-1.124
Statistics (NDs = DL)	0.682	0.656	0.637	-1.722	1.78	-1.034
Statistics (NDs = DL/2)	0.621	0.598	0.651	-1.895	1.819	-0.96
Statistics (Gamma ROS Estimates)	0.231	0.23	1.637	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.175	1.912	-0.879

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.915	0.894	0.874	0.926

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.83	0.939	Data Not Normal
Lilliefors (Detects Only)	0.177	0.142	Data Not Normal
Lilliefors (NDs = DL)	0.186	0.123	Data Not Normal
Lilliefors (NDs = DL/2)	0.235	0.123	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.196	0.123	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.971	0.984	0.982	0.931

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.376	0.801	
Kolmogorov-Smirnov (Detects Only)	0.101	0.148	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.457	0.799	
Kolmogorov-Smirnov (NDs = DL)	0.11	0.129	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.407	0.804	
Kolmogorov-Smirnov (NDs = DL/2)	0.0919	0.129	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.379	0.894	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.169	0.136	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.948	0.942	0.959	0.98

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.886	0.939	Data Not Lognormal
Lilliefors (Detects Only)	0.156	0.142	Data Not Lognormal
Lilliefors (NDs = DL)	0.188	0.123	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.175	0.123	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.112	0.123	Data Appear Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Dibenzo(a,h)anthracene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	53	0	53	22	31	58.49%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	31	0.002	0.43	0.209	0.24	0.15
Statistics (Detects Only)	22	0.005	0.77	0.172	0.051	0.246
Statistics (All: NDs treated as DL value)	53	0.002	0.77	0.193	0.157	0.194
Statistics (All: NDs treated as DL/2 value)	53	0.001	0.77	0.132	0.101	0.17
Statistics (Normal ROS Estimated Data)	53	-0.478	0.77	0.0129	-0.0229	0.233
Statistics (Gamma ROS Estimated Data)	53	0.000001	0.77	0.0779	0.000001	0.178
Statistics (Lognormal ROS Estimated Data)	53	0.00035892	0.77	0.0774	0.0119	0.176
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.539	0.521	0.319	-2.924	1.69	-0.578
Statistics (NDs = DL)	0.61	0.588	0.317	-2.654	1.859	-0.7
Statistics (NDs = DL/2)	0.596	0.575	0.222	-3.06	1.848	-0.604
Statistics (Gamma ROS Estimates)	0.129	0.134	0.604	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.151	1.708	-0.412

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.842	0.933	0.836	0.918

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.703	0.911	Data Not Normal
Lilliefors (Detects Only)	0.295	0.189	Data Not Normal
Lilliefors (NDs = DL)	0.18	0.122	Data Not Normal
Lilliefors (NDs = DL/2)	0.219	0.122	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.19	0.122	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.959	0.951	0.97	0.956

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.774	0.801	
Kolmogorov-Smirnov (Detects Only)	0.157	0.195	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	1.553	0.805	
Kolmogorov-Smirnov (NDs = DL)	0.186	0.128	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.863	0.806	
Kolmogorov-Smirnov (NDs = DL/2)	0.122	0.128	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	4.727	0.957	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.337	0.138	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.979	0.943	0.954	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.938	0.911	Data Appear Lognormal
Lilliefors (Detects Only)	0.093	0.189	Data Appear Lognormal
Lilliefors (NDs = DL)	0.21	0.122	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.187	0.122	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.196	0.122	Data Not Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Dibenzofuran

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	13	0	13	0	13	100.00%

**Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**

The data set for variable Dibenzofuran was not processed!

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Fluoranthene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	51	0	51	41	10	19.61%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	10	0.002	0.35	0.188	0.23	0.128
Statistics (Detects Only)	41	0.003	2.7	0.618	0.31	0.718
Statistics (All: NDs treated as DL value)	51	0.002	2.7	0.534	0.248	0.667
Statistics (All: NDs treated as DL/2 value)	51	0.001	2.7	0.515	0.222	0.676
Statistics (Normal ROS Estimated Data)	51	-1.106	2.7	0.459	0.222	0.739
Statistics (Gamma ROS Estimated Data)	51	0.000001	2.7	0.498	0.222	0.687
Statistics (Lognormal ROS Estimated Data)	51	0.00224	2.7	0.504	0.222	0.683
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.64	0.615	0.966	-1.438	1.791	-1.246
Statistics (NDs = DL)	0.635	0.61	0.841	-1.593	1.767	-1.109
Statistics (NDs = DL/2)	0.582	0.561	0.886	-1.729	1.837	-1.063
Statistics (Gamma ROS Estimates)	0.242	0.241	2.059	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.868	1.882	-1.007

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.889	0.862	0.856	0.919

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.784	0.941	Data Not Normal
Lilliefors (Detects Only)	0.196	0.138	Data Not Normal
Lilliefors (NDs = DL)	0.236	0.124	Data Not Normal
Lilliefors (NDs = DL/2)	0.242	0.124	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.201	0.124	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.98	0.984	0.983	0.948

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.248	0.8	
Kolmogorov-Smirnov (Detects Only)	0.0703	0.144	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.273	0.803	
Kolmogorov-Smirnov (NDs = DL)	0.0801	0.13	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.316	0.807	
Kolmogorov-Smirnov (NDs = DL/2)	0.104	0.131	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.358	0.889	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.159	0.137	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.958	0.963	0.972	0.982

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.905	0.941	Data Not Lognormal
Lilliefors (Detects Only)	0.125	0.138	Data Appear Lognormal
Lilliefors (NDs = DL)	0.147	0.124	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.135	0.124	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0863	0.124	Data Appear Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Fluorene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	57	0	57	19	38	66.67%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	38	0.003	0.5	0.219	0.26	0.153
Statistics (Detects Only)	19	0.005	0.55	0.136	0.045	0.184
Statistics (All: NDs treated as DL value)	57	0.003	0.55	0.191	0.22	0.167
Statistics (All: NDs treated as DL/2 value)	57	0.0015	0.55	0.118	0.115	0.122
Statistics (Normal ROS Estimated Data)	57	-0.352	0.55	-0.00667	-0.0292	0.167
Statistics (Gamma ROS Estimated Data)	57	0.000001	0.55	0.0519	0.000001	0.122
Statistics (Lognormal ROS Estimated Data)	57	0.00034969	0.55	0.0505	0.00849	0.121

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.548	0.531	0.247	-3.14	1.699	-0.541
Statistics (NDs = DL)	0.673	0.649	0.284	-2.558	1.751	-0.684
Statistics (NDs = DL/2)	0.685	0.661	0.172	-3.02	1.703	-0.564
Statistics (Gamma ROS Estimates)	0.125	0.13	0.416	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.546	1.609	-0.354

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.861	0.949	0.899	0.93

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.734	0.901	Data Not Normal
Lilliefors (Detects Only)	0.264	0.203	Data Not Normal
Lilliefors (NDs = DL)	0.187	0.117	Data Not Normal
Lilliefors (NDs = DL/2)	0.169	0.117	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.177	0.117	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.957	0.885	0.962	0.962

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.802	0.798	
Kolmogorov-Smirnov (Detects Only)	0.177	0.209	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL)	2.972	0.8	
Kolmogorov-Smirnov (NDs = DL)	0.209	0.123	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	1.871	0.798	
Kolmogorov-Smirnov (NDs = DL/2)	0.194	0.123	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	6.206	0.963	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.368	0.133	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.963	0.919	0.94	0.961

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.903	0.901	Data Appear Lognormal
Lilliefors (Detects Only)	0.174	0.203	Data Appear Lognormal
Lilliefors (NDs = DL)	0.233	0.117	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.237	0.117	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.202	0.117	Data Not Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Indeno(1,2,3-cd)pyrene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	48	0	48	28	20	41.67%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	20	0.002	0.41	0.232	0.285	0.145
Statistics (Detects Only)	28	0.003	1	0.197	0.135	0.232
Statistics (All: NDs treated as DL value)	48	0.002	1	0.212	0.202	0.199
Statistics (All: NDs treated as DL/2 value)	48	0.001	1	0.163	0.143	0.186
Statistics (Normal ROS Estimated Data)	48	-0.339	1	0.115	0.0684	0.218
Statistics (Gamma ROS Estimated Data)	48	0.000001	1	0.131	0.0505	0.195
Statistics (Lognormal ROS Estimated Data)	48	0.00143	1	0.126	0.0342	0.196
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.68	0.652	0.29	-2.515	1.619	-0.644
Statistics (NDs = DL)	0.756	0.723	0.28	-2.342	1.654	-0.706
Statistics (NDs = DL/2)	0.732	0.7	0.223	-2.631	1.647	-0.626
Statistics (Gamma ROS Estimates)	0.28	0.276	0.468	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.133	1.564	-0.499

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.888	0.926	0.864	0.914
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.797	0.924	Data Not Normal	
Lilliefors (Detects Only)	0.201	0.167	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.866	0.947	Data Not Normal	
Lilliefors (NDs = DL)	0.146	0.128	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.764	0.947	Data Not Normal	
Lilliefors (NDs = DL/2)	0.203	0.128	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.864	0.947	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.19	0.128	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.995	0.964	0.985	0.993
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	0.279	0.792		
Kolmogorov-Smirnov (Detects Only)	0.113	0.173	Data Appear Gamma Distributed	
Anderson-Darling (NDs = DL)	1.274	0.792		
Kolmogorov-Smirnov (NDs = DL)	0.154	0.133	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	0.618	0.793		
Kolmogorov-Smirnov (NDs = DL/2)	0.13	0.133	Data Appear Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	2.017	0.871		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.17	0.14	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.978	0.938	0.952	0.991
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.943	0.924	Data Appear Lognormal	
Lilliefors (Detects Only)	0.142	0.167	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.866	0.947	Data Not Lognormal	
Lilliefors (NDs = DL)	0.192	0.128	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.898	0.947	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.195	0.128	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.971	0.947	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.106	0.128	Data Appear Lognormal	

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Naphthalene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	57	0	57	17	40	70.18%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	40	0.003	0.5	0.225	0.27	0.156
Statistics (Detects Only)	17	0.004	0.26	0.0521	0.014	0.0769
Statistics (All: NDs treated as DL value)	57	0.003	0.5	0.173	0.14	0.158
Statistics (All: NDs treated as DL/2 value)	57	0.0015	0.26	0.0943	0.1	0.0818
Statistics (Normal ROS Estimated Data)	57	-0.153	0.26	0.00081538	-0.00103	0.0659
Statistics (Gamma ROS Estimated Data)	57	0.000001	0.26	0.0218	0.000001	0.0484
Statistics (Lognormal ROS Estimated Data)	57	0.00035572	0.26	0.0204	0.00724	0.0463

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.663	0.64	0.0785	-3.873	1.373	-0.355
Statistics (NDs = DL)	0.627	0.606	0.276	-2.733	1.804	-0.66
Statistics (NDs = DL/2)	0.704	0.678	0.134	-3.219	1.696	-0.527
Statistics (Gamma ROS Estimates)	0.14	0.145	0.155	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.891	1.258	-0.257

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.817	0.934	0.943	0.925

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.672	0.892	Data Not Normal
Lilliefors (Detects Only)	0.306	0.215	Data Not Normal
Lilliefors (NDs = DL)	0.203	0.117	Data Not Normal
Lilliefors (NDs = DL/2)	0.18	0.117	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.151	0.117	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.978	0.858	0.869	0.984

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	1.014	0.784	
Kolmogorov-Smirnov (Detects Only)	0.2	0.219	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL)	2.927	0.804	
Kolmogorov-Smirnov (NDs = DL)	0.199	0.124	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.596	0.797	
Kolmogorov-Smirnov (NDs = DL/2)	0.206	0.123	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	6.144	0.952	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.362	0.133	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.962	0.924	0.928	0.972

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.908	0.892	Data Appear Lognormal
Lilliefors (Detects Only)	0.168	0.215	Data Appear Lognormal
Lilliefors (NDs = DL)	0.224	0.117	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.225	0.117	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.167	0.117	Data Not Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Phenanthrene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	53	0	53	37	16	30.19%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	16	0.002	0.41	0.246	0.287	0.132
Statistics (Detects Only)	37	0.002	1.71	0.409	0.235	0.443
Statistics (All: NDs treated as DL value)	53	0.002	1.71	0.36	0.25	0.383
Statistics (All: NDs treated as DL/2 value)	53	0.001	1.71	0.322	0.155	0.393
Statistics (Normal ROS Estimated Data)	53	-0.671	1.71	0.286	0.122	0.43
Statistics (Gamma ROS Estimated Data)	53	0.000001	1.71	0.293	0.096	0.41
Statistics (Lognormal ROS Estimated Data)	53	0.00097741	1.71	0.294	0.0727	0.409
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.586	0.566	0.697	-1.953	1.933	-0.99
Statistics (NDs = DL)	0.685	0.658	0.525	-1.908	1.768	-0.927
Statistics (NDs = DL/2)	0.623	0.601	0.517	-2.118	1.785	-0.843
Statistics (Gamma ROS Estimates)	0.244	0.243	1.198	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.519	1.907	-0.757

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.92	0.909	0.875	0.922

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.839	0.936	Data Not Normal
Lilliefors (Detects Only)	0.194	0.146	Data Not Normal
Lilliefors (NDs = DL)	0.197	0.122	Data Not Normal
Lilliefors (NDs = DL/2)	0.252	0.122	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.213	0.122	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.959	0.983	0.98	0.932

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.463	0.804	
Kolmogorov-Smirnov (Detects Only)	0.0973	0.152	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.506	0.799	
Kolmogorov-Smirnov (NDs = DL)	0.108	0.128	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.479	0.804	
Kolmogorov-Smirnov (NDs = DL/2)	0.0842	0.128	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	1.588	0.888	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.134	0.134	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.954	0.944	0.963	0.985

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.893	0.936	Data Not Lognormal
Lilliefors (Detects Only)	0.135	0.146	Data Appear Lognormal
Lilliefors (NDs = DL)	0.178	0.122	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.167	0.122	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0823	0.122	Data Appear Lognormal

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

**Appendix C4: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Rural Developed Area PAHs**

Pyrene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	51	0	51	41	10	19.61%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	10	0.003	0.41	0.221	0.255	0.14
Statistics (Detects Only)	41	0.003	2.9	0.665	0.28	0.751
Statistics (All: NDs treated as DL value)	51	0.003	2.9	0.578	0.28	0.697
Statistics (All: NDs treated as DL/2 value)	51	0.0015	2.9	0.556	0.205	0.708
Statistics (Normal ROS Estimated Data)	51	-1.145	2.9	0.507	0.216	0.767
Statistics (Gamma ROS Estimated Data)	51	0.000001	2.9	0.536	0.197	0.721
Statistics (Lognormal ROS Estimated Data)	51	0.00218	2.9	0.543	0.197	0.716
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.624	0.6	1.066	-1.392	1.852	-1.33
Statistics (NDs = DL)	0.632	0.608	0.915	-1.518	1.797	-1.184
Statistics (NDs = DL/2)	0.581	0.56	0.957	-1.654	1.857	-1.123
Statistics (Gamma ROS Estimates)	0.24	0.239	2.238	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.805	1.918	-1.062

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.902	0.877	0.868	0.922

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.808	0.941	Data Not Normal
Lilliefors (Detects Only)	0.208	0.138	Data Not Normal
Lilliefors (NDs = DL)	0.236	0.124	Data Not Normal
Lilliefors (NDs = DL/2)	0.26	0.124	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.224	0.124	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.979	0.986	0.984	0.941

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.391	0.801	
Kolmogorov-Smirnov (Detects Only)	0.0986	0.145	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL)	0.408	0.803	
Kolmogorov-Smirnov (NDs = DL)	0.0915	0.13	Data Appear Gamma Distributed
Anderson-Darling (NDs = DL/2)	0.524	0.808	
Kolmogorov-Smirnov (NDs = DL/2)	0.12	0.131	Data Appear Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.414	0.89	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.185	0.137	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.951	0.955	0.965	0.978

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.89	0.941	Data Not Lognormal
Lilliefors (Detects Only)	0.162	0.138	Data Not Lognormal
Lilliefors (NDs = DL)	0.176	0.124	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.157	0.124	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.122	0.124	Data Appear Lognormal

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

Appendix C5

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File Rural_PAH_Data REV Input noOut.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

2-Methylnaphthalene

General Statistics

Number of Valid Data 53	Number of Detected Data 16
Number of Distinct Detected Data 14	Number of Non-Detect Data 37
Tolerance Factor 1.543	Percent Non-Detects 69.81%

Raw Statistics

Minimum Detected 0.0039
 Maximum Detected 0.69
 Mean of Detected 0.0739
 SD of Detected 0.168
 Minimum Non-Detect 0.002
 Maximum Non-Detect 0.5

Log-transformed Statistics

Minimum Detected -5.547
 Maximum Detected -0.371
 Mean of Detected -3.824
 SD of Detected 1.466
 Minimum Non-Detect -6.215
 Maximum Non-Detect -0.693

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 52
 Number treated as Detected with Single DL 1
 Single DL Non-Detect Percentage 98.11%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.442
 5% Shapiro Wilk Critical Value 0.887

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.917
 5% Shapiro Wilk Critical Value 0.887

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.0955
 SD 0.111
 90% UTL 90% Coverage 0.267
 90% UPL (t) 0.241
 90% Percentile (z) 0.238
 95% Percentile (z) 0.279
 99% Percentile (z) 0.354

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -3.316
 SD (Log Scale) 1.775
 90% UTL 90% Coverage 0.562
 90% UPL (t) 0.371
 90% Percentile (z) 0.353
 95% Percentile (z) 0.672
 99% Percentile (z) 2.253

Log ROS Method

Mean in Original Scale 0.0265
 SD in Original Scale 0.0959
 Mean in Log Scale -4.977
 SD in Log Scale 1.341
 90% UTL 90% Coverage 0.0546
 90% UPL (t) 0.0399
 90% Percentile (z) 0.0384
 95% Percentile (z) 0.0626
 99% Percentile (z) 0.156

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.463
 Theta Star 0.16
 nu star 14.8

A-D Test Statistic 1.206
 5% A-D Critical Value 0.795
 K-S Test Statistic 0.21
 5% K-S Critical Value 0.227

Data follow Appr. Gamma Distribution at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.0283
 Median 0.000001
 SD 0.097
 k star 0.136
 Theta star 0.209
 Nu star 14.38
 90% Percentile of Chisquare (2k) 0.791
 90% Percentile 0.0827
 95% Percentile 0.159
 99% Percentile 0.385

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data follow Appr. Gamma Distribution at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.0336
 SD 0.0961
 SE of Mean 0.0143
 90% KM UTL with 90% Coverage 0.182
 90% KM Chebyshev UPL 0.325
 90% KM UPL (t) 0.16
 90% Percentile (z) 0.157
 95% Percentile (z) 0.192
 99% Percentile (z) 0.257

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.0605
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.0551
 90% WH Approx. Gamma UTL with 90% Coverage 0.0835
 90% HW Approx. Gamma UTL with 90% Coverage 0.0825

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Acenaphthene

General Statistics

Number of Valid Data 57	Number of Detected Data 12
Number of Distinct Detected Data 12	Number of Non-Detect Data 45
Tolerance Factor 1.533	Percent Non-Detects 78.95%

Raw Statistics

Minimum Detected 0.0048
 Maximum Detected 0.359
 Mean of Detected 0.0592
 SD of Detected 0.103
 Minimum Non-Detect 0.002
 Maximum Non-Detect 0.79

Log-transformed Statistics

Minimum Detected -5.339
 Maximum Detected -1.024
 Mean of Detected -3.844
 SD of Detected 1.381
 Minimum Non-Detect -6.215
 Maximum Non-Detect -0.236

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 57
 Number treated as Detected with Single DL 0
 Single DL Non-Detect Percentage 100.00%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.591
 5% Shapiro Wilk Critical Value 0.859

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.88
 5% Shapiro Wilk Critical Value 0.859

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.11
 SD 0.104
 90% UTL 90% Coverage 0.27
 90% UPL (t) 0.247
 90% Percentile (z) 0.244
 95% Percentile (z) 0.282
 99% Percentile (z) 0.353

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -3.228
 SD (Log Scale) 1.892
 90% UTL 90% Coverage 0.721
 90% UPL (t) 0.471
 90% Percentile (z) 0.448
 95% Percentile (z) 0.891
 99% Percentile (z) 3.237

Log ROS Method
 Mean in Original Scale 0.0158
 SD in Original Scale 0.0512
 Mean in Log Scale -5.368
 SD in Log Scale 1.24
 90% UTL 90% Coverage 0.0312
 90% UPL (t) 0.0236
 90% Percentile (z) 0.0228
 95% Percentile (z) 0.0358
 99% Percentile (z) 0.0834

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.51
 Theta Star 0.116
 nu star 12.25

A-D Test Statistic 1.108
 5% A-D Critical Value 0.777
 K-S Test Statistic 0.303
 5% K-S Critical Value 0.257

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.0154
 Median 0.000001
 SD 0.052
 k star 0.13
 Theta star 0.118
 Nu star 14.81
 90% Percentile of Chisquare (2k) 0.751
 90% Percentile 0.0444
 95% Percentile 0.0867
 99% Percentile 0.213

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.0243
 SD 0.0583
 SE of Mean 0.00983
 90% KM UTL with 90% Coverage 0.114
 90% KM Chebyshev UPL 0.201
 90% KM UPL (t) 0.101
 90% Percentile (z) 0.099
 95% Percentile (z) 0.12
 99% Percentile (z) 0.16

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.0302
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.0257
 90% WH Approx. Gamma UTL with 90% Coverage 0.0417
 90% HW Approx. Gamma UTL with 90% Coverage 0.0384

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Acenaphthylene

General Statistics

Number of Valid Data 56	Number of Detected Data 24
Number of Distinct Detected Data 22	Number of Non-Detect Data 32
Tolerance Factor 1.536	Percent Non-Detects 57.14%

Raw Statistics

Minimum Detected 0.002
Maximum Detected 0.621
Mean of Detected 0.198
SD of Detected 0.206
Minimum Non-Detect 0.001
Maximum Non-Detect 0.43

Log-transformed Statistics

Minimum Detected -6.215
Maximum Detected -0.476
Mean of Detected -2.472
SD of Detected 1.592
Minimum Non-Detect -6.908
Maximum Non-Detect -0.844

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 52
Number treated as Detected with Single DL 4
Single DL Non-Detect Percentage 92.86%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.83
5% Shapiro Wilk Critical Value 0.916

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.928
5% Shapiro Wilk Critical Value 0.916

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
Mean 0.153
SD 0.149
90% UTL 90% Coverage 0.383
90% UPL (t) 0.349
90% Percentile (z) 0.345
95% Percentile (z) 0.399
99% Percentile (z) 0.501

Maximum Likelihood Estimate(MLE) Method

Mean 0.303
SD 0.175
90% UTL with 90% Coverage 0.572

90% UPL (t) 0.532
90% Percentile (z) 0.528
95% Percentile (z) 0.591
99% Percentile (z) 0.711

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.646
Theta Star 0.307
nu star 30.99

A-D Test Statistic 0.662
5% A-D Critical Value 0.787
K-S Test Statistic 0.161
5% K-S Critical Value 0.185

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data

Mean 0.0969
Median 0.0087
SD 0.164
k star 0.151
Theta star 0.642
Nu star 16.91
90% Percentile of Chisquare (2k) 0.896

90% Percentile 0.287
95% Percentile 0.532
99% Percentile 1.243

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
Mean (Log Scale) -2.686
SD (Log Scale) 1.766
90% UTL 90% Coverage 1.026
90% UPL (t) 0.687
90% Percentile (z) 0.655
95% Percentile (z) 1.244
99% Percentile (z) 4.143

Log ROS Method

Mean in Original Scale 0.0953
SD in Original Scale 0.161
90% UTL with 90% Coverage 0.313
90% BCA UTL with 90% Coverage 0.471
90% Bootstrap (% UTL) with 90% Coverage 0.52
90% UPL (t) 0.22
90% Percentile (z) 0.211
95% Percentile (z) 0.371
99% Percentile (z) 1.07

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method

Mean 0.107
SD 0.162
SE of Mean 0.0236
90% KM UTL with 90% Coverage 0.356
90% KM Chebyshev UPL 0.598
90% KM UPL (t) 0.319
90% Percentile (z) 0.315
95% Percentile (z) 0.374
99% Percentile (z) 0.484

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.262
90% Hawkins Wixley (HW) Approx. Gamma UPL 0.274
90% WH Approx. Gamma UTL with 90% Coverage 0.349
90% HW Approx. Gamma UTL with 90% Coverage 0.394

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Anthracene

General Statistics

Number of Valid Data 55	Number of Detected Data 24
Number of Distinct Detected Data 22	Number of Non-Detect Data 31
Tolerance Factor 1.538	Percent Non-Detects 56.36%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 0.67
 Mean of Detected 0.168
 SD of Detected 0.186
 Minimum Non-Detect 0.001
 Maximum Non-Detect 0.5

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected -0.4
 Mean of Detected -2.692
 SD of Detected 1.641
 Minimum Non-Detect -6.908
 Maximum Non-Detect -0.693

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 53
 Number treated as Detected with Single DL 2
 Single DL Non-Detect Percentage 96.36%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.827
 5% Shapiro Wilk Critical Value 0.916

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.932
 5% Shapiro Wilk Critical Value 0.916

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.138
 SD 0.137
 90% UTL 90% Coverage 0.349
 90% UPL (t) 0.317
 90% Percentile (z) 0.314
 95% Percentile (z) 0.363
 99% Percentile (z) 0.457

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.832
 SD (Log Scale) 1.793
 90% UTL 90% Coverage 0.928
 90% UPL (t) 0.616
 90% Percentile (z) 0.586
 95% Percentile (z) 1.124
 99% Percentile (z) 3.812

Log ROS Method
 Mean in Original Scale 0.0831
 SD in Original Scale 0.144
 Mean in Log Scale -3.654
 SD in Log Scale 1.543
 90% UTL 90% Coverage 0.278
 90% UPL (t) 0.195
 90% Percentile (z) 0.187
 95% Percentile (z) 0.327
 99% Percentile (z) 0.937

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.613
 Theta Star 0.274
 nu star 29.44

A-D Test Statistic 0.543
 5% A-D Critical Value 0.79
 K-S Test Statistic 0.173
 5% K-S Critical Value 0.186

Data appear Gamma Distributed at 5% Significance Level

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.0994
 SD 0.147
 SE of Mean 0.0224
 90% KM UTL with 90% Coverage 0.326
 90% KM Chebyshev UPL 0.546
 90% KM UPL (t) 0.292
 90% Percentile (z) 0.288
 95% Percentile (z) 0.342
 99% Percentile (z) 0.442

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.0871
 Median 0.0214
 SD 0.145
 k star 0.212
 Theta star 0.411
 Nu star 23.34
 90% Percentile of Chisquare (2k) 1.263
 90% Percentile 0.263
 95% Percentile 0.442
 99% Percentile 0.928

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.239
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.258
 90% WH Approx. Gamma UTL with 90% Coverage 0.311
 90% HW Approx. Gamma UTL with 90% Coverage 0.357

Note: DL/2 is not a recommended method.

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Benzo(a)anthracene

General Statistics

Number of Valid Data 51	Number of Detected Data 34
Number of Distinct Detected Data 31	Number of Non-Detect Data 17
Tolerance Factor 1.549	Percent Non-Detects 33.33%

Raw Statistics

Minimum Detected 0.003
 Maximum Detected 1.7
 Mean of Detected 0.442
 SD of Detected 0.46
 Minimum Non-Detect 0.002
 Maximum Non-Detect 0.43

Log-transformed Statistics

Minimum Detected -5.809
 Maximum Detected 0.531
 Mean of Detected -1.586
 SD of Detected 1.574
 Minimum Non-Detect -6.215
 Maximum Non-Detect -0.844

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 38
 Number treated as Detected with Single DL 13
 Single DL Non-Detect Percentage 74.51%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.83
 5% Shapiro Wilk Critical Value 0.933

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.919
 5% Shapiro Wilk Critical Value 0.933

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.334
 SD 0.407
 90% UTL 90% Coverage 0.965
 90% UPL (t) 0.868
 90% Percentile (z) 0.856
 95% Percentile (z) 1.004
 99% Percentile (z) 1.281

Maximum Likelihood Estimate(MLE) Method

Mean -0.103
 SD 0.801
 90% UTL with 90% Coverage 1.138

90% UPL (t) 0.947
 90% Percentile (z) 0.923
 95% Percentile (z) 1.215
 99% Percentile (z) 1.761

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.725
 Theta Star 0.61
 nu star 49.3

A-D Test Statistic 0.191
 5% A-D Critical Value 0.787
 K-S Test Statistic 0.0766
 5% K-S Critical Value 0.157

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.3
 Median 0.12
 SD 0.426
 k star 0.205
 Theta star 1.465
 Nu star 20.9
 90% Percentile of Chisquare (2k) 1.239
 90% Percentile 0.908
 95% Percentile 1.537
 99% Percentile 3.263

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.041
 SD (Log Scale) 1.823
 90% UTL 90% Coverage 2.19
 90% UPL (t) 1.42
 90% Percentile (z) 1.344
 95% Percentile (z) 2.607
 99% Percentile (z) 9.034

Log ROS Method

Mean in Original Scale 0.307
 SD in Original Scale 0.421
 90% UTL with 90% Coverage 1.434
 90% BCA UTL with 90% Coverage 1.3
 90% Bootstrap (%) UTL with 90% Coverage 1.3
 90% UPL (t) 0.957
 90% Percentile (z) 0.909
 95% Percentile (z) 1.688
 99% Percentile (z) 5.381

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.315
 SD 0.414
 SE of Mean 0.0594
 90% KM UTL with 90% Coverage 0.957
 90% KM Chebyshev UPL 1.571
 90% KM UPL (t) 0.859
 90% Percentile (z) 0.847
 95% Percentile (z) 0.997
 99% Percentile (z) 1.28

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.864
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.979
 90% WH Approx. Gamma UTL with 90% Coverage 1.122
 90% HW Approx. Gamma UTL with 90% Coverage 1.36

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Benzo(a)pyrene

General Statistics

Number of Valid Data 55	Number of Detected Data 36
Number of Distinct Detected Data 32	Number of Non-Detect Data 19
Tolerance Factor 1.538	Percent Non-Detects 34.55%

Raw Statistics

Minimum Detected 0.005
Maximum Detected 2.9
Mean of Detected 0.752
SD of Detected 0.819
Minimum Non-Detect 0.004
Maximum Non-Detect 0.43

Log-transformed Statistics

Minimum Detected -5.298
Maximum Detected 1.065
Mean of Detected -1.186
SD of Detected 1.699
Minimum Non-Detect -5.521
Maximum Non-Detect -0.844

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 35
Number treated as Detected with Single DL 20
Single DL Non-Detect Percentage 63.64%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.825
5% Shapiro Wilk Critical Value 0.935

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.925
5% Shapiro Wilk Critical Value 0.935

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
Mean 0.53
SD 0.729
90% UTL 90% Coverage 1.651
90% UPL (t) 1.484
90% Percentile (z) 1.464
95% Percentile (z) 1.729
99% Percentile (z) 2.225

Maximum Likelihood Estimate(MLE) Method

Mean -0.0452
SD 1.291
90% UTL with 90% Coverage 1.941

90% UPL (t) 1.645
90% Percentile (z) 1.61
95% Percentile (z) 2.079
99% Percentile (z) 2.959

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.637
Theta Star 1.18
nu star 45.87

A-D Test Statistic 0.247
5% A-D Critical Value 0.795
K-S Test Statistic 0.0907
5% K-S Critical Value 0.153

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
Mean 0.493
Median 0.115
SD 0.751
k star 0.167
Theta star 2.958
Nu star 18.33
90% Percentile of Chisquare (2k) 1
90% Percentile 1.479
95% Percentile 2.655
99% Percentile 5.996

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
Mean (Log Scale) -1.805
SD (Log Scale) 1.926
90% UTL 90% Coverage 3.184
90% UPL (t) 2.048
90% Percentile (z) 1.942
95% Percentile (z) 3.91
99% Percentile (z) 14.53

Log ROS Method

Mean in Original Scale 0.503
SD in Original Scale 0.744
90% UTL with 90% Coverage 2.443
90% BCA UTL with 90% Coverage 2.04
90% Bootstrap (% UTL) with 90% Coverage 2.04
90% UPL (t) 1.57
90% Percentile (z) 1.488
95% Percentile (z) 3.003
99% Percentile (z) 11.2

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
Mean 0.51
SD 0.734
SE of Mean 0.101
90% KM UTL with 90% Coverage 1.639
90% KM Chebyshev UPL 2.733
90% KM UPL (t) 1.471
90% Percentile (z) 1.451
95% Percentile (z) 1.718
99% Percentile (z) 2.218

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 1.396
90% Hawkins Wixley (HW) Approx. Gamma UPL 1.541
90% WH Approx. Gamma UTL with 90% Coverage 1.83
90% HW Approx. Gamma UTL with 90% Coverage 2.169

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Benzo(b)fluoranthene

General Statistics

Number of Valid Data 52	Number of Detected Data 38
Number of Distinct Detected Data 38	Number of Non-Detect Data 14
Tolerance Factor 1.546	Percent Non-Detects 26.92%

Raw Statistics

Minimum Detected 0.005
Maximum Detected 2.46
Mean of Detected 0.668
SD of Detected 0.671
Minimum Non-Detect 0.002
Maximum Non-Detect 0.43

Log-transformed Statistics

Minimum Detected -5.298
Maximum Detected 0.9
Mean of Detected -1.143
SD of Detected 1.533
Minimum Non-Detect -6.215
Maximum Non-Detect -0.844

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 34
Number treated as Detected with Single DL 18
Single DL Non-Detect Percentage 65.38%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.847
5% Shapiro Wilk Critical Value 0.938

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.919
5% Shapiro Wilk Critical Value 0.938

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
Mean 0.517
SD 0.626
90% UTL 90% Coverage 1.485
90% UPL (t) 1.337
90% Percentile (z) 1.319
95% Percentile (z) 1.546
99% Percentile (z) 1.973

Maximum Likelihood Estimate(MLE) Method

Mean -0.00967
SD 1.141
90% UTL with 90% Coverage 1.755

90% UPL (t) 1.486
90% Percentile (z) 1.453
95% Percentile (z) 1.867
99% Percentile (z) 2.645

Assuming Lognormal Distribution

DL/2 Substitution Method
Mean (Log Scale) -1.682
SD (Log Scale) 1.881
90% UTL 90% Coverage 3.41
90% UPL (t) 2.19
90% Percentile (z) 2.073
95% Percentile (z) 4.105
99% Percentile (z) 14.8

Log ROS Method

Mean in Original Scale 0.5
SD in Original Scale 0.637
90% UTL with 90% Coverage 2.448
90% BCA UTL with 90% Coverage 1.87
90% Bootstrap (% UTL) with 90% Coverage 1.9
90% UPL (t) 1.636
90% Percentile (z) 1.556
95% Percentile (z) 2.898
99% Percentile (z) 9.307

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.756
Theta Star 0.883
nu star 57.47

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
Mean 0.488
Median 0.205
SD 0.645
k star 0.195
Theta star 2.509
Nu star 20.23
90% Percentile of Chisquare (2k) 1.176

90% Percentile 1.476
95% Percentile 2.533
99% Percentile 5.456

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
Mean 0.506
SD 0.628
SE of Mean 0.0885
90% KM UTL with 90% Coverage 1.477
90% KM Chebyshev UPL 2.408
90% KM UPL (t) 1.329
90% Percentile (z) 1.31
95% Percentile (z) 1.539
99% Percentile (z) 1.967

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 1.427
90% Hawkins Wixley (HW) Approx. Gamma UPL 1.64
90% WH Approx. Gamma UTL with 90% Coverage 1.851
90% HW Approx. Gamma UTL with 90% Coverage 2.277

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Benzo(g,h,i)perylene

General Statistics

Number of Valid Data 52	Number of Detected Data 31
Number of Distinct Detected Data 29	Number of Non-Detect Data 21
Tolerance Factor 1.546	Percent Non-Detects 40.38%

Raw Statistics

Minimum Detected 0.003
Maximum Detected 1.2
Mean of Detected 0.29
SD of Detected 0.335
Minimum Non-Detect 0.002
Maximum Non-Detect 0.43

Log-transformed Statistics

Minimum Detected -5.809
Maximum Detected 0.182
Mean of Detected -2.126
SD of Detected 1.625
Minimum Non-Detect -6.215
Maximum Non-Detect -0.844

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 45
Number treated as Detected with Single DL 7
Single DL Non-Detect Percentage 86.54%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.794
5% Shapiro Wilk Critical Value 0.929

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.94
5% Shapiro Wilk Critical Value 0.929

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
Mean 0.217
SD 0.276
90% UTL 90% Coverage 0.645
90% UPL (t) 0.579
90% Percentile (z) 0.571
95% Percentile (z) 0.672
99% Percentile (z) 0.86

Maximum Likelihood Estimate(MLE) Method

Mean 0.88
SD 0.265
90% UTL with 90% Coverage 1.289

90% UPL (t) 1.227
90% Percentile (z) 1.219
95% Percentile (z) 1.315
99% Percentile (z) 1.496

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.638
Theta Star 0.454
nu star 39.56

A-D Test Statistic 0.243
5% A-D Critical Value 0.794
K-S Test Statistic 0.0818
5% K-S Critical Value 0.165

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
Mean 0.181
Median 0.0372
SD 0.291
k star 0.236
Theta star 0.765
Nu star 24.55
90% Percentile of Chisquare (2k) 1.422
90% Percentile 0.544
95% Percentile 0.889
99% Percentile 1.814

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
Mean (Log Scale) -2.508
SD (Log Scale) 1.789
90% UTL 90% Coverage 1.295
90% UPL (t) 0.85
90% Percentile (z) 0.807
95% Percentile (z) 1.545
99% Percentile (z) 5.231

Log ROS Method

Mean in Original Scale 0.182
SD in Original Scale 0.289
90% UTL with 90% Coverage 0.754
90% BCA UTL with 90% Coverage 0.8
90% Bootstrap (%) UTL with 90% Coverage 0.8
90% UPL (t) 0.504
90% Percentile (z) 0.48
95% Percentile (z) 0.893
99% Percentile (z) 2.864

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
Mean 0.194
SD 0.285
SE of Mean 0.0408
90% KM UTL with 90% Coverage 0.634
90% KM Chebyshev UPL 1.056
90% KM UPL (t) 0.567
90% Percentile (z) 0.559
95% Percentile (z) 0.662
99% Percentile (z) 0.856

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.495
90% Hawkins Wixley (HW) Approx. Gamma UPL 0.538
90% WH Approx. Gamma UTL with 90% Coverage 0.64
90% HW Approx. Gamma UTL with 90% Coverage 0.736

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Benzo(k)fluoranthene

General Statistics

Number of Valid Data 53	Number of Detected Data 31
Number of Distinct Detected Data 30	Number of Non-Detect Data 22
Tolerance Factor 1.543	Percent Non-Detects 41.51%

Raw Statistics

Minimum Detected 0.0065
 Maximum Detected 1.3
 Mean of Detected 0.373
 SD of Detected 0.399
 Minimum Non-Detect 0.003
 Maximum Non-Detect 0.41

Log-transformed Statistics

Minimum Detected -5.036
 Maximum Detected 0.262
 Mean of Detected -1.763
 SD of Detected 1.485
 Minimum Non-Detect -5.809
 Maximum Non-Detect -0.892

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 44
 Number treated as Detected with Single DL 9
 Single DL Non-Detect Percentage 83.02%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.817
 5% Shapiro Wilk Critical Value 0.929

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 0.929

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.264
 SD 0.333
 90% UTL 90% Coverage 0.778
 90% UPL (t) 0.701
 90% Percentile (z) 0.691
 95% Percentile (z) 0.812
 99% Percentile (z) 1.039

Maximum Likelihood Estimate(MLE) Method

Mean -0.395
 SD 0.859
 90% UTL with 90% Coverage 0.931

90% UPL (t) 0.731
 90% Percentile (z) 0.706
 95% Percentile (z) 1.018
 99% Percentile (z) 1.604

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.715
 Theta Star 0.522
 nu star 44.31

A-D Test Statistic 0.306
 5% A-D Critical Value 0.787
 K-S Test Statistic 0.0864
 5% K-S Critical Value 0.164

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.226
 Median 0.062
 SD 0.352
 k star 0.185
 Theta star 1.224
 Nu star 19.62
 90% Percentile of Chisquare (2k) 1.118
 90% Percentile 0.684
 95% Percentile 1.19
 99% Percentile 2.602

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.281
 SD (Log Scale) 1.734
 90% UTL 90% Coverage 1.485
 90% UPL (t) 0.991
 90% Percentile (z) 0.943
 95% Percentile (z) 1.771
 99% Percentile (z) 5.775

Log ROS Method

Mean in Original Scale 0.231
 SD in Original Scale 0.348
 90% UTL with 90% Coverage 0.902
 90% BCA UTL with 90% Coverage 1.036
 90% Bootstrap (%) UTL with 90% Coverage 1.07
 90% UPL (t) 0.619
 90% Percentile (z) 0.59
 95% Percentile (z) 1.063
 99% Percentile (z) 3.206

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.241
 SD 0.342
 SE of Mean 0.0484
 90% KM UTL with 90% Coverage 0.77
 90% KM Chebyshev UPL 1.278
 90% KM UPL (t) 0.69
 90% Percentile (z) 0.68
 95% Percentile (z) 0.804
 99% Percentile (z) 1.038

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.638
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.706
 90% WH Approx. Gamma UTL with 90% Coverage 0.836
 90% HW Approx. Gamma UTL with 90% Coverage 0.989

Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs

Carbazole

General Statistics

Number of Valid Data	11	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	11

**Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**

The data set for variable Carbazole was not processed!

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Chrysene

General Statistics

Number of Valid Data 52	Number of Detected Data 39
Number of Distinct Detected Data 36	Number of Non-Detect Data 13
Tolerance Factor 1.546	Percent Non-Detects 25.00%

Raw Statistics

Minimum Detected 0.002
Maximum Detected 2.04
Mean of Detected 0.498
SD of Detected 0.536
Minimum Non-Detect 0.002
Maximum Non-Detect 0.41

Log-transformed Statistics

Minimum Detected -6.215
Maximum Detected 0.713
Mean of Detected -1.677
SD of Detected 1.885
Minimum Non-Detect -6.215
Maximum Non-Detect -0.892

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 34
Number treated as Detected with Single DL 18
Single DL Non-Detect Percentage 65.38%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.83
5% Shapiro Wilk Critical Value 0.939

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.886
5% Shapiro Wilk Critical Value 0.939

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
Mean 0.404
SD 0.492
90% UTL 90% Coverage 1.165
90% UPL (t) 1.049
90% Percentile (z) 1.035
95% Percentile (z) 1.213
99% Percentile (z) 1.548

Maximum Likelihood Estimate(MLE) Method

Mean 0.0686
SD 0.831
90% UTL with 90% Coverage 1.354

90% UPL (t) 1.158
90% Percentile (z) 1.134
95% Percentile (z) 1.436
99% Percentile (z) 2.003

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.595
Theta Star 0.837
nu star 46.43

A-D Test Statistic 0.376
5% A-D Critical Value 0.801
K-S Test Statistic 0.101
5% K-S Critical Value 0.148

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
Mean 0.378
Median 0.151
SD 0.508
k star 0.23
Theta star 1.641
Nu star 23.96
90% Percentile of Chisquare (2k) 1.389
90% Percentile 1.14
95% Percentile 1.874
99% Percentile 3.851

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
Mean (Log Scale) -1.895
SD (Log Scale) 1.819
90% UTL 90% Coverage 2.504
90% UPL (t) 1.632
90% Percentile (z) 1.547
95% Percentile (z) 2.996
99% Percentile (z) 10.35

Log ROS Method

Mean in Original Scale 0.382
SD in Original Scale 0.505
90% UTL with 90% Coverage 2.186
90% BCA UTL with 90% Coverage 1.498
90% Bootstrap (%) UTL with 90% Coverage 1.5
90% UPL (t) 1.393
90% Percentile (z) 1.318
95% Percentile (z) 2.639
99% Percentile (z) 9.712

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
Mean 0.391
SD 0.496
SE of Mean 0.07
90% KM UTL with 90% Coverage 1.158
90% KM Chebyshev UPL 1.894
90% KM UPL (t) 1.041
90% Percentile (z) 1.027
95% Percentile (z) 1.207
99% Percentile (z) 1.545

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 1.082
90% Hawkins Wixley (HW) Approx. Gamma UPL 1.222
90% WH Approx. Gamma UTL with 90% Coverage 1.393
90% HW Approx. Gamma UTL with 90% Coverage 1.67

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Dibenzo(a,h)anthracene

General Statistics

Number of Valid Data 53	Number of Detected Data 22
Number of Distinct Detected Data 20	Number of Non-Detect Data 31
Tolerance Factor 1.543	Percent Non-Detects 58.49%

Raw Statistics

Minimum Detected 0.005
Maximum Detected 0.77
Mean of Detected 0.172
SD of Detected 0.246
Minimum Non-Detect 0.002
Maximum Non-Detect 0.43

Log-transformed Statistics

Minimum Detected -5.298
Maximum Detected -0.261
Mean of Detected -2.924
SD of Detected 1.69
Minimum Non-Detect -6.215
Maximum Non-Detect -0.844

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 49
Number treated as Detected with Single DL 4
Single DL Non-Detect Percentage 92.45%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.703
5% Shapiro Wilk Critical Value 0.911

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.938
5% Shapiro Wilk Critical Value 0.911

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
Mean 0.132
SD 0.17
90% UTL 90% Coverage 0.394
90% UPL (t) 0.355
90% Percentile (z) 0.35
95% Percentile (z) 0.412
99% Percentile (z) 0.527

Maximum Likelihood Estimate(MLE) Method

Mean N/A
SD N/A
90% UTL with 90% Coverage N/A

90% UPL (t) N/A
90% Percentile (z) N/A
95% Percentile (z) N/A
99% Percentile (z) N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
Mean (Log Scale) -3.06
SD (Log Scale) 1.848
90% UTL 90% Coverage 0.813
90% UPL (t) 0.528
90% Percentile (z) 0.501
95% Percentile (z) 0.981
99% Percentile (z) 3.455

Log ROS Method

Mean in Original Scale 0.0774
SD in Original Scale 0.176
90% UTL with 90% Coverage 0.22
90% BCA UTL with 90% Coverage 0.495
90% Bootstrap (% UTL) with 90% Coverage 0.495
90% UPL (t) 0.148
90% Percentile (z) 0.141
95% Percentile (z) 0.262
99% Percentile (z) 0.838

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.496
Theta Star 0.347
nu star 21.83

A-D Test Statistic 0.774
5% A-D Critical Value 0.801
K-S Test Statistic 0.157
5% K-S Critical Value 0.195

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
Mean 0.0779
Median 0.000001
SD 0.178
k star 0.134
Theta star 0.58
Nu star 14.24
90% Percentile of Chisquare (2k) 0.782

90% Percentile 0.227
95% Percentile 0.438
99% Percentile 1.064

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
Mean 0.087
SD 0.175
SE of Mean 0.0253
90% KM UTL with 90% Coverage 0.357
90% KM Chebyshev UPL 0.616
90% KM UPL (t) 0.316
90% Percentile (z) 0.311
95% Percentile (z) 0.374
99% Percentile (z) 0.493

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.184
90% Hawkins Wixley (HW) Approx. Gamma UPL 0.174
90% WH Approx. Gamma UTL with 90% Coverage 0.252
90% HW Approx. Gamma UTL with 90% Coverage 0.26

Note: DL/2 is not a recommended method.

Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs

Dibenzofuran

General Statistics

Number of Valid Data	13	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	13

**Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**

The data set for variable Dibenzofuran was not processed!

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Fluoranthene

General Statistics

Number of Valid Data 51	Number of Detected Data 41
Number of Distinct Detected Data 39	Number of Non-Detect Data 10
Tolerance Factor 1.549	Percent Non-Detects 19.61%

Raw Statistics

Minimum Detected 0.003
 Maximum Detected 2.7
 Mean of Detected 0.618
 SD of Detected 0.718
 Minimum Non-Detect 0.002
 Maximum Non-Detect 0.35

Log-transformed Statistics

Minimum Detected -5.809
 Maximum Detected 0.993
 Mean of Detected -1.438
 SD of Detected 1.791
 Minimum Non-Detect -6.215
 Maximum Non-Detect -1.05

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 31
 Number treated as Detected with Single DL 20
 Single DL Non-Detect Percentage 60.78%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.784
 5% Shapiro Wilk Critical Value 0.941

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.905
 5% Shapiro Wilk Critical Value 0.941

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.515
 SD 0.676
 90% UTL 90% Coverage 1.563
 90% UPL (t) 1.402
 90% Percentile (z) 1.382
 95% Percentile (z) 1.628
 99% Percentile (z) 2.089

Maximum Likelihood Estimate(MLE) Method

Mean 0.00365
 SD 1.178
 90% UTL with 90% Coverage 1.828
 90% UPL (t) 1.548
 90% Percentile (z) 1.513
 95% Percentile (z) 1.941
 99% Percentile (z) 2.744

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.609
 Theta Star 1.015
 nu star 49.96

A-D Test Statistic 0.248
 5% A-D Critical Value 0.8
 K-S Test Statistic 0.0703
 5% K-S Critical Value 0.144

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.498
 Median 0.222
 SD 0.687
 k star 0.241
 Theta star 2.069
 Nu star 24.56
 90% Percentile of Chisquare (2k) 1.449
 90% Percentile 1.499
 95% Percentile 2.439
 99% Percentile 4.952

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.729
 SD (Log Scale) 1.837
 90% UTL 90% Coverage 3.056
 90% UPL (t) 1.974
 90% Percentile (z) 1.869
 95% Percentile (z) 3.644
 99% Percentile (z) 12.74

Log ROS Method

Mean in Original Scale 0.504
 SD in Original Scale 0.683
 90% UTL with 90% Coverage 2.848
 90% BCA UTL with 90% Coverage 1.6
 90% Bootstrap (%) UTL with 90% Coverage 1.6
 90% UPL (t) 1.821
 90% Percentile (z) 1.722
 95% Percentile (z) 3.41
 99% Percentile (z) 12.3

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.509
 SD 0.674
 SE of Mean 0.0957
 90% KM UTL with 90% Coverage 1.553
 90% KM Chebyshev UPL 2.551
 90% KM UPL (t) 1.393
 90% Percentile (z) 1.373
 95% Percentile (z) 1.618
 99% Percentile (z) 2.077

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 1.414
 90% Hawkins Wixley (HW) Approx. Gamma UPL 1.597
 90% WH Approx. Gamma UTL with 90% Coverage 1.815
 90% HW Approx. Gamma UTL with 90% Coverage 2.174

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Fluorene

General Statistics

Number of Valid Data 57	Number of Detected Data 19
Number of Distinct Detected Data 18	Number of Non-Detect Data 38
Tolerance Factor 1.533	Percent Non-Detects 66.67%

Raw Statistics

Minimum Detected 0.005
 Maximum Detected 0.55
 Mean of Detected 0.136
 SD of Detected 0.184
 Minimum Non-Detect 0.003
 Maximum Non-Detect 0.5

Log-transformed Statistics

Minimum Detected -5.298
 Maximum Detected -0.598
 Mean of Detected -3.14
 SD of Detected 1.699
 Minimum Non-Detect -5.809
 Maximum Non-Detect -0.693

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 55
 Number treated as Detected with Single DL 2
 Single DL Non-Detect Percentage 96.49%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.734
 5% Shapiro Wilk Critical Value 0.901

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.903
 5% Shapiro Wilk Critical Value 0.901

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.118
 SD 0.122
 90% UTL 90% Coverage 0.305
 90% UPL (t) 0.278
 90% Percentile (z) 0.274
 95% Percentile (z) 0.319
 99% Percentile (z) 0.402

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -3.02
 SD (Log Scale) 1.703
 90% UTL 90% Coverage 0.664
 90% UPL (t) 0.453
 90% Percentile (z) 0.432
 95% Percentile (z) 0.803
 99% Percentile (z) 2.562

Log ROS Method

Mean in Original Scale 0.0505
 SD in Original Scale 0.121
 Mean in Log Scale -4.546
 SD in Log Scale 1.609
 90% UTL 90% Coverage 0.125
 90% UPL (t) 0.0871
 90% Percentile (z) 0.0834
 95% Percentile (z) 0.15
 99% Percentile (z) 0.448

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.497
 Theta Star 0.273
 nu star 18.87

A-D Test Statistic 0.802
 5% A-D Critical Value 0.798
 K-S Test Statistic 0.177
 5% K-S Critical Value 0.209

Data follow Appx. Gamma Distribution at 5% Significance Level

Data Distribution Test with Detected Values Only

Data follow Appr. Gamma Distribution at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.0629
 SD 0.123
 SE of Mean 0.0184
 90% KM UTL with 90% Coverage 0.252
 90% KM Chebyshev UPL 0.435
 90% KM UPL (t) 0.224
 90% Percentile (z) 0.221
 95% Percentile (z) 0.265
 99% Percentile (z) 0.349

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.0519
 Median 0.000001
 SD 0.122
 k star 0.13
 Theta star 0.399
 Nu star 14.82
 90% Percentile of Chisquare (2k) 0.751
 90% Percentile 0.15
 95% Percentile 0.293
 99% Percentile 0.721

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.118
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.109
 90% WH Approx. Gamma UTL with 90% Coverage 0.161
 90% HW Approx. Gamma UTL with 90% Coverage 0.161

Note: DL/2 is not a recommended method.

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Indeno(1,2,3-cd)pyrene

General Statistics

Number of Valid Data 48
Number of Distinct Detected Data 28
Tolerance Factor 1.558

Number of Detected Data 28
Number of Non-Detect Data 20
Percent Non-Detects 41.67%

Raw Statistics

Minimum Detected 0.003
Maximum Detected 1
Mean of Detected 0.197
SD of Detected 0.232
Minimum Non-Detect 0.002
Maximum Non-Detect 0.41

Log-transformed Statistics

Minimum Detected -5.809
Maximum Detected 0
Mean of Detected -2.515
SD of Detected 1.619
Minimum Non-Detect -6.215
Maximum Non-Detect -0.892

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 44
Number treated as Detected with Single DL 4
Single DL Non-Detect Percentage 91.67%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.797
5% Shapiro Wilk Critical Value 0.924

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.943
5% Shapiro Wilk Critical Value 0.924

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
Mean 0.163
SD 0.186
90% UTL 90% Coverage 0.453
90% UPL (t) 0.408
90% Percentile (z) 0.402
95% Percentile (z) 0.469
99% Percentile (z) 0.596

Maximum Likelihood Estimate(MLE) Method

Mean 0.731
SD 0.208
90% UTL with 90% Coverage 1.055

90% UPL (t) 1.004
90% Percentile (z) 0.997
95% Percentile (z) 1.073
99% Percentile (z) 1.214

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.631
Theta Star 0.313
nu star 35.34

A-D Test Statistic 0.279
5% A-D Critical Value 0.792
K-S Test Statistic 0.113
5% K-S Critical Value 0.173

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
Mean 0.131
Median 0.0505
SD 0.195
k star 0.276
Theta star 0.474
Nu star 26.53
90% Percentile of Chisquare (2k) 1.645
90% Percentile 0.39
95% Percentile 0.615
99% Percentile 1.206

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
Mean (Log Scale) -2.631
SD (Log Scale) 1.647
90% UTL 90% Coverage 0.938
90% UPL (t) 0.626
90% Percentile (z) 0.595
95% Percentile (z) 1.082
99% Percentile (z) 3.324

Log ROS Method

Mean in Original Scale 0.126
SD in Original Scale 0.196
90% UTL with 90% Coverage 0.499
90% BCA UTL with 90% Coverage 0.485
90% Bootstrap (%) UTL with 90% Coverage 0.485
90% UPL (t) 0.34
90% Percentile (z) 0.324
95% Percentile (z) 0.571
99% Percentile (z) 1.659

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
Mean 0.139
SD 0.195
SE of Mean 0.0299
90% KM UTL with 90% Coverage 0.443
90% KM Chebyshev UPL 0.73
90% KM UPL (t) 0.395
90% Percentile (z) 0.389
95% Percentile (z) 0.46
99% Percentile (z) 0.592

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.364
90% Hawkins Wixley (HW) Approx. Gamma UPL 0.407
90% WH Approx. Gamma UTL with 90% Coverage 0.467
90% HW Approx. Gamma UTL with 90% Coverage 0.552

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Naphthalene

General Statistics

Number of Valid Data 57	Number of Detected Data 17
Number of Distinct Detected Data 16	Number of Non-Detect Data 40
Tolerance Factor 1.533	Percent Non-Detects 70.18%

Raw Statistics

Minimum Detected 0.004
 Maximum Detected 0.26
 Mean of Detected 0.0521
 SD of Detected 0.0769
 Minimum Non-Detect 0.003
 Maximum Non-Detect 0.5

Log-transformed Statistics

Minimum Detected -5.521
 Maximum Detected -1.347
 Mean of Detected -3.873
 SD of Detected 1.373
 Minimum Non-Detect -5.809
 Maximum Non-Detect -0.693

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 57
 Number treated as Detected with Single DL 0
 Single DL Non-Detect Percentage 100.00%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.672
 5% Shapiro Wilk Critical Value 0.892

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.908
 5% Shapiro Wilk Critical Value 0.892

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.0943
 SD 0.0818
 90% UTL 90% Coverage 0.22
 90% UPL (t) 0.201
 90% Percentile (z) 0.199
 95% Percentile (z) 0.229
 99% Percentile (z) 0.285

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -3.219
 SD (Log Scale) 1.696
 90% UTL 90% Coverage 0.539
 90% UPL (t) 0.368
 90% Percentile (z) 0.352
 95% Percentile (z) 0.651
 99% Percentile (z) 2.069

Log ROS Method

Mean in Original Scale 0.0204
 SD in Original Scale 0.0463
 Mean in Log Scale -4.891
 SD in Log Scale 1.258
 90% UTL 90% Coverage 0.0517
 90% UPL (t) 0.0389
 90% Percentile (z) 0.0377
 95% Percentile (z) 0.0595
 99% Percentile (z) 0.14

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.585
 Theta Star 0.089
 nu star 19.9

A-D Test Statistic 1.014
 5% A-D Critical Value 0.784
 K-S Test Statistic 0.2
 5% K-S Critical Value 0.219

Data follow Appx. Gamma Distribution at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.0218
 Median 0.000001
 SD 0.0484
 k star 0.145
 Theta star 0.151
 Nu star 16.49
 90% Percentile of Chisquare (2k) 0.853
 90% Percentile 0.0642
 95% Percentile 0.121
 99% Percentile 0.286

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data follow Appr. Gamma Distribution at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.0305
 SD 0.0574
 SE of Mean 0.0103
 90% KM UTL with 90% Coverage 0.119
 90% KM Chebyshev UPL 0.204
 90% KM UPL (t) 0.106
 90% Percentile (z) 0.104
 95% Percentile (z) 0.125
 99% Percentile (z) 0.164

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.0535
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.052
 90% WH Approx. Gamma UTL with 90% Coverage 0.0722
 90% HW Approx. Gamma UTL with 90% Coverage 0.0759

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Phenanthrene

General Statistics

Number of Valid Data 53	Number of Detected Data 37
Number of Distinct Detected Data 35	Number of Non-Detect Data 16
Tolerance Factor 1.543	Percent Non-Detects 30.19%

Raw Statistics

Minimum Detected 0.002
Maximum Detected 1.71
Mean of Detected 0.409
SD of Detected 0.443
Minimum Non-Detect 0.002
Maximum Non-Detect 0.41

Log-transformed Statistics

Minimum Detected -6.215
Maximum Detected 0.536
Mean of Detected -1.953
SD of Detected 1.933
Minimum Non-Detect -6.215
Maximum Non-Detect -0.892

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 39
Number treated as Detected with Single DL 14
Single DL Non-Detect Percentage 73.58%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.839
5% Shapiro Wilk Critical Value 0.936

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.893
5% Shapiro Wilk Critical Value 0.936

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
Mean 0.322
SD 0.393
90% UTL 90% Coverage 0.93
90% UPL (t) 0.838
90% Percentile (z) 0.827
95% Percentile (z) 0.969
99% Percentile (z) 1.238

Maximum Likelihood Estimate(MLE) Method

Mean -0.0518
SD 0.751
90% UTL with 90% Coverage 1.108

90% UPL (t) 0.933
90% Percentile (z) 0.911
95% Percentile (z) 1.184
99% Percentile (z) 1.696

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.557
Theta Star 0.734
nu star 41.19

A-D Test Statistic 0.463
5% A-D Critical Value 0.804
K-S Test Statistic 0.0973
5% K-S Critical Value 0.152

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
Mean 0.293
Median 0.096
SD 0.41
k star 0.243
Theta star 1.204
Nu star 25.77
90% Percentile of Chisquare (2k) 1.462
90% Percentile 0.88
95% Percentile 1.429
99% Percentile 2.895

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
Mean (Log Scale) -2.118
SD (Log Scale) 1.785
90% UTL 90% Coverage 1.892
90% UPL (t) 1.248
90% Percentile (z) 1.186
95% Percentile (z) 2.268
99% Percentile (z) 7.655

Log ROS Method

Mean in Original Scale 0.294
SD in Original Scale 0.409
90% UTL with 90% Coverage 1.529
90% BCA UTL with 90% Coverage 1
90% Bootstrap (%) UTL with 90% Coverage 1
90% UPL (t) 0.98
90% Percentile (z) 0.928
95% Percentile (z) 1.855
99% Percentile (z) 6.805

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
Mean 0.304
SD 0.401
SE of Mean 0.0563
90% KM UTL with 90% Coverage 0.923
90% KM Chebyshev UPL 1.518
90% KM UPL (t) 0.829
90% Percentile (z) 0.818
95% Percentile (z) 0.963
99% Percentile (z) 1.237

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.821
90% Hawkins Wixley (HW) Approx. Gamma UPL 0.906
90% WH Approx. Gamma UTL with 90% Coverage 1.055
90% HW Approx. Gamma UTL with 90% Coverage 1.233

**Appendix C5: ProUCL Outputs for Background UPLs
Rural Developed PAHs**

Pyrene

General Statistics

Number of Valid Data 51	Number of Detected Data 41
Number of Distinct Detected Data 40	Number of Non-Detect Data 10
Tolerance Factor 1.549	Percent Non-Detects 19.61%

Raw Statistics

Minimum Detected 0.003
 Maximum Detected 2.9
 Mean of Detected 0.665
 SD of Detected 0.751
 Minimum Non-Detect 0.003
 Maximum Non-Detect 0.41

Log-transformed Statistics

Minimum Detected -5.809
 Maximum Detected 1.065
 Mean of Detected -1.392
 SD of Detected 1.852
 Minimum Non-Detect -5.809
 Maximum Non-Detect -0.892

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 32
 Number treated as Detected with Single DL 19
 Single DL Non-Detect Percentage 62.75%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.808
 5% Shapiro Wilk Critical Value 0.941

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.89
 5% Shapiro Wilk Critical Value 0.941

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.556
 SD 0.708
 90% UTL 90% Coverage 1.653
 90% UPL (t) 1.485
 90% Percentile (z) 1.464
 95% Percentile (z) 1.721
 99% Percentile (z) 2.203

Maximum Likelihood Estimate(MLE) Method

Mean -0.0001241
 SD 1.259
 90% UTL with 90% Coverage 1.95
 90% UPL (t) 1.65
 90% Percentile (z) 1.613
 95% Percentile (z) 2.07
 99% Percentile (z) 2.928

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.595
 Theta Star 1.119
 nu star 48.76

A-D Test Statistic 0.391
 5% A-D Critical Value 0.801
 K-S Test Statistic 0.0986
 5% K-S Critical Value 0.145

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.536
 Median 0.197
 SD 0.721
 k star 0.239
 Theta star 2.248
 Nu star 24.34
 90% Percentile of Chisquare (2k) 1.437
 90% Percentile 1.614
 95% Percentile 2.632
 99% Percentile 5.358

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.654
 SD (Log Scale) 1.857
 90% UTL 90% Coverage 3.399
 90% UPL (t) 2.185
 90% Percentile (z) 2.068
 95% Percentile (z) 4.06
 99% Percentile (z) 14.4

Log ROS Method

Mean in Original Scale 0.543
 SD in Original Scale 0.716
 90% UTL with 90% Coverage 3.209
 90% BCA UTL with 90% Coverage 2.2
 90% Bootstrap (%) UTL with 90% Coverage 2.2
 90% UPL (t) 2.034
 90% Percentile (z) 1.921
 95% Percentile (z) 3.856
 99% Percentile (z) 14.25

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.55
 SD 0.706
 SE of Mean 0.1
 90% KM UTL with 90% Coverage 1.643
 90% KM Chebyshev UPL 2.688
 90% KM UPL (t) 1.475
 90% Percentile (z) 1.454
 95% Percentile (z) 1.711
 99% Percentile (z) 2.192

Gamma ROS Limits with Extrapolated Data

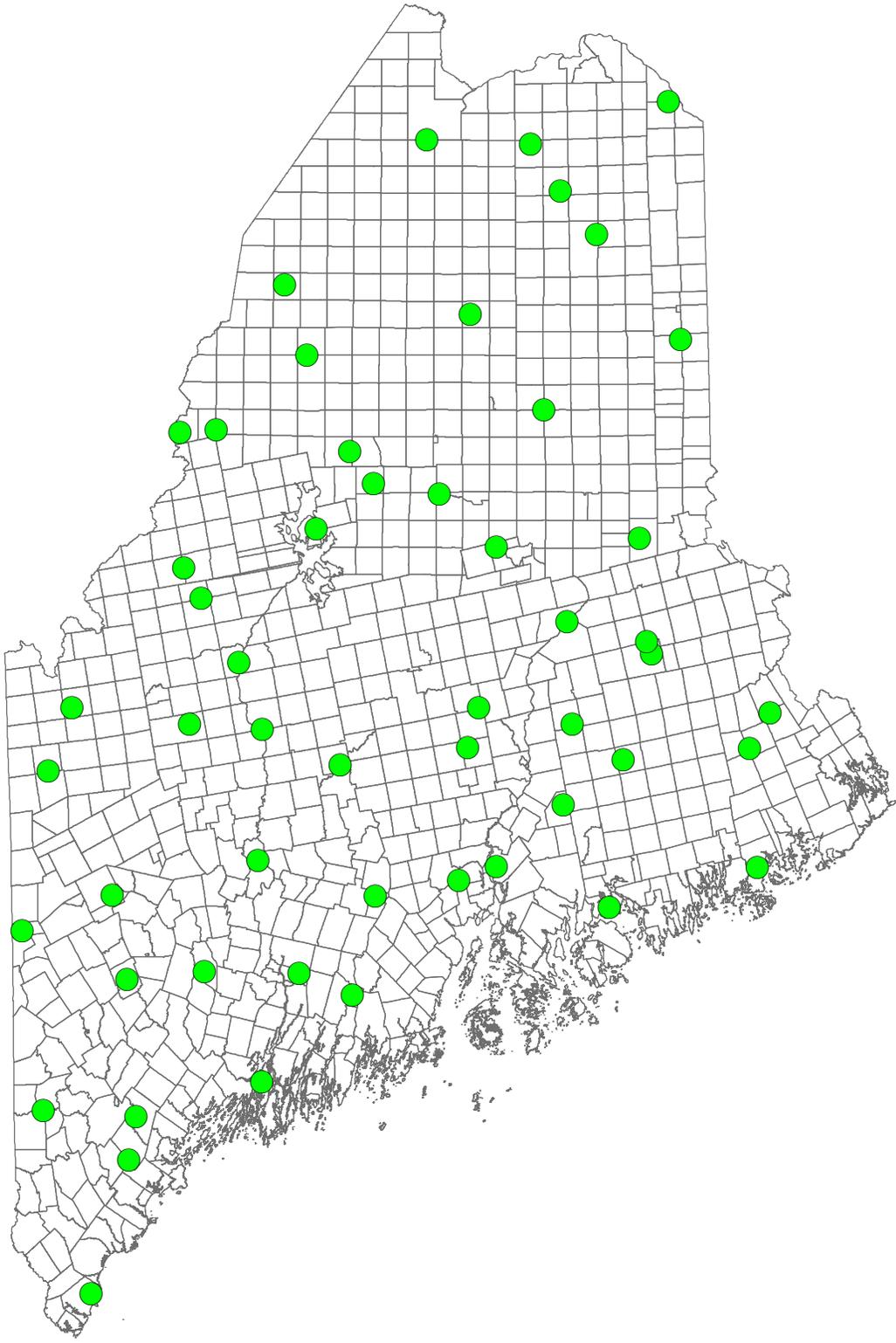
90% Wilson Hilferty (WH) Approx. Gamma UPL 1.528
 90% Hawkins Wixley (HW) Approx. Gamma UPL 1.728
 90% WH Approx. Gamma UTL with 90% Coverage 1.963
 90% HW Approx. Gamma UTL with 90% Coverage 2.355

Appendix D

Summary of Evaluation for Background Metals

- D1: Spatial Distribution of Samples
- D2: Box and Whisker Plots for Raw Dataset
- D3: Identification of Outliers
- D4: Rosner Test Outputs from ProUCL for Select Metals
- D5: Q-Q Probability Plots for final dataset (without outliers)
- D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
- D7: ProUCL Outputs for Background UPLs

Appendix D1

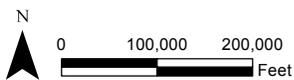


Legend

- Sample Locations
- Towns_24k_Polygon

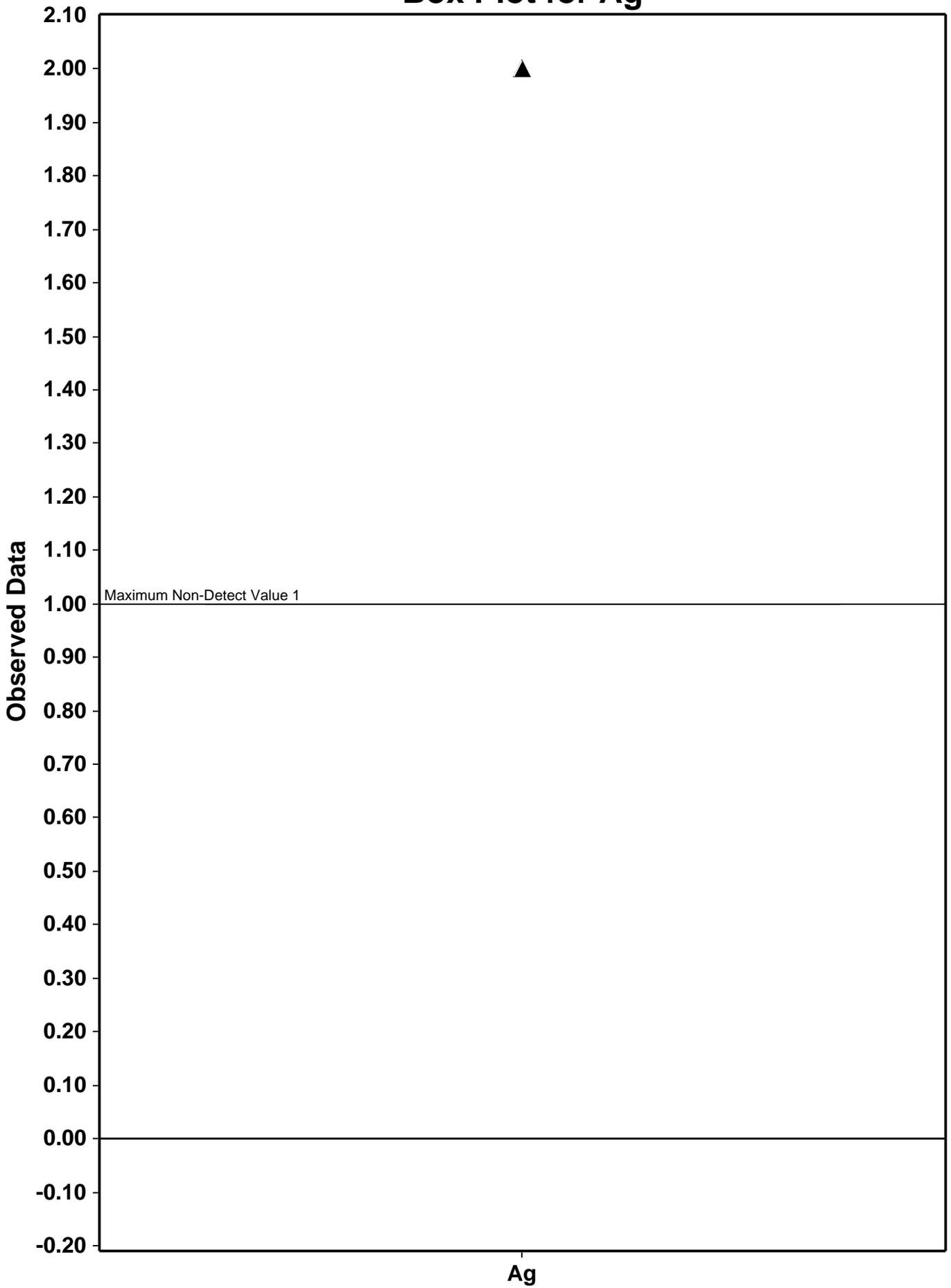
Figure X
Sample Locations

Maine DEP



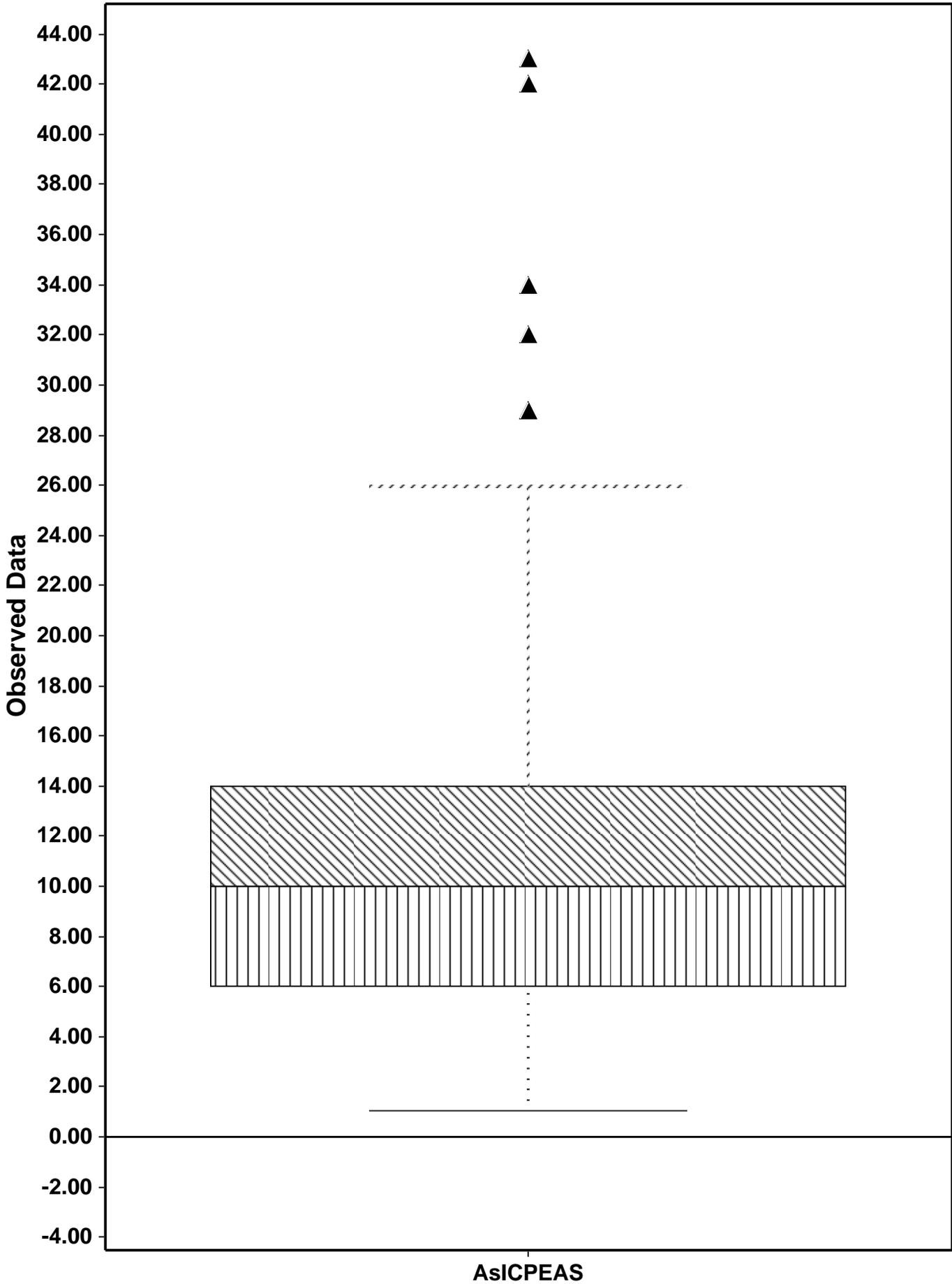
Appendix D2

Box Plot for Ag

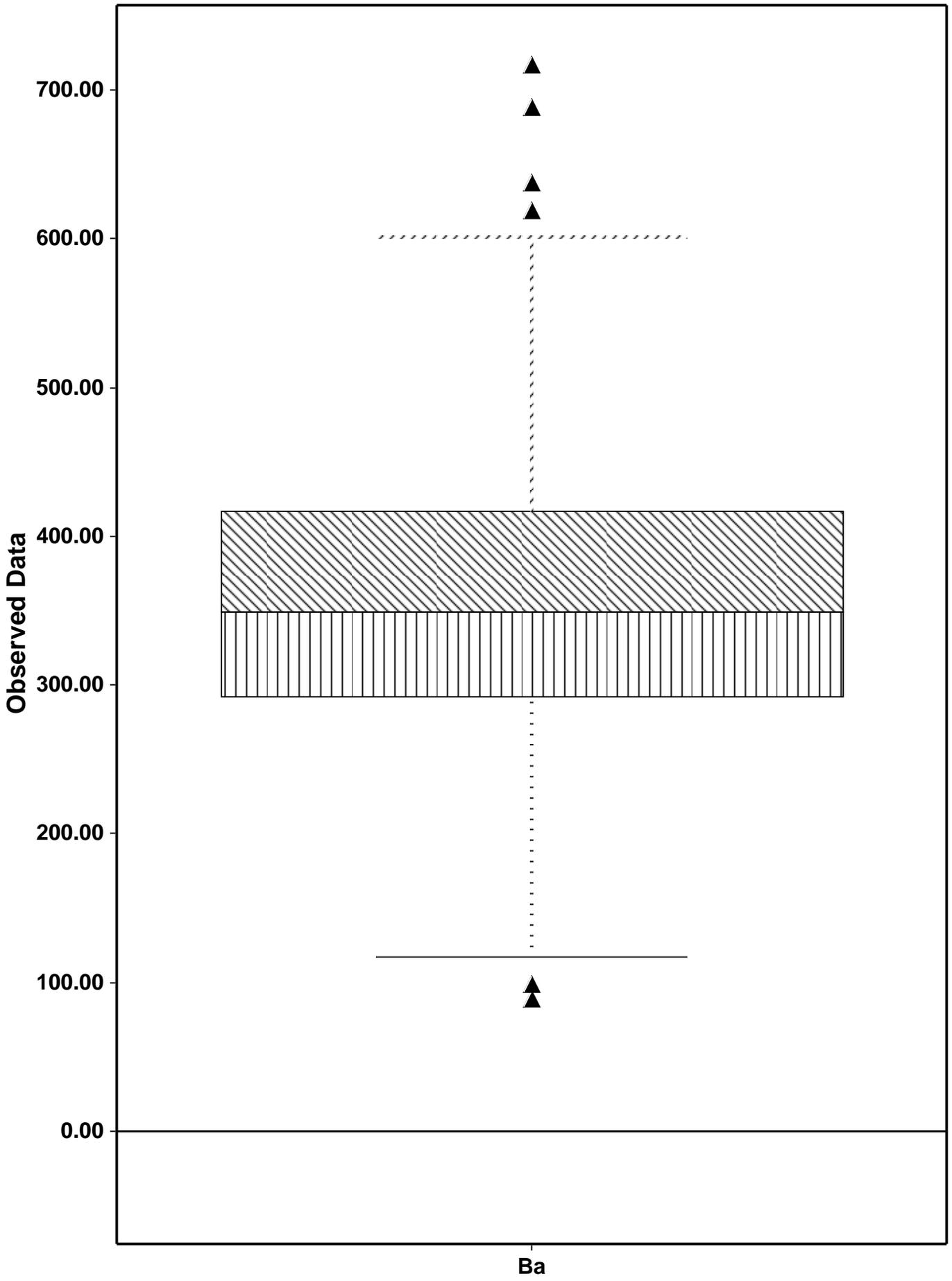


Ag

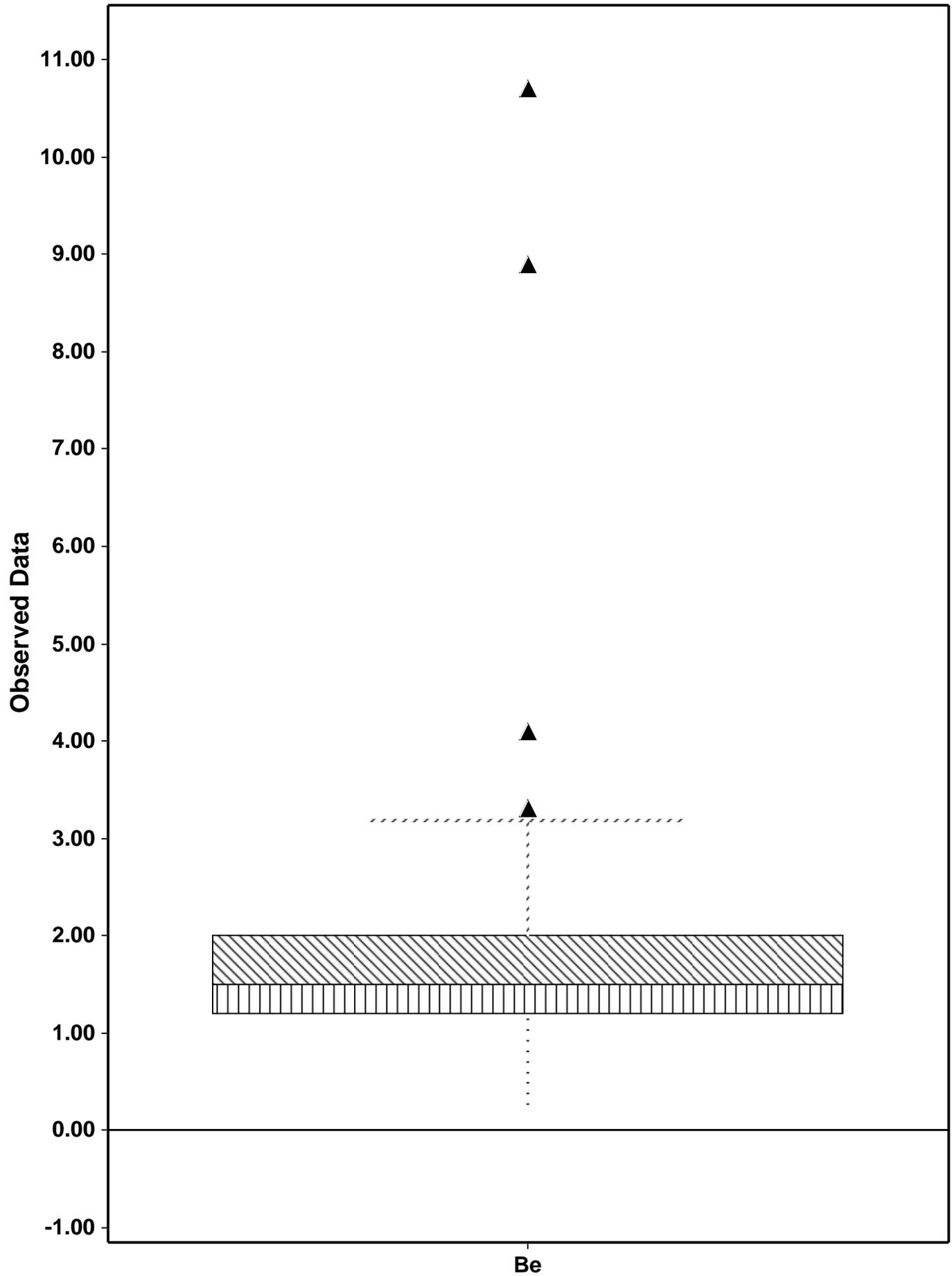
Box Plot for AsICPEAS



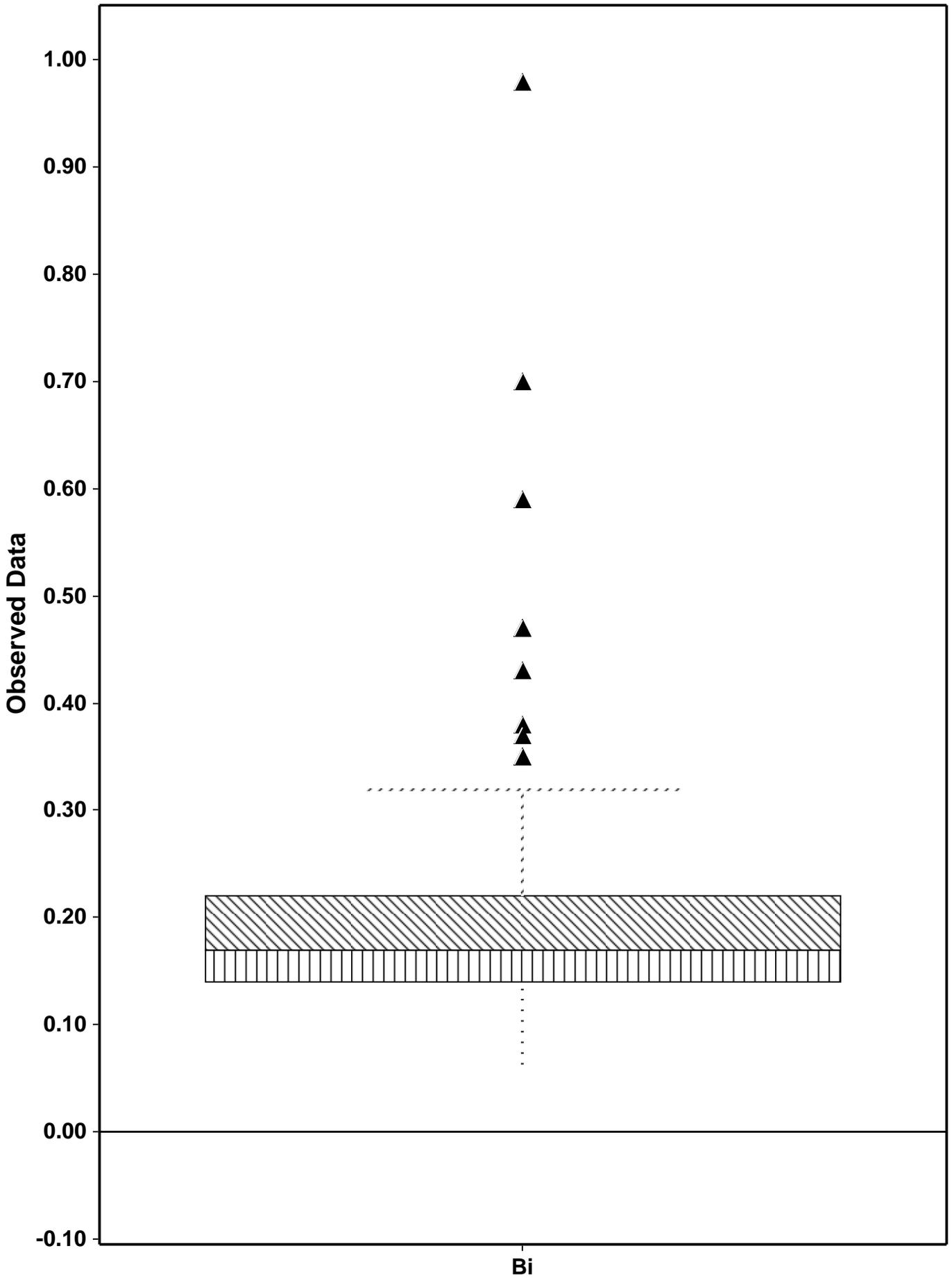
Box Plot for Ba



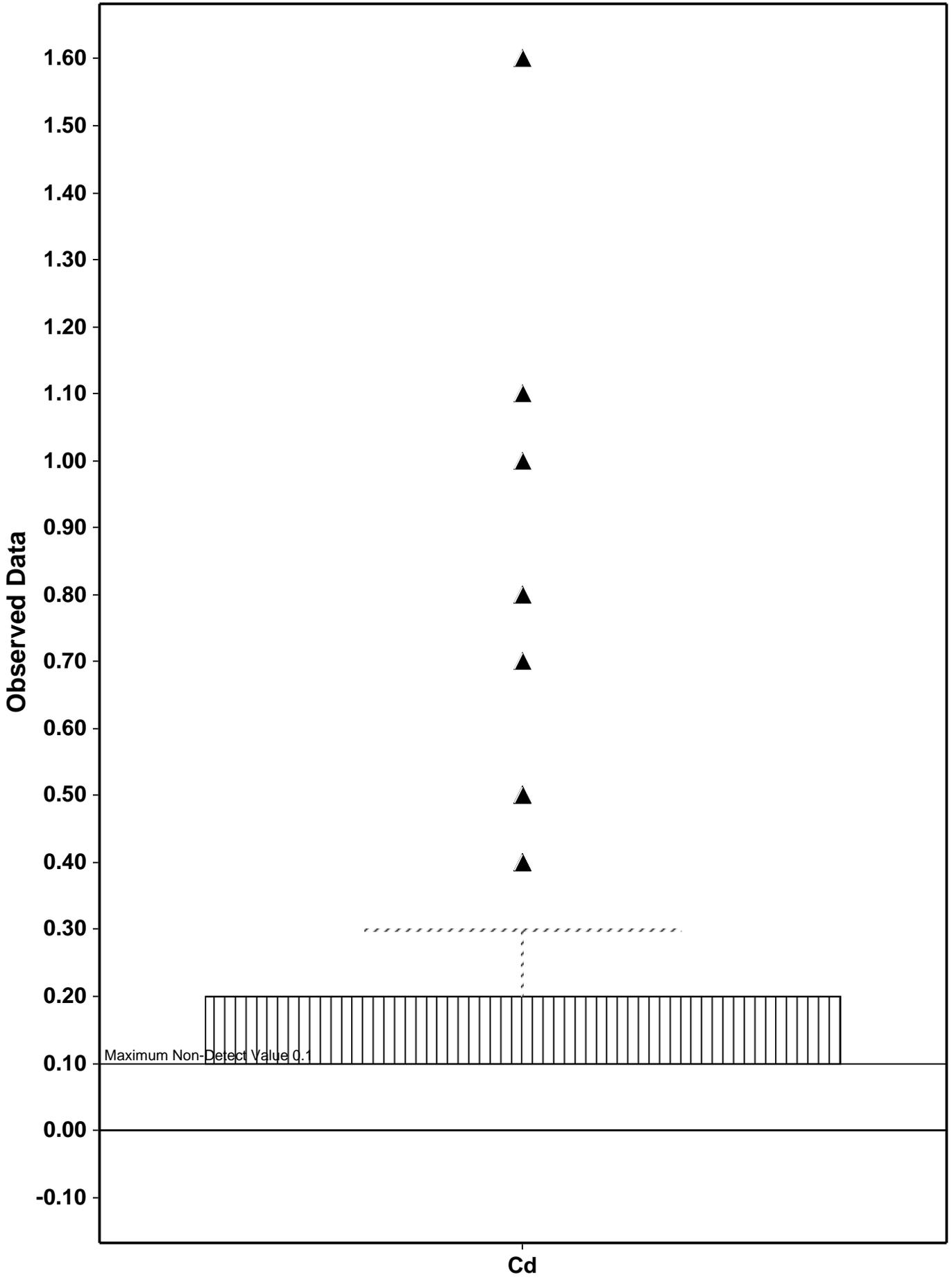
Box Plot for Be



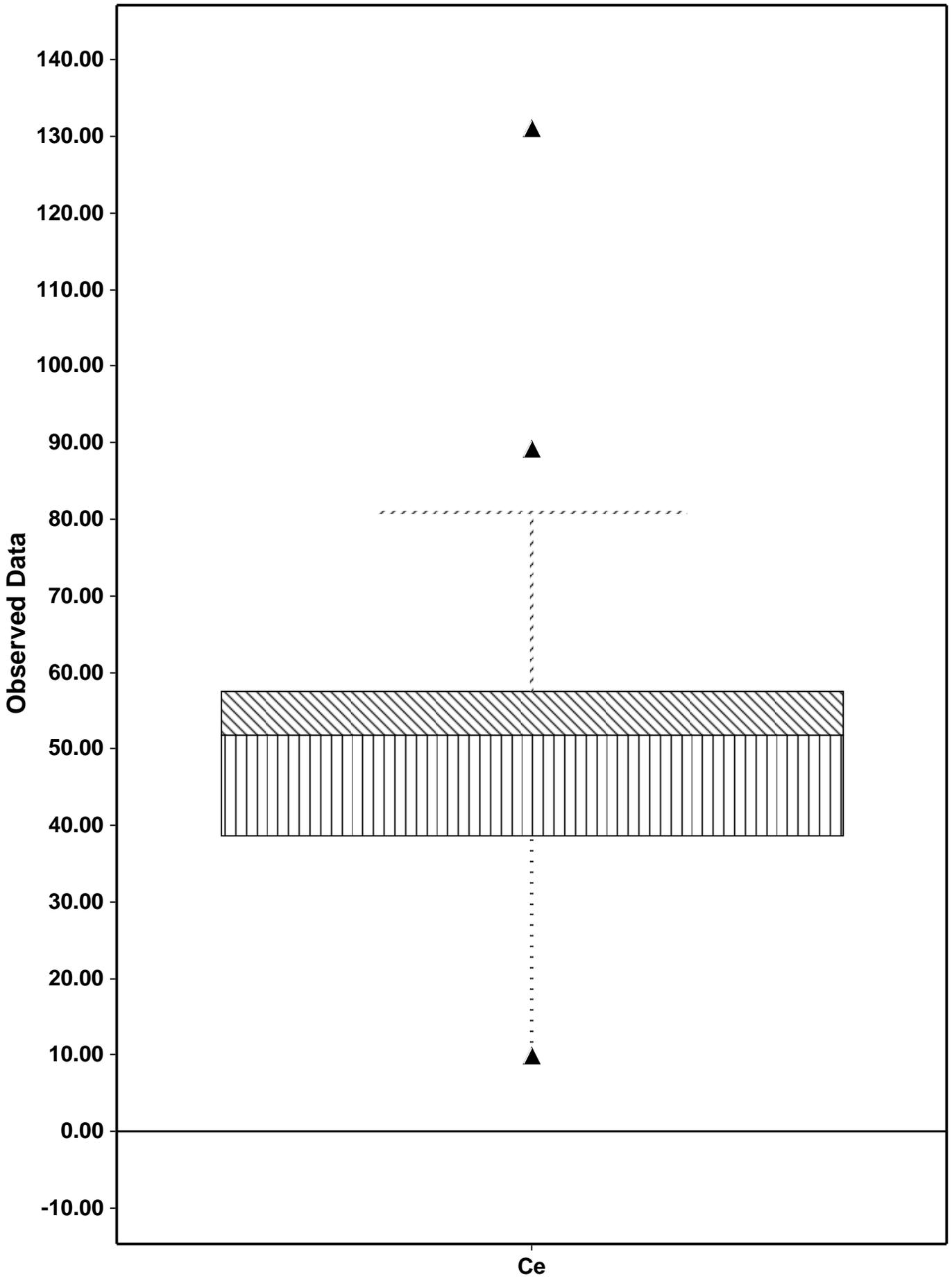
Box Plot for Bi



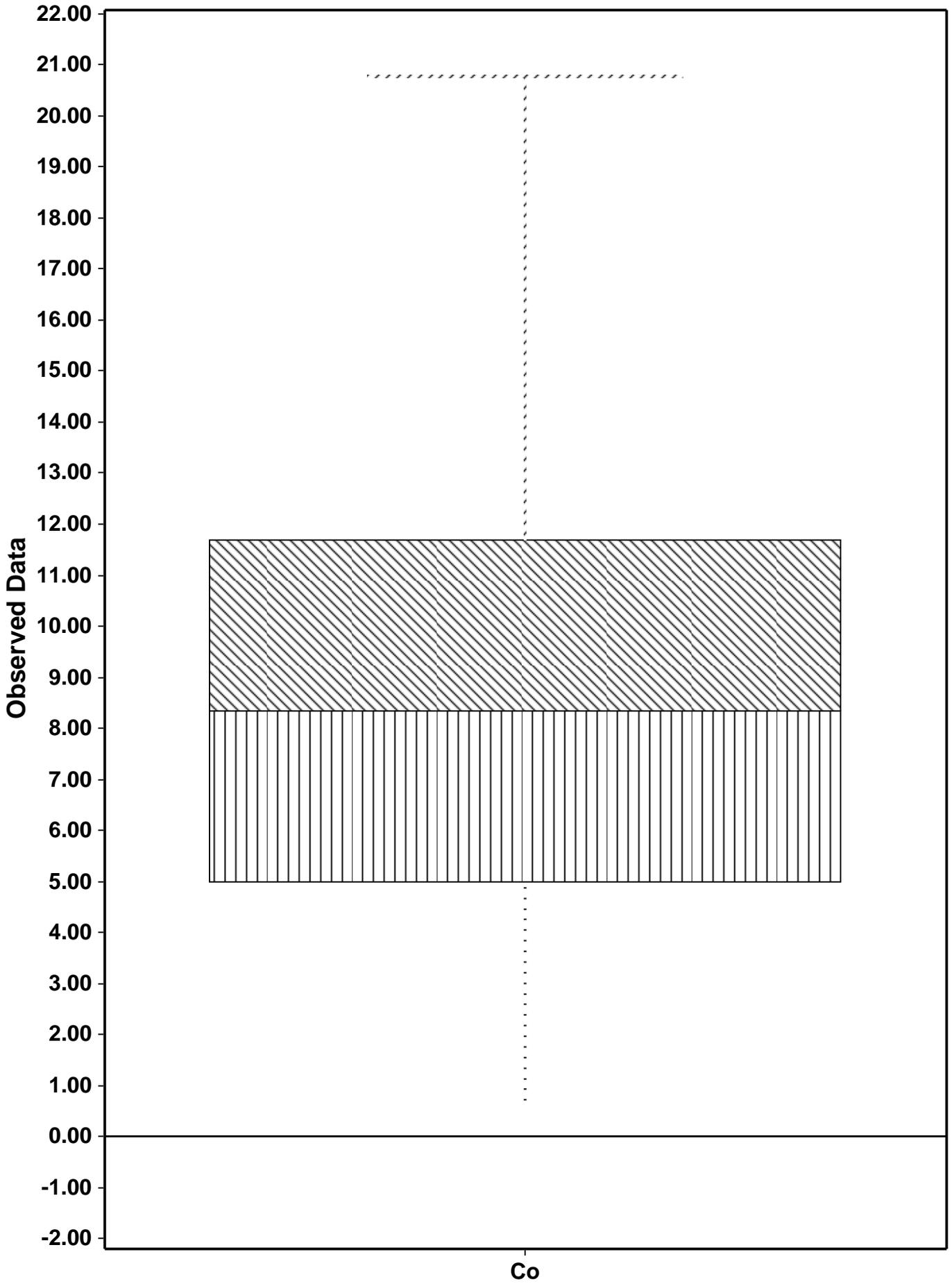
Box Plot for Cd



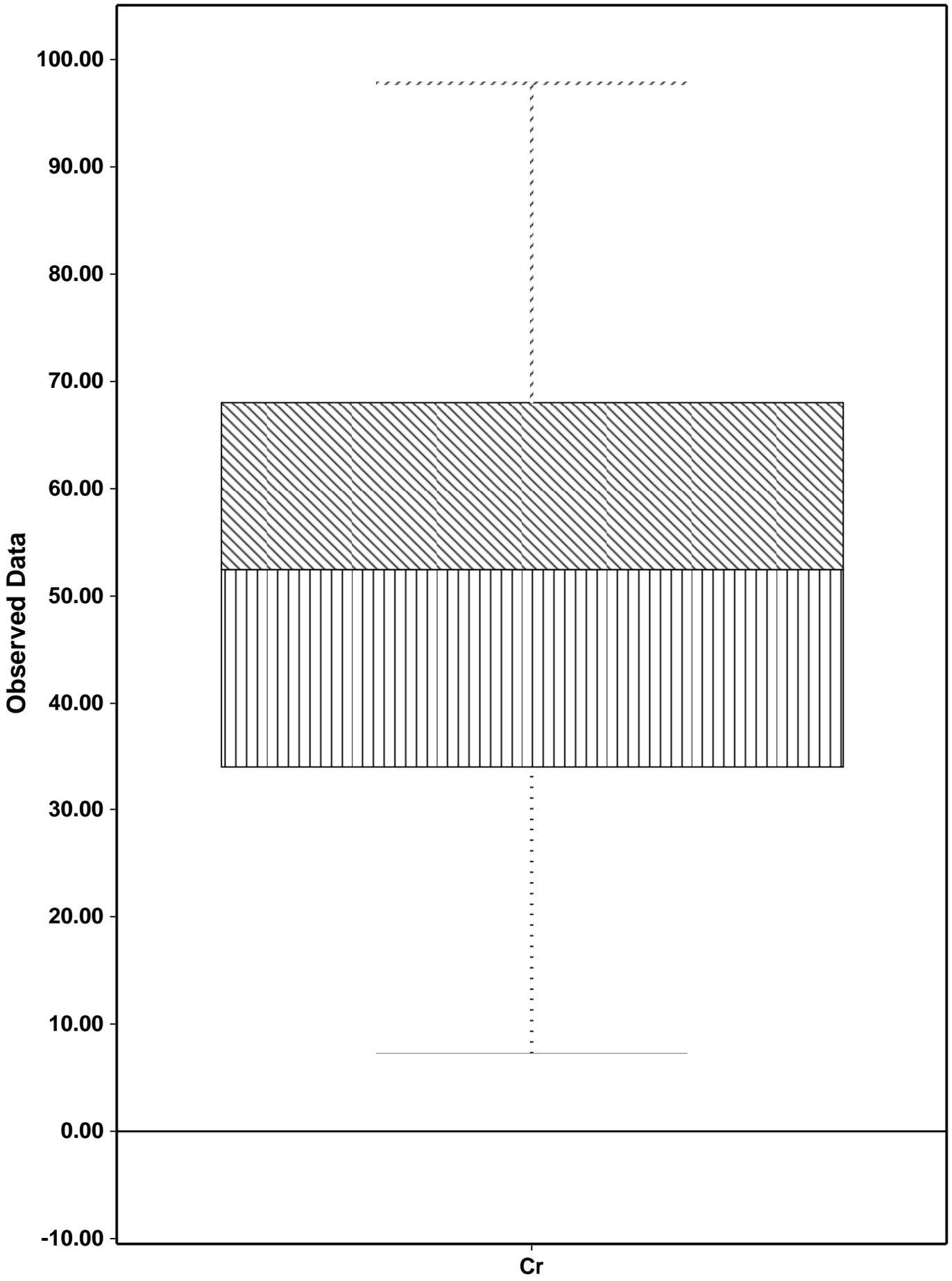
Box Plot for Ce



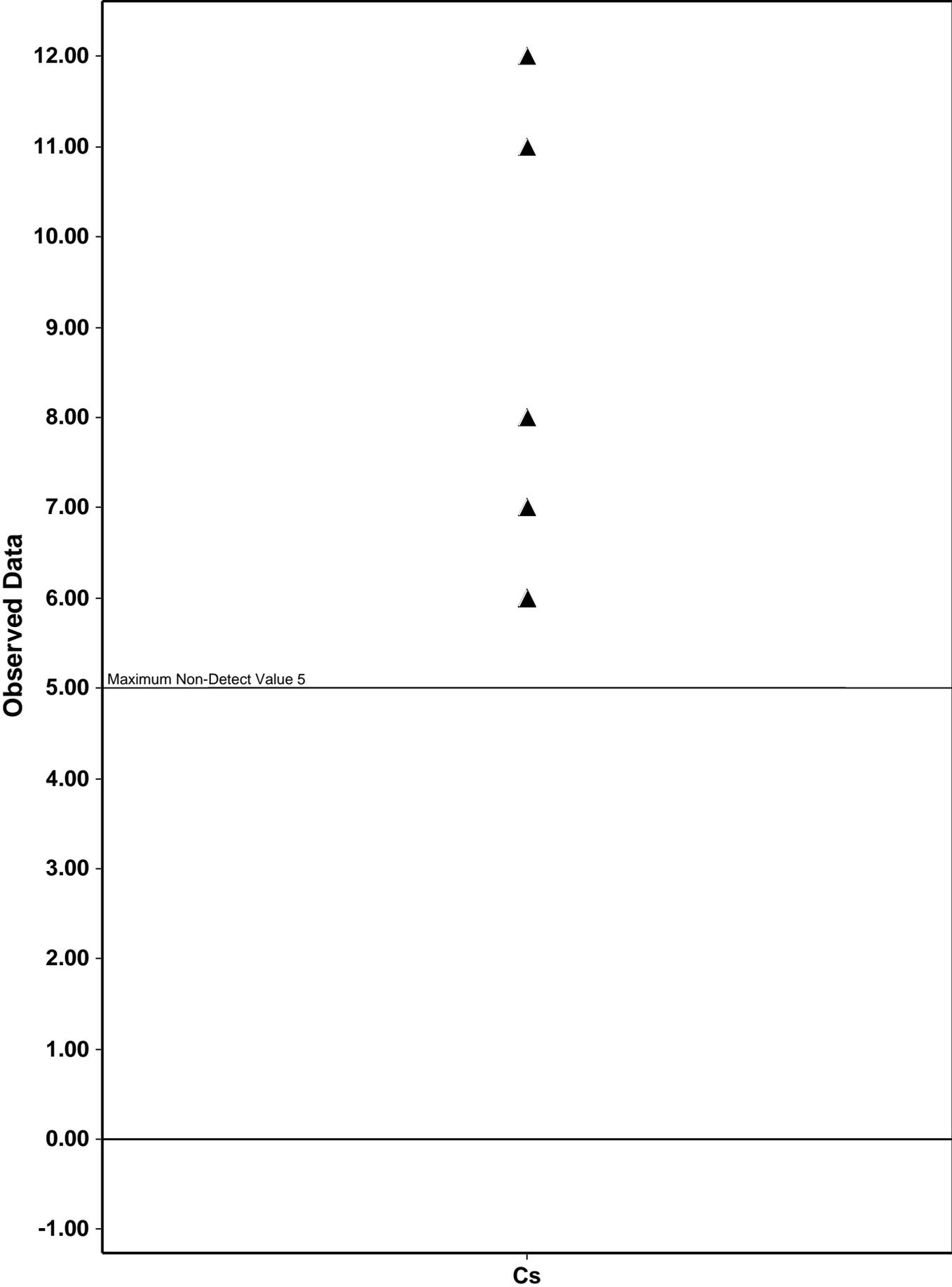
Box Plot for Co



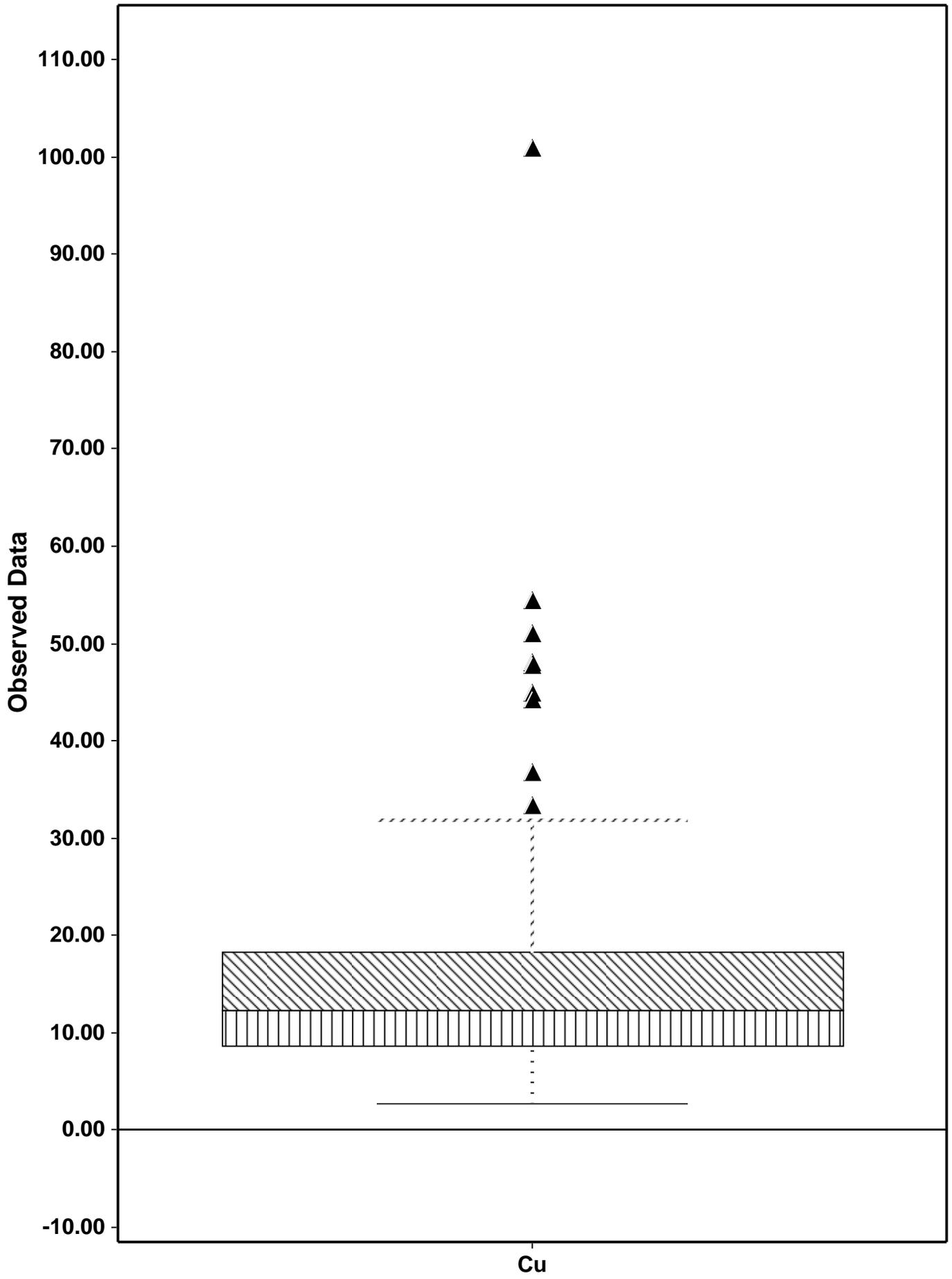
Box Plot for Cr



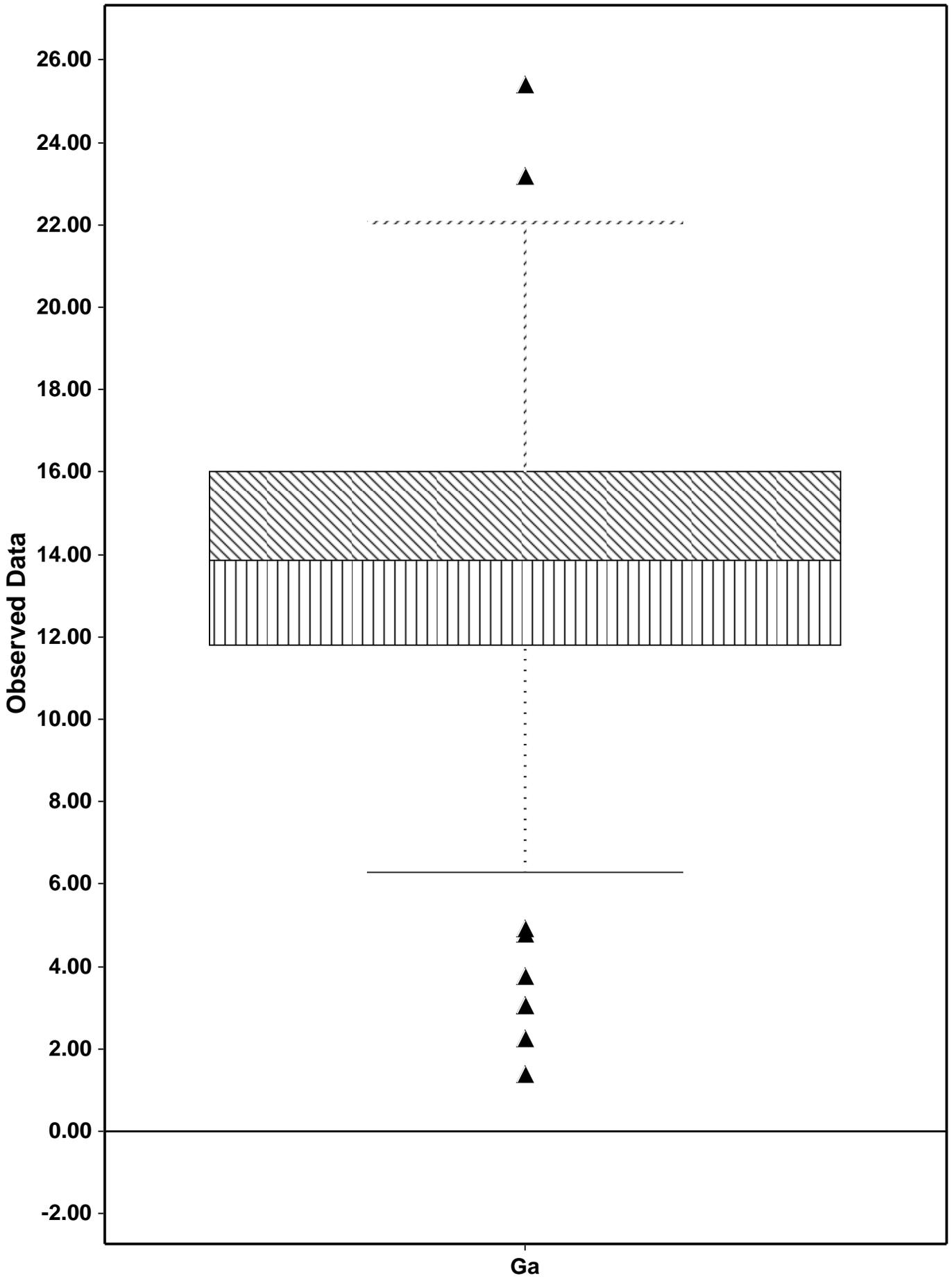
Box Plot for Cs



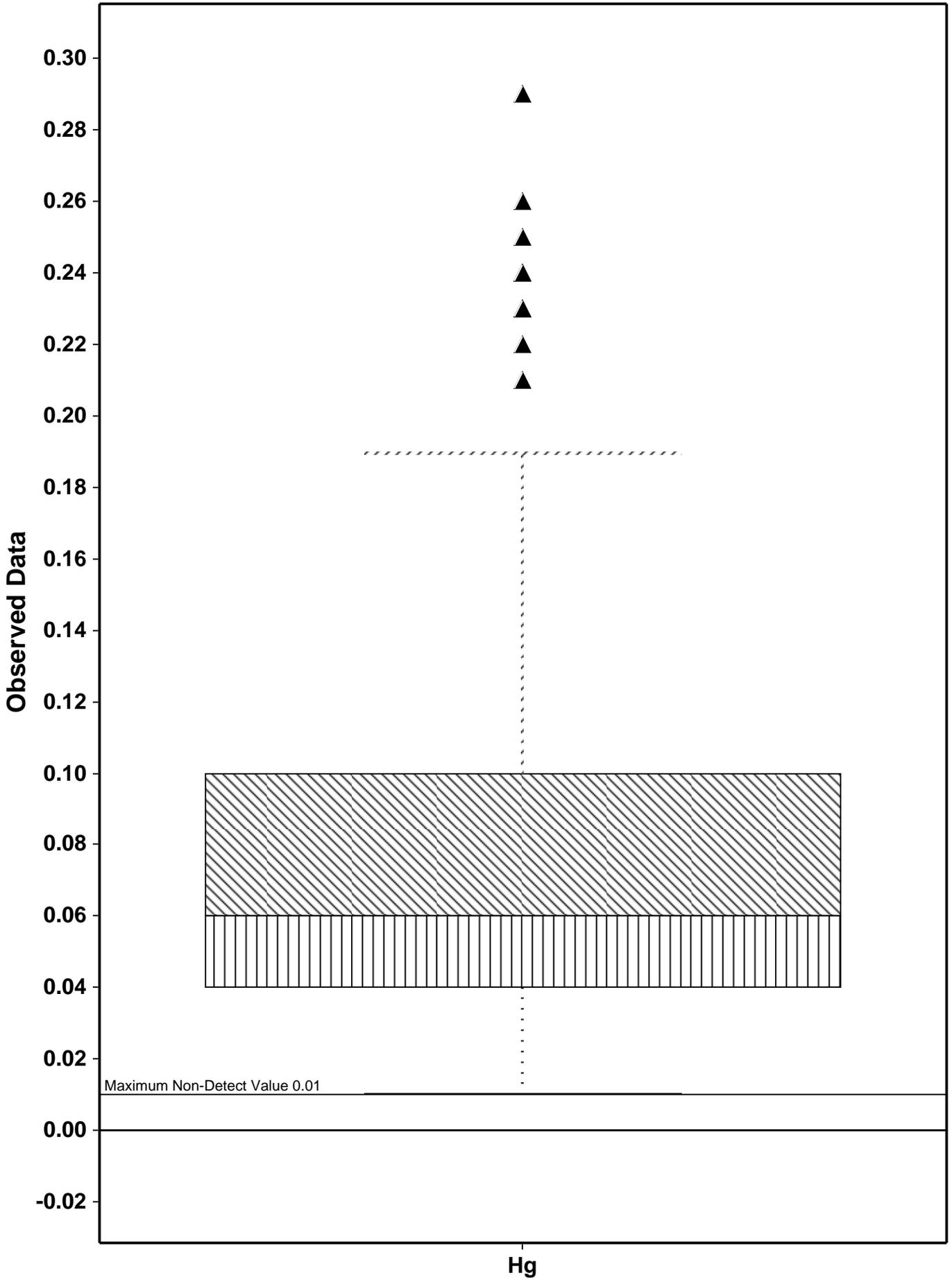
Box Plot for Cu



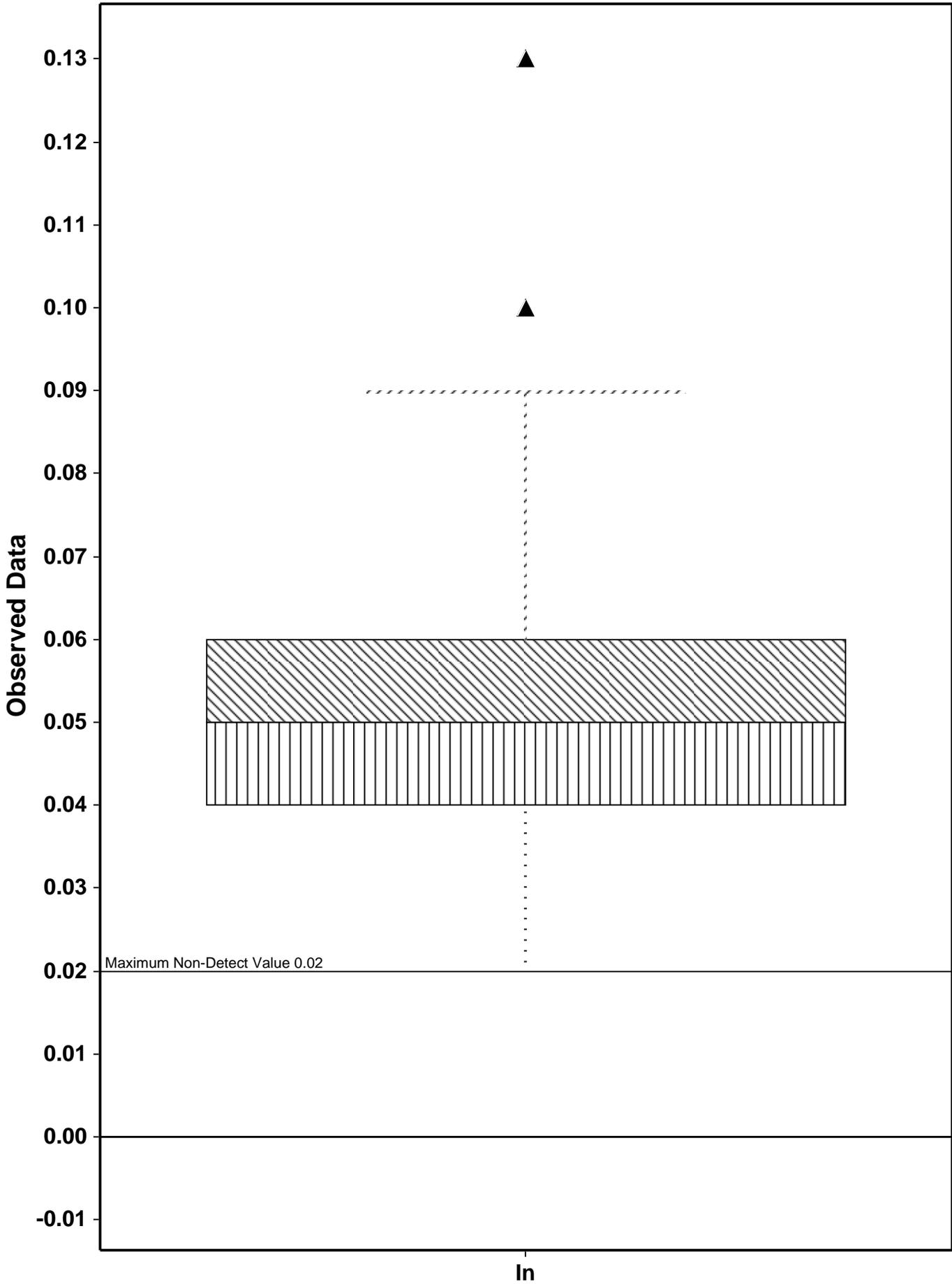
Box Plot for Ga



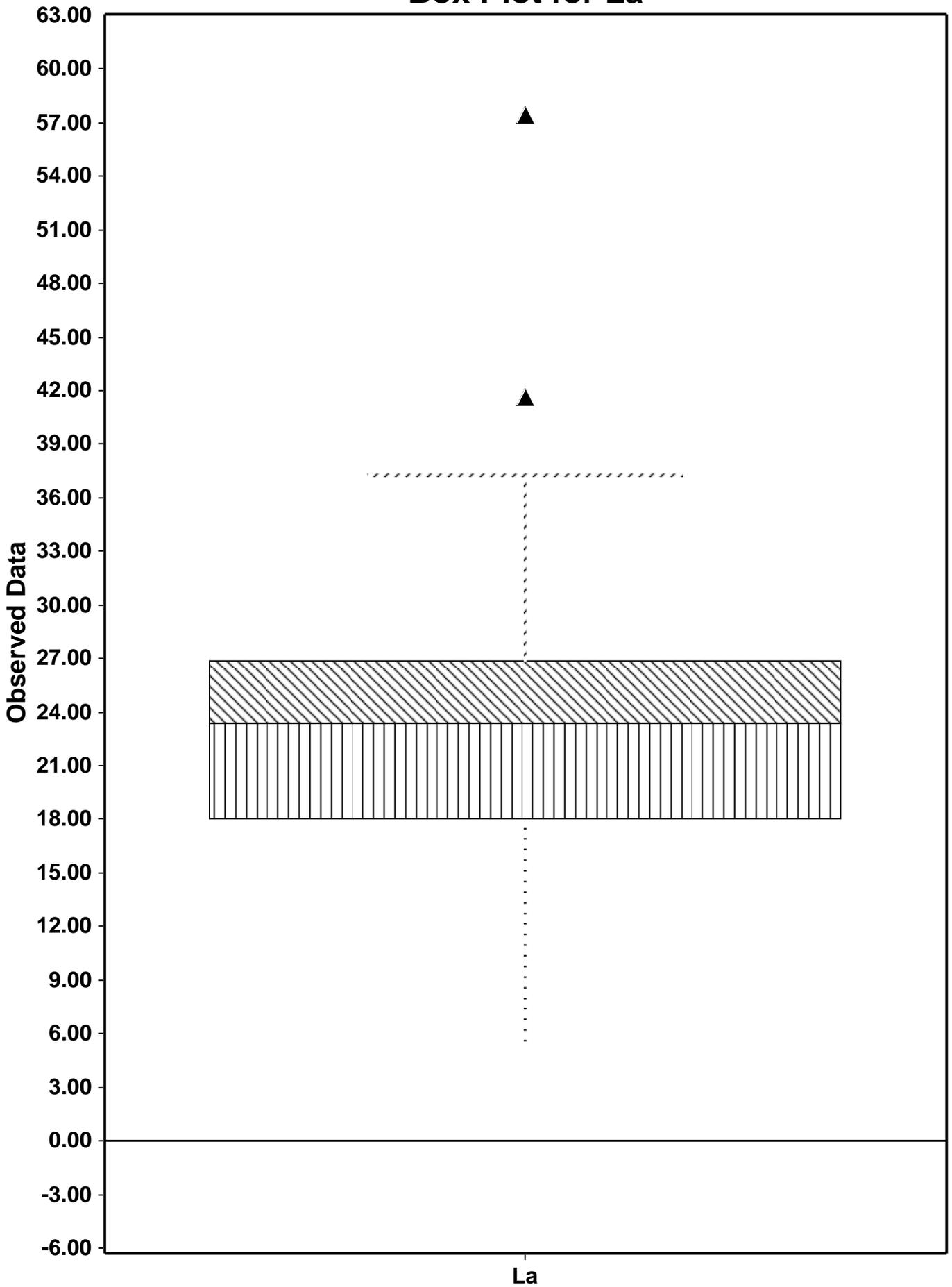
Box Plot for Hg



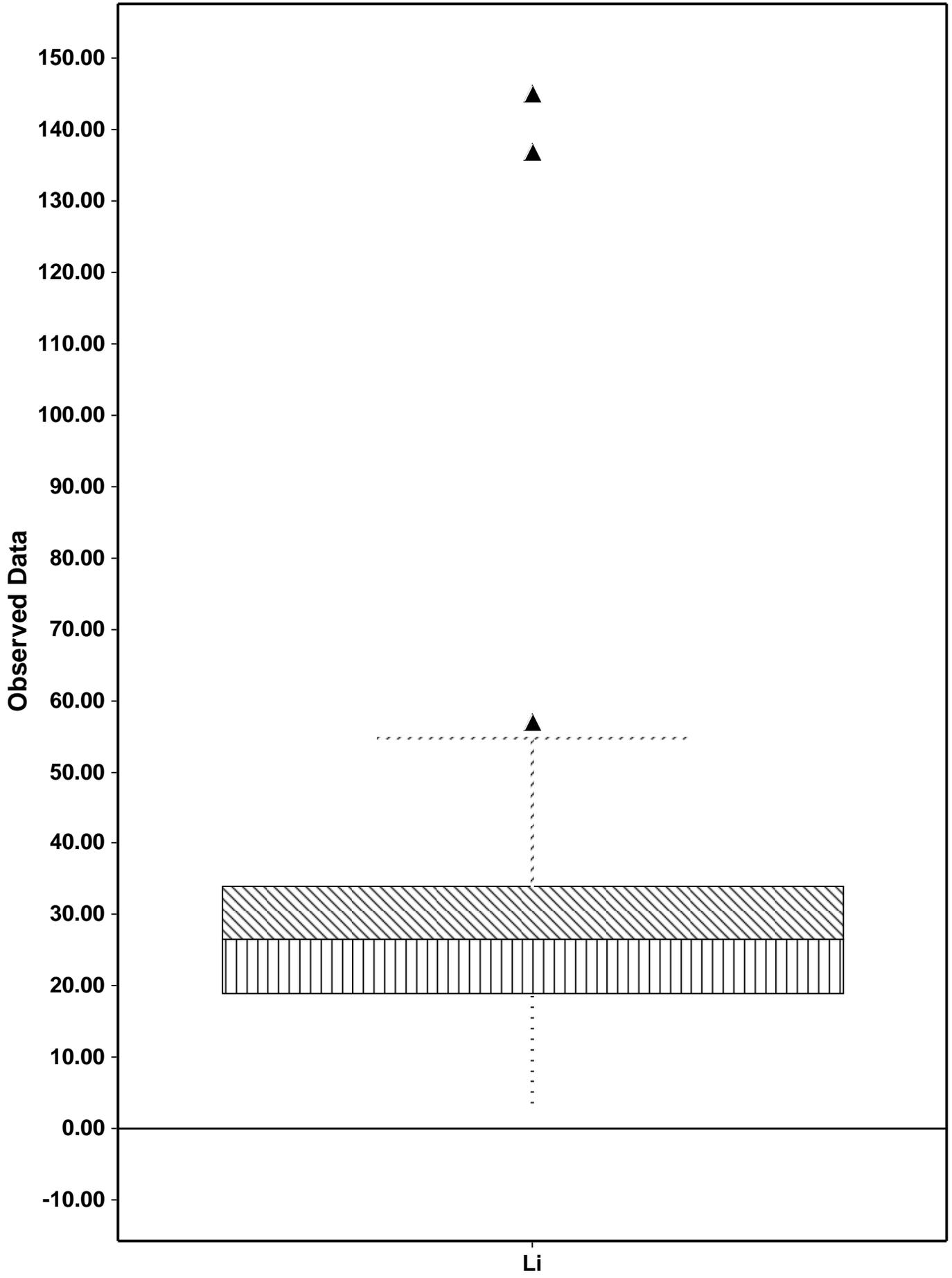
Box Plot for In



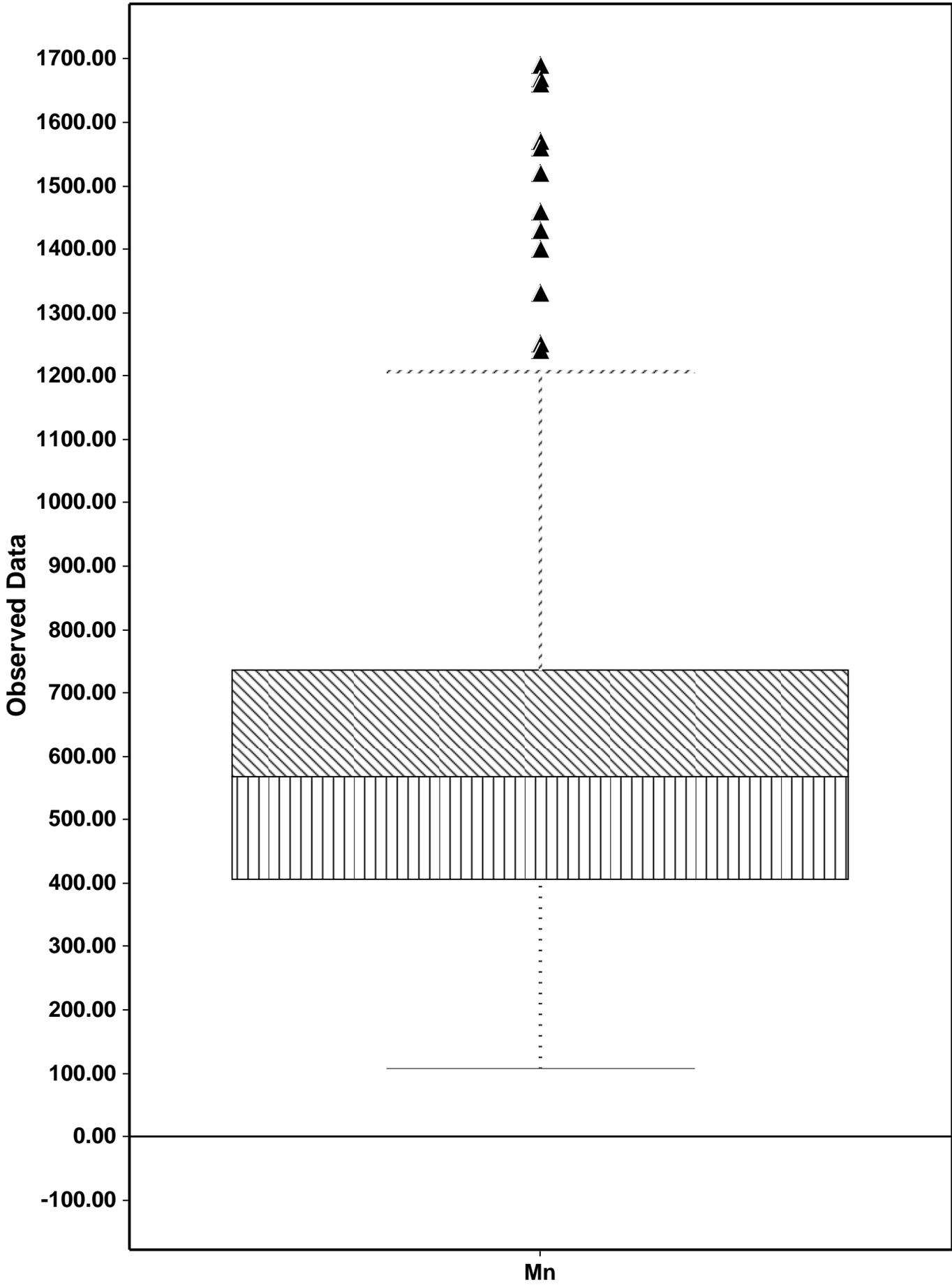
Box Plot for La



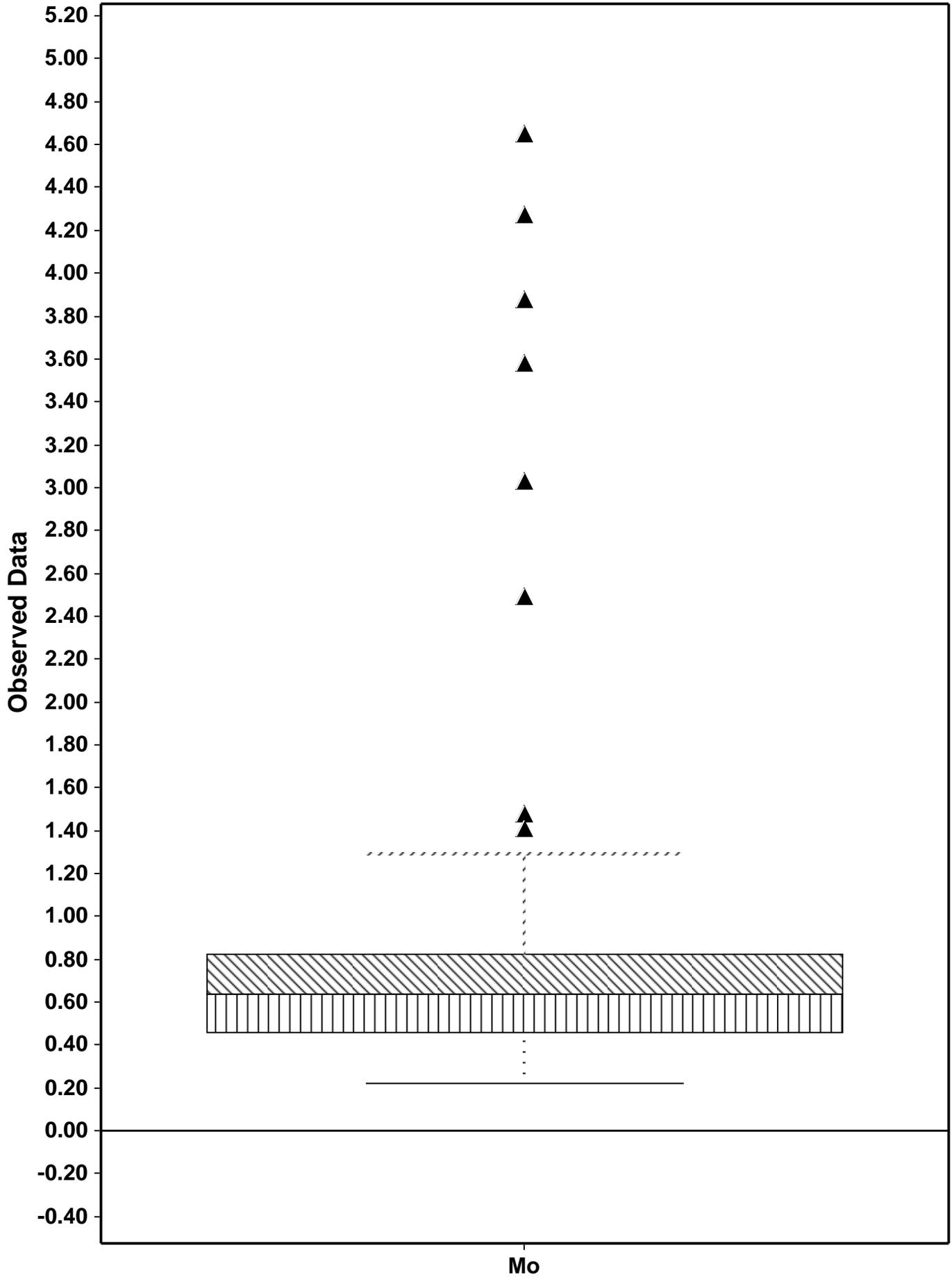
Box Plot for Li



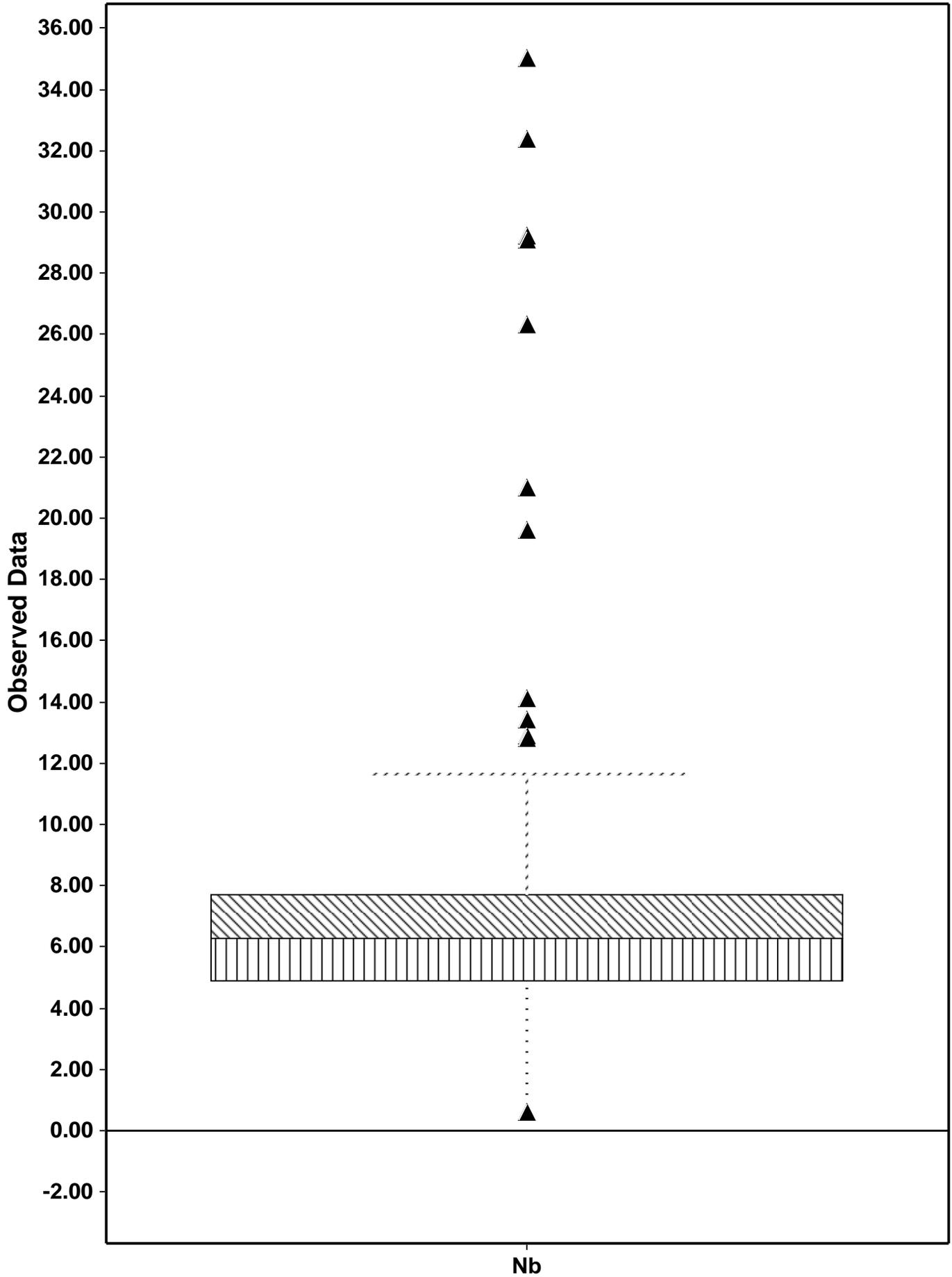
Box Plot for Mn



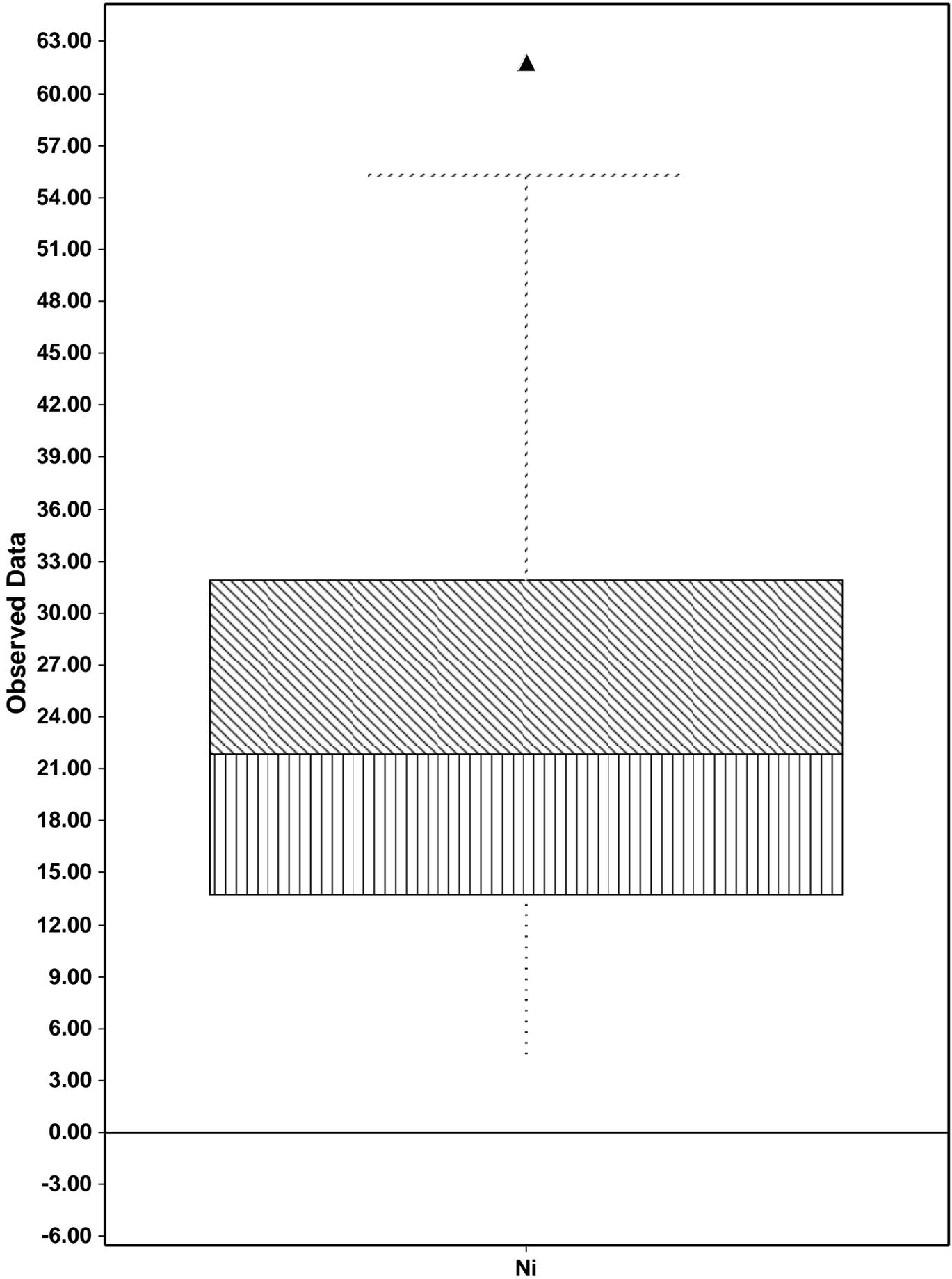
Box Plot for Mo



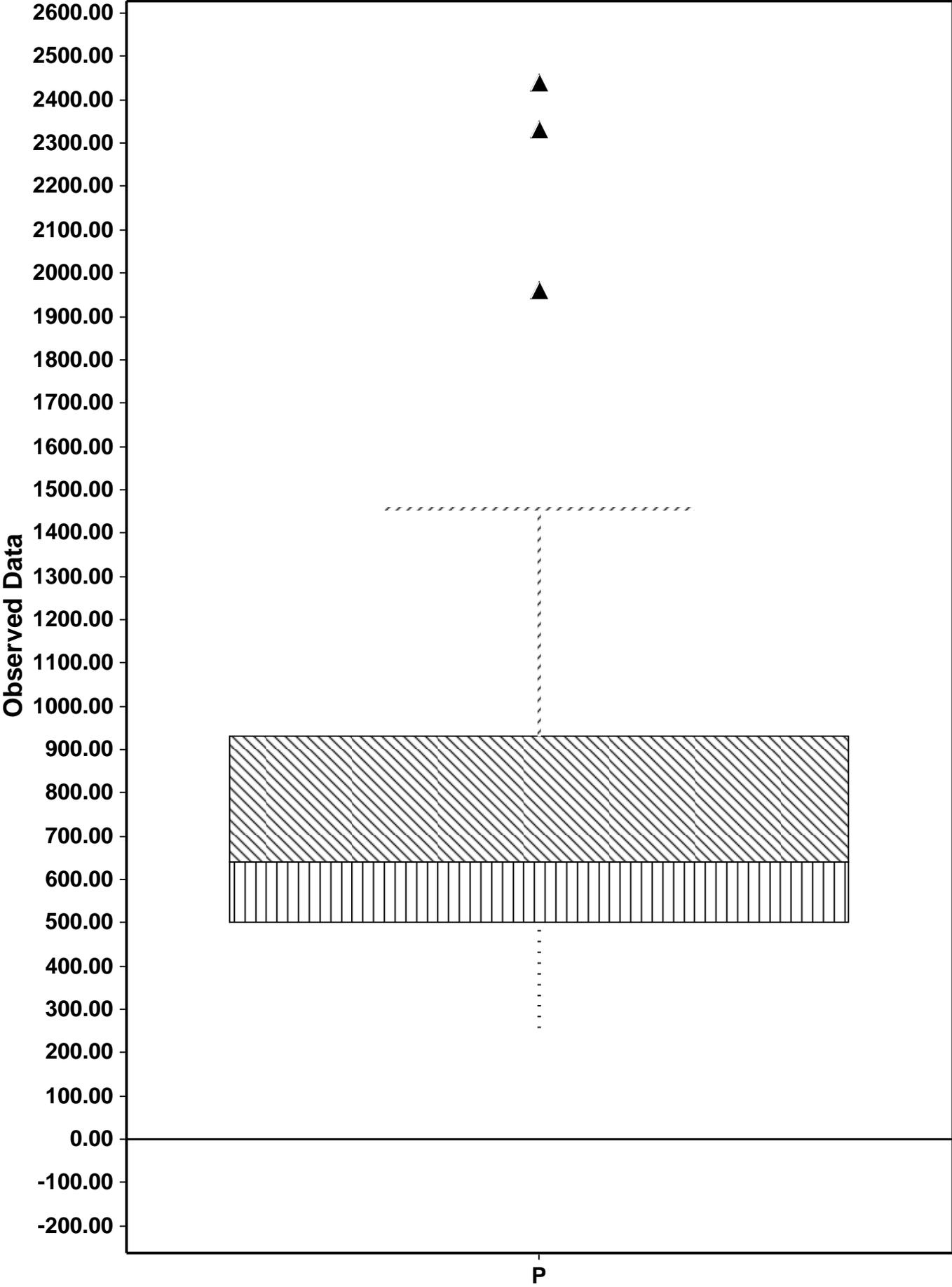
Box Plot for Nb



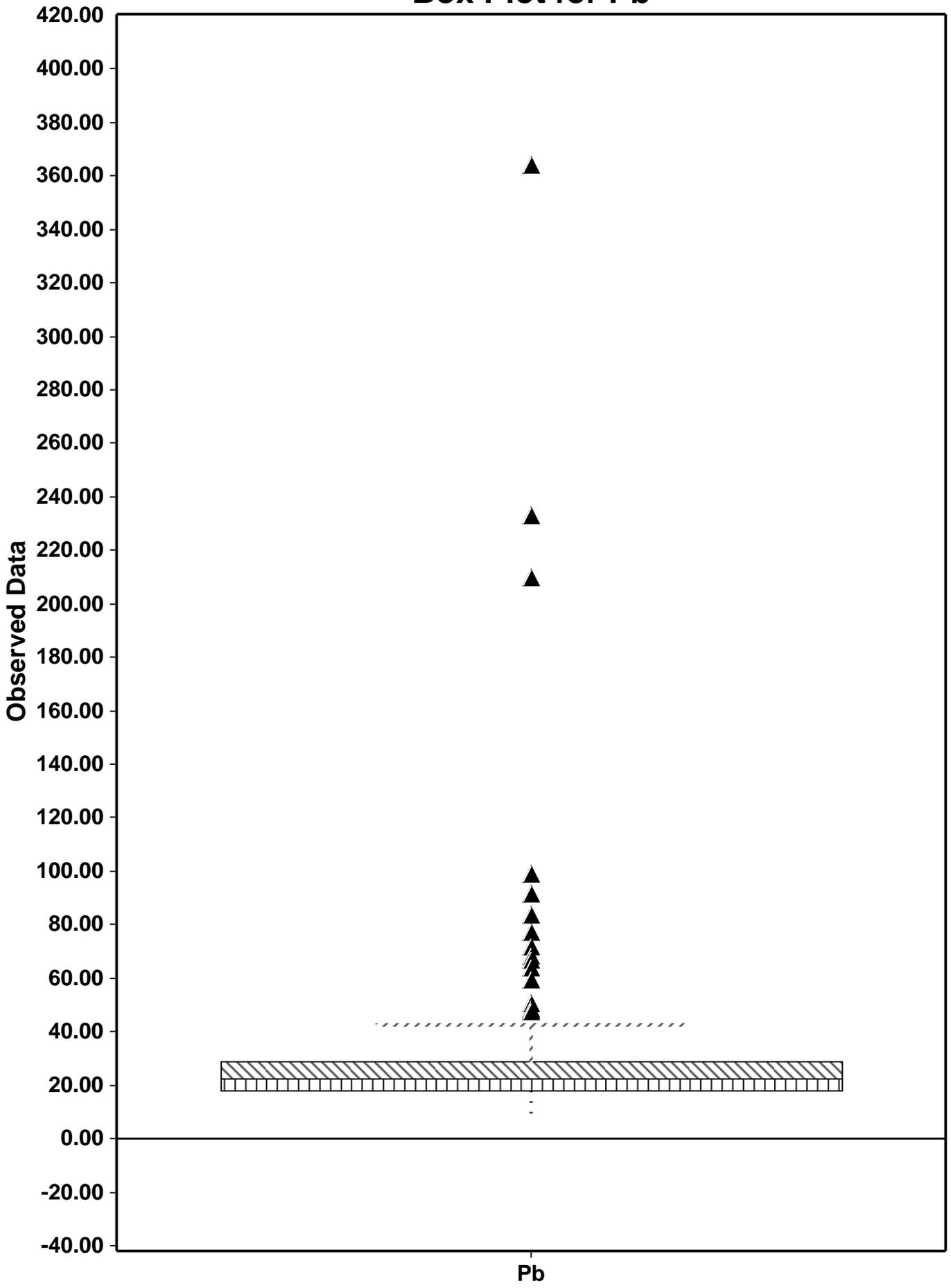
Box Plot for Ni



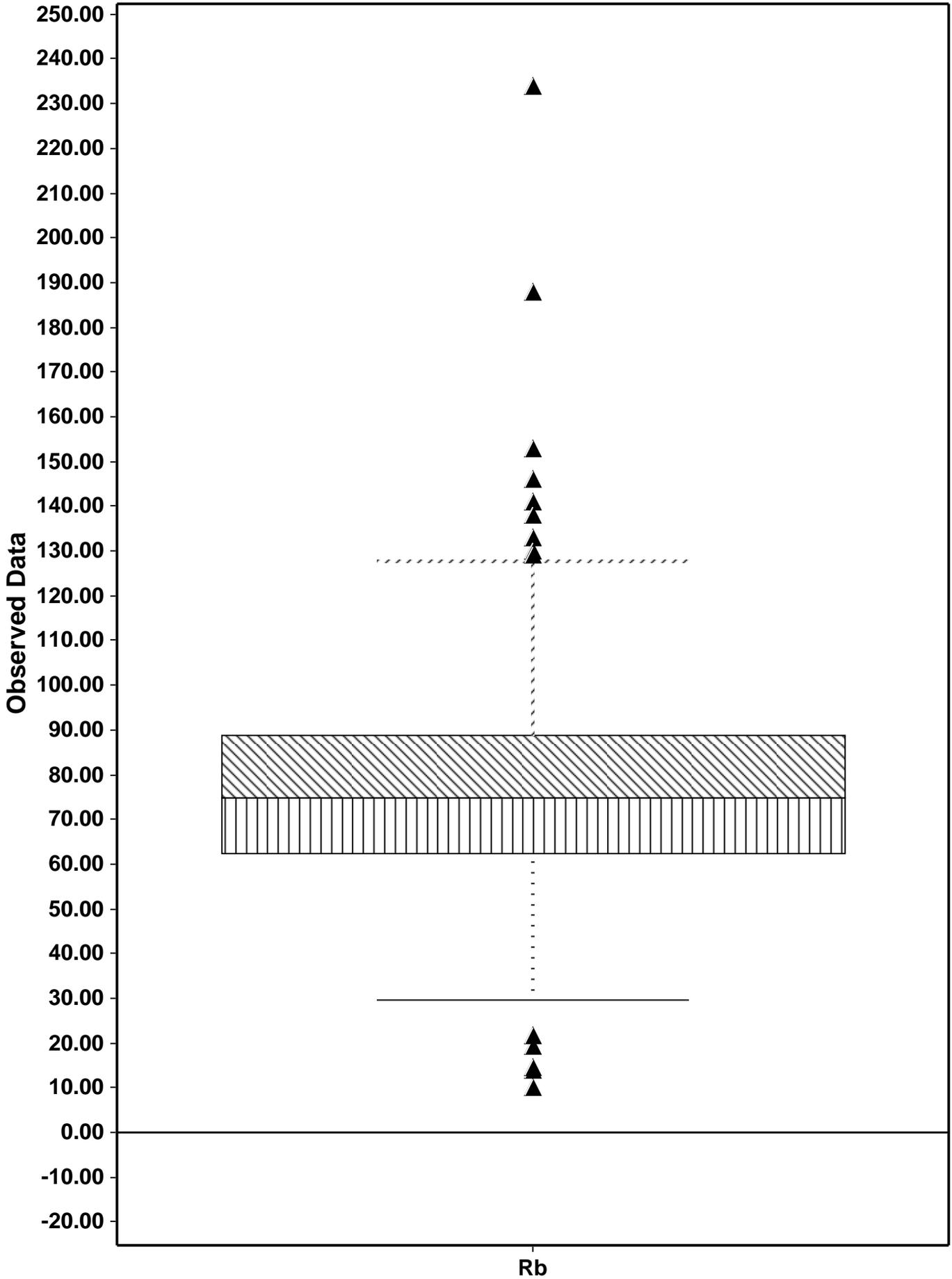
Box Plot for P



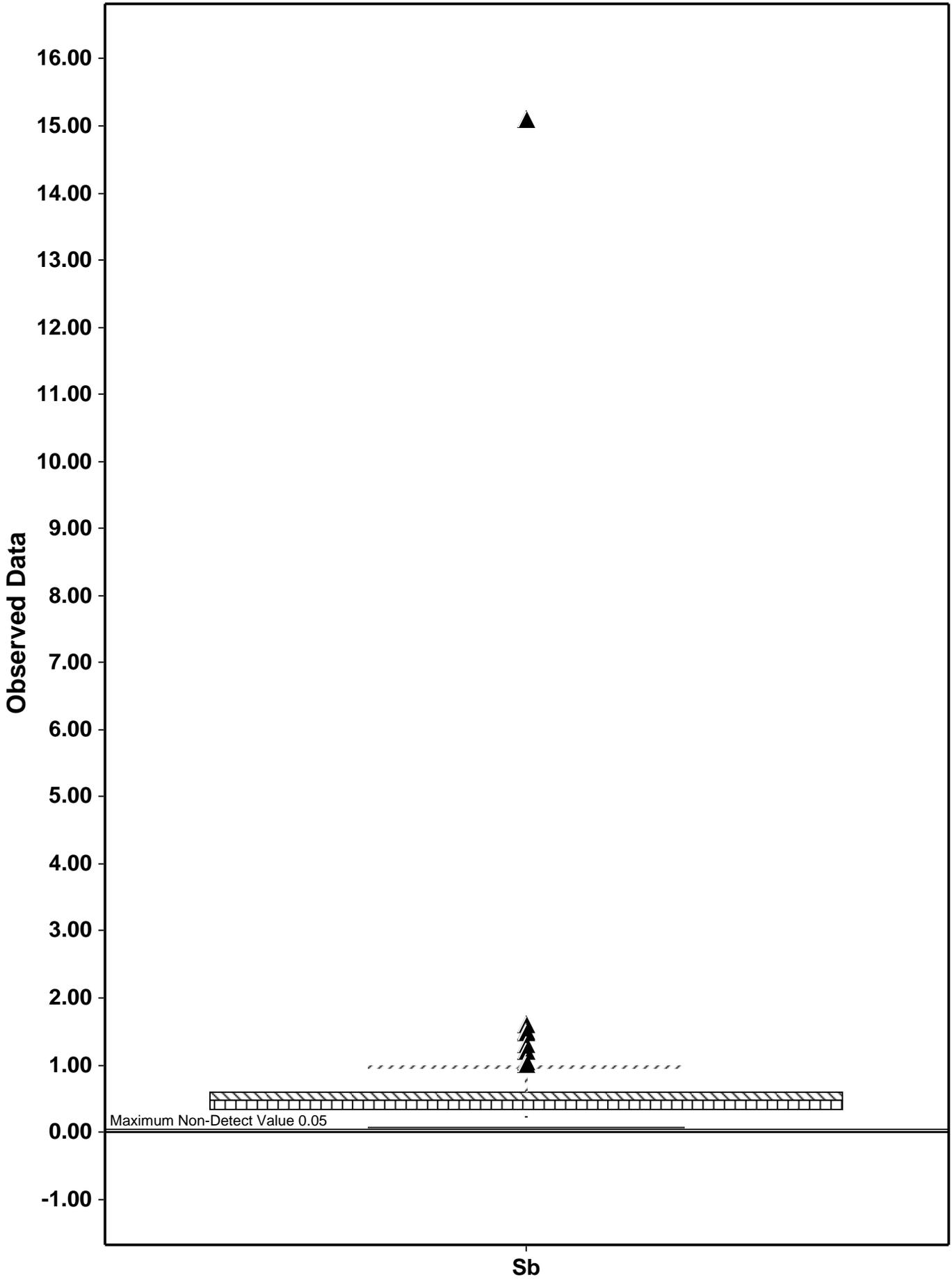
Box Plot for Pb



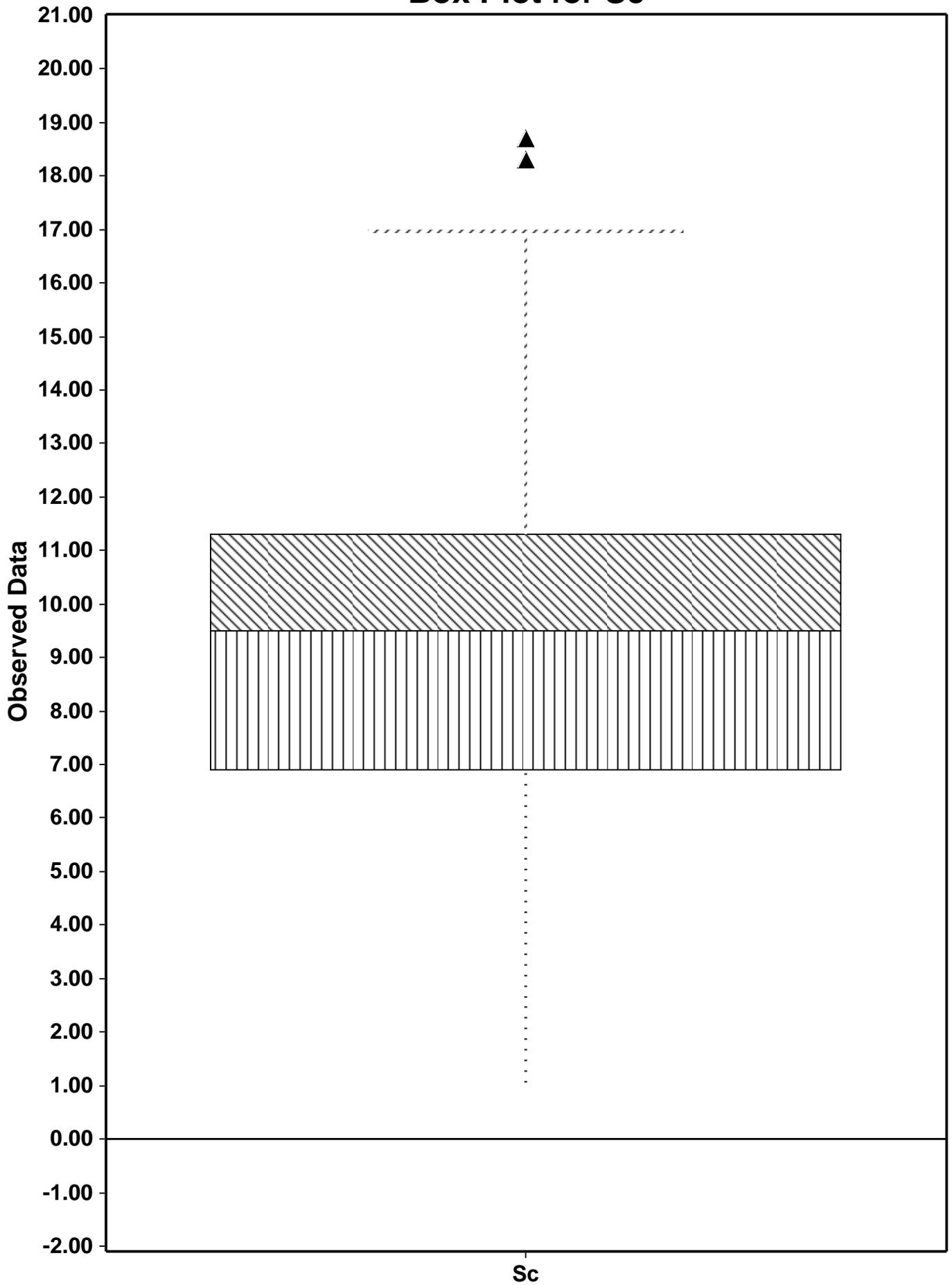
Box Plot for Rb



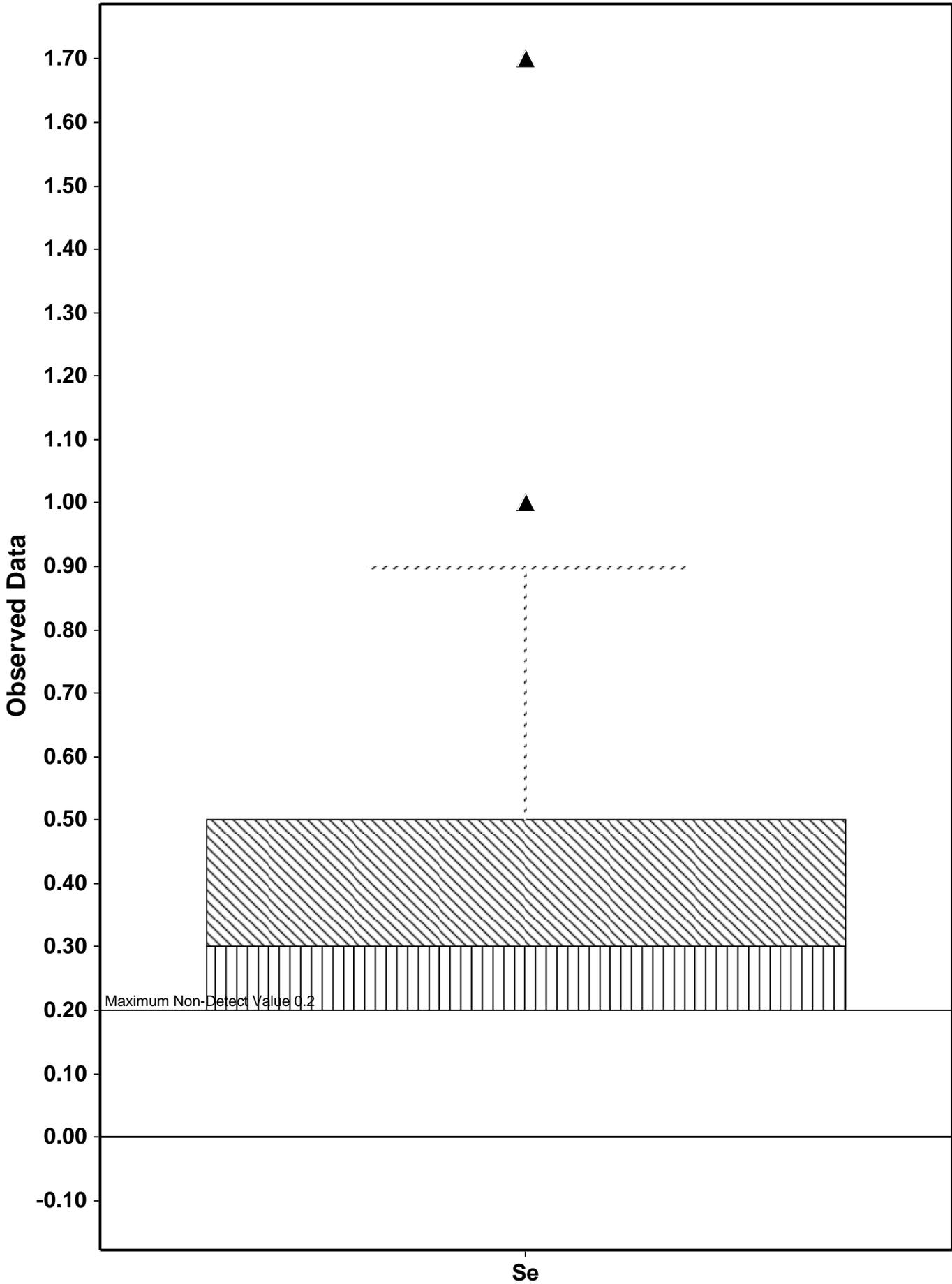
Box Plot for Sb



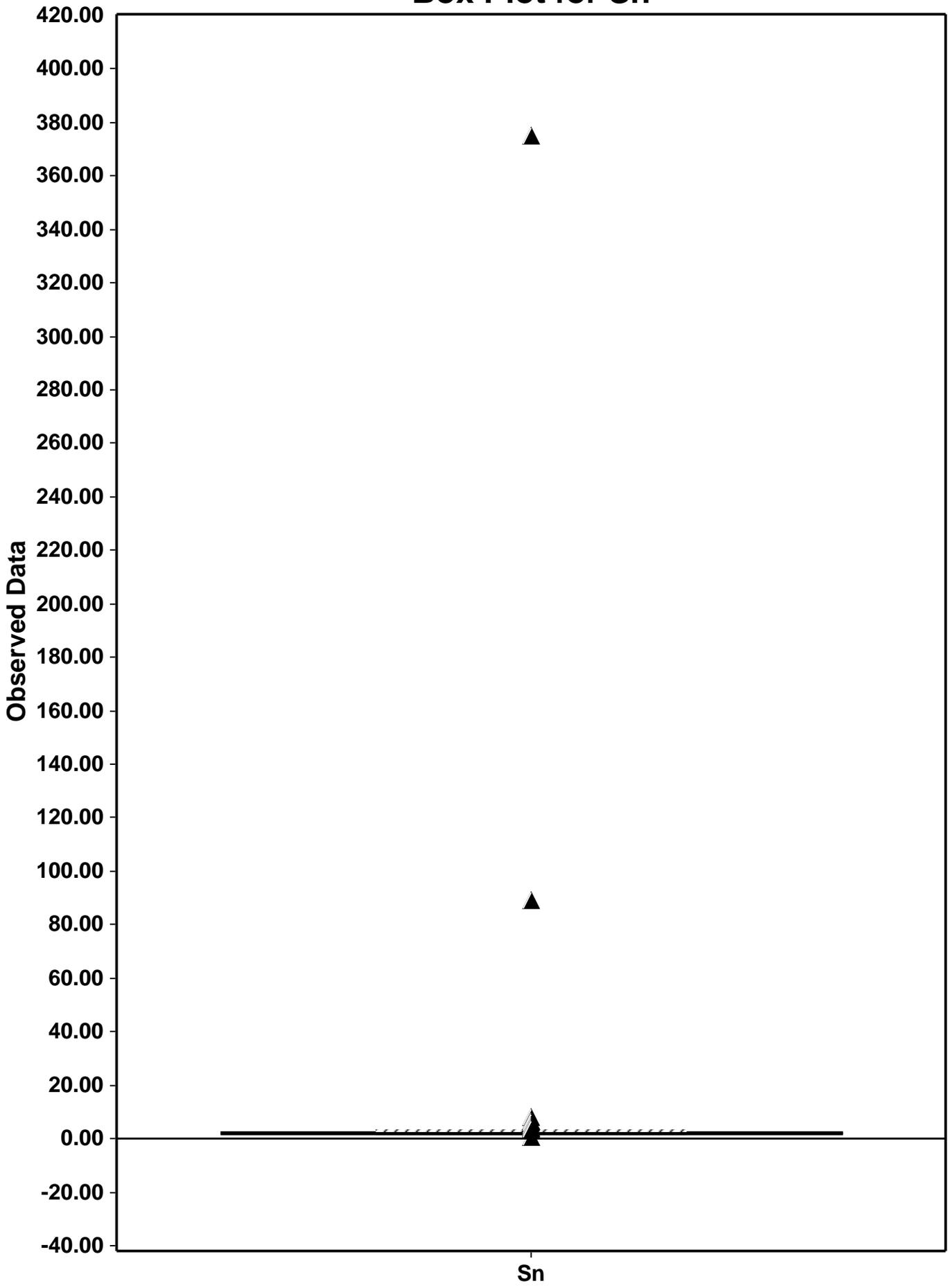
Box Plot for Sc



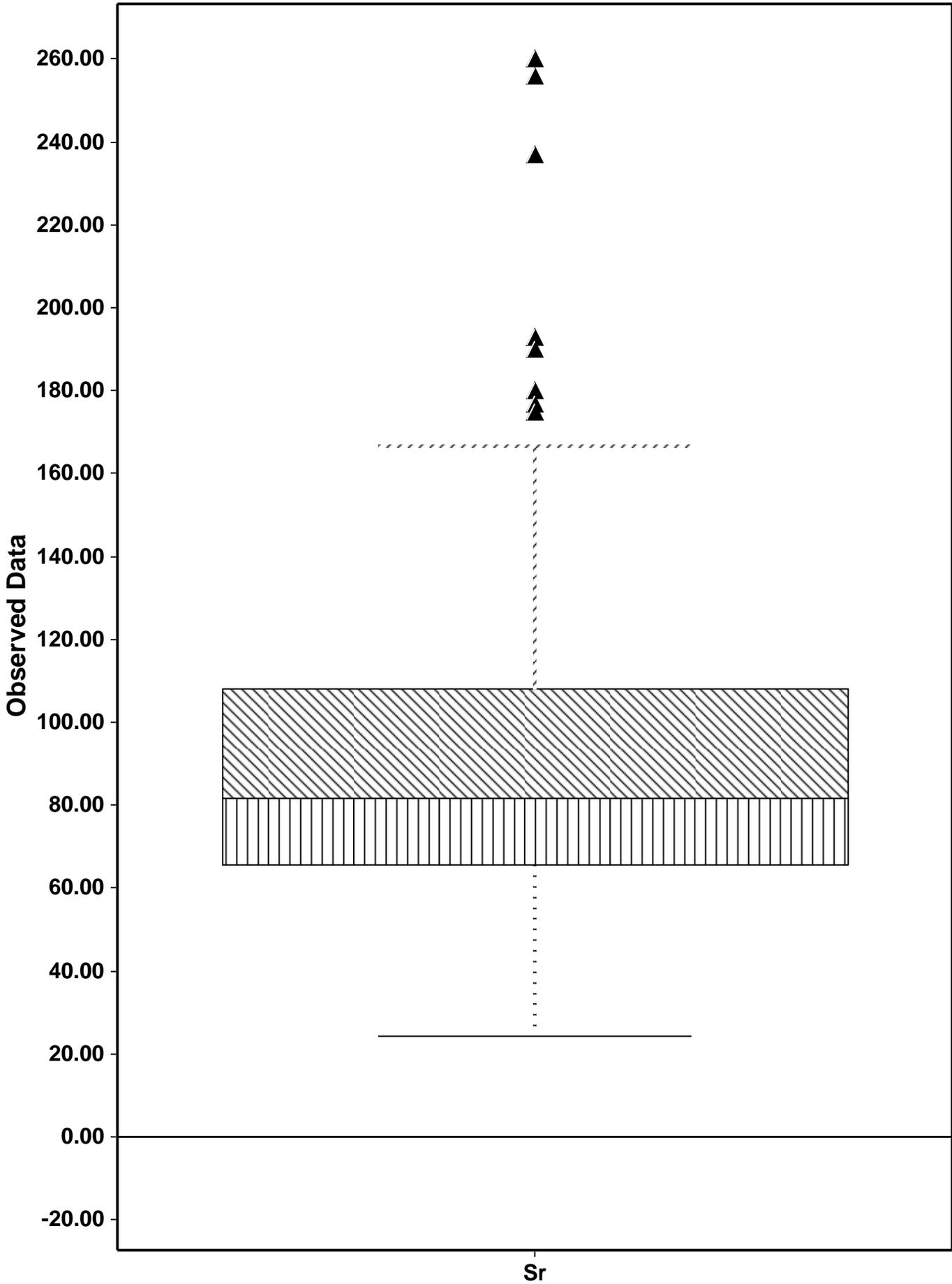
Box Plot for Se



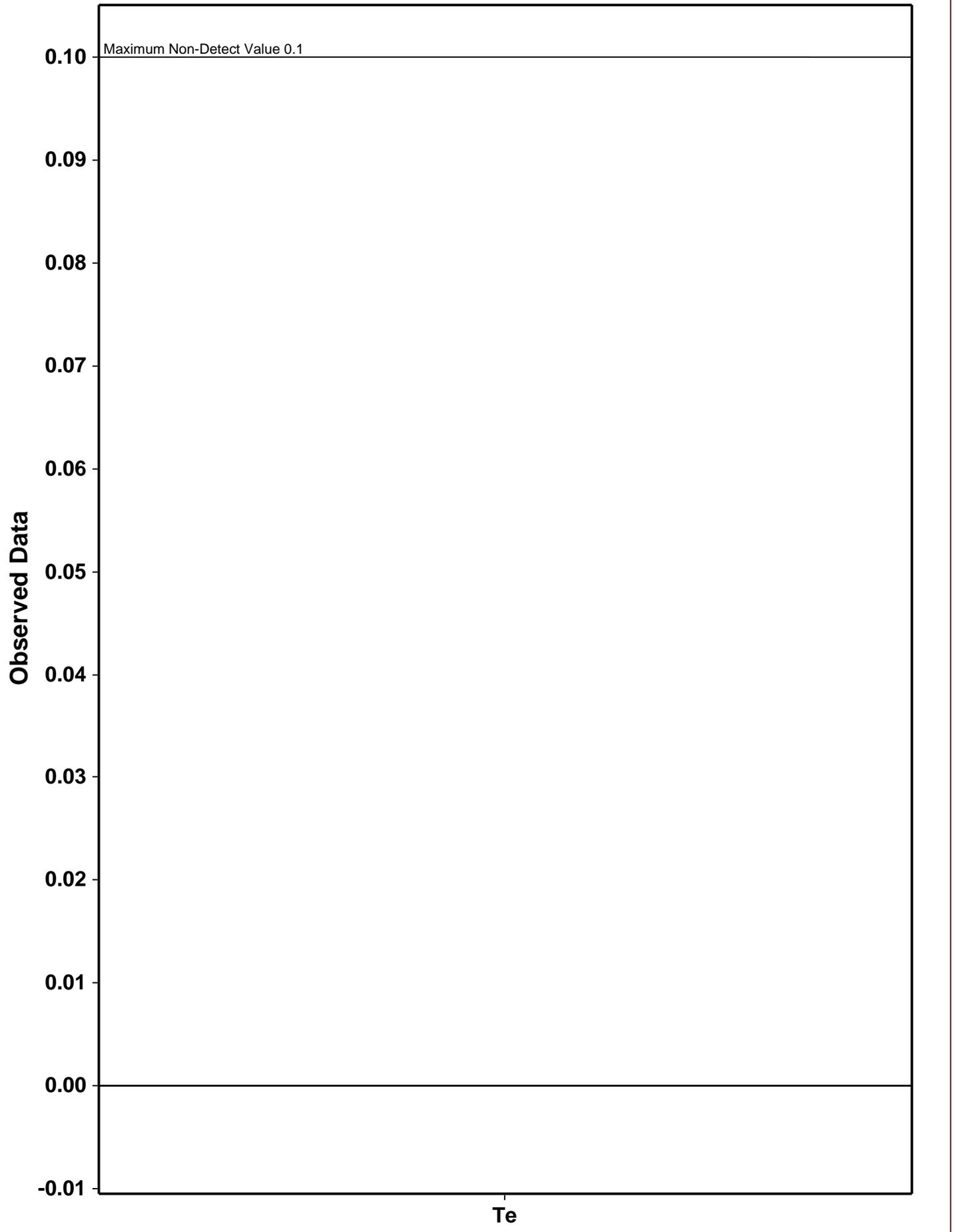
Box Plot for Sn



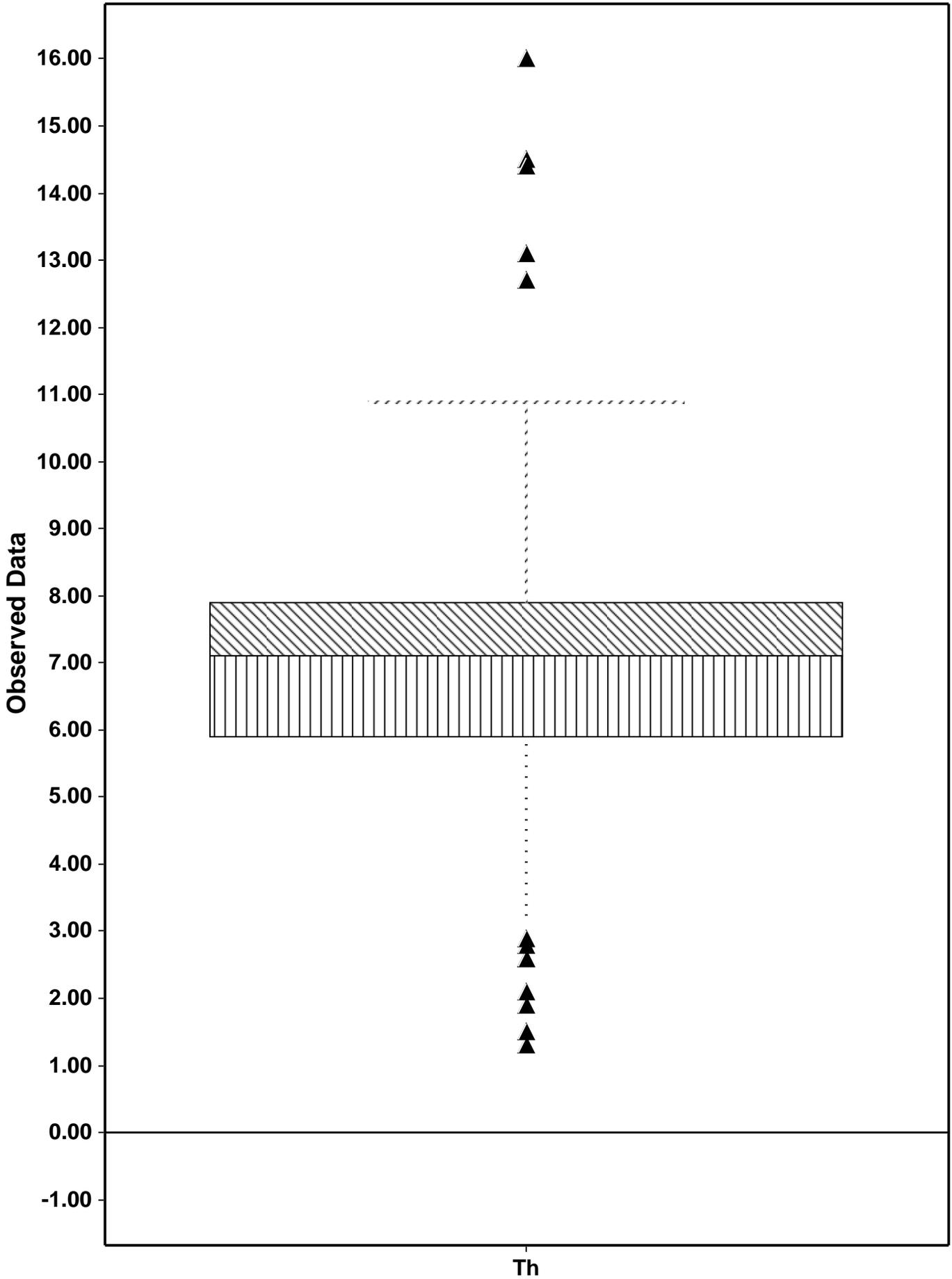
Box Plot for Sr



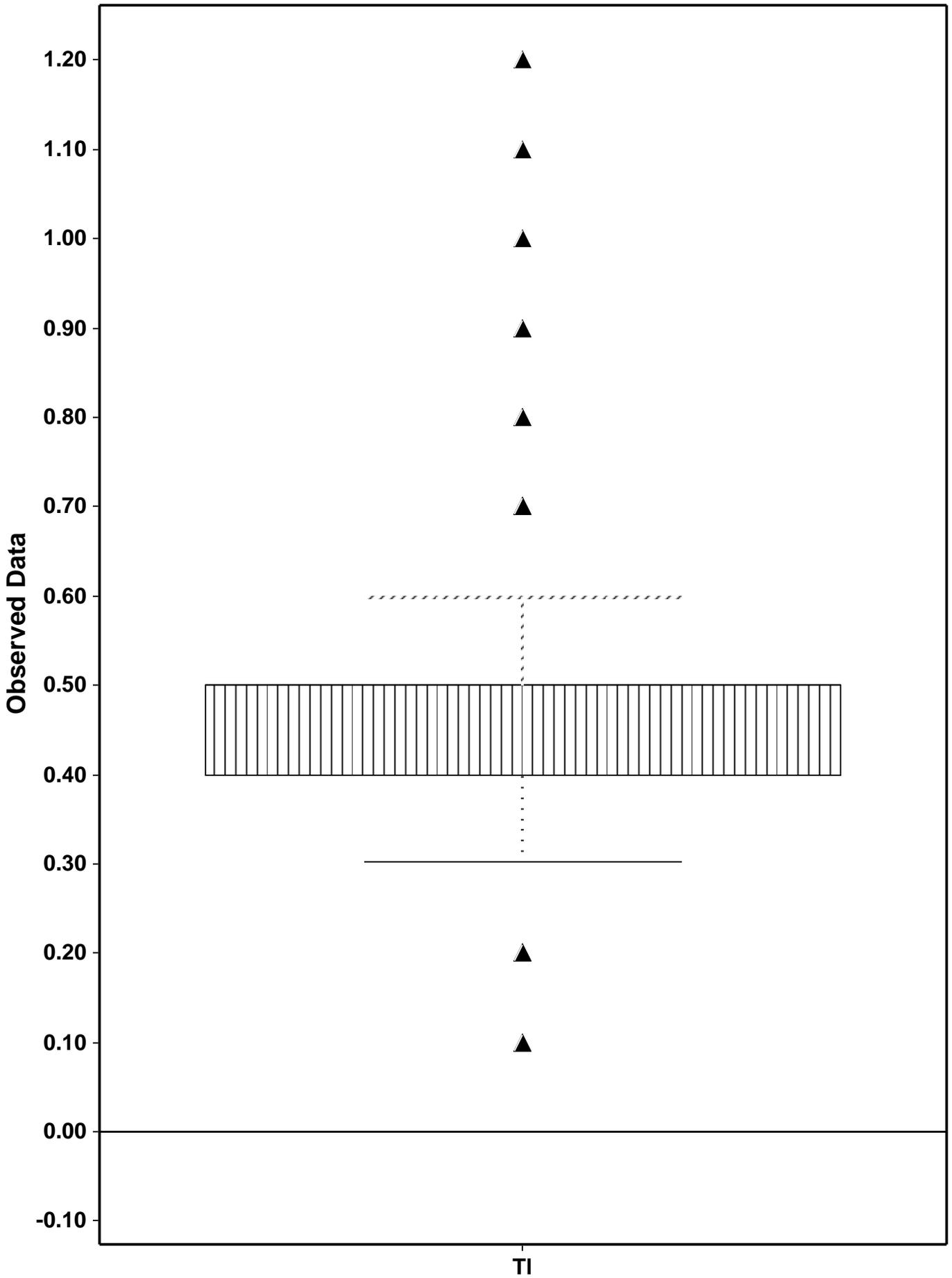
Box Plot for Te



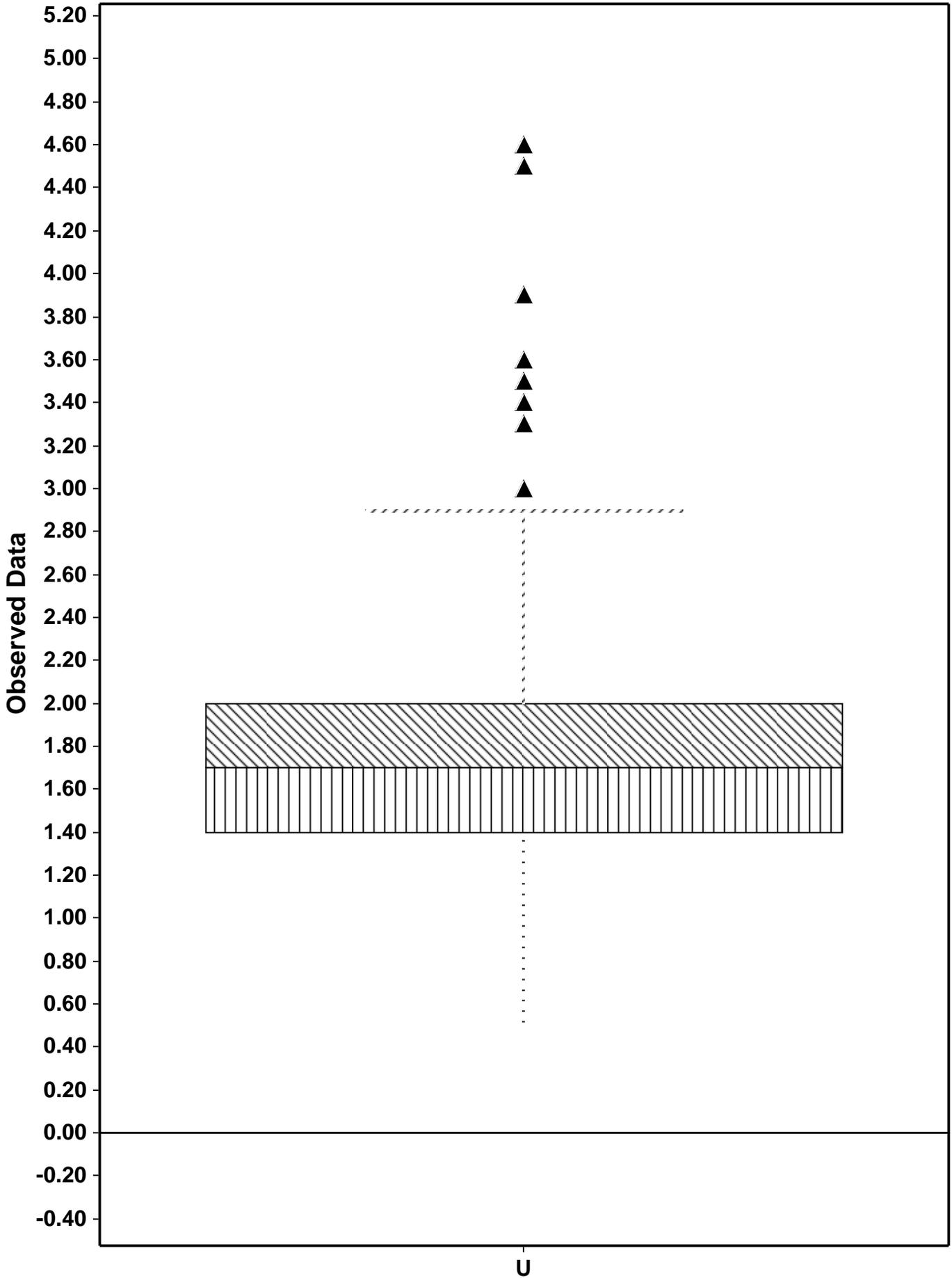
Box Plot for Th



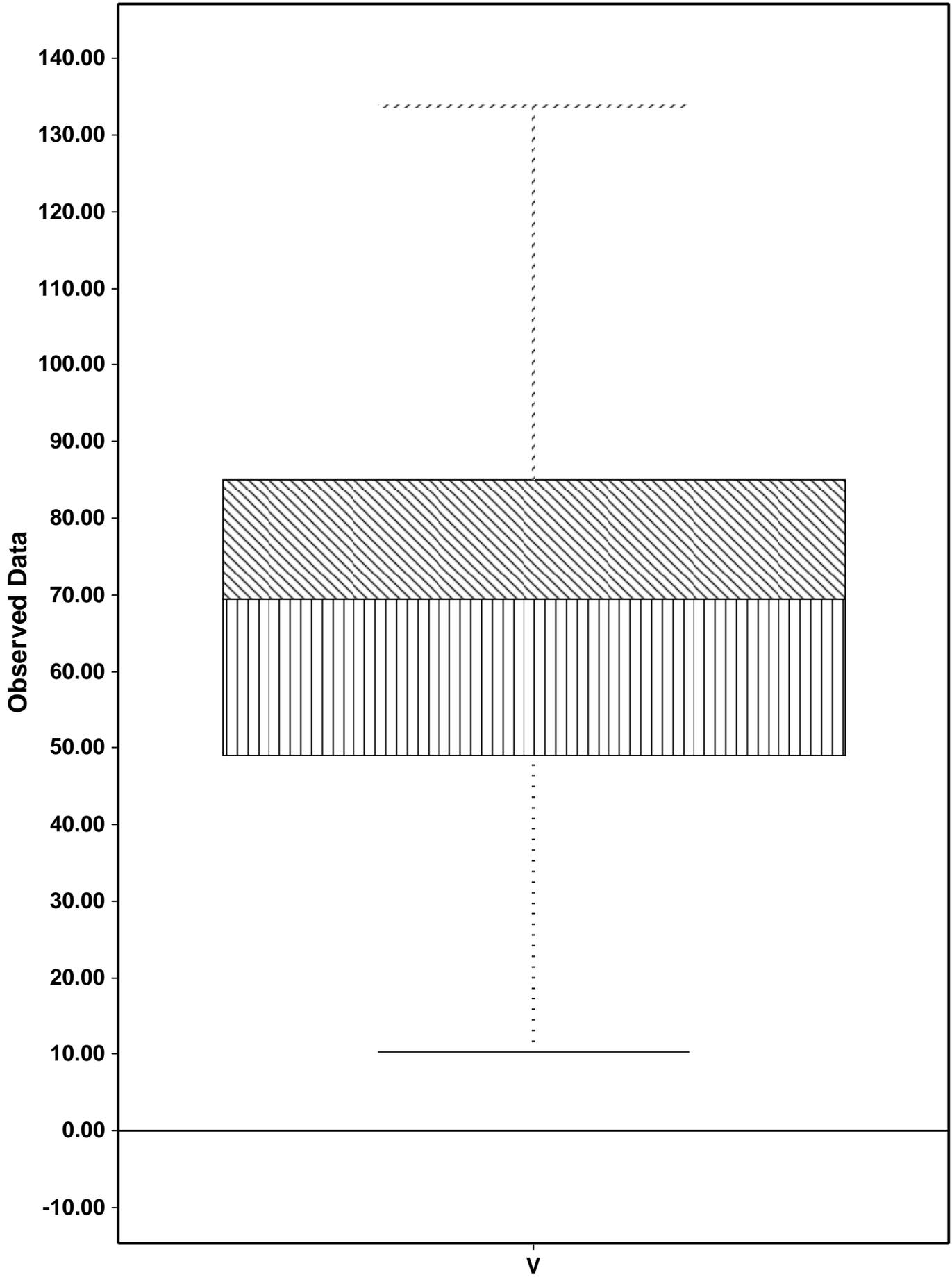
Box Plot for TI



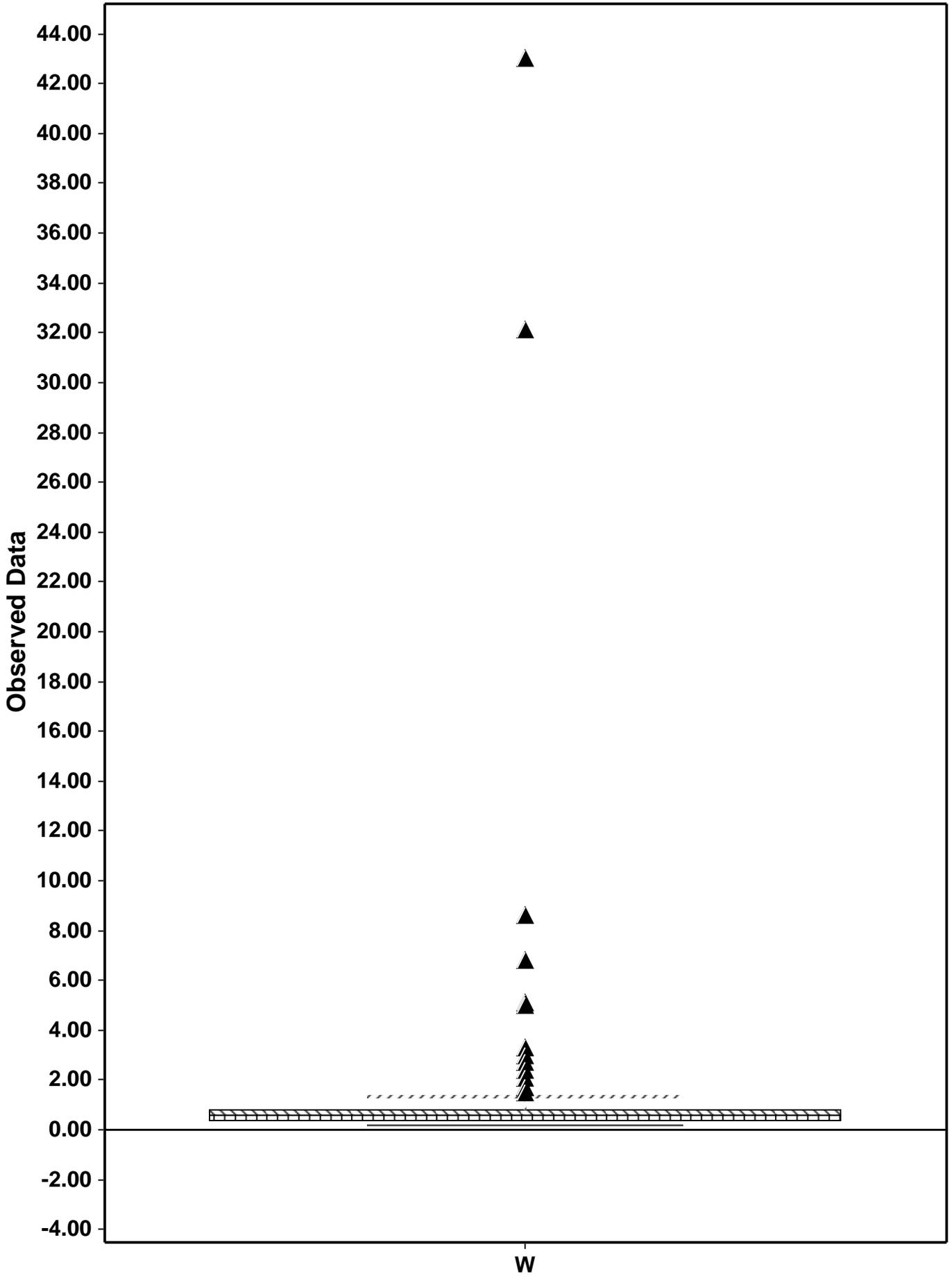
Box Plot for U



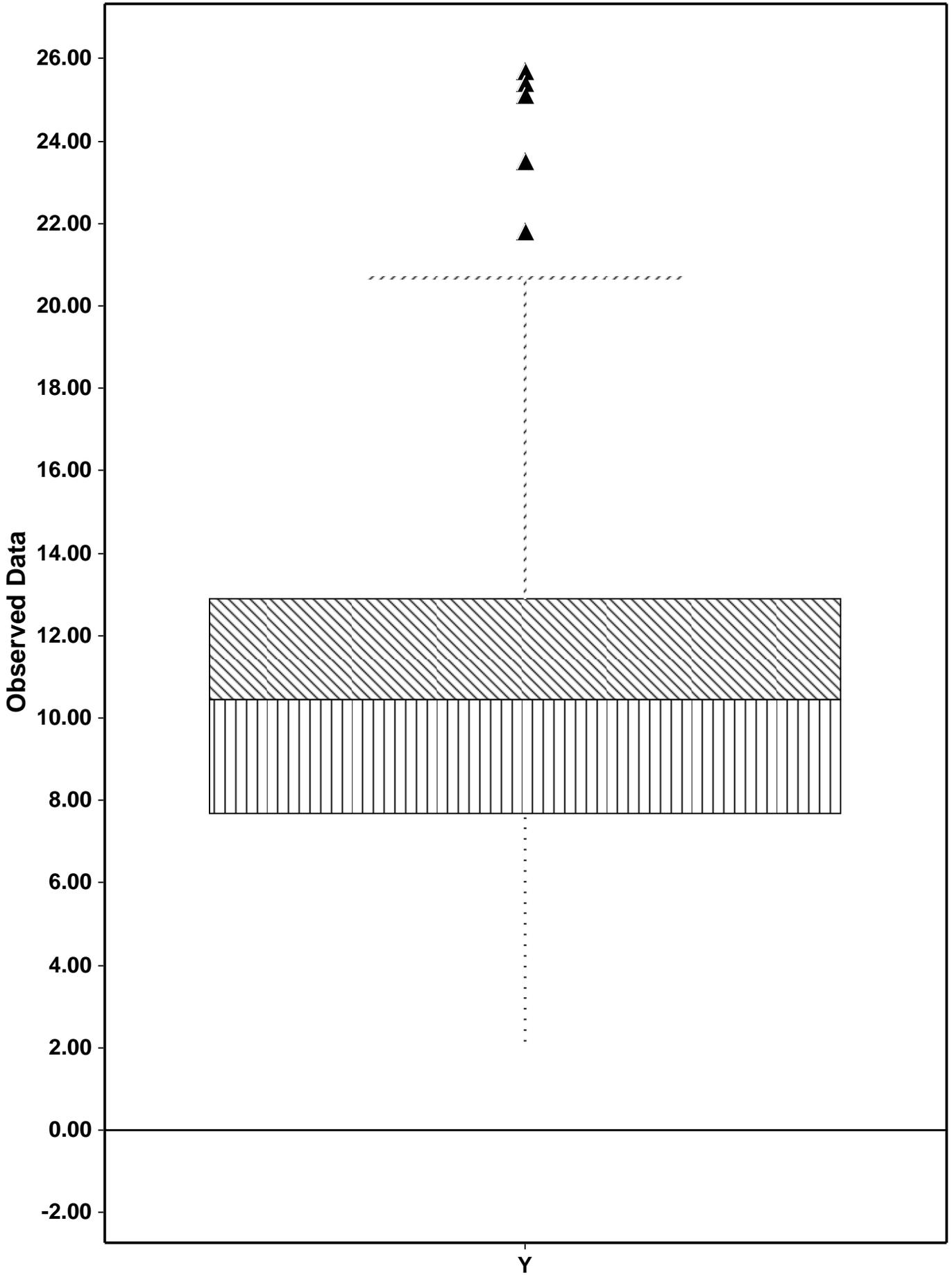
Box Plot for V



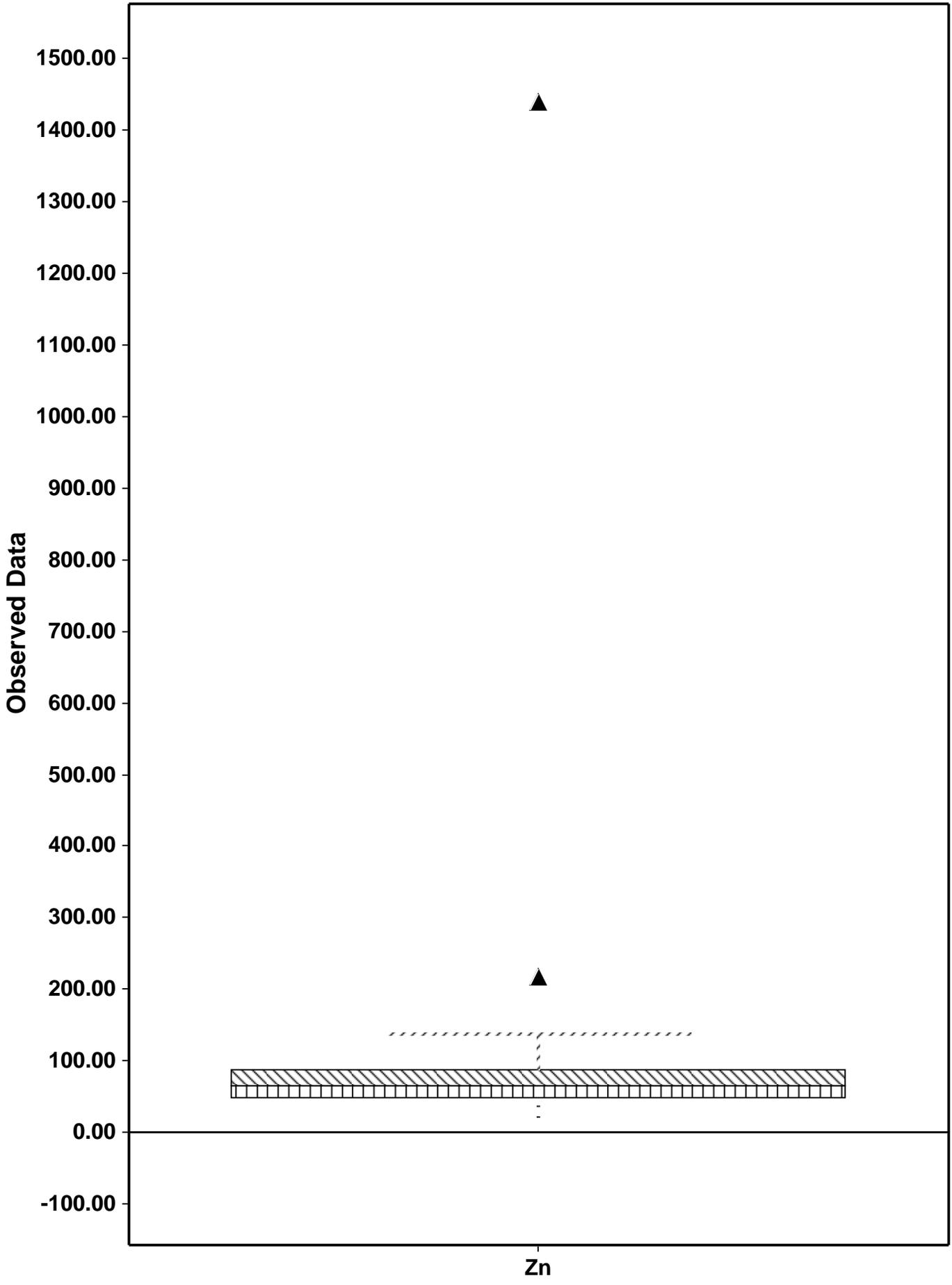
Box Plot for W



Box Plot for Y



Box Plot for Zn



Appendix D3

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	Hg	Qualifier	Ag	Qualifier	As	Qualifier	Ba	Qualifier	Be	Qualifier	Bi	Qualifier	Cd	Qualifier	Ce	Qualifier
A Horiz	C-299944	10041A	mg/kg	0.07		1	U	9		283		1.1		0.24		0.1	U	36.6	
A Horiz	C-299946	297A	mg/kg	0.03		1	U	3		311		1.7		0.13		0.1	U	37	
A Horiz	C-299948	2153A	mg/kg	0.07		1	U	16		405		1.8		0.25		0.2		50.5	
A Horiz	C-299949	10729A	mg/kg	0.1		1	U	7		250		0.9		0.17		0.2		47.9	
A Horiz	C-299951	11753A	mg/kg	0.05		1	U	13		500		2		0.18		0.3		59.8	
A Horiz	C-299952	2873A	mg/kg	0.16		1	U	18		417		1.9		0.14		0.3		45.2	
A Horiz	C-299953	9321A	mg/kg	0.11		1	U	7		287		1.4		0.23		0.1	U	36.4	
A Horiz	C-299954	8297A	mg/kg	0.08		1	U	7		259		1		0.15		0.1	U	26	
A Horiz	C-299955	9337A	mg/kg	0.08		1	U	43		408		1.6		0.27		0.3		53.1	
A Horiz	C-299957	6441A	mg/kg	0.17		1	U	14		270		1.2		0.59		0.3		41.7	
A Horiz	C-299958	11065A	mg/kg	0.05		1	U	9		430		1.6		0.15		0.2		56.6	
A Horiz	C-299959	5673A	mg/kg	0.05		1	U	9		417		1.4		0.14		0.2		52.8	
A Horiz	C-299961	6953A	mg/kg	0.02		1	U	21		553		2.6		0.3		0.1	U	89.2	
A Horiz	C-299963	7209A	mg/kg	0.04		1	U	5		352		2.3		0.47		0.5		43	
A Horiz	C-299966	4649A	mg/kg	0.06		1	U	9		380		0.8		0.2		0.7		23	
A Horiz	C-299967	6633A	mg/kg	0.12		1	U	6		211		0.5		0.19		0.5		24.8	
A Horiz	C-299968	3881A	mg/kg	0.21		1	U	5		140		0.4		0.15		1.1		20.6	
A Horiz	C-299970	5945A	mg/kg	0.1		1	U	16		717		1.2		0.22		0.3		37	
A Horiz	C-299971	2537A	mg/kg	0.08		1	U	12		304		1.1		0.19		0.3		60.4	
A Horiz	C-299975	6521A	mg/kg	0.05		1	U	16		323		1.5		0.15		0.2		56.6	
A Horiz	C-299976	1129A	mg/kg	0.06		1	U	11		426		1.8		0.14		0.1	U	57.4	
A Horiz	C-299984	3369A	mg/kg	0.01		1	U	13		454		1.7		0.23		0.2		57	
A Horiz	C-299985	4329A	mg/kg	0.06		1	U	10		401		1.5		0.17		0.2		63.2	
A Horiz	C-299989	1769A	mg/kg	0.04		1	U	11		402		1.2		0.14		0.2		53.3	
A Horiz	C-299990	4201A	mg/kg	0.08		1	U	19		359		1.6		0.2		0.2		53	
A Horiz	C-299991	6249A	mg/kg	0.02		1	U	17		455		2.2		0.21		0.1		53	
A Horiz	C-299995	4729A	mg/kg	0.14		1	U	16		324		1.1		0.15		0.3		52.2	
A Horiz	C-299997	12841A	mg/kg	0.08		1	U	25		301		1.2		0.35		0.3		46.3	
A Horiz	C-300005	8489A	mg/kg	0.01		1	U	10		405		8.9		0.98		0.1		72	
A Horiz	C-300007	3897A	mg/kg	0.24		1	U	29		298		1.3		0.24		0.4		54.3	
A Horiz	C-300010	3561A	mg/kg	0.02		1	U	13		463		1.4		0.13		0.1		71.8	
A Horiz	C-300012	9513A	mg/kg	0.02		2		5		320		2.4		0.35		0.2		46.7	
A Horiz	C-300016	7993A	mg/kg	0.09		1	U	13		375		1.4		0.2		0.4		59.2	
A Horiz	C-300018	233A	mg/kg	0.07		1	U	8		292		0.8		0.22		0.2		52	
A Horiz	C-300019	12073A	mg/kg	0.18		1	U	16		315		1.3		0.24		0.1		49.2	
A Horiz	C-300021	6969A	mg/kg	0.01	U	1	U	10		497		2.4		0.09		0.1	U	60.3	
A Horiz	C-300024	7977A	mg/kg	0.08		1	U	21		279		1.1		0.18		0.2		45.6	
A Horiz	C-300026	105A	mg/kg	0.08		1		13		326		1.4		0.18		0.2		54.6	
A Horiz	C-300027	13033A	mg/kg	0.19		1	U	4		99		0.2		0.18		0.5		12.4	
A Horiz	C-300033	10537A	mg/kg	0.01	U	1	U	4		536		1.2		0.17		0.1	U	42.7	
A Horiz	C-300035	12393A	mg/kg	0.06		1	U	8		347		1.5		0.17		0.1	U	37.6	
A Horiz	C-300038	5225A	mg/kg	0.06		1	U	15		280		1.6		0.19		0.2		48.4	
A Horiz	C-300041	1849A	mg/kg	0.18		1	U	26		280		1.3		0.22		0.3		38.6	
A Horiz	C-300042	7465A	mg/kg	0.05		1	U	9		314		1.6		0.19		0.1		46.8	
A Horiz	C-300043	7017A	mg/kg	0.15		1	U	4		233		2.1		0.19		0.1		31.5	
A Horiz	C-300044	4393A	mg/kg	0.15		1	U	5		199		1.6		0.16		0.2		29.1	
A Horiz	C-300045	11561A	mg/kg	0.05		1	U	12		311		1.6		0.12		0.2		43.7	
A Horiz	C-300047	3113A	mg/kg	0.04		1	U	2		402		2.7		0.14		0.1		40	
A Horiz	C-300051	633A	mg/kg	0.08		1	U	9		493		1.8		0.14		0.4		57.9	
C Horiz	C-300261	7017C	mg/kg	0.1		1	U	16		277		3.1		0.7		0.1		57.5	
C Horiz	C-300168	297C	mg/kg	0.02		1	U	2		351		2.5		0.16		0.1	U	40.9	
C Horiz	C-300176	8297C	mg/kg	0.05		1	U	7		317		1.6		0.08		0.1		41.8	
C Horiz	C-300182	6953C	mg/kg	0.01		1	U	12		619		3.2		0.29		0.1	U	131	
C Horiz	C-300242	6969C	mg/kg	0.02		1	U	9		494		3.1		0.12		0.1	U	52.9	
C Horiz	C-300260	7465C	mg/kg	0.05		1	U	12		358		2.3		0.32		0.1		52.2	
C Horiz	C-300263	4393C	mg/kg	0.01		1	U	3		335		3.3		0.1		0.1	U	31.2	
C Horiz	C-300170	2153C	mg/kg	0.03		1	U	18		522		2.5		0.31		0.1	U	81	
C Horiz	C-300189	3881C	mg/kg	0.24		1	U	2		117		0.6		0.1		0.8		24.4	
C Horiz	C-300212	6249C	mg/kg	0.02		1	U	12		437		2.2		0.18		0.1	U	57.1	
C Horiz	C-300245	7977C	mg/kg	0.01		1	U	14		371		2		0.15		0.1	U	63	

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	Hg	Qualifier	Ag	Qualifier	As	Qualifier	Ba	Qualifier	Be	Qualifier	Bi	Qualifier	Cd	Qualifier	Ce	Qualifier
C Horiz	C-300257	5225C	mg/kg	0.05		1	U	12		311		1.9		0.17		0.1	U	64.5	
C Horiz	C-300177	9337C	mg/kg	0.09		1	U	42		427		1.7		0.3		0.3		75.5	
C Horiz	C-300254	12393C	mg/kg	0.01		1	U	6		384		1.8		0.11		0.1	U	33.6	
C Horiz	C-300173	2873C	mg/kg	0.04		1	U	10		459		2.4		0.17		0.1	U	43.2	
C Horiz	C-300191	5945C	mg/kg	0.08		1	U	17		638		1.4		0.2		0.3		53.2	
C Horiz	C-300259	1849C	mg/kg	0.1		1	U	15		280		1.3		0.21		0.1		52.1	
C Horiz	C-300188	6633C	mg/kg	0.07		1	U	11		244		1.2		0.16		0.2		44.6	
C Horiz	C-300196	6521C	mg/kg	0.07		1	U	32		332		1.3		0.21		0.2		66.9	
C Horiz	C-300208	4329C	mg/kg	0.07		1	U	11		381		1.4		0.17		0.1		72.3	
C Horiz	C-300217	4729C	mg/kg	0.09		1	U	15		344		1.1		0.21		0.2		57.3	
C Horiz	C-300230	3897C	mg/kg	0.18		1	U	18		308		1.6		0.21		0.2		59.9	
C Horiz	C-300237	7993C	mg/kg	0.18		1	U	12		374		1.6		0.19		0.3		61.6	
C Horiz	C-300270	633C	mg/kg	0.11		1	U	13		602		2		0.19		0.1		66.6	
C Horiz	C-300271	10729C	mg/kg	0.05		1	U	10		393		1.5		0.23		0.1	U	52.6	
C Horiz	C-300238	233C	mg/kg	0.08		1	U	9		366		1.6		0.22		0.2		54.1	
C Horiz	C-300179	11065C	mg/kg	0.05		1	U	8		355		1.1		0.11		0.1		48.4	
C Horiz	C-300193	2537C	mg/kg	0.06		1	U	16		288		0.9		0.25		0.2		59.7	
C Horiz	C-300172	11753C	mg/kg	0.02		1	U	8		392		1.2		0.12		0.1	U	60.6	
C Horiz	C-300178	6441C	mg/kg	0.04		1	U	7		313		1		0.16		0.1	U	46.8	
C Horiz	C-300180	5673C	mg/kg	0.09		1	U	6		374		1.2		0.11		0.3		63.1	
C Horiz	C-300187	4649C	mg/kg	0.02		1	U	7		405		1.1		0.11		0.2		31.8	
C Horiz	C-300205	3369C	mg/kg	0.02		1	U	9		434		1.5		0.18		0.1	U	58.9	
C Horiz	C-300252	10537C	mg/kg	0.07		1	U	4		445		1.1		0.17		0.1		33.8	
C Horiz	C-300264	11561C	mg/kg	0.05		1	U	20		348		1.9		0.17		0.1		67.2	
C Horiz	C-300186	7209C	mg/kg	0.04		1	U	4		358		2.2		0.37		0.1		60.5	
C Horiz	C-300226	8489C	mg/kg	0.05		1	U	3		298		4.1		0.29		0.1	U	31.5	
C Horiz	C-300233	9513C	mg/kg	0.02		1	U	1		395		2.6		0.16		0.1		64.6	
C Horiz	C-300266	3113C	mg/kg	0.02		1	U	3		435		3.3		0.24		0.1		70.8	
C Horiz	C-300197	1129C	mg/kg	0.06		1	U	11		427		1.6		0.15		0.1	U	53.6	
C Horiz	C-300211	4201C	mg/kg	0.04		1	U	14		351		1.1		0.2		0.1		55.9	
C Horiz	C-300246	105C	mg/kg	0.07		1	U	13		309		2		0.18		0.1	U	32.4	
C Horiz	C-300210	1769C	mg/kg	0.04		1	U	11		432		1.3		0.13		0.1		62.4	
C Horiz	C-300218	12841C	mg/kg	0.08		1	U	34		284		1.7		0.38		0.2		53.8	
C Horiz	C-300239	12073C	mg/kg	0.16		1	U	15		322		1.6		0.21		0.1		49.2	
C Horiz	C-300174	9321C	mg/kg	0.08		1	U	5		352		1.6		0.22		0.1	U	46.9	
C Horiz	C-300231	3561C	mg/kg	0.02		1	U	11		441		1.5		0.13		0.1	U	61.7	
C Horiz	C-300166	10041C	mg/kg	0.07		1	U	9		357		2.1		0.12		0.1		56	
0-5cm	C-300148	7017PH	mg/kg	0.23		1	U	2		89		0.4		0.11		0.4		9.86	
0-5cm	C-300056	297PH	mg/kg	0.15		1	U	1		213		1.2		0.09		0.1		14.8	
0-5cm	C-300064	8297PH	mg/kg	0.16		1	U	2		208		0.5		0.15		0.1	U	17.2	
0-5cm	C-300070	6953PH	mg/kg	0.02		1	U	15		531		3		0.24		0.1	U	75.8	
0-5cm	C-300127	6969PH	mg/kg	0.01	U	1	U	9		465		2.8		0.07		0.1	U	53	
0-5cm	C-300147	7465PH	mg/kg	0.05		1	U	13		334		2		0.25		0.2		55.3	
0-5cm	C-300149	4393PH	mg/kg	0.23		1	U	2		163		1.4		0.19		0.3		20.6	
0-5cm	C-300161	11049PH	mg/kg	0.06		1	U	14		361		2.3		0.43		1		54.3	
0-5cm	C-300164	2857PH	mg/kg	0.12		1	U	8		295		1.1		0.16		0.8		30.8	
0-5cm	C-300058	2153PH	mg/kg	0.08		1	U	8		290		1.3		0.18		0.1		38.9	
0-5cm	C-300077	3881PH	mg/kg	0.12		1	U	3		125		0.2		0.06		0.5		10.8	
0-5cm	C-300099	6249PH	mg/kg	0.02		1	U	10		430		2		0.13		0.1	U	41.9	
0-5cm	C-300131	7977PH	mg/kg	0.09		1	U	14		270		1.2		0.12		0.2		55.1	
0-5cm	C-300144	5225PH	mg/kg	0.06		1	U	12		283		1.4		0.26		0.2		51.5	
0-5cm	C-300065	9337PH	mg/kg	0.07		1	U	29		409		1.5		0.2		0.2		49.5	
0-5cm	C-300139	12393PH	mg/kg	0.06		1	U	6		313		1.5		0.12		0.1	U	32.1	
0-5cm	C-300061	2873PH	mg/kg	0.09		1	U	11		401		1.4		0.1		0.2		32.1	
0-5cm	C-300079	5945PH	mg/kg	0.1		1	U	12		688		1		0.17		0.3		30.9	
0-5cm	C-300146	1849PH	mg/kg	0.15		1	U	20		294		1.4		0.22		0.3		52.7	
0-5cm	C-300076	6633PH	mg/kg	0.11		1	U	4		207		0.5		0.11		0.4		25.3	
0-5cm	C-300083	6521PH	mg/kg	0.05		1	U	13		305		1.3		0.13		0.2		53.7	
0-5cm	C-300093	4329PH	mg/kg	0.06		1	U	8		390		1.4		0.14		0.2		58.4	
0-5cm	C-300103	4729PH	mg/kg	0.09		1	U	11		310		1.3		0.12		0.2		47	

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	Hg	Qualifier	Ag	Qualifier	As	Qualifier	Ba	Qualifier	Be	Qualifier	Bi	Qualifier	Cd	Qualifier	Ce	Qualifier
0-5cm	C-300114	3897PH	mg/kg	0.25		1	U	19		286		1.2		0.16		0.3		45.2	
0-5cm	C-300123	7993PH	mg/kg	0.29		1	U	9		338		1.4		0.14		0.2		47	
0-5cm	C-300157	633PH	mg/kg	0.08		1	U	10		497		1.7		0.18		0.5		64	
0-5cm	C-300124	233PH	mg/kg	0.05		1	U	6		291		0.9		0.13		0.1		53.5	
0-5cm	C-300158	745PH	mg/kg	0.05		1	U	21		526		2		0.2		0.1		71.4	
0-5cm	C-300067	11065PH	mg/kg	0.03		1	U	6		430		1.8		0.11		0.1		49.4	
0-5cm	C-300080	2537PH	mg/kg	0.08		1	U	7		273		0.8		0.13		0.4		41.4	
0-5cm	C-300133	13033PH	mg/kg	0.14		1	U	2		146		0.5		0.09		0.3		24.2	
0-5cm	C-300060	11753PH	mg/kg	0.05		1	U	9		482		1.9		0.17		0.2		52.8	
0-5cm	C-300066	6441PH	mg/kg	0.26		1	U	9		267		1		0.29		0.1		31.3	
0-5cm	C-300068	5673PH	mg/kg	0.11		1	U	5		332		1.2		0.15		0.3		42.5	
0-5cm	C-300073	4649PH	mg/kg	0.06		1	U	5		368		0.8		0.19		1.6		21.7	
0-5cm	C-300092	3369PH	mg/kg	0.01	U	1	U	8		525		2		0.14		0.1	U	53.4	
0-5cm	C-300137	10537PH	mg/kg	0.01	U	1	U	3		513		1.6		0.13		0.1	U	49.3	
0-5cm	C-300150	11561PH	mg/kg	0.05		1	U	13		319		1.7		0.14		0.3		46.7	
0-5cm	C-300072	7209PH	mg/kg	0.04		1	U	3		313		2		0.29		0.1		60.5	
0-5cm	C-300112	8489PH	mg/kg	0.02		1	U	6		380		10.7		0.47		0.1		48.3	
0-5cm	C-300117	9513PH	mg/kg	0.02		1	U	2		299		3.1		0.23		0.1	U	35.6	
0-5cm	C-300153	3113PH	mg/kg	0.04		1	U	5		420		2.9		0.16		0.2		52.6	
0-5cm	C-300159	11305PH	mg/kg	0.05		1	U	7		335		2.6		0.24		0.2		57.9	
0-5cm	C-300084	1129PH	mg/kg	0.05		1	U	8		428		1.7		0.12		0.1	U	52.8	
0-5cm	C-300098	4201PH	mg/kg	0.09		1	U	16		352		1.7		0.17		0.2		52.3	
0-5cm	C-300132	105PH	mg/kg	0.09		1	U	11		347		1.6		0.14		0.2		50.8	
0-5cm	C-300095	1769PH	mg/kg	0.04		1	U	10		404		1.5		0.12		0.2		58.1	
0-5cm	C-300105	12841PH	mg/kg	0.07		1	U	13		247		1.1		0.21		0.2		29.2	
0-5cm	C-300125	12073PH	mg/kg	0.17		1	U	13		308		1.5		0.18		0.2		51.6	
0-5cm	C-300062	9321PH	mg/kg	0.22		1	U	2		157		0.6		0.15		0.1		21.2	
0-5cm	C-300059	10729PH	mg/kg	0.12		1	U	5		226		0.7		0.11		0.2		38.2	
0-5cm	C-300115	3561PH	mg/kg	0.02		1	U	8		395		1.5		0.09		0.1	U	59.3	
0-5cm	C-300054	10041PH	mg/kg	0.07		1	U	5		267		1		0.14		0.1	U	34.4	

IQR

Max	mg/kg	0.29		2		43		717		10.7		0.98		1.6		131	
25%	mg/kg	0.04		1		6		292.5		1.2		0.14		0.1		38.675	
50%	mg/kg	0.06		1		10		349.5		1.5		0.17		0.2		51.8	
75%	mg/kg	0.0975		1		13.75		417		1.975		0.22		0.2		57.475	
90%	mg/kg	0.17		1		18.1		494.3		2.6		0.29		0.4		64.05	
95%	mg/kg	0.2155		1		23.2		528.75		3.1		0.361		0.5		71.62	
IQR	mg/kg	0.0575		0		7.75		124.5		0.775		0.08		0.1		18.8	
Upper IQR	mg/kg	0.18375		1		25.375		603.75		3.1375		0.34		0.35		85.675	
Lower IQR	mg/kg	-0.04625		1		-5.625		105.75		0.0375		0.02		-0.05		10.475	

Notes:

mg/kg - milligram per kilogram

U - undetected

J - estimated

Yellow highlighted cells indicate outliers

above the upper IQR

Orange highlighted cell indicate outliers

below the lower IQR

IQR - interquartile range

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	Co	Qualifier	Cr	Qualifier	Cs	Qualifier	Cu	Qualifier	Ga	Qualifier	In	Qualifier	La	Qualifier	Li	Qualifier
A Horiz	C-299944	10041A	mg/kg	4		41		5	U	6.6		13.7		0.04		17		17	
A Horiz	C-299946	297A	mg/kg	0.6		10		5	U	6.5		11		0.02	U	18		7	
A Horiz	C-299948	2153A	mg/kg	7		56		6		8.9		19.6		0.06		23.8		35	
A Horiz	C-299949	10729A	mg/kg	5.4		52		5	U	7.2		12.7		0.04		23.3		17	
A Horiz	C-299951	11753A	mg/kg	19		92		6		24.1		17.9		0.07		27.1		46	
A Horiz	C-299952	2873A	mg/kg	7.9		45		5	U	14.2		14.9		0.05		19.2		27	
A Horiz	C-299953	9321A	mg/kg	4.8		48		5	U	6.2		17		0.06		17.5		13	
A Horiz	C-299954	8297A	mg/kg	2.4		25		5	U	4		12		0.03		12.8		7	
A Horiz	C-299955	9337A	mg/kg	15		53		5	U	19.6		16.3		0.06		24.5		47	
A Horiz	C-299957	6441A	mg/kg	11.3		75		5	U	22.5		12.6		0.05		18		24	
A Horiz	C-299958	11065A	mg/kg	6.2		44		5	U	9.6		16.1		0.06		26.6		25	
A Horiz	C-299959	5673A	mg/kg	10.7		91		5	U	22.5		13.9		0.04		24.4		20	
A Horiz	C-299961	6953A	mg/kg	17		91		7		18.3		21.3		0.07		41.6		54	
A Horiz	C-299963	7209A	mg/kg	5.2		63		5	U	16.5		12.1		0.13		19.4		23	
A Horiz	C-299966	4649A	mg/kg	5.1		37		5	U	11.6		11		0.03		11.1		14	
A Horiz	C-299967	6633A	mg/kg	3		26		5	U	13.9		8.7		0.03		12		8	
A Horiz	C-299968	3881A	mg/kg	4.9		26		5	U	23		3.07		0.02	U	12.5		6	
A Horiz	C-299970	5945A	mg/kg	4.5		39		5	U	10.9		15.9		0.05		16.7		20	
A Horiz	C-299971	2537A	mg/kg	10.3		59		5	U	13.9		14		0.05		28.5		28	
A Horiz	C-299975	6521A	mg/kg	12.2		76		5	U	51		14.8		0.05		27		40	
A Horiz	C-299976	1129A	mg/kg	8.8		46		5	U	12		13.9		0.05		26.3		26	
A Horiz	C-299984	3369A	mg/kg	10.9		54		5	U	44.2		14.7		0.04		27.6		26	
A Horiz	C-299985	4329A	mg/kg	13.7		69		5	U	11.1		15		0.05		29.6		42	
A Horiz	C-299989	1769A	mg/kg	10.8		62		5	U	12		12.7		0.04		25		36	
A Horiz	C-299990	4201A	mg/kg	12.6		69		5	U	12.4		15		0.06		24.5		44	
A Horiz	C-299991	6249A	mg/kg	8.9		35		5	U	14.8		16		0.04		26		30	
A Horiz	C-299995	4729A	mg/kg	11		61		5	U	27.3		13.7		0.05		24.8		34	
A Horiz	C-299997	12841A	mg/kg	7.3		45		5	U	10.8		16		0.05		21.2		19	
A Horiz	C-300005	8489A	mg/kg	12.2		47		12		17.8		21		0.06		36.1		145	
A Horiz	C-300007	3897A	mg/kg	13.6		68		5	U	47.8		16.3		0.07		25.7		26	
A Horiz	C-300010	3561A	mg/kg	15.1		72		5	U	21.5		14.9		0.05		34.2		35	
A Horiz	C-300012	9513A	mg/kg	7		24		5	U	18.7		12.3		0.03		23.1		19	
A Horiz	C-300016	7993A	mg/kg	16.6		69		5	U	30.7		15.8		0.06		27.2		43	
A Horiz	C-300018	233A	mg/kg	4.4		67		5	U	7.7		18.7		0.06		25.5		21	
A Horiz	C-300019	12073A	mg/kg	9.7		54		5	U	22		12.3		0.04		22.6		27	
A Horiz	C-300021	6969A	mg/kg	5		18		5	U	9.4		16.9		0.06		26.6		23	
A Horiz	C-300024	7977A	mg/kg	7.8		54		5	U	13.1		12.1		0.04		20.3		25	
A Horiz	C-300026	105A	mg/kg	11.2		73		5	U	19.2		14.8		0.05		26.1		35	
A Horiz	C-300027	13033A	mg/kg	2.6		17		5	U	12.4		3.07		0.02	U	6		5	
A Horiz	C-300033	10537A	mg/kg	6.8		34		5	U	15.9		12.3		0.02		21.7		15	
A Horiz	C-300035	12393A	mg/kg	6.1		45		5	U	5.3		13.2		0.04		18		25	
A Horiz	C-300038	5225A	mg/kg	11.7		68		5	U	12.7		13.9		0.05		19.6		33	
A Horiz	C-300041	1849A	mg/kg	10.5		64		5	U	11.7		13.7		0.06		17.5		33	
A Horiz	C-300042	7465A	mg/kg	7.9		45		5	U	10.9		9.6		0.04		20.9		30	
A Horiz	C-300043	7017A	mg/kg	1.7		15		5	U	5.3		12.2		0.04		14.1		10	
A Horiz	C-300044	4393A	mg/kg	1		9		5	U	3.2		9.43		0.02	U	13.8		7	
A Horiz	C-300045	11561A	mg/kg	13.9		69		5	U	14.9		12.4		0.04		19.3		28	
A Horiz	C-300047	3113A	mg/kg	4.7		26		5	U	9.1		9.79		0.03		20.4		18	
A Horiz	C-300051	633A	mg/kg	18.8		74		5	U	27.9		14.4		0.06		28.4		36	
C Horiz	C-300261	7017C	mg/kg	3.2		30		5	U	3.4		23.2		0.1		21.6		18	
C Horiz	C-300168	297C	mg/kg	2.6		8		5	U	3.1		12.8		0.02	U	17.7		16	
C Horiz	C-300176	8297C	mg/kg	4.7		32		5	U	5.2		11.3		0.04		16.7		23	
C Horiz	C-300182	6953C	mg/kg	17.1		62		8		14.8		25.4		0.09		57.4		57	
C Horiz	C-300242	6969C	mg/kg	4.1		20		5	U	8.7		16.6		0.07		24.2		27	
C Horiz	C-300260	7465C	mg/kg	10.4		59		5	U	12.9		14.2		0.04		21.4		30	
C Horiz	C-300263	4393C	mg/kg	2.2		9		5	U	2.7		13.8		0.02	U	14.8		15	
C Horiz	C-300170	2153C	mg/kg	15.5		63		8		15.8		22.1		0.09		31.6		54	
C Horiz	C-300189	3881C	mg/kg	3.7		31		5	U	13.9		3.76		0.02	U	14.9		4	
C Horiz	C-300212	6249C	mg/kg	6		32		5	U	8.6		15.4		0.05		26.9		28	
C Horiz	C-300245	7977C	mg/kg	12.4		65		5	U	16.4		13.8		0.04		30.2		28	

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	Co	Qualifier	Cr	Qualifier	Cs	Qualifier	Cu	Qualifier	Ga	Qualifier	In	Qualifier	La	Qualifier	Li	Qualifier
C Horiz	C-300257	5225C	mg/kg	11.4		77		5	U	16.9		13.6		0.05		26.9		31	
C Horiz	C-300177	9337C	mg/kg	15.5		61		7		17.1		19.2		0.07		35.5		54	
C Horiz	C-300254	12393C	mg/kg	7.2		44		5	U	7.7		12.4		0.04		15.9		22	
C Horiz	C-300173	2873C	mg/kg	8.9		41		5	U	8.6		16.2		0.06		20		32	
C Horiz	C-300191	5945C	mg/kg	7.2		50		5	U	9.4		18.4		0.07		23		42	
C Horiz	C-300259	1849C	mg/kg	8.1		55		5	U	9.8		16		0.05		23.9		26	
C Horiz	C-300188	6633C	mg/kg	7.1		46		5	U	9.5		12.8		0.06		21.7		31	
C Horiz	C-300196	6521C	mg/kg	11.9		75		5	U	101		18.3		0.05		32.7		39	
C Horiz	C-300208	4329C	mg/kg	15.7		98		5	U	13.3		18.5		0.06		33.3		54	
C Horiz	C-300217	4729C	mg/kg	11.6		67		5	U	29.5		16.2		0.05		27.3		38	
C Horiz	C-300230	3897C	mg/kg	18.5		77		5	U	24.1		19.2		0.07		28.2		33	
C Horiz	C-300237	7993C	mg/kg	14.8		70		5	U	27.6		16.6		0.06		29		40	
C Horiz	C-300270	633C	mg/kg	20.8		92		5		36.8		17.7		0.07		32.8		37	
C Horiz	C-300271	10729C	mg/kg	7.8		82		5		5		20.1		0.05		25.5		32	
C Horiz	C-300238	233C	mg/kg	9.8		86		5	U	12.8		16.6		0.06		25.9		42	
C Horiz	C-300179	11065C	mg/kg	8		46		5	U	4.9		14.9		0.06		23.3		31	
C Horiz	C-300193	2537C	mg/kg	7.1		64		5	U	11.4		19.6		0.06		29.6		24	
C Horiz	C-300172	11753C	mg/kg	12.5		57		5	U	12.7		13.3		0.05		26.3		30	
C Horiz	C-300178	6441C	mg/kg	8.2		96		5	U	5.7		15		0.04		21.9		17	
C Horiz	C-300180	5673C	mg/kg	9		48		5	U	13		12.8		0.03		25.9		12	
C Horiz	C-300187	4649C	mg/kg	7.3		34		5	U	5		12.8		0.04		15.8		20	
C Horiz	C-300205	3369C	mg/kg	11.2		46		5	U	19.7		15.2		0.05		28.4		27	
C Horiz	C-300252	10537C	mg/kg	4.7		26		5	U	11.2		10		0.02		16.9		11	
C Horiz	C-300264	11561C	mg/kg	16.4		90		5	U	12.7		14.8		0.05		25.9		34	
C Horiz	C-300186	7209C	mg/kg	4.1		22		5	U	6.5		12.7		0.03		27.4		20	
C Horiz	C-300226	8489C	mg/kg	3		21		5	U	3.4		18.4		0.03		15.8		30	
C Horiz	C-300233	9513C	mg/kg	4.9		20		5	U	3.7		13.9		0.03		28.8		20	
C Horiz	C-300266	3113C	mg/kg	8.4		30		5	U	9.5		15.8		0.05		37.3		23	
C Horiz	C-300197	1129C	mg/kg	8.2		43		5	U	10		16		0.05		24.3		26	
C Horiz	C-300211	4201C	mg/kg	8.6		69		6		7.5		17.5		0.06		26.7		31	
C Horiz	C-300246	105C	mg/kg	11.8		79		5	U	10.4		14.2		0.05		14.8		33	
C Horiz	C-300210	1769C	mg/kg	11.2		66		5	U	6.7		15.4		0.05		30.2		38	
C Horiz	C-300218	12841C	mg/kg	9.7		53		5	U	10.9		17		0.06		24.1		29	
C Horiz	C-300239	12073C	mg/kg	9.7		58		5	U	18.6		12.7		0.04		22.1		25	
C Horiz	C-300174	9321C	mg/kg	9.2		57		6		7.8		18.9		0.07		22.3		20	
C Horiz	C-300231	3561C	mg/kg	14.2		70		5	U	20.4		16.3		0.05		30.2		34	
C Horiz	C-300166	10041C	mg/kg	11.6		74		5	U	6.6		15.1		0.05		22.5		29	
0-5cm	C-300148	7017PH	mg/kg	1.2		10		5	U	17.5		2.26		0.02	U	5.2		3	
0-5cm	C-300056	297PH	mg/kg	0.9		7		5	U	4.4		6.23		0.02	U	7.1		7	
0-5cm	C-300064	8297PH	mg/kg	1.1		14		5	U	5.8		4.91		0.02	U	8.4		4	
0-5cm	C-300070	6953PH	mg/kg	17		81		6		19.4		17.6		0.06		34.9		55	
0-5cm	C-300127	6969PH	mg/kg	5		19		5	U	9.6		14.6		0.06		24.6		25	
0-5cm	C-300147	7465PH	mg/kg	9.9		54		5	U	11.5		14.6		0.06		22.2		30	
0-5cm	C-300149	4393PH	mg/kg	0.9		9		5	U	3.9		6.83		0.02	U	10.2		5	
0-5cm	C-300161	11049PH	mg/kg	8.3		63		6		33.4		14.5		0.05		26.6		35	
0-5cm	C-300164	2857PH	mg/kg	6.2		38		5	U	16.3		8.52		0.03		14.8		18	
0-5cm	C-300058	2153PH	mg/kg	4.8		37		5	U	4.7		12.8		0.04		19.5		26	
0-5cm	C-300077	3881PH	mg/kg	4.7		15		5	U	20.1		1.37		0.02	U	6.5		4	
0-5cm	C-300099	6249PH	mg/kg	6.6		33		5	U	11.7		11.8		0.03		22.2		30	
0-5cm	C-300131	7977PH	mg/kg	7.7		52		5	U	11.1		10.3		0.04		26.7		24	
0-5cm	C-300144	5225PH	mg/kg	10.5		66		5	U	12.3		14		0.05		21.1		30	
0-5cm	C-300065	9337PH	mg/kg	14.4		52		5	U	24.7		11.6		0.04		23.2		50	
0-5cm	C-300139	12393PH	mg/kg	5.1		40		5	U	5.9		10.1		0.04		16.3		22	
0-5cm	C-300061	2873PH	mg/kg	6.3		37		5	U	13.3		10.4		0.04		13.6		26	
0-5cm	C-300079	5945PH	mg/kg	3.9		37		5	U	9.9		12.1		0.04		14.7		19	
0-5cm	C-300146	1849PH	mg/kg	11.1		58		5	U	11.9		16		0.06		23.1		34	
0-5cm	C-300076	6633PH	mg/kg	2.7		26		5	U	8.9		7.02		0.03		12.1		9	
0-5cm	C-300083	6521PH	mg/kg	10.9		68		5	U	54.4		12		0.04		26.7		39	
0-5cm	C-300093	4329PH	mg/kg	13.3		69		5	U	10.9		13.1		0.05		28		46	
0-5cm	C-300103	4729PH	mg/kg	10.8		59		5	U	29		11.7		0.04		23.2		34	

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	Co	Qualifier	Cr	Qualifier	Cs	Qualifier	Cu	Qualifier	Ga	Qualifier	In	Qualifier	La	Qualifier	Li	Qualifier
0-5cm	C-300114	3897PH	mg/kg	11.7		55		5	U	48		12.2		0.05		22		28	
0-5cm	C-300123	7993PH	mg/kg	13.9		64		5	U	28.9		12.1		0.05		23		41	
0-5cm	C-300157	633PH	mg/kg	19.4		75		5	U	26.4		17.5		0.06		29.9		35	
0-5cm	C-300124	233PH	mg/kg	2.5		59		5	U	6.8		14.3		0.04		27.9		10	
0-5cm	C-300158	745PH	mg/kg	20.3		74		5		32		18.9		0.07		34.2		35	
0-5cm	C-300067	11065PH	mg/kg	6		35		5	U	10.4		13.1		0.06		23.4		24	
0-5cm	C-300080	2537PH	mg/kg	6.5		53		5	U	11.9		8.9		0.03		20.9		24	
0-5cm	C-300133	13033PH	mg/kg	3		25		5	U	6.1		4.78		0.02		11.8		8	
0-5cm	C-300060	11753PH	mg/kg	18.2		90		5	U	22.4		15.4		0.06		24.8		47	
0-5cm	C-300066	6441PH	mg/kg	9.1		74		5	U	16.6		9.34		0.02	U	14.3		24	
0-5cm	C-300068	5673PH	mg/kg	10.5		51		5	U	18.3		8.6		0.03		19.4		17	
0-5cm	C-300073	4649PH	mg/kg	4.6		35		5	U	12.9		8.51		0.03		10.8		15	
0-5cm	C-300092	3369PH	mg/kg	11		62		5	U	17.5		14.1		0.05		27.8		32	
0-5cm	C-300137	10537PH	mg/kg	8		24		5	U	15.5		10.5		0.03		26.2		15	
0-5cm	C-300150	11561PH	mg/kg	14.1		72		5	U	13.7		15.1		0.05		19.8		25	
0-5cm	C-300072	7209PH	mg/kg	3.6		15		5	U	6.5		9.14		0.02		28.9		21	
0-5cm	C-300112	8489PH	mg/kg	10.4		49		11		13.2		16.7		0.05		26.2		137	
0-5cm	C-300117	9513PH	mg/kg	6.5		24		5	U	14.2		9.74		0.02		18		18	
0-5cm	C-300153	3113PH	mg/kg	5.2		25		5	U	8		13.9		0.04		25.7		17	
0-5cm	C-300159	11305PH	mg/kg	9.9		50		6		12.1		14.6		0.05		26.4		34	
0-5cm	C-300084	1129PH	mg/kg	8.2		42		5	U	10.7		11.2		0.04		25.3		24	
0-5cm	C-300098	4201PH	mg/kg	11		74		5	U	11.9		12.7		0.05		25.8		43	
0-5cm	C-300132	105PH	mg/kg	12.5		74		5	U	13.8		13.2		0.05		25		36	
0-5cm	C-300095	1769PH	mg/kg	12		67		5	U	9.7		11.9		0.04		28.8		38	
0-5cm	C-300105	12841PH	mg/kg	6.3		40		5	U	44.9		10.5		0.04		13.5		22	
0-5cm	C-300125	12073PH	mg/kg	9.8		58		5	U	21.6		10.7		0.04		25.3		28	
0-5cm	C-300062	9321PH	mg/kg	2.9		24		5	U	7		6.63		0.03		10.2		6	
0-5cm	C-300059	10729PH	mg/kg	5.2		47		5	U	7.4		8.17		0.03		19.5		16	
0-5cm	C-300115	3561PH	mg/kg	14.1		63		5	U	20.4		12.1		0.05		28.3		34	
0-5cm	C-300054	10041PH	mg/kg	3.5		44		5	U	2.4		10.9		0.03		16.8		16	

IQR

Max	mg/kg	20.8	98	12	101	25.4	0.13	57.4	145
25%	mg/kg	5.025	34.25	5	8.6	11.825	0.04	18	19
50%	mg/kg	8.35	52.5	5	12.2	13.85	0.05	23.35	26.5
75%	mg/kg	11.675	67.75	5	18.3	16	0.06	26.85	34
90%	mg/kg	15.14	75.1	5	27.63	18.4	0.06	29.93	43
95%	mg/kg	17.055	88.2	6	35.27	19.42	0.07	33.795	52.2
IQR	mg/kg	6.65	33.5	0	9.7	4.175	0.02	8.85	15
Upper IQR	mg/kg	21.65	118	5	32.85	22.2625	0.09	40.125	56.5
Lower IQR	mg/kg	-4.95	-16	5	-5.95	5.5625	0.01	4.725	-3.5

Notes:
 mg/kg - milligram per kilogram
 U - undetected
 J - estimated
 Yellow highlighted cells indicate outliers
 above the upper IQR
 Orange highlighted cell indicate outliers
 below the lower IQR
 IQR - interquartile range

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	Mn	Qualifier	Mo	Qualifier	Nb	Qualifier	Ni	Qualifier	P	Qualifier	Pb	Qualifier	Rb	Qualifier	Sb	Qualifier
A Horiz	C-299944	10041A	mg/kg	294		0.67		6.5		50.3		350		26		70.6		0.54	
A Horiz	C-299946	297A	mg/kg	122		0.28		5.1		5.1		240		36.1		127		0.25	
A Horiz	C-299948	2153A	mg/kg	406		1.24		11.7		19.9		640		64.1		129		0.58	
A Horiz	C-299949	10729A	mg/kg	170		0.43		4.4		15.6		550		19.8		61.4		0.46	
A Horiz	C-299951	11753A	mg/kg	1210		0.82		5		50.5		750		23.6		115		0.53	
A Horiz	C-299952	2873A	mg/kg	469		0.68		4.9		23.9		1170		30.4		113		0.7	
A Horiz	C-299953	9321A	mg/kg	271		0.53		5.9		11.5		660		26.2		91.2		1.31	
A Horiz	C-299954	8297A	mg/kg	333		0.64		6.6		6.9		380		20.3		55.6		0.57	
A Horiz	C-299955	9337A	mg/kg	1570		1.02		6		25.6		950		32.1		92.4		1.49	
A Horiz	C-299957	6441A	mg/kg	565		0.76		6.9		32		710		364		52		15.1	
A Horiz	C-299958	11065A	mg/kg	638		0.65		7.2		17		580		24.1		106		0.65	
A Horiz	C-299959	5673A	mg/kg	523		1.03		9.5		61.8		520		26.9		70.4		0.49	
A Horiz	C-299961	6953A	mg/kg	693		0.67		12.8		44		420		24.3		153		0.47	
A Horiz	C-299963	7209A	mg/kg	635		1.06		8.2		34.8		690		34		79		1.6	
A Horiz	C-299966	4649A	mg/kg	387		0.66		3.4		14.3		860		99.2		69.7		0.41	
A Horiz	C-299967	6633A	mg/kg	1400		0.4		4.2		11.7		1000		23.6		38.3		0.56	
A Horiz	C-299968	3881A	mg/kg	594		1.48		1.4		18.9		1130		48		21.6		0.47	
A Horiz	C-299970	5945A	mg/kg	363		3.58		9		13.7		480		34.1		67.3		0.73	
A Horiz	C-299971	2537A	mg/kg	760		0.63		5.4		23.2		620		21.4		75		0.7	
A Horiz	C-299975	6521A	mg/kg	472		0.47		5		40.5		1450		21.8		88.9		0.54	
A Horiz	C-299976	1129A	mg/kg	554		0.53		6		22.5		520		19.3		95		0.57	
A Horiz	C-299984	3369A	mg/kg	606		0.57		4.3		35.9		380		21.1		92.1		0.59	
A Horiz	C-299985	4329A	mg/kg	1430		0.42		4.2		30.3		820		23.2		98.4		0.37	
A Horiz	C-299989	1769A	mg/kg	589		0.72		3.6		30.5		550		16		76.1		0.5	
A Horiz	C-299990	4201A	mg/kg	1560		0.86		5.6		39.6		790		20.9		82.1		1.05	
A Horiz	C-299991	6249A	mg/kg	478		0.69		8.7		18.5		560		27.7		133		0.65	
A Horiz	C-299995	4729A	mg/kg	586		0.61		6.4		26.2		2440		17.2		74.1		0.46	
A Horiz	C-299997	12841A	mg/kg	737		0.77		9.6		13		580		24		80.8		0.45	
A Horiz	C-300005	8489A	mg/kg	724		1.16		32.4		26.7		1280		33.8		234		0.21	
A Horiz	C-300007	3897A	mg/kg	694		0.81		7.1		28.6		1420		25.2		68		0.94	
A Horiz	C-300010	3561A	mg/kg	891		1.24		7.1		50		540		16.6		82.1		0.53	
A Horiz	C-300012	9513A	mg/kg	761		0.65		7.4		12.2		490		27.8		93.3		0.18	
A Horiz	C-300016	7993A	mg/kg	1040		0.5		4.5		47.8		840		23		93.3		0.73	
A Horiz	C-300018	233A	mg/kg	197		0.44		4.6		17.6		730		16.6		80.9		0.31	
A Horiz	C-300019	12073A	mg/kg	682		0.64		7.1		28		1070		83.4		76.8		0.49	
A Horiz	C-300021	6969A	mg/kg	365		0.28		7.1		9.5		450		21.1		138		0.44	
A Horiz	C-300024	7977A	mg/kg	508		0.75		5.9		24.8		930		36.4		64.4		0.73	
A Horiz	C-300026	105A	mg/kg	606		0.58		6.3		31.5		580		26.8		80.9		0.57	
A Horiz	C-300027	13033A	mg/kg	277		0.43		0.9		13.9		770		50.3		14.6		0.47	
A Horiz	C-300033	10537A	mg/kg	405		0.43		4.8		21.2		450		11.1		64.6		0.21	
A Horiz	C-300035	12393A	mg/kg	281		0.38		5.7		17.8		340		23.8		84.9		0.58	
A Horiz	C-300038	5225A	mg/kg	437		0.55		7.6		32.8		900		23.1		72.3		0.58	
A Horiz	C-300041	1849A	mg/kg	798		0.69		5.1		22		1280		20.7		68.6		0.67	
A Horiz	C-300042	7465A	mg/kg	483		0.46		6.3		21.7		1050		22.5		60.9		0.2	
A Horiz	C-300043	7017A	mg/kg	346		2.49		29.2		5.4		530		66.7		74.4		0.51	
A Horiz	C-300044	4393A	mg/kg	133		0.68		10.6		4.1		360		48.3		68.5		0.42	
A Horiz	C-300045	11561A	mg/kg	756		0.87		8.3		29.1		790		21.7		51.8		0.32	
A Horiz	C-300047	3113A	mg/kg	456		0.58		10.7		10.2		730		25.5		75.1		0.13	
A Horiz	C-300051	633A	mg/kg	796		0.78		6.9		44.7		750		17.5		83.1		0.53	
C Horiz	C-300261	7017C	mg/kg	516		4.27		35		7.2		1130		28.7		84.7		0.33	
C Horiz	C-300168	297C	mg/kg	188		0.21		5.8		6.5		370		28.6		128		0.05	U
C Horiz	C-300176	8297C	mg/kg	315		0.42		5.8		15.1		320		16.9		65.3		0.47	
C Horiz	C-300182	6953C	mg/kg	1520		4.65		21		31.3		1380		23.6		126		0.24	
C Horiz	C-300242	6969C	mg/kg	428		0.37		9.2		9.2		480		19.7		118		0.44	
C Horiz	C-300260	7465C	mg/kg	546		0.54		8.9		24.9		840		20.5		81.1		0.25	
C Horiz	C-300263	4393C	mg/kg	196		0.25		9.7		5.4		460		23.3		141		0.08	
C Horiz	C-300170	2153C	mg/kg	803		0.84		12.9		31.9		420		29.3		130		0.7	
C Horiz	C-300189	3881C	mg/kg	572		1.41		1.4		13.8		1260		30.7		19.3		0.43	
C Horiz	C-300212	6249C	mg/kg	347		0.51		8.3		12.8		800		23.8		110		0.6	
C Horiz	C-300245	7977C	mg/kg	720		0.4		5		37.9		480		14.1		72.2		0.86	

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	Mn	Qualifier	Mo	Qualifier	Nb	Qualifier	Ni	Qualifier	P	Qualifier	Pb	Qualifier	Rb	Qualifier	Sb	Qualifier
C Horiz	C-300257	5225C	mg/kg	441		0.52		7		34.2		640		17.1		70.2		0.49	
C Horiz	C-300177	9337C	mg/kg	1690		1.1		7.5		23.5		880		28.1		90.2		1.5	
C Horiz	C-300254	12393C	mg/kg	372		0.25		2.8		20.3		280		13.5		79.8		0.49	
C Horiz	C-300173	2873C	mg/kg	633		0.51		5.1		22.2		340		20.7		107		0.65	
C Horiz	C-300191	5945C	mg/kg	349		3.88		7.5		22.8		370		23.7		73.8		0.51	
C Horiz	C-300259	1849C	mg/kg	724		0.7		6.9		14.8		770		13.7		64.4		0.56	
C Horiz	C-300188	6633C	mg/kg	391		0.51		5.2		17		560		13.8		52.7		0.49	
C Horiz	C-300196	6521C	mg/kg	674		0.44		6.8		32.1		1960		22.5		84.5		0.69	
C Horiz	C-300208	4329C	mg/kg	508		0.38		5.8		47.6		540		17.8		87.7		0.42	
C Horiz	C-300217	4729C	mg/kg	515		0.58		7.4		31.9		1430		16.4		70.4		0.46	
C Horiz	C-300230	3897C	mg/kg	877		0.7		6.7		29.4		1350		17.1		64.3		0.83	
C Horiz	C-300237	7993C	mg/kg	1180		0.58		8		42.5		850		31.8		80.5		0.8	
C Horiz	C-300270	633C	mg/kg	837		1		7.4		55.4		580		16.8		90.5		0.65	
C Horiz	C-300271	10729C	mg/kg	265		0.35		6		20.8		420		16.3		106		0.3	
C Horiz	C-300238	233C	mg/kg	281		0.42		3.7		43.2		880		15.6		78.9		0.28	
C Horiz	C-300179	11065C	mg/kg	509		0.5		6.7		19.7		760		14.7		72		0.36	
C Horiz	C-300193	2537C	mg/kg	281		0.62		5.6		17.1		850		22.2		77.4		0.81	
C Horiz	C-300172	11753C	mg/kg	792		0.44		5.5		30.4		340		14.3		60.6		0.33	
C Horiz	C-300178	6441C	mg/kg	446		0.44		6.4		18.9		280		22.8		59.4		0.25	
C Horiz	C-300180	5673C	mg/kg	560		0.66		8.8		37.2		520		22.1		46.3		0.52	
C Horiz	C-300187	4649C	mg/kg	367		0.32		3.2		16.8		500		18.2		61.6		0.25	
C Horiz	C-300205	3369C	mg/kg	629		0.46		4.7		27		410		16		78.9		0.44	
C Horiz	C-300252	10537C	mg/kg	236		0.88		4.9		13.2		480		17.8		60		0.32	
C Horiz	C-300264	11561C	mg/kg	676		1.09		9		36.4		700		14.8		53.6		0.3	
C Horiz	C-300186	7209C	mg/kg	585		0.41		9.4		9.3		620		25.7		70.1		0.05	
C Horiz	C-300226	8489C	mg/kg	624		0.89		29.1		6.5		980		24.4		146		0.12	
C Horiz	C-300233	9513C	mg/kg	619		0.74		14.1		6.8		380		21		80.9		0.6	
C Horiz	C-300266	3113C	mg/kg	658		0.74		19.6		12.9		500		19.5		97.5		0.1	
C Horiz	C-300197	1129C	mg/kg	610		0.58		6.4		18.2		530		20.3		85.8		0.78	
C Horiz	C-300211	4201C	mg/kg	1330		0.86		5.9		22.4		610		15.3		83.7		0.9	
C Horiz	C-300246	105C	mg/kg	547		0.6		7		33.3		530		17.7		65.4		0.52	
C Horiz	C-300210	1769C	mg/kg	619		0.82		3.8		26.9		490		15.8		77.7		0.33	
C Horiz	C-300218	12841C	mg/kg	684		0.7		10.1		17.7		570		21.2		72.1		0.42	
C Horiz	C-300239	12073C	mg/kg	677		0.61		7.1		27.7		940		77.1		66.3		0.47	
C Horiz	C-300174	9321C	mg/kg	503		0.48		6.5		17.3		580		13.9		96.5		1.21	
C Horiz	C-300231	3561C	mg/kg	819		1.26		9.5		45.5		490		15.5		73.5		0.53	
C Horiz	C-300166	10041C	mg/kg	546		0.82		7.7		24.4		420		18		74.6		0.41	
0-5cm	C-300148	7017PH	mg/kg	383		0.66		3.1		7.1		950		59.4		14.1		0.62	
0-5cm	C-300056	297PH	mg/kg	222		0.4		3		4.6		630		37.6		77		0.3	
0-5cm	C-300064	8297PH	mg/kg	530		0.46		2.6		5		540		43.2		29.3		0.56	
0-5cm	C-300070	6953PH	mg/kg	735		0.65		11.5		41.5		410		22.6		127		0.42	
0-5cm	C-300127	6969PH	mg/kg	393		0.37		7.2		10		430		20		119		0.42	
0-5cm	C-300147	7465PH	mg/kg	491		0.58		8.8		21.4		1240		27.2		71.8		0.27	
0-5cm	C-300149	4393PH	mg/kg	103		0.65		8.2		6.3		530		68.4		48.2		0.5	
0-5cm	C-300161	11049PH	mg/kg	517		1.19		9.8		32.3		870		210		86.8		0.78	
0-5cm	C-300164	2857PH	mg/kg	407		1.3		4.9		17.7		1360		28.7		37.3		0.43	
0-5cm	C-300058	2153PH	mg/kg	317		0.92		8.3		10.9		510		41.7		88.3		0.4	
0-5cm	C-300077	3881PH	mg/kg	1240		0.92		0.6		15.9		1140		12.2		10.2		0.23	
0-5cm	C-300099	6249PH	mg/kg	428		0.58		6.4		16		570		21.5		104		0.52	
0-5cm	C-300131	7977PH	mg/kg	537		0.76		5.3		22.5		970		31.1		56.9		0.56	
0-5cm	C-300144	5225PH	mg/kg	462		0.54		7		30.2		1010		21.8		61.8		0.51	
0-5cm	C-300065	9337PH	mg/kg	1670		0.86		4.9		29.1		1180		25.5		74.7		1.2	
0-5cm	C-300139	12393PH	mg/kg	254		0.43		5.1		16.1		330		28.8		70		0.51	
0-5cm	C-300061	2873PH	mg/kg	486		0.44		3.7		19.7		1210		22.9		79.8		0.56	
0-5cm	C-300079	5945PH	mg/kg	388		3.03		7.4		13.2		520		32.1		55		0.55	
0-5cm	C-300146	1849PH	mg/kg	980		0.69		5.7		21.5		1280		22.2		66.5		0.65	
0-5cm	C-300076	6633PH	mg/kg	1460		0.34		3.3		8.8		950		19.2		33.6		0.42	
0-5cm	C-300083	6521PH	mg/kg	447		0.43		4.5		39.1		1460		18.2		75.8		0.48	
0-5cm	C-300093	4329PH	mg/kg	1250		0.44		4		32.1		830		20.2		90.2		0.46	
0-5cm	C-300103	4729PH	mg/kg	590		0.66		5.6		25.4		2330		15.8		63.1		0.4	

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	Mn	Qualifier	Mo	Qualifier	Nb	Qualifier	Ni	Qualifier	P	Qualifier	Pb	Qualifier	Rb	Qualifier	Sb	Qualifier
0-5cm	C-300114	3897PH	mg/kg	709		0.76		5.5		27.6		1450		21.3		53.7		0.77	
0-5cm	C-300123	7993PH	mg/kg	1020		0.55		4.8		41.2		940		26.1		71.3		0.66	
0-5cm	C-300157	633PH	mg/kg	838		0.73		7.3		42.8		770		18.6		77.5		0.58	
0-5cm	C-300124	233PH	mg/kg	129		0.34		4.3		9.1		550		7.2		59.9		0.31	
0-5cm	C-300158	745PH	mg/kg	1040		1.19		5.5		41.1		520		19.1		86.4		1.01	
0-5cm	C-300067	11065PH	mg/kg	617		0.54		6.5		14.7		600		21.9		94.9		0.46	
0-5cm	C-300080	2537PH	mg/kg	666		0.45		3.8		20.2		750		15.8		50.4		0.48	
0-5cm	C-300133	13033PH	mg/kg	461		0.4		1.2		9.8		790		26		29.8		0.33	
0-5cm	C-300060	11753PH	mg/kg	1190		0.88		4		50.3		730		21.9		104		0.51	
0-5cm	C-300066	6441PH	mg/kg	540		0.66		4.9		32.1		720		233		41.1		0.81	
0-5cm	C-300068	5673PH	mg/kg	860		0.78		5.7		46.4		750		36.6		47.6		0.41	
0-5cm	C-300073	4649PH	mg/kg	416		0.64		3.2		13		1060		91.7		57.5		0.32	
0-5cm	C-300092	3369PH	mg/kg	767		0.57		4.7		30.5		450		17.5		93.7		0.45	
0-5cm	C-300137	10537PH	mg/kg	394		0.39		4.9		20.3		420		12.6		72.3		0.23	
0-5cm	C-300150	11561PH	mg/kg	713		0.89		10.3		27		760		23.3		51.5		0.34	
0-5cm	C-300072	7209PH	mg/kg	471		0.82		5.7		9.1		630		35.7		62.4		0.15	
0-5cm	C-300112	8489PH	mg/kg	699		1.05		26.3		24.5		1220		30.8		188		0.18	
0-5cm	C-300117	9513PH	mg/kg	827		0.56		6.1		9.4		480		21.2		74.9		0.13	
0-5cm	C-300153	3113PH	mg/kg	483		0.52		13.4		8.4		710		31		88.4		0.14	
0-5cm	C-300159	11305PH	mg/kg	570		0.6		10.5		21.4		1050		25.6		80.1		0.2	
0-5cm	C-300084	1129PH	mg/kg	600		0.55		5.9		20.6		550		17.6		80.5		0.61	
0-5cm	C-300098	4201PH	mg/kg	1660		0.95		5.8		39.5		870		21		70.8		0.99	
0-5cm	C-300132	105PH	mg/kg	643		0.64		6.4		30.7		620		25.5		76.6		0.48	
0-5cm	C-300095	1769PH	mg/kg	703		0.81		4		30.4		610		16.4		75.4		0.47	
0-5cm	C-300105	12841PH	mg/kg	789		0.95		6.5		12.6		660		16.1		55.1		0.31	
0-5cm	C-300125	12073PH	mg/kg	675		0.69		6.9		27.1		1180		71.8		69.2		0.46	
0-5cm	C-300062	9321PH	mg/kg	244		0.44		2.6		8.8		640		38.5		41.3		0.65	
0-5cm	C-300059	10729PH	mg/kg	160		0.44		2.8		17.1		640		19.9		43.9		0.35	
0-5cm	C-300115	3561PH	mg/kg	817		1.17		6.9		44.1		560		13.4		67		0.41	
0-5cm	C-300054	10041PH	mg/kg	314		0.65		5		9.9		380		47.4		53.7		0.43	

IQR

Max	mg/kg	1690	4.65	35	61.8	2440	364	234	15.1
25%	mg/kg	405.25	0.46	4.9	13.725	502.5	17.85	62.575	0.3325
50%	mg/kg	567.5	0.64	6.3	21.85	640	22.5	74.95	0.48
75%	mg/kg	732.25	0.82	7.675	31.8	922.5	28.7	88.775	0.5975
90%	mg/kg	1054	1.161	10.51	42.53	1242	47.46	115.3	0.81
95%	mg/kg	1416.5	1.3605	13.785	47.06	1402	70.27	129.55	1.032
IQR	mg/kg	327	0.36	2.775	18.075	420	10.85	26.2	0.265
Upper IQR	mg/kg	1222.75	1.36	11.8375	58.9125	1552.5	44.975	128.075	0.995
Lower IQR	mg/kg	-85.25	-0.08	0.7375	-13.3875	-127.5	1.575	23.275	-0.065

Notes:

mg/kg - milligram per kilogram

U - undetected

J - estimated

Yellow highlighted cells indicate outliers

above the upper IQR

Orange highlighted cell indicate outliers

below the lower IQR

IQR - interquartile range

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	Sc	Qualifier	Sn	Qualifier	Sr	Qualifier	Te	Qualifier	Th	Qualifier	Tl	Qualifier	U	Qualifier	V	Qualifier
A Horiz	C-299944	10041A	mg/kg	7.7		2		71.8		0.1	U	5.1		0.4		1.3		55	
A Horiz	C-299946	297A	mg/kg	1.4		1.8		93.5		0.1	U	8		0.7		1.5		10	
A Horiz	C-299948	2153A	mg/kg	11.4		3.5		69.9		0.1	U	8.4		0.6		1.8		85	
A Horiz	C-299949	10729A	mg/kg	9.5		2		50.4		0.1	U	5.7		0.4		1.5		64	
A Horiz	C-299951	11753A	mg/kg	15.5		2.1		66.9		0.1	U	8		0.6		2.2		105	
A Horiz	C-299952	2873A	mg/kg	8.5		2.2		58.9		0.1	U	6.3		0.6		1.9		51	
A Horiz	C-299953	9321A	mg/kg	11.2		2.5		44.5		0.1	U	5.3		0.5		1.3		82	
A Horiz	C-299954	8297A	mg/kg	4.3		1.6		49.6		0.1	U	3.8		0.4		1.1		44	
A Horiz	C-299955	9337A	mg/kg	11.4		2.2		62.7		0.1	U	8.2		0.5		1.8		86	
A Horiz	C-299957	6441A	mg/kg	9.2		375		78.8		0.1	U	5.9		0.4		1.6		74	
A Horiz	C-299958	11065A	mg/kg	10.7		3.9		84.7		0.1	U	7.5		0.5		1.6		63	
A Horiz	C-299959	5673A	mg/kg	8.4		1.7		158		0.1	U	5.9		0.4		1.4		62	
A Horiz	C-299961	6953A	mg/kg	15.6		3.4		123		0.1	U	13.1		0.8		2.6		110	
A Horiz	C-299963	7209A	mg/kg	6.2		2.5		175		0.1	U	6.7		0.4		3.5		33	
A Horiz	C-299966	4649A	mg/kg	7		3.3		69.1		0.1	U	3.5		0.3		1.1		50	
A Horiz	C-299967	6633A	mg/kg	5.4		1.8		42.6		0.1	U	3.9		0.4		1.1		46	
A Horiz	C-299968	3881A	mg/kg	2.6		1.2		102		0.1	U	2.6		0.2		1.3		21	
A Horiz	C-299970	5945A	mg/kg	7.7		2.9		58.7		0.1	U	5.7		0.5		2		76	
A Horiz	C-299971	2537A	mg/kg	9.5		1.7		51		0.1	U	7.8		0.5		2		80	
A Horiz	C-299975	6521A	mg/kg	11.1		1.7		70.6		0.1	U	7.9		0.4		2.2		79	
A Horiz	C-299976	1129A	mg/kg	8.7		1.7		66.5		0.1	U	7.9		0.5		1.8		57	
A Horiz	C-299984	3369A	mg/kg	10.5		3.1		128		0.1	U	8.7		0.5		2		74	
A Horiz	C-299985	4329A	mg/kg	10.4		1.8		83.2		0.1	U	7.7		0.5		1.9		81	
A Horiz	C-299989	1769A	mg/kg	9.2		1.4		67.5		0.1	U	6.8		0.4		1.9		69	
A Horiz	C-299990	4201A	mg/kg	10.5		1.9		62.6		0.1	U	7		0.5		1.8		76	
A Horiz	C-299991	6249A	mg/kg	8.8		3.1		91.2		0.1	U	7.3		0.6		1.8		51	
A Horiz	C-299995	4729A	mg/kg	9.4		1.6		81.2		0.1	U	7		0.4		2.4		86	
A Horiz	C-299997	12841A	mg/kg	10.6		2.7		68.9		0.1	U	7.3		0.5		1.7		98	
A Horiz	C-300005	8489A	mg/kg	9		8.2		256		0.1	U	10.8		1.2		4.5		63	
A Horiz	C-300007	3897A	mg/kg	12.7		2.2		70.2		0.1	U	7.1		0.4		2.2		117	
A Horiz	C-300010	3561A	mg/kg	11.8		1.5		99.4		0.1	U	7		0.5		2		76	
A Horiz	C-300012	9513A	mg/kg	7.3		1.8		141		0.1	U	6.7		0.5		2.4		47	
A Horiz	C-300016	7993A	mg/kg	13.7		1.9		97.7		0.1	U	7.9		0.5		1.8		96	
A Horiz	C-300018	233A	mg/kg	10.9		1.9		43.3		0.1	U	7.2		0.5		1.6		96	
A Horiz	C-300019	12073A	mg/kg	8.6		6.6		132		0.1	U	7		0.4		1.6		59	
A Horiz	C-300021	6969A	mg/kg	10.8		1.9		75.4		0.1	U	9.4		0.5		1.4		28	
A Horiz	C-300024	7977A	mg/kg	7.8		1.9		71		0.1	U	6.6		0.4		1.7		62	
A Horiz	C-300026	105A	mg/kg	11.1		6.5		77.4		0.1	U	7.3		0.5		1.6		79	
A Horiz	C-300027	13033A	mg/kg	2.2		0.6		23.9		0.1	U	1.5		0.1		0.5		17	
A Horiz	C-300033	10537A	mg/kg	6.9		0.8		167		0.1	U	7.6		0.3		1.3		54	
A Horiz	C-300035	12393A	mg/kg	7.6		1.9		65.2		0.1	U	6.3		0.4		1.3		55	
A Horiz	C-300038	5225A	mg/kg	10.6		2.1		86.3		0.1	U	6.6		0.4		1.7		77	
A Horiz	C-300041	1849A	mg/kg	9.4		1.8		60		0.1	U	7.2		0.4		1.7		83	
A Horiz	C-300042	7465A	mg/kg	7.8		1.9		98.5		0.1	U	7.1		0.4		1.5		65	
A Horiz	C-300043	7017A	mg/kg	3		3.9		78.4		0.1	U	5.7		0.3		1.5		31	
A Horiz	C-300044	4393A	mg/kg	1.9		2.4		84.3		0.1	U	6		0.2		1.3		24	
A Horiz	C-300045	11561A	mg/kg	13.4		2.1		156		0.1	U	6.2		0.2		1.5		100	
A Horiz	C-300047	3113A	mg/kg	6		2		175		0.1	U	7.8		0.4		2.2		48	
A Horiz	C-300051	633A	mg/kg	14.7		1.9		103		0.1	U	7.9		0.4		2		117	
C Horiz	C-300261	7017C	mg/kg	5.9		4.6		82.7		0.1	U	12.7		0.5		2.3		44	
C Horiz	C-300168	297C	mg/kg	2.8		1.6		125		0.1	U	8.8		0.9		1.9		15	
C Horiz	C-300176	8297C	mg/kg	6.4		1.3		74.2		0.1	U	5.5		0.5		1.2		41	
C Horiz	C-300182	6953C	mg/kg	17		4		260		0.1	U	16		0.8		2.9		111	
C Horiz	C-300242	6969C	mg/kg	13.1		2.2		76.2		0.1	U	9.4		0.7		1.5		31	
C Horiz	C-300260	7465C	mg/kg	11.1		2.3		108		0.1	U	8.2		0.5		1.9		73	
C Horiz	C-300263	4393C	mg/kg	2.4		1.5		150		0.1	U	8.5		0.8		1.6		13	
C Horiz	C-300170	2153C	mg/kg	16.8		3.7		87.9		0.1	U	14.4		0.9		2.5		103	
C Horiz	C-300189	3881C	mg/kg	3.2		1.3		108		0.1	U	2.9		0.1		1.8		17	
C Horiz	C-300212	6249C	mg/kg	8.1		2.5		105		0.1	U	7.7		0.7		1.6		43	
C Horiz	C-300245	7977C	mg/kg	11.4		1.6		69.9		0.1	U	9.4		0.4		1.7		70	

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	Sc	Qualifier	Sn	Qualifier	Sr	Qualifier	Te	Qualifier	Th	Qualifier	Tl	Qualifier	U	Qualifier	V	Qualifier
C Horiz	C-300257	5225C	mg/kg	11.1		1.9		91.2		0.1	U	8.3		0.4		1.7		77	
C Horiz	C-300177	9337C	mg/kg	13.6		2.6		70		0.1	U	9.6		0.6		2		95	
C Horiz	C-300254	12393C	mg/kg	8.5		1.3		76.5		0.1	U	5.6		0.4		1.2		49	
C Horiz	C-300173	2873C	mg/kg	11		1.8		65.3		0.1	U	7.1		0.7		1.6		54	
C Horiz	C-300191	5945C	mg/kg	10.1		2		62.4		0.1	U	7.2		0.6		2		76	
C Horiz	C-300259	1849C	mg/kg	10.2		2		62.2		0.1	U	7.8		0.5		1.8		93	
C Horiz	C-300188	6633C	mg/kg	9.4		1.5		51.1		0.1	U	6.2		0.4		1.5		64	
C Horiz	C-300196	6521C	mg/kg	10.9		1.8		71.6		0.1	U	8		0.5		3		81	
C Horiz	C-300208	4329C	mg/kg	13.5		1.9		102		0.1	U	9.3		0.5		2.2		96	
C Horiz	C-300217	4729C	mg/kg	10.9		1.7		91.4		0.1	U	7.3		0.4		2.4		94	
C Horiz	C-300230	3897C	mg/kg	14.1		2.1		81.8		0.1	U	7.7		0.5		2.1		131	
C Horiz	C-300237	7993C	mg/kg	13.8		2.8		100		0.1	U	8.2		0.5		2.1		103	
C Horiz	C-300270	633C	mg/kg	18.3		2.1		103		0.1	U	8.9		0.5		2.3		134	
C Horiz	C-300271	10729C	mg/kg	14.6		2.3		57.9		0.1	U	6.9		0.6		1.7		103	
C Horiz	C-300238	233C	mg/kg	12.2		1.8		47.5		0.1	U	7.8		0.5		1.6		103	
C Horiz	C-300179	11065C	mg/kg	9.9		1.9		71.6		0.1	U	5.9		0.5		1.3		72	
C Horiz	C-300193	2537C	mg/kg	11.5		2.1		49.4		0.1	U	6.9		0.6		1.9		110	
C Horiz	C-300172	11753C	mg/kg	12		1.4		83.9		0.1	U	6.7		0.4		1.6		74	
C Horiz	C-300178	6441C	mg/kg	10.5		2.8		88.2		0.1	U	5.7		0.5		1.5		102	
C Horiz	C-300180	5673C	mg/kg	6.8		1.6		140		0.1	U	5		0.3		1.4		51	
C Horiz	C-300187	4649C	mg/kg	9		1.2		83.7		0.1	U	4.1		0.3		1		55	
C Horiz	C-300205	3369C	mg/kg	11.4		1.6		137		0.1	U	7.2		0.5		1.7		77	
C Horiz	C-300252	10537C	mg/kg	6.3		1		162		0.1	U	6.5		0.3		1.7		39	
C Horiz	C-300264	11561C	mg/kg	15.8		2.2		147		0.1	U	8.1		0.3		2		116	
C Horiz	C-300186	7209C	mg/kg	6.3		1.9		193		0.1	U	8.2		0.5		3.6		31	
C Horiz	C-300226	8489C	mg/kg	3.3		3.4		136		0.1	U	7.4		1		2.2		25	
C Horiz	C-300233	9513C	mg/kg	6.2		1.6		177		0.1	U	9.7		0.5		3.9		40	
C Horiz	C-300266	3113C	mg/kg	10.6		2.4		180		0.1	U	14.5		0.6		4.6		65	
C Horiz	C-300197	1129C	mg/kg	9.6		1.8		69		0.1	U	6.9		0.6		1.6		62	
C Horiz	C-300211	4201C	mg/kg	10.9		2		62.4		0.1	U	7.3		0.6		1.8		83	
C Horiz	C-300246	105C	mg/kg	12.3		1.8		79.2		0.1	U	6.6		0.4		1.5		86	
C Horiz	C-300210	1769C	mg/kg	10.8		1.5		66.1		0.1	U	7		0.5		1.9		75	
C Horiz	C-300218	12841C	mg/kg	12.3		2.6		86		0.1	U	8.4		0.5		1.9		93	
C Horiz	C-300239	12073C	mg/kg	9.3		6.4		129		0.1	U	7.3		0.4		1.5		64	
C Horiz	C-300174	9321C	mg/kg	13.7		2.2		54.8		0.1	U	7.1		0.6		1.5		89	
C Horiz	C-300231	3561C	mg/kg	12.9		1.8		98.9		0.1	U	7		0.5		2.1		74	
C Horiz	C-300166	10041C	mg/kg	12.8		1.7		127		0.1	U	7.7		0.6		1.8		72	
0-5cm	C-300148	7017PH	mg/kg	1		1.7		39.6		0.1	U	1.9		0.2		0.5		15	
0-5cm	C-300056	297PH	mg/kg	1.2		1.4		69.3		0.1	U	3.1		0.3		0.8		12	
0-5cm	C-300064	8297PH	mg/kg	2.2		1.7		41		0.1	U	2.1		0.3		0.6		25	
0-5cm	C-300070	6953PH	mg/kg	14.9		3.1		136		0.1	U	10.9		0.7		2.3		107	
0-5cm	C-300127	6969PH	mg/kg	10.8		1.9		75.5		0.1	U	8.9		0.6		1.3		29	
0-5cm	C-300147	7465PH	mg/kg	10.8		2.4		106		0.1	U	7.7		0.5		1.9		69	
0-5cm	C-300149	4393PH	mg/kg	1.5		2		65.5		0.1	U	4.6		0.5		1.1		19	
0-5cm	C-300161	11049PH	mg/kg	10		3.4		143		0.1	U	7.7		0.7		2.9		67	
0-5cm	C-300164	2857PH	mg/kg	6.3		1.5		97.5		0.1	U	3.9		0.3		1.9		46	
0-5cm	C-300058	2153PH	mg/kg	8.2		2.6		54.4		0.1	U	6.6		0.5		1.4		64	
0-5cm	C-300077	3881PH	mg/kg	1.3		0.4		108		0.1	U	1.3		0.1		0.7		14	
0-5cm	C-300099	6249PH	mg/kg	6.9		2.3		97.9		0.1	U	6.3		0.6		1.4		47	
0-5cm	C-300131	7977PH	mg/kg	7.8		1.8		73.8		0.1	U	7.4		0.2		1.7		62	
0-5cm	C-300144	5225PH	mg/kg	10.4		2.1		92.5		0.1	U	6.3		0.4		1.6		77	
0-5cm	C-300065	9337PH	mg/kg	9.5		1.9		70.5		0.1	U	6.7		0.5		1.4		85	
0-5cm	C-300139	12393PH	mg/kg	6.7		1.9		60.4		0.1	U	4.7		0.4		1.1		54	
0-5cm	C-300061	2873PH	mg/kg	6.7		1.8		61		0.1	U	4.6		0.5		1.4		50	
0-5cm	C-300079	5945PH	mg/kg	6.2		2.3		61.6		0.1	U	4.9		0.4		1.7		74	
0-5cm	C-300146	1849PH	mg/kg	11.2		2.2		64		0.1	U	7.5		0.5		1.8		91	
0-5cm	C-300076	6633PH	mg/kg	4.8		1.3		46.6		0.1	U	3.5		0.3		0.9		44	
0-5cm	C-300083	6521PH	mg/kg	10.1		1.7		65.9		0.1	U	7.3		0.4		2		74	
0-5cm	C-300093	4329PH	mg/kg	10.5		1.7		89.9		0.1	U	7.3		0.3		1.8		84	
0-5cm	C-300103	4729PH	mg/kg	9.1		1.4		83.8		0.1	U	6.5		0.3		2.1		81	

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	Sc	Qualifier	Sn	Qualifier	Sr	Qualifier	Te	Qualifier	Th	Qualifier	Tl	Qualifier	U	Qualifier	V	Qualifier
0-5cm	C-300114	3897PH	mg/kg	10.7		2.1		71		0.1	U	6.2		0.4		1.9		117	
0-5cm	C-300123	7993PH	mg/kg	11.5		2.2		96.2		0.1	U	6.9		0.4		1.7		89	
0-5cm	C-300157	633PH	mg/kg	16.4		2		109		0.1	U	8.2		0.5		2.2		119	
0-5cm	C-300124	233PH	mg/kg	9.9		1.8		42.6		0.1	U	6.8		0.5		1.5		96	
0-5cm	C-300158	745PH	mg/kg	18.7		1.9		81.7		0.1	U	8.8		0.6		2.4		130	
0-5cm	C-300067	11065PH	mg/kg	11.2		2.2		91.6		0.1	U	7.3		0.4		1.4		53	
0-5cm	C-300080	2537PH	mg/kg	6.9		1.3		51.7		0.1	U	5.4		0.3		1.3		71	
0-5cm	C-300133	13033PH	mg/kg	4.1		1		27.4		0.1	U	2.8		0.2		0.7		28	
0-5cm	C-300060	11753PH	mg/kg	15.1		1.9		67.1		0.1	U	7.3		0.5		1.9		106	
0-5cm	C-300066	6441PH	mg/kg	7.6		88.9		76.2		0.1	U	4.6		0.3		1.2		79	
0-5cm	C-300068	5673PH	mg/kg	6		1.7		121		0.1	U	4.5		0.2		1.1		53	
0-5cm	C-300073	4649PH	mg/kg	6.3		3		72.7		0.1	U	3.2		0.3		0.9		47	
0-5cm	C-300092	3369PH	mg/kg	11.4		1.6		156		0.1	U	7.8		0.5		1.8		85	
0-5cm	C-300137	10537PH	mg/kg	7.7		0.9		166		0.1	U	8.2		0.3		1.5		51	
0-5cm	C-300150	11561PH	mg/kg	14.7		2.4		159		0.1	U	5.6		0.3		1.5		98	
0-5cm	C-300072	7209PH	mg/kg	5		2		167		0.1	U	9.2		0.3		3.4		30	
0-5cm	C-300112	8489PH	mg/kg	7.7		6.6		237		0.1	U	7.5		1.1		3.3		62	
0-5cm	C-300117	9513PH	mg/kg	6.9		1.5		137		0.1	U	6.5		0.4		2		45	
0-5cm	C-300153	3113PH	mg/kg	7.1		2.3		190		0.1	U	8.8		0.5		2.5		46	
0-5cm	C-300159	11305PH	mg/kg	11		2.7		128		0.1	U	8.7		0.6		2.4		71	
0-5cm	C-300084	1129PH	mg/kg	8.6		1.6		59.7		0.1	U	7.3		0.5		1.5		61	
0-5cm	C-300098	4201PH	mg/kg	9.3		1.9		63.2		0.1	U	7		0.4		1.6		76	
0-5cm	C-300132	105PH	mg/kg	11.9		2.8		83.5		0.1	U	7.3		0.4		1.7		85	
0-5cm	C-300095	1769PH	mg/kg	10.1		1.4		66.7		0.1	U	7.2		0.4		1.9		71	
0-5cm	C-300105	12841PH	mg/kg	8.3		4.9		71		0.1	U	4.4		0.3		1.2		87	
0-5cm	C-300125	12073PH	mg/kg	8.4		6.1		138		0.1	U	7.3		0.4		1.5		60	
0-5cm	C-300062	9321PH	mg/kg	5.6		1.7		36.3		0.1	U	2.6		0.2		0.6		44	
0-5cm	C-300059	10729PH	mg/kg	6.7		1.4		53.6		0.1	U	4.5		0.2		1.2		55	
0-5cm	C-300115	3561PH	mg/kg	11.3		1.3		100		0.1	U	6.6		0.4		1.9		68	
0-5cm	C-300054	10041PH	mg/kg	6.6		1.8		90.3		0.1	U	4.4		0.4		1.1		59	

IQR																			
Max	mg/kg	18.7		375		260		0.1		16		1.2		4.6		134			
25%	mg/kg	6.9		1.7		65.6		0.1		5.9		0.4		1.4		49.25			
50%	mg/kg	9.5		1.9		81.75		0.1		7.1		0.5		1.7		69.5			
75%	mg/kg	11.275		2.4		108		0.1		7.9		0.5		2		85			
90%	mg/kg	13.71		3.41		156.2		0.1		8.9		0.6		2.4		103			
95%	mg/kg	15.32		5.56		175		0.1		9.655		0.755		2.955		113.75			
IQR	mg/kg	4.375		0.7		42.4		0		2		0.1		0.6		35.75			
Upper IQR	mg/kg	17.8375		3.45		171.6		0.1		10.9		0.65		2.9		138.625			
Lower IQR	mg/kg	0.3375		0.65		2		0.1		2.9		0.25		0.5		-4.375			

Notes:
mg/kg - milligram per kilogram
U - undetected
J - estimated
Yellow highlighted cells indicate outliers
above the upper IQR
Orange highlighted cell indicate outliers
below the lower IQR
IQR - interquartile range

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	W	Qualifier	Y	Qualifier	Zn	Qualifier	Se	Qualifier
A Horiz	C-299944	10041A	mg/kg	0.5		7		29		0.4	
A Horiz	C-299946	297A	mg/kg	0.4		3.7		10		0.2	U
A Horiz	C-299948	2153A	mg/kg	0.9		9.9		68		0.9	
A Horiz	C-299949	10729A	mg/kg	0.4		7.5		37		0.2	U
A Horiz	C-299951	11753A	mg/kg	0.5		13.2		109		0.2	
A Horiz	C-299952	2873A	mg/kg	0.5		10.5		85		0.3	
A Horiz	C-299953	9321A	mg/kg	0.7		6.6		40		0.9	
A Horiz	C-299954	8297A	mg/kg	0.5		5.4		17		0.4	
A Horiz	C-299955	9337A	mg/kg	1		9		122		0.7	
A Horiz	C-299957	6441A	mg/kg	0.6		7.7		79		0.5	
A Horiz	C-299958	11065A	mg/kg	0.6		17.6		59		0.3	
A Horiz	C-299959	5673A	mg/kg	0.7		11.1		57		0.2	U
A Horiz	C-299961	6953A	mg/kg	1.2		15.9		79		0.2	
A Horiz	C-299963	7209A	mg/kg	0.8		11.8		1440		0.2	
A Horiz	C-299966	4649A	mg/kg	0.4		5.4		120		0.2	U
A Horiz	C-299967	6633A	mg/kg	0.5		6.2		69		0.3	
A Horiz	C-299968	3881A	mg/kg	2.4		8.6		86		0.8	
A Horiz	C-299970	5945A	mg/kg	0.9		8.6		50		0.7	
A Horiz	C-299971	2537A	mg/kg	0.4		9.7		72		0.3	
A Horiz	C-299975	6521A	mg/kg	0.5		13.8		89		0.2	U
A Horiz	C-299976	1129A	mg/kg	0.6		10.8		57		0.4	
A Horiz	C-299984	3369A	mg/kg	5.1		12.6		60		0.2	U
A Horiz	C-299985	4329A	mg/kg	0.3		11.7		94		0.2	U
A Horiz	C-299989	1769A	mg/kg	0.3		9.2		77		0.2	U
A Horiz	C-299990	4201A	mg/kg	0.6		7.6		108		0.5	
A Horiz	C-299991	6249A	mg/kg	0.8		17.2		56		0.3	
A Horiz	C-299995	4729A	mg/kg	0.6		10.5		105		0.2	
A Horiz	C-299997	12841A	mg/kg	3.3		9.6		51		0.4	
A Horiz	C-300005	8489A	mg/kg	2.1		14.2		73		0.2	U
A Horiz	C-300007	3897A	mg/kg	0.7		11.9		94		0.6	
A Horiz	C-300010	3561A	mg/kg	0.3		18.7		66		0.2	U
A Horiz	C-300012	9513A	mg/kg	0.6		12.9		37		0.2	U
A Horiz	C-300016	7993A	mg/kg	0.4		16.4		99		0.2	U
A Horiz	C-300018	233A	mg/kg	0.2		7.5		49		0.4	
A Horiz	C-300019	12073A	mg/kg	0.7		10.5		102		0.2	
A Horiz	C-300021	6969A	mg/kg	0.8		21.8		51		0.2	U
A Horiz	C-300024	7977A	mg/kg	0.5		6.4		73		0.6	
A Horiz	C-300026	105A	mg/kg	43		11.3		78		0.4	
A Horiz	C-300027	13033A	mg/kg	0.3		2.6		43		0.4	
A Horiz	C-300033	10537A	mg/kg	0.4		8.8		37		0.2	U
A Horiz	C-300035	12393A	mg/kg	1.1		7.9		44		0.5	
A Horiz	C-300038	5225A	mg/kg	0.7		9.9		71		0.6	
A Horiz	C-300041	1849A	mg/kg	0.4		9.4		97		0.9	
A Horiz	C-300042	7465A	mg/kg	0.6		8.5		62		0.4	
A Horiz	C-300043	7017A	mg/kg	1.2		7.9		39		0.7	
A Horiz	C-300044	4393A	mg/kg	0.7		3.7		18		0.7	
A Horiz	C-300045	11561A	mg/kg	1.1		13.5		69		0.3	
A Horiz	C-300047	3113A	mg/kg	0.7		9.3		48		0.2	U
A Horiz	C-300051	633A	mg/kg	0.5		19.3		111		0.2	U
C Horiz	C-300261	7017C	mg/kg	6.8		12.8		84		1.7	
C Horiz	C-300168	297C	mg/kg	0.3		5.9		19		0.2	U
C Horiz	C-300176	8297C	mg/kg	0.4		8.3		44		0.5	
C Horiz	C-300182	6953C	mg/kg	1.1		25.7		107		0.2	U
C Horiz	C-300242	6969C	mg/kg	0.9		25.1		62		0.2	U
C Horiz	C-300260	7465C	mg/kg	0.8		10.6		63		0.4	
C Horiz	C-300263	4393C	mg/kg	0.4		6.7		23		0.2	U
C Horiz	C-300170	2153C	mg/kg	1.1		14.7		88		0.3	
C Horiz	C-300189	3881C	mg/kg	0.3		10.2		46		1	
C Horiz	C-300212	6249C	mg/kg	0.8		16.7		46		0.2	U
C Horiz	C-300245	7977C	mg/kg	0.3		10.7		57		0.2	U

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	W	Qualifier	Y	Qualifier	Zn	Qualifier	Se	Qualifier
C Horiz	C-300257	5225C	mg/kg	0.6		9.8		63		0.5	
C Horiz	C-300177	9337C	mg/kg	1.1		11.4		139		0.9	
C Horiz	C-300254	12393C	mg/kg	0.6		9.5		38		0.2	U
C Horiz	C-300173	2873C	mg/kg	0.5		13.8		51		0.2	
C Horiz	C-300191	5945C	mg/kg	0.7		10.9		91		0.8	
C Horiz	C-300259	1849C	mg/kg	0.6		10.8		67		0.5	
C Horiz	C-300188	6633C	mg/kg	0.4		11.4		75		0.3	
C Horiz	C-300196	6521C	mg/kg	0.5		13		95		0.2	U
C Horiz	C-300208	4329C	mg/kg	0.4		13.8		94		0.2	U
C Horiz	C-300217	4729C	mg/kg	1.7		12.1		93		0.2	U
C Horiz	C-300230	3897C	mg/kg	0.5		13.6		102		0.5	
C Horiz	C-300237	7993C	mg/kg	0.7		16.7		103		0.2	U
C Horiz	C-300270	633C	mg/kg	0.7		25.4		93		0.2	U
C Horiz	C-300271	10729C	mg/kg	0.5		7.7		55		0.2	U
C Horiz	C-300238	233C	mg/kg	0.2		9		89		0.3	
C Horiz	C-300179	11065C	mg/kg	0.5		11.6		81		0.4	
C Horiz	C-300193	2537C	mg/kg	0.4		10.3		68		0.2	
C Horiz	C-300172	11753C	mg/kg	0.3		12.2		59		0.2	U
C Horiz	C-300178	6441C	mg/kg	0.6		7.8		37		0.2	
C Horiz	C-300180	5673C	mg/kg	0.5		11.6		39		0.3	
C Horiz	C-300187	4649C	mg/kg	0.3		8.3		61		0.2	U
C Horiz	C-300205	3369C	mg/kg	0.5		13.5		60		0.2	U
C Horiz	C-300252	10537C	mg/kg	2.7		7.2		33		0.2	U
C Horiz	C-300264	11561C	mg/kg	1.1		14.2		62		0.4	
C Horiz	C-300186	7209C	mg/kg	0.6		14		28		0.2	U
C Horiz	C-300226	8489C	mg/kg	1.4		8.7		35		0.3	
C Horiz	C-300233	9513C	mg/kg	1		11.3		31		0.2	U
C Horiz	C-300266	3113C	mg/kg	32.1		17.3		52		0.2	U
C Horiz	C-300197	1129C	mg/kg	0.5		10.9		62		0.4	
C Horiz	C-300211	4201C	mg/kg	0.5		7.6		65		0.3	
C Horiz	C-300246	105C	mg/kg	0.6		10.4		69		0.5	
C Horiz	C-300210	1769C	mg/kg	0.2		9.8		70		0.2	U
C Horiz	C-300218	12841C	mg/kg	5		12.1		65		0.4	
C Horiz	C-300239	12073C	mg/kg	0.7		10.2		96		0.2	U
C Horiz	C-300174	9321C	mg/kg	1.1		8.2		55		0.9	
C Horiz	C-300231	3561C	mg/kg	0.5		19		65		0.2	U
C Horiz	C-300166	10041C	mg/kg	0.7		11.8		72		0.5	
0-5cm	C-300148	7017PH	mg/kg	1		2		61		0.5	
0-5cm	C-300056	297PH	mg/kg	0.3		2.3		21		0.4	
0-5cm	C-300064	8297PH	mg/kg	0.3		3.1		22		0.5	
0-5cm	C-300070	6953PH	mg/kg	1.1		15.2		68		0.2	
0-5cm	C-300127	6969PH	mg/kg	0.8		20.7		45		0.2	U
0-5cm	C-300147	7465PH	mg/kg	0.8		10.5		74		0.3	
0-5cm	C-300149	4393PH	mg/kg	0.8		3.4		31		0.7	
0-5cm	C-300161	11049PH	mg/kg	8.6		13.7		126		0.3	
0-5cm	C-300164	2857PH	mg/kg	1.3		8.2		218		0.5	
0-5cm	C-300058	2153PH	mg/kg	0.6		7.5		46		0.9	
0-5cm	C-300077	3881PH	mg/kg	3		5.1		70		0.6	
0-5cm	C-300099	6249PH	mg/kg	0.7		14		51		0.2	U
0-5cm	C-300131	7977PH	mg/kg	0.6		7		68		0.6	
0-5cm	C-300144	5225PH	mg/kg	0.6		9.3		76		0.4	
0-5cm	C-300065	9337PH	mg/kg	0.8		8.2		105		0.7	
0-5cm	C-300139	12393PH	mg/kg	1		7.6		39		0.5	
0-5cm	C-300061	2873PH	mg/kg	0.4		8.1		75		0.3	
0-5cm	C-300079	5945PH	mg/kg	0.8		7.2		54		0.7	
0-5cm	C-300146	1849PH	mg/kg	0.6		10.6		99		0.6	
0-5cm	C-300076	6633PH	mg/kg	0.4		5.6		59		0.3	
0-5cm	C-300083	6521PH	mg/kg	0.6		12.7		79		0.2	U
0-5cm	C-300093	4329PH	mg/kg	0.3		11.3		89		0.2	U
0-5cm	C-300103	4729PH	mg/kg	0.5		10.2		96		0.3	

Appendix B3. Identification of Outliers for Background Metals in Soil

Dataset	Lab No.	Field No.	Units	W	Qualifier	Y	Qualifier	Zn	Qualifier	Se	Qualifier
0-5cm	C-300114	3897PH	mg/kg	0.4		10.8		88		0.5	
0-5cm	C-300123	7993PH	mg/kg	0.5		13.6		89		0.2	U
0-5cm	C-300157	633PH	mg/kg	0.6		18.5		132		0.2	U
0-5cm	C-300124	233PH	mg/kg	0.2		7.1		31		0.2	U
0-5cm	C-300158	745PH	mg/kg	0.5		23.5		86		0.2	U
0-5cm	C-300067	11065PH	mg/kg	0.5		19.3		55		0.2	U
0-5cm	C-300080	2537PH	mg/kg	0.3		6.7		85		0.3	
0-5cm	C-300133	13033PH	mg/kg	0.1		3.8		37		0.4	
0-5cm	C-300060	11753PH	mg/kg	0.5		12.5		99		0.2	
0-5cm	C-300066	6441PH	mg/kg	0.6		6.3		71		0.5	
0-5cm	C-300068	5673PH	mg/kg	0.4		8.2		60		0.5	
0-5cm	C-300073	4649PH	mg/kg	0.4		5		125		0.2	U
0-5cm	C-300092	3369PH	mg/kg	0.5		14.1		60		0.2	U
0-5cm	C-300137	10537PH	mg/kg	0.5		9.3		34		0.2	U
0-5cm	C-300150	11561PH	mg/kg	1.1		15		74		0.2	
0-5cm	C-300072	7209PH	mg/kg	0.6		11		29		0.2	
0-5cm	C-300112	8489PH	mg/kg	1.5		12.8		65		0.2	U
0-5cm	C-300117	9513PH	mg/kg	0.6		12.9		34		0.2	U
0-5cm	C-300153	3113PH	mg/kg	0.8		11.7		51		0.2	U
0-5cm	C-300159	11305PH	mg/kg	1.1		12.4		61		0.2	
0-5cm	C-300084	1129PH	mg/kg	0.6		10		55		0.4	
0-5cm	C-300098	4201PH	mg/kg	0.5		7.7		107		0.6	
0-5cm	C-300132	105PH	mg/kg	0.6		11.8		77		0.5	
0-5cm	C-300095	1769PH	mg/kg	0.4		9.7		71		0.2	U
0-5cm	C-300105	12841PH	mg/kg	1.7		7.6		56		0.4	
0-5cm	C-300125	12073PH	mg/kg	0.7		10.3		99		0.2	
0-5cm	C-300062	9321PH	mg/kg	0.3		3.8		35		0.8	
0-5cm	C-300059	10729PH	mg/kg	0.2		6.5		34		0.3	
0-5cm	C-300115	3561PH	mg/kg	0.3		19.2		54		0.2	U
0-5cm	C-300054	10041PH	mg/kg	0.4		6.8		24		0.5	

IQR

Max	mg/kg	43	25.7	1440	1.7
25%	mg/kg	0.4	7.725	48.25	0.2
50%	mg/kg	0.6	10.45	65	0.3
75%	mg/kg	0.8	12.9	87.5	0.5
90%	mg/kg	1.31	16.75	103.2	0.7
95%	mg/kg	2.865	19.255	115.95	0.855
IQR	mg/kg	0.4	5.175	39.25	0.3
Upper IQR	mg/kg	1.4	20.6625	146.375	0.95
Lower IQR	mg/kg	-0.2	-0.0375	-10.625	-0.25

Notes:
 mg/kg - milligram per kilogram
 U - undetected
 J - estimated
 Yellow highlighted cells indicate outliers
 above the upper IQR
 Orange highlighted cell indicate outliers
 below the lower IQR
 IQR - interquartile range

Prepared By: EYM
 Checked By: RRD

Appendix D4

Appendix D4: Rosner Test Outputs from ProUCL for Select Metals

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Input.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 5

Rosner's Outlier Test for AsICPEAS

Mean 10.9
Standard Deviation 7.189
Number of data 150
Number of suspected outliers 5

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	10.9	7.165	43	9	4.48	3.52	3.89
2	10.68	6.71	42	62	4.667	3.51	3.89
3	10.47	6.214	34	93	3.786	3.51	3.89
4	10.31	5.922	32	68	3.662	3.51	3.88
5	10.16	5.661	29	30	3.328	3.51	3.88

For 5% significance level, there are 4 Potential Outliers
 Therefore, Potential Statistical Outliers are
 43, 42, 34, 32

For 1% Significance Level, there are 2 Potential Outliers
 Therefore, Potential Statistical Outliers are
 43, 42

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Input.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 6

Rosner's Outlier Test for Ba

Mean 356
Standard Deviation 107.6
Number of data 150
Number of suspected outliers 6

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	356	107.2	717	18	3.366	3.52	3.89
2	353.6	103.8	688	115	3.222	3.51	3.89
3	351.3	100.4	638	65	2.856	3.51	3.89
4	349.4	97.87	619	53	2.755	3.51	3.88
5	347.5	95.61	89	98	2.704	3.51	3.88
6	349.3	93.47	602	73	2.703	3.508	3.878

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Appendix D4: Rosner Test Outputs from ProUCL for Select Metals

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Format.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 1

Rosner's Outlier Test for Co

Mean 8.861
Standard Deviation 4.638
Number of data 150
Number of suspected outliers 1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	8.861	4.623	20.8	73	2.583	3.52	3.89

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Format.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 1

Rosner's Outlier Test for Cr

Mean 50.61
Standard Deviation 21.92
Number of data 150
Number of suspected outliers 1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	50.61	21.85	98	69	2.169	3.52	3.89

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Appendix D4: Rosner Test Outputs from ProUCL for Select Metals

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Format.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 1

Rosner's Outlier Test for V

Mean 67.75
Standard Deviation 27.67
Number of data 150
Number of suspected outliers 1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	67.75	27.57	134	73	2.403	3.52	3.89

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Input.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 8

Rosner's Outlier Test for Ga

Mean 13.54
Standard Deviation 4.012
Number of data 150
Number of suspected outliers 8

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	13.54	3.999	1.37	108	3.043	3.52	3.89
2	13.62	3.899	25.4	53	3.021	3.51	3.89
3	13.54	3.788	2.26	98	2.978	3.51	3.89
4	13.62	3.684	3.07	17	2.863	3.51	3.88
5	13.69	3.591	3.07	39	2.958	3.51	3.88
6	13.76	3.492	3.76	58	2.865	3.508	3.878
7	13.83	3.402	23.2	50	2.753	3.506	3.876
8	13.77	3.322	4.78	128	2.706	3.504	3.874

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Appendix D4: Rosner Test Outputs from ProUCL for Select Metals

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Input.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 3

Rosner's Outlier Test for Li

Mean 28.24
Standard Deviation 17.79
Number of data 150
Number of suspected outliers 3

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	28.24	17.74	145	29	6.583	3.52	3.89
2	27.46	15.04	137	137	7.286	3.51	3.89
3	26.72	12.06	57	53	2.511	3.51	3.89

For 5% significance level, there are 2 Potential Outliers
 Therefore, Potential Statistical Outliers are
 145, 137

For 1% Significance Level, there are 2 Potential Outliers
 Therefore, Potential Statistical Outliers are
 145, 137

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Input.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 10

Rosner's Outlier Test for Mn

Mean 623.7
Standard Deviation 336.3
Number of data 150
Number of suspected outliers 10

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	623.7	335.2	1690	62	3.181	3.52	3.89
2	616.6	325.8	1670	112	3.233	3.51	3.89
3	609.5	315.1	1660	142	3.334	3.51	3.89
4	602.3	303.9	1570	9	3.184	3.51	3.88
5	595.7	294.1	1560	25	3.279	3.51	3.88
6	589	283.9	1520	53	3.279	3.508	3.878
7	582.6	273.9	1460	117	3.203	3.506	3.876
8	576.4	264.8	1430	23	3.224	3.504	3.874
9	570.4	255.7	1400	16	3.244	3.502	3.872
10	564.5	246.8	1330	90	3.101	3.5	3.87

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Appendix D4: Rosner Test Outputs from ProUCL for Select Metals

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Input.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 10

Rosner's Outlier Test for Nb

Mean 7.288
Standard Deviation 5.219
Number of data 150
Number of suspected outliers 10

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	7.288	5.202	35	50	5.327	3.52	3.89
2	7.102	4.712	32.4	29	5.369	3.51	3.89
3	6.931	4.239	29.2	45	5.253	3.51	3.89
4	6.78	3.831	29.1	86	5.827	3.51	3.88
5	6.627	3.364	26.3	137	5.848	3.51	3.88
6	6.491	2.948	21	53	4.922	3.508	3.878
7	6.39	2.696	19.6	88	4.9	3.506	3.876
8	6.298	2.466	14.1	87	3.164	3.504	3.874
9	6.243	2.385	13.4	139	3.001	3.502	3.872
10	6.192	2.315	12.9	57	2.897	3.5	3.87

For 5% significance level, there are 7 Potential Outliers
 Therefore, Potential Statistical Outliers are
 35, 32.4, 29.2, 29.1, 26.3, 21, 19.6

For 1% Significance Level, there are 7 Potential Outliers
 Therefore, Potential Statistical Outliers are
 35, 32.4, 29.2, 29.1, 26.3, 21, 19.6

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Input.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 1

Rosner's Outlier Test for Ni

Mean 23.75
Standard Deviation 12.62
Number of data 150
Number of suspected outliers 1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	23.75	12.57	61.8	12	3.026	3.52	3.89

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Appendix D4: Rosner Test Outputs from ProUCL for Select Metals

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Input.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 7

Rosner's Outlier Test for Sb

Mean 0.606
Standard Deviation 1.221
Number of data 150
Number of suspected outliers 7

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.606	1.217	15.1	10	11.91	3.52	3.89
2	0.509	0.269	1.6	14	4.049	3.51	3.89
3	0.502	0.255	1.5	62	3.918	3.51	3.89
4	0.495	0.242	1.49	9	4.114	3.51	3.88
5	0.488	0.228	1.31	7	3.603	3.51	3.88
6	0.483	0.218	1.21	95	3.333	3.508	3.878
7	0.478	0.21	1.2	112	3.434	3.506	3.876

For 5% significance level, there are 5 Potential Outliers
 Therefore, Potential Statistical Outliers are
 15.1, 1.6, 1.5, 1.49, 1.31

For 1% Significance Level, there are 4 Potential Outliers
 Therefore, Potential Statistical Outliers are
 15.1, 1.6, 1.5, 1.49

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Input.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 2

Rosner's Outlier Test for Sc

Mean 9.3
Standard Deviation 3.663
Number of data 150
Number of suspected outliers 2

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	9.3	3.651	18.7	125	2.575	3.52	3.89
2	9.237	3.593	18.3	73	2.523	3.51	3.89

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Appendix D4: Rosner Test Outputs from ProUCL for Select Metals

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Input.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 2

Rosner's Outlier Test for Se

Mean 0.37
Standard Deviation 0.231
Number of data 150
Number of suspected outliers 2

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.37	0.231	1.7	50	5.768	3.52	3.89
2	0.361	0.205	1	58	3.123	3.51	3.89

For 5% Significance Level, there is 1 Potential Outlier
 Therefore, Observation 1.7 is a Potential Statistical Outlier

For 1% Significance Level, there is 1 Potential Outlier
 Therefore, Observation 1.7 is a Potential Statistical Outlier

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Input.wst
 Full Precision OFF
 Test for Suspected Outliers with Dixon test 1
 Test for Suspected Outliers with Rosner test 5

Rosner's Outlier Test for Y

Mean 10.84
Standard Deviation 4.528
Number of data 150
Number of suspected outliers 5

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	10.84	4.513	25.7	53	3.292	3.52	3.89
2	10.74	4.375	25.4	73	3.35	3.51	3.89
3	10.64	4.219	25.1	54	3.426	3.51	3.89
4	10.55	4.059	23.5	125	3.191	3.51	3.88
5	10.46	3.928	21.8	36	2.888	3.51	3.88

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Appendix D4: Rosner Test Outputs from ProUCL for Select Metals

Outlier Tests for Selected Variables

User Selected Options

From File ALL_Metals_Data ProUCL_Input.wst
Full Precision OFF
Test for Suspected Outliers with Dixon test 1
Test for Suspected Outliers with Rosner test 2

Rosner's Outlier Test for Zn

Mean 76.59
Standard Deviation 115.8
Number of data 150
Number of suspected outliers 2

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	76.59	115.4	1440	14	11.81	3.52	3.89
2	67.44	29.31	218	106	5.136	3.51	3.89

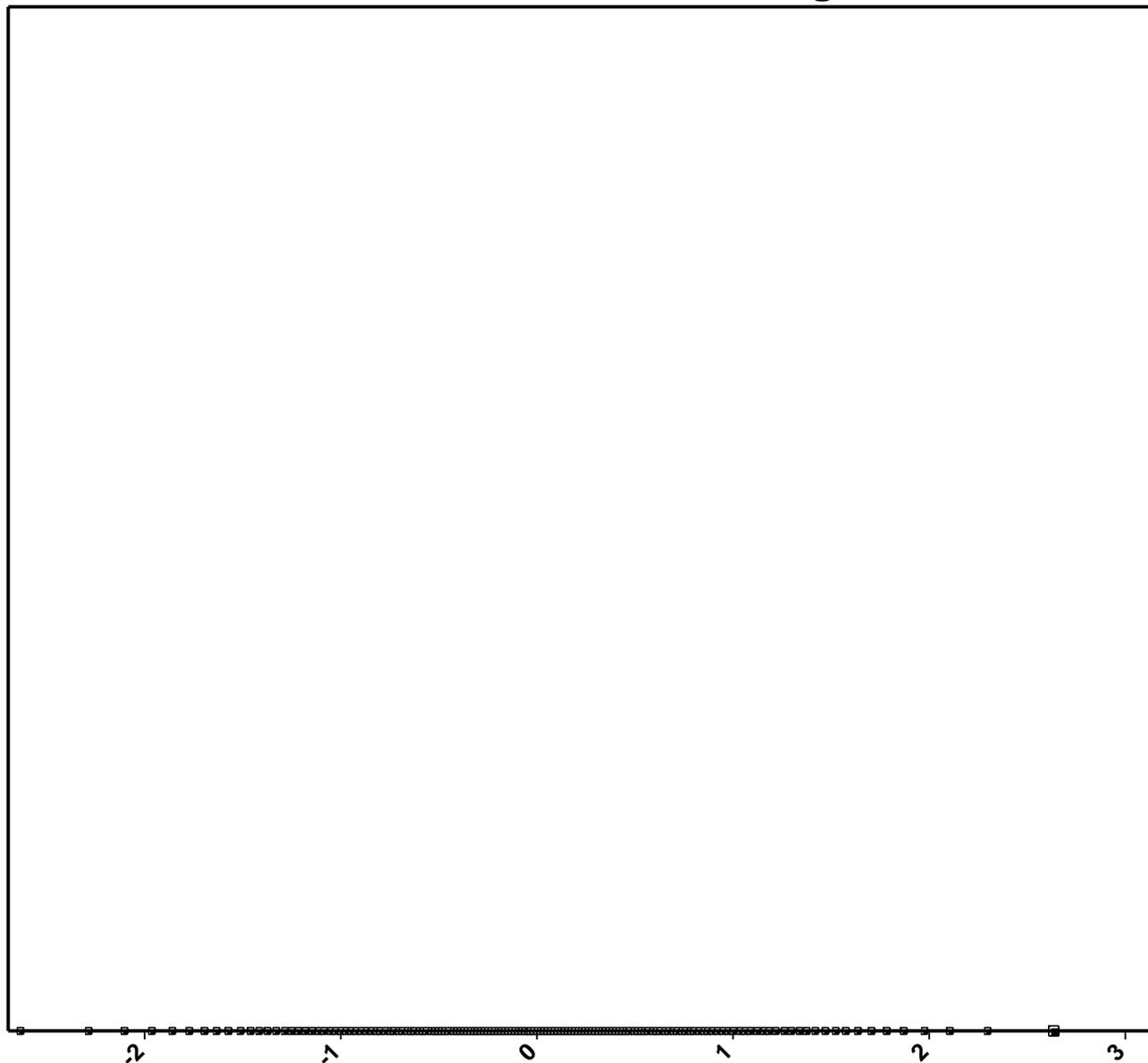
For 5% significance level, there are 2 Potential Outliers
Therefore, Potential Statistical Outliers are
1440, 218

For 1% Significance Level, there are 2 Potential Outliers
Therefore, Potential Statistical Outliers are
1440, 218

Prepared By: EYM
Checked By: RRD

Appendix D5

Q-Q Plot with NDs for Ag



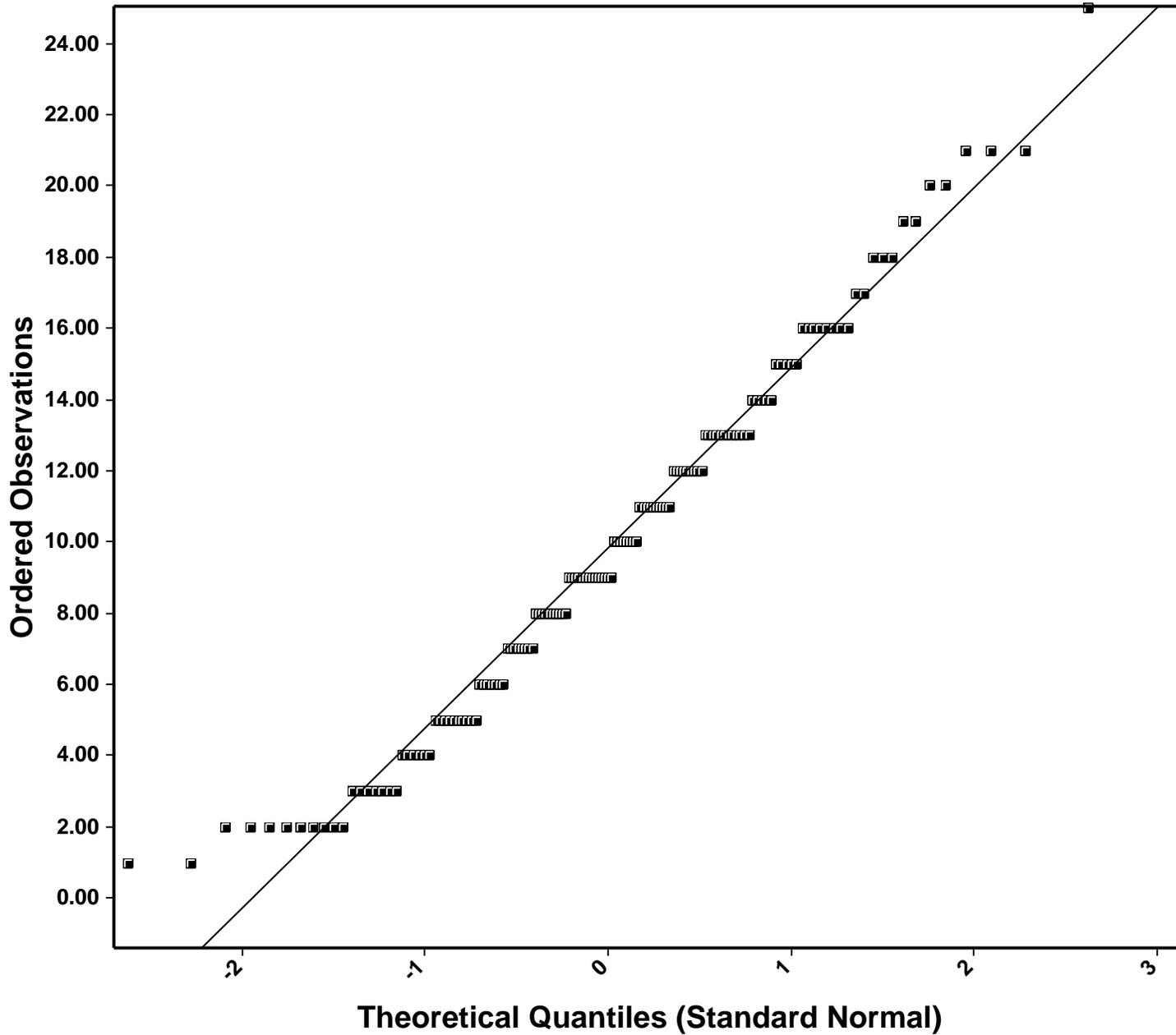
Theoretical Quantiles (Standard Normal)

■ Ag

Ag

Total Number of Data = 149
Number of Non-Detects = 148
Number of Detects = 1
Mean = 1.0000
Sd = 0.0000
Slope = 0.0000
Intercept = 1.0000
Correlation, R = NaN

Q-Q Plot with NDs for AsICPEAS



■ AsICPEAS

AsICPEAS

Total Number of Data = 143

Number of Non-Detects = 0

Number of Detects = 143

Mean = 9.7902

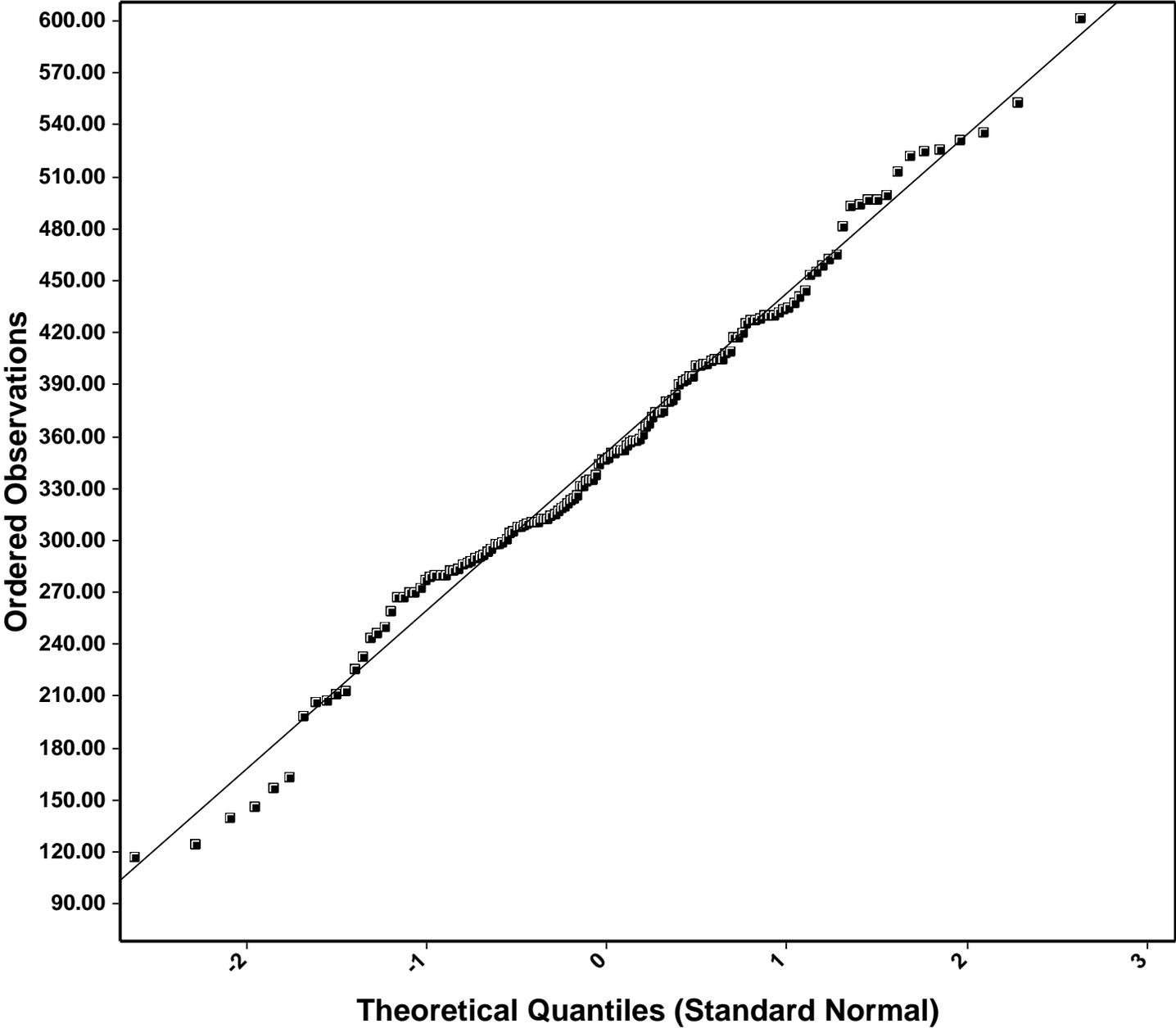
Sd = 5.0808

Slope = 5.0668

Intercept = 9.7902

Correlation, R = 0.9891

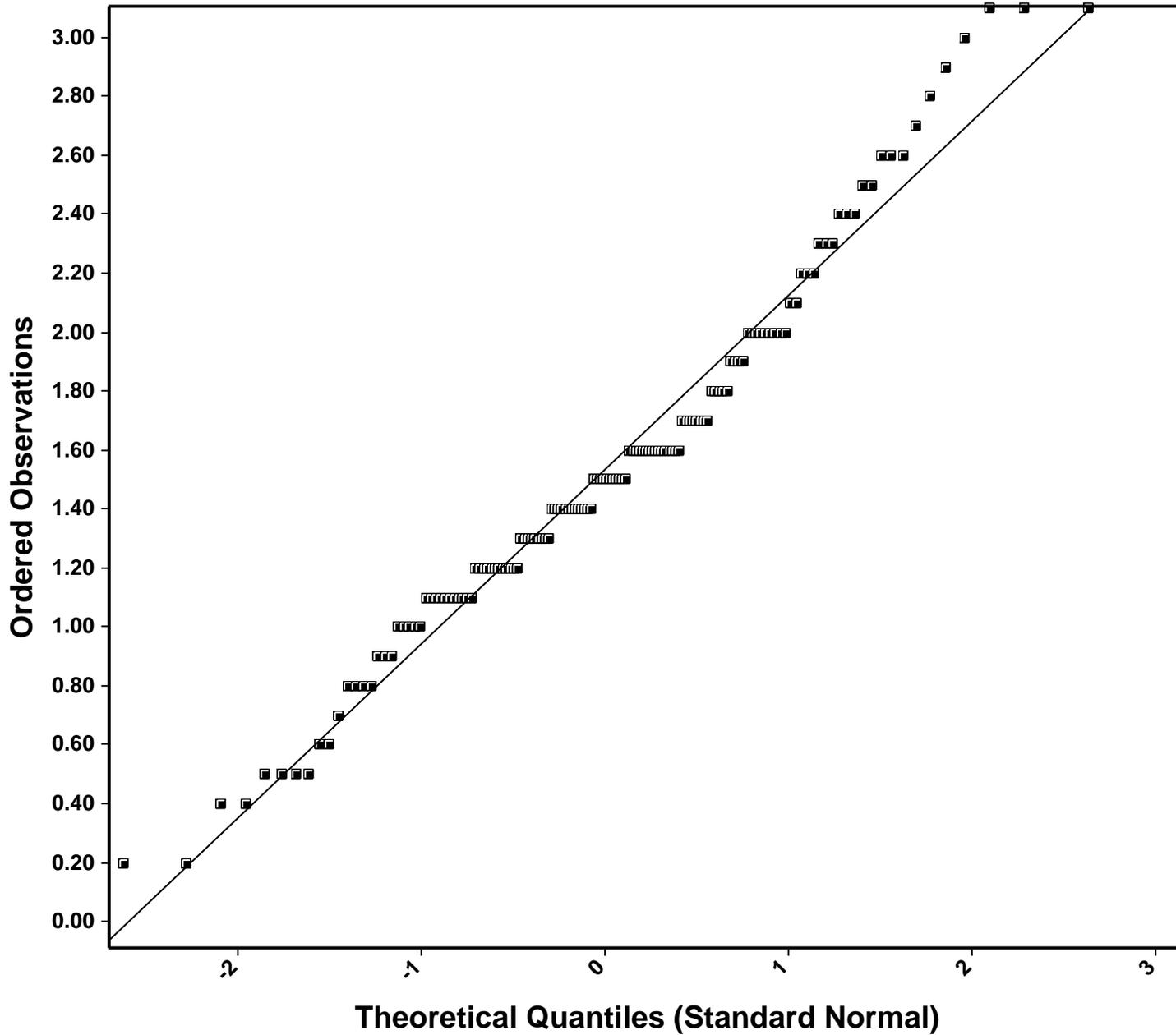
Q-Q Plot with NDs for Ba



■ Ba

Ba
Total Number of Data = 144
Number of Non-Detects = 0
Number of Detects = 144
Mean = 351.0694
Sd = 91.4151
Slope = 91.7167
Intercept = 351.0694
Correlation, R = 0.9952

Q-Q Plot with NDs for Be



■ Be

Be

Total Number of Data = 144

Number of Non-Detects = 0

Number of Detects = 144

Mean = 1.5354

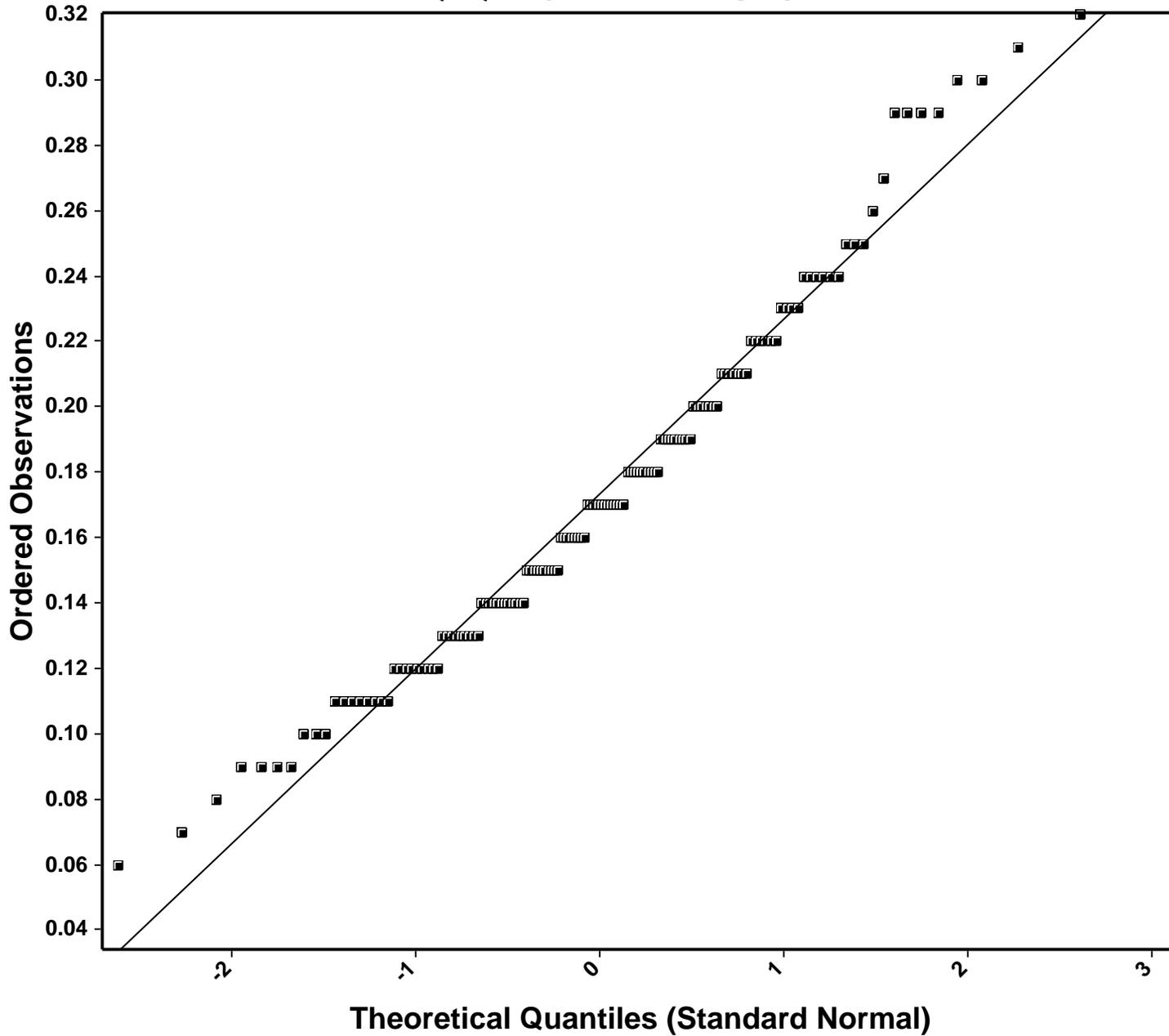
Sd = 0.5943

Slope = 0.5916

Intercept = 1.5354

Correlation, R = 0.9874

Q-Q Plot with NDs for Bi



Bi

Total Number of Data = 140

Number of Non-Detects = 0

Number of Detects = 140

Mean = 0.1731

Sd = 0.0538

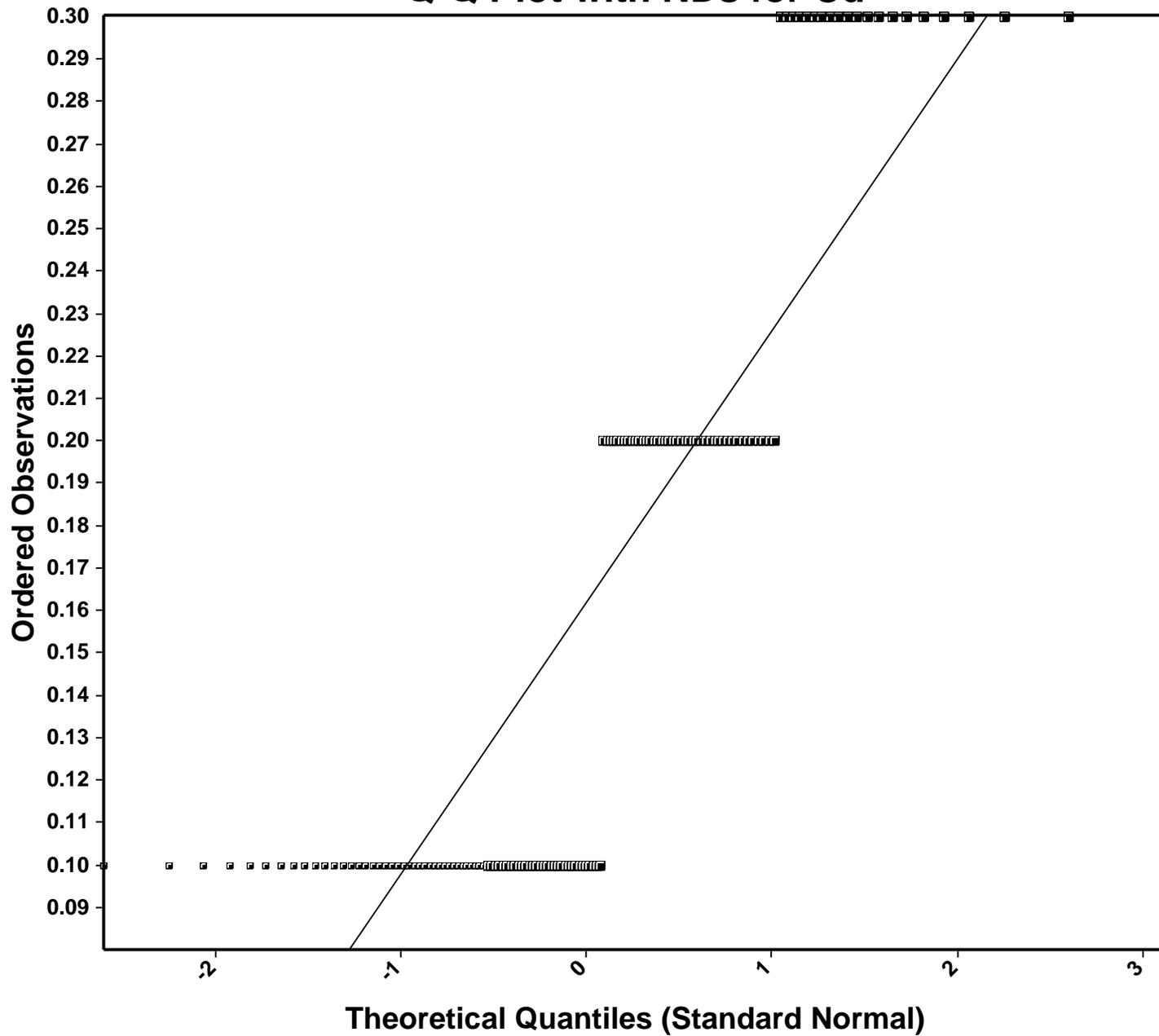
Slope = 0.0536

Intercept = 0.1731

Correlation, R = 0.9875

■ Bi

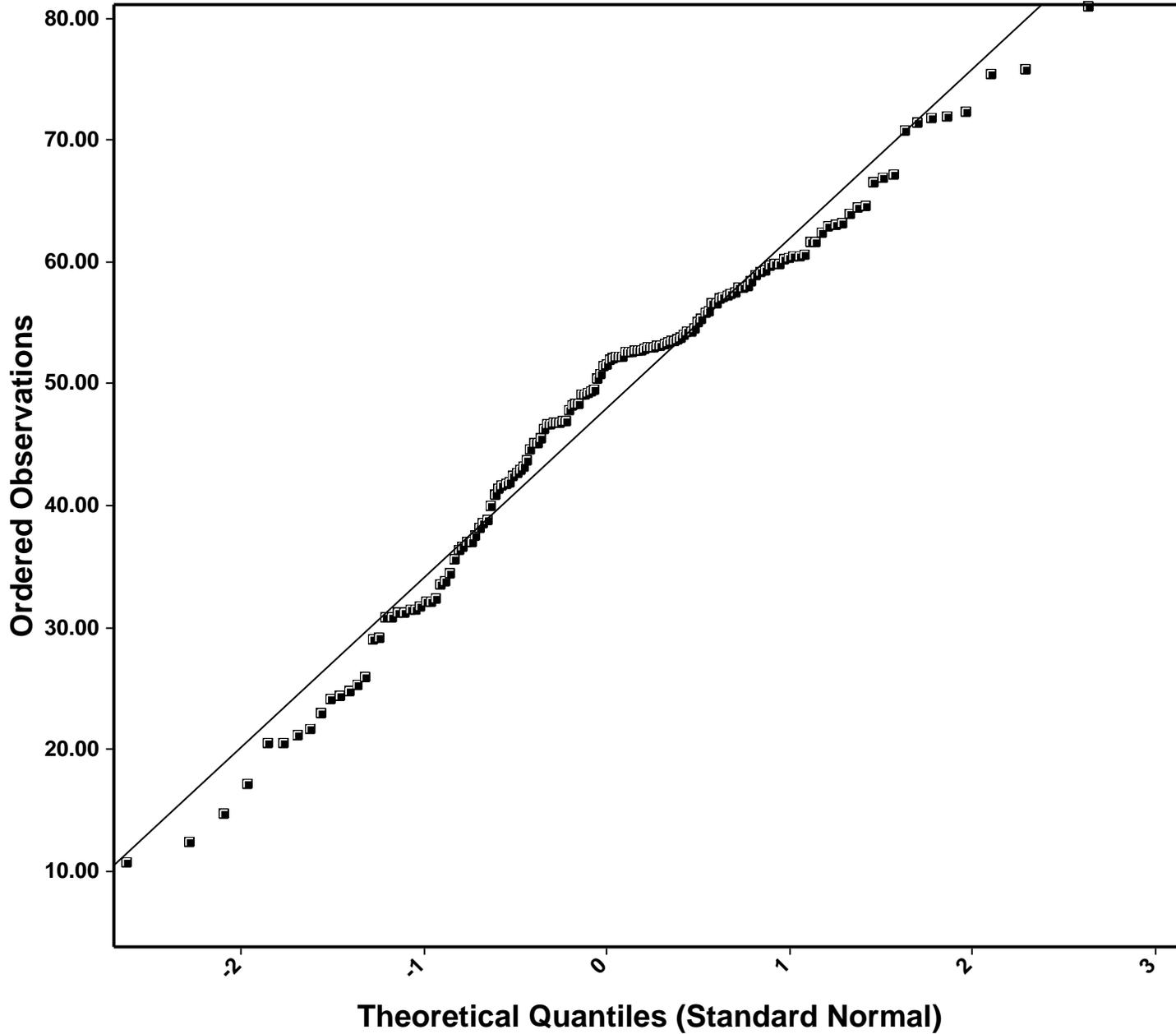
Q-Q Plot with NDs for Cd



Cd

Total Number of Data = 133
Number of Non-Detects = 39
Number of Detects = 94
Mean = 0.1617
Sd = 0.0736
Slope = 0.0641
Intercept = 0.1617
Correlation, R = 0.8645

Q-Q Plot with NDs for Ce

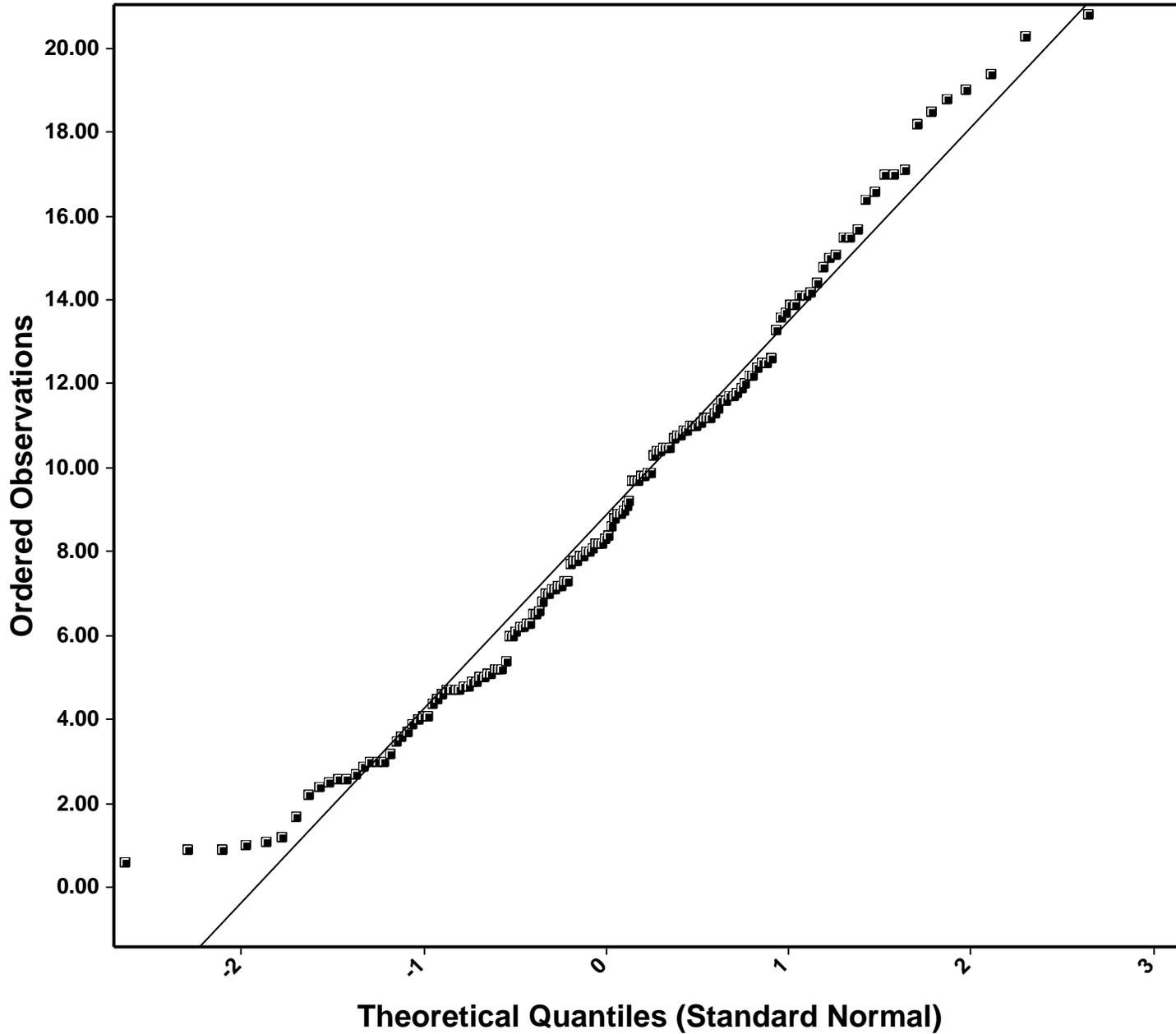


■ Ce

Ce

Total Number of Data = 147
Number of Non-Detects = 0
Number of Detects = 147
Mean = 48.0728
Sd = 13.9693
Slope = 13.9144
Intercept = 48.0728
Correlation, R = 0.9882

Q-Q Plot with NDs for Co

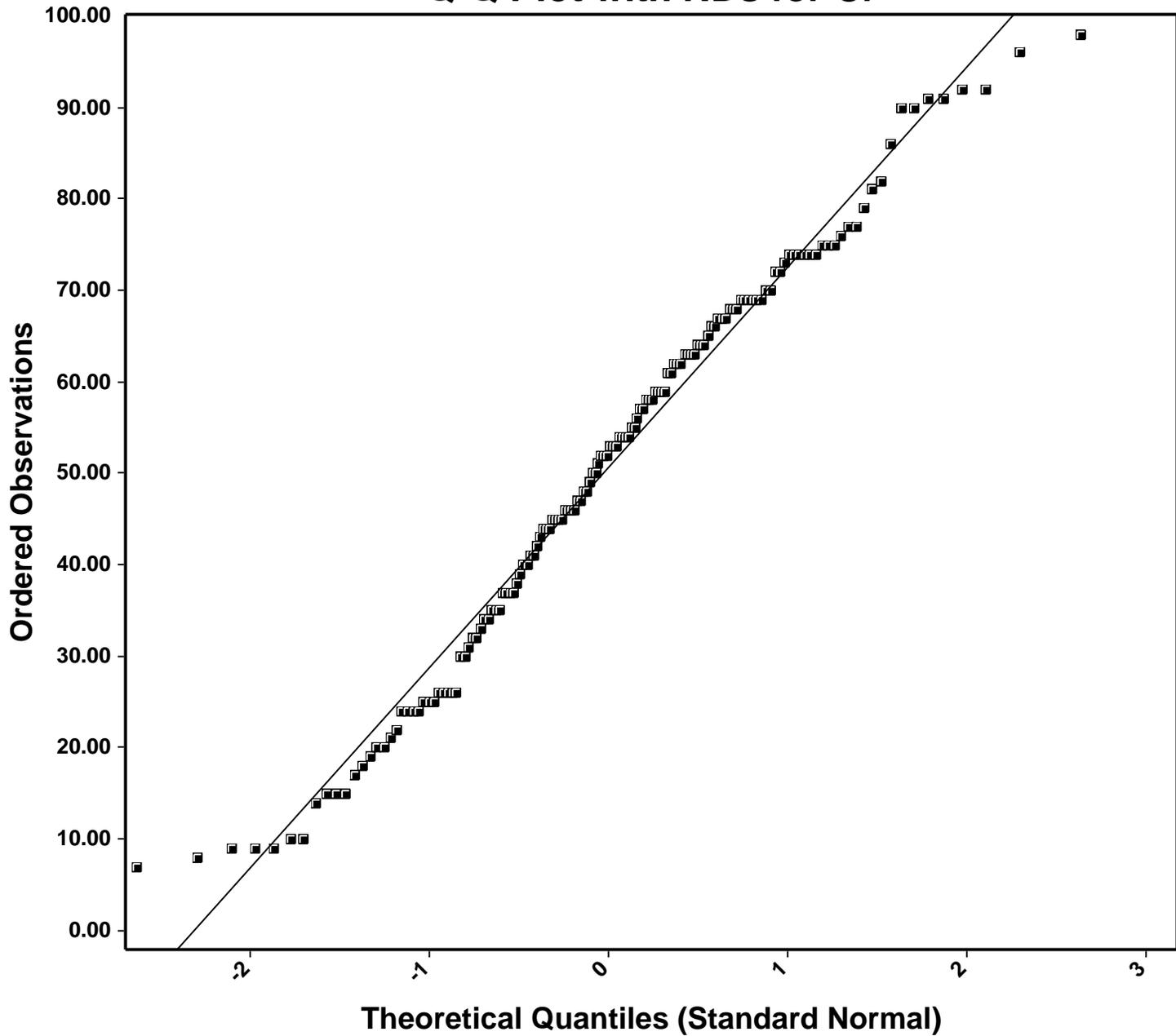


■ Co

Co

Total Number of Data = 150
Number of Non-Detects = 0
Number of Detects = 150
Mean = 8.8613
Sd = 4.6382
Slope = 4.6286
Intercept = 8.8613
Correlation, R = 0.9901

Q-Q Plot with NDs for Cr

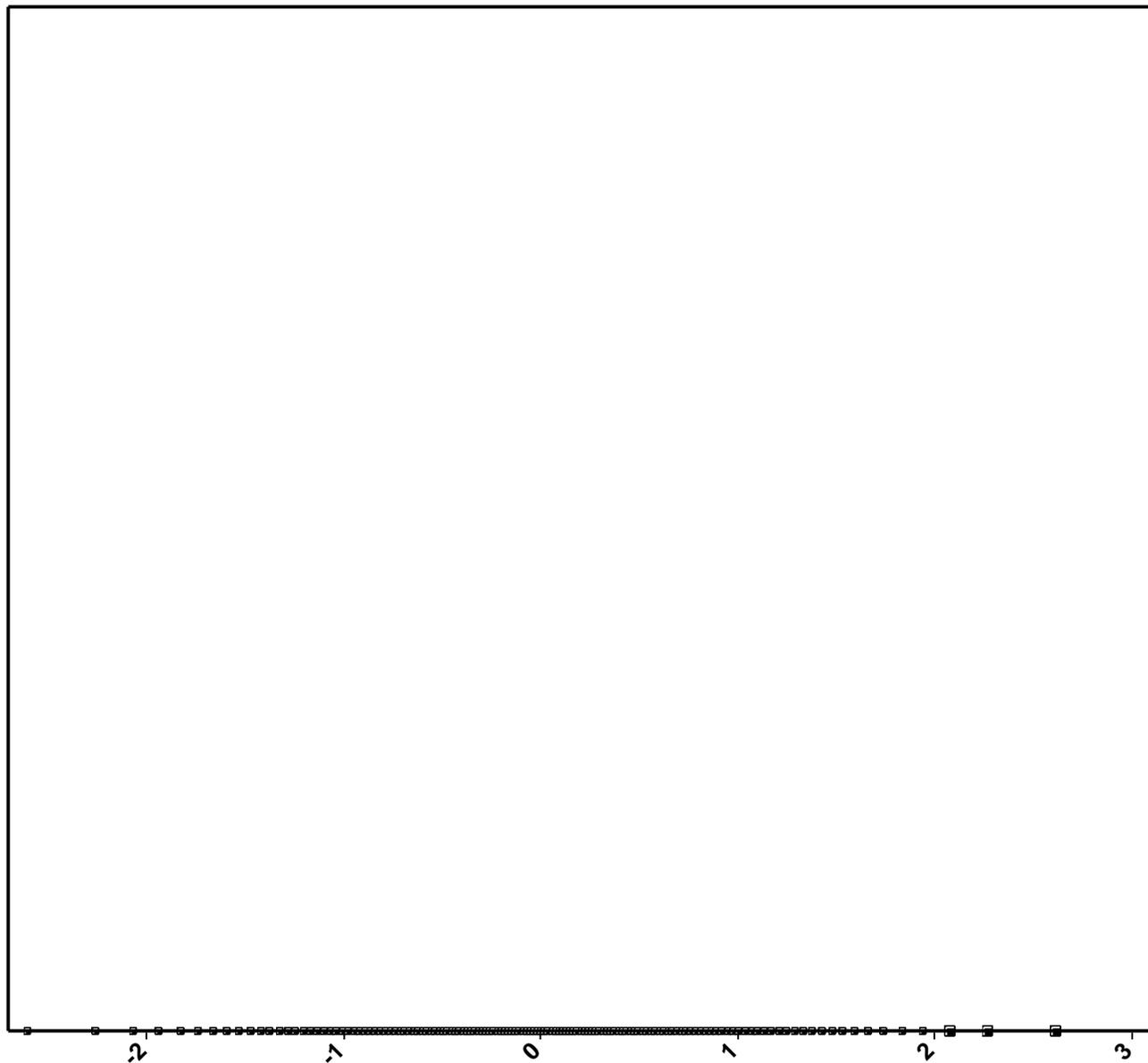


■ Cr

Cr

Total Number of Data = 150
Number of Non-Detects = 0
Number of Detects = 150
Mean = 50.6067
Sd = 21.9223
Slope = 21.9224
Intercept = 50.6067
Correlation, R = 0.9922

Q-Q Plot with NDs for Cs



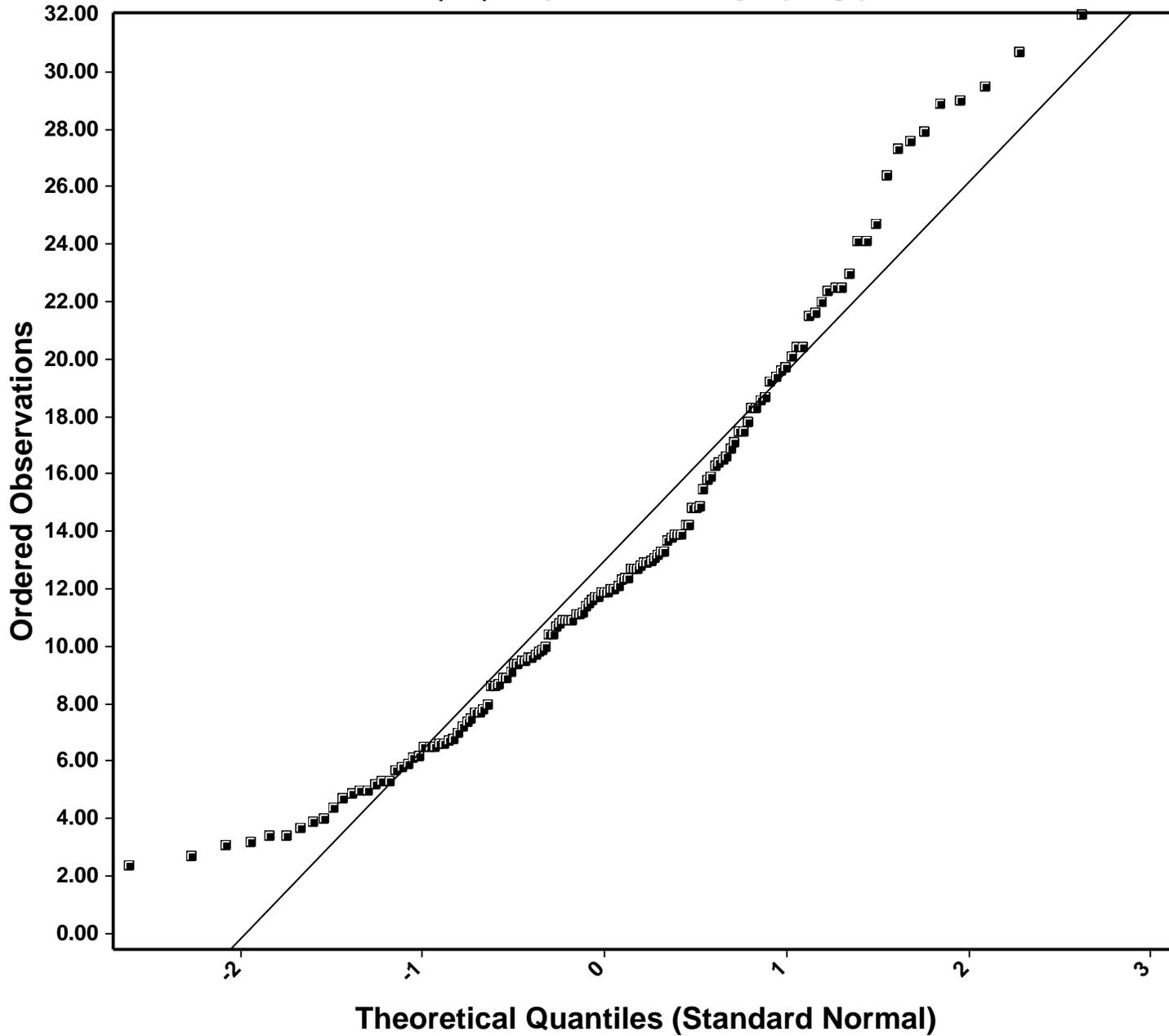
Theoretical Quantiles (Standard Normal)

■ Cs

Cs

Total Number of Data = 137
Number of Non-Detects = 134
Number of Detects = 3
Mean = 5.0000
Sd = 0.0000
Slope = 0.0000
Intercept = 5.0000
Correlation, R = NaN

Q-Q Plot with NDs for Cu

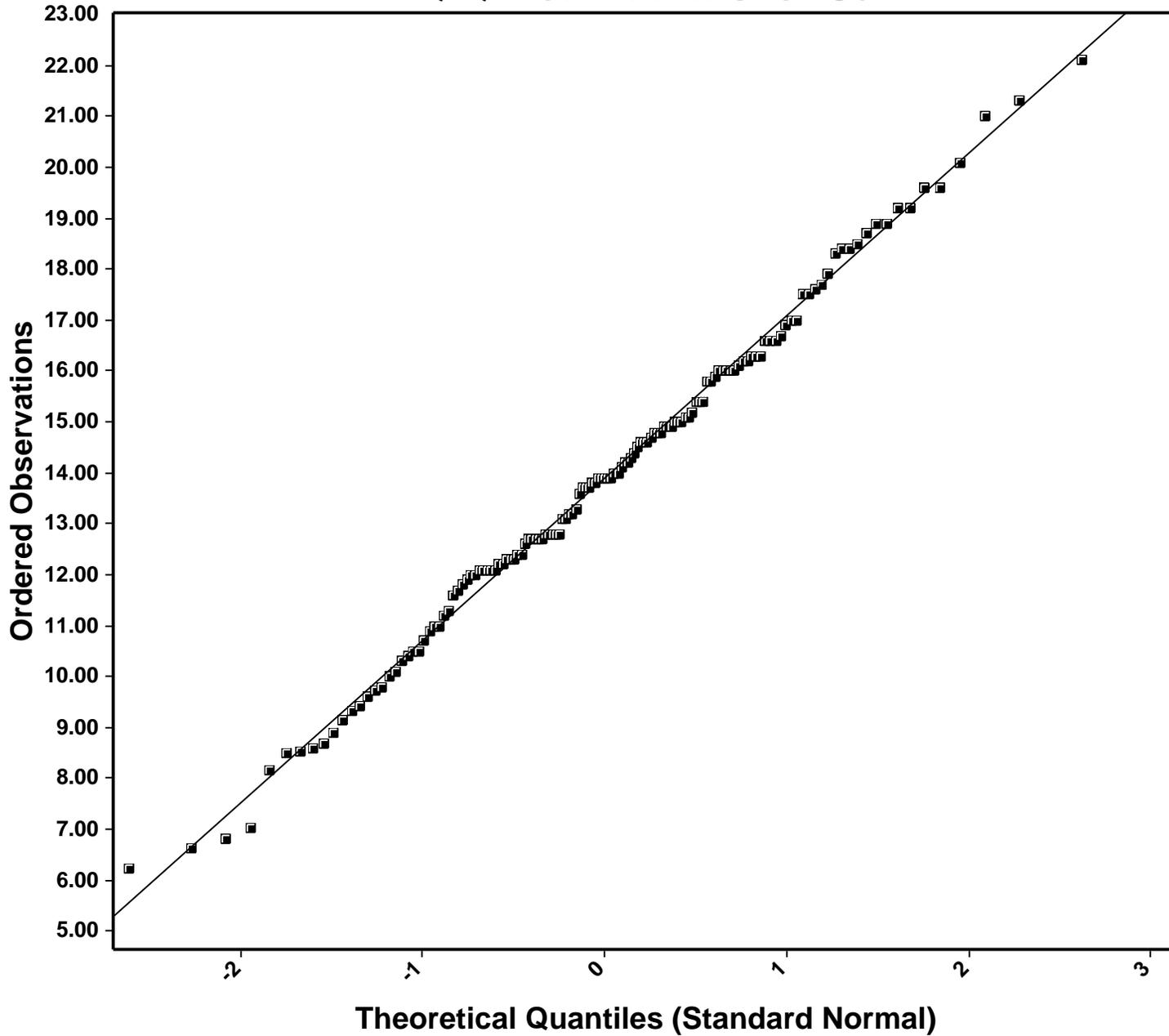


■ Cu

Cu

Total Number of Data = 141
Number of Non-Detects = 0
Number of Detects = 141
Mean = 12.9504
Sd = 6.7145
Slope = 6.5969
Intercept = 12.9504
Correlation, R = 0.9744

Q-Q Plot with NDs for Ga

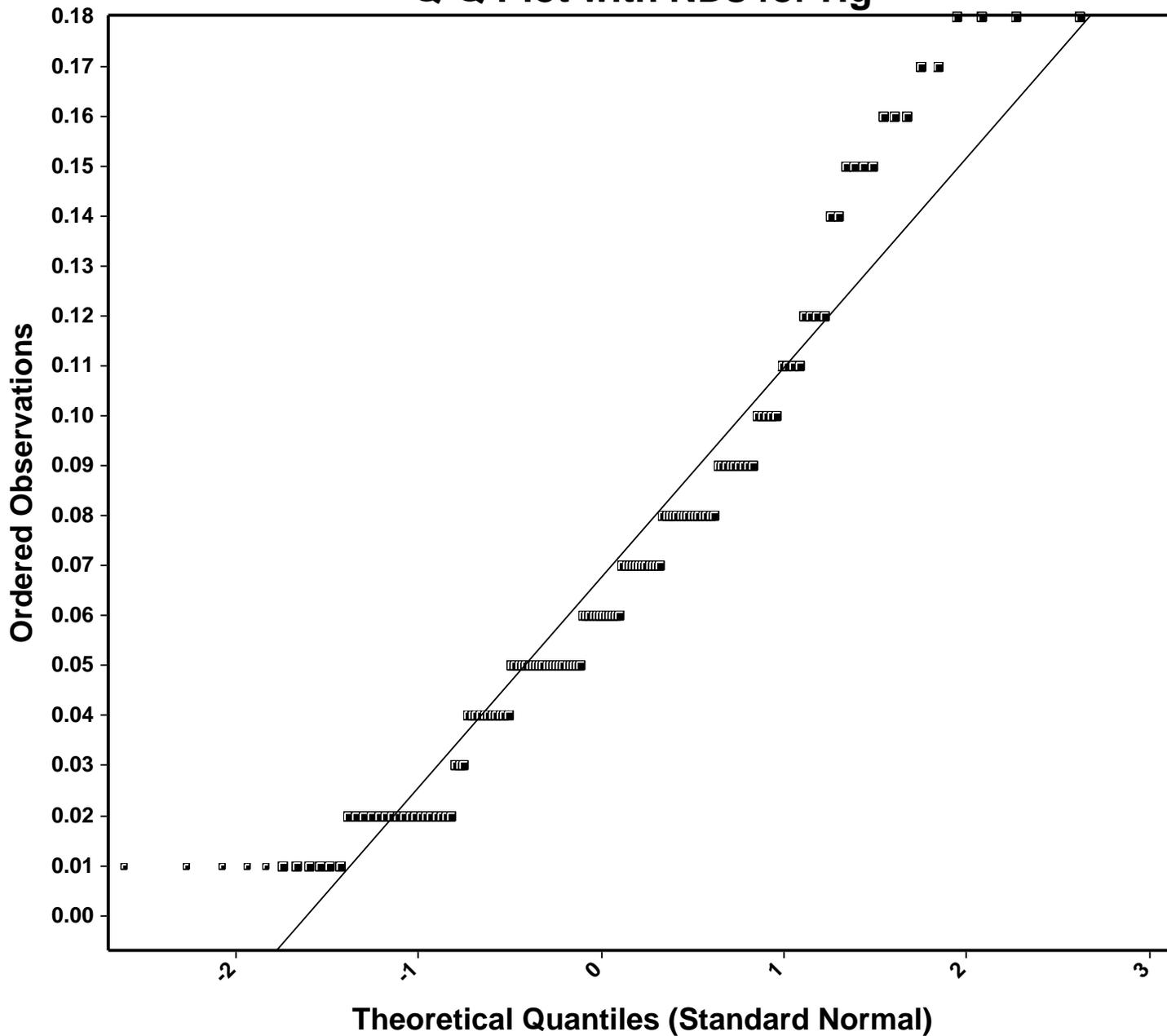


■ Ga

Ga

Total Number of Data = 141
Number of Non-Detects = 0
Number of Detects = 141
Mean = 13.8940
Sd = 3.1684
Slope = 3.1885
Intercept = 13.8940
Correlation, R = 0.9981

Q-Q Plot with NDs for Hg



Hg

Total Number of Data = 140

Number of Non-Detects = 5

Number of Detects = 135

Mean = 0.0676

Sd = 0.0434

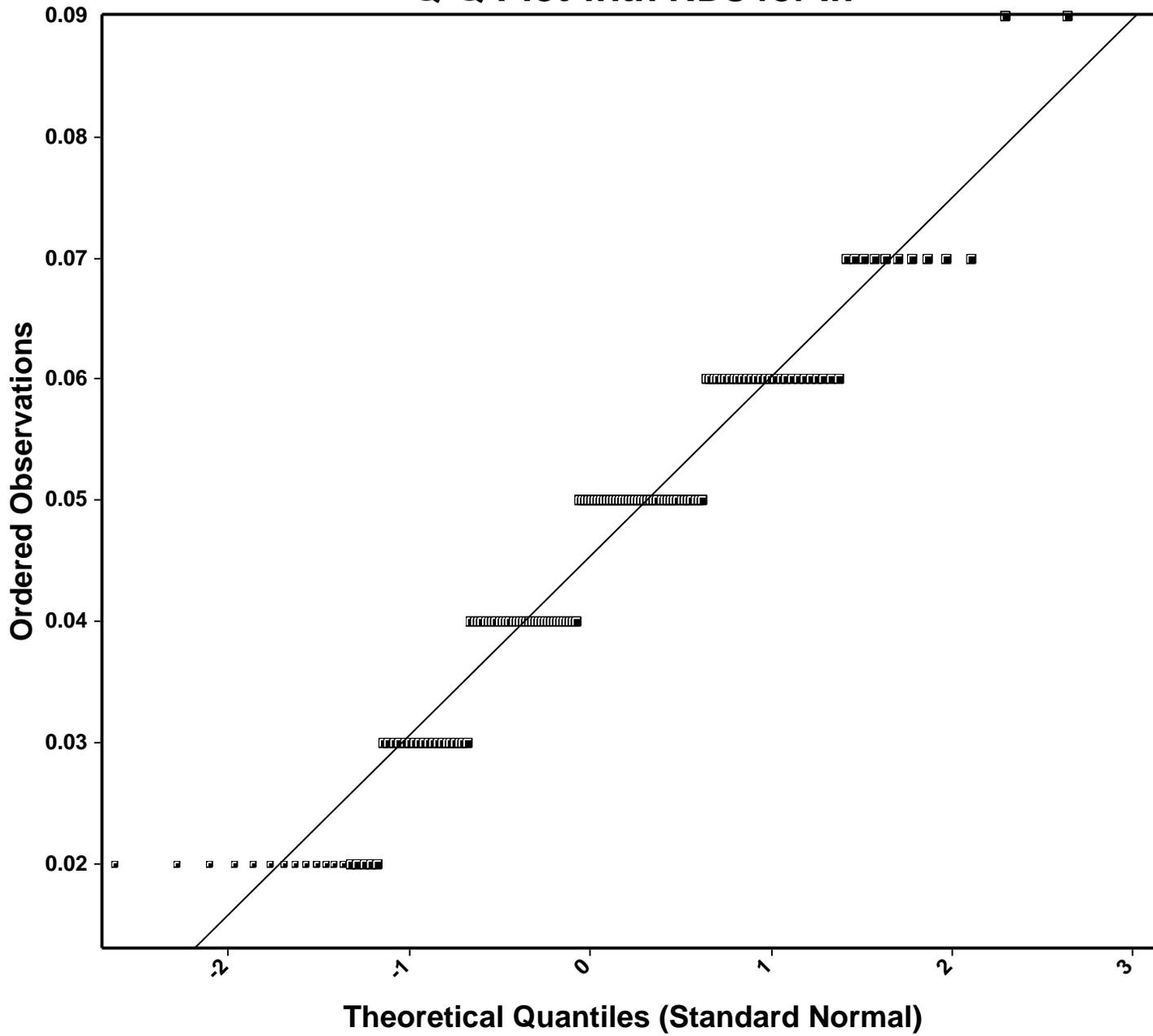
Slope = 0.0421

Intercept = 0.0676

Correlation, R = 0.9607

■ Hg

Q-Q Plot with NDs for In

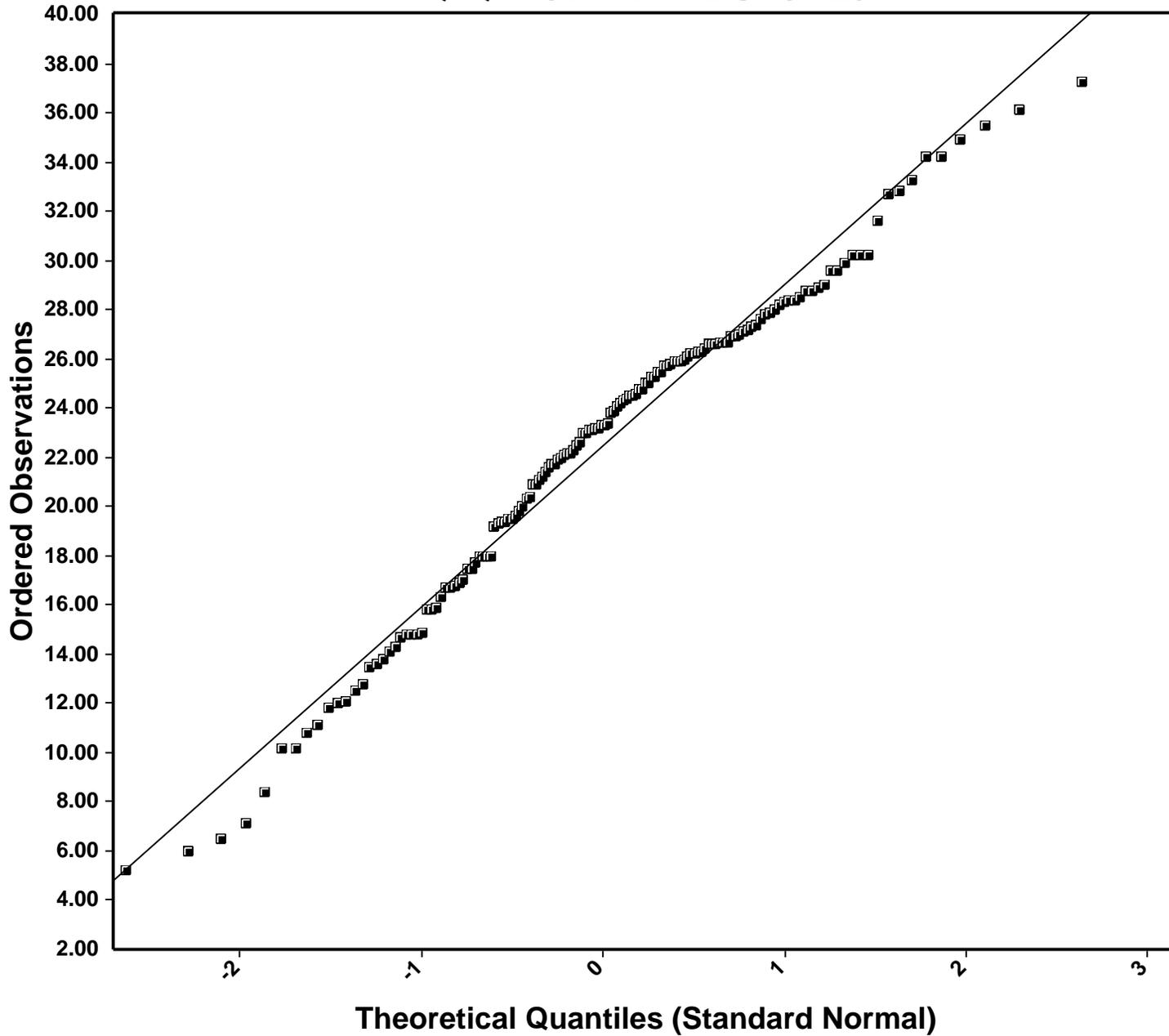


■ In

In

Total Number of Data = 148
Number of Non-Detects = 13
Number of Detects = 135
Mean = 0.0453
Sd = 0.0151
Slope = 0.0148
Intercept = 0.0453
Correlation, R = 0.9717

Q-Q Plot with NDs for La



■ La

La

Total Number of Data = 148

Number of Non-Detects = 0

Number of Detects = 148

Mean = 22.4622

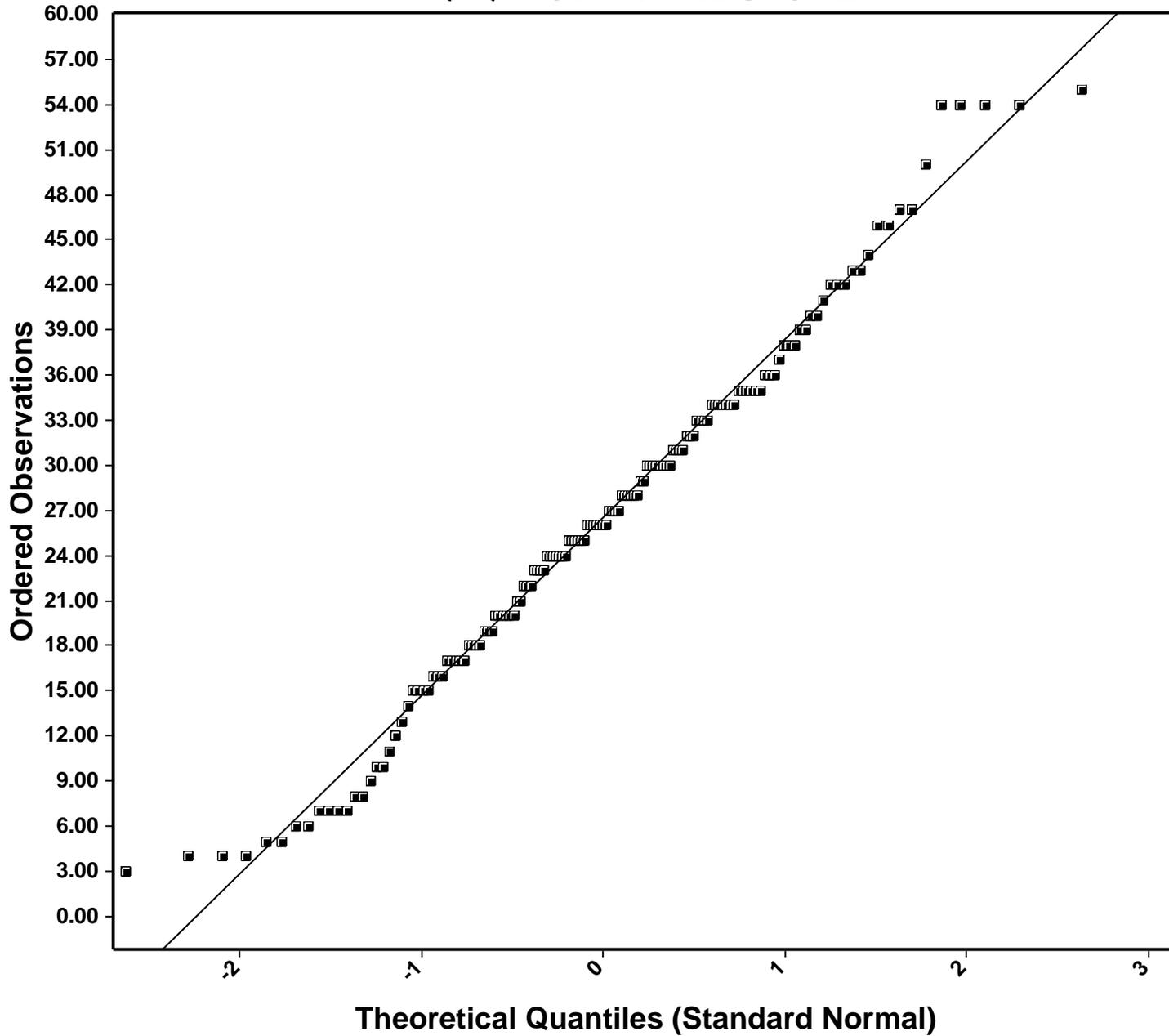
Sd = 6.5548

Slope = 6.5453

Intercept = 22.4622

Correlation, R = 0.9907

Q-Q Plot with NDs for Li

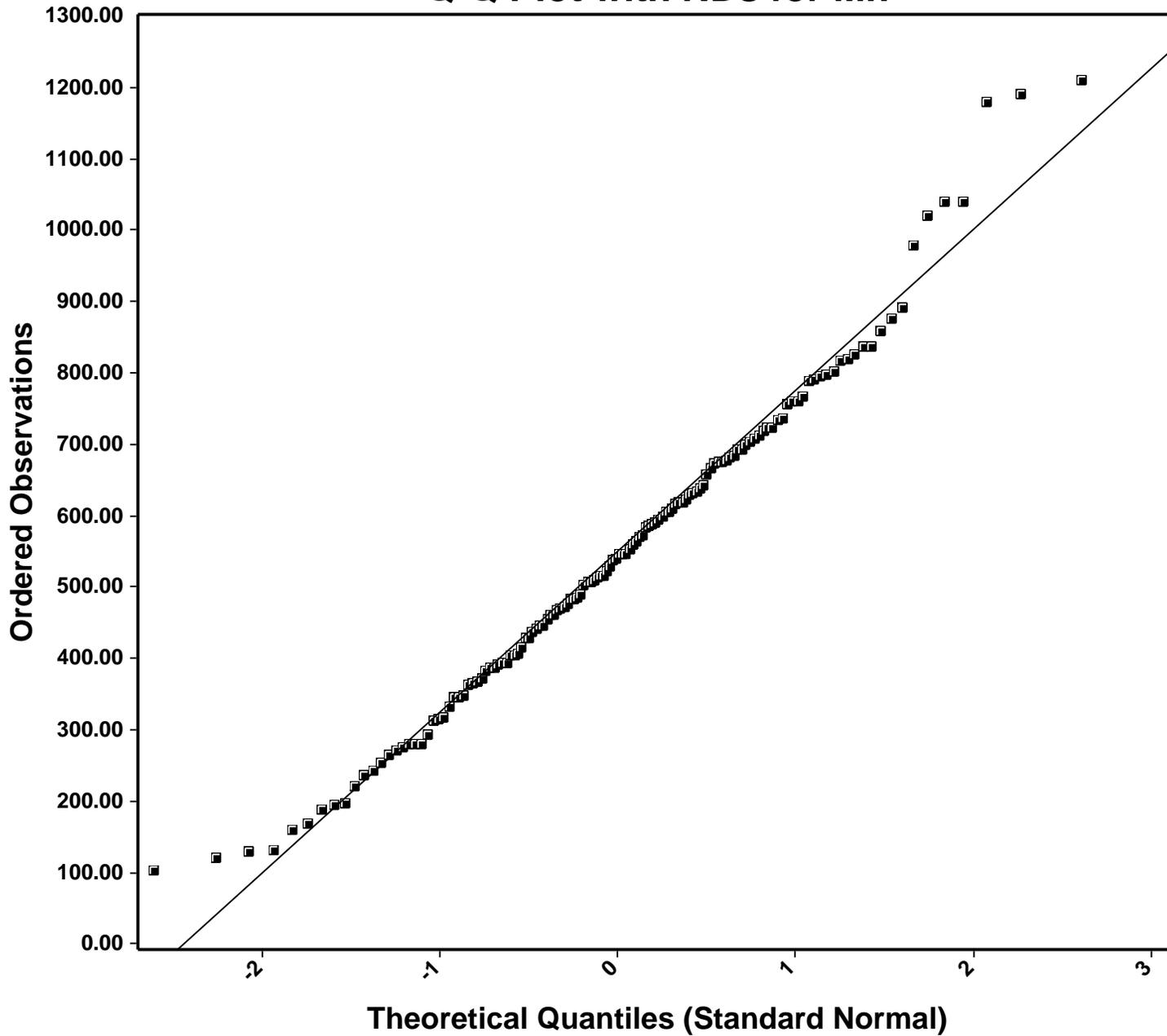


■ Li

Li

Total Number of Data = 147
Number of Non-Detects = 0
Number of Detects = 147
Mean = 26.5102
Sd = 11.8358
Slope = 11.8592
Intercept = 26.5102
Correlation, R = 0.9940

Q-Q Plot with NDs for Mn



Mn

Total Number of Data = 138

Number of Non-Detects = 0

Number of Detects = 138

Mean = 549.1377

Sd = 225.7934

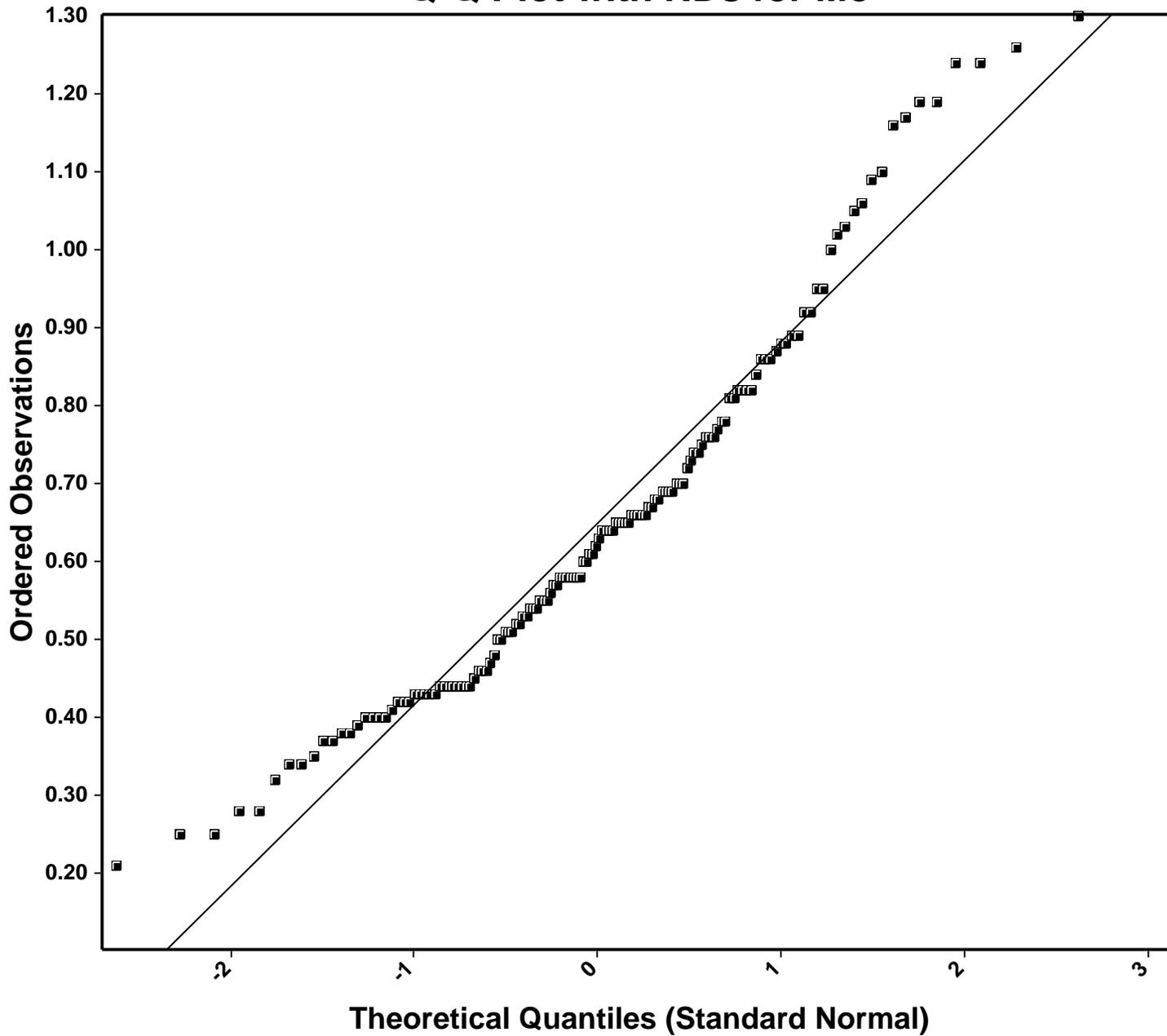
Slope = 225.8688

Intercept = 549.1377

Correlation, R = 0.9920

■ Mn

Q-Q Plot with NDs for Mo



Mo

Total Number of Data = 142

Number of Non-Detects = 0

Number of Detects = 142

Mean = 0.6485

Sd = 0.2370

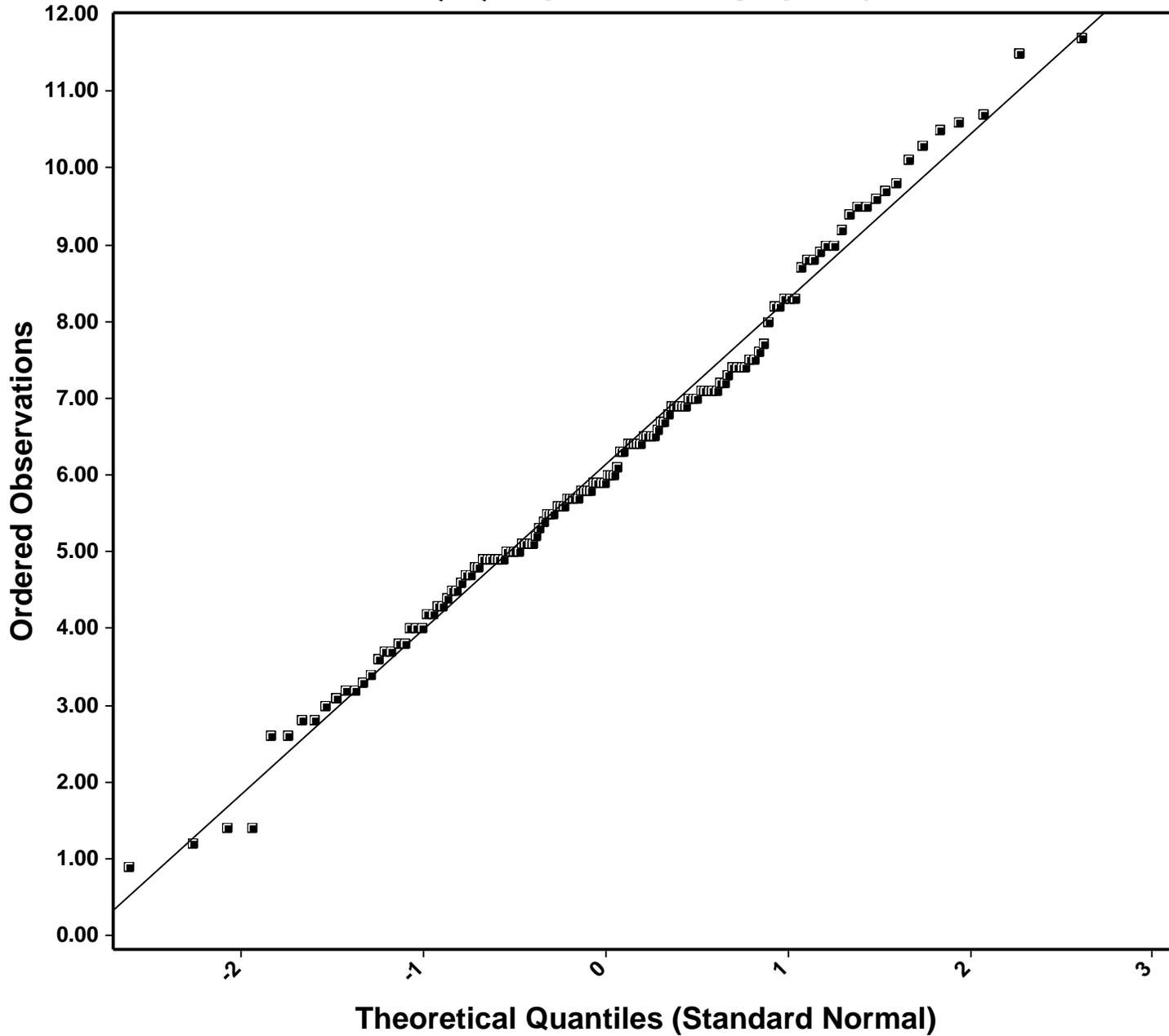
Slope = 0.2336

Intercept = 0.6485

Correlation, R = 0.9776

Mo

Q-Q Plot with NDs for Nb



■ Nb

Nb

Total Number of Data = 138

Number of Non-Detects = 0

Number of Detects = 138

Mean = 6.1362

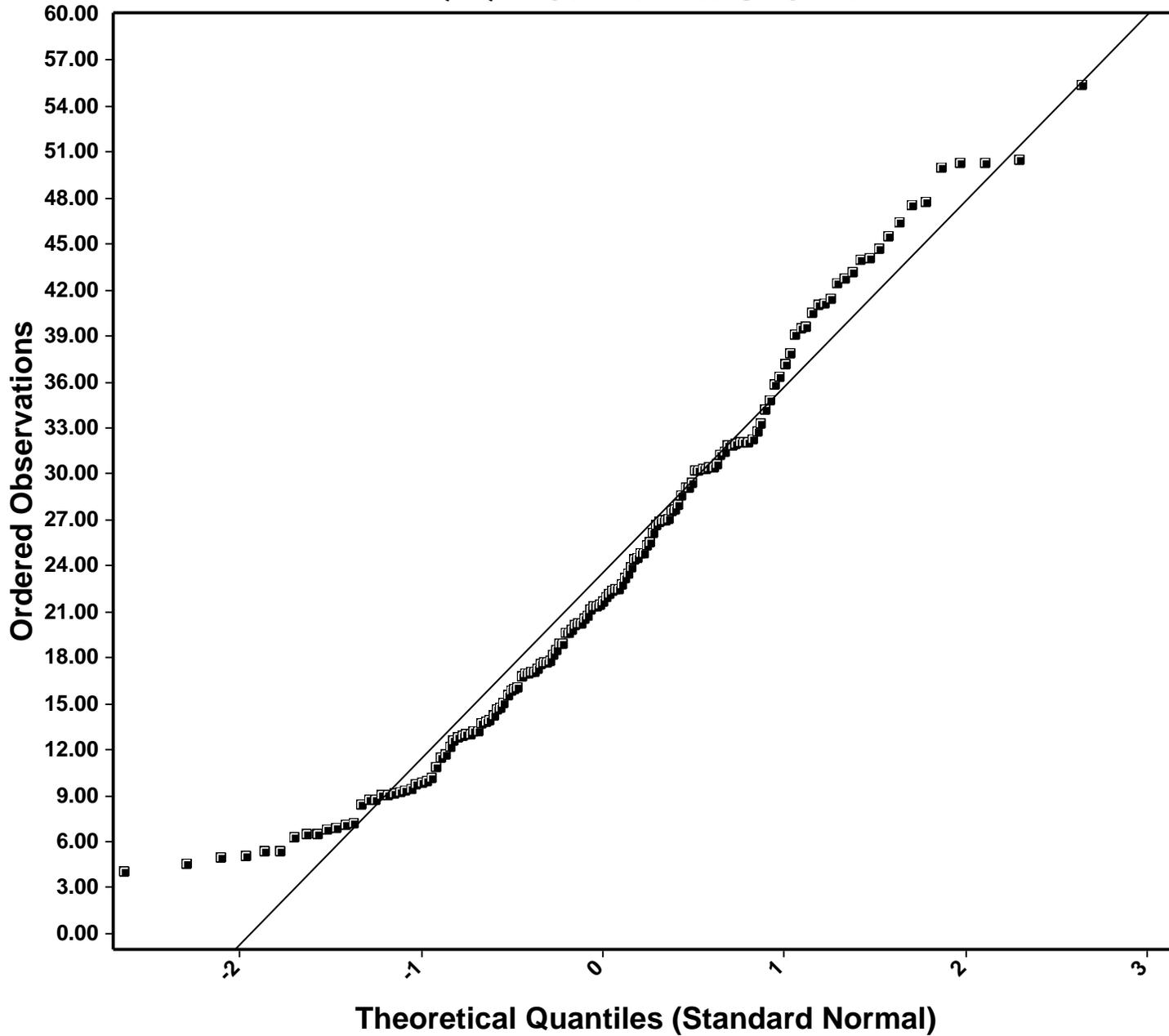
Sd = 2.1447

Slope = 2.1533

Intercept = 6.1362

Correlation, R = 0.9956

Q-Q Plot with NDs for Ni

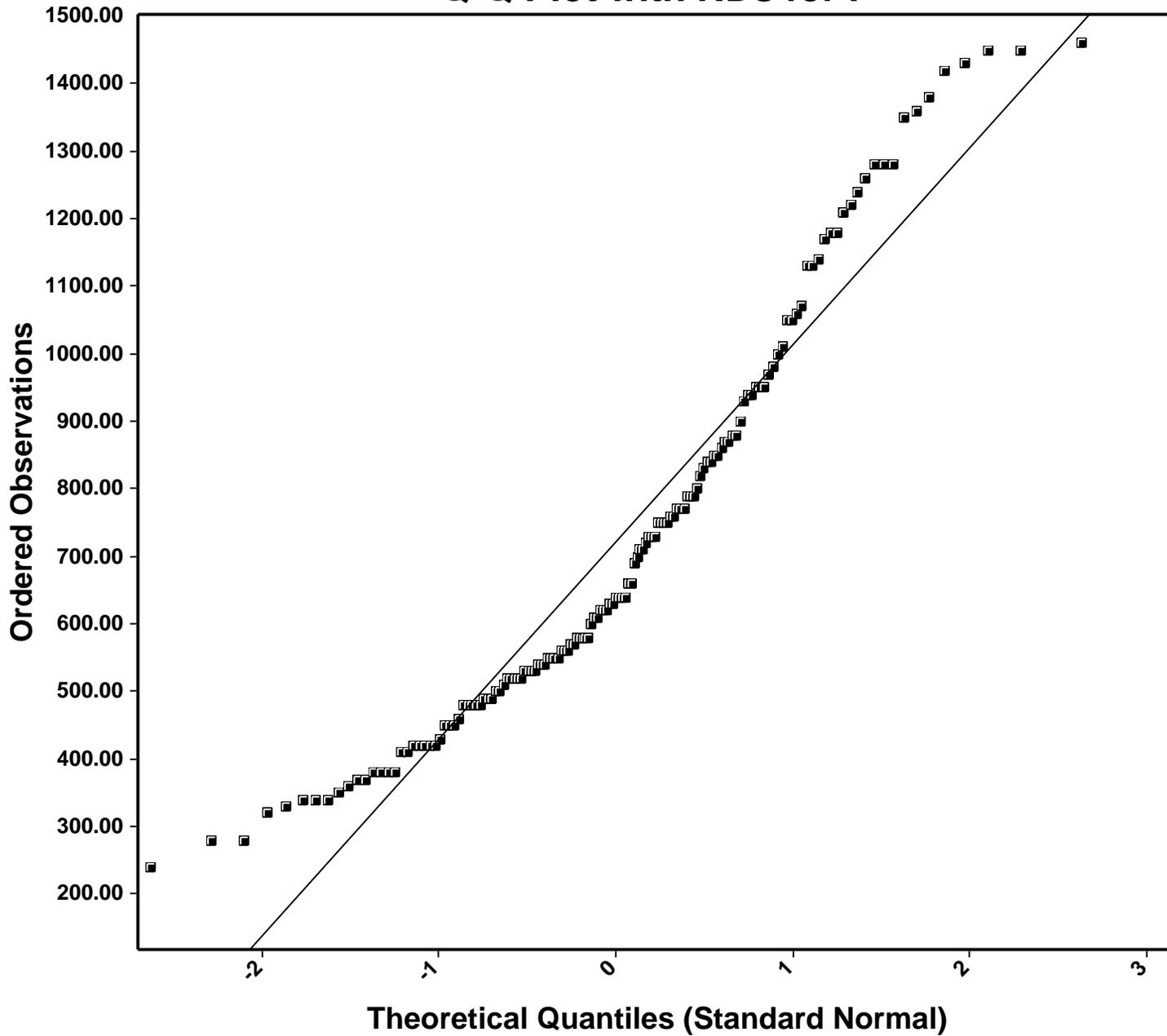


■ Ni

Ni

Total Number of Data = 149
Number of Non-Detects = 0
Number of Detects = 149
Mean = 23.4960
Sd = 12.2626
Slope = 12.1482
Intercept = 23.4960
Correlation, R = 0.9829

Q-Q Plot with NDs for P

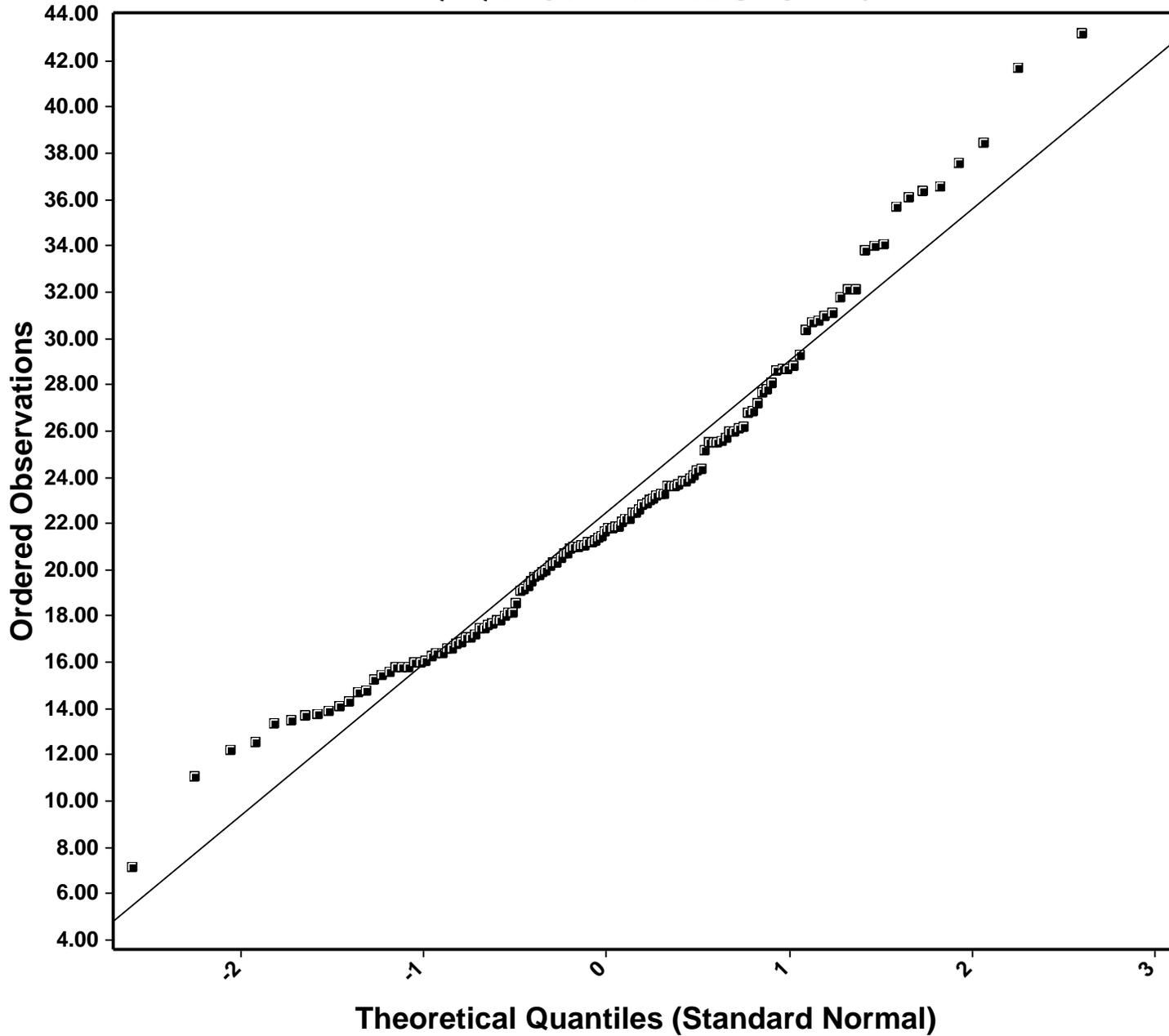


■ P

P

Total Number of Data = 147
Number of Non-Detects = 0
Number of Detects = 147
Mean = 720.5442
Sd = 299.8922
Slope = 292.1604
Intercept = 720.5442
Correlation, R = 0.9665

Q-Q Plot with NDs for Pb

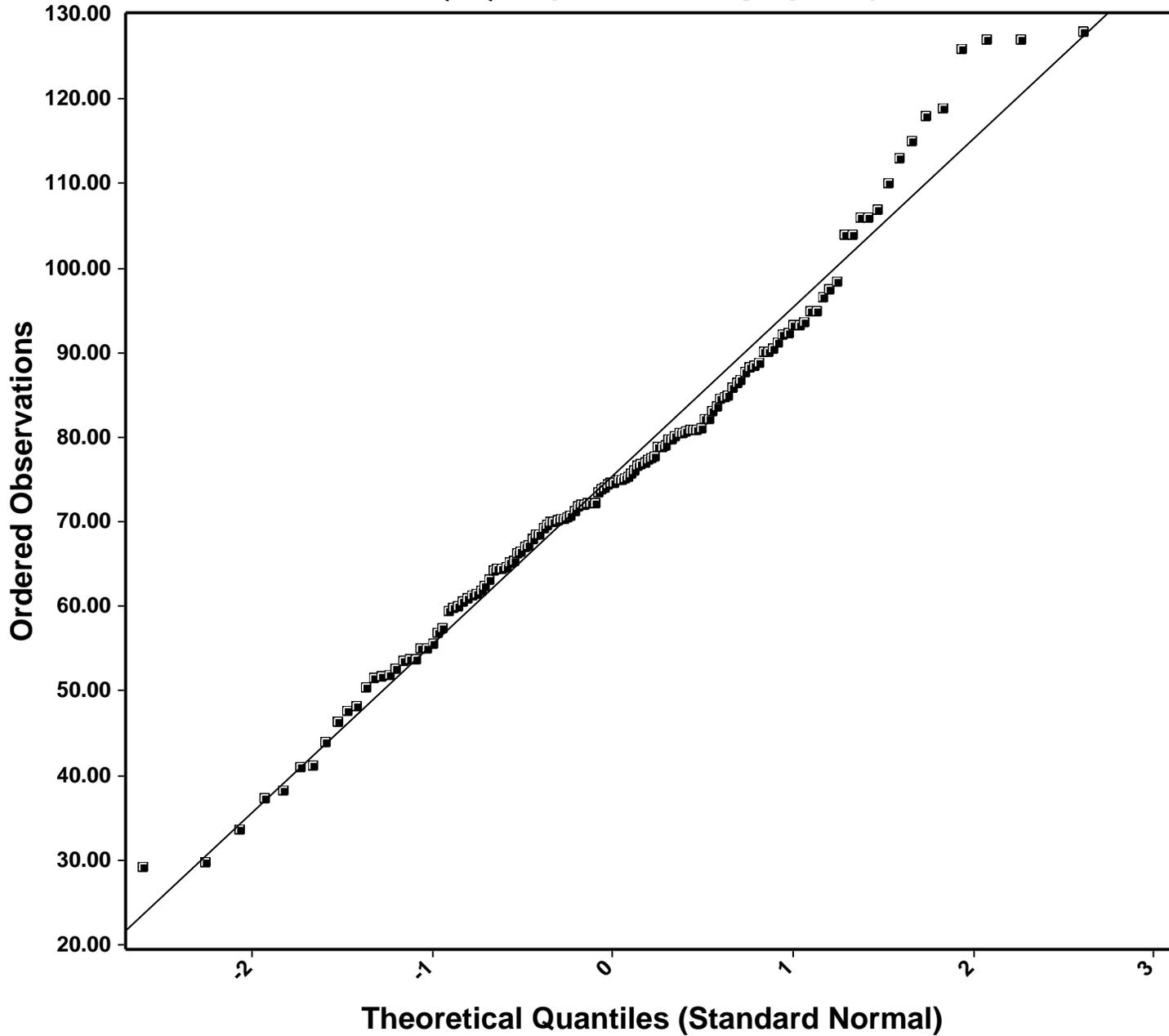


■ Pb

Pb

Total Number of Data = 134
Number of Non-Detects = 0
Number of Detects = 134
Mean = 22.5052
Sd = 6.6065
Slope = 6.5402
Intercept = 22.5052
Correlation, R = 0.9815

Q-Q Plot with NDs for Rb



■ Rb

Rb

Total Number of Data = 136

Number of Non-Detects = 0

Number of Detects = 136

Mean = 75.4588

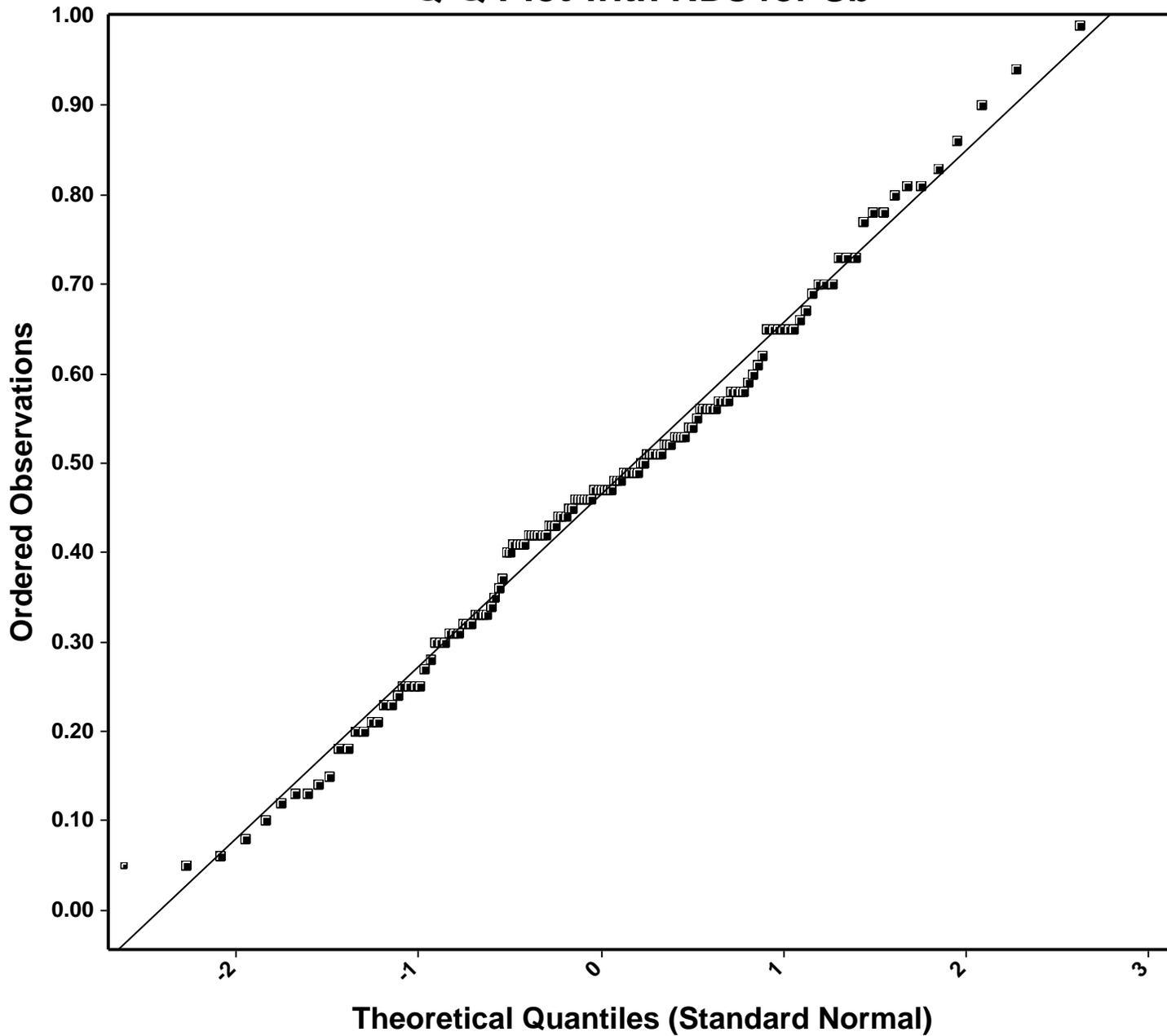
Sd = 19.9411

Slope = 19.9232

Intercept = 75.4588

Correlation, R = 0.9907

Q-Q Plot with NDs for Sb

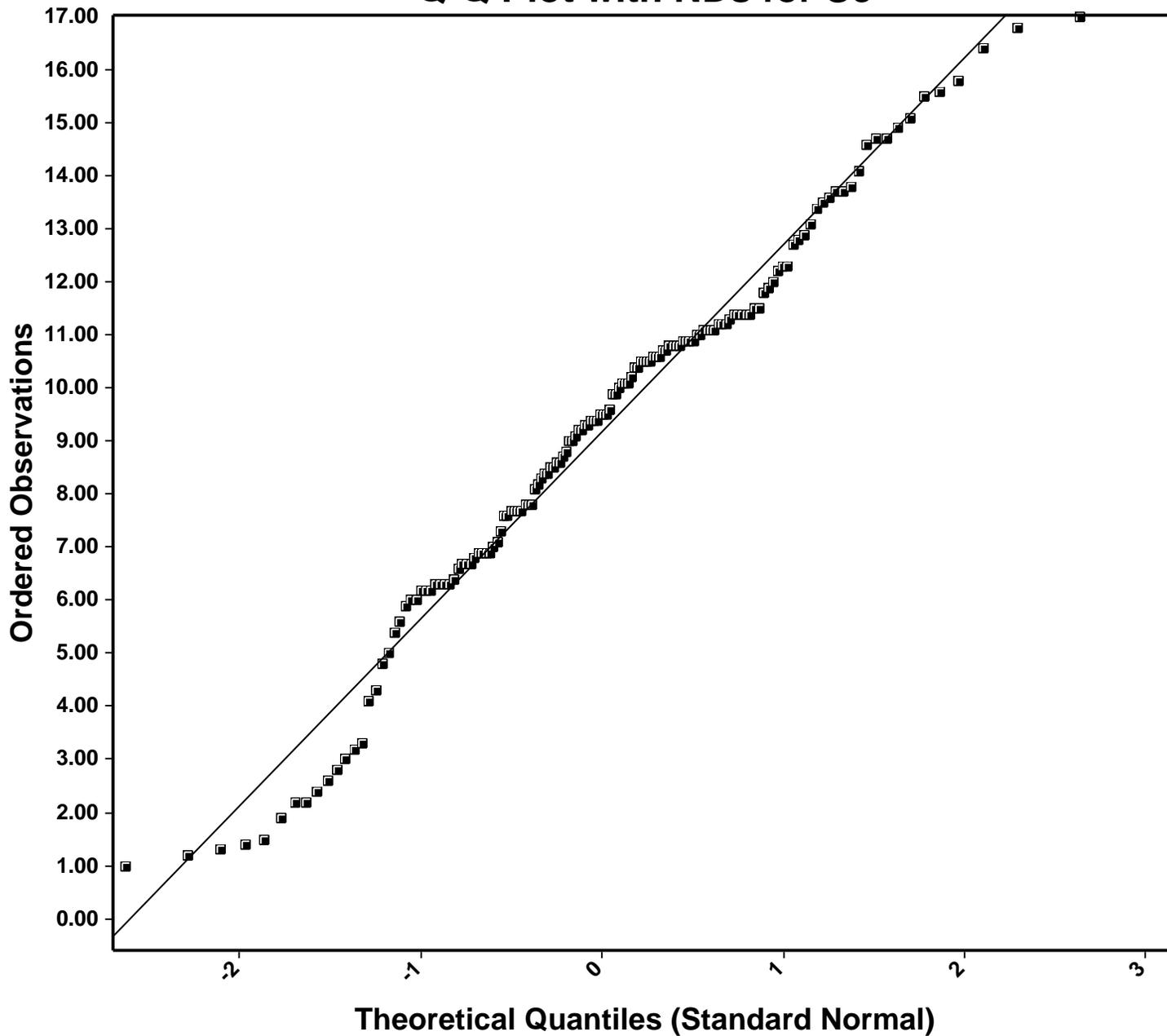


■ Sb

Sb

Total Number of Data = 141
Number of Non-Detects = 1
Number of Detects = 140
Mean = 0.4645
Sd = 0.1922
Slope = 0.1929
Intercept = 0.4645
Correlation, R = 0.9953

Q-Q Plot with NDs for Sc



■ Sc

Sc

Total Number of Data = 148

Number of Non-Detects = 0

Number of Detects = 148

Mean = 9.1757

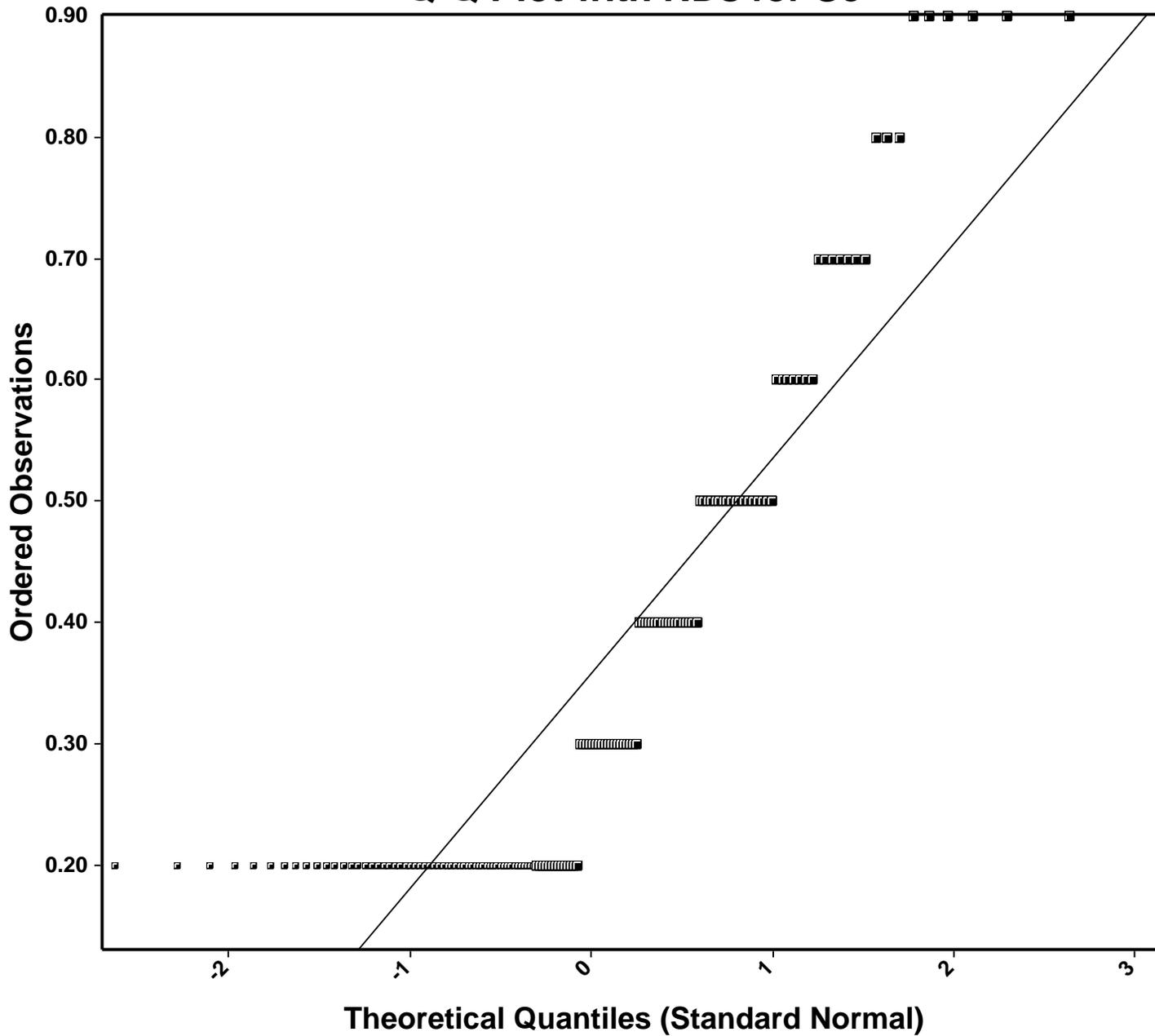
Sd = 3.5260

Slope = 3.5223

Intercept = 9.1757

Correlation, R = 0.9911

Q-Q Plot with NDs for Se

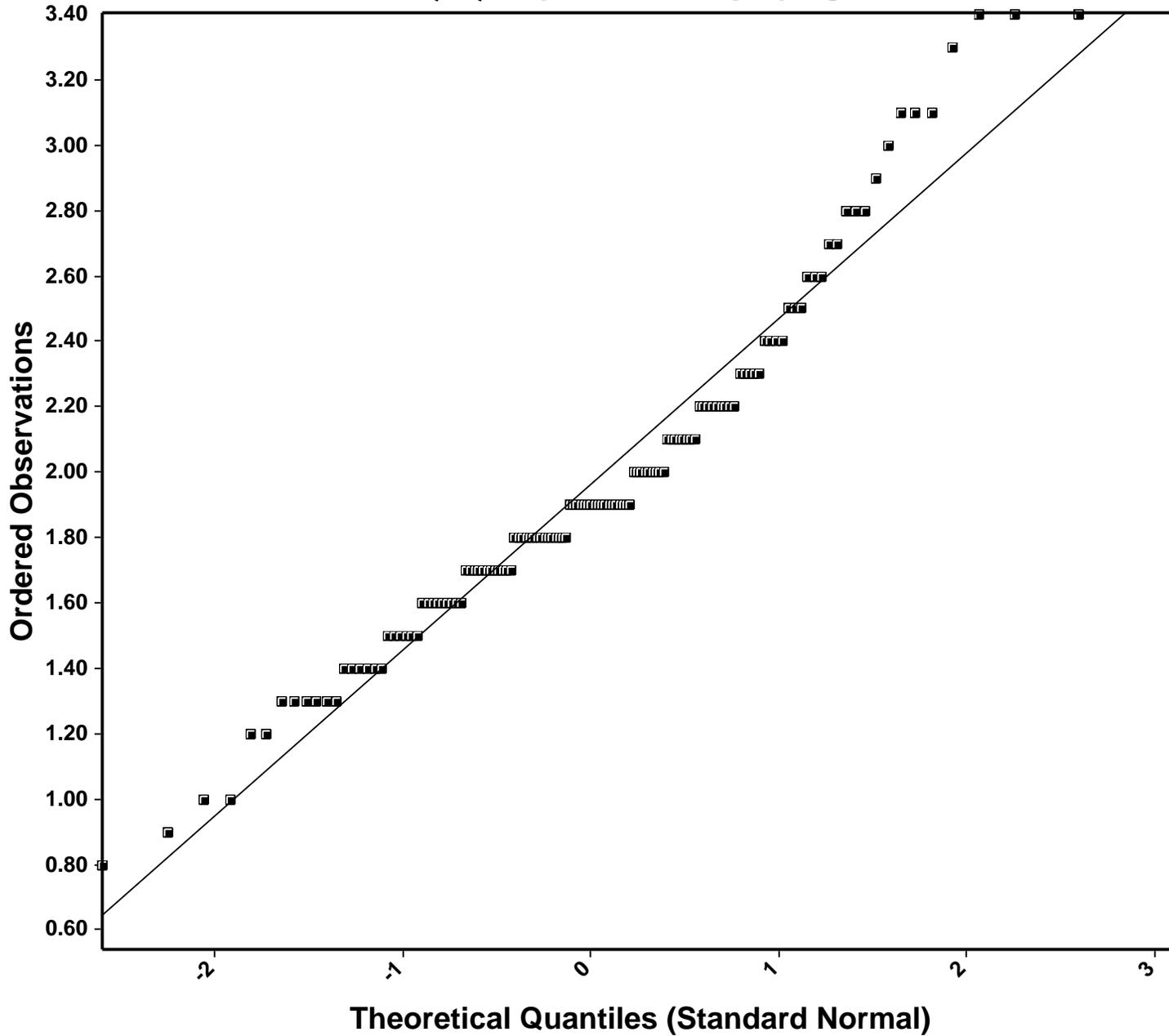


Se

Total Number of Data = 148
Number of Non-Detects = 56
Number of Detects = 92
Mean = 0.3568
Sd = 0.1983
Slope = 0.1775
Intercept = 0.3568
Correlation, R = 0.8878

■ Se

Q-Q Plot with NDs for Sn



Sn

Total Number of Data = 133

Number of Non-Detects = 0

Number of Detects = 133

Mean = 1.9609

Sd = 0.5142

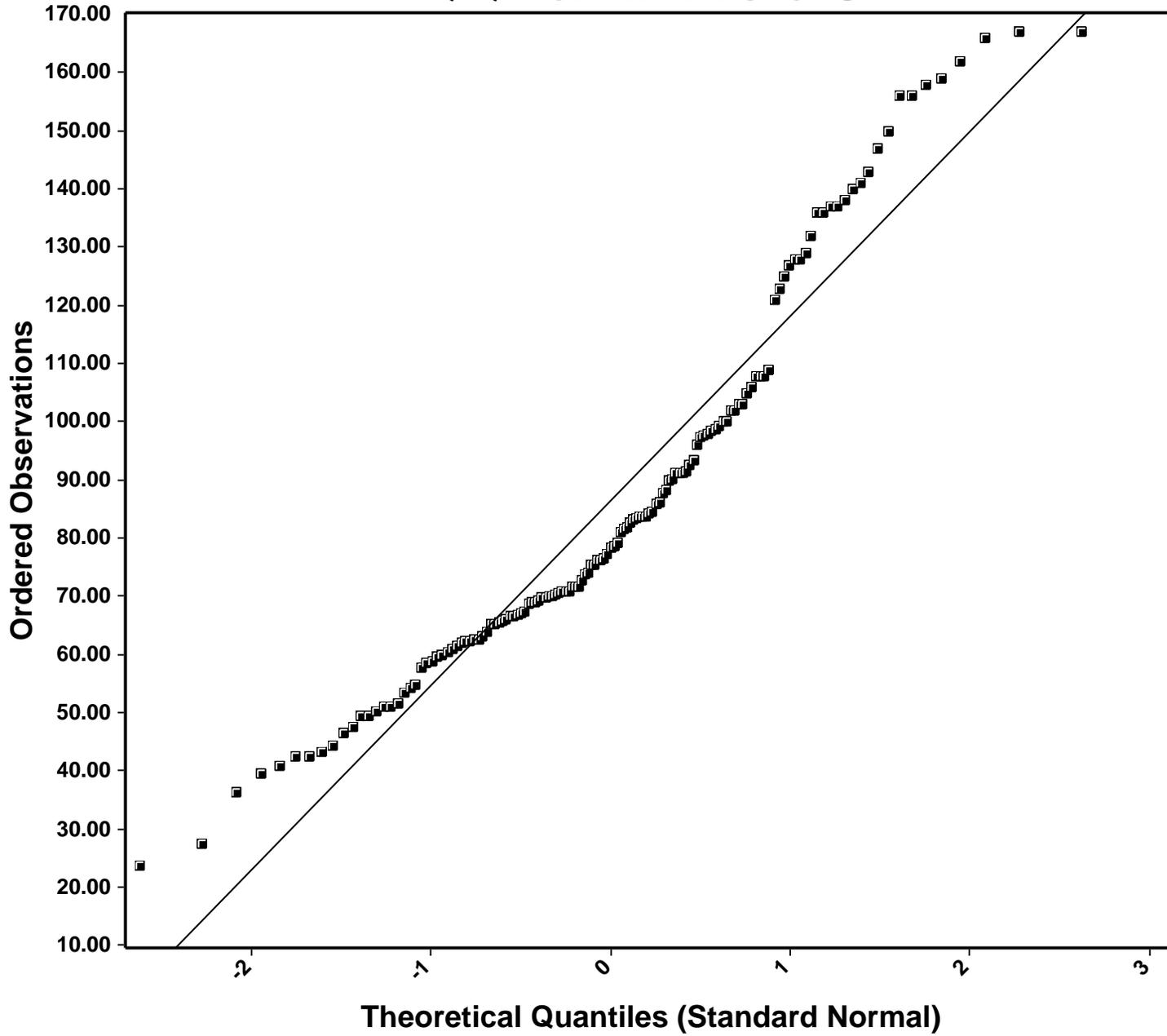
Slope = 0.5068

Intercept = 1.9609

Correlation, R = 0.9772

■ Sn

Q-Q Plot with NDs for Sr

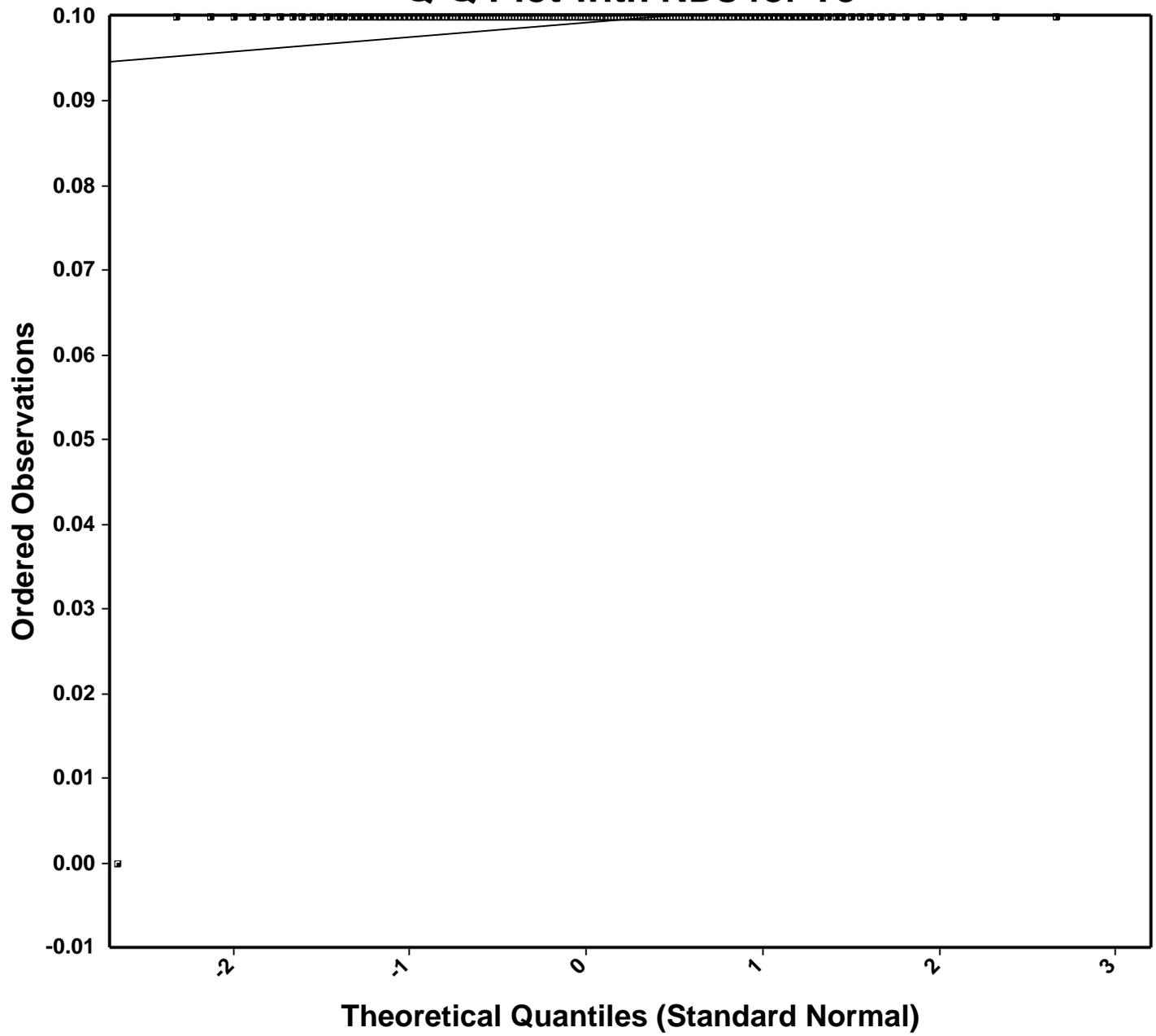


■ Sr

Sr

Total Number of Data = 141
Number of Non-Detects = 0
Number of Detects = 141
Mean = 86.2766
Sd = 32.4681
Slope = 31.7275
Intercept = 86.2766
Correlation, R = 0.9692

Q-Q Plot with NDs for Te

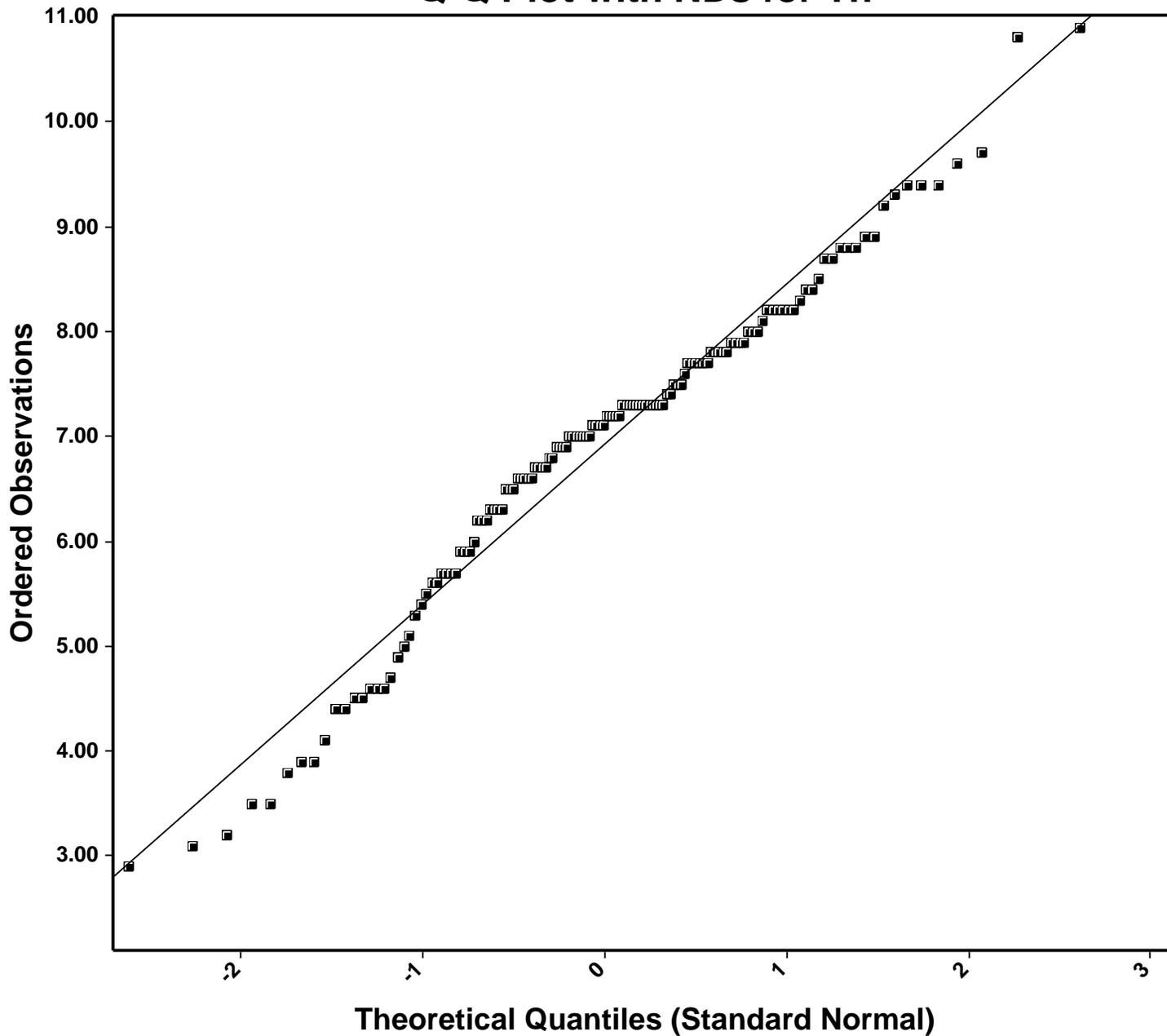


Te

Total Number of Data = 159
Number of Non-Detects = 159
Number of Detects = 0
Mean = 0.0994
Sd = 0.0079
Slope = 0.0017
Intercept = 0.0994
Correlation, R = 0.2138

■ Te

Q-Q Plot with NDs for Th



■ Th

Th

Total Number of Data = 138

Number of Non-Detects = 0

Number of Detects = 138

Mean = 6.9246

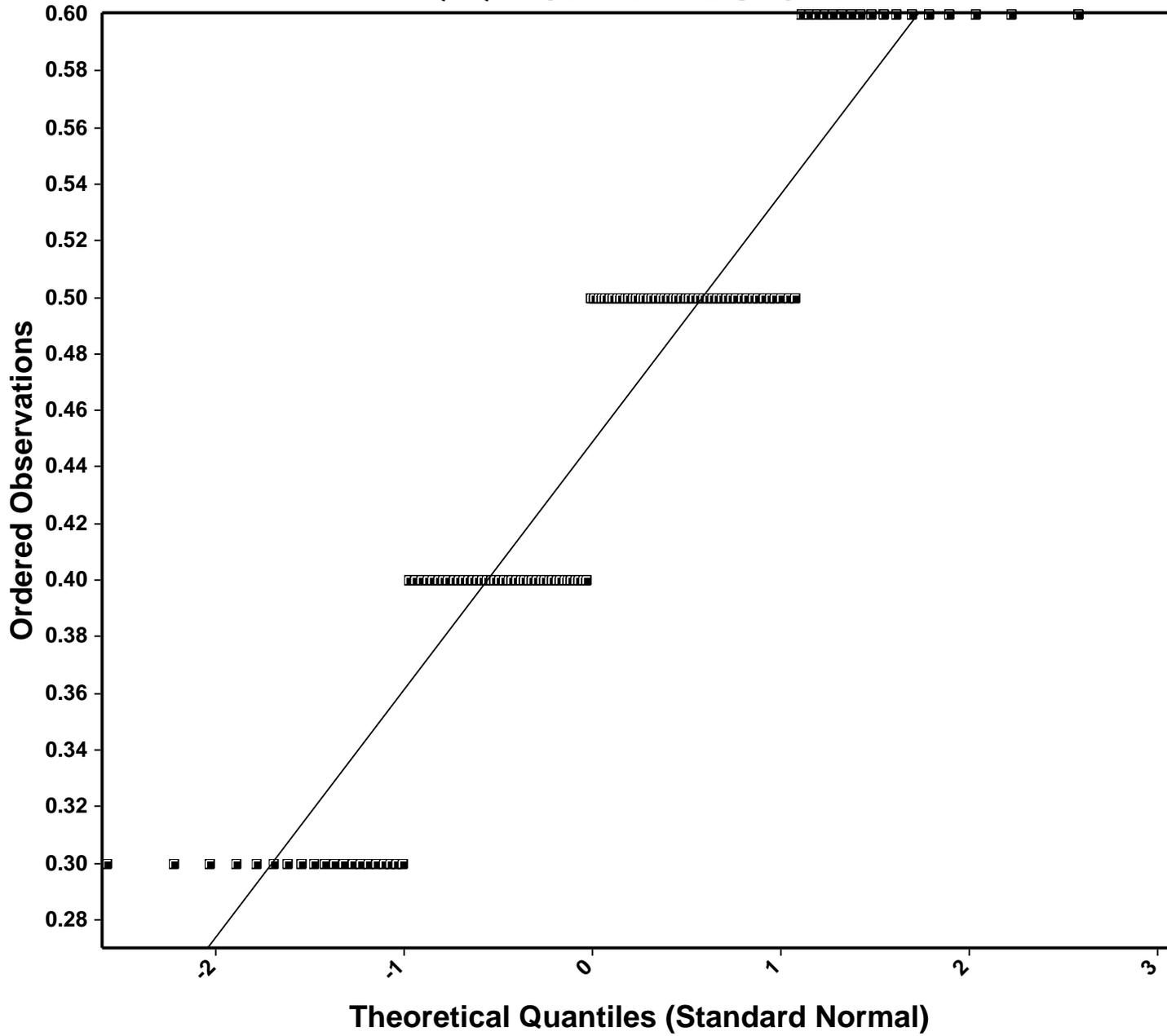
Sd = 1.5386

Slope = 1.5298

Intercept = 6.9246

Correlation, R = 0.9859

Q-Q Plot with NDs for TI



TI

Total Number of Data = 124

Number of Non-Detects = 0

Number of Detects = 124

Mean = 0.4484

Sd = 0.0924

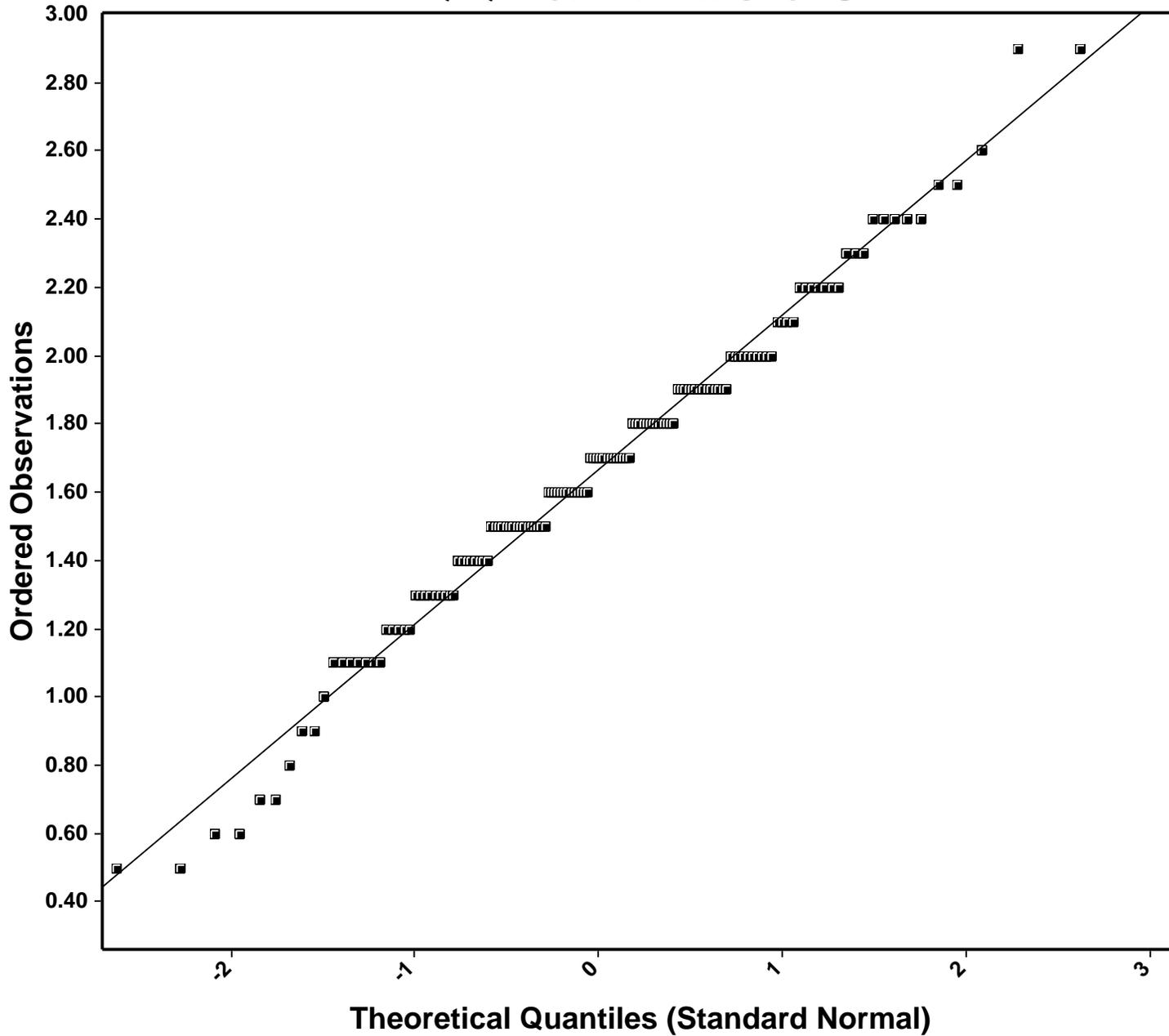
Slope = 0.0877

Intercept = 0.4484

Correlation, R = 0.9412

■ TI

Q-Q Plot with NDs for U

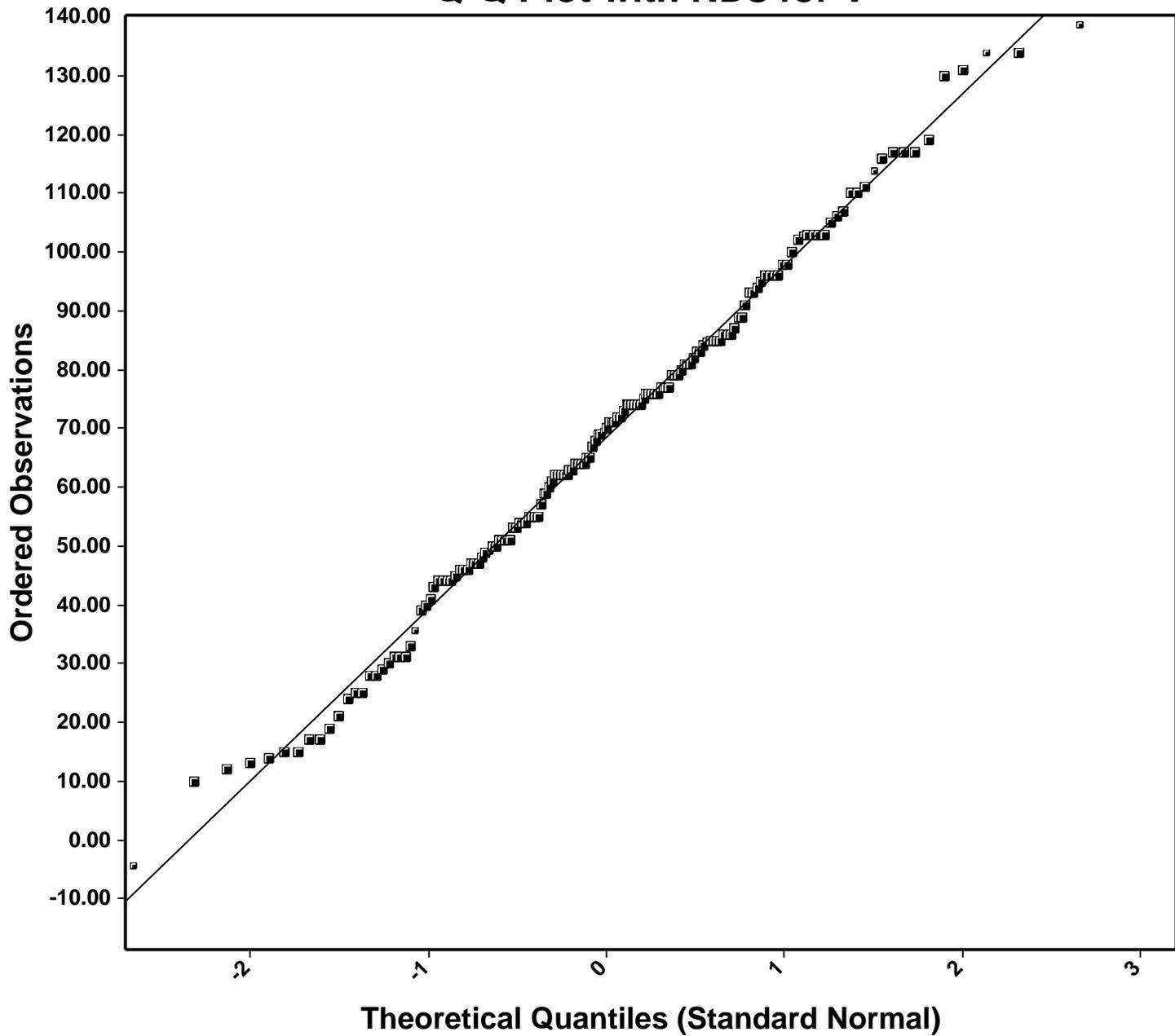


■ U

U

Total Number of Data = 142
Number of Non-Detects = 0
Number of Detects = 142
Mean = 1.6676
Sd = 0.4528
Slope = 0.4534
Intercept = 1.6676
Correlation, R = 0.9932

Q-Q Plot with NDs for V



V

Total Number of Data = 159

Number of Non-Detects = 9

Number of Detects = 150

Mean = 68.4748

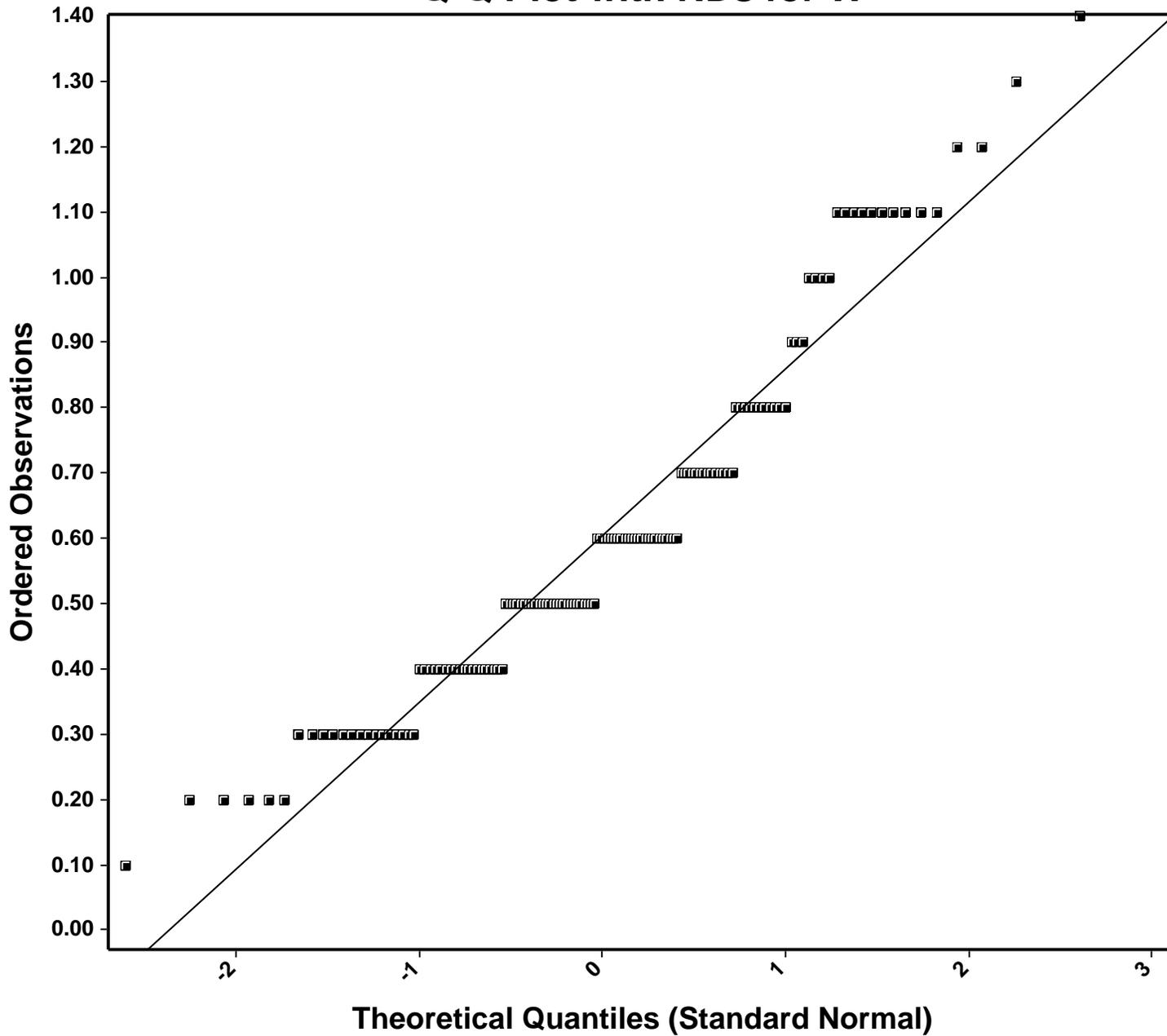
Sd = 29.0785

Slope = 29.2257

Intercept = 68.4748

Correlation, R = 0.9976

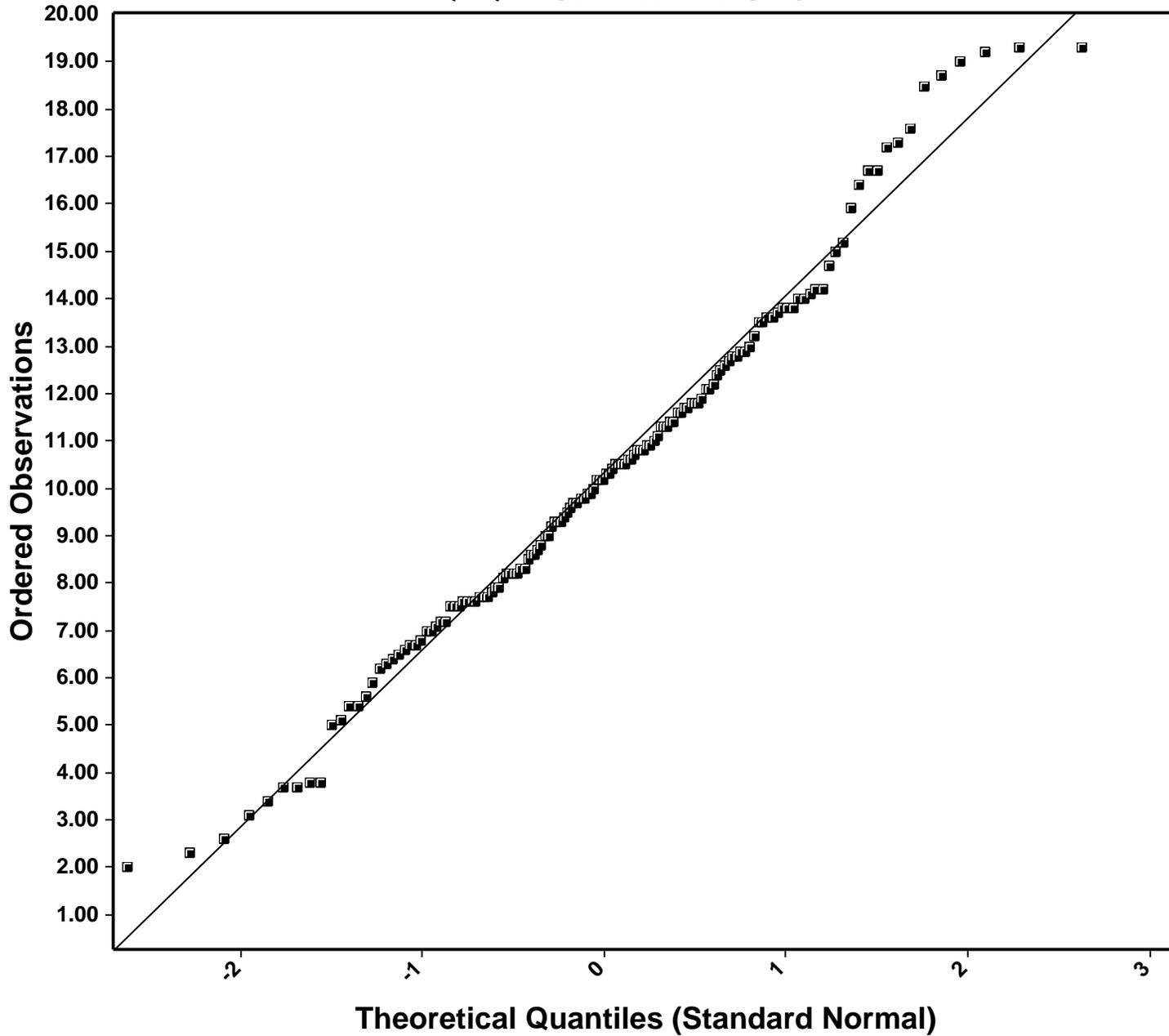
Q-Q Plot with NDs for W



W
Total Number of Data = 136
Number of Non-Detects = 0
Number of Detects = 136
Mean = 0.6029
Sd = 0.2619
Slope = 0.2557
Intercept = 0.6029
Correlation, R = 0.9682

■ W

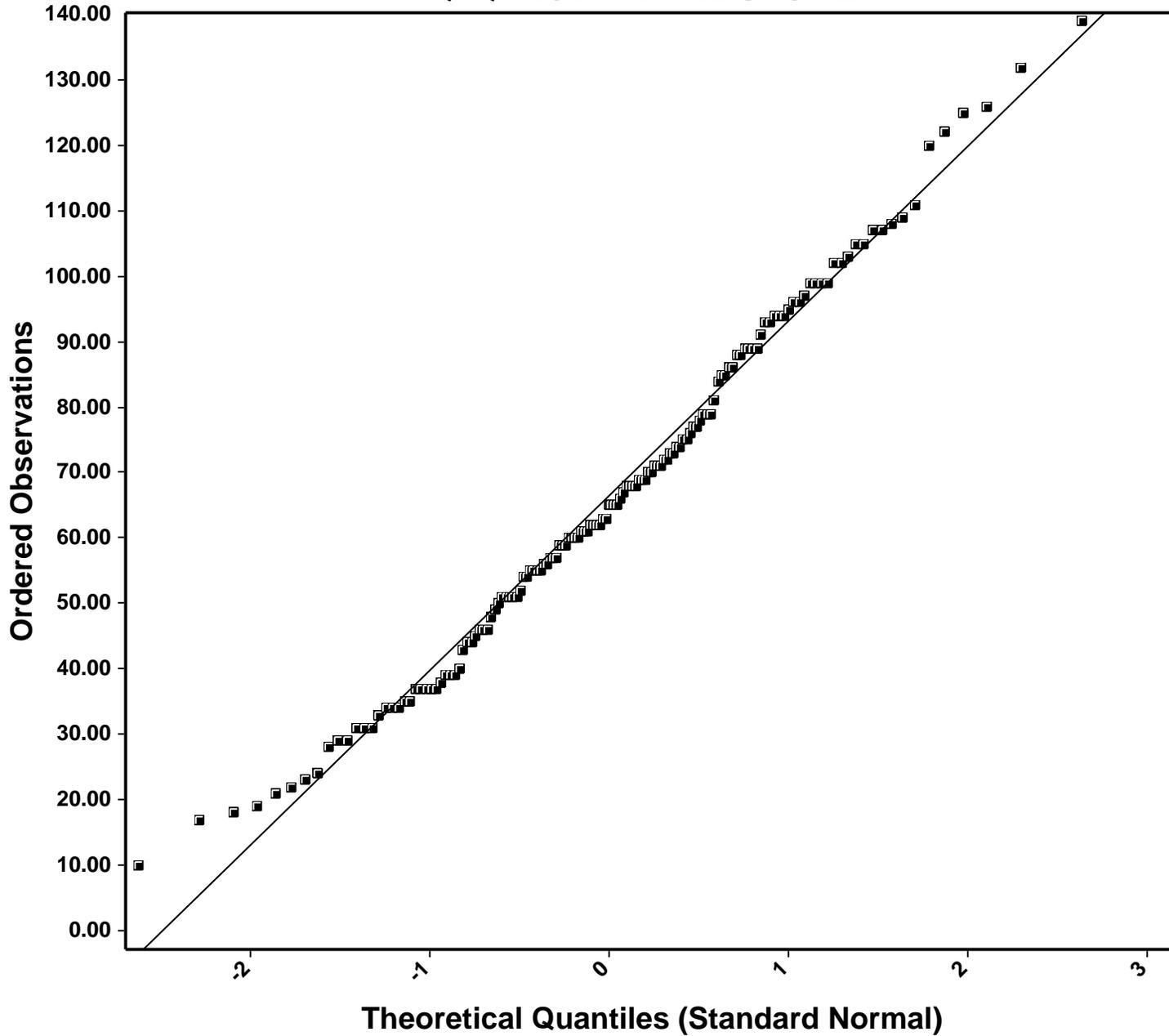
Q-Q Plot with NDs for Y



Y

Total Number of Data = 144
Number of Non-Detects = 0
Number of Detects = 144
Mean = 10.3076
Sd = 3.7400
Slope = 3.7465
Intercept = 10.3076
Correlation, R = 0.9937

Q-Q Plot with NDs for Zn



■ Zn

Zn

Total Number of Data = 148

Number of Non-Detects = 0

Number of Detects = 148

Mean = 66.4189

Sd = 26.6443

Slope = 26.7163

Intercept = 66.4189

Correlation, R = 0.9948

Appendix D6

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File ALL_Metals_Data OutliersRemoved.wst
Full Precision OFF
Confidence Coefficient 0.95

Hg

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	140	0	140	135	5	3.57%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	0.01	0.01	0.01	0.01	0
Statistics (Detects Only)	135	0.01	0.18	0.0697	0.06	0.0428
Statistics (All: NDs treated as DL value)	140	0.01	0.18	0.0676	0.06	0.0434
Statistics (All: NDs treated as DL/2 value)	140	0.005	0.18	0.0674	0.06	0.0437
Statistics (Normal ROS Estimated Data)	140	-0.05	0.18	0.066	0.06	0.0462
Statistics (Gamma ROS Estimated Data)	140	0.000001	0.18	0.0672	0.06	0.0439
Statistics (Lognormal ROS Estimated Data)	140	0.00797	0.18	0.0676	0.06	0.0434
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	2.499	2.45	0.0279	-2.877	0.706	-0.245
Statistics (NDs = DL)	2.202	2.16	0.0307	-2.938	0.764	-0.26
Statistics (NDs = DL/2)	2.031	1.992	0.0332	-2.963	0.827	-0.279
Statistics (Gamma ROS Estimates)	1.015	0.998	0.0662	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.937	0.761	-0.259

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.96	0.961	0.964	0.978
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Detects Only)	0.131	0.0763	Data Not Normal	
Lilliefors (NDs = DL)	0.123	0.0749	Data Not Normal	
Lilliefors (NDs = DL/2)	0.122	0.0749	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.117	0.0749	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.983	0.982	0.981	0.958
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	1.298	0.762		
Kolmogorov-Smirnov (Detects Only)	0.108	0.0812	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	1.503	0.764		
Kolmogorov-Smirnov (NDs = DL)	0.116	0.0801	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	1.485	0.765		
Kolmogorov-Smirnov (NDs = DL/2)	0.128	0.0802	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	8.144	0.783		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.217	0.0815	Data Not Gamma Distributed	

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.973	0.967	0.959	0.971

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.152	0.0763	Data Not Lognormal
Lilliefors (NDs = DL)	0.163	0.0749	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.177	0.0749	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.162	0.0749	Data Not Lognormal

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

Ag

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	149	0	149	1	148	99.33%

**Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).**

The data set for variable Ag was not processed!

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

AsICPEAS

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	143	0	143	143	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	143	1	25	9.79	9	5.081
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	2.993	2.935	3.271	2.105	0.661	0.314

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.989	0.989	0.989	0.989
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0723	0.0741	Data Appear Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.981	0.981	0.981	0.981
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	1.548	0.759		
Kolmogorov-Smirnov (Full: no NDs)	0.108	0.0789	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.961	0.961	0.961	0.961
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.143	0.0741	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Ba

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	144	0	144	144	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	144	117	602	351.1	347.5	91.42
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	13.26	12.99	26.48	5.823	0.29	0.0499

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.995	0.995	0.995	0.995
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0608	0.0738	Data Appear Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.989	0.989	0.989	0.989
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	1.004	0.751		
Kolmogorov-Smirnov (Full: no NDs)	0.0784	0.078	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.967	0.967	0.967	0.967
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.095	0.0738	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Be

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	144	0	144	144	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	144	0.2	3.1	1.535	1.5	0.594
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	5.716	5.601	0.269	0.339	0.466	1.375

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.987	0.987	0.987	0.987
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.116	0.0738	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.988	0.988	0.988	0.988
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	1.582	0.755		
Kolmogorov-Smirnov (Full: no NDs)	0.111	0.0782	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.948	0.948	0.948	0.948
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.141	0.0738	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Bi

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	140	0	140	140	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	140	0.06	0.32	0.173	0.17	0.0538
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	10.37	10.15	0.0167	-1.803	0.319	-0.177

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.987	0.987	0.987	0.987
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0803	0.0749	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.996	0.996	0.996	0.996
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	0.311	0.752		
Kolmogorov-Smirnov (Full: no NDs)	0.0531	0.0791	Data Appear Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.994	0.994	0.994	0.994
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0674	0.0749	Data Appear Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Cd

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	133	0	133	94	39	29.32%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	39	0.1	0.1	0.1	0.1	5.624E-17
Statistics (Detects Only)	94	0.1	0.3	0.187	0.2	0.0737
Statistics (All: NDs treated as DL value)	133	0.1	0.3	0.162	0.1	0.0736
Statistics (All: NDs treated as DL/2 value)	133	0.05	0.3	0.147	0.1	0.0881
Statistics (Normal ROS Estimated Data)	133	-0.0999	0.3	0.14	0.1	0.0993
Statistics (Gamma ROS Estimated Data)	133	0.000001	0.3	0.134	0.1	0.103
Statistics (Lognormal ROS Estimated Data)	133	0.035	0.3	0.154	0.1	0.0815
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	6.133	6	0.0305	-1.759	0.422	-0.24
Statistics (NDs = DL)	5.359	5.243	0.0302	-1.918	0.433	-0.225
Statistics (NDs = DL/2)	2.601	2.547	0.0565	-2.122	0.667	-0.314
Statistics (Gamma ROS Estimates)	0.275	0.274	0.488	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.021	0.558	-0.276

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.902	0.864	0.919	0.966
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Detects Only)	0.228	0.0914	Data Not Normal	
Lilliefors (NDs = DL)	0.333	0.0768	Data Not Normal	
Lilliefors (NDs = DL/2)	0.237	0.0768	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.193	0.0768	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.897	0.898	0.918	0.687
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	8.297	0.754		
Kolmogorov-Smirnov (Detects Only)	0.277	0.0924	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	15.5	0.755		
Kolmogorov-Smirnov (NDs = DL)	0.344	0.0811	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	7.817	0.762		
Kolmogorov-Smirnov (NDs = DL/2)	0.232	0.0817	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	23.66	0.879		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.394	0.0883	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.891	0.863	0.92	0.953
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Detects Only)	0.298	0.0914	Data Not Lognormal	
Lilliefors (NDs = DL)	0.347	0.0768	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.245	0.0768	Data Not Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.236	0.0768	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Ce

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	147	0	147	147	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	147	10.8	81	48.07	51.6	13.97
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	9.396	9.209	5.116	3.819	0.358	0.0937

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.988	0.988	0.988	0.988
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.107	0.0731	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.961	0.961	0.961	0.961
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	3.774	0.752		
Kolmogorov-Smirnov (Full: no NDs)	0.141	0.0773	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.938	0.938	0.938	0.938
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.161	0.0731	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Co

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	150	0	150	150	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	150	0.6	20.8	8.861	8.35	4.638
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	2.9	2.847	3.055	1.999	0.684	0.342

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.99	0.99	0.99	0.99
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0717	0.0723	Data Appear Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.982	0.982	0.982	0.982
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	1.077	0.76	Data Not Gamma Distributed	
Kolmogorov-Smirnov (Full: no NDs)	0.0842	0.0771		

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.957	0.957	0.957	0.957
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.105	0.0723	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Cr

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	150	0	150	150	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	150	7	98	50.61	52.5	21.92
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	3.993	3.918	12.67	3.794	0.572	0.151

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.992	0.992	0.992	0.992
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0692	0.0723	Data Appear Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.96	0.96	0.96	0.96
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	2.836	0.756		
Kolmogorov-Smirnov (Full: no NDs)	0.108	0.0769	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.945	0.945	0.945	0.945
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.14	0.0723	Data Not Lognormal	

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

Cs

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	137	0	137	3	134	97.81%

**Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).**

The data set for variable Cs was not processed!

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Cu

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	141	0	141	141	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	141	2.4	32	12.95	11.9	6.714
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	3.645	3.572	3.553	2.418	0.562	0.232

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.974	0.974	0.974	0.974
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.11	0.0746	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.994	0.994	0.994	0.994
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	0.271	0.757		
Kolmogorov-Smirnov (Full: no NDs)	0.0445	0.0793	Data Appear Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.99	0.99	0.99	0.99
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0763	0.0746	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Ga

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	141	0	141	141	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	141	6.23	22.1	13.89	13.9	3.168
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	18.04	17.66	0.77	2.603	0.244	0.0937

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.998	0.998	0.998	0.998
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.048	0.0746	Data Appear Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.993	0.993	0.993	0.993
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	0.619	0.751	Data Appear Gamma Distributed	
Kolmogorov-Smirnov (Full: no NDs)	0.0718	0.0787		

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.984	0.984	0.984	0.984
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0866	0.0746	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

In

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	148	0	148	135	13	8.78%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	13	0.02	0.02	0.02	0.02	3.611E-18
Statistics (Detects Only)	135	0.02	0.09	0.0477	0.05	0.0135
Statistics (All: NDs treated as DL value)	148	0.02	0.09	0.0453	0.05	0.0151
Statistics (All: NDs treated as DL/2 value)	148	0.01	0.09	0.0444	0.05	0.0168
Statistics (Normal ROS Estimated Data)	148	0.00597	0.09	0.045	0.05	0.0157
Statistics (Gamma ROS Estimated Data)	148	0.000001	0.09	0.044	0.05	0.0176
Statistics (Lognormal ROS Estimated Data)	148	0.0184	0.09	0.0456	0.05	0.0147
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	11.72	11.49	0.00407	-3.086	0.304	-0.0987
Statistics (NDs = DL)	8.042	7.883	0.00563	-3.159	0.374	-0.118
Statistics (NDs = DL/2)	4.934	4.838	0.009	-3.219	0.52	-0.162
Statistics (Gamma ROS Estimates)	1.487	1.462	0.0296	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.145	0.348	-0.111

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.972	0.972	0.971	0.98
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Detects Only)	0.145	0.0763	Data Not Normal	
Lilliefors (NDs = DL)	0.15	0.0728	Data Not Normal	
Lilliefors (NDs = DL/2)	0.158	0.0728	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.152	0.0728	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.97	0.965	0.939	0.868
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	3.472	0.752		
Kolmogorov-Smirnov (Detects Only)	0.18	0.0803	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	4.324	0.753		
Kolmogorov-Smirnov (NDs = DL)	0.184	0.0771	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	7.156	0.755		
Kolmogorov-Smirnov (NDs = DL/2)	0.22	0.0772	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	19.63	0.771		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.316	0.0785	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.962	0.952	0.896	0.968
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Detects Only)	0.194	0.0763	Data Not Lognormal	
Lilliefors (NDs = DL)	0.196	0.0728	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.25	0.0728	Data Not Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.192	0.0728	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

La

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	148	0	148	148	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	148	5.2	37.3	22.46	23.3	6.555
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	9.388	9.202	2.393	3.058	0.358	0.117

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.991	0.991	0.991	0.991
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.08	0.0728	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.965	0.965	0.965	0.965
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	3.187	0.752		
Kolmogorov-Smirnov (Full: no NDs)	0.119	0.077	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.941	0.941	0.941	0.941
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.138	0.0728	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Li

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	147	0	147	147	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	147	3	55	26.51	26	11.84
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	3.789	3.716	6.997	3.14	0.594	0.189

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.994	0.994	0.994	0.994

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Full: no NDs)	0.0461	0.0731	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.975	0.975	0.975	0.975

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	2.598	0.757	
Kolmogorov-Smirnov (Full: no NDs)	0.119	0.0777	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.941	0.941	0.941	0.941

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Full: no NDs)	0.152	0.0731	Data Not Lognormal

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Mn

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	138	0	138	138	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	138	103	1210	549.1	543	225.8
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	5.208	5.099	105.4	6.209	0.479	0.0771

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.992	0.992	0.992	0.992
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0309	0.0754	Data Appear Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.991	0.991	0.991	0.991
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	0.834	0.755		
Kolmogorov-Smirnov (Full: no NDs)	0.0614	0.0798	Data appear Approximate Gamma Distribution	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.973	0.973	0.973	0.973
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0901	0.0754	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Mo

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	142	0	142	142	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	142	0.21	1.3	0.649	0.625	0.237
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	7.767	7.608	0.0835	-0.499	0.368	-0.737

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.978	0.978	0.978	0.978
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0971	0.0744	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.994	0.994	0.994	0.994
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	0.447	0.753		
Kolmogorov-Smirnov (Full: no NDs)	0.0603	0.0786	Data Appear Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.996	0.996	0.996	0.996
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0559	0.0744	Data Appear Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Nb

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	138	0	138	138	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	138	0.9	11.7	6.136	5.95	2.145
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	6.848	6.704	0.896	1.739	0.423	0.243

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.996	0.996	0.996	0.996
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0605	0.0754	Data Appear Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.988	0.988	0.988	0.988
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	1.092	0.754		
Kolmogorov-Smirnov (Full: no NDs)	0.0845	0.0797	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.948	0.948	0.948	0.948
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.115	0.0754	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Ni

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	149	0	149	149	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	149	4.1	55.4	23.5	21.7	12.26
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	3.308	3.246	7.102	2.998	0.602	0.201

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.983	0.983	0.983	0.983

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Full: no NDs)	0.0693	0.0726	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.985	0.985	0.985	0.985

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	0.567	0.758	
Kolmogorov-Smirnov (Full: no NDs)	0.0531	0.0773	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.983	0.983	0.983	0.983

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Full: no NDs)	0.0723	0.0726	Data Appear Lognormal

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

P

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	147	0	147	147	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	147	240	1460	720.5	640	299.9
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	6.166	6.045	116.9	6.497	0.41	0.0631

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.966	0.966	0.966	0.966
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.13	0.0731	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.988	0.988	0.988	0.988
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	1.063	0.754		
Kolmogorov-Smirnov (Full: no NDs)	0.0913	0.0774	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.994	0.994	0.994	0.994
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0699	0.0731	Data Appear Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Pb

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	134	0	134	134	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	134	7.2	43.2	22.51	21.75	6.606
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	12.01	11.75	1.874	3.072	0.294	0.0958

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.982	0.982	0.982	0.982
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.094	0.0765	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.996	0.996	0.996	0.996
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	0.39	0.751		
Kolmogorov-Smirnov (Full: no NDs)	0.0569	0.0806	Data Appear Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.993	0.993	0.993	0.993
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0411	0.0765	Data Appear Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Rb

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	136	0	136	136	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	136	29.3	128	75.46	74.65	19.94
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	13.75	13.45	5.49	4.287	0.28	0.0653

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.991	0.991	0.991	0.991
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0798	0.076	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.992	0.992	0.992	0.992
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	0.734	0.751		
Kolmogorov-Smirnov (Full: no NDs)	0.0679	0.0801	Data Appear Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.983	0.983	0.983	0.983
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0866	0.076	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Sb

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	141	0	141	140	1	0.71%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Detects Only)	140	0.05	0.99	0.468	0.47	0.19
Statistics (All: NDs treated as DL value)	141	0.05	0.99	0.465	0.47	0.192
Statistics (All: NDs treated as DL/2 value)	141	0.025	0.99	0.464	0.47	0.193
Statistics (Normal ROS Estimated Data)	141	-0.0687	0.99	0.464	0.47	0.194
Statistics (Gamma ROS Estimated Data)	141	0.000001	0.99	0.464	0.47	0.193
Statistics (Lognormal ROS Estimated Data)	141	0.05	0.99	0.465	0.47	0.191

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	4.719	4.623	0.0991	-0.87	0.526	-0.605
Statistics (NDs = DL)	4.383	4.294	0.106	-0.885	0.554	-0.626
Statistics (NDs = DL/2)	4.227	4.142	0.11	-0.89	0.576	-0.647
Statistics (Gamma ROS Estimates)	2.728	2.674	0.17	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.88	0.537	-0.611

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.995	0.995	0.996	0.996
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Detects Only)	0.0737	0.0749	Data Appear Normal	
Lilliefors (NDs = DL)	0.0762	0.0746	Data Not Normal	
Lilliefors (NDs = DL/2)	0.0768	0.0746	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.0791	0.0746	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.98	0.977	0.976	0.964
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	2.293	0.755		
Kolmogorov-Smirnov (Detects Only)	0.144	0.0793	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	2.667	0.756		
Kolmogorov-Smirnov (NDs = DL)	0.15	0.0791	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	2.815	0.756		
Kolmogorov-Smirnov (NDs = DL/2)	0.154	0.0791	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	6.056	0.761		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.19	0.0795	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.941	0.932	0.92	0.941
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Detects Only)	0.177	0.0749	Data Not Lognormal	
Lilliefors (NDs = DL)	0.183	0.0746	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.187	0.0746	Data Not Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.179	0.0746	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Sc

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	148	0	148	148	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	148	1	17	9.176	9.5	3.526
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	4.608	4.519	1.991	2.104	0.55	0.262

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.991	0.991	0.991	0.991
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0682	0.0728	Data Appear Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.955	0.955	0.955	0.955
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	4.715	0.756		
Kolmogorov-Smirnov (Full: no NDs)	0.12	0.0773	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.906	0.906	0.906	0.906
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.155	0.0728	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Sn

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	133	0	133	133	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	133	0.8	3.4	1.961	1.9	0.514
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	15	14.66	0.131	0.64	0.263	0.411

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.977	0.977	0.977	0.977

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Full: no NDs)	0.134	0.0768	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.989	0.989	0.989	0.989

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	1.056	0.751	
Kolmogorov-Smirnov (Full: no NDs)	0.1	0.0808	Data Not Gamma Distributed

Lognormal Distribution Test Results

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

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Full: no NDs)	0.0909	0.0768	Data Not Lognormal

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Sr

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	141	0	141	141	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	141	23.9	167	86.28	78.4	32.47
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	7.403	7.25	11.65	4.388	0.377	0.0859

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.969	0.969	0.969	0.969

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Full: no NDs)	0.115	0.0746	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.987	0.987	0.987	0.987

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	1.101	0.753	
Kolmogorov-Smirnov (Full: no NDs)	0.0733	0.0789	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.991	0.991	0.991	0.991

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Full: no NDs)	0.0521	0.0746	Data Appear Lognormal

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

Te

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	160	1	159	0	159	100.00%

**Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).**

The data set for variable Te was not processed!

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Th

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	138	0	138	138	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	138	2.9	10.9	6.925	7.15	1.539
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	17.65	17.27	0.392	1.906	0.252	0.132

Normal Distribution Test Results

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

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Full: no NDs)	0.105	0.0754	Data Not Normal

Gamma Distribution Test Results

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

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	3.257	0.751	
Kolmogorov-Smirnov (Full: no NDs)	0.141	0.0795	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.953	0.953	0.953	0.953

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Full: no NDs)	0.158	0.0754	Data Not Lognormal

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

TI

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	124	0	124	124	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	124	0.3	0.6	0.448	0.5	0.0924
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	22.66	22.12	0.0198	-0.824	0.215	-0.261

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.941	0.941	0.941	0.941
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.22	0.0796	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.935	0.935	0.935	0.935
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	6.445	0.75		
Kolmogorov-Smirnov (Full: no NDs)	0.233	0.0831	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.934	0.934	0.934	0.934
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.237	0.0796	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

U

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	142	0	142	142	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	142	0.5	2.9	1.668	1.7	0.453
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	11.61	11.36	0.144	0.468	0.316	0.675

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.993	0.993	0.993	0.993
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.081	0.0744	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.982	0.982	0.982	0.982
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	1.894	0.752		
Kolmogorov-Smirnov (Full: no NDs)	0.124	0.0785	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.952	0.952	0.952	0.952
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.147	0.0744	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

V

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	160	1	159	150	9	5.66%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	9	-4.375	138.6	80.5	85	47.67
Statistics (Detects Only)	150	10	134	67.75	69.5	27.67
Statistics (All: NDs treated as DL value)	159	-4.375	138.6	68.47	70	29.08
Statistics (All: NDs treated as DL/2 value)	159	-2.188	134	66.2	67	28.13
Statistics (Normal ROS Estimated Data)	159	-10.59	134	66.52	66.4	27.94

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.996	0.998	0.997	0.998
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Detects Only)	0.0427	0.0723	Data Appear Normal	
Lilliefors (NDs = DL)	0.0345	0.0703	Data Appear Normal	
Lilliefors (NDs = DL/2)	0.0392	0.0703	Data Appear Normal	
Lilliefors (Normal ROS Estimates)	0.0395	0.0703	Data Appear Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	N/A	N/A	N/A	N/A
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	N/A	N/A		
Kolmogorov-Smirnov (Detects Only)	N/A	N/A		
Anderson-Darling (NDs = DL)	N/A	N/A		
Kolmogorov-Smirnov (NDs = DL)	N/A	N/A		
Anderson-Darling (NDs = DL/2)	N/A	N/A		
Kolmogorov-Smirnov (NDs = DL/2)	N/A	N/A		
Anderson-Darling (Gamma ROS Estimates)	N/A	N/A		
Kolmogorov-Smirnov (Gamma ROS Est.)	N/A	N/A		

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

W

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	136	0	136	136	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	136	0.1	1.4	0.603	0.6	0.262
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	5.336	5.223	0.113	-0.603	0.456	-0.756

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.968	0.968	0.968	0.968
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.166	0.076	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.987	0.987	0.987	0.987
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	1.406	0.755		
Kolmogorov-Smirnov (Full: no NDs)	0.109	0.0803	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.981	0.981	0.981	0.981
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.127	0.076	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Y

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	144	0	144	144	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	144	2	19.3	10.31	10.25	3.74
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	6.61	6.477	1.559	2.255	0.424	0.188

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.994	0.994	0.994	0.994
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0463	0.0738	Data Appear Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.988	0.988	0.988	0.988
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	0.952	0.754		
Kolmogorov-Smirnov (Full: no NDs)	0.0656	0.0782	Data appear Approximate Gamma Distribution	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.965	0.965	0.965	0.965
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0907	0.0738	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Zn

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	148	0	148	148	0	0.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	148	10	139	66.42	65	26.64
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	5.469	5.363	12.14	4.102	0.465	0.113

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.995	0.995	0.995	0.995
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0466	0.0728	Data Appear Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.99	0.99	0.99	0.99
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Full: no NDs)	0.668	0.755	Data Appear Gamma Distributed	
Kolmogorov-Smirnov (Full: no NDs)	0.0645	0.0772		

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.975	0.975	0.975	0.975
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Full: no NDs)	0.0952	0.0728	Data Not Lognormal	

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

**Appendix D6: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Metals**

Se

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	148	0	148	92	56	37.84%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	56	0.2	0.2	0.2	0.2	1.4E-16
Statistics (Detects Only)	92	0.2	0.9	0.452	0.4	0.198
Statistics (All: NDs treated as DL value)	148	0.2	0.9	0.357	0.3	0.198
Statistics (All: NDs treated as DL/2 value)	148	0.1	0.9	0.319	0.3	0.232
Statistics (Normal ROS Estimated Data)	148	-0.488	0.9	0.268	0.3	0.3
Statistics (Gamma ROS Estimated Data)	148	0.000001	0.9	0.283	0.3	0.268
Statistics (Lognormal ROS Estimated Data)	148	0.0532	0.9	0.338	0.3	0.216
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	5.429	5.323	0.0833	-0.889	0.443	-0.498
Statistics (NDs = DL)	3.986	3.91	0.0895	-1.161	0.494	-0.426
Statistics (NDs = DL/2)	1.931	1.896	0.165	-1.424	0.771	-0.542
Statistics (Gamma ROS Estimates)	0.185	0.186	1.529	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.289	0.657	-0.509

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.957	0.888	0.926	0.995
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Detects Only)	0.158	0.0924	Data Not Normal	
Lilliefors (NDs = DL)	0.258	0.0728	Data Not Normal	
Lilliefors (NDs = DL/2)	0.206	0.0728	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.0697	0.0728	Data Appear Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.977	0.952	0.968	0.742
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	1.644	0.754		
Kolmogorov-Smirnov (Detects Only)	0.131	0.0934	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	10.77	0.756		
Kolmogorov-Smirnov (NDs = DL)	0.283	0.0774	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	7.26	0.766		
Kolmogorov-Smirnov (NDs = DL/2)	0.241	0.0781	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	23.89	0.935		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.351	0.086	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.973	0.907	0.926	0.988
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Lilliefors (Detects Only)	0.12	0.0924	Data Not Lognormal	
Lilliefors (NDs = DL)	0.291	0.0728	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.251	0.0728	Data Not Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.114	0.0728	Data Not Lognormal	

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

Prepared By: EYM
Checked By: RRD

Appendix D7

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

Hg

General Statistics

Number of Valid Data 140	Number of Detected Data 135
Number of Distinct Detected Data 17	Number of Non-Detect Data 5
Tolerance Factor 1.436	Percent Non-Detects 3.57%

Raw Statistics

Minimum Detected 0.01
 Maximum Detected 0.18
 Mean of Detected 0.0697
 SD of Detected 0.0428
 Minimum Non-Detect 0.01
 Maximum Non-Detect 0.01

Log-transformed Statistics

Minimum Detected -4.605
 Maximum Detected -1.715
 Mean of Detected -2.877
 SD of Detected 0.706
 Minimum Non-Detect -4.605
 Maximum Non-Detect -4.605

Background Statistics

Normal Distribution Test with Detected Values Only

Lilliefors Test Statistic 0.131
 5% Lilliefors Critical Value 0.0763

Data not Normal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.0674
 SD 0.0437
 90% UTL 90% Coverage 0.13
 90% UPL (t) 0.124
 90% Percentile (z) 0.123
 95% Percentile (z) 0.139
 99% Percentile (z) 0.169

Maximum Likelihood Estimate(MLE) Method

Mean 0.0668
 SD 0.0446
 90% UTL with 90% Coverage 0.131

90% UPL (t) 0.124
 90% Percentile (z) 0.124
 95% Percentile (z) 0.14
 99% Percentile (z) 0.171

Lognormal Distribution Test with Detected Values Only

Lilliefors Test Statistic 0.152
 5% Lilliefors Critical Value 0.0763

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.963
 SD (Log Scale) 0.827
 90% UTL 90% Coverage 0.169
 90% UPL (t) 0.15
 90% Percentile (z) 0.149
 95% Percentile (z) 0.201
 99% Percentile (z) 0.354

Log ROS Method

Mean in Original Scale 0.0676
 SD in Original Scale 0.0434
 90% UTL with 90% Coverage 0.158
 90% BCA UTL with 90% Coverage 0.15
 90% Bootstrap (%) UTL with 90% Coverage 0.15
 90% UPL (t) 0.142
 90% Percentile (z) 0.141
 95% Percentile (z) 0.185
 99% Percentile (z) 0.312

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 2.448
 Theta Star 0.0285
 nu star 661

A-D Test Statistic 1.298
 5% A-D Critical Value 0.762
 K-S Test Statistic 0.108
 5% K-S Critical Value 0.0812

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.0672
 Median 0.06
 SD 0.0439
 k star 0.998
 Theta star 0.0673
 Nu star 279.5
 90% Percentile of Chisquare (2k) 4.599
 90% Percentile 0.155
 95% Percentile 0.201
 99% Percentile 0.31

Data Distribution Test with Detected Values Only

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.0676
 SD 0.0433
 SE of Mean 0.00367
 90% KM UTL with 90% Coverage 0.13
 90% KM Chebyshev UPL 0.198
 90% KM UPL (t) 0.123
 90% Percentile (z) 0.123
 95% Percentile (z) 0.139
 99% Percentile (z) 0.168

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.143
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.159
 90% WH Approx. Gamma UTL with 90% Coverage 0.157
 90% HW Approx. Gamma UTL with 90% Coverage 0.177

Note: DL/2 is not a recommended method.

Appendix D7: ProUCL Outputs for Background UPLs
Metals

General Background Statistics for Data Sets with Non-Detects

User Selected Options
From File ALL_Metals_Data OutliersRemoved.wst
Full Precision OFF
Confidence Coefficient 90%
Coverage 90%
Different or Future K Values 1
Number of Bootstrap Operations 2000

Ag

General Statistics

Number of Valid Data 149
Number of Distinct Detected Data 1
Number of Detected Data 1
Number of Non-Detect Data 148

**Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).**

The data set for variable Ag was not processed!

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

As

General Statistics

Total Number of Observations 143 Number of Distinct Observations 22
 Tolerance Factor 1.434

Raw Statistics

Minimum 1
 Maximum 25
 Second Largest 21
 First Quartile 6
 Median 9
 Third Quartile 13
 Mean 9.79
 Geometric Mean 8.208
 SD 5.081
 Coefficient of Variation 0.519
 Skewness 0.363

Log-Transformed Statistics

Minimum 0
 Maximum 3.219
 Second Largest 3.045
 First Quartile 1.792
 Median 2.197
 Third Quartile 2.565
 Mean 2.105
 SD 0.661

Background Statistics

Normal Distribution Test

Lilliefors Test Statistic 0.0723
 Lilliefors Critical Value 0.0741

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

90% UTL with 90% Coverage 17.08
 90% UPL (t) 16.35
 90% Percentile (z) 16.3
 95% Percentile (z) 18.15
 99% Percentile (z) 21.61

Gamma Distribution Test

k star 2.935
 Theta Star 3.335
 MLE of Mean 9.79
 MLE of Standard Deviation 5.714
 nu star 839.5

A-D Test Statistic 1.548
 5% A-D Critical Value 0.759
 K-S Test Statistic 0.108
 5% K-S Critical Value 0.0789

Data not Gamma Distributed at 5% Significance Level

Lognormal Distribution Test

Lilliefors Test Statistic 0.143
 Lilliefors Critical Value 0.0741

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution

90% UTL with 90% Coverage 21.19
 90% UPL (t) 19.29
 90% Percentile (z) 19.15
 95% Percentile (z) 24.35
 99% Percentile (z) 38.22

Data Distribution Test

Data appear Normal at 5% Significance Level

Nonparametric Statistics

90% Percentile 16
 95% Percentile 18.9
 99% Percentile 21

Appendix D7: ProUCL Outputs for Background UPLs
Metals

General Background Statistics for Data Sets with Non-Detects

User Selected Options
From File ALL_Metals_Data OutliersRemoved.wst
Full Precision OFF
Confidence Coefficient 90%
Coverage 90%
Different or Future K Values 1
Number of Bootstrap Operations 2000

Assuming Gamma Distribution

90% Percentile	17.45	90% UTL with 90% Coverage	18
95% Percentile	20.68	90% Percentile Bootstrap UTL with 90% Coverage	17.8
99% Percentile	27.67	90% BCA Bootstrap UTL with 90% Coverage	15.8
			90% UPL 16
			90% Chebyshev UPL 25.09
		Upper Threshold Limit Based upon IQR	23.5
90% WH Approx. Gamma UPL	17.48		
90% HW Approx. Gamma UPL	17.8		
90% WH Approx. Gamma UTL with 90% Coverage	18.7		
90% HW Approx. Gamma UTL with 90% Coverage	19.14		

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

Cd

General Statistics

Number of Valid Data 133	Number of Detected Data 94
Number of Distinct Detected Data 3	Number of Non-Detect Data 39
Tolerance Factor 1.44	Percent Non-Detects 29.32%

Raw Statistics

Minimum Detected 0.1
 Maximum Detected 0.3
 Mean of Detected 0.187
 SD of Detected 0.0737
 Minimum Non-Detect 0.1
 Maximum Non-Detect 0.1

Log-transformed Statistics

Minimum Detected -2.303
 Maximum Detected -1.204
 Mean of Detected -1.759
 SD of Detected 0.422
 Minimum Non-Detect -2.303
 Maximum Non-Detect -2.303

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

Background Statistics

Normal Distribution Test with Detected Values Only
 Lilliefors Test Statistic 0.228
 5% Lilliefors Critical Value 0.0914
Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only
 Lilliefors Test Statistic 0.298
 5% Lilliefors Critical Value 0.0914
Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.147
 SD 0.0881
 90% UTL 90% Coverage 0.274
 90% UPL (t) 0.261
 90% Percentile (z) 0.26
 95% Percentile (z) 0.292
 99% Percentile (z) 0.352

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.122
 SD (Log Scale) 0.667
 90% UTL 90% Coverage 0.313
 90% UPL (t) 0.284
 90% Percentile (z) 0.282
 95% Percentile (z) 0.359
 99% Percentile (z) 0.565

Maximum Likelihood Estimate(MLE) Method

Mean 0.143
 SD 0.096
 90% UTL with 90% Coverage 0.281
 90% UPL (t) 0.267
 90% Percentile (z) 0.266
 95% Percentile (z) 0.301
 99% Percentile (z) 0.366

Log ROS Method

Mean in Original Scale 0.154
 SD in Original Scale 0.0815
 90% UTL with 90% Coverage 0.296
 90% BCA UTL with 90% Coverage 0.28
 90% Bootstrap (%) UTL with 90% Coverage 0.3
 90% UPL (t) 0.273
 90% Percentile (z) 0.271
 95% Percentile (z) 0.332
 99% Percentile (z) 0.485

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 5.944
 Theta Star 0.0315
 nu star 1118

A-D Test Statistic 8.297
 5% A-D Critical Value 0.754
 K-S Test Statistic 0.277
 5% K-S Critical Value 0.0924

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.134
 Median 0.1
 SD 0.103
 k star 0.274
 Theta star 0.49
 Nu star 72.83
 90% Percentile of Chisquare (2k) 1.631
 90% Percentile 0.4
 95% Percentile 0.632
 99% Percentile 1.242

Data Distribution Test with Detected Values Only

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.162
 SD 0.0733
 SE of Mean 0.00639
 90% KM UTL with 90% Coverage 0.267
 90% KM Chebyshev UPL 0.382
 90% KM UPL (t) 0.256
 90% Percentile (z) 0.256
 95% Percentile (z) 0.282
 99% Percentile (z) 0.332

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.388
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.477
 90% WH Approx. Gamma UTL with 90% Coverage 0.448
 90% HW Approx. Gamma UTL with 90% Coverage 0.572

Note: DL/2 is not a recommended method.

Appendix D7: ProUCL Outputs for Background UPLs
Metals

General Background Statistics for Data Sets with Non-Detects

User Selected Options
From File ALL_Metals_Data OutliersRemoved.wst
Full Precision OFF
Confidence Coefficient 90%
Coverage 90%
Different or Future K Values 1
Number of Bootstrap Operations 2000

Cs

General Statistics

Number of Valid Data 137
Number of Distinct Detected Data 1
Number of Detected Data 3
Number of Non-Detect Data 134

**Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).**

The data set for variable Cs was not processed!

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

In

General Statistics

Number of Valid Data 148	Number of Detected Data 135
Number of Distinct Detected Data 7	Number of Non-Detect Data 13
Tolerance Factor 1.432	Percent Non-Detects 8.78%

Raw Statistics

Minimum Detected 0.02
 Maximum Detected 0.09
 Mean of Detected 0.0477
 SD of Detected 0.0135
 Minimum Non-Detect 0.02
 Maximum Non-Detect 0.02

Log-transformed Statistics

Minimum Detected -3.912
 Maximum Detected -2.408
 Mean of Detected -3.086
 SD of Detected 0.304
 Minimum Non-Detect -3.912
 Maximum Non-Detect -3.912

Background Statistics

Normal Distribution Test with Detected Values Only

Lilliefors Test Statistic 0.145
 5% Lilliefors Critical Value 0.0763

Data not Normal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.0444
 SD 0.0168
 90% UTL 90% Coverage 0.0684
 90% UPL (t) 0.0661
 90% Percentile (z) 0.0659
 95% Percentile (z) 0.072
 99% Percentile (z) 0.0835

Maximum Likelihood Estimate(MLE) Method
 Mean 0.0446
 SD 0.0163
 90% UTL with 90% Coverage 0.068

90% UPL (t) 0.0657
 90% Percentile (z) 0.0656
 95% Percentile (z) 0.0715
 99% Percentile (z) 0.0827

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 11.46
 Theta Star 0.00416
 nu star 3096

A-D Test Statistic 3.472
 5% A-D Critical Value 0.752
 K-S Test Statistic 0.18
 5% K-S Critical Value 0.0803

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.044
 Median 0.05
 SD 0.0176
 k star 1.462
 Theta star 0.0301
 Nu star 432.6
 90% Percentile of Chisquare (2k) 6.13

90% Percentile 0.0923
 95% Percentile 0.116
 99% Percentile 0.169

Lognormal Distribution Test with Detected Values Only

Lilliefors Test Statistic 0.194
 5% Lilliefors Critical Value 0.0763

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -3.219
 SD (Log Scale) 0.52
 90% UTL 90% Coverage 0.0842
 90% UPL (t) 0.0783
 90% Percentile (z) 0.0779
 95% Percentile (z) 0.0941
 99% Percentile (z) 0.134

Log ROS Method
 Mean in Original Scale 0.0456
 SD in Original Scale 0.0147
 90% UTL with 90% Coverage 0.0709
 90% BCA UTL with 90% Coverage 0.06
 90% Bootstrap (%) UTL with 90% Coverage 0.07
 90% UPL (t) 0.0676
 90% Percentile (z) 0.0673
 95% Percentile (z) 0.0764
 99% Percentile (z) 0.0969

Data Distribution Test with Detected Values Only

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.0453
 SD 0.0151
 SE of Mean 0.00124
 90% KM UTL with 90% Coverage 0.0669
 90% KM Chebyshev UPL 0.0907
 90% KM UPL (t) 0.0648
 90% Percentile (z) 0.0646
 95% Percentile (z) 0.0701
 99% Percentile (z) 0.0804

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.0846
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.0948
 90% WH Approx. Gamma UTL with 90% Coverage 0.091
 90% HW Approx. Gamma UTL with 90% Coverage 0.103

Note: DL/2 is not a recommended method.

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

Mn

General Statistics

Total Number of Observations 138
 Tolerance Factor 1.437
 Number of Distinct Observations 128

Raw Statistics

Minimum 103
 Maximum 1210
 Second Largest 1190
 First Quartile 391.5
 Median 543
 Third Quartile 690.8
 Mean 549.1
 Geometric Mean 497.3
 SD 225.8
 Coefficient of Variation 0.411
 Skewness 0.422

Log-Transformed Statistics

Minimum 4.635
 Maximum 7.098
 Second Largest 7.082
 First Quartile 5.97
 Median 6.297
 Third Quartile 6.538
 Mean 6.209
 SD 0.479

Background Statistics

Normal Distribution Test

Lilliefors Test Statistic 0.0309
 Lilliefors Critical Value 0.0754

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

90% UTL with 90% Coverage 873.7
 90% UPL (t) 841
 90% Percentile (z) 838.5
 95% Percentile (z) 920.5
 99% Percentile (z) 1074

Gamma Distribution Test

k star 5.099
 Theta Star 107.7
 MLE of Mean 549.1
 MLE of Standard Deviation 243.2
 nu star 1407

A-D Test Statistic 0.834
 5% A-D Critical Value 0.755
 K-S Test Statistic 0.0614
 5% K-S Critical Value 0.0798

Data follow Appx. Gamma Distribution at 5% Significance Level

Assuming Gamma Distribution

90% Percentile 874.7
 95% Percentile 1000
 99% Percentile 1266
 90% WH Approx. Gamma UPL 875.7
 90% HW Approx. Gamma UPL 884.7
 90% WH Approx. Gamma UTL with 90% Coverage 924.2
 90% HW Approx. Gamma UTL with 90% Coverage 936.7

Lognormal Distribution Test

Lilliefors Test Statistic 0.0901
 Lilliefors Critical Value 0.0754

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution

90% UTL with 90% Coverage 989.6
 90% UPL (t) 923.3
 90% Percentile (z) 918.5
 95% Percentile (z) 1093
 99% Percentile (z) 1514

Data Distribution Test

Data appear Normal at 5% Significance Level

Nonparametric Statistics

90% Percentile 817.6
 95% Percentile 904.4
 99% Percentile 1186
 90% UTL with 90% Coverage 838
 90% Percentile Bootstrap UTL with 90% Coverage 844.6
 90% BCA Bootstrap UTL with 90% Coverage 844.6
 90% UPL 819.8
 90% Chebyshev UPL 1229
 Upper Threshold Limit Based upon IQR 1140

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

Nb

General Statistics

Total Number of Observations 138
 Tolerance Factor 1.437
 Number of Distinct Observations 69

Raw Statistics

Minimum 0.9
 Maximum 11.7
 Second Largest 11.5
 First Quartile 4.9
 Median 5.95
 Third Quartile 7.275
 Mean 6.136
 Geometric Mean 5.694
 SD 2.145
 Coefficient of Variation 0.35
 Skewness 0.182

Log-Transformed Statistics

Minimum -0.105
 Maximum 2.46
 Second Largest 2.442
 First Quartile 1.589
 Median 1.783
 Third Quartile 1.984
 Mean 1.739
 SD 0.423

Background Statistics

Normal Distribution Test

Lilliefors Test Statistic 0.0605
 Lilliefors Critical Value 0.0754

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

90% UTL with 90% Coverage 9.219
 90% UPL (t) 8.908
 90% Percentile (z) 8.885
 95% Percentile (z) 9.664
 99% Percentile (z) 11.13

Gamma Distribution Test

k star 6.704
 Theta Star 0.915
 MLE of Mean 6.136
 MLE of Standard Deviation 2.37
 nu star 1850

A-D Test Statistic 1.092
 5% A-D Critical Value 0.754
 K-S Test Statistic 0.0845
 5% K-S Critical Value 0.0797

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

90% Percentile 9.301
 95% Percentile 10.48
 99% Percentile 12.94
 90% WH Approx. Gamma UPL 9.307
 90% HW Approx. Gamma UPL 9.407
 90% WH Approx. Gamma UTL with 90% Coverage 9.762
 90% HW Approx. Gamma UTL with 90% Coverage 9.895

Lognormal Distribution Test

Lilliefors Test Statistic 0.115
 Lilliefors Critical Value 0.0754

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution

90% UTL with 90% Coverage 10.47
 90% UPL (t) 9.843
 90% Percentile (z) 9.798
 95% Percentile (z) 11.43
 99% Percentile (z) 15.25

Data Distribution Test

Data appear Normal at 5% Significance Level

Nonparametric Statistics

90% Percentile 9.06
 95% Percentile 9.845
 99% Percentile 11.2
 90% UTL with 90% Coverage 9.5
 90% Percentile Bootstrap UTL with 90% Coverage 9.53
 90% BCA Bootstrap UTL with 90% Coverage 9.53
 90% UPL 9.22
 90% Chebyshev UPL 12.59
 Upper Threshold Limit Based upon IQR 10.84

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

Sb

General Statistics

Number of Valid Data 141	Number of Detected Data 140
Number of Distinct Detected Data 62	Number of Non-Detect Data 1
Tolerance Factor 1.436	Percent Non-Detects 0.71%

Raw Statistics

Minimum Detected 0.05
 Maximum Detected 0.99
 Mean of Detected 0.468
 SD of Detected 0.19
 Minimum Non-Detect 0.05
 Maximum Non-Detect 0.05

Log-transformed Statistics

Minimum Detected -2.996
 Maximum Detected -0.0101
 Mean of Detected -0.87
 SD of Detected 0.526
 Minimum Non-Detect -2.996
 Maximum Non-Detect -2.996

Background Statistics

Normal Distribution Test with Detected Values Only

Lilliefors Test Statistic 0.0737
 5% Lilliefors Critical Value 0.0749

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.464
 SD 0.193
 90% UTL 90% Coverage 0.741
 90% UPL (t) 0.713
 90% Percentile (z) 0.711
 95% Percentile (z) 0.781
 99% Percentile (z) 0.912

Maximum Likelihood Estimate(MLE) Method

Mean 0.464
 SD 0.193
 90% UTL with 90% Coverage 0.741
 90% UPL (t) 0.713
 90% Percentile (z) 0.711
 95% Percentile (z) 0.781
 99% Percentile (z) 0.912

Lognormal Distribution Test with Detected Values Only

Lilliefors Test Statistic 0.177
 5% Lilliefors Critical Value 0.0749

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -0.89
 SD (Log Scale) 0.576
 90% UTL 90% Coverage 0.938
 90% UPL (t) 0.864
 90% Percentile (z) 0.859
 95% Percentile (z) 1.059
 99% Percentile (z) 1.567

Log ROS Method

Mean in Original Scale 0.465
 SD in Original Scale 0.191
 90% UTL with 90% Coverage 0.897
 90% BCA UTL with 90% Coverage 0.7
 90% Bootstrap (%) UTL with 90% Coverage 0.77
 90% UPL (t) 0.831
 90% Percentile (z) 0.826
 95% Percentile (z) 1.004
 99% Percentile (z) 1.448

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 4.623
 Theta Star 0.101
 nu star 1294

A-D Test Statistic 2.293
 5% A-D Critical Value 0.755
 K-S Test Statistic 0.144
 5% K-S Critical Value 0.0793

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.464
 Median 0.47
 SD 0.193
 k star 2.674
 Theta star 0.174
 Nu star 754.1
 90% Percentile of Chisquare (2k) 9.732

90% Percentile 0.845
 95% Percentile 1.007
 99% Percentile 1.362

Data Distribution Test with Detected Values Only

Data appear Normal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.465
 SD 0.192
 SE of Mean 0.0162
 90% KM UTL with 90% Coverage 0.739
 90% KM Chebyshev UPL 1.041
 90% KM UPL (t) 0.712
 90% Percentile (z) 0.71
 95% Percentile (z) 0.78
 99% Percentile (z) 0.91

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.796
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.84
 90% WH Approx. Gamma UTL with 90% Coverage 0.847
 90% HW Approx. Gamma UTL with 90% Coverage 0.9

Note: DL/2 is not a recommended method.

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

Sn

General Statistics

Total Number of Observations 133
 Tolerance Factor 1.44
 Number of Distinct Observations 25

Raw Statistics

Minimum 0.8
 Maximum 3.4
 Second Largest 3.4
 First Quartile 1.7
 Median 1.9
 Third Quartile 2.2
 Mean 1.961
 Geometric Mean 1.896
 SD 0.514
 Coefficient of Variation 0.262
 Skewness 0.721

Log-Transformed Statistics

Minimum -0.223
 Maximum 1.224
 Second Largest 1.224
 First Quartile 0.531
 Median 0.642
 Third Quartile 0.788
 Mean 0.64
 SD 0.263

Background Statistics

Normal Distribution Test

Lilliefors Test Statistic 0.134
 Lilliefors Critical Value 0.0768

Data not Normal at 5% Significance Level

Assuming Normal Distribution

90% UTL with 90% Coverage 2.702
 90% UPL (t) 2.626
 90% Percentile (z) 2.62
 95% Percentile (z) 2.807
 99% Percentile (z) 3.157

Gamma Distribution Test

k star 14.66
 Theta Star 0.134
 MLE of Mean 1.961
 MLE of Standard Deviation 0.512
 nu star 3901

A-D Test Statistic 1.056
 5% A-D Critical Value 0.751
 K-S Test Statistic 0.1
 5% K-S Critical Value 0.0808

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

90% Percentile 2.639
 95% Percentile 2.872
 99% Percentile 3.344
 90% WH Approx. Gamma UPL 2.64
 90% HW Approx. Gamma UPL 2.645
 90% WH Approx. Gamma UTL with 90% Coverage 2.733
 90% HW Approx. Gamma UTL with 90% Coverage 2.74

Lognormal Distribution Test

Lilliefors Test Statistic 0.0909
 Lilliefors Critical Value 0.0768

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution

90% UTL with 90% Coverage 2.768
 90% UPL (t) 2.663
 90% Percentile (z) 2.655
 95% Percentile (z) 2.921
 99% Percentile (z) 3.494

Data Distribution Test

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

90% Percentile 2.68
 95% Percentile 3.04
 99% Percentile 3.4

90% UTL with 90% Coverage 2.8
 90% Percentile Bootstrap UTL with 90% Coverage 2.8
 90% BCA Bootstrap UTL with 90% Coverage 2.8
 90% UPL 2.7
 90% Chebyshev UPL 3.509
 Upper Threshold Limit Based upon IQR 2.95

Appendix D7: ProUCL Outputs for Background UPLs
Metals

General Background Statistics for Data Sets with Non-Detects

User Selected Options
From File ALL_Metals_Data OutliersRemoved.wst
Full Precision OFF
Confidence Coefficient 90%
Coverage 90%
Different or Future K Values 1
Number of Bootstrap Operations 2000

Te

General Statistics

Number of Valid Data 159
Number of Distinct Detected Data 0
Number of Detected Data 0
Number of Non-Detect Data 159

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Te was not processed!

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

TI

General Statistics

Total Number of Observations 124 Number of Distinct Observations 4
 Tolerance Factor 1.447

Raw Statistics

Minimum 0.3
 Maximum 0.6
 Second Largest 0.6
 First Quartile 0.4
 Median 0.5
 Third Quartile 0.5
 Mean 0.448
 Geometric Mean 0.439
 SD 0.0924
 Coefficient of Variation 0.206
 Skewness -0.0463

Log-Transformed Statistics

Minimum -1.204
 Maximum -0.511
 Second Largest -0.511
 First Quartile -0.916
 Median -0.693
 Third Quartile -0.693
 Mean -0.824
 SD 0.215

**Warning: There are only 4 Distinct Values in this data
 There are insufficient Distinct Values to perform some GOF tests and bootstrap methods.
 Those methods will return a 'N/A' value on your output display!**

It is necessary to have 4 or more Distinct Values to compute bootstrap methods.
 However, results obtained using 4 to 9 distinct values may not be reliable.
 It is recommended to have 10-15 or more observations for accurate and meaningful bootstrap results.

Background Statistics

Normal Distribution Test
 Lilliefors Test Statistic 0.22
 Lilliefors Critical Value 0.0796

Data not Normal at 5% Significance Level

Assuming Normal Distribution

90% UTL with 90% Coverage 0.582
 90% UPL (t) 0.568
 90% Percentile (z) 0.567
 95% Percentile (z) 0.6
 99% Percentile (z) 0.663

Gamma Distribution Test

k star 22.12
 Theta Star 0.0203
 MLE of Mean 0.448
 MLE of Standard Deviation 0.0953
 nu star 5486

A-D Test Statistic 6.445
 5% A-D Critical Value 0.75
 K-S Test Statistic 0.233
 5% K-S Critical Value 0.0831

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

90% Percentile 0.574
 95% Percentile 0.616
 99% Percentile 0.699
 90% WH Approx. Gamma UPL 0.574
 90% HW Approx. Gamma UPL 0.576
 90% WH Approx. Gamma UTL with 90% Coverage 0.592
 90% HW Approx. Gamma UTL with 90% Coverage 0.593

Lognormal Distribution Test

Lilliefors Test Statistic 0.237
 Lilliefors Critical Value 0.0796

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution

90% UTL with 90% Coverage 0.599
 90% UPL (t) 0.579
 90% Percentile (z) 0.578
 95% Percentile (z) 0.625
 99% Percentile (z) 0.723

Data Distribution Test

Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics

90% Percentile 0.6
 95% Percentile 0.6
 99% Percentile 0.6
 90% UTL with 90% Coverage 0.6
 90% Percentile Bootstrap UTL with 90% Coverage 0.6
 90% BCA Bootstrap UTL with 90% Coverage 0.6
 90% UPL 0.6
 90% Chebyshev UPL 0.727
 Upper Threshold Limit Based upon IQR 0.65

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

V

General Statistics

Number of Valid Data 159
 Number of Distinct Detected Data 79
 Tolerance Factor 1.426
 Number of Missing Values 1

Number of Detected Data 150
 Number of Non-Detect Data 9
 Percent Non-Detects 5.66%

Raw Statistics

Minimum Detected 10
 Maximum Detected 134
 Mean of Detected 67.75
 Mean of Detected 67.75
 Mean of Detected 67.75
 Maximum Non-Detect 138.6

Log-transformed Statistics

Log Statistics Not Available

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 159
 Number treated as Detected with Single DL 0
 Single DL Non-Detect Percentage 100.00%

Background Statistics

Normal Distribution Test with Detected Values Only

Lilliefors Test Statistic 0.0427
 5% Lilliefors Critical Value 0.0723

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Not Available

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 66.2
 SD 28.13
 90% UTL 90% Coverage 106.3
 90% UPL (t) 102.5
 90% Percentile (z) 102.2
 95% Percentile (z) 112.5
 99% Percentile (z) 131.6

Assuming Lognormal Distribution

DL/2 Substitution Method N/A

Maximum Likelihood Estimate(MLE) Method N/A

Log ROS Method N/A

Gamma Distribution Test with Detected Values Only

Gamma Statistics Not Available

Data Distribution Test with Detected Values Only

Data appear Normal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 66.55
 SD 28.05
 SE of Mean 2.266
 90% KM UTL with 90% Coverage 106.5
 90% KM Chebyshev UPL 151
 90% KM UPL (t) 102.8
 90% Percentile (z) 102.5
 95% Percentile (z) 112.7
 99% Percentile (z) 131.8

Note: DL/2 is not a recommended method.

**Appendix D7: ProUCL Outputs for Background UPLs
Metals**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File ALL_Metals_Data OutliersRemoved.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

Se

General Statistics

Number of Valid Data 148	Number of Detected Data 92
Number of Distinct Detected Data 8	Number of Non-Detect Data 56
Tolerance Factor 1.432	Percent Non-Detects 37.84%

Raw Statistics

Minimum Detected 0.2
 Maximum Detected 0.9
 Mean of Detected 0.452
 SD of Detected 0.198
 Minimum Non-Detect 0.2
 Maximum Non-Detect 0.2

Log-transformed Statistics

Minimum Detected -1.609
 Maximum Detected -0.105
 Mean of Detected -0.889
 SD of Detected 0.443
 Minimum Non-Detect -1.609
 Maximum Non-Detect -1.609

Background Statistics

Normal Distribution Test with Detected Values Only
 Lilliefors Test Statistic 0.158
 5% Lilliefors Critical Value 0.0924
Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only
 Lilliefors Test Statistic 0.12
 5% Lilliefors Critical Value 0.0924
Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.319
 SD 0.232
 90% UTL 90% Coverage 0.651
 90% UPL (t) 0.618
 90% Percentile (z) 0.616
 95% Percentile (z) 0.7
 99% Percentile (z) 0.858

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.424
 SD (Log Scale) 0.771
 90% UTL 90% Coverage 0.727
 90% UPL (t) 0.652
 90% Percentile (z) 0.647
 95% Percentile (z) 0.856
 99% Percentile (z) 1.449

Maximum Likelihood Estimate(MLE) Method

Mean 0.28
 SD 0.287
 90% UTL with 90% Coverage 0.691
 90% UPL (t) 0.651
 90% Percentile (z) 0.648
 95% Percentile (z) 0.752
 99% Percentile (z) 0.947

Log ROS Method

Mean in Original Scale 0.338
 SD in Original Scale 0.216
 90% UTL with 90% Coverage 0.705
 90% BCA UTL with 90% Coverage 0.7
 90% Bootstrap (%) UTL with 90% Coverage 0.7
 90% UPL (t) 0.643
 90% Percentile (z) 0.639
 95% Percentile (z) 0.811
 99% Percentile (z) 1.27

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 5.259
 Theta Star 0.086
 nu star 967.7

Data Distribution Test with Detected Values Only

Data do not follow a Discernable Distribution (0.05)

A-D Test Statistic 1.644
 5% A-D Critical Value 0.754
 K-S Test Statistic 0.131
 5% K-S Critical Value 0.0934

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.357
 SD 0.198
 SE of Mean 0.0163
 90% KM UTL with 90% Coverage 0.64
 90% KM Chebyshev UPL 0.952
 90% KM UPL (t) 0.612
 90% Percentile (z) 0.61
 95% Percentile (z) 0.682
 99% Percentile (z) 0.817

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.283
 Median 0.3
 SD 0.268
 k star 0.186
 Theta star 1.523
 Nu star 55.05
 90% Percentile of Chisquare (2k) 1.123
 90% Percentile 0.855
 95% Percentile 1.486
 99% Percentile 3.245

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.856
 90% Hawkins Wixley (HW) Approx. Gamma UPL 1.033
 90% WH Approx. Gamma UTL with 90% Coverage 0.999
 90% HW Approx. Gamma UTL with 90% Coverage 1.262

Note: DL/2 is not a recommended method.

Prepared By: EYM
 Checked By: RRD

Appendix E

Summary of Evaluation for Urban Fill Background PAHs

E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)

E2: ProUCL Outputs for Background UPLs

Appendix E1

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

2-Methylnaphthalene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	33	0	33	9	24	72.73%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	24	0.002	3.7	0.398	0.286	0.735
Statistics (Detects Only)	9	0.012	1.11	0.266	0.03	0.426
Statistics (All: NDs treated as DL value)	33	0.002	3.7	0.362	0.274	0.661
Statistics (All: NDs treated as DL/2 value)	33	0.001	1.85	0.217	0.14	0.379
Statistics (Normal ROS Estimated Data)	33	-0.878	1.11	-0.149	-0.207	0.38
Statistics (Gamma ROS Estimated Data)	33	0.000001	1.11	0.0724	0.000001	0.244
Statistics (Lognormal ROS Estimated Data)	33	0.0003358	1.11	0.0775	0.00768	0.243
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.479	0.456	0.555	-2.661	1.759	-0.661
Statistics (NDs = DL)	0.483	0.459	0.75	-2.339	2.077	-0.888
Statistics (NDs = DL/2)	0.485	0.461	0.448	-2.843	2.071	-0.728
Statistics (Gamma ROS Estimates)	0.0997	0.111	0.726	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.595	1.713	-0.373

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.809	0.694	0.734	0.914
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.652	0.829	Data Not Normal	
Lilliefors (Detects Only)	0.365	0.295	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.515	0.931	Data Not Normal	
Lilliefors (NDs = DL)	0.319	0.154	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.562	0.931	Data Not Normal	
Lilliefors (NDs = DL/2)	0.357	0.154	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.856	0.931	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.198	0.154	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.947	0.917	0.959	0.952
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	0.822	0.775		
Kolmogorov-Smirnov (Detects Only)	0.281	0.295	Data appear Approximate Gamma Distribution	
Anderson-Darling (NDs = DL)	0.601	0.815		
Kolmogorov-Smirnov (NDs = DL)	0.135	0.162	Data Appear Gamma Distributed	
Anderson-Darling (NDs = DL/2)	0.792	0.814		
Kolmogorov-Smirnov (NDs = DL/2)	0.177	0.162	Data appear Approximate Gamma Distribution	
Anderson-Darling (Gamma ROS Estimates)	6.261	0.954		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.454	0.173	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.941	0.954	0.948	0.944
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.863	0.829	Data Appear Lognormal	
Lilliefors (Detects Only)	0.24	0.295	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.897	0.931	Data Not Lognormal	
Lilliefors (NDs = DL)	0.208	0.154	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.888	0.931	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.206	0.154	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.901	0.931	Data Not Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.166	0.154	Data Not Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Acenaphthene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	9	29	76.32%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	29	0.002	3.7	0.375	0.3	0.666
Statistics (Detects Only)	9	0.0093	14.5	1.852	0.086	4.758
Statistics (All: NDs treated as DL value)	38	0.002	14.5	0.725	0.286	2.374
Statistics (All: NDs treated as DL/2 value)	38	0.001	14.5	0.582	0.148	2.343
Statistics (Normal ROS Estimated Data)	38	-8.479	14.5	-2.132	-2.742	3.535
Statistics (Gamma ROS Estimated Data)	38	0.000001	14.5	0.439	0.000001	2.352
Statistics (Lognormal ROS Estimated Data)	38	0.0001394	14.5	0.445	0.00721	2.35
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.29	0.285	6.38	-1.773	2.245	-1.266
Statistics (NDs = DL)	0.392	0.378	1.851	-2.008	2.08	-1.036
Statistics (NDs = DL/2)	0.339	0.33	1.717	-2.537	2.12	-0.836
Statistics (Gamma ROS Estimates)	0.082	0.0931	5.346	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.513	2.165	-0.48

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.647	0.501	0.451	0.85
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.449	0.829	Data Not Normal	
Lilliefors (Detects Only)	0.45	0.295	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.289	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.419	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.24	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.431	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.765	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.175	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.94	0.81	0.779	0.887
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	0.937	0.811		
Kolmogorov-Smirnov (Detects Only)	0.258	0.302	Data appear Approximate Gamma Distribution	
Anderson-Darling (NDs = DL)	2.366	0.837		
Kolmogorov-Smirnov (NDs = DL)	0.254	0.154	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	3.378	0.849		
Kolmogorov-Smirnov (NDs = DL/2)	0.311	0.155	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	8.428	1.123		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.471	0.171	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.972	0.935	0.93	0.947
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.949	0.829	Data Appear Lognormal	
Lilliefors (Detects Only)	0.175	0.295	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.874	0.938	Data Not Lognormal	
Lilliefors (NDs = DL)	0.213	0.144	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.869	0.938	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.207	0.144	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.915	0.938	Data Not Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.188	0.144	Data Not Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Acenaphthylene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	15	23	60.53%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	23	0.001	3.7	0.415	0.329	0.744
Statistics (Detects Only)	15	0.045	4.74	0.683	0.366	1.184
Statistics (All: NDs treated as DL value)	38	0.001	4.74	0.521	0.355	0.937
Statistics (All: NDs treated as DL/2 value)	38	0.0005	4.74	0.395	0.18	0.818
Statistics (Normal ROS Estimated Data)	38	-2.279	4.74	-0.324	-0.497	1.172
Statistics (Gamma ROS Estimated Data)	38	0.000001	4.74	0.271	0.000001	0.803
Statistics (Lognormal ROS Estimated Data)	38	0.00766	4.74	0.298	0.067	0.794
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.802	0.756	0.851	-1.122	1.164	-1.038
Statistics (NDs = DL)	0.529	0.505	0.985	-1.842	2.152	-1.168
Statistics (NDs = DL/2)	0.479	0.459	0.824	-2.262	2.271	-1.004
Statistics (Gamma ROS Estimates)	0.111	0.12	2.437	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.396	1.366	-0.57

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.698	0.675	0.64	0.899
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.515	0.881	Data Not Normal	
Lilliefors (Detects Only)	0.361	0.229	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.481	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.363	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.445	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.37	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.839	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.166	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.906	0.906	0.903	0.965
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	0.998	0.773		
Kolmogorov-Smirnov (Detects Only)	0.26	0.23	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	2.033	0.81		
Kolmogorov-Smirnov (NDs = DL)	0.197	0.151	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	1.793	0.817		
Kolmogorov-Smirnov (NDs = DL/2)	0.184	0.152	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	4.466	0.953		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.373	0.162	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.971	0.882	0.887	0.972
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.954	0.881	Data Appear Lognormal	
Lilliefors (Detects Only)	0.17	0.229	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.776	0.938	Data Not Lognormal	
Lilliefors (NDs = DL)	0.232	0.144	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.786	0.938	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.273	0.144	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.948	0.938	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.144	0.144	Data Not Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Anthracene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	15	23	60.53%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	23	0.001	3.7	0.431	0.329	0.737
Statistics (Detects Only)	15	0.002	27.1	2.379	0.329	6.872
Statistics (All: NDs treated as DL value)	38	0.001	27.1	1.2	0.329	4.373
Statistics (All: NDs treated as DL/2 value)	38	0.0005	27.1	1.07	0.18	4.37
Statistics (Normal ROS Estimated Data)	38	-9.665	27.1	-1.796	-3.049	5.699
Statistics (Gamma ROS Estimated Data)	38	0.000001	27.1	0.939	0.000001	4.389
Statistics (Lognormal ROS Estimated Data)	38	0.00043751	27.1	0.947	0.0128	4.387
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.325	0.316	7.332	-1.231	2.359	-1.916
Statistics (NDs = DL)	0.369	0.357	3.252	-1.624	2.181	-1.343
Statistics (NDs = DL/2)	0.323	0.315	3.314	-2.044	2.258	-1.105
Statistics (Gamma ROS Estimates)	0.0932	0.103	10.07	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.485	2.522	-0.724

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.576	0.471	0.449	0.796
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.363	0.881	Data Not Normal	
Lilliefors (Detects Only)	0.445	0.229	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.26	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.396	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.238	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.403	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.676	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.216	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.883	0.786	0.777	0.891
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	0.98	0.83		
Kolmogorov-Smirnov (Detects Only)	0.229	0.239	Data appear Approximate Gamma Distribution	
Anderson-Darling (NDs = DL)	2.776	0.842		
Kolmogorov-Smirnov (NDs = DL)	0.242	0.154	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	3.046	0.852		
Kolmogorov-Smirnov (NDs = DL/2)	0.253	0.155	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	4.683	1.021		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.372	0.166	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.965	0.923	0.939	0.974
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.943	0.881	Data Appear Lognormal	
Lilliefors (Detects Only)	0.168	0.229	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.859	0.938	Data Not Lognormal	
Lilliefors (NDs = DL)	0.244	0.144	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.89	0.938	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.22	0.144	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.946	0.938	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.185	0.144	Data Not Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Benzo(a)anthracene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	26	12	31.58%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	12	0.002	3.7	0.563	0.337	1.016
Statistics (Detects Only)	26	0.002	109.1	5.541	0.454	21.22
Statistics (All: NDs treated as DL value)	38	0.002	109.1	3.969	0.364	17.61
Statistics (All: NDs treated as DL/2 value)	38	0.001	109.1	3.88	0.293	17.62
Statistics (Normal ROS Estimated Data)	38	-22.58	109.1	0.836	0.219	19.12
Statistics (Gamma ROS Estimated Data)	38	0.000001	109.1	3.791	0.219	17.64
Statistics (Lognormal ROS Estimated Data)	38	0.00092712	109.1	3.801	0.219	17.64
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.281	0.276	19.75	-0.772	2.358	-3.053
Statistics (NDs = DL)	0.277	0.273	14.32	-1.142	2.361	-2.068
Statistics (NDs = DL/2)	0.26	0.257	14.93	-1.361	2.458	-1.806
Statistics (Gamma ROS Estimates)	0.127	0.134	29.97	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.812	2.596	-1.433

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.485	0.436	0.432	0.626
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.265	0.92	Data Not Normal	
Lilliefors (Detects Only)	0.423	0.174	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.226	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.411	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.223	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.413	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.44	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.35	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.828	0.783	0.788	0.859
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	2.021	0.86		
Kolmogorov-Smirnov (Detects Only)	0.208	0.187	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	2.977	0.867		
Kolmogorov-Smirnov (NDs = DL)	0.228	0.156	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	3.017	0.875		
Kolmogorov-Smirnov (NDs = DL/2)	0.235	0.157	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	1.648	0.944		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.195	0.161	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.976	0.967	0.974	0.994
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.961	0.92	Data Appear Lognormal	
Lilliefors (Detects Only)	0.138	0.174	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.938	0.938	Data Appear Lognormal	
Lilliefors (NDs = DL)	0.14	0.144	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.953	0.938	Data Appear Lognormal	
Lilliefors (NDs = DL/2)	0.14	0.144	Data Appear Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.987	0.938	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.0649	0.144	Data Appear Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Benzo(a)pyrene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	27	11	28.95%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	11	0.004	3.7	0.551	0.324	1.069
Statistics (Detects Only)	27	0.004	100.5	5.214	0.511	19.2
Statistics (All: NDs treated as DL value)	38	0.004	100.5	3.864	0.38	16.24
Statistics (All: NDs treated as DL/2 value)	38	0.002	100.5	3.784	0.338	16.25
Statistics (Normal ROS Estimated Data)	38	-22.29	100.5	0.658	0.262	17.95
Statistics (Gamma ROS Estimated Data)	38	0.000001	100.5	3.705	0.262	16.27
Statistics (Lognormal ROS Estimated Data)	38	0.0022	100.5	3.717	0.262	16.27
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.313	0.306	16.65	-0.535	2.049	-3.831
Statistics (NDs = DL)	0.291	0.286	13.27	-1.028	2.246	-2.184
Statistics (NDs = DL/2)	0.273	0.269	13.84	-1.229	2.376	-1.933
Statistics (Gamma ROS Estimates)	0.137	0.144	27.06	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.46	2.358	-1.615

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.495	0.451	0.448	0.657
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.276	0.923	Data Not Normal	
Lilliefors (Detects Only)	0.41	0.171	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.24	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.406	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.237	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.408	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.481	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.336	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.827	0.794	0.799	0.866
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	2.267	0.85		
Kolmogorov-Smirnov (Detects Only)	0.236	0.182	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	2.839	0.861		
Kolmogorov-Smirnov (NDs = DL)	0.236	0.156	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	2.785	0.869		
Kolmogorov-Smirnov (NDs = DL/2)	0.242	0.156	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	1.648	0.938		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.187	0.161	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.983	0.974	0.978	0.995
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.98	0.923	Data Appear Lognormal	
Lilliefors (Detects Only)	0.12	0.171	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.949	0.938	Data Appear Lognormal	
Lilliefors (NDs = DL)	0.128	0.144	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.956	0.938	Data Appear Lognormal	
Lilliefors (NDs = DL/2)	0.139	0.144	Data Appear Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.988	0.938	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.0766	0.144	Data Appear Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Benzo(b)fluoranthene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	28	10	26.32%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	10	0.002	3.7	0.522	0.197	1.13
Statistics (Detects Only)	28	0.034	159.8	7.769	0.662	29.99
Statistics (All: NDs treated as DL value)	38	0.002	159.8	5.862	0.453	25.83
Statistics (All: NDs treated as DL/2 value)	38	0.001	159.8	5.793	0.453	25.84
Statistics (Normal ROS Estimated Data)	38	-31.86	159.8	0.297	0.417	28.91
Statistics (Gamma ROS Estimated Data)	38	0.000001	159.8	5.725	0.417	25.86
Statistics (Lognormal ROS Estimated Data)	38	0.0137	159.8	5.744	0.417	25.85
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.333	0.325	23.3	0.0174	1.693	97.08
Statistics (NDs = DL)	0.276	0.272	21.23	-0.763	2.399	-3.144
Statistics (NDs = DL/2)	0.261	0.258	22.19	-0.945	2.583	-2.732
Statistics (Gamma ROS Estimates)	0.144	0.15	39.75	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.795	2.053	-2.582

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.479	0.439	0.438	0.662
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.262	0.924	Data Not Normal	
Lilliefors (Detects Only)	0.422	0.167	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.229	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.425	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.228	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.424	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.485	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.348	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.809	0.79	0.795	0.854
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	3.354	0.847		
Kolmogorov-Smirnov (Detects Only)	0.237	0.179	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	3.195	0.868		
Kolmogorov-Smirnov (NDs = DL)	0.224	0.156	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	2.955	0.874		
Kolmogorov-Smirnov (NDs = DL/2)	0.209	0.157	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	2.098	0.934		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.184	0.161	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.964	0.955	0.955	0.986
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.946	0.924	Data Appear Lognormal	
Lilliefors (Detects Only)	0.141	0.167	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.918	0.938	Data Not Lognormal	
Lilliefors (NDs = DL)	0.18	0.144	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.915	0.938	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.188	0.144	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.971	0.938	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.0926	0.144	Data Appear Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Benzo(g,h,i)perylene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	25	13	34.21%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	13	0.002	3.7	0.534	0.35	0.973
Statistics (Detects Only)	25	0.002	63.7	3.337	0.418	12.66
Statistics (All: NDs treated as DL value)	38	0.002	63.7	2.378	0.355	10.3
Statistics (All: NDs treated as DL/2 value)	38	0.001	63.7	2.287	0.184	10.31
Statistics (Normal ROS Estimated Data)	38	-13.51	63.7	0.537	0.0755	11.16
Statistics (Gamma ROS Estimated Data)	38	0.000001	63.7	2.195	0.0755	10.32
Statistics (Lognormal ROS Estimated Data)	38	0.00073408	63.7	2.205	0.084	10.32
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.281	0.277	11.86	-1.27	2.29	-1.803
Statistics (NDs = DL)	0.295	0.29	8.054	-1.475	2.232	-1.514
Statistics (NDs = DL/2)	0.275	0.271	8.304	-1.712	2.299	-1.343
Statistics (Gamma ROS Estimates)	0.124	0.132	17.66	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.259	2.441	-1.081

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.49	0.441	0.434	0.62
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.27	0.918	Data Not Normal	
Lilliefors (Detects Only)	0.46	0.177	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.231	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.433	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.224	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.456	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.435	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.393	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.836	0.785	0.785	0.864
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	2.091	0.86		
Kolmogorov-Smirnov (Detects Only)	0.265	0.19	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	3.054	0.859		
Kolmogorov-Smirnov (NDs = DL)	0.247	0.156	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	3.287	0.868		
Kolmogorov-Smirnov (NDs = DL/2)	0.229	0.156	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	1.809	0.945		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.209	0.161	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.978	0.965	0.97	0.994
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.965	0.918	Data Appear Lognormal	
Lilliefors (Detects Only)	0.112	0.177	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.935	0.938	Data Not Lognormal	
Lilliefors (NDs = DL)	0.131	0.144	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.948	0.938	Data Appear Lognormal	
Lilliefors (NDs = DL/2)	0.137	0.144	Data Appear Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.989	0.938	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.059	0.144	Data Appear Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Benzo(k)fluoranthene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	21	17	44.74%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	17	0.003	3.7	0.475	0.35	0.859
Statistics (Detects Only)	21	0.006	49.7	3.446	0.49	10.7
Statistics (All: NDs treated as DL value)	38	0.003	49.7	2.117	0.36	8.029
Statistics (All: NDs treated as DL/2 value)	38	0.0015	49.7	2.011	0.193	8.037
Statistics (Normal ROS Estimated Data)	38	-14.62	49.7	-1.353	0.13	9.822
Statistics (Gamma ROS Estimated Data)	38	0.000001	49.7	1.904	0.13	8.057
Statistics (Lognormal ROS Estimated Data)	38	0.00325	49.7	1.922	0.135	8.053
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.376	0.364	9.158	-0.529	1.83	-3.461
Statistics (NDs = DL)	0.341	0.332	6.21	-1.231	2.144	-1.741
Statistics (NDs = DL/2)	0.307	0.3	6.555	-1.541	2.296	-1.489
Statistics (Gamma ROS Estimates)	0.112	0.121	16.94	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.91	2.162	-1.132

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.544	0.471	0.463	0.764
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.323	0.908	Data Not Normal	
Lilliefors (Detects Only)	0.391	0.193	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.259	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.396	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.251	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.401	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.628	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.259	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.849	0.794	0.799	0.891
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	1.776	0.83		
Kolmogorov-Smirnov (Detects Only)	0.22	0.203	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	2.642	0.848		
Kolmogorov-Smirnov (NDs = DL)	0.236	0.155	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	2.828	0.856		
Kolmogorov-Smirnov (NDs = DL/2)	0.218	0.155	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	2.654	0.952		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.285	0.162	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.966	0.951	0.952	0.988
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.953	0.908	Data Appear Lognormal	
Lilliefors (Detects Only)	0.132	0.193	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.906	0.938	Data Not Lognormal	
Lilliefors (NDs = DL)	0.167	0.144	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.909	0.938	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.228	0.144	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.974	0.938	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.0842	0.144	Data Appear Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Carbazole

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	10	0	10	3	7	70.00%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.3	0.4	0.359	0.36	0.0297
Statistics (Detects Only)	3	0.146	0.844	0.392	0.185	0.392
Statistics (All: NDs treated as DL value)	10	0.146	0.844	0.369	0.36	0.187
Statistics (All: NDs treated as DL/2 value)	10	0.146	0.844	0.243	0.18	0.212
Statistics (Normal ROS Estimated Data)	10	-0.0748	0.844	0.25	0.193	0.244
Statistics (Gamma ROS Estimated Data)	10	0.000001	0.844	0.118	0.000001	0.265
Statistics (Lognormal ROS Estimated Data)	10	0.0892	0.844	0.245	0.173	0.218
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.695	1.253	0.231	-1.26	0.952	-0.755
Statistics (NDs = DL)	5.165	3.682	0.0713	-1.098	0.468	-0.426
Statistics (NDs = DL/2)	3.12	2.251	0.0779	-1.583	0.506	-0.32
Statistics (Gamma ROS Estimates)	0.102	0.138	1.148	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.612	0.598	-0.371

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.89	0.846	0.633	0.884
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.792	0.767	Data Appear Normal	
Lilliefors (Detects Only)	0.368	0.512	Data Appear Normal	
Shapiro-Wilks (NDs = DL)	0.75	0.842	Data Not Normal	
Lilliefors (NDs = DL)	0.333	0.28	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.434	0.842	Data Not Normal	
Lilliefors (NDs = DL/2)	0.48	0.28	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.814	0.842	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.292	0.28	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	N/A	0.891	0.763	0.993
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Anderson-Darling (Detects Only)	N/A	N/A		
Kolmogorov-Smirnov (Detects Only)	N/A	N/A		
Anderson-Darling (NDs = DL)	0.868	0.729		
Kolmogorov-Smirnov (NDs = DL)	0.269	0.267	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	2.447	0.732		
Kolmogorov-Smirnov (NDs = DL/2)	0.456	0.268	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	1.822	0.887		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.448	0.298	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.921	0.915	0.707	0.896
	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)	
Shapiro-Wilks (Detects Only)	0.849	0.767	Data Appear Lognormal	
Lilliefors (Detects Only)	0.34	0.512	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.865	0.842	Data Appear Lognormal	
Lilliefors (NDs = DL)	0.265	0.28	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.535	0.842	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.42	0.28	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.833	0.842	Data Not Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.266	0.28	Data Appear Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Chrysene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	37	0	37	28	9	24.32%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	9	0.002	3.7	0.661	0.35	1.163
Statistics (Detects Only)	28	0.002	128.5	6.019	0.468	24.11
Statistics (All: NDs treated as DL value)	37	0.002	128.5	4.716	0.4	21.02
Statistics (All: NDs treated as DL/2 value)	37	0.001	128.5	4.635	0.37	21.03
Statistics (Normal ROS Estimated Data)	37	-24.01	128.5	2.152	0.325	22.3
Statistics (Gamma ROS Estimated Data)	37	0.000001	128.5	4.555	0.325	21.05
Statistics (Lognormal ROS Estimated Data)	37	0.00168	128.5	4.567	0.325	21.04
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.283	0.278	21.24	-0.661	2.261	-3.419
Statistics (NDs = DL)	0.275	0.271	17.15	-0.992	2.382	-2.4
Statistics (NDs = DL/2)	0.262	0.258	17.71	-1.161	2.474	-2.131
Statistics (Gamma ROS Estimates)	0.144	0.15	31.67	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.399	2.461	-1.759

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.47	0.435	0.433	0.585
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.253	0.924	Data Not Normal	
Lilliefors (Detects Only)	0.418	0.167	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.225	0.936	Data Not Normal	
Lilliefors (NDs = DL)	0.423	0.146	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.223	0.936	Data Not Normal	
Lilliefors (NDs = DL/2)	0.421	0.146	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.39	0.936	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.377	0.146	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.815	0.783	0.787	0.847
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	2.428	0.861		
Kolmogorov-Smirnov (Detects Only)	0.22	0.18	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	3.01	0.868		
Kolmogorov-Smirnov (NDs = DL)	0.214	0.158	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	2.996	0.874		
Kolmogorov-Smirnov (NDs = DL/2)	0.22	0.159	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	1.543	0.933		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.154	0.163	Data appear Approximate Gamma Distribution	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.974	0.963	0.968	0.991
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.962	0.924	Data Appear Lognormal	
Lilliefors (Detects Only)	0.123	0.167	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.931	0.936	Data Not Lognormal	
Lilliefors (NDs = DL)	0.156	0.146	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.942	0.936	Data Appear Lognormal	
Lilliefors (NDs = DL/2)	0.167	0.146	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.982	0.936	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.0684	0.146	Data Appear Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Dibenzo(a,h)anthracene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	16	22	57.89%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	22	0.002	3.7	0.434	0.34	0.75
Statistics (Detects Only)	16	0.005	18.3	1.472	0.197	4.51
Statistics (All: NDs treated as DL value)	38	0.002	18.3	0.871	0.312	2.972
Statistics (All: NDs treated as DL/2 value)	38	0.001	18.3	0.745	0.178	2.953
Statistics (Normal ROS Estimated Data)	38	-6.306	18.3	-0.638	-0.607	3.619
Statistics (Gamma ROS Estimated Data)	38	0.000001	18.3	0.621	0.000001	2.964
Statistics (Lognormal ROS Estimated Data)	38	0.00117	18.3	0.636	0.0363	2.961
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.348	0.338	4.233	-1.55	1.867	-1.205
Statistics (NDs = DL)	0.398	0.384	2.191	-1.794	2.028	-1.13
Statistics (NDs = DL/2)	0.353	0.343	2.111	-2.196	2.093	-0.953
Statistics (Gamma ROS Estimates)	0.103	0.112	6.053	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-2.96	1.893	-0.639

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.558	0.487	0.451	0.755
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.342	0.887	Data Not Normal	
Lilliefors (Detects Only)	0.423	0.222	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.275	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.431	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.24	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.439	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.618	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.306	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.87	0.796	0.773	0.88
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	1.665	0.828		
Kolmogorov-Smirnov (Detects Only)	0.323	0.232	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	2.854	0.835		
Kolmogorov-Smirnov (NDs = DL)	0.289	0.153	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	3.59	0.845		
Kolmogorov-Smirnov (NDs = DL/2)	0.292	0.154	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	3.872	0.958		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.341	0.162	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.972	0.925	0.919	0.977
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.963	0.887	Data Appear Lognormal	
Lilliefors (Detects Only)	0.171	0.222	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.86	0.938	Data Not Lognormal	
Lilliefors (NDs = DL)	0.206	0.144	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.852	0.938	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.261	0.144	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.966	0.938	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.12	0.144	Data Appear Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Dibenzofuran

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	14	0	14	1	13	92.86%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Dibenzofuran was not processed!

Fluoranthene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	35	3	7.89%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	3	0.324	3.7	1.458	0.35	1.942
Statistics (Detects Only)	35	0.002	250.2	9.119	0.549	42.1
Statistics (All: NDs treated as DL value)	38	0.002	250.2	8.514	0.534	40.41
Statistics (All: NDs treated as DL/2 value)	38	0.002	250.2	8.456	0.534	40.42
Statistics (Normal ROS Estimated Data)	38	-7.193	250.2	8.141	0.534	40.52
Statistics (Gamma ROS Estimated Data)	38	0.000001	250.2	8.399	0.486	40.43
Statistics (Lognormal ROS Estimated Data)	38	0.002	250.2	8.407	0.486	40.43

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.241	0.239	37.85	-0.755	2.499	-3.309
Statistics (NDs = DL)	0.249	0.246	34.25	-0.719	2.42	-3.369
Statistics (NDs = DL/2)	0.245	0.243	34.51	-0.773	2.418	-3.127
Statistics (Gamma ROS Estimates)	0.19	0.192	44.3	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-0.894	2.451	-2.742

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.432	0.422	0.421	0.439

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.221	0.934	Data Not Normal
Lilliefors (Detects Only)	0.425	0.15	Data Not Normal
Shapiro-Wilks (NDs = DL)	0.214	0.938	Data Not Normal
Lilliefors (NDs = DL)	0.426	0.144	Data Not Normal
Shapiro-Wilks (NDs = DL/2)	0.213	0.938	Data Not Normal
Lilliefors (NDs = DL/2)	0.426	0.144	Data Not Normal
Shapiro-Wilks (Normal ROS Estimates)	0.23	0.938	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.422	0.144	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.795	0.781	0.783	0.809

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	2.986	0.882	
Kolmogorov-Smirnov (Detects Only)	0.23	0.163	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	3.296	0.88	
Kolmogorov-Smirnov (NDs = DL)	0.229	0.157	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	3.39	0.882	
Kolmogorov-Smirnov (NDs = DL/2)	0.232	0.157	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	2.044	0.908	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.183	0.159	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.985	0.984	0.985	0.989

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.975	0.934	Data Appear Lognormal
Lilliefors (Detects Only)	0.0934	0.15	Data Appear Lognormal
Shapiro-Wilks (NDs = DL)	0.973	0.938	Data Appear Lognormal
Lilliefors (NDs = DL)	0.103	0.144	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.976	0.938	Data Appear Lognormal
Lilliefors (NDs = DL/2)	0.0957	0.144	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.982	0.938	Data Appear Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0794	0.144	Data Appear Lognormal

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Fluorene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	10	28	73.68%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	28	0.003	3.7	0.385	0.3	0.676
Statistics (Detects Only)	10	0.022	17.9	2.129	0.27	5.557
Statistics (All: NDs treated as DL value)	38	0.003	17.9	0.844	0.3	2.907
Statistics (All: NDs treated as DL/2 value)	38	0.0015	17.9	0.702	0.15	2.888
Statistics (Normal ROS Estimated Data)	38	-10.13	17.9	-3.338	-4.51	4.626
Statistics (Gamma ROS Estimated Data)	38	0.000001	17.9	0.56	0.000001	2.901
Statistics (Lognormal ROS Estimated Data)	38	0.0004094	17.9	0.567	0.00815	2.9
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.334	0.325	6.378	-1.274	2.003	-1.572
Statistics (NDs = DL)	0.404	0.39	2.089	-1.794	1.935	-1.078
Statistics (NDs = DL/2)	0.345	0.336	2.034	-2.305	2.009	-0.871
Statistics (Gamma ROS Estimates)	0.0835	0.0945	6.708	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-4.186	2.217	-0.53

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.629	0.483	0.444	0.862
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.427	0.842	Data Not Normal	
Lilliefors (Detects Only)	0.454	0.28	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.271	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.435	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.234	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.425	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.778	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.193	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.92	0.789	0.769	0.888
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	1.024	0.807		
Kolmogorov-Smirnov (Detects Only)	0.284	0.287	Data appear Approximate Gamma Distribution	
Anderson-Darling (NDs = DL)	2.813	0.834		
Kolmogorov-Smirnov (NDs = DL)	0.263	0.153	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	3.601	0.847		
Kolmogorov-Smirnov (NDs = DL/2)	0.294	0.154	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	7.55	1.11		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.456	0.17	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.968	0.936	0.936	0.946
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.941	0.842	Data Appear Lognormal	
Lilliefors (Detects Only)	0.135	0.28	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.879	0.938	Data Not Lognormal	
Lilliefors (NDs = DL)	0.233	0.144	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.882	0.938	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.221	0.144	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.903	0.938	Data Not Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.197	0.144	Data Not Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Indeno(1,2,3-cd)pyrene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	27	11	28.95%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	11	0.002	3.7	0.583	0.36	1.056
Statistics (Detects Only)	27	0.002	73.8	3.625	0.342	14.12
Statistics (All: NDs treated as DL value)	38	0.002	73.8	2.745	0.351	11.93
Statistics (All: NDs treated as DL/2 value)	38	0.001	73.8	2.66	0.214	11.94
Statistics (Normal ROS Estimated Data)	38	-14.72	73.8	1.002	0.214	12.8
Statistics (Gamma ROS Estimated Data)	38	0.000001	73.8	2.576	0.159	11.95
Statistics (Lognormal ROS Estimated Data)	38	0.00156	73.8	2.59	0.159	11.95
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.295	0.289	12.29	-1.056	2.13	-2.016
Statistics (NDs = DL)	0.297	0.291	9.243	-1.316	2.199	-1.671
Statistics (NDs = DL/2)	0.28	0.275	9.517	-1.517	2.28	-1.503
Statistics (Gamma ROS Estimates)	0.137	0.143	18.84	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.829	2.291	-1.253

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.48	0.441	0.435	0.604
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.261	0.923	Data Not Normal	
Lilliefors (Detects Only)	0.449	0.171	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.231	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.419	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.225	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.443	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.413	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.392	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.823	0.783	0.785	0.857
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	2.523	0.855		
Kolmogorov-Smirnov (Detects Only)	0.27	0.183	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	3.175	0.859		
Kolmogorov-Smirnov (NDs = DL)	0.269	0.155	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	3.326	0.866		
Kolmogorov-Smirnov (NDs = DL/2)	0.252	0.156	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	1.733	0.938		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.182	0.161	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.976	0.966	0.968	0.991
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.967	0.923	Data Appear Lognormal	
Lilliefors (Detects Only)	0.104	0.171	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.939	0.938	Data Appear Lognormal	
Lilliefors (NDs = DL)	0.115	0.144	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.945	0.938	Data Appear Lognormal	
Lilliefors (NDs = DL/2)	0.153	0.144	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.984	0.938	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.075	0.144	Data Appear Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Naphthalene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	12	26	68.42%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	26	0.003	3.7	0.388	0.295	0.702
Statistics (Detects Only)	12	0.014	2.9	0.445	0.106	0.825
Statistics (All: NDs treated as DL value)	38	0.003	3.7	0.406	0.281	0.732
Statistics (All: NDs treated as DL/2 value)	38	0.0015	2.9	0.273	0.148	0.547
Statistics (Normal ROS Estimated Data)	38	-1.53	2.9	-0.187	-0.306	0.696
Statistics (Gamma ROS Estimated Data)	38	0.000001	2.9	0.146	0.000001	0.496
Statistics (Lognormal ROS Estimated Data)	38	0.00071705	2.9	0.151	0.0176	0.493
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.501	0.479	0.888	-2.076	1.67	-0.804
Statistics (NDs = DL)	0.536	0.511	0.758	-2.074	1.887	-0.91
Statistics (NDs = DL/2)	0.507	0.484	0.539	-2.548	1.915	-0.751
Statistics (Gamma ROS Estimates)	0.103	0.112	1.423	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-3.728	1.66	-0.445

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.746	0.693	0.671	0.875
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.58	0.859	Data Not Normal	
Lilliefors (Detects Only)	0.318	0.256	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.506	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.34	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.479	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.347	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.805	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.198	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.969	0.915	0.923	0.975
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	0.707	0.785		
Kolmogorov-Smirnov (Detects Only)	0.248	0.259	Data Appear Gamma Distributed	
Anderson-Darling (NDs = DL)	1.089	0.809		
Kolmogorov-Smirnov (NDs = DL)	0.163	0.151	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	1.307	0.812		
Kolmogorov-Smirnov (NDs = DL/2)	0.178	0.151	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	5.523	0.958		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.413	0.162	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.97	0.947	0.943	0.947
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.931	0.859	Data Appear Lognormal	
Lilliefors (Detects Only)	0.226	0.256	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.886	0.938	Data Not Lognormal	
Lilliefors (NDs = DL)	0.229	0.144	Data Not Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.883	0.938	Data Not Lognormal	
Lilliefors (NDs = DL/2)	0.22	0.144	Data Not Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.909	0.938	Data Not Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.192	0.144	Data Not Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Phenanthrene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	37	0	37	30	7	18.92%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	7	0.002	0.4	0.192	0.1	0.16
Statistics (Detects Only)	30	0.002	177.8	7.213	0.401	32.32
Statistics (All: NDs treated as DL value)	37	0.002	177.8	5.884	0.324	29.14
Statistics (All: NDs treated as DL/2 value)	37	0.001	177.8	5.866	0.21	29.14
Statistics (Normal ROS Estimated Data)	37	-29.65	177.8	3.489	0.21	30.25
Statistics (Gamma ROS Estimated Data)	37	0.000001	177.8	5.848	0.21	29.15
Statistics (Lognormal ROS Estimated Data)	37	0.00080222	177.8	5.853	0.21	29.14
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.242	0.24	29.86	-0.981	2.388	-2.434
Statistics (NDs = DL)	0.237	0.236	24.78	-1.243	2.337	-1.879
Statistics (NDs = DL/2)	0.229	0.229	25.6	-1.374	2.416	-1.758
Statistics (Gamma ROS Estimates)	0.149	0.155	39.33	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.602	2.578	-1.61

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.444	0.414	0.414	0.534
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.229	0.927	Data Not Normal	
Lilliefors (Detects Only)	0.443	0.162	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.207	0.936	Data Not Normal	
Lilliefors (NDs = DL)	0.438	0.146	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.207	0.936	Data Not Normal	
Lilliefors (NDs = DL/2)	0.438	0.146	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.332	0.936	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.407	0.146	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.81	0.784	0.788	0.833
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	3.191	0.879		
Kolmogorov-Smirnov (Detects Only)	0.275	0.176	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	4.248	0.884		
Kolmogorov-Smirnov (NDs = DL)	0.283	0.159	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	4.091	0.888		
Kolmogorov-Smirnov (NDs = DL/2)	0.275	0.16	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	1.84	0.93		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.185	0.162	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.976	0.972	0.98	0.992
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.963	0.927	Data Appear Lognormal	
Lilliefors (Detects Only)	0.155	0.162	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.953	0.936	Data Appear Lognormal	
Lilliefors (NDs = DL)	0.132	0.146	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.97	0.936	Data Appear Lognormal	
Lilliefors (NDs = DL/2)	0.13	0.146	Data Appear Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.988	0.936	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.113	0.146	Data Appear Lognormal	

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

**Appendix E1: Goodness of Fit Statistics for Final Dataset (ProUCL Outputs)
Urban Fill PAHs**

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File Urban_Fill_ProUCL Input.wst
Full Precision OFF
Confidence Coefficient 0.95

Pyrene

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	38	0	38	33	5	13.16%
	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	5	0.002	3.7	0.889	0.324	1.579
Statistics (Detects Only)	33	0.003	202.9	8.058	0.56	35.14
Statistics (All: NDs treated as DL value)	38	0.002	202.9	7.115	0.514	32.78
Statistics (All: NDs treated as DL/2 value)	38	0.001	202.9	7.056	0.514	32.79
Statistics (Normal ROS Estimated Data)	38	-31.52	202.9	5.378	0.514	33.67
Statistics (Gamma ROS Estimated Data)	38	0.000001	202.9	6.998	0.467	32.8
Statistics (Lognormal ROS Estimated Data)	38	0.00125	202.9	7.005	0.467	32.8
	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	0.255	0.252	31.62	-0.692	2.387	-3.449
Statistics (NDs = DL)	0.252	0.249	28.27	-0.857	2.438	-2.844
Statistics (NDs = DL/2)	0.245	0.244	28.75	-0.948	2.491	-2.626
Statistics (Gamma ROS Estimates)	0.172	0.176	40.57	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	-1.097	2.535	-2.311

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.447	0.43	0.429	0.514
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.234	0.931	Data Not Normal	
Lilliefors (Detects Only)	0.418	0.154	Data Not Normal	
Shapiro-Wilks (NDs = DL)	0.221	0.938	Data Not Normal	
Lilliefors (NDs = DL)	0.419	0.144	Data Not Normal	
Shapiro-Wilks (NDs = DL/2)	0.22	0.938	Data Not Normal	
Lilliefors (NDs = DL/2)	0.418	0.144	Data Not Normal	
Shapiro-Wilks (Normal ROS Estimates)	0.311	0.938	Data Not Normal	
Lilliefors (Normal ROS Estimates)	0.398	0.144	Data Not Normal	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.804	0.788	0.79	0.826
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Anderson-Darling (Detects Only)	2.749	0.875		
Kolmogorov-Smirnov (Detects Only)	0.242	0.168	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL)	3.034	0.879		
Kolmogorov-Smirnov (NDs = DL)	0.243	0.157	Data Not Gamma Distributed	
Anderson-Darling (NDs = DL/2)	3.036	0.881		
Kolmogorov-Smirnov (NDs = DL/2)	0.235	0.157	Data Not Gamma Distributed	
Anderson-Darling (Gamma ROS Estimates)	1.614	0.917		
Kolmogorov-Smirnov (Gamma ROS Est.)	0.168	0.16	Data Not Gamma Distributed	

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.987	0.985	0.988	0.992
Test value	Crit. (0.05)	Conclusion with Alpha(0.05)		
Shapiro-Wilks (Detects Only)	0.978	0.931	Data Appear Lognormal	
Lilliefors (Detects Only)	0.0977	0.154	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL)	0.974	0.938	Data Appear Lognormal	
Lilliefors (NDs = DL)	0.0902	0.144	Data Appear Lognormal	
Shapiro-Wilks (NDs = DL/2)	0.982	0.938	Data Appear Lognormal	
Lilliefors (NDs = DL/2)	0.0794	0.144	Data Appear Lognormal	
Shapiro-Wilks (Lognormal ROS Estimates)	0.986	0.938	Data Appear Lognormal	
Lilliefors (Lognormal ROS Estimates)	0.0868	0.144	Data Appear Lognormal	

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

Appendix E2

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

General Background Statistics for Data Sets with Non-Detects

User Selected Options
 From File Urban_Fill_ProUCL Input.wst
 Full Precision OFF
 Confidence Coefficient 90%
 Coverage 90%
 Different or Future K Values 1
 Number of Bootstrap Operations 2000

2-Methylnaphthalene

General Statistics

Number of Valid Data 33	Number of Detected Data 9
Number of Distinct Detected Data 9	Number of Non-Detect Data 24
Tolerance Factor 1.624	Percent Non-Detects 72.73%

Raw Statistics

Minimum Detected 0.012
 Maximum Detected 1.11
 Mean of Detected 0.266
 SD of Detected 0.426
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -4.423
 Maximum Detected 0.104
 Mean of Detected -2.661
 SD of Detected 1.759
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 33
 Number treated as Detected with Single DL 0
 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 to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.652
 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 0.863
 5% Shapiro Wilk Critical Value 0.829

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.217
 SD 0.379
 90% UTL 90% Coverage 0.832
 90% UPL (t) 0.72
 90% Percentile (z) 0.702
 95% Percentile (z) 0.84
 99% Percentile (z) 1.098

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.843
 SD (Log Scale) 2.071
 90% UTL 90% Coverage 1.682
 90% UPL (t) 0.911
 90% Percentile (z) 0.827
 95% Percentile (z) 1.756
 99% Percentile (z) 7.2

Log ROS Method

Mean in Original Scale 0.0775
 SD in Original Scale 0.243
 Mean in Log Scale -4.595
 SD in Log Scale 1.713
 90% UTL 90% Coverage 0.163
 90% UPL (t) 0.0983
 90% Percentile (z) 0.0907
 95% Percentile (z) 0.169
 99% Percentile (z) 0.543

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.393
 Theta Star 0.675
 nu star 7.08

A-D Test Statistic 0.822
 5% A-D Critical Value 0.775
 K-S Test Statistic 0.281
 5% K-S Critical Value 0.295

Data follow Appx. Gamma Distribution at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.0724
 Median 0.000001
 SD 0.244
 k star 0.111
 Theta star 0.653
 Nu star 7.316
 90% Percentile of Chisquare (2k) 0.613
 90% Percentile 0.2
 95% Percentile 0.417
 99% Percentile 1.092

Data Distribution Test with Detected Values Only

Data follow Appr. Gamma Distribution at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.0923
 SD 0.241
 SE of Mean 0.0457
 90% KM UTL with 90% Coverage 0.483
 90% KM Chebyshev UPL 0.826
 90% KM UPL (t) 0.412
 90% Percentile (z) 0.401
 95% Percentile (z) 0.488
 99% Percentile (z) 0.652

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.12
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.0868
 90% WH Approx. Gamma UTL with 90% Coverage 0.186
 90% HW Approx. Gamma UTL with 90% Coverage 0.152

Note: DL/2 is not a recommended method.

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Acenaphthene

General Statistics

Number of Valid Data 38	Number of Detected Data 9
Number of Distinct Detected Data 9	Number of Non-Detect Data 29
Tolerance Factor 1.598	Percent Non-Detects 76.32%

Raw Statistics

Minimum Detected 0.0093
 Maximum Detected 14.5
 Mean of Detected 1.852
 SD of Detected 4.758
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -4.678
 Maximum Detected 2.674
 Mean of Detected -1.773
 SD of Detected 2.245
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 37
 Number treated as Detected with Single DL 1
 Single DL Non-Detect Percentage 97.37%

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 to draw conclusions**

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.449
 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 0.949
 5% Shapiro Wilk Critical Value 0.829

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.582
 SD 2.343
 90% UTL 90% Coverage 4.326
 90% UPL (t) 3.68
 90% Percentile (z) 3.585
 95% Percentile (z) 4.436
 99% Percentile (z) 6.033

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.537
 SD (Log Scale) 2.12
 90% UTL 90% Coverage 2.341
 90% UPL (t) 1.305
 90% Percentile (z) 1.198
 95% Percentile (z) 2.588
 99% Percentile (z) 10.98

Log ROS Method

Mean in Original Scale 0.445
 SD in Original Scale 2.35
 Mean in Log Scale -4.513
 SD in Log Scale 2.165
 90% UTL 90% Coverage 0.348
 90% UPL (t) 0.192
 90% Percentile (z) 0.176
 95% Percentile (z) 0.386
 99% Percentile (z) 1.686

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.268
 Theta Star 6.921
 nu star 4.816

A-D Test Statistic 0.937
 5% A-D Critical Value 0.811
 K-S Test Statistic 0.258
 5% K-S Critical Value 0.302

Data follow Appx. Gamma Distribution at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.439
 Median 0.000001
 SD 2.352
 k star 0.0931
 Theta star 4.71
 Nu star 7.076
 90% Percentile of Chi-square (2k) 0.48
 90% Percentile 1.131
 95% Percentile 2.553
 99% Percentile 7.218

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data follow Appr. Gamma Distribution at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.464
 SD 2.316
 SE of Mean 0.399
 90% KM UTL with 90% Coverage 4.164
 90% KM Chebyshev UPL 7.504
 90% KM UPL (t) 3.526
 90% Percentile (z) 3.432
 95% Percentile (z) 4.274
 99% Percentile (z) 5.852

Gamma ROS Limits with Extrapolated Data

90% Wilson Hiferty (WH) Approx. Gamma UPL 0.465
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.263
 90% WH Approx. Gamma UTL with 90% Coverage 0.726
 90% HW Approx. Gamma UTL with 90% Coverage 0.459

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Acenaphthylene

General Statistics

Number of Valid Data 38	Number of Detected Data 15
Number of Distinct Detected Data 15	Number of Non-Detect Data 23
Tolerance Factor 1.598	Percent Non-Detects 60.53%

Raw Statistics

Minimum Detected 0.045
 Maximum Detected 4.74
 Mean of Detected 0.683
 SD of Detected 1.184
 Minimum Non-Detect 0.001
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -3.101
 Maximum Detected 1.556
 Mean of Detected -1.122
 SD of Detected 1.164
 Minimum Non-Detect -6.908
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 37
 Number treated as Detected with Single DL 1
 Single DL Non-Detect Percentage 97.37%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.515
 5% Shapiro Wilk Critical Value 0.881

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.954
 5% Shapiro Wilk Critical Value 0.881

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.395
 SD 0.818
 90% UTL 90% Coverage 1.701
 90% UPL (t) 1.476
 90% Percentile (z) 1.443
 95% Percentile (z) 1.74
 99% Percentile (z) 2.297

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.262
 SD (Log Scale) 2.271
 90% UTL 90% Coverage 3.919
 90% UPL (t) 2.096
 90% Percentile (z) 1.912
 95% Percentile (z) 4.363
 99% Percentile (z) 20.5

Log ROS Method

Mean in Original Scale 0.298
 SD in Original Scale 0.794
 Mean in Log Scale -2.396
 SD in Log Scale 1.366
 90% UTL 90% Coverage 0.807
 90% UPL (t) 0.554
 90% Percentile (z) 0.524
 95% Percentile (z) 0.861
 99% Percentile (z) 2.185

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.686
 Theta Star 0.995
 nu star 20.58

A-D Test Statistic 0.998
 5% A-D Critical Value 0.773
 K-S Test Statistic 0.26
 5% K-S Critical Value 0.23

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.271
 Median 0.000001
 SD 0.803
 k star 0.12
 Theta star 2.259
 Nu star 9.106
 90% Percentile of Chisquare (2k) 0.679
 90% Percentile 0.766
 95% Percentile 1.545
 99% Percentile 3.921

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.324
 SD 0.779
 SE of Mean 0.132
 90% KM UTL with 90% Coverage 1.569
 90% KM Chebyshev UPL 2.693
 90% KM UPL (t) 1.354
 90% Percentile (z) 1.323
 95% Percentile (z) 1.606
 99% Percentile (z) 2.137

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.619
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.581
 90% WH Approx. Gamma UTL with 90% Coverage 0.901
 90% HW Approx. Gamma UTL with 90% Coverage 0.938

Note: DL/2 is not a recommended method.

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Anthracene

General Statistics

Number of Valid Data 38	Number of Detected Data 15
Number of Distinct Detected Data 15	Number of Non-Detect Data 23
Tolerance Factor 1.598	Percent Non-Detects 60.53%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 27.1
 Mean of Detected 2.379
 SD of Detected 6.872
 Minimum Non-Detect 0.001
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected 3.3
 Mean of Detected -1.231
 SD of Detected 2.359
 Minimum Non-Detect -6.908
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 37
 Number treated as Detected with Single DL 1
 Single DL Non-Detect Percentage 97.37%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.363
 5% Shapiro Wilk Critical Value 0.881

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.943
 5% Shapiro Wilk Critical Value 0.881

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 1.07
 SD 4.37
 90% UTL 90% Coverage 8.052
 90% UPL (t) 6.847
 90% Percentile (z) 6.671
 95% Percentile (z) 8.258
 99% Percentile (z) 11.24

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.044
 SD (Log Scale) 2.258
 90% UTL 90% Coverage 4.774
 90% UPL (t) 2.562
 90% Percentile (z) 2.339
 95% Percentile (z) 5.312
 99% Percentile (z) 24.74

Log ROS Method

Mean in Original Scale 0.947
 SD in Original Scale 4.387
 Mean in Log Scale -3.485
 SD in Log Scale 2.522
 90% UTL 90% Coverage 1.724
 90% UPL (t) 0.86
 90% Percentile (z) 0.777
 95% Percentile (z) 1.942
 99% Percentile (z) 10.84

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.304
 Theta Star 7.825
 nu star 9.122

A-D Test Statistic 0.98
 5% A-D Critical Value 0.83
 K-S Test Statistic 0.229
 5% K-S Critical Value 0.239

Data follow Appx. Gamma Distribution at 5% Significance Level

Data Distribution Test with Detected Values Only

Data follow Appr. Gamma Distribution at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.977
 SD 4.324
 SE of Mean 0.726
 90% KM UTL with 90% Coverage 7.885
 90% KM Chebyshev UPL 14.12
 90% KM UPL (t) 6.693
 90% Percentile (z) 6.519
 95% Percentile (z) 8.089
 99% Percentile (z) 11.04

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.939
 Median 0.000001
 SD 4.389
 k star 0.103
 Theta star 9.081
 Nu star 7.861
 90% Percentile of Chisquare (2k) 0.558
 90% Percentile 2.534
 95% Percentile 5.44
 99% Percentile 14.67

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 1.464
 90% Hawkins Wixley (HW) Approx. Gamma UPL 1.114
 90% WH Approx. Gamma UTL with 90% Coverage 2.197
 90% HW Approx. Gamma UTL with 90% Coverage 1.857

Note: DL/2 is not a recommended method.

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Benzo(a)anthracene

General Statistics

Number of Valid Data 38	Number of Detected Data 26
Number of Distinct Detected Data 25	Number of Non-Detect Data 12
Tolerance Factor 1.598	Percent Non-Detects 31.58%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 109.1
 Mean of Detected 5.541
 SD of Detected 21.22
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected 4.692
 Mean of Detected -0.772
 SD of Detected 2.358
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 34
 Number treated as Detected with Single DL 4
 Single DL Non-Detect Percentage 89.47%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.265
 5% Shapiro Wilk Critical Value 0.92

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.961
 5% Shapiro Wilk Critical Value 0.92

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 3.88
 SD 17.62
 90% UTL 90% Coverage 32.04
 90% UPL (t) 27.18
 90% Percentile (z) 26.47
 95% Percentile (z) 32.87
 99% Percentile (z) 44.88

Maximum Likelihood Estimate(MLE) Method

Mean -90.84
 SD 73.89
 90% UTL with 90% Coverage 27.2

90% UPL (t) 6.831
 90% Percentile (z) 3.849
 95% Percentile (z) 30.69
 99% Percentile (z) 81.04

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.274
 Theta Star 20.23
 nu star 14.24

A-D Test Statistic 2.021
 5% A-D Critical Value 0.86
 K-S Test Statistic 0.208
 5% K-S Critical Value 0.187

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 3.791
 Median 0.219
 SD 17.64
 k star 0.134
 Theta star 28.28
 Nu star 10.19
 90% Percentile of Chisquare (2k) 0.78
 90% Percentile 11.03
 95% Percentile 21.29
 99% Percentile 51.79

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.361
 SD (Log Scale) 2.458
 90% UTL 90% Coverage 13.01
 90% UPL (t) 6.607
 90% Percentile (z) 5.983
 95% Percentile (z) 14.61
 99% Percentile (z) 78.01

Log ROS Method

Mean in Original Scale 3.801
 SD in Original Scale 17.64
 90% UTL with 90% Coverage 10.33
 90% BCA UTL with 90% Coverage 5.56
 90% Bootstrap (%) UTL with 90% Coverage 6.502
 90% UPL (t) 5.05
 90% Percentile (z) 4.547
 95% Percentile (z) 11.68
 99% Percentile (z) 68.47

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 3.825
 SD 17.4
 SE of Mean 2.879
 90% KM UTL with 90% Coverage 31.62
 90% KM Chebyshev UPL 56.71
 90% KM UPL (t) 26.83
 90% Percentile (z) 26.13
 95% Percentile (z) 32.45
 99% Percentile (z) 44.31

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 6.658
 90% Hawkins Wixley (HW) Approx. Gamma UPL 5.736
 90% WH Approx. Gamma UTL with 90% Coverage 9.615
 90% HW Approx. Gamma UTL with 90% Coverage 8.961

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Benzo(a)pyrene

General Statistics

Number of Valid Data 38	Number of Detected Data 27
Number of Distinct Detected Data 27	Number of Non-Detect Data 11
Tolerance Factor 1.598	Percent Non-Detects 28.95%

Raw Statistics

Minimum Detected 0.004
 Maximum Detected 100.5
 Mean of Detected 5.214
 SD of Detected 19.2
 Minimum Non-Detect 0.004
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -5.521
 Maximum Detected 4.61
 Mean of Detected -0.535
 SD of Detected 2.049
 Minimum Non-Detect -5.521
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 34
 Number treated as Detected with Single DL 4
 Single DL Non-Detect Percentage 89.47%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.276
 5% Shapiro Wilk Critical Value 0.923

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.98
 5% Shapiro Wilk Critical Value 0.923

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 3.784
 SD 16.25
 90% UTL 90% Coverage 29.75
 90% UPL (t) 25.27
 90% Percentile (z) 24.61
 95% Percentile (z) 30.52
 99% Percentile (z) 41.6

Maximum Likelihood Estimate(MLE) Method

Mean -84.04
 SD 68.72
 90% UTL with 90% Coverage 25.74

90% UPL (t) 6.8
 90% Percentile (z) 4.026
 95% Percentile (z) 28.99
 99% Percentile (z) 75.82

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.303
 Theta Star 17.2
 nu star 16.37

A-D Test Statistic 2.267
 5% A-D Critical Value 0.85
 K-S Test Statistic 0.236
 5% K-S Critical Value 0.182

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 3.705
 Median 0.262
 SD 16.27
 k star 0.144
 Theta star 25.79
 Nu star 10.92
 90% Percentile of Chisquare (2k) 0.846
 90% Percentile 10.91
 95% Percentile 20.56
 99% Percentile 48.8

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.229
 SD (Log Scale) 2.376
 90% UTL 90% Coverage 13.02
 90% UPL (t) 6.762
 90% Percentile (z) 6.144
 95% Percentile (z) 14.56
 99% Percentile (z) 73.52

Log ROS Method

Mean in Original Scale 3.717
 SD in Original Scale 16.27
 90% UTL with 90% Coverage 10.04
 90% BCA UTL with 90% Coverage 7.018
 90% Bootstrap (%) UTL with 90% Coverage 7.41
 90% UPL (t) 5.242
 90% Percentile (z) 4.766
 95% Percentile (z) 11.22
 99% Percentile (z) 55.98

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 3.738
 SD 16.05
 SE of Mean 2.653
 90% KM UTL with 90% Coverage 29.37
 90% KM Chebyshev UPL 52.51
 90% KM UPL (t) 24.95
 90% Percentile (z) 24.3
 95% Percentile (z) 30.13
 99% Percentile (z) 41.07

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 6.959
 90% Hawkins Wixley (HW) Approx. Gamma UPL 6.223
 90% WH Approx. Gamma UTL with 90% Coverage 9.944
 90% HW Approx. Gamma UTL with 90% Coverage 9.584

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Benzo(b)fluoranthene

General Statistics

Number of Valid Data 38	Number of Detected Data 28
Number of Distinct Detected Data 28	Number of Non-Detect Data 10
Tolerance Factor 1.598	Percent Non-Detects 26.32%

Raw Statistics

Minimum Detected 0.034
 Maximum Detected 159.8
 Mean of Detected 7.769
 SD of Detected 29.99
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -3.381
 Maximum Detected 5.074
 Mean of Detected 0.0174
 SD of Detected 1.693
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 32
 Number treated as Detected with Single DL 6
 Single DL Non-Detect Percentage 84.21%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.262
 5% Shapiro Wilk Critical Value 0.924

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.946
 5% Shapiro Wilk Critical Value 0.924

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 5.793
 SD 25.84
 90% UTL 90% Coverage 47.08
 90% UPL (t) 39.95
 90% Percentile (z) 38.91
 95% Percentile (z) 48.3
 99% Percentile (z) 65.91

Maximum Likelihood Estimate(MLE) Method

Mean -82.55
 SD 81.48
 90% UTL with 90% Coverage 47.61

90% UPL (t) 25.15
 90% Percentile (z) 21.86
 95% Percentile (z) 51.47
 99% Percentile (z) 107

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.322
 Theta Star 24.16
 nu star 18

A-D Test Statistic 3.354
 5% A-D Critical Value 0.847
 K-S Test Statistic 0.237
 5% K-S Critical Value 0.179

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 5.725
 Median 0.417
 SD 25.86
 k star 0.15
 Theta star 38.11
 Nu star 11.42
 90% Percentile of Chisquare (2k) 0.891
 90% Percentile 16.98
 95% Percentile 31.5
 99% Percentile 73.63

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -0.945
 SD (Log Scale) 2.583
 90% UTL 90% Coverage 24.07
 90% UPL (t) 11.81
 90% Percentile (z) 10.64
 95% Percentile (z) 27.19
 99% Percentile (z) 158.1

Log ROS Method

Mean in Original Scale 5.744
 SD in Original Scale 25.85
 90% UTL with 90% Coverage 12
 90% BCA UTL with 90% Coverage 11
 90% Bootstrap (%) UTL with 90% Coverage 8.84
 90% UPL (t) 6.812
 90% Percentile (z) 6.271
 95% Percentile (z) 13.22
 99% Percentile (z) 53.56

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 5.76
 SD 25.51
 SE of Mean 4.214
 90% KM UTL with 90% Coverage 46.51
 90% KM Chebyshev UPL 83.28
 90% KM UPL (t) 39.48
 90% Percentile (z) 38.45
 95% Percentile (z) 47.71
 99% Percentile (z) 65.1

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 10.61
 90% Hawkins Wixley (HW) Approx. Gamma UPL 9.49
 90% WH Approx. Gamma UTL with 90% Coverage 15.06
 90% HW Approx. Gamma UTL with 90% Coverage 14.43

Note: DL/2 is not a recommended method.

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Benzo(g,h,i)perylene

General Statistics

Number of Valid Data 38	Number of Detected Data 25
Number of Distinct Detected Data 25	Number of Non-Detect Data 13
Tolerance Factor 1.598	Percent Non-Detects 34.21%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 63.7
 Mean of Detected 3.337
 SD of Detected 12.66
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected 4.154
 Mean of Detected -1.27
 SD of Detected 2.29
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 36
 Number treated as Detected with Single DL 2
 Single DL Non-Detect Percentage 94.74%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.27
 5% Shapiro Wilk Critical Value 0.918

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.965
 5% Shapiro Wilk Critical Value 0.918

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 2.287
 SD 10.31
 90% UTL 90% Coverage 18.75
 90% UPL (t) 15.91
 90% Percentile (z) 15.49
 95% Percentile (z) 19.24
 99% Percentile (z) 26.26

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.712
 SD (Log Scale) 2.299
 90% UTL 90% Coverage 7.107
 90% UPL (t) 3.771
 90% Percentile (z) 3.437
 95% Percentile (z) 7.923
 99% Percentile (z) 37.97

Log ROS Method

Mean in Original Scale 2.205
 SD in Original Scale 10.32
 Mean in Log Scale -2.259
 SD in Log Scale 2.441
 90% UTL 90% Coverage 5.162
 90% UPL (t) 2.634
 90% Percentile (z) 2.387
 95% Percentile (z) 5.794
 99% Percentile (z) 30.59

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.274
 Theta Star 12.16
 nu star 13.72

A-D Test Statistic 2.091
 5% A-D Critical Value 0.86
 K-S Test Statistic 0.265
 5% K-S Critical Value 0.19

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 2.195
 Median 0.0755
 SD 10.32
 k star 0.132
 Theta star 16.63
 Nu star 10.04
 90% Percentile of Chisquare (2k) 0.766
 90% Percentile 6.367
 95% Percentile 12.36
 99% Percentile 30.23

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 2.223
 SD 10.18
 SE of Mean 1.685
 90% KM UTL with 90% Coverage 18.48
 90% KM Chebyshev UPL 33.16
 90% KM UPL (t) 15.68
 90% Percentile (z) 15.27
 95% Percentile (z) 18.97
 99% Percentile (z) 25.9

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 3.756
 90% Hawkins Wixley (HW) Approx. Gamma UPL 3.185
 90% WH Approx. Gamma UTL with 90% Coverage 5.448
 90% HW Approx. Gamma UTL with 90% Coverage 5.004

Note: DL/2 is not a recommended method.

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Benzo(k)fluoranthene

General Statistics

Number of Valid Data 38	Number of Detected Data 21
Number of Distinct Detected Data 20	Number of Non-Detect Data 17
Tolerance Factor 1.598	Percent Non-Detects 44.74%

Raw Statistics

Minimum Detected 0.006
 Maximum Detected 49.7
 Mean of Detected 3.446
 SD of Detected 10.7
 Minimum Non-Detect 0.003
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -5.116
 Maximum Detected 3.906
 Mean of Detected -0.529
 SD of Detected 1.83
 Minimum Non-Detect -5.809
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 35
 Number treated as Detected with Single DL 3
 Single DL Non-Detect Percentage 92.11%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.323
 5% Shapiro Wilk Critical Value 0.908

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 0.908

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 2.011
 SD 8.037
 90% UTL 90% Coverage 14.85
 90% UPL (t) 12.64
 90% Percentile (z) 12.31
 95% Percentile (z) 15.23
 99% Percentile (z) 20.71

Maximum Likelihood Estimate(MLE) Method

Mean -54.11
 SD 40.56
 90% UTL with 90% Coverage 10.68

90% UPL (t) -0.5
 90% Percentile (z) -2.137
 95% Percentile (z) 12.6
 99% Percentile (z) 40.24

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.541
 SD (Log Scale) 2.296
 90% UTL 90% Coverage 8.382
 90% UPL (t) 4.452
 90% Percentile (z) 4.058
 95% Percentile (z) 9.343
 99% Percentile (z) 44.66

Log ROS Method

Mean in Original Scale 1.922
 SD in Original Scale 8.053
 90% UTL with 90% Coverage 4.684
 90% BCA UTL with 90% Coverage 4.99
 90% Bootstrap (%) UTL with 90% Coverage 4.99
 90% UPL (t) 2.581
 90% Percentile (z) 2.365
 95% Percentile (z) 5.188
 99% Percentile (z) 22.65

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.354
 Theta Star 9.727
 nu star 14.88

A-D Test Statistic 1.776
 5% A-D Critical Value 0.83
 K-S Test Statistic 0.22
 5% K-S Critical Value 0.203

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 1.904
 Median 0.13
 SD 8.057
 k star 0.121
 Theta star 15.73
 Nu star 9.201
 90% Percentile of Chisquare (2k) 0.688
 90% Percentile 5.409
 95% Percentile 10.86
 99% Percentile 27.44

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 1.944
 SD 7.942
 SE of Mean 1.32
 90% KM UTL with 90% Coverage 14.63
 90% KM Chebyshev UPL 26.08
 90% KM UPL (t) 12.44
 90% Percentile (z) 12.12
 95% Percentile (z) 15.01
 99% Percentile (z) 20.42

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 3.611
 90% Hawkins Wixley (HW) Approx. Gamma UPL 3.213
 90% WH Approx. Gamma UTL with 90% Coverage 5.242
 90% HW Approx. Gamma UTL with 90% Coverage 5.106

Note: DL/2 is not a recommended method.

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Carbazole

General Statistics

Number of Valid Data 10	Number of Detected Data 3
Number of Distinct Detected Data 3	Number of Non-Detect Data 7

**Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful and reliable test statistics and estimates.
No statistics will be produced!**

Tolerance Factor 2.066	Percent Non-Detects 70.00%
------------------------	----------------------------

Raw Statistics

Minimum Detected 0.146
Maximum Detected 0.844
Mean of Detected 0.392
SD of Detected 0.392
Minimum Non-Detect 0.3
Maximum Non-Detect 0.4

Log-transformed Statistics

Minimum Detected -1.924
Maximum Detected -0.17
Mean of Detected -1.26
SD of Detected 0.952
Minimum Non-Detect -1.204
Maximum Non-Detect -0.916

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 9
Number treated as Detected with Single DL 1
Single DL Non-Detect Percentage 90.00%

**Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!**

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.792
5% Shapiro Wilk Critical Value 0.767

Data appear Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.849
5% Shapiro Wilk Critical Value 0.767

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
Mean 0.243
SD 0.212
90% UTL 90% Coverage 0.681
90% UPL (t) 0.55
90% Percentile (z) 0.514
95% Percentile (z) 0.591
99% Percentile (z) 0.736

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
Mean (Log Scale) -1.583
SD (Log Scale) 0.506
90% UTL 90% Coverage 0.584
90% UPL (t) 0.428
90% Percentile (z) 0.393
95% Percentile (z) 0.472
99% Percentile (z) 0.666
Log ROS Method
Mean in Original Scale 0.245
SD in Original Scale 0.218
Mean in Log Scale -1.612
SD in Log Scale 0.598
90% UTL 90% Coverage 0.686
90% UPL (t) 0.475
90% Percentile (z) 0.429
95% Percentile (z) 0.533
99% Percentile (z) 0.801

Gamma Distribution Test with Detected Values Only

k star (bias corrected) N/A
Theta Star N/A
nu star N/A

A-D Test Statistic N/A
5% A-D Critical Value N/A
K-S Test Statistic N/A
5% K-S Critical Value N/A

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
Mean N/A
Median N/A
SD N/A
k star N/A
Theta star N/A
Nu star N/A
90% Percentile of Chisquare (2k) N/A
90% Percentile N/A
95% Percentile N/A
99% Percentile N/A

Data Distribution Test with Detected Values Only

Data appear Normal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
Mean 0.233
SD 0.204
SE of Mean 0.0803
90% KM UTL with 90% Coverage 0.656
90% KM Chebyshev UPL 0.876
90% KM UPL (t) 0.53
90% Percentile (z) 0.495
95% Percentile (z) 0.57
99% Percentile (z) 0.709

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL N/A
90% Hawkins Wixley (HW) Approx. Gamma UPL N/A
90% WH Approx. Gamma UTL with 90% Coverage N/A
90% HW Approx. Gamma UTL with 90% Coverage N/A

Note: DL/2 is not a recommended method.

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Chrysene

General Statistics

Number of Valid Data 37	Number of Detected Data 28
Number of Distinct Detected Data 28	Number of Non-Detect Data 9
Tolerance Factor 1.602	Percent Non-Detects 24.32%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 128.5
 Mean of Detected 6.019
 SD of Detected 24.11
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected 4.856
 Mean of Detected -0.661
 SD of Detected 2.261
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 33
 Number treated as Detected with Single DL 4
 Single DL Non-Detect Percentage 89.19%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.253
 5% Shapiro Wilk Critical Value 0.924

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.962
 5% Shapiro Wilk Critical Value 0.924

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 4.635
 SD 21.03
 90% UTL 90% Coverage 38.33
 90% UPL (t) 32.46
 90% Percentile (z) 31.59
 95% Percentile (z) 39.23
 99% Percentile (z) 53.56

Maximum Likelihood Estimate(MLE) Method

Mean -106.7
 SD 87.36
 90% UTL with 90% Coverage 33.25

90% UPL (t) 8.841
 90% Percentile (z) 5.217
 95% Percentile (z) 36.96
 99% Percentile (z) 96.49

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.277
 Theta Star 21.74
 nu star 15.5

A-D Test Statistic 2.428
 5% A-D Critical Value 0.861
 K-S Test Statistic 0.22
 5% K-S Critical Value 0.18

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 4.555
 Median 0.325
 SD 21.05
 k star 0.15
 Theta star 30.33
 Nu star 11.11
 90% Percentile of Chisquare (2k) 0.891
 90% Percentile 13.51
 95% Percentile 25.06
 99% Percentile 58.59

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.161
 SD (Log Scale) 2.474
 90% UTL 90% Coverage 16.51
 90% UPL (t) 8.269
 90% Percentile (z) 7.462
 95% Percentile (z) 18.33
 99% Percentile (z) 98.97

Log ROS Method

Mean in Original Scale 4.567
 SD in Original Scale 21.04
 90% UTL with 90% Coverage 12.74
 90% BCA UTL with 90% Coverage 6.74
 90% Bootstrap (%) UTL with 90% Coverage 8.044
 90% UPL (t) 6.407
 90% Percentile (z) 5.785
 95% Percentile (z) 14.15
 99% Percentile (z) 75.71

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 4.59
 SD 20.75
 SE of Mean 3.474
 90% KM UTL with 90% Coverage 37.84
 90% KM Chebyshev UPL 67.68
 90% KM UPL (t) 32.05
 90% Percentile (z) 31.19
 95% Percentile (z) 38.73
 99% Percentile (z) 52.87

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 8.173
 90% Hawkins Wixley (HW) Approx. Gamma UPL 7.138
 90% WH Approx. Gamma UTL with 90% Coverage 11.73
 90% HW Approx. Gamma UTL with 90% Coverage 10.99

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Dibenzo(a,h)anthracene

General Statistics

Number of Valid Data 38	Number of Detected Data 16
Number of Distinct Detected Data 16	Number of Non-Detect Data 22
Tolerance Factor 1.598	Percent Non-Detects 57.89%

Raw Statistics

Minimum Detected 0.005
 Maximum Detected 18.3
 Mean of Detected 1.472
 SD of Detected 4.51
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -5.298
 Maximum Detected 2.907
 Mean of Detected -1.55
 SD of Detected 1.867
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 37
 Number treated as Detected with Single DL 1
 Single DL Non-Detect Percentage 97.37%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.342
 5% Shapiro Wilk Critical Value 0.887

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.963
 5% Shapiro Wilk Critical Value 0.887

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 0.745
 SD 2.953
 90% UTL 90% Coverage 5.463
 90% UPL (t) 4.649
 90% Percentile (z) 4.53
 95% Percentile (z) 5.602
 99% Percentile (z) 7.615

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.196
 SD (Log Scale) 2.093
 90% UTL 90% Coverage 3.153
 90% UPL (t) 1.771
 90% Percentile (z) 1.627
 95% Percentile (z) 3.481
 99% Percentile (z) 14.5

Log ROS Method

Mean in Original Scale 0.636
 SD in Original Scale 2.961
 Mean in Log Scale -2.96
 SD in Log Scale 1.893
 90% UTL 90% Coverage 1.065
 90% UPL (t) 0.632
 90% Percentile (z) 0.586
 95% Percentile (z) 1.165
 99% Percentile (z) 4.231

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.324
 Theta Star 4.54
 nu star 10.37

A-D Test Statistic 1.665
 5% A-D Critical Value 0.828
 K-S Test Statistic 0.323
 5% K-S Critical Value 0.232

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.621
 Median 0.000001
 SD 2.964
 k star 0.112
 Theta star 5.543
 Nu star 8.519
 90% Percentile of Chisquare (2k) 0.622
 90% Percentile 1.725
 95% Percentile 3.573
 99% Percentile 9.315

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.66
 SD 2.918
 SE of Mean 0.489
 90% KM UTL with 90% Coverage 5.322
 90% KM Chebyshev UPL 9.529
 90% KM UPL (t) 4.517
 90% Percentile (z) 4.4
 95% Percentile (z) 5.46
 99% Percentile (z) 7.448

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.984
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.778
 90% WH Approx. Gamma UTL with 90% Coverage 1.462
 90% HW Approx. Gamma UTL with 90% Coverage 1.273

Note: DL/2 is not a recommended method.

Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs

Dibenzofuran

General Statistics

Number of Valid Data	14	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	13

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set! It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Dibenzofuran was not processed!

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Fluoranthene

General Statistics

Number of Valid Data 38	Number of Detected Data 35
Number of Distinct Detected Data 30	Number of Non-Detect Data 3
Tolerance Factor 1.598	Percent Non-Detects 7.89%

Raw Statistics

Minimum Detected 0.002
Maximum Detected 250.2
Mean of Detected 9.119
SD of Detected 42.1
Minimum Non-Detect 0.324
Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -6.215
Maximum Detected 5.522
Mean of Detected -0.755
SD of Detected 2.499
Minimum Non-Detect -1.127
Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 31
Number treated as Detected with Single DL 7
Single DL Non-Detect Percentage 81.58%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.221
5% Shapiro Wilk Critical Value 0.934

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.975
5% Shapiro Wilk Critical Value 0.934

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
Mean 8.456
SD 40.42
90% UTL 90% Coverage 73.03
90% UPL (t) 61.89
90% Percentile (z) 60.26
95% Percentile (z) 74.94
99% Percentile (z) 102.5

Maximum Likelihood Estimate(MLE) Method

Mean -107.8
SD 114.5
90% UTL with 90% Coverage 75.19

90% UPL (t) 43.62
90% Percentile (z) 39
95% Percentile (z) 80.6
99% Percentile (z) 158.6

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.239
Theta Star 38.1
nu star 16.75

A-D Test Statistic 2.986
5% A-D Critical Value 0.882
K-S Test Statistic 0.23
5% K-S Critical Value 0.163

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
Mean 8.399
Median 0.486
SD 40.43
k star 0.192
Theta star 43.71
Nu star 14.6
90% Percentile of Chisquare (2k) 1.162

90% Percentile 25.39
95% Percentile 43.72
99% Percentile 94.53

Note: DL/2 is not a recommended method.

Assuming Lognormal Distribution

DL/2 Substitution Method
Mean (Log Scale) -0.773
SD (Log Scale) 2.418
90% UTL 90% Coverage 21.97
90% UPL (t) 11.28
90% Percentile (z) 10.23
95% Percentile (z) 24.63
99% Percentile (z) 127.9

Log ROS Method

Mean in Original Scale 8.407
SD in Original Scale 40.43
90% UTL with 90% Coverage 20.54
90% BCA UTL with 90% Coverage 13.43
90% Bootstrap (%) UTL with 90% Coverage 13.43
90% UPL (t) 10.45
90% Percentile (z) 9.464
95% Percentile (z) 23.06
99% Percentile (z) 122.6

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
Mean 8.419
SD 39.89
SE of Mean 6.566
90% KM UTL with 90% Coverage 72.15
90% KM Chebyshev UPL 129.7
90% KM UPL (t) 61.15
90% Percentile (z) 59.54
95% Percentile (z) 74.04
99% Percentile (z) 101.2

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 14.43
90% Hawkins Wixley (HW) Approx. Gamma UPL 12.01
90% WH Approx. Gamma UTL with 90% Coverage 20.43
90% HW Approx. Gamma UTL with 90% Coverage 17.92

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Fluorene

General Statistics

Number of Valid Data 38	Number of Detected Data 10
Number of Distinct Detected Data 10	Number of Non-Detect Data 28
Tolerance Factor 1.598	Percent Non-Detects 73.68%

Raw Statistics

Minimum Detected 0.022
 Maximum Detected 17.9
 Mean of Detected 2.129
 SD of Detected 5.557
 Minimum Non-Detect 0.003
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -3.817
 Maximum Detected 2.885
 Mean of Detected -1.274
 SD of Detected 2.003
 Minimum Non-Detect -5.809
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 37
 Number treated as Detected with Single DL 1
 Single DL Non-Detect Percentage 97.37%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.427
 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 0.702
 SD 2.888
 90% UTL 90% Coverage 5.316
 90% UPL (t) 4.52
 90% Percentile (z) 4.404
 95% Percentile (z) 5.453
 99% Percentile (z) 7.421

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -2.305
 SD (Log Scale) 2.009
 90% UTL 90% Coverage 2.47
 90% UPL (t) 1.42
 90% Percentile (z) 1.309
 95% Percentile (z) 2.716
 99% Percentile (z) 10.68

Log ROS Method

Mean in Original Scale 0.567
 SD in Original Scale 2.9
 Mean in Log Scale -4.186
 SD in Log Scale 2.217
 90% UTL 90% Coverage 0.525
 90% UPL (t) 0.285
 90% Percentile (z) 0.261
 95% Percentile (z) 0.583
 99% Percentile (z) 2.642

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.3
 Theta Star 7.089
 nu star 6.007

Data follow Appx. Gamma Distribution at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 0.56
 Median 0.000001
 SD 2.901
 k star 0.0945
 Theta star 5.931
 Nu star 7.181
 90% Percentile of Chisquare (2k) 0.491
 90% Percentile 1.455
 95% Percentile 3.261
 99% Percentile 9.156

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only

Data follow Appr. Gamma Distribution at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 0.592
 SD 2.857
 SE of Mean 0.489
 90% KM UTL with 90% Coverage 5.156
 90% KM Chebyshev UPL 9.275
 90% KM UPL (t) 4.369
 90% Percentile (z) 4.253
 95% Percentile (z) 5.291
 99% Percentile (z) 7.238

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.674
 90% Hawkins Wixley (HW) Approx. Gamma UPL 0.42
 90% WH Approx. Gamma UTL with 90% Coverage 1.04
 90% HW Approx. Gamma UTL with 90% Coverage 0.725

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Indeno(1,2,3-cd)pyrene

General Statistics

Number of Valid Data 38	Number of Detected Data 27
Number of Distinct Detected Data 27	Number of Non-Detect Data 11
Tolerance Factor 1.598	Percent Non-Detects 28.95%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 73.8
 Mean of Detected 3.625
 SD of Detected 14.12
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected 4.301
 Mean of Detected -1.056
 SD of Detected 2.13
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 36
 Number treated as Detected with Single DL 2
 Single DL Non-Detect Percentage 94.74%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.261
 5% Shapiro Wilk Critical Value 0.923

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.967
 5% Shapiro Wilk Critical Value 0.923

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 2.66
 SD 11.94
 90% UTL 90% Coverage 21.73
 90% UPL (t) 18.44
 90% Percentile (z) 17.96
 95% Percentile (z) 22.3
 99% Percentile (z) 30.43

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.517
 SD (Log Scale) 2.28
 90% UTL 90% Coverage 8.381
 90% UPL (t) 4.47
 90% Percentile (z) 4.077
 95% Percentile (z) 9.335
 99% Percentile (z) 44.16

Log ROS Method

Mean in Original Scale 2.59
 SD in Original Scale 11.95
 Mean in Log Scale -1.829
 SD in Log Scale 2.291
 90% UTL 90% Coverage 6.243
 90% UPL (t) 3.319
 90% Percentile (z) 3.026
 95% Percentile (z) 6.957
 99% Percentile (z) 33.16

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.287
 Theta Star 12.64
 nu star 15.49

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 2.576
 Median 0.159
 SD 11.95
 k star 0.143
 Theta star 17.95
 Nu star 10.9
 90% Percentile of Chisquare (2k) 0.845
 90% Percentile 7.588
 95% Percentile 14.3
 99% Percentile 33.95

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 2.609
 SD 11.79
 SE of Mean 1.949
 90% KM UTL with 90% Coverage 21.44
 90% KM Chebyshev UPL 38.43
 90% KM UPL (t) 18.19
 90% Percentile (z) 17.72
 95% Percentile (z) 22
 99% Percentile (z) 30.03

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 4.567
 90% Hawkins Wixley (HW) Approx. Gamma UPL 3.972
 90% WH Approx. Gamma UTL with 90% Coverage 6.553
 90% HW Approx. Gamma UTL with 90% Coverage 6.133

Note: DL/2 is not a recommended method.

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Naphthalene

General Statistics

Number of Valid Data 38	Number of Detected Data 12
Number of Distinct Detected Data 12	Number of Non-Detect Data 26
Tolerance Factor 1.598	Percent Non-Detects 68.42%

Raw Statistics

Minimum Detected 0.014
Maximum Detected 2.9
Mean of Detected 0.445
SD of Detected 0.825
Minimum Non-Detect 0.003
Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -4.269
Maximum Detected 1.065
Mean of Detected -2.076
SD of Detected 1.67
Minimum Non-Detect -5.809
Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 38
Number treated as Detected with Single DL 0
Single DL Non-Detect Percentage 100.00%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.58
5% Shapiro Wilk Critical Value 0.859

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.931
5% Shapiro Wilk Critical Value 0.859

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
Mean 0.273
SD 0.547
90% UTL 90% Coverage 1.147
90% UPL (t) 0.997
90% Percentile (z) 0.974
95% Percentile (z) 1.173
99% Percentile (z) 1.546

Maximum Likelihood Estimate(MLE) Method N/A

Assuming Lognormal Distribution

DL/2 Substitution Method
Mean (Log Scale) -2.548
SD (Log Scale) 1.915
90% UTL 90% Coverage 1.666
90% UPL (t) 0.983
90% Percentile (z) 0.91
95% Percentile (z) 1.824
99% Percentile (z) 6.725

Log ROS Method

Mean in Original Scale 0.151
SD in Original Scale 0.493
Mean in Log Scale -3.728
SD in Log Scale 1.66
90% UTL 90% Coverage 0.341
90% UPL (t) 0.216
90% Percentile (z) 0.202
95% Percentile (z) 0.369
99% Percentile (z) 1.144

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.431
Theta Star 1.032
nu star 10.36

A-D Test Statistic 0.707
5% A-D Critical Value 0.785
K-S Test Statistic 0.248
5% K-S Critical Value 0.259

Data appear Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
Mean 0.146
Median 0.000001
SD 0.496
k star 0.112
Theta star 1.304
Nu star 8.537
90% Percentile of Chisquare (2k) 0.624
90% Percentile 0.407
95% Percentile 0.842
99% Percentile 2.194

Data Distribution Test with Detected Values Only

Data appear Gamma Distributed at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
Mean 0.173
SD 0.491
SE of Mean 0.0851
90% KM UTL with 90% Coverage 0.957
90% KM Chebyshev UPL 1.664
90% KM UPL (t) 0.822
90% Percentile (z) 0.802
95% Percentile (z) 0.98
99% Percentile (z) 1.315

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 0.277
90% Hawkins Wixley (HW) Approx. Gamma UPL 0.225
90% WH Approx. Gamma UTL with 90% Coverage 0.412
90% HW Approx. Gamma UTL with 90% Coverage 0.374

Note: DL/2 is not a recommended method.

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Phenanthrene

General Statistics

Number of Valid Data 37	Number of Detected Data 30
Number of Distinct Detected Data 28	Number of Non-Detect Data 7
Tolerance Factor 1.602	Percent Non-Detects 18.92%

Raw Statistics

Minimum Detected 0.002
 Maximum Detected 177.8
 Mean of Detected 7.213
 SD of Detected 32.32
 Minimum Non-Detect 0.002
 Maximum Non-Detect 0.4

Log-transformed Statistics

Minimum Detected -6.215
 Maximum Detected 5.181
 Mean of Detected -0.981
 SD of Detected 2.388
 Minimum Non-Detect -6.215
 Maximum Non-Detect -0.916

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 22
 Number treated as Detected with Single DL 15
 Single DL Non-Detect Percentage 59.46%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.229
 5% Shapiro Wilk Critical Value 0.927

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.963
 5% Shapiro Wilk Critical Value 0.927

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 5.866
 SD 29.14
 90% UTL 90% Coverage 52.56
 90% UPL (t) 44.42
 90% Percentile (z) 43.21
 95% Percentile (z) 53.8
 99% Percentile (z) 73.66

Maximum Likelihood Estimate(MLE) Method

Mean -23.34
 SD 49.41
 90% UTL with 90% Coverage 55.83
 90% UPL (t) 42.03
 90% Percentile (z) 39.98
 95% Percentile (z) 57.93
 99% Percentile (z) 91.6

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -1.374
 SD (Log Scale) 2.416
 90% UTL 90% Coverage 12.15
 90% UPL (t) 6.188
 90% Percentile (z) 5.598
 95% Percentile (z) 13.47
 99% Percentile (z) 69.89

Log ROS Method

Mean in Original Scale 5.853
 SD in Original Scale 29.14
 90% UTL with 90% Coverage 12.55
 90% BCA UTL with 90% Coverage 8.71
 90% Bootstrap (%) UTL with 90% Coverage 7.624
 90% UPL (t) 6.106
 90% Percentile (z) 5.487
 95% Percentile (z) 14
 99% Percentile (z) 81.15

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.24
 Theta Star 30.1
 nu star 14.38

A-D Test Statistic 3.191
 5% A-D Critical Value 0.879
 K-S Test Statistic 0.275
 5% K-S Critical Value 0.176

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 5.848
 Median 0.21
 SD 29.15
 k star 0.155
 Theta star 37.81
 Nu star 11.44
 90% Percentile of Chisquare (2k) 0.921
 90% Percentile 17.41
 95% Percentile 31.99
 99% Percentile 74.04

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 5.859
 SD 28.75
 SE of Mean 4.807
 90% KM UTL with 90% Coverage 51.92
 90% KM Chebyshev UPL 93.26
 90% KM UPL (t) 43.89
 90% Percentile (z) 42.7
 95% Percentile (z) 53.14
 99% Percentile (z) 72.73

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 9.347
 90% Hawkins Wixley (HW) Approx. Gamma UPL 7.588
 90% WH Approx. Gamma UTL with 90% Coverage 13.52
 90% HW Approx. Gamma UTL with 90% Coverage 11.7

Note: DL/2 is not a recommended method.

**Appendix E2: ProUCL Outputs for Background UPLs
Urban Fill PAHs**

Pyrene

General Statistics

Number of Valid Data 38	Number of Detected Data 33
Number of Distinct Detected Data 31	Number of Non-Detect Data 5
Tolerance Factor 1.598	Percent Non-Detects 13.16%

Raw Statistics

Minimum Detected 0.003
 Maximum Detected 202.9
 Mean of Detected 6.058
 SD of Detected 35.14
 Minimum Non-Detect 0.002
 Maximum Non-Detect 3.7

Log-transformed Statistics

Minimum Detected -5.809
 Maximum Detected 5.313
 Mean of Detected -0.692
 SD of Detected 2.387
 Minimum Non-Detect -6.215
 Maximum Non-Detect 1.308

Data with Multiple Detection Limits

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

Single Detection Limit Scenario

Number treated as Non-Detect with Single DL 32
 Number treated as Detected with Single DL 6
 Single DL Non-Detect Percentage 84.21%

Background Statistics

Normal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.234
 5% Shapiro Wilk Critical Value 0.931

Data not Normal at 5% Significance Level

Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic 0.978
 5% Shapiro Wilk Critical Value 0.931

Data appear Lognormal at 5% Significance Level

Assuming Normal Distribution

DL/2 Substitution Method
 Mean 7.056
 SD 32.79
 90% UTL 90% Coverage 59.43
 90% UPL (t) 50.4
 90% Percentile (z) 49.07
 95% Percentile (z) 60.98
 99% Percentile (z) 83.33

Maximum Likelihood Estimate(MLE) Method

Mean -106.1
 SD 103.7
 90% UTL with 90% Coverage 59.54

90% UPL (t) 30.95
 90% Percentile (z) 26.77
 95% Percentile (z) 64.45
 99% Percentile (z) 135.1

Assuming Lognormal Distribution

DL/2 Substitution Method
 Mean (Log Scale) -0.948
 SD (Log Scale) 2.491
 90% UTL 90% Coverage 20.72
 90% UPL (t) 10.43
 90% Percentile (z) 9.429
 95% Percentile (z) 23.31
 99% Percentile (z) 127.3

Log ROS Method

Mean in Original Scale 7.005
 SD in Original Scale 32.8
 90% UTL with 90% Coverage 19.17
 90% BCA UTL with 90% Coverage 12.51
 90% Bootstrap (%) UTL with 90% Coverage 12.51
 90% UPL (t) 9.529
 90% Percentile (z) 8.602
 95% Percentile (z) 21.61
 99% Percentile (z) 121.6

Gamma Distribution Test with Detected Values Only

k star (bias corrected) 0.252
 Theta Star 31.99
 nu star 16.62

A-D Test Statistic 2.749
 5% A-D Critical Value 0.875
 K-S Test Statistic 0.242
 5% K-S Critical Value 0.168

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution

Gamma ROS Statistics with Extrapolated Data
 Mean 6.998
 Median 0.467
 SD 32.8
 k star 0.176
 Theta star 39.66
 Nu star 13.41
 90% Percentile of Chisquare (2k) 1.063

90% Percentile 21.08
 95% Percentile 37.19
 99% Percentile 82.52

Data Distribution Test with Detected Values Only

Data appear Lognormal at 5% Significance Level

Nonparametric Statistics

Kaplan-Meier (KM) Method
 Mean 7.019
 SD 32.36
 SE of Mean 5.331
 90% KM UTL with 90% Coverage 58.71
 90% KM Chebyshev UPL 105.4
 90% KM UPL (t) 49.79
 90% Percentile (z) 48.49
 95% Percentile (z) 60.24
 99% Percentile (z) 82.3

Gamma ROS Limits with Extrapolated Data

90% Wilson Hilferty (WH) Approx. Gamma UPL 12.36
 90% Hawkins Wixley (HW) Approx. Gamma UPL 10.52
 90% WH Approx. Gamma UTL with 90% Coverage 17.54
 90% HW Approx. Gamma UTL with 90% Coverage 15.83

Note: DL/2 is not a recommended method.